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Functional Servicing and Stormwater Management Report

545 Dunlop Street West, Barrie

January 20, 2023

Prepared for:

First Gulf

Prepared by:

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FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Revision	Description	Author		Quality Check		Independent Review	
0	1st submission	2023-01	BK	2023-01	AQ	2023-01	AL

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Approved by _____
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Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Stantec Consulting Limited has been retained by First Gulf to prepare a Functional Servicing and Stormwater Management Report (FSR) in support an industrial/commercial development located at 545 Dunlop Street West (referred to as 'the Site') in the City of Barrie (City).

The purpose of this FSR is to provide servicing options regarding the availability and capacity of existing municipal infrastructure (storm, sanitary and water) to support the proposed development on the subject lands.

The development concept prepared by Powers Brown Architecture (see **Appendix A**), proposes one (1) industrial building with total GFA of 32,301 m^2 of Multi-Tenant Facility providing both office and warehouse uses. The proposed building would have frontage on Dunlop Street east and would occupy a parcel of land having an approximate area of 8.00 hectares (ha).

The subject Site is shown in **Figure 1**.

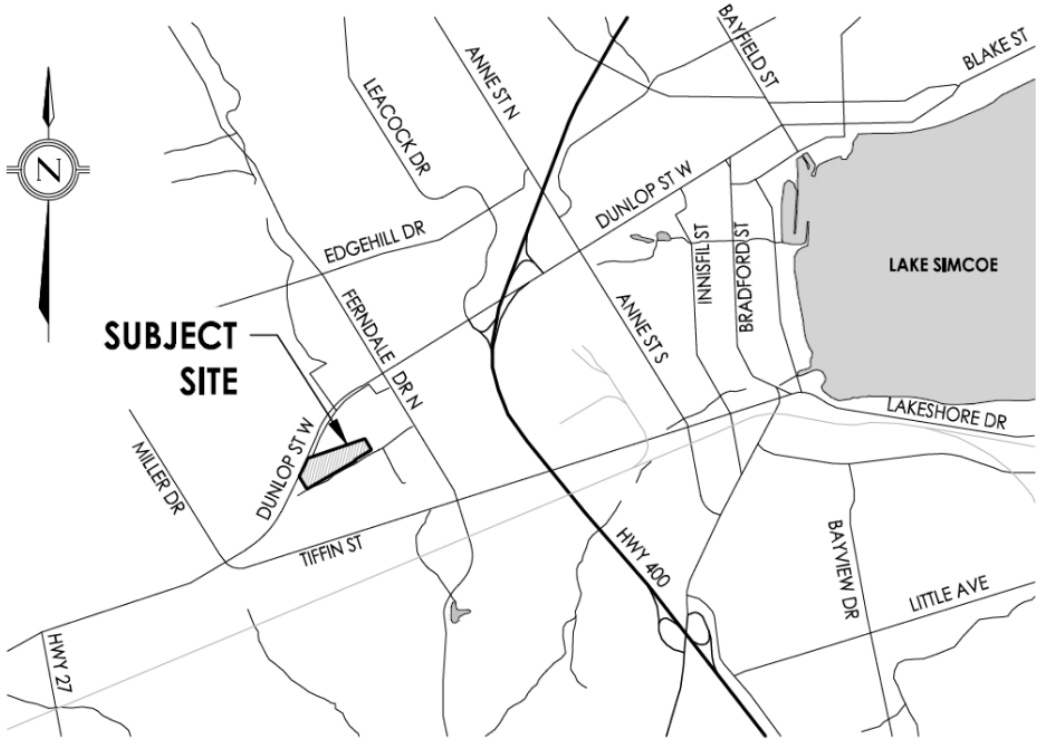

Figure 1: Site Location – 545 Dunlop Street, Barrie

2.0 BACKGROUND INFORMATION

A preliminary servicing design concept and servicing brief has been prepared for the Site by WMI Associates dated April 1, 2022. It is understood that the preliminary designs were presented to the City and any concerns / comments were raised through the Pre-Consultation Review Planning Comments. Refer to Conceptual Design and Servicing Memo in **Appendix B** for detailed information

This FSR further develops from the preliminary design and incorporates any comments raised through the Pre-Consultation Review. It also reflects any changes resulting from any further investigations and discussions with the City.

3.0 REFERENCED DOCUMENTS

The following documents were reviewed in preparing this FSR.

- Servicing Brief 545 Dunlop Street, Barrie, prepared by WMI & Associates Limited, dated April 1, 2022; [WMI Servicing Brief]
- Overall Site Plan – 545 Dunlop Street, prepared by Powers Brown Architecture, dated January 19, 2023;
- Hydrogeological Study Proposed Commercial and/or Industrial Development, 545 Dunlop Street West, Barrie, Ontario, prepared by GEI Consulting Engineers and Scientists, dated July 16, 2021;
- Geotechnical Investigation Proposed Commercial and/or Industrial Development, 545 Dunlop Street West, Barrie, Ontario, prepared by GEI Consulting Engineers and Scientists, dated June 30, 2021;
- LSRCA Technical Guidelines for Stormwater Management Submissions, prepared by LSRCA, dated April, 2022;
- Lake Simcoe Protection Plan (LSPP), LSRCA, dated July, 2009;
- Storm Water Management Planning and Design Manual, Ministry of Environment and Climate Change, 2003 [MOECC Guidelines];
- Low Impact Development Stormwater Management Planning and Design Guide, prepared by CVC and TRCA, 2010.
- Storm Drainage and Stormwater Management Policies and Design Guidelines, prepared by Engineering Department Barrie, dated 2017.
- City of Barrie Wastewater Collection Master Plan Update, Final Master Plan report prepared by Cole Engineering Group Ltd., dated July 15, 2019
- Sanitary Sewage Collection System Policies and Design Guideline, City of Barrie, dated October 2017 [City Sanitary Design Guideline]
- Water Transmission and Distribution Design Standard, City of Barrie, dated June 2022. [City Water Design Standard]
- Development Manual, City of Barrie, dated Oct 27, 2017. [City Development Manual]
- Ferndale Drive North Reconstruction, Tiffin St. to Dunlop St., Plan and Profile Drawings:

- Ferndale Drive North STA. 0+160 to 0+320 dated January 06, 2014
- Ferndale Drive North STA. 0+320 to 0+480 dated January 06, 2014
- Ferndale Drive North STA. 0+480 to 0+640 dated January 06, 2014
- Ferndale Drive North STA. 0+640 to 0+800 dated January 06, 2014
- Ferndale Drive North STA. 0+800 to 0+960 dated January 06, 2014

4.0 STORMWATER MANAGEMENT

The Site is a part of the Barrie Creeks subwatershed, which is under the jurisdiction of the Lake Simcoe Region Conservation Authority (LSRCA). LSRCA's Regulation Mapping tool shows that the western, southern, and north-east edges of the Site are within LSRCA's regulated area.

4.1 EXISTING CONDITION

The existing Site (8 ha) is a vacant lot, which is mostly pervious with small portions of forested areas. The existing contour information of the Site shows that there is high ground in the middle of the Site, which drains both to the north (towards the hydro-corridor) and to the south (towards the existing ditch).

Based on the land use and soil type, the area-weighted SCS Curve number or CN*II determined for the Site is 60. The area draining to the south discharges to an existing ditch, which drains from west to east towards a culvert on Ferndale Drive North. The approximate time of concentration for the existing condition is 0.86 h. **Figure 2** shows the existing drainage plan of the Site.

The Visual OTTHYMO (VO) software was used for the hydrologic assessment of the Site. 4-hour Chicago and 24-hour SCS design storms were generated from the Barrie WPCC IDF Curve Parameters (adjusted to account for Climate Change). From 6-hour SCS, 12-hour SCS, and 24-hour SCS design storms, 24-hour SCS design storm is the most critical.

Table 4.1 shows the peak flows generated from the existing Site, which range from 0.075-0.39 m^3/s for the 24-hour SCS design storms and 0.045-0.245 m^3/s for 4-hour Chicago design storms.

Table 4.1: Existing Peak Flows

Storm Type	25mm	2yr	5yr	10yr	25yr	50yr	100yr	Hazel
4h Chicago	0.017	0.045	0.086	0.119	0.167	0.203	0.245	0.801
24h SCS	-	0.075	0.141	0.193	0.270	0.320	0.390	-

Relevant calculations are provided in **Appendix C**.

4.1.1 Subsurface Condition

According to the Hydrogeological Study Report (GEI, 2021), the Site is predominantly underlain by an upper zone of earth fill, followed by upper cohesionless and wet deposits of sand to silty sand. The topsoil layer ranges from 25 to 610 mm in thickness. Earth fill consisting of sand to silty sand with various amount of gravel and clay was found below the topsoil, extending to depths of 0.8 to 3.3 m below grade. Native soils consisted of silt with some clay, to clayey silt, to silt and clay. The native soils were encountered at depths of 0.025 to 3.3 m below grade and extended beyond the vertical depth of investigation.

The monitoring well recordings indicated that at the western two-thirds of the Site, the groundwater level elevations ranged from 233.5 to 234.1 m, approximately 0.3 to 3.1 below existing grade. In the eastern one-third of the Site, the groundwater level elevation is approximately at 233.5 m, approximately near the ground surface to about 1.2 m below existing grade.

Based on soil type and the results of the hydraulic conductivity testing, the estimated equivalent unfactored infiltration rate was 60 mm/hour. Using a factor of safety of 2.5, a design infiltration rate of 24 mm/hour was used for the Site.

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Legend

- PROPERTY BOUNDARY
- STORM SEWER
- A=1.01 / C=0.90 — AREA (Ha) / RUNOFF COEFFICIENT
- DRAINAGE BOUNDARY
- STORM DRAINAGE FLOW DIRECTION

1:1500 0 15 45 75m

Client/Project
F1RST GULF

545 DUNLOP STREET WEST

Project No.
1606 23106

Title
EXISTING STORM DRAINAGE PLAN

Revision

Date
2023.01.20

Reference Sheet
C-701

Figure No.
2

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4.2 STORMWATER MANAGEMENT CRITERIA

The Site is subject to the City of Barrie Storm Drainage and SWM Policies and Design Guidelines (2017). In addition, the site is subject to the criteria outlined in the LSRCA Technical Guidelines for Stormwater Management (approved June 2016), which provides criteria pertaining to quantity control, quality control, and water balance.

The SWM criteria applicable to the Site are outlined in the Sections below.

4.2.1 Quantity Control

4.2.1.1 Peak Flow Control

Per the Town and LSRCA guidelines, the post-development peak flow rates should be controlled to pre-development peak flow rates for all storms ranging between the 2-year through 100-year events.

4.2.1.2 Runoff Volume Control (RVc)

The proposed site will create more than 0.5 hectares of new impervious surfaces and is therefore considered a major development. As such, the Runoff Volume Control target for the site is retention of the 25 mm event from the total impervious area. Achieving the 25 mm retention target is not possible for the Site due to the high ground water table, as well as zoning and setback constraints. As such, the site is considered a “site with restrictions” as noted in Section 2.2.2.2 of the LSRCA SWM Guidelines and the Flexible Treatment Alternatives will apply as follows:

- Alternative #1 – Retention of the 12.5 mm event from all impervious surfaces shall be provided. Full compliance to retain the 12.5 mm event is not possible due to the high ground water table, as well as zoning and setback constraints.
- Alternative #2 – Retention of the 5 mm event from all impervious surfaces shall be provided.
- Alternative #3 – Mitigation equivalent to the performance of 25 mm of volume reduction shall be performed off-site to protect the receiving water body.

Typically, volume reduction techniques include infiltration, reuse and rainwater harvesting, canopy interception, evapotranspiration and/or additional techniques based on the LSRCA SWM Guidelines. However, due to the high-groundwater conditions, zoning and setback requirements, there are limited opportunities to provide a subsurface onsite retention facility while meeting the 1m separation criteria between the base of the facility and high groundwater table.

4.2.2 Quality Control

4.2.2.1 Total Suspended Solids (TSS)

In accordance with the LSRCA SWM Guidelines, the minimum level of treatment required for any development within the LSRCA watershed is the Enhanced (80% TSS removal) water quality protection level which is in accordance with the MECP (formally MOE or MOECC) Stormwater Management Practices Planning and Design Manual (2003).

4.2.2.2 Phosphorus Loading

The Phosphorus Offsetting Policy (LSPOP) was adopted by the LSRCA in 2017 and requires that all new developments treat 100% of phosphorus from leaving the Site; and is referred to as the Zero Export Target. Any remaining stormwater phosphorus load that cannot be treated on site will trigger the need for a cash in lieu offset to achieve a net zero target.

4.2.3 Water Balance

The LSRCA Watershed Development Policies states that “the SWM plan must make every feasible effort to maintain the pre-development infiltration and evapotranspiration rates and temperatures to the receiving waterbody and watershed.”

According to the Hydrogeological Report (GEI, 2021):

- The Site is located within a Wellhead Protection Area (WHPA) Zone A;
- The Site is partially located within a Highly Vulnerable Aquifer (HVA);
- The Site is located within a Significant Groundwater Recharge Area (SGRA);

Therefore, the Site is subject to Source Protection Land Use Policy (SPP LUP) 12, Designated Policy (DP) 6.40, and DP 4.8 of LSPP. Water balance assessment results and recommended mitigation measures are outlined in the Hydrogeological Study (GEI, 2021), which states that:

- Water balance assessment shows that without mitigation efforts, the proposed development will decrease average infiltration by about 8660 m^3/year.
- The reduction of infiltration can be minimized by using low impact development (LID) measures to promote infiltration.
- Infiltration-based practices will not be permitted for impervious areas of the commercial/industrial development.
- Infiltration of runoff from vegetated and roof areas is permitted.

- “Phosphorus Offsetting Policy” is applicable to the Site.

4.3 PROPOSED CONDITION

Under the proposed condition, the Site is developed as a multi-tenant warehouse/office facility. The proposed Site is occupied by a new building (3.23 ha), surrounding parking lots and landscaped areas, and a proposed SWM pond block. In the proposed drainage assessment, the Site is divided into multiple catchments. A brief summary of the catchments and corresponding parameters are outlined in **Table 4.2**. **Figure 3** shows the proposed drainage plan and the proposed catchments.

Table 4.2: Proposed Drainage Catchment Parameters

Catchment ID	Type	Area (ha)	Imperviousness (%)	CN*II
201	Building	3.23	94	99
202	Parking Lot or Paved areas	2.65	94	99
203	Pond Block	0.92	50	69
204	Uncontrolled Areas	1.20	0	72

Catchment 201 refers to the new building with a finished floor elevation (FFE) of 237.60 m. The new building is equipped with rooftop control, with a controlled release rate of 42 L/s/ha or 135.66 L/s. The controlled runoff from the rooftop drains northward to a proposed LID feature, ultimately discharging to the proposed SWM pond, located east of the new building.

Catchment 202 refers to the parking lot and paved areas surrounding the new building. The proposed grade of the parking lot, located north of the building is higher than that located south of the building. The south of the building consists of the truck loading areas. The overall parking lot areas are drained by a proposed storm sewer system and discharges to Lift Station 13, where the runoff is pumped to the proposed SWM pond.

Catchment 203 refers to the proposed pond block, which consists of the proposed SWM wet pond. Additional details pertaining to the proposed SWM wet pond are provided in **Section 4.4**.

Catchment 204 refers to the uncontrolled areas located at the outskirts of the proposed development. Due to grading constraints, these landscaped areas drain uncontrolled and away from the Site.

Due to the proposed development, the unmitigated peak flows from the Site increases, compared to the existing condition. Therefore, appropriate SWM measures are undertaken for the Site.

DUNLOP STREET WEST
(THE KING'S HIGHWAY NO. 90)

(HIGHWAY PLAN P-2429-16)

TRANSFERRED BY O.R.C. 89-66 AS IN INST.-RO216068)

TRANSFERRED BY O.R.C. 2/67 AS IN RO949963)

ONTARIO HYDRO
H.E.P.C. PLAN No. 203-9014, INST. RO147171

204a
0.20 | 0.09

201
0.90 | 3.23

PROPOSED BUILDING
FFE=237.60
(ROOF CONTROLLED TO 42L/s/Ha)

OFFICE A
OFFICE B
OFFICE C
OFFICE D
OFFICE E
OFFICE F

LOT 24, PART 1, PLAN 51R-5945

PIN 58764-0050(LT)

204b
0.20 | 1.11

202
0.90 | 2.65

203
0.50 | 0.92

FOREBAY
MAIN CELL

MAINTENANCE ROAD

PART 1, PLAN 51R-37191

PART 2, PLAN 51R-26459

PART 2, PLAN 51R-1806

SUBJECT TO EASEMENT AS IN RO1374181

INST. RO419022

CENTRE STREET

BLOCK A
PART 2, PLAN 51R-1806

LOT 6

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Legend

- PROPERTY BOUNDARY
- STORM SEWER
- STORM MANHOLE
- CATCH BASIN
- 200 / 0.90 | 1.01 — CATCHMENT ID / AREA (Ha) / RUNOFF COEFFICIENT
- DRAINAGE BOUNDARY
- STORM DRAINAGE FLOW DIRECTION

1:1500 0 15 45 75m

Client/Project
F1RST GULF

545 DUNLOP STREET WEST

Project No.
1606 23106

Title
PROPOSED STORM DRAINAGE PLAN

Revision

Date
2023.01.20

Reference Sheet
C-702

Figure No.
3

4.4 STORMWATER MANAGEMENT PLAN

Under the proposed condition, the level of imperviousness increases, resulting in increased runoff and flow rates from the Site. Due to the grading constraints, approximately 1.20 ha (Catchment 204) drains uncontrolled from the Site. The area-weighted level of imperviousness of the controlled area (6.80 ha) is 88%. The runoff from the proposed controlled areas is discharged to various at-source (LID) and end-of-pipe (wet pond) SWM measures.

4.4.1 Quantity Control

4.4.1.1 Peak Flow Control

The major and minor flows from the proposed controlled areas are discharged to a proposed SWM wet pond, located east of the new building. The proposed wet pond controls the post-development flows to the pre-development levels and discharges runoff to the existing ditch, located south of the Site. The required and provided active storage volume of the wet pond are 4351 m^3 and 5615 m^3, respectively.

The hydraulics of the wet pond is controlled by the following flow control devices located within the control manhole (MH):

- 115 mm orifice with invert of 234 m;
- 170 mm orifice with invert of 234.40 m; and
- 270 mm weir with invert of 234.85 m.

The proposed wet pond has an emergency spillway which is 4.9 m in length with 10:1 side slopes, designed to convey the 100-year uncontrolled flow from the Site.

The hydraulic performance of the wet pond is shown in **Table 4.3**.

The VO output files for the proposed condition are provided in **Appendix C**.

Table 4.3: Hydraulic Performance of Wet Pond in 24-hour SCS and 4-hour Chicago Storms

Storm	Return Period (year)	Inflow (m^3/s)	Outflow (m^3/s)	Volume (m^3)	WSE (m)	Final Outflow (m^3/s) Addhyd (8)	Target (m^3/s)
24h SCS	2	0.42	0.034	2000	234.55	0.057	0.075
	5	0.59	0.052	2643	234.70	0.099	0.141
	10	0.7	0.06	3135	234.80	0.134	0.193
	25	0.85	0.079	3712	234.94	0.179	0.270
	50	0.95	0.099	4053	235.00	0.212	0.320
	100	1.06	0.121	4351	235.06	0.245	0.390
4h Chi	2	0.71	0.021	1566	234.48	0.038	0.045
	5	0.95	0.037	2073	234.56	0.063	0.086
	10	1.13	0.046	2407	234.64	0.082	0.119
	25	1.33	0.055	2860	234.74	0.110	0.167
	50	1.48	0.062	3196	234.82	0.134	0.203
	100	1.65	0.07	3516	234.89	0.160	0.245
	25mm	0.42	0.014	1015	234.30	0.016	0.017
	Regional	0.69	0.55	6144	235.40	0.670	0.801

Note:

- The hydraulic performance of the wet pond is analyzed for 24-hour SCS and 4-hour Chicago design storms using the VO model
- WSE refers to the water surface elevation in the wet pond
- Final Outflow refers to the combined controlled and uncontrolled flows from the Site, which corresponds to Addhyd (8) in the VO model
- Target flows refer to the pre-development flow rates from the Site
- Inflow refers to the total unmitigated flows draining to the pond
- Outflow refers to the controlled release rates from the wet pond

4.4.1.2 Volume Control

The proposed Site is considered a major development as it will create more than 0.5 ha of new impervious surfaces. In accordance with LSRCA's Flexible Treatment Alternatives, the following options should be considered:

Alternative	Rainfall Event (mm)	Retention Volume (m^3)
#1	12.5	1000
#2	5	400
#3	25	2000

However, due to high groundwater table, limited space, footprint of the proposed gallery, zoning, and setback constraints, retention of 12.5 mm and 25 mm events becomes challenging. The viable retention target is 5 mm from impervious surfaces across the Site. Furthermore, based on the nature of the proposed development, only the runoff from the rooftop can be utilized to meet the retention requirement of the entire Site.

The required retention volume for 5 mm rainfall across the entire Site (8 ha) is 400 m^3 on an event basis. This is equivalent to the diversion of approximately 12.50 mm rainfall from the roof surface to a proposed LID feature (infiltration gallery). The roof runoff is considered clean and does not require any pre-treatment.

The proposed infiltration gallery is located north of the new building in the form of underground storage tanks Stormtech SC-740 (or approved equivalent), between MH 118 and MH 103. The runoff from the rooftops are conveyed to the underground storage tanks. The underground storage tanks are designed to retain the required storage volume, prior to the flow exiting the system.

The design infiltration rate for the Site is 24 mm/hr. Hence, the approximate drawdown time of the underground storage tank is 19 hours. At the infiltration gallery location, the seasonal high groundwater table elevation is approximately 233.7 m. As the approximate elevation of the base of the stone of the gallery is 234.85 m, the separation between the bottom of the gallery and the groundwater table is more than 1 m.

The stage-storage data and relevant calculations of the underground storage tank are provided in **Appendix C**.

4.4.2 Quality Control

4.4.2.1 Enhanced Control

The proposed SWM wet pond is designed to provide an 'Enhanced' level of treatment. The required and provided permanent pool volume of the wet pond are 1466 m^3 and 2144 m^3, respectively. The required and provided extended detention (ED) volume of the wet pond is 1525 m^3. The drawdown time for the ED runoff is 39 hours. Calculations are provided in **Appendix C**.

4.4.2.2 Phosphorus Control

The stormwater phosphorus loading calculations were based on the MECP's "Lake Simcoe Phosphorus Loading Development Tool" dated 2019.

Under pre-development conditions, a phosphorus load of 1.52 kg/year was calculated.

According to the LSRCA Phosphorus tool, the proposed Site is designated as a "High Intensity – Commercial/Industrial" which incurs a phosphorus load of 12.54 kg/year without mitigation.

In the proposed condition, approximately 3.58 ha of the proposed Site discharges to a proposed wet pond, which provides 63% phosphorus removal efficiency. The new building (3.23 ha) firstly discharges to a proposed infiltration gallery (87% phosphorus removal efficiency), then to the proposed wet pond (63% phosphorus removal efficiency), resulting in a combined removal rate of 95%, based on the treatment train approach. The remaining 1.19 ha of the Site drains uncontrolled from the Site. With the proposed mitigation efforts, the proposed Site generates 2.84 kg/yr of phosphorus.

To satisfy the Zero Export Target, a cash in lieu will be provided by the developer for the phosphorus load deficit. Based on the formula of (ratio (2.5) x P deficit in kg x $35,000) provided by the LSPOP, and the total estimated phosphorus load deficit of 2.84 kg/yr under the post-development condition with mitigation, the cash in lieu is estimated at $248,179.

Detailed calculations are provided in **Appendix C**.

4.4.3 Water Balance

The Hydrogeological Report (GEI 2021), included a pre a post-development water balance assessment. This report should be reviewed in conjunction with this report.

4.5 EROSION AND SEDIMENT CONTROL

Soils are exposed during construction due to the removal of the natural vegetative cover, thereby increasing the potential for sediment wash-off from the site during rainstorms. The following erosion and sediment control (ESC) measures are to be installed prior to construction and maintained until surface works are completed and the site is stabilized. The ESC plan for the project site involves three stages.

Stage 1: In Stage 1 interceptor swales equipped with rock check dams will be used to drain the existing site, as per the existing drainage pattern. Proposed sediment traps will be used to collect the sediment loads at the end of the interceptor swales.

Stage 2: In Stage 2, proposed interceptor swales around the new building will convey the runoff to proposed ESC pond, located east of the new building.

Stage 3: In Stage 3, flows will continue to be directed to the proposed SWM pond. Storm sewer system will be installed, and the diversion swales will be removed. Catchbasin (CB) sediment control devices will be installed for protecting the CBs. At the end of Stage 3, the sediments collected in the proposed SWM pond will be removed.

Additional ESC measures pertaining to the Site include:

- Silt fences must be installed along the perimeter of the proposed development where it will be effective in intercepting surface flow;
- Mud mats must be installed at all construction entrances to the site;
- Topsoil piles must be contained by sedimentation control fence;
- Silt fence or tree fencing shall be installed around the perimeter of the SWM pond.
- The erosion and sediment control measures must be inspected regularly and repaired and cleaned out if required, particularly after a rainfall event.

5.0 WATER SUPPLY

5.1 EXISTING WATER SERVICE

Based on Topographic Survey, and available background drawings the surrounding existing water services are summarized as follows:

Dunlop Street West

- 300mm diameter ductile iron watermain near Ferndale Drive North
- 300mm diameter PVC watermain near Miller Drive

Ferndale Drive North

- 300mm diameter ductile iron watermain
- 400mm diameter PVC watermain

Tiffin Street

- 300mm diameter PVC watermain

A preliminary water servicing design for the property was prepared by WMI & Associates, which outlines the requirement for a watermain loop with feasible connection options to Dunlop St., or Ferndale Drive North. Refer to WMI Servicing Brief attached in **Appendix B** for details. Based on further correspondence with the City, the preferred option is to extend the watermain along Dunlop Street to the north and south, connecting to existing stubs to create the required loop system.

5.2 PROPOSED WATER SUPPLY

As outlined in **Section 5.1**, the existing 300mm diameter watermain on Dunlop Street West will be extended to connect existing 300mm stubs near Miller Dr. and Ferndale Drive North to provide a looped connection to the Site. The Site will be serviced by one (1) 250 mm diameter water service connection from the extended 300mm diameter watermain along Dunlop Street West. The water services will be split for domestic and fire supply prior to entering the building. The associated watermain appurtenances such as water meter, backflow preventor, and detector valve will be located within the proposed building's mechanical room. The required redundancy for the Site's water supply will be provided by installation of two (2) valves in proximity of the 250mm diameter servicing connection to provide a reliable water supply for the Site. Refer to the Site Servicing Plans for details.

5.3 DOMESTIC WATER DEMAND

The domestic water demand for the Site is calculated on area basis as specified in the City Water Design Standards. The GFA for the Site is multiplied by an average water consumption rate of 35 m^3/ha/Day to obtain the average water consumption rate for the Site. A peaking factor of 2.0 is applied to the average water consumption rate for the Site in accordance with the peak usage rate as per MECP Design Guidelines for Drinking Water Systems (2008) that results in domestic water demand of 157 L/min. Refer to **Appendix D**. for detailed calculations.

5.4 FIRE FLOW CALCULATIONS

Fire flow demand for the Site has been completed as per Fire Underwriters Survey (FUS) requirements. A detailed fire flow calculation (see **Appendix D**) has been prepared using recommendations of the FUS. It is assumed that the building will be non-combustible construction with a fully automatic sprinkler system. The calculated fire flow calculated for this Site is 12,000 L/min, rounded to the nearest 1,000 L/min as per FUS guidelines. The City Water Design Standards notes a minimum fire flow requirement of 20,000 L/min (333 L/s) which is greater than the calculated fire flow demand of 12,000 L/min. Therefore, 20,000 L/min is considered as the fire flow demand for this Site.

5.5 TOTAL WATER DEMAND

The total water demand for the Site is calculated as a sum of domestic water demand plus fire flow that equates to 20,157L/min. Refer to **Appendix D** for detailed calculations. Based on WMI Servicing Brief and Pre-Consultation Review Planning Comments with the City dated May 19, 2022, no concerns regarding capacity of the watermains vicinity to the Site has been raised. Fire flow testing in accordance with City Water Design Standard will be completed next year to confirm capacity of the watermains vicinity to the Site. Options such as fire pump installation will be explored should fire flow testing indicate insufficient capacity to support the proposed development.

6.0 SANITARY SERVICE

6.1 EXISTING SANITARY SERVICE

Based on Topographic Survey, and available background drawings the existing sanitary services are summarized as follows:

Dunlop Street West

- 250mm diameter sanitary sewer west of Ferndale Drive North
- 600mm diameter sanitary sewer east of Ferndale Drive North

Ferndale Drive North

- 300mm diameter sanitary sewer

A preliminary sanitary servicing design was prepared by WMI & Associates Limited for the property which includes extension of the existing sanitary sewer along Dunlop Street West with a connection to the north of Site. Refer to WMI Servicing Brief attached in **Appendix B** for details.

6.2 PROPOSED SANITARY SERVICE

Aligned with the preliminary sanitary servicing design completed by WMI & Associates, sanitary servicing for the Site will be provided by extending the existing sanitary service along Dunlop Street West and providing one (1) 250mm diameter service connection to the Site. Refer to the Site Servicing Plans for details.

An estimate of the expected sanitary flow generation has been calculated as per City Sanitary Design Guideline has been included in **Appendix E**. The sanitary flow estimate was based on average daily flow of 35 m^3/day/ha. The average daily dry weather flow for the proposed development is calculated to be 1.3 L/s. The proposed development will be a warehouse setting with minimal sanitary demand. Therefore, a peaking factor of 2.0 was applied based on Section 3.3.3.2 of City Sanitary Design Guidelines. In addition, application of extraneous flows as per City Sanitary Design Guidelines results in overall sanitary demand flow of 3.4 L/s. See **Table 6.1** for summary of sanitary calculations.

Table 6.1 – Proposed Sanitary Flow

Flow Type	Development Flow (L/s)
Sewage	1.3
Extraneous	0.8
Total Site Design Flow (incl. Peaking factor)	3.4

No capacity concerns with regards to the receiving sanitary sewers have been raised by the City. In addition, upon review of the City of Barrie Wastewater Collection Master Plan Update, Final Master Plan Report (2019), no major sewer capacity concerns were raised for the existing sanitary sewers downstream of the proposed development. Therefore, it is anticipated that the existing sanitary servicing infrastructure has sufficient capacity to support the proposed development.

7.0 GROUNDWATER

Permanent Groundwater Drainage:

Based on the Hydrogeological and Geotechnical investigation completed by GEI Consulting Engineers and Scientists, as basement levels are not considered for this Site, foundation drains and permanent dewatering are not anticipated to be required.

Short-Term Groundwater Discharge:

The Hydrogeological Report estimates that short-term dewatering volume of approximately 530,000 L/day during construction. Based on the above estimate, registration for Environment Activity and Sector Registry (EASR) will need to be applied for from the Ministry of Environment, Conservation and Parks (MECP). In addition, Permit to Take Water (PTTW) will also be required as the volume exceeds 400,000 L/day. For comprehensive understanding of the Site groundwater conditions, refer to the Hydrogeological Report. The Hydrogeological Report also indicates a possible reduction of short-term dewatering volumes pending finalized grading and servicing plan. Groundwater management will be further investigated by the project team as the design develops.

8.0 CONCLUSION AND RECOMMENDATIONS

From the findings of this report, the conclusions are as follows:

Stormwater Management

The proposed development plan will satisfy the requirements of the City and LSRCA guidelines and achieve the following:

- **Quantity Control:** Control post-development peak flow rates to pre-development levels for 2 to 100-year events using proposed rooftop control and a SWM wet pond. In addition, satisfy Runoff Volume Control target of 5mm retention from total imperviousness areas using proposed LID features (infiltration gallery).
- **Quality Control:** Provide Enhanced level of treatment using proposed SWM wet pond. Provide treatment of phosphorous using proposed SWM wet pond and cash-in-lieu in accordance with LSRCA's Phosphorous Offsetting Policy.
- **Water Balance:** Provide best efforts approach to maintain post-development water balance to the pre-development levels as per LSRCA Watershed Development Policies.
    - In-situ Soil Percolation tests will be undertaken in future phases at the proposed LID locations to verify the infiltration rates.

Sanitary Sewer

- **Sanitary Sewers:** Extend existing 250mm diameter sanitary sewer along Dunlop Street West to the Site.
- The sanitary demand from the proposed development results in sanitary flow of 3.4 L/s.

Water Servicing

- **Watermain:** Extend existing 300mm diameter watermain along Dunlop Street West to the north and south to connect to existing stubs near Ferndale Drive North and Miller Dr.
- The domestic water demand for the proposed development is calculated as 157 L/min.
- The fire demand for the proposed development is considered to be 20,000 L/min which is the minimum fire flow requirement as per City Water Design Standards.
- The total water demand (domestic and fire) is calculated as 20,157 L/min.

- Fire flow testing will be completed later this year to confirm the capacity of the water infrastructure. Use of fire pumps will be explored should there be insufficient capacity with the existing water infrastructure.

Groundwater

- As no basement structures are proposed, long-term water discharge is not anticipated to be required.
- Short-term private water discharge will likely be required during construction. Based on calculated volumes in the Hydrogeological report by others, both EASR and PTTW will be required.

Appendix A SITE PLAN

OVERALL SITE PLAN

SITE AREA = ±19.78 AC (861,592.69 SF / 80,045 M²)	TOTAL BUILDING AREA = 347,680 SF / 32,301 SM	COVERAGE = 40%	CAR PARKING = 158 SPACES PROVIDED	TRUCK PARKING = 22

SITE LEGEND
- EXPOSED FOUNDATION WALL
- DRIP LINE
- LANDSCAPED

PARKING CALCULATION

WAREHOUSE (1 PER 1,000 SM):
30,947.86 SM / 1000 = **31 PARKING REQUIRED**

OFFICE (1 PER 30 SM):
1,352.67 SM / 30 = **46 PARKING REQUIRED**

TOTAL PARKING = 77 PARKING REQUIRED

BARRIER FREE PARKING REQUIREMENT:
(76 TO 100 SPACES)

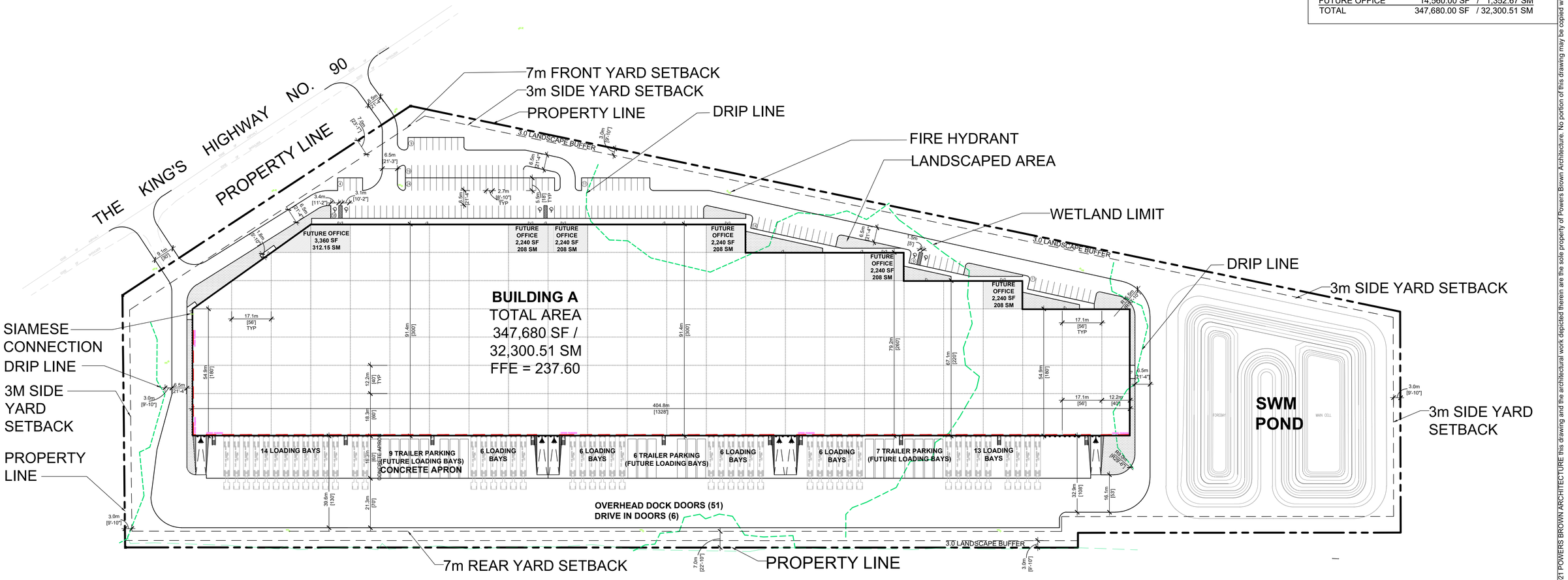
- 2 SPACES OF TYPE A
- 2 SPACES OF TYPE B

4 SPACES REQUIRED **6 SPACES PROVIDED**

TYPE A (WIDTH: 3.4m W / ACCESS AISLE WIDTH OF 1.5M
TYPE B (WIDTH: 3.1m W / ACCESS AISLE WIDTH OF 1.5 M

BUILDING

WAREHOUSE	333,120.00 SF	/ 30,947.86 SM
FUTURE OFFICE	14,560.00 SF	/ 1,352.67 SM
TOTAL	347,680.00 SF	/ 32,300.51 SM



* PRELIMINARY NOT FOR CONSTRUCTION, PERMIT, OR REGULATORY APPROVAL. * BOUNDARY LINES AND EASEMENTS ARE PRELIMINARY & REQUIRE VERIFICATION - SURVEY NOT PROVIDED. * ALL BUILDING AREAS ARE APPROXIMATE UNTIL BUILDING FOOTPRINT/ ENTRY DESIGNS ARE FINALIZED.
* RENDERING IS REPRESENTATIVE OF DESIGN INTENT ONLY. IT IS NOT A PHOTOREALISTIC REPRESENTATION OF ACTUAL MATERIALS PROPOSED AND SHOULD BE CONSIDERED PRELIMINARY AT ALL STAGES. * PRELIMINARY DETENTION CALCULATIONS. CALCULATIONS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED BY A LICENSED ENGINEER. *

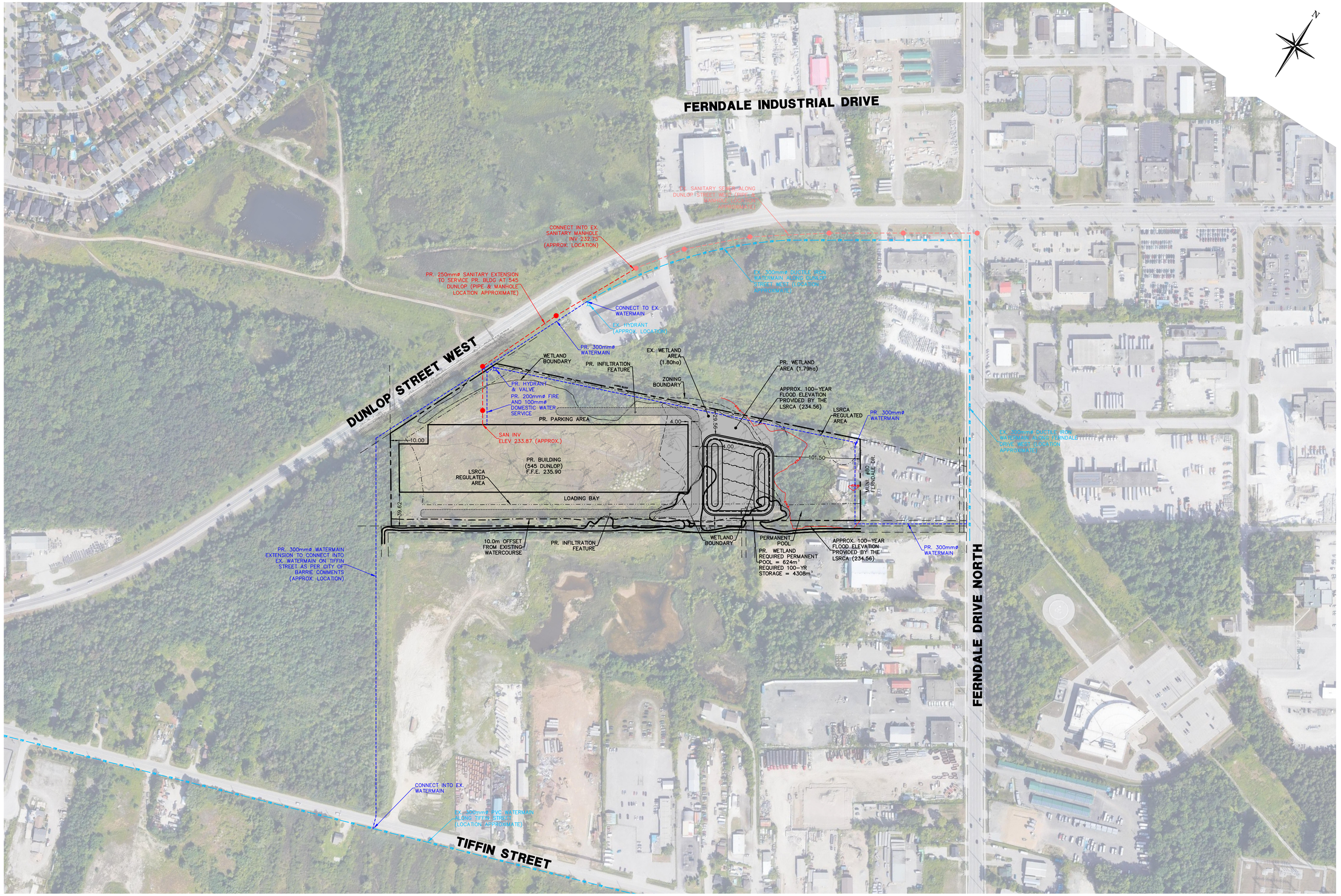
0 30 60 120 340

545 DUNLOP STREET
a project for
FIRST GULF

powers brown architecture

TORONTO 19 JANUARY 2023 CANADA 225058

Appendix B WMI BACKGROUND INFORMATION



Key Plan:

Legend:

EXISTING FEATURES (EX)

- EX STD IRON BAR
- EX IRON BAR
- EX UTILITY POLE
- EX BELL PED
- EX HYDRO TRANSFORMER
- EX ELEVATION
- EX FENCE
- EX U/G GASMAIN
- EX U/G BELL
- EX U/G HYDRO
- EX WATERMAIN & VALVE
- EX SAN SEWER & MH
- EX STM SEWER & MH
- EX WATER SERVICE
- EX FIRE HYD.
- EX ST NAME SIGN
- EX STOP SIGN

PROPOSED FEATURES (PR)

- PR STREET NAME SIGN
- PR STOP SIGN
- PR SILT FENCE
- PR STREET LIGHT
- PR HYDRO TRANSFORMER
- PR WATER SERVICE
- PR SANITARY SERVICE
- PR STORM SERVICE
- PR WATERMAIN
- PR FIRE HYDRANT
- PR WATER VALVE
- PR SANITARY SEWER
- PR SANITARY MANHOLE
- PR STORM SEWER
- PR CATCHBASIN MANHOLE
- PR MANHOLE
- PR CATCHBASIN
- PR SWALE
- PR ELEVATION
- PR MATCH EXISTING ELEVATION (INTERPOLATED)
- PR TOP OF CURB ELEVATION
- PR EDGE OF PAVEMENT ELEVATION
- PR 3:1 SLOPE

CAUTION
CONTRACTOR TO DETERMINE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

Notes:

1. Unless noted otherwise, the measurements and distances shown on this drawing are shown in meters.
2. Do not scale drawings.
3. It is the contractor's responsibility to verify all dimensions, levels and datums on site and report any discrepancies or omissions to WMI & Associates Limited prior to construction.
4. This drawing is to be read and understood in conjunction with all other relevant documents applicable to this project.
5. This drawing is the exclusive property of WMI & Associates Limited and the reproduction of any part of this document without prior written consent is strictly prohibited.

No.	Issue / Revision	Date
1	INTERNAL REVIEW	APRIL 1, 2022

545 DUNLOP

CONCEPTUAL DESIGN

Client:
First Gulf
351 King St E, 13th floor,
Toronto, ON
M5A 0L6

WMI & Associates Limited
119 Collier Street
Barrie, Ontario
L4M 1H5
Ph 705-797-2027
www.wmiengineering.ca

Drawn By	Checked By	Drawing No.
RT	SM	CON
Scale 1:2000	Project No. 21-663	

WMI & Associates Limited
119 Collier Street, Barrie Ontario, L4M 1H5
P (705) 797-2027 F (705) 797-2028

Memorandum

DATE: April 1, 2022 **FILE NO.:** 21-663

RE: Servicing Brief
545 Dunlop Street, Barrie

DISTRIBUTION: Steven Duronio
First Gulf

CC:

FROM: Stephen Morash, P. Eng.
WMI & Associates Limited

WMI has background with the required servicing for this property based on our previous preliminary design work. We have also previously attended a pre-consultation meeting with the City of Barrie (City) and the Lake Simcoe Region Conservation Authority (LSRCA). The following is a summary of site servicing.

Sanitary

The sanitary connection for this property will be as per the attached drawing located at the very upstream of the existing sanitary sewer system. The manhole located in the shoulder of Dunlop Street in front an existing commercial building (521 Dunlop). This manhole depth is approximately 2.7m and thus will require a very flat sewer to connect to the proposed development at 545 Dunlop St. To date the City has not advised of any downstream flow restrictions.

Water

The water connection is in the same general location as the connection to the sanitary sewer. The watermain will need to be extended along Dunlop St. and brought into the subject area. Through the pre-consultation meeting the City has indicated it will be a requirement to loop the watermain. Previous discussion had the watermain looping back to Ferndale Drive. We have also explored an additional option on what we believe is City owned lands and we have shown an alternative looping connection to Tiffin St. To date the City has not advised of any flow or pressure problems with the existing municipal system.

Stormwater Management

The site consists of a sufficient drainage outlet which is the existing watercourse that runs in a west-east direction immediately south of the subject lands and discharges at the Ferndale Drive right-of-way. All site drainage will be conveyed to the southeast limit of the property and attenuated prior to being released to the aforementioned outlet. External drainage from the north of the property should by-pass the proposed stormwater management (SWM) treatment train and be discharged directly to the outlet.

Based on correspondence with the City and LSRCA, stormwater quantity controls are required to ensure post-development peak flows do not exceed pre-development targets rates. Quality control to an Enhanced Level of Protection (80% Total Suspended Solids removal efficiency) as per the Ontario Ministry of the Environment, Conservation and Parks (MECP) design guidelines is required. In addition to the above, the LSRCA requires Water Balance, Phosphorus reduction and Runoff Volume Control as per their engineering design standards.

To meet each of the necessary SWM requirements, a series of Low Impact Development (LID) features such as grass swales and infiltration galleries will be required in conjunction with a proposed storm sewer system, oil/grit separator and end-of-pipe SWM facility (wetland). The location of the proposed SWM facility as shown in CONA has slight encroachments of wetland features but we believe the LSRCA will accept this location based on previous discussions. The proposed building size also reflects setbacks which we believe will be accepted.

The LSRCA has Water Balance, Phosphorus and Ecological Offsetting Policies and each consists of offsetting fees should the necessary targets not be met. In order to meet the policies referenced above, the proposed stormwater management design would need to rely heavily on infiltration and the use of a proposed wetland (SWM facility) resulting in the need for the site to be raised in elevation and the east limit to be undeveloped for the purposes of implementing each of these respective design features. In addition to the need to raise the site for groundwater separation purposes, the LSRCA has noted potential issues with sodium/chlorides within the existing groundwater in the area of the site which may limit the infiltration capacity on-site.

An MECP Environmental Compliance Approval (ECA) will be required for the stormwater management design and is also required for the extension of the site servicing within the municipal right-of-ways.

Appendix C STORMWATER MANAGEMENT

160623106: 545 Dunlop Street
545 Dunlop Street, Barrie
NRCS (SCS) Curve Number Determination
Current/Existing Conditions

Reference Soil/Landuse Curve Numbers

TABLE OF CURVE NUMBERS (CN's)										
Land Use		Hydrologic Soil Type							Manning's 'n'	Source
		A	AB	B	BC	C	CD	D		
Meadow	"Good"	30	44	58	64.5	71	74.5	78	0.40	MTO
Woodlot	"Fair"	36	48	60	66.5	73	76	79	0.40	MTO
Gravel		76	80.5	85	87	89	90	91	0.30	Chin
Lawns	"Good"	39	50	61	67.5	74	77	80	0.25	Chin
Pasture/Hay[3]		58	61.5	65	70.5	76	78.5	81	0.17	MTO
Crop		66	70	74	78	82	84	86	0.13	MTO
Fallow (Bare)		77	82	86	89	91	93	94	0.05	MTO
Low Density Residences		57	64.5	72	76.5	81	83.5	86	0.25	Chin
Streets, paved		98	98	98	98	98	98	98	0.01	Chin

1. MTO Drainage Manual (1997), Design Chart 1.09-Soil/Land Use Curve Numbers
2. Chin (2000), Water-Resources Engineering, Table 6.13-Curve Numbers for Various Urban Land Uses
3. MTO Drainage Manual (1997), Design Chart 1.09 Soil/Landuse Curve Number (use AMCII value of 38 for Pasture/Hay Soil Group A)

HYDROLOGIC SOIL TYPE (%) - Existing Conditions								
	Hydrologic Soil Type							
Catchment	A	AB	B	BC	C	CD	D	TOTAL
101	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100

LAND USE (%) - Existing Conditions									
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Low Density Residences	Impervious	Total
101	0.0	8.0	0.0	0.0	92.0		0.0		0.0	100.0

Estimation of Weighted CN Values

CURVE NUMBER (CN) - Existing Conditions												
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Low Density Residences	Impervious	Weighted CN	IA (mm)	Manning's 'n'
101	0.0	4.8	0.0	0.0	59.8	0.0	0.0	0.0	0.0	65	27.35	0.19

Notes:
CN calculated using area weighted soil and landuse data
AMC II condition assumed
Hydrological Soil Group data taken from Table D1 for each soil type

160623106: 545 Dunlop Street
NRCS (SCS) Curve Number Determination
Proposed Conditions

Site Soils: (as per J.D. Paine 1998 Step 2 SWM Requirements Report)

TABLE OF CURVE NUMBERS (CN's)										
Land Use		Hydrologic Soil Type							Manning's 'n'	Source
		A	AB	B	BC	C	CD	D		
Meadow	"Good"	30	44	58	64.5	71	74.5	78	0.40	MTO
Woodlot	"Fair"	36	48	60	66.5	73	76	79	0.40	MTO
Gravel		76	80.5	85	87	89	90	91	0.30	Chin
Lawns	"Good"	39	50	61	67.5	74	77	80	0.25	Chin
Pasture/Range		58	61.5	65	70.5	76	78.5	81	0.17	MTO
Crop		66	70	74	78	82	84	86	0.13	MTO
Fallow (Bare)		77	82	86	89	91	93	94	0.05	MTO
Low Density Residences		57	64.5	72	76.5	81	83.5	86	0.25	Chin
Streets, paved		98	98	98	98	98	98	98	0.01	Chin

1. MTO Drainage Manual (1997), Design Chart 1.09-Soil/Land Use Curve Numbers
2. Chin (2000), Water-Resources Engineering, Table 6.13-Curve Numbers for Various Urban Land Uses

HYDROLOGIC SOIL TYPE (%) - Proposed Conditions								
	Hydrologic Soil Type							
Catchment	A	AB	B	BC	C	CD	D	TOTAL
201			100					100
202			100					100
203			100					100
204			100					100

LAND USE (%) - Proposed Conditions										
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Low Density Residences	Impervious (see note)	Total
201	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	100
202	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	100
203	0.0	0.0	0.0	50.0		0.0	0.0	0.0	50.0	100
204	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	100

CURVE NUMBER (CN) - Proposed Conditions												
Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Low Density Residences	Impervious	Weighted CN	IA	Manning's 'n'
201	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	98	0.52	0.00
202	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	98	0.52	0.00
203	0.0	0.0	0.0	30.5	0.0	0.0	0.0	0.0	49.0	80	6.35	0.13
204	0.0	0.0	0.0	74.0	0.0	0.0	0.0	0.0	0.0	74	8.92	0.25

160623106: 545 Dunlop Street
NRCS (SCS) Curve Number Determination
Current/Existing Conditions

Estimation of CN* for AMC II condition from Weighted CN Values

	1	2	3			4		5	6	7
Catchment	**CNII**	**CNIII**	**P (100yr)**	**SIII**	**IA (0.2S)**	**QIII**	**Pref IA**	**S*III**	**CN*III**	**CN*II**
101	65	81.0	133.6	59.46	11.89	81.76	5	73.67	77.52	60

Equations used in Assessment

$$Q = \frac{(P - Ia)^2}{(P - Ia) + S} \qquad S = \frac{(P - Ia)^2}{Q} - (P - Ia) \quad (1)$$

$$CN\ III = \frac{23 \times CN\ II}{(10+0.13 \times CN\ II)} \qquad CN\ II = \frac{10 \times CN\ III}{(23 - 0.13 \times CN\ III)} \quad (3)$$

P = Total precipitation in mm
Q = rainfall excess or runoff, mm
S = potential maximum retention or available storage, mm
Ia = Initial Abstraction in mm

CN III = CN value for AMC III condition
CN II = CN value for AMC II condition

$$CN = \frac{25400}{S + 254} \qquad S = \frac{25400}{CN} - 254 \quad (2)$$

CN* = modified SCS curve # that better reflects Ia conditions in Ontario

1 CN based on typical AMC II conditions presented in Table D2 (CN calculated using area weighted soil and landuse data from Tables C1 to C5).
2 Convert CN from AMC II to AMC III conditions [Standard VO equation (3)]
3 Get precipitation depth P in mm for 100 year storm (4h Chicago Design Storm with Climate Change used)
4 Using CN_{III} with Ia = 0.2S, compute Q_{III} for 100 year precipitation, based on equation (1)
5 For the same Q_{III}, compute S^*_{III} using Ia=1.5mm or 5mm, based on equation (1)
6 Compute CN^*_{III} using S^*_{III}, based on equation (2)
7 Calculate CN^*_{II} using standard VO equation (3)

160623106: 545 Dunlop Street
NRCS (SCS) Curve Number Determination
Proposed Condition

Estimation of CN* for AMC II condition from Weighted CN Values

	1	2	3			4		5	6	7
Catchment	**CNII**	**CNIII**	**P (100yr)**	**SIII**	**IA (0.2S)**	**QIII**	**Pref IA**	**S*III**	**CN*III**	**CN*II**
201	98	99.1	133.6	2.25	0.45	130.93	1.5	1.18	99.54	99
202	98	99.1	133.6	2.25	0.45	130.93	1.5	1.18	99.54	99
203	74	86.7	133.6	38.80	7.76	96.18	1.5	49.33	83.74	69
204	74	86.7	133.6	38.80	7.76	96.18	5	43.34	85.42	72

Equations used in Assessment

$$Q = \frac{(P - Ia)^2}{(P - Ia) + S} \qquad S = \frac{(P - Ia)^2}{Q} - (P - Ia) \quad (1)$$

$$CN\ III = \frac{23 \times CN\ II}{(10 + 0.13 \times CN\ II)} \qquad CN\ II = \frac{10 \times CN\ III}{(23 - 0.13 \times CN\ III)} \quad (3)$$

P = Total precipitation in mm
Q = rainfall excess or runoff, mm
S = potential maximum retention or available storage, mm
Ia = Initial Abstraction in mm

CN III = CN value for AMC III condition
CN II = CN value for AMC II condition

$$CN = \frac{25400}{S + 254} \qquad S = \frac{25400}{CN} - 254 \quad (2)$$

CN* = modified SCS curve # that better reflects Ia conditions in Ontario

1 CN based on typical AMC II conditions presented in Table D2 (CN calculated using area weighted soil and landuse data from Tables C1 to C5).
2 Convert CN from AMC II to AMC III conditions [Standard VO equation (3)]
3 Get precipitation depth P in mm for 100 year storm (4h Chicago Design Storm with Climate Change used)
4 Using CN_{III} with Ia = 0.2S, compute Q_{III} for 100 year precipitation, based on equation (1)
5 For the same Q_{III}, compute S^*_{III} using Ia=1.5mm or 5mm, based on equation (1)
6 Compute CN^*_{III} using S^*_{III}, based on equation (2)
7 Calculate CN^*_{II} using standard VO equation (3)

Project Description: 545 Dunlop Street
Job Number: 160623106
Creation Date: 25-Oct-22
Revision Date: NA
Author: AQ
Pond Name Dunlop Pond

Permanent Pool and Extended Detention Sizing Calculations

Landuse	Area (ha)	C (Runoff Coef.)	C (weighted value)	Imperviousness (%)	Imperviousness (Weighted Value)
Catch 201	3.23	0.90	2.91	94	305
Catch 202	2.65	0.90	2	94	250
Catch 203	0.92	0.50	0	50	46
Total	6.80		**0.85**		**88%**

* Runoff coef. values from Design Criteria Manual (City of Barrie, 2017)
** Assumed C values
*** Assumed percent impervious (I) converted from C values based on Simple Method, C = 0.05 + 0.009(I); (Schueler, 1987)

Protection Level	Enhanced	Choose Level Enhanced (80%), Normal (70%) or Basic (60%)
Pond Type	Wet Pond	Choose Infiltration, Wet Pond, Wetland, Hybrid, or Dry Pond (Basic Only)
Imperviousness %	88	

MOECC 2003 Table 3.2 Volume	256	m^3/ha	
	216	m^3/ha	Less 40 m^3/ha for active storage

Protection and Pond Type	Permanent Pool	Active Pond *		Est. Release Rate
	Wet Pond (m^3)	MOE Guideline (m^3)	Extended Detention (m^3)	(m^3/s)
Enhanced Wet Pond	1466	272	1525	0.026

Note: *-the greater of the MOE Guideline and the Extended Detention Runoff is used as the Active Pond volume
The extended detention volume has been calculated using

RV = 22.43 mm >>>> (For minimum of 24 hr extended detention)

Project Description: 545 Dunlop Street
Job Number: 160623106
Creation Date: 10/25/2022
Revision Date: NA
Author: AQ
Pond Name: Dunlop Pond

FOREBAY SIZING CALCULATION

FOREBAY 1 REQUIREMENTS

INPUT AREA					
LENGTH TO WIDTH RATIO (r):		4			
PEAK QUALITY STORM RELEASE RATE:	m^3/s	0.014	m^3/s		
PEAK STORM SEWER DESIGN STORM FLOW INTO POND:	m^3/s	0.59	m^3/s		(5-YEAR)
PARTICLE SETTLING VELOCITY (v_s):	m/s	3.00E-04	m/s	3.00E-4 FOR 150um PARTICLES	
FOREBAY DEPTH:	m	1.20	m		
FOREBAY BERM TARGET VELOCITY:	m^3/s	0.5	m/s	0.5 STANDARD	

SETTLING LENGTH CALCULATION	
FOREBAY LENGTH:	**14**

DISPERSION LENGTH CALCULATION	
FOREBAY LENGTH:	**8**

FOREBAY DIMENSIONS	
FOREBAY LENGTH:	**14**
FOREBAY WIDTH:	**3**
FOREBAY DEPTH:	**1.2**
FOREBAY LENGTH (PROVIDED):	**69**
FOREBAY WIDTH (PROVIDED):	**16**

Perforated Pipe Outlet

The perforated pipe will be sized to ensure that the orifice still controls with 75% blockage of the pipe

Diameter of the Orifice =	**115**	mm
Area of the Orifice = pr^2 =	0.01039	m^2
Diameter of Perforated Pipe =	700	mm
Length of Pipe =	1.2	m
Circumference of Pipe =	2.199	m

Riser Pipe	
Bottom Elv	234
Rim Elv	235.15
Height	1.15

Using 25 mm diameter holes spaced at 258 mm c/c staggered:

Holes per row (258 mm spacing) =	8	holes/row
Rows per length of pipe (100 mm spacing) =	11	rows
Holes per length of pipe =	88	holes
Area of one 25 mm diameter hole =	0.00049	m^2
Total open area of perforated pipe =	0.0432	m^2

The perforated pipe should provide an opening area greater than 4 x the orifice area

4x Orifice Area =	0.0415	m^2		
0.0432 m^2	**>**	**0.0415**	m^2	**TRUE**

Actual Stage/Storage Table:

Elevation (m)	Area (m^2)	Storage (m^3)	Incremental Area (m^2)
234.00	3,054	0	2,194
234.50	4,151	1,801	1,587
234.80	4,627	3,118	1,477
235.10	5,070	4,572	1,480
235.30	5,366	5,616	4,810
235.40	5,847	6,177	5,035
235.60	6,854	7,447	5,035

Expanded Stage/Storage Table:

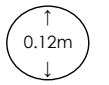
Stage (m)	Forebay Area	Main Cell Area	Total Area	Incremental Volume	Total Storage	Active Storage
232.80	325.26	685	1,011			
232.90	377.06	732	1,109	106	106	
233.00	430.68	780	1,210	116	222	
233.10	486.28	827	1,314	126	348	
233.20	544.27	877	1,422	137	485	
233.30	604.73	930	1,535	148	633	
233.40	668.24	991	1,659	160	792	
233.50	734.95	1,061	1,796	173	965	
233.60	840.53	1,161	2,002	190	1,155	
233.70	949.75	1,267	2,217	211	1,366	
233.80	1065.89	1,379	2,445	233	1,599	
233.90	1084.29	1,626	2,711	258	1,856	
234.00		3,054	3,054	288	2,144	0
234.10		3,269	3,269	316	2,460	316
234.20		3,487	3,487	338	2,798	654
234.30		3,706	3,706	360	3,158	1,013
234.40		3,928	3,928	382	3,539	1,395
234.50		4,151	4,151	404	3,943	1,799
234.60		4,318	4,318	423	4,367	2,222
234.70		4,475	4,475	440	4,806	2,662
234.80		4,627	4,627	455	5,261	3,117
234.90		4,776	4,776	470	5,731	3,587
235.00		4,923	4,923	485	6,216	4,072
235.10		5,070	5,070	500	6,716	4,572
235.20		5,217	5,217	514	7,230	5,086
235.30		5,366	5,366	529	7,760	5,615
235.40		5,847	5,847	560	8,320	6,176
235.50		6,341	6,341	609	8,929	6,785
235.60		6,854	6,854	660	9,589	7,445

Project Description: 545 Dunlop Street
Job Number: 160623106
Creation Date: 44859
Revision Date: NA
Author: AQ
Pond Name: Dunlop Pond

Control Structure Design Details

Orifice 1 (Round Only)

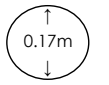
Invert =	234.00	m
Size =	0.12	m
C=	0.62	
Obvert =	234.115	m



Inv. = 234.00m

Orifice 2 (Round Only)

Invert =	234.40	m
Size =	0.17	m
C =	0.62	
Obvert =	234.57	m



Inv. = 234.40m

Broad Crested Weir 1

Length =	4.90	m
Elevation =	235.30	m
Side Slp =	10.00	
(0 = vertical, 1 = 1H to 1V, 3 = 3H to 1 v)		
Breadth =	0.2	m

Inv. = 235.30m

Sharp Crested Weir 2

Length =	0.27	m
Elevation =	234.85	m
Side Slp =	0.00	
Breadth =	0.20	m
Numbr of Contractions =	2.00	
P=	0.7	m
B=	50	m

Inv. = 234.85m

Note this is the number of end contractions.
Note P is the distance from the orifice invert to the normal water level.
Note B is the approximate pond block width at the face of the outlet structure.

Project Description: 545 Dunlop
Job Number: 160623106
Creation Date: 25/10/2022
Revision Date: NA
Author: AQ
Pond Name: Dunlop Pond

POND NAME **Dunlop Pond**

Start Elevation Set to NWL (m) 234
Increment (m) 0.1

Upstream Elevation (m)	Orifice 1 Outflow (cms)	Orifice 2 Outflow (cms)	Weir 1 Outflow (cms)	Weir 2 Outflow m^3/s	Total Flow (cms)	Storage (m^3)
234.00	0.000	0.000	0.000	0.000	0.000	0
234.10	0.006	0.000	0.000	0.000	0.006	316
234.20	0.011	0.000	0.000	0.000	0.011	654
234.30	0.014	0.000	0.000	0.000	0.014	1013
234.40	0.017	0.000	0.000	0.000	0.017	1395
234.50	0.019	0.008	0.000	0.000	0.027	1799
234.60	0.021	0.021	0.000	0.000	0.042	2222
234.70	0.023	0.029	0.000	0.000	0.052	2662
234.80	0.025	0.035	0.000	0.000	0.060	3117
234.90	0.026	0.040	0.000	0.005	0.072	3587
235.00	0.028	0.045	0.000	0.028	0.100	4072
235.10	0.029	0.049	0.000	0.059	0.137	4572
235.20	0.030	0.053	0.000	0.098	0.181	5086
235.30	0.032	0.056	0.000	0.142	0.230	5615
235.40	0.033	0.060	0.289	0.192	0.574	6176
235.50	0.034	0.063	0.957	0.246	1.300	6785
235.60	0.035	0.066	2.077	0.305	2.483	7445

Project Description: 545 Dunlop Street
Job Number: 160623106

Creation Date: 25-Oct-22

Revision Date: NA

Author: AQ

Pond Name Dunlop Pond

Drawdown Calculations

		Outlet	
Normal Water Level =		234.00	m
Orifice Size =		0.115	m
Orifice Level (midpoint of orifice) =		234.058	m
Orifice area (ao)=		0.0104	m^2
Orifice Coefficient =		0.62	
Orifice Discharge Equation =		$Q = C_2 * Ao * (2 g h)^{1/2}$	

Stage (m)	Head Above Orifice Centre Outlet (m)	Surface Area (m2)	Incremental Volume (m3)	Accumulated Volume (m3)	Calculated Surface Area Ap (m2)	Orifice Discharge Q (m3)
234.00	0.000	3,054	0	0	3,017	0.000
234.50	0.442	4,151	1801	1,801	4,107	0.019
234.80	0.743	4,627	1317	3,118	4,761	0.025
235.10	1.042	5,070	1455	4,572	5,414	0.029
235.30	1.243	5,366	1044	5,616	5,850	0.032
235.40	1.343	5,847	561	6,177	6,068	0.033
235.60	1.542	6,854	1270	7,447	6,504	0.035

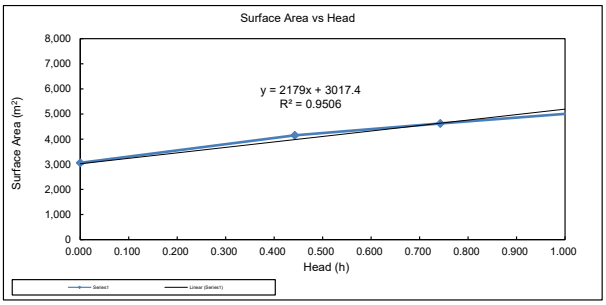
Regression Output:

X Coefficient	2179.00	C_2
Constant	3017.4	C_3
R^2	0.9506	

$Ap = C_2*h + C_3$

$t = (0.66*c2*h^{1.5} + 2*c3*h^{0.5})/(2.75\ Ao)$

Ao =	Main Orifice	0.010	m^2
ED Runoff		22.43	mm
Site Area		6.80	ha
Unrouted Extended Detention Volume :		1,525	m^3
Corresponding Head above Midpoint of Orifice:		0.37	m
Corresponding Surface Area (Ap) =		3,826	m^2
Corresponding Stage =		234.43	mASL
Max Orifice Discharge =		0.017	m^3/s
Drain time (s) =		140,086	s
Drain time (hr) =		38.91	hr < 48 hr



LID Design Calculations

Stantec

Infiltration Trench Calculations

Project Name: **545 Dunlop St**
Project Number: 161012336

input
output

Site Area (ha) 8

Alternative	Event Retention (mm)	Vol (m3)
1	12.5	1000
2	5	400
3	25	2000

Infiltration Trench/Gallery 5mm on-site retention

Site Characteristics - Infiltration Trench

Area Directed to Infiltration Trenches	8.00	ha	
Retain Depth of	5.0	mm	
Infiltration Trench Requirement	**400**	**m^3** (as per Water Balance Calculations)	

Gallery Top Elv (m)
Gallery Bottom Elv. (m) 234.88
GWT Elv. (m) 233.7
GW Separation (m) **1.18**

Roof Area	3.23	ha
Retain Depth	12.50	mm
Volume	403.75	m3

Existing Soil Type = Silty Clay Till

Infiltration Rate (with FS 2.5) = i =	24.0	mm/hr
Drawdown Time (allowable) = t =	48	hrs
Void Ratio of Storage Media = Vr =	0.4	

Infiltration Rate I = 60.0 mm/hr
(Hydrogeology Report (GEI, 2021))

Trench Details

Trench Length = l =	335.0	m		
Trench Width = w =	6.0	m		
Total Trench Surface Area = l x w = A	2010	m2	Equiv SC-740 Area (m2)	867
Max Depth of Media for infiltration (dr_{max}) = i * t /1000/Vr (TRCA) =	2.88	m		

Infiltration Trench Volume

Provided surface Area of infiltration trench = A =	2010	m2
Provided depth of trench d1 =	0.50	m
Total Trench Volume = A x d1 =	1005	m3
Total Retention Volume =	402	m3
Drawdown Time =	**19.2**	hr

Percentage of Target = 101%

TRCA LID Eqn

Equation taken from the TRCA LIDSWMPDG

$$A_t = \frac{WQV}{(d \times Vr)} \qquad d = \frac{i * t}{1000}$$

A_t = Bottom Area of Trench (m^2)
WQV= Water Quality Volume (m3)
d = Equivalent depth of Hybrid System (m)
Vr^{1}= Void space ratio for aggregate (0.4 for 50mm clearstone)
Vr^{2}= Void space ratio of water (1.0)
I= Infiltration Rate of Surrounding Native Soil (mm/hr)
t = Time to drain (48 hrs)

Note: [1]: "Void space ratio" of 0.4 is actually "Porosity" based on the MOE equation 4.3 above.

Project: **545 Dunlop Barrie**

Chamber Model -	SC-740	
Units -	**Metric**	Click Here for Imperial
	20	
Number of chambers -	276	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	234.85	m
Amount of Stone Above Chambers -	153	mm
Amount of Stone Below Chambers -	153	mm
Area of system -	867	sq.meters

☑ Include Perimeter Stone in Calculations

Min. Area - 866.637 sq.meters

Height of System *(mm)*	Incremental Single Chamber *(cubic meters)*	Incremental Total Chamber *(cubic meters)*	Incremental Stone *(cubic meters)*	Incremental Ch & St *(cubic meters)*	Cumulative Chamber *(cubic meters)*	Elevation *(meters)*
1067	0.00	0.00	8.81	8.81	585.430	235.92
1041	0.00	0.00	8.81	8.81	576.621	235.89
1016	0.00	0.00	8.81	8.81	567.813	235.87
991	0.00	0.00	8.81	8.81	559.005	235.84
965	0.00	0.00	8.81	8.81	550.196	235.82
940	0.00	0.00	8.81	8.81	541.388	235.79
914	0.00	0.43	8.64	9.07	532.579	235.76
889	0.00	1.27	8.30	9.57	523.513	235.74
864	0.01	2.20	7.93	10.13	513.941	235.71
838	0.02	4.72	6.92	11.64	503.810	235.69
813	0.02	6.27	6.30	12.57	492.170	235.66
787	0.03	7.43	5.84	13.27	479.602	235.64
762	0.03	8.40	5.45	13.85	466.335	235.61
737	0.03	9.23	5.12	14.34	452.488	235.59
711	0.04	9.89	4.85	14.74	438.144	235.56
686	0.04	10.59	4.57	15.16	423.401	235.54
660	0.04	11.36	4.26	15.63	408.238	235.51
635	0.04	11.92	4.04	15.96	392.611	235.49
610	0.04	12.37	3.86	16.23	376.653	235.46
584	0.05	12.84	3.67	16.51	360.424	235.43
559	0.05	13.28	3.50	16.78	343.915	235.41
533	0.05	13.70	3.33	17.03	327.137	235.38
508	0.05	14.09	3.17	17.26	310.109	235.36
483	0.05	14.50	3.01	17.51	292.846	235.33
457	0.05	14.80	2.89	17.69	275.339	235.31
432	0.05	15.12	2.76	17.88	257.654	235.28
406	0.06	15.44	2.63	18.07	239.776	235.26
381	0.06	15.71	2.53	18.23	221.706	235.23
356	0.06	15.98	2.42	18.40	203.473	235.21
330	0.06	16.22	2.32	18.54	185.075	235.18
305	0.06	16.45	2.23	18.68	166.536	235.15
279	0.06	16.66	2.14	18.80	147.858	235.13
254	0.06	16.83	2.08	18.91	129.053	235.10
229	0.06	17.01	2.00	19.02	110.144	235.08
203	0.06	17.18	1.94	19.12	91.127	235.05
178	0.06	17.25	1.91	19.16	72.010	235.03
152	0.00	0.00	8.81	8.81	52.851	235.00
127	0.00	0.00	8.81	8.81	44.042	234.98
102	0.00	0.00	8.81	8.81	35.234	234.95
76	0.00	0.00	8.81	8.81	26.425	234.93
51	0.00	0.00	8.81	8.81	17.617	234.90
25	0.00	0.00	8.81	8.81	8.808	234.88

Required Retention Volume

LSRCA P Budget Tool - Output

Ontario

MINISTRY OF THE ENVIRONMENT

Database Version: V 2.0 Release Update
Update Date: 30-Mar-12

Project DEVELOPMENT Summary

DEVELOPMENT: 545 Dunlop Street
Subwatershed: Barrie Creeks

Total Pre-Development Area (ha):	8	Total Pre-Development Phosphorus Load (kg/yr):	1.52

Pre-Development Land Use	Area (ha)	P coeff. (kg/ha)	P Load (kg/yr)
Cropland	8	0.19	1.52

POST-DEVELOPMENT LOAD

Post-Development Land Use	Area (ha)	P coeff. (kg/ha)	Best Management Practice applied with P Removal Efficiency		P Load (kg/yr)
High Intensity - Comm/Industrial	3.23	1.82	Treatment Train Approach	95%	0.29
			Treated by a combination of Infiltration Gallery and Wet Pond		
High Intensity - Comm/Industrial	3.58	1.82	Wet Detention Ponds	63%	2.41
Sod Farm / Golf Course	1.19	0.12	Dry swales	0%	0.14

Post-Development Area Altered:	**8.00**
Total Pre-Development Area:	**8.00**
Unaffected Area:	**0**

	P Load (kg/yr)
Pre-Development:	**1.52**
Post-Development:	**12.54**
Change (Pre - Post):	**-11.02**
725% Net Increase in Load	
Post-Development (with BMPs):	**2.85**
Change (Pre - Post):	**-1.33**
87.34% Net Increase in Load	

DEVELOPMENT: 545 Dunlop Street
Subwatershed: Barrie Creeks

CONSTRUCTION PHASE LOAD

SUMMARY WITH IMPLEMENTATION OF BMPs	P Load (kg/yr)
Pre-Development:	**1.52**
Construction Phase Amortized Over 8 Years :	to be determined
Post-Development:	**2.85**
Post-Development + Amortized Construction:	**to be determined**
Pre-Development Load - Post-Development Load:	**-1.33**
Conclusion:	**87% Increase in Load**
Pre-Development Load - (Post-Development + Amortized Construction Load):	**to be determined**
Conclusion:	**to be determined**

Based on a comparison of Pre-Development and Post-Development loads, and in consideration of Construction Phase loads, the Ministry would encourage the Municipality to:

Not approve development as site specific appropriate

Cash in Lieu (Phosphorus Removal)

Based on LSPOP guidelines (2017)

Condition	Land Use	Area (ha)	P Load (kg/yr)	Note
Pre-Development	Crop	8	1.52	
Post-Development (unmitigated)	Industrial	6.81	12.39	Unmitigated
Post-Development (unmitigated)	Landscaped (uncontrolled)	1.19	0.14	Unmitigated
	Total	8	12.54	

P Removal Rate	87%		63%
Treatment 1	P Remaining (kg/yr)	Treatment 2	P Remaining (kg/yr)
-	-	Pond	2.41
Infil/Exfil Sys	0.76	Pond	0.28
-	-	-	0.14

P Remaining refers to Phophorus Remaining in kg/yr
P Removal Rates obtained from Lake Simcoe Phosphorus Budget Tool

Post-Development (with mitigation)	Industrial (to Pond)	3.58	2.41	Mitigation-Wet Detention Pond
Post-Development (with mitigation)	Building (to Gallery and Pond)	3.23	0.28	Mitigation- Infiltration + Wet Detention Pond
Post-Development (unmitigated)	Landscaped (uncontrolled)	1.19	0.14	Unmitigated
	Total	8	2.84	

P Deficit	2.84

Offset Ratio	2.5	:1
Offset Value	35000	kg/year

Cash in Lieu	$248,179

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

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       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
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4h Chicago - VO Output

```
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DATE: 01/16/2023                          TIME: 06:19:26

USER:


COMMENTS: _____________________________________________________

-------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 100yr 4hr 10min Chicago       **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1426.408
| Ptotal= 87.58 mm |                          B=   5.273
--------------------                          C=   0.759
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    6.41 |  1.00   45.22 |'  2.00   14.50 |  3.00    7.56
               0.17    7.29 |  1.17  180.15 |'  2.17   12.44 |  3.17    7.04
               0.33    8.52 |  1.33   58.54 |'  2.33   10.94 |  3.33    6.60
               0.50   10.36 |  1.50   31.96 |'  2.50    9.80 |  3.50    6.22
               0.67   13.45 |  1.67   22.45 |'  2.67    8.90 |  3.67    5.89
               0.83   19.96 |  1.83   17.52 |'  2.83    8.16 |  3.83    5.59


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.41 | 1.083   45.22 | 2.083   14.50 |  3.08    7.56
               0.167    6.41 | 1.167   45.22 | 2.167   14.50 |  3.17    7.56
               0.250    7.29 | 1.250  180.15 | 2.250   12.44 |  3.25    7.04
               0.333    7.29 | 1.333  180.15 | 2.333   12.44 |  3.33    7.04
               0.417    8.52 | 1.417   58.54 | 2.417   10.94 |  3.42    6.60
               0.500    8.52 | 1.500   58.54 | 2.500   10.94 |  3.50    6.60
               0.583   10.36 | 1.583   31.96 | 2.583    9.80 |  3.58    6.22
               0.667   10.36 | 1.667   31.96 | 2.667    9.80 |  3.67    6.22
               0.750   13.45 | 1.750   22.45 | 2.750    8.90 |  3.75    5.89
               0.833   13.45 | 1.833   22.45 | 2.833    8.90 |  3.83    5.89
               0.917   19.96 | 1.917   17.52 | 2.917    8.16 |  3.92    5.59
               1.000   19.96 | 2.000   17.52 | 3.000    8.16 |  4.00    5.59

     Unit Hyd Qpeak  (cms)=   0.355

     PEAK FLOW       (cms)=   0.245 (i)
     TIME TO PEAK    (hrs)=   2.417
     RUNOFF VOLUME    (mm)=  27.070
     TOTAL RAINFALL   (mm)=  87.580
     RUNOFF COEFFICIENT   =   0.309

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   1.20   Curve Number   (CN)= 72.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.41 | 1.083   45.22 | 2.083   14.50 |  3.08    7.56
               0.167    6.41 | 1.167   45.22 | 2.167   14.50 |  3.17    7.56
               0.250    7.29 | 1.250  180.15 | 2.250   12.44 |  3.25    7.04
               0.333    7.29 | 1.333  180.15 | 2.333   12.44 |  3.33    7.04
               0.417    8.52 | 1.417   58.54 | 2.417   10.94 |  3.42    6.60
               0.500    8.52 | 1.500   58.54 | 2.500   10.94 |  3.50    6.60
               0.583   10.36 | 1.583   31.96 | 2.583    9.80 |  3.58    6.22
               0.667   10.36 | 1.667   31.96 | 2.667    9.80 |  3.67    6.22
               0.750   13.45 | 1.750   22.45 | 2.750    8.90 |  3.75    5.89
               0.833   13.45 | 1.833   22.45 | 2.833    8.90 |  3.83    5.89
               0.917   19.96 | 1.917   17.52 | 2.917    8.16 |  3.92    5.59
               1.000   19.96 | 2.000   17.52 | 3.000    8.16 |  4.00    5.59

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.133 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  37.530
     TOTAL RAINFALL   (mm)=  87.580
     RUNOFF COEFFICIENT   =   0.429

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.65
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.00   Dir. Conn.(%)=  94.00
--------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        2.49          0.16
     Dep. Storage     (mm)=        1.00          1.50
     Average Slope     (%)=        1.00          2.00
     Length            (m)=      132.92         40.00
     Mannings n            =       0.013         0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.41 | 1.083   45.22 | 2.083   14.50 |  3.08    7.56
               0.167    6.41 | 1.167   45.22 | 2.167   14.50 |  3.17    7.56
               0.250    7.29 | 1.250  180.15 | 2.250   12.44 |  3.25    7.04
               0.333    7.29 | 1.333  180.15 | 2.333   12.44 |  3.33    7.04
               0.417    8.52 | 1.417   58.54 | 2.417   10.94 |  3.42    6.60
               0.500    8.52 | 1.500   58.54 | 2.500   10.94 |  3.50    6.60
               0.583   10.36 | 1.583   31.96 | 2.583    9.80 |  3.58    6.22
               0.667   10.36 | 1.667   31.96 | 2.667    9.80 |  3.67    6.22
               0.750   13.45 | 1.750   22.45 | 2.750    8.90 |  3.75    5.89
               0.833   13.45 | 1.833   22.45 | 2.833    8.90 |  3.83    5.89
               0.917   19.96 | 1.917   17.52 | 2.917    8.16 |  3.92    5.59
               1.000   19.96 | 2.000   17.52 | 3.000    8.16 |  4.00    5.59

     Max.Eff.Inten.(mm/hr)=     180.15      ********
               over (min)          5.00          5.00
     Storage Coeff.  (min)=        2.39 (ii)     4.25 (ii)
     Unit Hyd. Tpeak (min)=        5.00          5.00
     Unit Hyd. peak  (cms)=        0.30          0.24
```

				TOTALS
PEAK FLOW	(cms)=	1.23	0.07	1.306 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	86.58	83.59	86.40
TOTAL RAINFALL	(mm)=	87.58	87.58	87.58
RUNOFF COEFFICIENT	=	0.99	0.95	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0004)	Area	(ha)= 3.23	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00	Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.41	1.083	45.22	2.083	14.50	3.08	7.56
0.167	6.41	1.167	45.22	2.167	14.50	3.17	7.56
0.250	7.29	1.250	180.15	2.250	12.44	3.25	7.04
0.333	7.29	1.333	180.15	2.333	12.44	3.33	7.04
0.417	8.52	1.417	58.54	2.417	10.94	3.42	6.60
0.500	8.52	1.500	58.54	2.500	10.94	3.50	6.60
0.583	10.36	1.583	31.96	2.583	9.80	3.58	6.22
0.667	10.36	1.667	31.96	2.667	9.80	3.67	6.22
0.750	13.45	1.750	22.45	2.750	8.90	3.75	5.89
0.833	13.45	1.833	22.45	2.833	8.90	3.83	5.89
0.917	19.96	1.917	17.52	2.917	8.16	3.92	5.59
1.000	19.96	2.000	17.52	3.000	8.16	4.00	5.59

Max.Eff.Inten.(mm/hr)=		180.15	178.94	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.54 (ii)	4.40 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.29	0.23	
				TOTALS
PEAK FLOW	(cms)=	1.50	0.09	1.586 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	86.58	83.59	86.40
TOTAL RAINFALL	(mm)=	87.58	87.58	87.58
RUNOFF COEFFICIENT	=	0.99	0.95	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1360	0.2300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	1.586	1.33	86.40
OUTFLOW: ID= 1 (0005)	3.230	0.113	2.25	86.27

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.15
TIME SHIFT OF PEAK FLOW (min)= 55.00
MAXIMUM STORAGE USED (ha.m.)= 0.1919

CALIB			
STANDHYD (0010)	Area	(ha)= 0.92	
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.46	0.46
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	78.32	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.41	1.083	45.22	2.083	14.50	3.08	7.56
0.167	6.41	1.167	45.22	2.167	14.50	3.17	7.56
0.250	7.29	1.250	180.15	2.250	12.44	3.25	7.04
0.333	7.29	1.333	180.15	2.333	12.44	3.33	7.04
0.417	8.52	1.417	58.54	2.417	10.94	3.42	6.60
0.500	8.52	1.500	58.54	2.500	10.94	3.50	6.60
0.583	10.36	1.583	31.96	2.583	9.80	3.58	6.22
0.667	10.36	1.667	31.96	2.667	9.80	3.67	6.22
0.750	13.45	1.750	22.45	2.750	8.90	3.75	5.89
0.833	13.45	1.833	22.45	2.833	8.90	3.83	5.89
0.917	19.96	1.917	17.52	2.917	8.16	3.92	5.59
1.000	19.96	2.000	17.52	3.000	8.16	4.00	5.59

Max.Eff.Inten.(mm/hr)=		180.15	69.17	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.74 (ii)	9.92 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.11	
				TOTALS
PEAK FLOW	(cms)=	0.23	0.06	0.275 (iii)
TIME TO PEAK	(hrs)=	1.33	1.42	1.33
RUNOFF VOLUME	(mm)=	86.58	37.01	61.79
TOTAL RAINFALL	(mm)=	87.58	87.58	87.58
RUNOFF COEFFICIENT	=	0.99	0.42	0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0006)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	0.92	0.275	1.33	61.79
+ ID2= 2 (0002):	2.65	1.306	1.33	86.40
ID = 3 (0006):	3.57	1.581	1.33	80.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0006)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0006):	3.57	1.581	1.33	80.06
+ ID2= 2 (0005):	3.23	0.113	2.25	86.27
ID = 1 (0006):	6.80	1.649	1.33	83.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0720	0.3590
	0.0060	0.0320	0.1000	0.4070

0.0110	0.0650	0.1370	0.4570
0.0140	0.1010	0.1810	0.5090
0.0170	0.1400	0.2300	0.5620
0.0270	0.1800	0.5740	0.6180
0.0420	0.2220	1.3000	0.6780
0.0520	0.2660	2.4830	0.7440
0.0600	0.3120	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	6.800	1.649	1.33	83.01
OUTFLOW: ID= 1 (0003)	6.800	0.070	5.75	82.81

PEAK FLOW REDUCTION [Qout/Qin](%)= 4.25
TIME SHIFT OF PEAK FLOW (min)=265.00
MAXIMUM STORAGE USED (ha.m.)= 0.3516

ADD HYD (0008)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0003):	6.80	0.070	5.75	82.81
	+ ID2= 2 (0007):	1.20	0.133	1.50	37.53
	ID = 3 (0008):	8.00	0.160	1.50	76.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       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
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\dbd9a49a-c7
Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\dbd9a49a-c7

DATE: 01/16/2023 TIME: 06:19:27

USER:

COMMENTS: _____

** SIMULATION : 10yr 4hr 10min Chicago **

CHICAGO STORM	Ptotal= 59.69 mm

IDF curve parameters: A= 975.865
B= 4.699
C= 0.760
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	4.32	1.00	30.27	2.00	9.72	3.00	5.09
0.17	4.91	1.17	126.55	2.17	8.35	3.17	4.74
0.33	5.73	1.33	39.22	2.33	7.35	3.33	4.45
0.50	6.96	1.50	21.35	2.50	6.59	3.50	4.19
0.67	9.03	1.67	15.01	2.67	5.99	3.67	3.97
0.83	13.36	1.83	11.74	2.83	5.50	3.83	3.77

CALIB	NASHYD (0001)	ID= 1 DT= 5.0 min

Area (ha)= 8.00 Curve Number (CN)= 60.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.86

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.32	1.083	30.27	2.083	9.72	3.08	5.09
0.167	4.32	1.167	30.27	2.167	9.72	3.17	5.09
0.250	4.91	1.250	126.55	2.250	8.35	3.25	4.74
0.333	4.91	1.333	126.55	2.333	8.35	3.33	4.74
0.417	5.73	1.417	39.22	2.417	7.35	3.42	4.45
0.500	5.73	1.500	39.22	2.500	7.35	3.50	4.45
0.583	6.96	1.583	21.35	2.583	6.59	3.58	4.19
0.667	6.96	1.667	21.35	2.667	6.59	3.67	4.19
0.750	9.03	1.750	15.01	2.750	5.99	3.75	3.97
0.833	9.03	1.833	15.01	2.833	5.99	3.83	3.97
0.917	13.36	1.917	11.74	2.917	5.50	3.92	3.77
1.000	13.36	2.000	11.74	3.000	5.50	4.00	3.77

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.119 (i)
TIME TO PEAK (hrs)= 2.417
RUNOFF VOLUME (mm)= 13.353
TOTAL RAINFALL (mm)= 59.695
RUNOFF COEFFICIENT = 0.224

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

CALIB	NASHYD (0007)	ID= 1 DT= 5.0 min

Area (ha)= 1.20 Curve Number (CN)= 72.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.32	1.083	30.27	2.083	9.72	3.08	5.09
0.167	4.32	1.167	30.27	2.167	9.72	3.17	5.09
0.250	4.91	1.250	126.55	2.250	8.35	3.25	4.74
0.333	4.91	1.333	126.55	2.333	8.35	3.33	4.74
0.417	5.73	1.417	39.22	2.417	7.35	3.42	4.45
0.500	5.73	1.500	39.22	2.500	7.35	3.50	4.45
0.583	6.96	1.583	21.35	2.583	6.59	3.58	4.19
0.667	6.96	1.667	21.35	2.667	6.59	3.67	4.19
0.750	9.03	1.750	15.01	2.750	5.99	3.75	3.97
0.833	9.03	1.833	15.01	2.833	5.99	3.83	3.97
0.917	13.36	1.917	11.74	2.917	5.50	3.92	3.77
1.000	13.36	2.000	11.74	3.000	5.50	4.00	3.77

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.067 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 19.455
TOTAL RAINFALL (mm)= 59.695
RUNOFF COEFFICIENT = 0.326

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

CALIB	STANDHYD (0002)	ID= 1 DT= 5.0 min

Area (ha)= 2.65
Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

IMPERVIOUS PERVIOUS (i)

```
     Surface Area     (ha)=       2.49          0.16
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     132.92         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    4.32 | 1.083   30.27 | 2.083    9.72 |  3.08    5.09
              0.167    4.32 | 1.167   30.27 | 2.167    9.72 |  3.17    5.09
              0.250    4.91 | 1.250  126.55 | 2.250    8.35 |  3.25    4.74
              0.333    4.91 | 1.333  126.55 | 2.333    8.35 |  3.33    4.74
              0.417    5.73 | 1.417   39.22 | 2.417    7.35 |  3.42    4.45
              0.500    5.73 | 1.500   39.22 | 2.500    7.35 |  3.50    4.45
              0.583    6.96 | 1.583   21.35 | 2.583    6.59 |  3.58    4.19
              0.667    6.96 | 1.667   21.35 | 2.667    6.59 |  3.67    4.19
              0.750    9.03 | 1.750   15.01 | 2.750    5.99 |  3.75    3.97
              0.833    9.03 | 1.833   15.01 | 2.833    5.99 |  3.83    3.97
              0.917   13.36 | 1.917   11.74 | 2.917    5.50 |  3.92    3.77
              1.000   13.36 | 2.000   11.74 | 3.000    5.50 |  4.00    3.77

     Max.Eff.Inten.(mm/hr)=     126.55     ********
               over (min)        5.00        5.00
     Storage Coeff.  (min)=       2.76 (ii)    4.89 (ii)
     Unit Hyd. Tpeak (min)=       5.00        5.00
     Unit Hyd. peak  (cms)=       0.28        0.22
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.86        0.05          0.907 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.33           1.33
     RUNOFF VOLUME    (mm)=      58.69       55.74          58.52
     TOTAL RAINFALL   (mm)=      59.69       59.69          59.69
     RUNOFF COEFFICIENT   =       0.98        0.93           0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   3.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.00   Dir. Conn.(%)=  94.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.04          0.19
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     146.74         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    4.32 | 1.083   30.27 | 2.083    9.72 |  3.08    5.09
              0.167    4.32 | 1.167   30.27 | 2.167    9.72 |  3.17    5.09
              0.250    4.91 | 1.250  126.55 | 2.250    8.35 |  3.25    4.74
              0.333    4.91 | 1.333  126.55 | 2.333    8.35 |  3.33    4.74
              0.417    5.73 | 1.417   39.22 | 2.417    7.35 |  3.42    4.45
              0.500    5.73 | 1.500   39.22 | 2.500    7.35 |  3.50    4.45
              0.583    6.96 | 1.583   21.35 | 2.583    6.59 |  3.58    4.19
              0.667    6.96 | 1.667   21.35 | 2.667    6.59 |  3.67    4.19
              0.750    9.03 | 1.750   15.01 | 2.750    5.99 |  3.75    3.97
              0.833    9.03 | 1.833   15.01 | 2.833    5.99 |  3.83    3.97
              0.917   13.36 | 1.917   11.74 | 2.917    5.50 |  3.92    3.77
              1.000   13.36 | 2.000   11.74 | 3.000    5.50 |  4.00    3.77

     Max.Eff.Inten.(mm/hr)=     126.55     ********
               over (min)        5.00       10.00
     Storage Coeff.  (min)=       2.93 (ii)    5.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00       10.00
     Unit Hyd. peak  (cms)=       0.28        0.16
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.04        0.05          1.093 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.33           1.33
     RUNOFF VOLUME    (mm)=      58.69       55.74          58.52
     TOTAL RAINFALL   (mm)=      59.69       59.69          59.69
     RUNOFF COEFFICIENT   =       0.98        0.93           0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |   0.1360     0.2300

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)       3.230     1.093      1.33       58.52
   OUTFLOW: ID= 1 (  0005)       3.230     0.077      2.25       58.39

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.05
                 TIME SHIFT OF PEAK FLOW          (min)= 55.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  0.1303

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46          0.46
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                            ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    4.32 | 1.083   30.27 | 2.083    9.72 |  3.08    5.09
              0.167    4.32 | 1.167   30.27 | 2.167    9.72 |  3.17    5.09
              0.250    4.91 | 1.250  126.55 | 2.250    8.35 |  3.25    4.74
              0.333    4.91 | 1.333  126.55 | 2.333    8.35 |  3.33    4.74
              0.417    5.73 | 1.417   39.22 | 2.417    7.35 |  3.42    4.45
              0.500    5.73 | 1.500   39.22 | 2.500    7.35 |  3.50    4.45
              0.583    6.96 | 1.583   21.35 | 2.583    6.59 |  3.58    4.19
              0.667    6.96 | 1.667   21.35 | 2.667    6.59 |  3.67    4.19
              0.750    9.03 | 1.750   15.01 | 2.750    5.99 |  3.75    3.97
              0.833    9.03 | 1.833   15.01 | 2.833    5.99 |  3.83    3.97
              0.917   13.36 | 1.917   11.74 | 2.917    5.50 |  3.92    3.77
              1.000   13.36 | 2.000   11.74 | 3.000    5.50 |  4.00    3.77

     Max.Eff.Inten.(mm/hr)=     126.55       29.52
               over (min)        5.00       15.00
     Storage Coeff.  (min)=       2.01 (ii)   13.51 (ii)
     Unit Hyd. Tpeak (min)=       5.00       15.00
     Unit Hyd. peak  (cms)=       0.31        0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.16        0.03          0.174 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.50           1.33
     RUNOFF VOLUME    (mm)=      58.69       19.65          39.17
     TOTAL RAINFALL   (mm)=      59.69       59.69          59.69
     RUNOFF COEFFICIENT   =       0.98        0.33           0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.174     1.33    39.17
     + ID2= 2 (  0002):     2.65   0.907     1.33    58.52
       ================================================
       ID = 3 (  0006):     3.57   1.081     1.33    53.53

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   1.081     1.33    53.53
     + ID2= 2 (  0005):     3.23   0.077     2.25    58.39
       ================================================
       ID = 1 (  0006):     6.80   1.126     1.33    55.84

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |  0.0720      0.3590
                         0.0060     0.0320    |  0.1000      0.4070
                         0.0110     0.0650    |  0.1370      0.4570
                         0.0140     0.1010    |  0.1810      0.5090
                         0.0170     0.1400    |  0.2300      0.5620
                         0.0270     0.1800    |  0.5740      0.6180
                         0.0420     0.2220    |  1.3000      0.6780
                         0.0520     0.2660    |  2.4830      0.7440
                         0.0600     0.3120    |  0.0000      0.0000

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)    6.800     1.126      1.33      55.84
   OUTFLOW: ID= 1 (  0003)    6.800     0.046      5.83      55.64

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.11
                 TIME SHIFT OF PEAK FLOW         (min)=270.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  0.2407

------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.046     5.83    55.64
     + ID2= 2 (  0007):     1.20   0.067     1.50    19.45
       ================================================
       ID = 3 (  0008):     8.00   0.082     1.50    50.21

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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       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
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                  *****  D E T A I L E D   O U T P U T *****
```

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\7d3c9f47-02
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\7d3c9f47-02

DATE: 01/16/2023                          TIME: 06:19:26

USER:


COMMENTS: _____________________________________________________

------------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 25yr 4hr 10min Chicago        **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1146.275
| Ptotal= 71.24 mm |                          B=   4.922
--------------------                          C=   0.757
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    5.22 |  1.00   36.37 |  2.00   11.74 |  3.00    6.15
               0.17    5.94 |  1.17  148.15 |  2.17   10.09 |  3.17    5.74
               0.33    6.93 |  1.33   47.06 |  2.33    8.89 |  3.33    5.38
               0.50    8.42 |  1.50   25.72 |  2.50    7.96 |  3.50    5.08
               0.67   10.91 |  1.67   18.11 |  2.67    7.24 |  3.67    4.80
               0.83   16.13 |  1.83   14.17 |  2.83    6.65 |  3.83    4.57


------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    5.22 | 1.083   36.37 | 2.083   11.74 |  3.08    6.15
               0.167    5.22 | 1.167   36.37 | 2.167   11.74 |  3.17    6.15
               0.250    5.94 | 1.250  148.15 | 2.250   10.09 |  3.25    5.74
               0.333    5.94 | 1.333  148.15 | 2.333   10.09 |  3.33    5.74
               0.417    6.93 | 1.417   47.06 | 2.417    8.89 |  3.42    5.38
               0.500    6.93 | 1.500   47.06 | 2.500    8.89 |  3.50    5.38
               0.583    8.42 | 1.583   25.72 | 2.583    7.96 |  3.58    5.08
               0.667    8.42 | 1.667   25.72 | 2.667    7.96 |  3.67    5.08
               0.750   10.91 | 1.750   18.11 | 2.750    7.24 |  3.75    4.80
               0.833   10.91 | 1.833   18.11 | 2.833    7.24 |  3.83    4.80
               0.917   16.13 | 1.917   14.17 | 2.917    6.65 |  3.92    4.57
               1.000   16.13 | 2.000   14.17 | 3.000    6.65 |  4.00    4.57

    Unit Hyd Qpeak  (cms)=   0.355

    PEAK FLOW       (cms)=   0.167 (i)
    TIME TO PEAK    (hrs)=   2.417
    RUNOFF VOLUME    (mm)=  18.623
    TOTAL RAINFALL   (mm)=  71.236
    RUNOFF COEFFICIENT   =   0.261

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

------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   1.20   Curve Number   (CN)= 72.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.22	1.083	36.37	2.083	11.74	3.08	6.15
0.167	5.22	1.167	36.37	2.167	11.74	3.17	6.15
0.250	5.94	1.250	148.15	2.250	10.09	3.25	5.74
0.333	5.94	1.333	148.15	2.333	10.09	3.33	5.74
0.417	6.93	1.417	47.06	2.417	8.89	3.42	5.38
0.500	6.93	1.500	47.06	2.500	8.89	3.50	5.38
0.583	8.42	1.583	25.72	2.583	7.96	3.58	5.08
0.667	8.42	1.667	25.72	2.667	7.96	3.67	5.08
0.750	10.91	1.750	18.11	2.750	7.24	3.75	4.80
0.833	10.91	1.833	18.11	2.833	7.24	3.83	4.80
0.917	16.13	1.917	14.17	2.917	6.65	3.92	4.57
1.000	16.13	2.000	14.17	3.000	6.65	4.00	4.57

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.092 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 26.536
TOTAL RAINFALL (mm)= 71.236
RUNOFF COEFFICIENT = 0.373

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

CALIB	Area (ha)= 2.65
STANDHYD (0002)	Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00
ID= 1 DT= 5.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.22	1.083	36.37	2.083	11.74	3.08	6.15
0.167	5.22	1.167	36.37	2.167	11.74	3.17	6.15
0.250	5.94	1.250	148.15	2.250	10.09	3.25	5.74
0.333	5.94	1.333	148.15	2.333	10.09	3.33	5.74
0.417	6.93	1.417	47.06	2.417	8.89	3.42	5.38
0.500	6.93	1.500	47.06	2.500	8.89	3.50	5.38
0.583	8.42	1.583	25.72	2.583	7.96	3.58	5.08
0.667	8.42	1.667	25.72	2.667	7.96	3.67	5.08
0.750	10.91	1.750	18.11	2.750	7.24	3.75	4.80
0.833	10.91	1.833	18.11	2.833	7.24	3.83	4.80
0.917	16.13	1.917	14.17	2.917	6.65	3.92	4.57
1.000	16.13	2.000	14.17	3.000	6.65	4.00	4.57

				TOTALS
Max.Eff.Inten.(mm/hr)=		148.15	********	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.59 (ii)	4.60 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.29	0.23	
PEAK FLOW	(cms)=	1.01	0.06	1.068 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	70.24	67.26	70.06
TOTAL RAINFALL	(mm)=	71.24	71.24	71.24
RUNOFF COEFFICIENT	=	0.99	0.94	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	Area (ha)= 3.23
STANDHYD (0004)	Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00
ID= 1 DT= 5.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.22	1.083	36.37	2.083	11.74	3.08	6.15
0.167	5.22	1.167	36.37	2.167	11.74	3.17	6.15
0.250	5.94	1.250	148.15	2.250	10.09	3.25	5.74
0.333	5.94	1.333	148.15	2.333	10.09	3.33	5.74
0.417	6.93	1.417	47.06	2.417	8.89	3.42	5.38
0.500	6.93	1.500	47.06	2.500	8.89	3.50	5.38
0.583	8.42	1.583	25.72	2.583	7.96	3.58	5.08
0.667	8.42	1.667	25.72	2.667	7.96	3.67	5.08
0.750	10.91	1.750	18.11	2.750	7.24	3.75	4.80
0.833	10.91	1.833	18.11	2.833	7.24	3.83	4.80
0.917	16.13	1.917	14.17	2.917	6.65	3.92	4.57
1.000	16.13	2.000	14.17	3.000	6.65	4.00	4.57

				TOTALS
Max.Eff.Inten.(mm/hr)=		148.15	********	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.75 (ii)	4.75 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.28	0.22	
PEAK FLOW	(cms)=	1.22	0.07	1.296 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	70.24	67.26	70.06
TOTAL RAINFALL	(mm)=	71.24	71.24	71.24
RUNOFF COEFFICIENT	=	0.99	0.94	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 5.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1360	0.2300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	1.296	1.33	70.06
OUTFLOW: ID= 1 (0005)	3.230	0.092	2.33	69.93

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.10
TIME SHIFT OF PEAK FLOW (min)= 60.00
MAXIMUM STORAGE USED (ha.m.)= 0.1556

CALIB	Area (ha)= 0.92
STANDHYD (0010)	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00
ID= 1 DT= 5.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.46	0.46
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	78.32	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.22	1.083	36.37	2.083	11.74	3.08	6.15

```
              0.167    5.22 | 1.167   36.37 | 2.167   11.74 |  3.17    6.15
              0.250    5.94 | 1.250  148.15 | 2.250   10.09 |  3.25    5.74
              0.333    5.94 | 1.333  148.15 | 2.333   10.09 |  3.33    5.74
              0.417    6.93 | 1.417   47.06 | 2.417    8.89 |  3.42    5.38
              0.500    6.93 | 1.500   47.06 | 2.500    8.89 |  3.50    5.38
              0.583    8.42 | 1.583   25.72 | 2.583    7.96 |  3.58    5.08
              0.667    8.42 | 1.667   25.72 | 2.667    7.96 |  3.67    5.08
              0.750   10.91 | 1.750   18.11 | 2.750    7.24 |  3.75    4.80
              0.833   10.91 | 1.833   18.11 | 2.833    7.24 |  3.83    4.80
              0.917   16.13 | 1.917   14.17 | 2.917    6.65 |  3.92    4.57
              1.000   16.13 | 2.000   14.17 | 3.000    6.65 |  4.00    4.57

     Max.Eff.Inten.(mm/hr)=     148.15        48.87
               over (min)          5.00        15.00
     Storage Coeff.  (min)=       1.89 (ii)   11.28 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.32         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.19         0.04          0.208 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.50           1.33
     RUNOFF VOLUME    (mm)=      70.24        26.45          48.34
     TOTAL RAINFALL   (mm)=      71.24        71.24          71.24
     RUNOFF COEFFICIENT   =       0.99         0.37           0.68

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.208     1.33    48.34
     + ID2= 2 (  0002):     2.65   1.068     1.33    70.06
       ================================================
       ID = 3 (  0006):     3.57   1.276     1.33    64.46

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   1.276     1.33    64.46
     + ID2= 2 (  0005):     3.23   0.092     2.33    69.93
       ================================================
       ID = 1 (  0006):     6.80   1.330     1.33    67.06

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)    (ha.m.)   |   (cms)    (ha.m.)
                           0.0000     0.0000   |  0.0720     0.3590
                           0.0060     0.0320   |  0.1000     0.4070
                           0.0110     0.0650   |  0.1370     0.4570
                           0.0140     0.1010   |  0.1810     0.5090
                           0.0170     0.1400   |  0.2300     0.5620
                           0.0270     0.1800   |  0.5740     0.6180
                           0.0420     0.2220   |  1.3000     0.6780
                           0.0520     0.2660   |  2.4830     0.7440
                           0.0600     0.3120   |  0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)     6.800     1.330      1.33      67.06
   OUTFLOW: ID= 1 (  0003)     6.800     0.055      5.83      66.86

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.17
                 TIME SHIFT OF PEAK FLOW         (min)=270.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  0.2860

--------------------------------------------------------------------------------

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

```
| ADD HYD  (  0008)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.055     5.83    66.86
     + ID2= 2 (  0007):     1.20   0.092     1.50    26.54
       ================================================
       ID = 3 (  0008):     8.00   0.110     1.50    60.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\9f01b310-6f
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\9f01b310-6f


DATE: 01/16/2023                          TIME: 06:19:27

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 2yr 4hr 10min Chicago         **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 678.085
| Ptotal= 36.96 mm |                          B=   4.699
--------------------                          C=   0.781
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  4.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    2.47 |  1.00   18.78 |  2.00    5.73 |  3.00    2.93
                0.17    2.82 |  1.17   83.11 |  2.17    4.89 |  3.17    2.72
                0.33    3.31 |  1.33   24.57 |  2.33    4.28 |  3.33    2.55
                0.50    4.05 |  1.50   13.01 |  2.50    3.82 |  3.50    2.39
                0.67    5.30 |  1.67    9.01 |  2.67    3.46 |  3.67    2.26
                0.83    7.98 |  1.83    6.97 |  2.83    3.17 |  3.83    2.15


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.47 | 1.083   18.78 | 2.083    5.73 |  3.08    2.93
               0.167    2.47 | 1.167   18.78 | 2.167    5.73 |  3.17    2.93
```

0.250	2.82	1.250	83.11	2.250	4.89	3.25	2.72
0.333	2.82	1.333	83.11	2.333	4.89	3.33	2.72
0.417	3.31	1.417	24.57	2.417	4.28	3.42	2.55
0.500	3.31	1.500	24.57	2.500	4.28	3.50	2.55
0.583	4.05	1.583	13.01	2.583	3.82	3.58	2.39
0.667	4.05	1.667	13.01	2.667	3.82	3.67	2.39
0.750	5.30	1.750	9.01	2.750	3.46	3.75	2.26
0.833	5.30	1.833	9.01	2.833	3.46	3.83	2.26
0.917	7.98	1.917	6.97	2.917	3.17	3.92	2.15
1.000	7.98	2.000	6.97	3.000	3.17	4.00	2.15

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.045 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 5.073
TOTAL RAINFALL (mm)= 36.955
RUNOFF COEFFICIENT = 0.137

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

CALIB			
NASHYD (0007)	Area (ha)= 1.20	Curve Number (CN)= 72.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.47	1.083	18.78	2.083	5.73	3.08	2.93
0.167	2.47	1.167	18.78	2.167	5.73	3.17	2.93
0.250	2.82	1.250	83.11	2.250	4.89	3.25	2.72
0.333	2.82	1.333	83.11	2.333	4.89	3.33	2.72
0.417	3.31	1.417	24.57	2.417	4.28	3.42	2.55
0.500	3.31	1.500	24.57	2.500	4.28	3.50	2.55
0.583	4.05	1.583	13.01	2.583	3.82	3.58	2.39
0.667	4.05	1.667	13.01	2.667	3.82	3.67	2.39
0.750	5.30	1.750	9.01	2.750	3.46	3.75	2.26
0.833	5.30	1.833	9.01	2.833	3.46	3.83	2.26
0.917	7.98	1.917	6.97	2.917	3.17	3.92	2.15
1.000	7.98	2.000	6.97	3.000	3.17	4.00	2.15

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.026 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 7.796
TOTAL RAINFALL (mm)= 36.955
RUNOFF COEFFICIENT = 0.211

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

CALIB			
STANDHYD (0002)	Area (ha)= 2.65		
ID= 1 DT= 5.0 min	Total Imp(%)= 94.00	Dir. Conn.(%)= 94.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.49	0.16
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	132.92	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.47	1.083	18.78	2.083	5.73	3.08	2.93
0.167	2.47	1.167	18.78	2.167	5.73	3.17	2.93
0.250	2.82	1.250	83.11	2.250	4.89	3.25	2.72
0.333	2.82	1.333	83.11	2.333	4.89	3.33	2.72
0.417	3.31	1.417	24.57	2.417	4.28	3.42	2.55
0.500	3.31	1.500	24.57	2.500	4.28	3.50	2.55
0.583	4.05	1.583	13.01	2.583	3.82	3.58	2.39
0.667	4.05	1.667	13.01	2.667	3.82	3.67	2.39
0.750	5.30	1.750	9.01	2.750	3.46	3.75	2.26
0.833	5.30	1.833	9.01	2.833	3.46	3.83	2.26
0.917	7.98	1.917	6.97	2.917	3.17	3.92	2.15
1.000	7.98	2.000	6.97	3.000	3.17	4.00	2.15

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.11	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.26 (ii)	5.79 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.15	
PEAK FLOW (cms)=	0.55	0.03	0.580 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	35.96	33.06	35.78
TOTAL RAINFALL (mm)=	36.96	36.96	36.96
RUNOFF COEFFICIENT =	0.97	0.89	0.97

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0004)	Area (ha)= 3.23		
ID= 1 DT= 5.0 min	Total Imp(%)= 94.00	Dir. Conn.(%)= 94.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.04	0.19
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	146.74	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.47	1.083	18.78	2.083	5.73	3.08	2.93
0.167	2.47	1.167	18.78	2.167	5.73	3.17	2.93
0.250	2.82	1.250	83.11	2.250	4.89	3.25	2.72
0.333	2.82	1.333	83.11	2.333	4.89	3.33	2.72
0.417	3.31	1.417	24.57	2.417	4.28	3.42	2.55
0.500	3.31	1.500	24.57	2.500	4.28	3.50	2.55
0.583	4.05	1.583	13.01	2.583	3.82	3.58	2.39
0.667	4.05	1.667	13.01	2.667	3.82	3.67	2.39
0.750	5.30	1.750	9.01	2.750	3.46	3.75	2.26
0.833	5.30	1.833	9.01	2.833	3.46	3.83	2.26
0.917	7.98	1.917	6.97	2.917	3.17	3.92	2.15
1.000	7.98	2.000	6.97	3.000	3.17	4.00	2.15

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.11	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.46 (ii)	5.99 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.26	0.15	
PEAK FLOW (cms)=	0.67	0.03	0.701 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	35.96	33.06	35.78
TOTAL RAINFALL (mm)=	36.96	36.96	36.96
RUNOFF COEFFICIENT =	0.97	0.89	0.97

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1360	0.2300

```
                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)      3.230     0.701      1.33      35.78
   OUTFLOW: ID= 1 (  0005)      3.230     0.048      2.25      35.65

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.81
                  TIME SHIFT OF PEAK FLOW          (min)= 55.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0808

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46         0.46
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      78.32        40.00
     Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    2.47 | 1.083   18.78 | 2.083    5.73 |  3.08    2.93
              0.167    2.47 | 1.167   18.78 | 2.167    5.73 |  3.17    2.93
              0.250    2.82 | 1.250   83.11 | 2.250    4.89 |  3.25    2.72
              0.333    2.82 | 1.333   83.11 | 2.333    4.89 |  3.33    2.72
              0.417    3.31 | 1.417   24.57 | 2.417    4.28 |  3.42    2.55
              0.500    3.31 | 1.500   24.57 | 2.500    4.28 |  3.50    2.55
              0.583    4.05 | 1.583   13.01 | 2.583    3.82 |  3.58    2.39
              0.667    4.05 | 1.667   13.01 | 2.667    3.82 |  3.67    2.39
              0.750    5.30 | 1.750    9.01 | 2.750    3.46 |  3.75    2.26
              0.833    5.30 | 1.833    9.01 | 2.833    3.46 |  3.83    2.26
              0.917    7.98 | 1.917    6.97 | 2.917    3.17 |  3.92    2.15
              1.000    7.98 | 2.000    6.97 | 3.000    3.17 |  4.00    2.15

     Max.Eff.Inten.(mm/hr)=      83.11        11.53
               over (min)         5.00        20.00
     Storage Coeff.  (min)=       2.38 (ii)   19.12 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.30         0.06
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.01        0.108 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.58         1.33
     RUNOFF VOLUME    (mm)=      35.96         8.40        22.17
     TOTAL RAINFALL   (mm)=      36.96        36.96        36.96
     RUNOFF COEFFICIENT   =       0.97         0.23         0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0010):      0.92    0.108      1.33     22.17
     + ID2= 2 (  0002):      2.65    0.580      1.33     35.78
       ==========================================================
       ID = 3 (  0006):      3.57    0.688      1.33     32.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
       ID1= 3 (  0006):      3.57    0.688      1.33     32.27
     + ID2= 2 (  0005):      3.23    0.048      2.25     35.65
       ==========================================================
       ID = 1 (  0006):      6.80    0.714      1.33     33.88

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |   0.0720     0.3590
                          0.0060     0.0320    |   0.1000     0.4070
                          0.0110     0.0650    |   0.1370     0.4570
                          0.0140     0.1010    |   0.1810     0.5090
                          0.0170     0.1400    |   0.2300     0.5620
                          0.0270     0.1800    |   0.5740     0.6180
                          0.0420     0.2220    |   1.3000     0.6780
                          0.0520     0.2660    |   2.4830     0.7440
                          0.0600     0.3120    |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)      6.800     0.714      1.33      33.88
   OUTFLOW: ID= 1 (  0003)      6.800     0.021      7.17      33.68

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  2.96
                  TIME SHIFT OF PEAK FLOW          (min)=350.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1566

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |         AREA     QPEAK     TPEAK      R.V.
--------------------         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0003):      6.80    0.021      7.17     33.68
     + ID2= 2 (  0007):      1.20    0.026      1.50      7.80
       ==========================================================
       ID = 3 (  0008):      8.00    0.038      1.50     29.80

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\8334a68b-96
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\8334a68b-96


DATE: 01/16/2023                          TIME: 06:19:26

USER:


COMMENTS: _____________________________________________________


--------------------------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 50yr 4hr 10min Chicago        **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1236.152
| Ptotal= 79.45 mm |                          B=   4.699
--------------------                          C=   0.751
                         used in:   INTENSITY =  A / (t + B)^C
```

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	5.93	1.00	40.22	2.00	13.20	3.00	6.98
0.17	6.74	1.17	164.22	2.17	11.37	3.17	6.51
0.33	7.85	1.33	51.92	2.33	10.03	3.33	6.11
0.50	9.50	1.50	28.58	2.50	9.00	3.50	5.77
0.67	12.27	1.67	20.23	2.67	8.19	3.67	5.46
0.83	18.04	1.83	15.88	2.83	7.53	3.83	5.19

CALIB
NASHYD (0001)
ID= 1 DT= 5.0 min

Area (ha)= 8.00 Curve Number (CN)= 60.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.86

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.93	1.083	40.22	2.083	13.20	3.08	6.98
0.167	5.93	1.167	40.22	2.167	13.20	3.17	6.98
0.250	6.74	1.250	164.22	2.250	11.37	3.25	6.51
0.333	6.74	1.333	164.22	2.333	11.37	3.33	6.51
0.417	7.85	1.417	51.92	2.417	10.03	3.42	6.11
0.500	7.85	1.500	51.92	2.500	10.03	3.50	6.11
0.583	9.50	1.583	28.58	2.583	9.00	3.58	5.77
0.667	9.50	1.667	28.58	2.667	9.00	3.67	5.77
0.750	12.27	1.750	20.23	2.750	8.19	3.75	5.46
0.833	12.27	1.833	20.23	2.833	8.19	3.83	5.46
0.917	18.04	1.917	15.88	2.917	7.53	3.92	5.19
1.000	18.04	2.000	15.88	3.000	7.53	4.00	5.19

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.203 (i)
TIME TO PEAK (hrs)= 2.417
RUNOFF VOLUME (mm)= 22.738
TOTAL RAINFALL (mm)= 79.453
RUNOFF COEFFICIENT = 0.286

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

CALIB
NASHYD (0007)
ID= 1 DT= 5.0 min

Area (ha)= 1.20 Curve Number (CN)= 72.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.93	1.083	40.22	2.083	13.20	3.08	6.98
0.167	5.93	1.167	40.22	2.167	13.20	3.17	6.98
0.250	6.74	1.250	164.22	2.250	11.37	3.25	6.51
0.333	6.74	1.333	164.22	2.333	11.37	3.33	6.51
0.417	7.85	1.417	51.92	2.417	10.03	3.42	6.11
0.500	7.85	1.500	51.92	2.500	10.03	3.50	6.11
0.583	9.50	1.583	28.58	2.583	9.00	3.58	5.77
0.667	9.50	1.667	28.58	2.667	9.00	3.67	5.77
0.750	12.27	1.750	20.23	2.750	8.19	3.75	5.46
0.833	12.27	1.833	20.23	2.833	8.19	3.83	5.46
0.917	18.04	1.917	15.88	2.917	7.53	3.92	5.19
1.000	18.04	2.000	15.88	3.000	7.53	4.00	5.19

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.111 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 31.938
TOTAL RAINFALL (mm)= 79.453
RUNOFF COEFFICIENT = 0.402

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

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 2.65
Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.93	1.083	40.22	2.083	13.20	3.08	6.98
0.167	5.93	1.167	40.22	2.167	13.20	3.17	6.98
0.250	6.74	1.250	164.22	2.250	11.37	3.25	6.51
0.333	6.74	1.333	164.22	2.333	11.37	3.33	6.51
0.417	7.85	1.417	51.92	2.417	10.03	3.42	6.11
0.500	7.85	1.500	51.92	2.500	10.03	3.50	6.11
0.583	9.50	1.583	28.58	2.583	9.00	3.58	5.77
0.667	9.50	1.667	28.58	2.667	9.00	3.67	5.77
0.750	12.27	1.750	20.23	2.750	8.19	3.75	5.46
0.833	12.27	1.833	20.23	2.833	8.19	3.83	5.46
0.917	18.04	1.917	15.88	2.917	7.53	3.92	5.19
1.000	18.04	2.000	15.88	3.000	7.53	4.00	5.19

Max.Eff.Inten.(mm/hr)=		164.22	********	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.48 (ii)	4.41 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.29	0.23	
				TOTALS
PEAK FLOW	(cms)=	1.12	0.07	1.187 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	78.45	75.47	78.27
TOTAL RAINFALL	(mm)=	79.45	79.45	79.45
RUNOFF COEFFICIENT	=	0.99	0.95	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB
STANDHYD (0004)
ID= 1 DT= 5.0 min

Area (ha)= 3.23
Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	5.93	1.083	40.22	2.083	13.20	3.08	6.98
0.167	5.93	1.167	40.22	2.167	13.20	3.17	6.98
0.250	6.74	1.250	164.22	2.250	11.37	3.25	6.51
0.333	6.74	1.333	164.22	2.333	11.37	3.33	6.51
0.417	7.85	1.417	51.92	2.417	10.03	3.42	6.11
0.500	7.85	1.500	51.92	2.500	10.03	3.50	6.11
0.583	9.50	1.583	28.58	2.583	9.00	3.58	5.77
0.667	9.50	1.667	28.58	2.667	9.00	3.67	5.77
0.750	12.27	1.750	20.23	2.750	8.19	3.75	5.46
0.833	12.27	1.833	20.23	2.833	8.19	3.83	5.46

```
            0.917   18.04 | 1.917   15.88 | 2.917    7.53 |  3.92    5.19
            1.000   18.04 | 2.000   15.88 | 3.000    7.53 |  4.00    5.19

     Max.Eff.Inten.(mm/hr)=     164.22     ********
               over (min)        5.00        5.00
     Storage Coeff.  (min)=       2.64 (ii)    4.56 (ii)
     Unit Hyd. Tpeak (min)=       5.00        5.00
     Unit Hyd. peak  (cms)=       0.29        0.23
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.36        0.08         1.442 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.33          1.33
     RUNOFF VOLUME    (mm)=      78.45       75.47         78.27
     TOTAL RAINFALL   (mm)=      79.45       79.45         79.45
     RUNOFF COEFFICIENT   =       0.99        0.95          0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1360      0.2300

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)     3.230     1.442      1.33       78.27
   OUTFLOW: ID= 1 (  0005)     3.230     0.102      2.33       78.14

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.11
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1732

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46          0.46
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    5.93 | 1.083   40.22 | 2.083   13.20 |  3.08    6.98
              0.167    5.93 | 1.167   40.22 | 2.167   13.20 |  3.17    6.98
              0.250    6.74 | 1.250  164.22 | 2.250   11.37 |  3.25    6.51
              0.333    6.74 | 1.333  164.22 | 2.333   11.37 |  3.33    6.51
              0.417    7.85 | 1.417   51.92 | 2.417   10.03 |  3.42    6.11
              0.500    7.85 | 1.500   51.92 | 2.500   10.03 |  3.50    6.11
              0.583    9.50 | 1.583   28.58 | 2.583    9.00 |  3.58    5.77
              0.667    9.50 | 1.667   28.58 | 2.667    9.00 |  3.67    5.77
              0.750   12.27 | 1.750   20.23 | 2.750    8.19 |  3.75    5.46
              0.833   12.27 | 1.833   20.23 | 2.833    8.19 |  3.83    5.46
              0.917   18.04 | 1.917   15.88 | 2.917    7.53 |  3.92    5.19
              1.000   18.04 | 2.000   15.88 | 3.000    7.53 |  4.00    5.19

     Max.Eff.Inten.(mm/hr)=     164.22       58.76
               over (min)        5.00       15.00
     Storage Coeff.  (min)=       1.81 (ii)   10.54 (ii)
     Unit Hyd. Tpeak (min)=       5.00       15.00
     Unit Hyd. peak  (cms)=       0.32        0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.21        0.05         0.233 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.50          1.33
     RUNOFF VOLUME    (mm)=      78.45       31.64         55.04
     TOTAL RAINFALL   (mm)=      79.45       79.45         79.45
     RUNOFF COEFFICIENT   =       0.99        0.40          0.69

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.233     1.33    55.04
     + ID2= 2 (  0002):     2.65   1.187     1.33    78.27
       ================================================
       ID = 3 (  0006):     3.57   1.421     1.33    72.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   1.421     1.33    72.29
     + ID2= 2 (  0005):     3.23   0.102     2.33    78.14
       ================================================
       ID = 1 (  0006):     6.80   1.482     1.33    75.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0720      0.3590
                           0.0060     0.0320   |   0.1000      0.4070
                           0.0110     0.0650   |   0.1370      0.4570
                           0.0140     0.1010   |   0.1810      0.5090
                           0.0170     0.1400   |   0.2300      0.5620
                           0.0270     0.1800   |   0.5740      0.6180
                           0.0420     0.2220   |   1.3000      0.6780
                           0.0520     0.2660   |   2.4830      0.7440
                           0.0600     0.3120   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)     6.800     1.482      1.33       75.07
   OUTFLOW: ID= 1 (  0003)     6.800     0.062      5.83       74.87

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.18
                  TIME SHIFT OF PEAK FLOW         (min)=270.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3196

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.062     5.83    74.87
     + ID2= 2 (  0007):     1.20   0.111     1.50    31.94
       ================================================
       ID = 3 (  0008):     8.00   0.134     1.50    68.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================================================================

       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
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\d3c6a0b0-81
Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\d3c6a0b0-81

DATE: 01/16/2023 TIME: 06:19:27

USER:

COMMENTS: _____

****
** SIMULATION : 5yr 4hr 10min Chicago **
****

| CHICAGO STORM |
| Ptotal= 50.52 mm |

IDF curve parameters: A= 853.608
B= 4.699
C= 0.766
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.57	1.00	25.64	2.00	8.12	3.00	4.22
0.17	4.07	1.17	108.92	2.17	6.96	3.17	3.93
0.33	4.76	1.33	33.31	2.33	6.12	3.33	3.68
0.50	5.79	1.50	17.99	2.50	5.48	3.50	3.47
0.67	7.53	1.67	12.60	2.67	4.97	3.67	3.28
0.83	11.20	1.83	9.82	2.83	4.56	3.83	3.12

| CALIB |
| NASHYD (0001) | Area (ha)= 8.00 Curve Number (CN)= 60.0
|ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.86

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.57	1.083	25.64	2.083	8.12	3.08	4.22
0.167	3.57	1.167	25.64	2.167	8.12	3.17	4.22
0.250	4.07	1.250	108.92	2.250	6.96	3.25	3.93
0.333	4.07	1.333	108.92	2.333	6.96	3.33	3.93
0.417	4.76	1.417	33.31	2.417	6.12	3.42	3.68
0.500	4.76	1.500	33.31	2.500	6.12	3.50	3.68
0.583	5.79	1.583	17.99	2.583	5.48	3.58	3.47
0.667	5.79	1.667	17.99	2.667	5.48	3.67	3.47
0.750	7.53	1.750	12.60	2.750	4.97	3.75	3.28
0.833	7.53	1.833	12.60	2.833	4.97	3.83	3.28
0.917	11.20	1.917	9.82	2.917	4.56	3.92	3.12
1.000	11.20	2.000	9.82	3.000	4.56	4.00	3.12

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.086 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 9.644
TOTAL RAINFALL (mm)= 50.521
RUNOFF COEFFICIENT = 0.191

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

| CALIB |
| NASHYD (0007) | Area (ha)= 1.20 Curve Number (CN)= 72.0
|ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.57	1.083	25.64	2.083	8.12	3.08	4.22
0.167	3.57	1.167	25.64	2.167	8.12	3.17	4.22
0.250	4.07	1.250	108.92	2.250	6.96	3.25	3.93
0.333	4.07	1.333	108.92	2.333	6.96	3.33	3.93
0.417	4.76	1.417	33.31	2.417	6.12	3.42	3.68
0.500	4.76	1.500	33.31	2.500	6.12	3.50	3.68
0.583	5.79	1.583	17.99	2.583	5.48	3.58	3.47
0.667	5.79	1.667	17.99	2.667	5.48	3.67	3.47
0.750	7.53	1.750	12.60	2.750	4.97	3.75	3.28
0.833	7.53	1.833	12.60	2.833	4.97	3.83	3.28
0.917	11.20	1.917	9.82	2.917	4.56	3.92	3.12
1.000	11.20	2.000	9.82	3.000	4.56	4.00	3.12

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.049 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 14.333
TOTAL RAINFALL (mm)= 50.521
RUNOFF COEFFICIENT = 0.284

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

| CALIB |
| STANDHYD (0002) | Area (ha)= 2.65
|ID= 1 DT= 5.0 min | Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.57	1.083	25.64	2.083	8.12	3.08	4.22
0.167	3.57	1.167	25.64	2.167	8.12	3.17	4.22
0.250	4.07	1.250	108.92	2.250	6.96	3.25	3.93
0.333	4.07	1.333	108.92	2.333	6.96	3.33	3.93
0.417	4.76	1.417	33.31	2.417	6.12	3.42	3.68
0.500	4.76	1.500	33.31	2.500	6.12	3.50	3.68
0.583	5.79	1.583	17.99	2.583	5.48	3.58	3.47
0.667	5.79	1.667	17.99	2.667	5.48	3.67	3.47
0.750	7.53	1.750	12.60	2.750	4.97	3.75	3.28
0.833	7.53	1.833	12.60	2.833	4.97	3.83	3.28
0.917	11.20	1.917	9.82	2.917	4.56	3.92	3.12
1.000	11.20	2.000	9.82	3.000	4.56	4.00	3.12

				TOTALS
Max.Eff.Inten.(mm/hr)=		108.92	********	
over (min)		5.00	10.00	
Storage Coeff. (min)=		2.93 (ii)	5.20 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.28	0.16	
PEAK FLOW	(cms)=	0.73	0.04	0.771 (iii)
TIME TO PEAK	(hrs)=	1.33	1.33	1.33
RUNOFF VOLUME	(mm)=	49.52	46.58	49.34
TOTAL RAINFALL	(mm)=	50.52	50.52	50.52
RUNOFF COEFFICIENT	=	0.98	0.92	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   3.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.00   Dir. Conn.(%)=  94.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.04         0.19
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     146.74        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    3.57 | 1.083   25.64 | 2.083    8.12 |  3.08    4.22
              0.167    3.57 | 1.167   25.64 | 2.167    8.12 |  3.17    4.22
              0.250    4.07 | 1.250  108.92 | 2.250    6.96 |  3.25    3.93
              0.333    4.07 | 1.333  108.92 | 2.333    6.96 |  3.33    3.93
              0.417    4.76 | 1.417   33.31 | 2.417    6.12 |  3.42    3.68
              0.500    4.76 | 1.500   33.31 | 2.500    6.12 |  3.50    3.68
              0.583    5.79 | 1.583   17.99 | 2.583    5.48 |  3.58    3.47
              0.667    5.79 | 1.667   17.99 | 2.667    5.48 |  3.67    3.47
              0.750    7.53 | 1.750   12.60 | 2.750    4.97 |  3.75    3.28
              0.833    7.53 | 1.833   12.60 | 2.833    4.97 |  3.83    3.28
              0.917   11.20 | 1.917    9.82 | 2.917    4.56 |  3.92    3.12
              1.000   11.20 | 2.000    9.82 | 3.000    4.56 |  4.00    3.12

     Max.Eff.Inten.(mm/hr)=     108.92       ********
               over (min)        5.00         10.00
     Storage Coeff.  (min)=      3.11 (ii)    5.38 (ii)
     Unit Hyd. Tpeak (min)=      5.00         10.00
     Unit Hyd. peak  (cms)=      0.27          0.16
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.89          0.04          0.934 (iii)
     TIME TO PEAK    (hrs)=      1.33          1.33           1.33
     RUNOFF VOLUME    (mm)=     49.52         46.58          49.34
     TOTAL RAINFALL   (mm)=     50.52         50.52          50.52
     RUNOFF COEFFICIENT   =      0.98          0.92           0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1360      0.2300

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)    3.230     0.934      1.33      49.34
   OUTFLOW: ID= 1 (  0005)    3.230     0.065      2.25      49.21

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.98
                  TIME SHIFT OF PEAK FLOW         (min)= 55.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1103

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46         0.46
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      78.32        40.00
     Mannings n             =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                                ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    3.57 | 1.083   25.64 | 2.083    8.12 |  3.08    4.22
              0.167    3.57 | 1.167   25.64 | 2.167    8.12 |  3.17    4.22
              0.250    4.07 | 1.250  108.92 | 2.250    6.96 |  3.25    3.93
              0.333    4.07 | 1.333  108.92 | 2.333    6.96 |  3.33    3.93
              0.417    4.76 | 1.417   33.31 | 2.417    6.12 |  3.42    3.68
              0.500    4.76 | 1.500   33.31 | 2.500    6.12 |  3.50    3.68
              0.583    5.79 | 1.583   17.99 | 2.583    5.48 |  3.58    3.47
              0.667    5.79 | 1.667   17.99 | 2.667    5.48 |  3.67    3.47
              0.750    7.53 | 1.750   12.60 | 2.750    4.97 |  3.75    3.28
              0.833    7.53 | 1.833   12.60 | 2.833    4.97 |  3.83    3.28
              0.917   11.20 | 1.917    9.82 | 2.917    4.56 |  3.92    3.12
              1.000   11.20 | 2.000    9.82 | 3.000    4.56 |  4.00    3.12

     Max.Eff.Inten.(mm/hr)=     108.92       22.18
               over (min)        5.00        20.00
     Storage Coeff.  (min)=      2.13 (ii)   15.02 (ii)
     Unit Hyd. Tpeak (min)=      5.00        20.00
     Unit Hyd. peak  (cms)=      0.31         0.07
                                                     *TOTALS*
     PEAK FLOW       (cms)=      0.14         0.02         0.145 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.58          1.33
     RUNOFF VOLUME    (mm)=     49.52        14.73         32.12
     TOTAL RAINFALL   (mm)=     50.52        50.52         50.52
     RUNOFF COEFFICIENT   =      0.98         0.29          0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0010):     0.92   0.145     1.33    32.12
      + ID2= 2 (  0002):     2.65   0.771     1.33    49.34
        ==========================================
        ID = 3 (  0006):     3.57   0.915     1.33    44.90

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0006):     3.57   0.915     1.33    44.90
      + ID2= 2 (  0005):     3.23   0.065     2.25    49.21
        ==========================================
        ID = 1 (  0006):     6.80   0.953     1.33    46.95

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0720      0.3590
                          0.0060     0.0320   |   0.1000      0.4070
                          0.0110     0.0650   |   0.1370      0.4570
                          0.0140     0.1010   |   0.1810      0.5090
                          0.0170     0.1400   |   0.2300      0.5620
                          0.0270     0.1800   |   0.5740      0.6180
                          0.0420     0.2220   |   1.3000      0.6780
                          0.0520     0.2660   |   2.4830      0.7440
                          0.0600     0.3120   |   0.0000      0.0000

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)    6.800     0.953      1.33      46.95
   OUTFLOW: ID= 1 (  0003)    6.800     0.037      6.08      46.75

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.86
```

TIME SHIFT OF PEAK FLOW (min)=285.00
MAXIMUM STORAGE USED (ha.m.)= 0.2073

ADD HYD (0008)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3					
ID1= 1 (0003):		6.80	0.037	6.08	46.75
+ ID2= 2 (0007):		1.20	0.049	1.50	14.33
ID = 3 (0008):		8.00	0.063	1.50	41.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

       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
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```

24h SCS - VO Output

```
                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\3559Of04-4d
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\3559Of04-4d


DATE: 01/16/2023                          TIME: 06:10:51

USER:


COMMENTS: _____________________________________________________


-------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 25MM4HR                       **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              4d115e28-8689-44fe-a23c-8ba2dad70c48\8ec3c3d7
| Ptotal= 25.00 mm |    Comments: 25MM4HR
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    2.07 |  1.00    5.70 |  2.00    5.19 |  3.00    2.80
               0.17    2.27 |  1.17   10.78 |  2.17    4.47 |  3.17    2.62
               0.33    2.52 |  1.33   50.21 |  2.33    3.95 |  3.33    2.48
               0.50    2.88 |  1.50   13.37 |  2.50    3.56 |  3.50    2.35
               0.67    3.38 |  1.67    8.29 |  2.67    3.25 |  3.67    2.23
               0.83    4.18 |  1.83    6.30 |  2.83    3.01 |  3.83    2.14

-------------------------------------------------------------------------------


--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number    (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.07 | 1.083    5.70 | 2.083    5.19 |  3.08    2.80
               0.167    2.07 | 1.167    5.70 | 2.167    5.19 |  3.17    2.80
               0.250    2.27 | 1.250   10.78 | 2.250    4.47 |  3.25    2.62
               0.333    2.27 | 1.333   10.78 | 2.333    4.47 |  3.33    2.62
               0.417    2.52 | 1.417   50.21 | 2.417    3.95 |  3.42    2.48
               0.500    2.52 | 1.500   50.21 | 2.500    3.95 |  3.50    2.48
               0.583    2.88 | 1.583   13.37 | 2.583    3.56 |  3.58    2.35
               0.667    2.88 | 1.667   13.37 | 2.667    3.56 |  3.67    2.35
               0.750    3.38 | 1.750    8.29 | 2.750    3.25 |  3.75    2.23
               0.833    3.38 | 1.833    8.29 | 2.833    3.25 |  3.83    2.23
               0.917    4.18 | 1.917    6.30 | 2.917    3.01 |  3.92    2.14
               1.000    4.18 | 2.000    6.30 | 3.000    3.01 |  4.00    2.14

    Unit Hyd Qpeak  (cms)=   0.355

    PEAK FLOW       (cms)=   0.017 (i)
    TIME TO PEAK    (hrs)=   2.833
    RUNOFF VOLUME    (mm)=   2.112
    TOTAL RAINFALL   (mm)=  24.997
    RUNOFF COEFFICIENT   =   0.084

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   1.20   Curve Number    (CN)= 72.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.07 | 1.083    5.70 | 2.083    5.19 |  3.08    2.80
               0.167    2.07 | 1.167    5.70 | 2.167    5.19 |  3.17    2.80
               0.250    2.27 | 1.250   10.78 | 2.250    4.47 |  3.25    2.62
               0.333    2.27 | 1.333   10.78 | 2.333    4.47 |  3.33    2.62
               0.417    2.52 | 1.417   50.21 | 2.417    3.95 |  3.42    2.48
               0.500    2.52 | 1.500   50.21 | 2.500    3.95 |  3.50    2.48
               0.583    2.88 | 1.583   13.37 | 2.583    3.56 |  3.58    2.35
               0.667    2.88 | 1.667   13.37 | 2.667    3.56 |  3.67    2.35
               0.750    3.38 | 1.750    8.29 | 2.750    3.25 |  3.75    2.23
               0.833    3.38 | 1.833    8.29 | 2.833    3.25 |  3.83    2.23
               0.917    4.18 | 1.917    6.30 | 2.917    3.01 |  3.92    2.14
               1.000    4.18 | 2.000    6.30 | 3.000    3.01 |  4.00    2.14

    Unit Hyd Qpeak  (cms)=   0.229

    PEAK FLOW       (cms)=   0.009 (i)
    TIME TO PEAK    (hrs)=   1.667
    RUNOFF VOLUME    (mm)=   3.360
    TOTAL RAINFALL   (mm)=  24.997
    RUNOFF COEFFICIENT   =   0.134

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   2.65
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.00   Dir. Conn.(%)=  94.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       2.49         0.16
    Dep. Storage     (mm)=       1.00         1.50
    Average Slope     (%)=       1.00         2.00
    Length            (m)=     132.92        40.00
    Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.07 | 1.083    5.70 | 2.083    5.19 |  3.08    2.80
               0.167    2.07 | 1.167    5.70 | 2.167    5.19 |  3.17    2.80
               0.250    2.27 | 1.250   10.78 | 2.250    4.47 |  3.25    2.62
               0.333    2.27 | 1.333   10.78 | 2.333    4.47 |  3.33    2.62
               0.417    2.52 | 1.417   50.21 | 2.417    3.95 |  3.42    2.48
               0.500    2.52 | 1.500   50.21 | 2.500    3.95 |  3.50    2.48
               0.583    2.88 | 1.583   13.37 | 2.583    3.56 |  3.58    2.35
               0.667    2.88 | 1.667   13.37 | 2.667    3.56 |  3.67    2.35
               0.750    3.38 | 1.750    8.29 | 2.750    3.25 |  3.75    2.23
               0.833    3.38 | 1.833    8.29 | 2.833    3.25 |  3.83    2.23
               0.917    4.18 | 1.917    6.30 | 2.917    3.01 |  3.92    2.14
               1.000    4.18 | 2.000    6.30 | 3.000    3.01 |  4.00    2.14

    Max.Eff.Inten.(mm/hr)=      50.21      ********
              over (min)        5.00        10.00
    Storage Coeff.  (min)=      3.99 (ii)    7.08 (ii)
    Unit Hyd. Tpeak (min)=      5.00        10.00
    Unit Hyd. peak  (cms)=      0.24         0.14
                                                      *TOTALS*
    PEAK FLOW       (cms)=      0.32         0.01        0.339 (iii)
    TIME TO PEAK    (hrs)=      1.50         1.58         1.50
```

```
     RUNOFF VOLUME    (mm)=      24.00         21.18          23.83
     TOTAL RAINFALL   (mm)=      25.00         25.00          25.00
     RUNOFF COEFFICIENT   =       0.96          0.85           0.95

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB              |
| STANDHYD (  0004)|   Area    (ha)=   3.23
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.00   Dir. Conn.(%)=  94.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.04          0.19
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     146.74         40.00
     Mannings n             =     0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    2.07 | 1.083    5.70 | 2.083    5.19 |  3.08    2.80
              0.167    2.07 | 1.167    5.70 | 2.167    5.19 |  3.17    2.80
              0.250    2.27 | 1.250   10.78 | 2.250    4.47 |  3.25    2.62
              0.333    2.27 | 1.333   10.78 | 2.333    4.47 |  3.33    2.62
              0.417    2.52 | 1.417   50.21 | 2.417    3.95 |  3.42    2.48
              0.500    2.52 | 1.500   50.21 | 2.500    3.95 |  3.50    2.48
              0.583    2.88 | 1.583   13.37 | 2.583    3.56 |  3.58    2.35
              0.667    2.88 | 1.667   13.37 | 2.667    3.56 |  3.67    2.35
              0.750    3.38 | 1.750    8.29 | 2.750    3.25 |  3.75    2.23
              0.833    3.38 | 1.833    8.29 | 2.833    3.25 |  3.83    2.23
              0.917    4.18 | 1.917    6.30 | 2.917    3.01 |  3.92    2.14
              1.000    4.18 | 2.000    6.30 | 3.000    3.01 |  4.00    2.14

     Max.Eff.Inten.(mm/hr)=      50.21     ********
               over (min)        5.00       10.00
     Storage Coeff.  (min)=      4.24 (ii)   7.33 (ii)
     Unit Hyd. Tpeak (min)=      5.00       10.00
     Unit Hyd. peak  (cms)=      0.24        0.13
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.39        0.02      0.408 (iii)
     TIME TO PEAK    (hrs)=      1.50        1.58       1.50
     RUNOFF VOLUME    (mm)=     24.00       21.18      23.83
     TOTAL RAINFALL   (mm)=     25.00       25.00      25.00
     RUNOFF COEFFICIENT   =      0.96        0.85       0.95

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1360      0.2300

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)     3.230     0.408      1.50      23.83
   OUTFLOW: ID= 1 (  0005)     3.230     0.031      2.75      23.70

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  7.48
                  TIME SHIFT OF PEAK FLOW         (min)= 75.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0517

--------------------------------------------------------------------------------
--------------------
| CALIB              |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46          0.46
     Dep. Storage     (mm)=       1.00          1.50
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      78.32         40.00
     Mannings n             =     0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    2.07 | 1.083    5.70 | 2.083    5.19 |  3.08    2.80
              0.167    2.07 | 1.167    5.70 | 2.167    5.19 |  3.17    2.80
              0.250    2.27 | 1.250   10.78 | 2.250    4.47 |  3.25    2.62
              0.333    2.27 | 1.333   10.78 | 2.333    4.47 |  3.33    2.62
              0.417    2.52 | 1.417   50.21 | 2.417    3.95 |  3.42    2.48
              0.500    2.52 | 1.500   50.21 | 2.500    3.95 |  3.50    2.48
              0.583    2.88 | 1.583   13.37 | 2.583    3.56 |  3.58    2.35
              0.667    2.88 | 1.667   13.37 | 2.667    3.56 |  3.67    2.35
              0.750    3.38 | 1.750    8.29 | 2.750    3.25 |  3.75    2.23
              0.833    3.38 | 1.833    8.29 | 2.833    3.25 |  3.83    2.23
              0.917    4.18 | 1.917    6.30 | 2.917    3.01 |  3.92    2.14
              1.000    4.18 | 2.000    6.30 | 3.000    3.01 |  4.00    2.14

     Max.Eff.Inten.(mm/hr)=      50.21         3.70
               over (min)        5.00        30.00
     Storage Coeff.  (min)=      2.91 (ii)   29.30 (ii)
     Unit Hyd. Tpeak (min)=      5.00        30.00
     Unit Hyd. peak  (cms)=      0.28         0.04
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.06         0.00       0.063 (iii)
     TIME TO PEAK    (hrs)=      1.50         1.92        1.50
     RUNOFF VOLUME    (mm)=     24.00         4.01       13.99
     TOTAL RAINFALL   (mm)=     25.00        25.00       25.00
     RUNOFF COEFFICIENT   =      0.96         0.16        0.56

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):      0.92   0.063     1.50    13.99
     + ID2= 2 (  0002):      2.65   0.339     1.50    23.83
       ==========================================================
       ID = 3 (  0006):      3.57   0.402     1.50    21.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):      3.57   0.402     1.50    21.29
     + ID2= 2 (  0005):      3.23   0.031     2.75    23.70
       ==========================================================
       ID = 1 (  0006):      6.80   0.418     1.50    22.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0720      0.3590
                           0.0060     0.0320   |   0.1000      0.4070
                           0.0110     0.0650   |   0.1370      0.4570
                           0.0140     0.1010   |   0.1810      0.5090
                           0.0170     0.1400   |   0.2300      0.5620
```

0.0270	0.1800	0.5740	0.6180
0.0420	0.2220	1.3000	0.6780
0.0520	0.2660	2.4830	0.7440
0.0600	0.3120	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	6.800	0.418	1.50	22.43
OUTFLOW: ID= 1 (0003)	6.800	0.014	7.42	22.24

PEAK FLOW REDUCTION [Qout/Qin](%)= 3.36
TIME SHIFT OF PEAK FLOW (min)=355.00
MAXIMUM STORAGE USED (ha.m.)= 0.1015

ADD HYD (0008)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0003):	6.80	0.014	7.42	22.24
	+ ID2= 2 (0007):	1.20	0.009	1.67	3.36
	ID = 3 (0008):	8.00	0.017	1.75	19.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
Output filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\a3d7714f-89
Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\a3d7714f-89

DATE: 01/16/2023 TIME: 06:10:51

USER:

COMMENTS: _____

** SIMULATION : SCS MTO ii 24 Hour 100yr Barr **

MASS STORM	Ptotal=133.60 mm

Filename: C:\Users\aquader\AppData\Local\Temp\4d115e28-8689-44fe-a23c-8ba2dad70c48\f9f15d97
Comments: 24 Hour SCSii Storm Based on MTO Design

Duration of storm = 24.00 hrs
Mass curve time step = 15.00 min

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.50	6.00	2.67	12.00	19.24	18.00	2.40
0.25	1.44	6.25	2.67	12.25	19.24	18.25	2.40
0.50	1.50	6.50	2.67	12.50	9.89	18.50	2.40
0.75	1.44	6.75	2.67	12.75	9.89	18.75	2.40
1.00	1.50	7.00	2.67	13.00	6.41	19.00	2.40
1.25	1.44	7.25	2.67	13.25	6.41	19.25	2.40
1.50	1.50	7.50	2.67	13.50	6.41	19.50	2.40
1.75	1.44	7.75	2.67	13.75	6.41	19.75	2.40
2.00	1.76	8.00	3.63	14.00	4.01	20.00	1.60
2.25	1.71	8.25	3.58	14.25	4.01	20.25	1.60
2.50	1.76	8.50	3.63	14.50	4.01	20.50	1.60
2.75	1.71	8.75	3.58	14.75	4.01	20.75	1.60
3.00	1.76	9.00	4.28	15.00	4.01	21.00	1.60
3.25	1.71	9.25	4.28	15.25	4.01	21.25	1.60
3.50	1.76	9.50	4.81	15.50	4.01	21.50	1.60
3.75	1.71	9.75	4.81	15.75	4.01	21.75	1.60
4.00	2.14	10.00	6.15	16.00	2.40	22.00	1.60
4.25	2.14	10.25	6.15	16.25	2.40	22.25	1.60
4.50	2.14	10.50	8.28	16.50	2.40	22.50	1.60
4.75	2.14	10.75	8.28	16.75	2.40	22.75	1.60
5.00	2.14	11.00	12.83	17.00	2.40	23.00	1.60
5.25	2.14	11.25	12.83	17.25	2.40	23.25	1.60
5.50	2.14	11.50	101.54	17.50	2.40	23.50	1.60
5.75	2.14	11.75	101.54	17.75	2.40	23.75	1.60

CALIB				
NASHYD (0001)	Area (ha)= 8.00	Curve Number (CN)= 60.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.86	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.50	6.083	2.67	12.083	19.25	18.08	2.40
0.167	1.50	6.167	2.67	12.167	19.24	18.17	2.40
0.250	1.50	6.250	2.67	12.250	19.24	18.25	2.40
0.333	1.44	6.333	2.67	12.333	19.24	18.33	2.40
0.417	1.44	6.417	2.67	12.417	19.24	18.42	2.40
0.500	1.44	6.500	2.67	12.500	19.24	18.50	2.40
0.583	1.50	6.583	2.67	12.583	9.89	18.58	2.40
0.667	1.50	6.667	2.67	12.667	9.89	18.67	2.40
0.750	1.50	6.750	2.67	12.750	9.89	18.75	2.40
0.833	1.44	6.833	2.67	12.833	9.89	18.83	2.40
0.917	1.44	6.917	2.67	12.917	9.89	18.92	2.40
1.000	1.44	7.000	2.67	13.000	9.89	19.00	2.40
1.083	1.50	7.083	2.67	13.083	6.41	19.08	2.40
1.167	1.50	7.167	2.67	13.167	6.41	19.17	2.40
1.250	1.50	7.250	2.67	13.250	6.41	19.25	2.40
1.333	1.44	7.333	2.67	13.333	6.41	19.33	2.40
1.417	1.44	7.417	2.67	13.417	6.41	19.42	2.40
1.500	1.44	7.500	2.67	13.500	6.41	19.50	2.40
1.583	1.50	7.583	2.67	13.583	6.41	19.58	2.40
1.667	1.50	7.667	2.67	13.667	6.41	19.67	2.40
1.750	1.50	7.750	2.67	13.750	6.41	19.75	2.40
1.833	1.44	7.833	2.67	13.833	6.41	19.83	2.40
1.917	1.44	7.917	2.67	13.917	6.41	19.92	2.40
2.000	1.44	8.000	2.67	14.000	6.41	20.00	2.40
2.083	1.76	8.083	3.63	14.083	4.01	20.08	1.60
2.167	1.76	8.167	3.63	14.167	4.01	20.17	1.60
2.250	1.76	8.250	3.63	14.250	4.01	20.25	1.60
2.333	1.71	8.333	3.58	14.333	4.01	20.33	1.60
2.417	1.71	8.417	3.58	14.417	4.01	20.42	1.60
2.500	1.71	8.500	3.58	14.500	4.01	20.50	1.60
2.583	1.76	8.583	3.63	14.583	4.01	20.58	1.60
2.667	1.76	8.667	3.63	14.667	4.01	20.67	1.60
2.750	1.76	8.750	3.63	14.750	4.01	20.75	1.60
2.833	1.71	8.833	3.58	14.833	4.01	20.83	1.60
2.917	1.71	8.917	3.58	14.917	4.01	20.92	1.60
3.000	1.71	9.000	3.58	15.000	4.01	21.00	1.60
3.083	1.76	9.083	4.28	15.083	4.01	21.08	1.60
3.167	1.76	9.167	4.28	15.167	4.01	21.17	1.60
3.250	1.76	9.250	4.28	15.250	4.01	21.25	1.60
3.333	1.71	9.333	4.28	15.333	4.01	21.33	1.60
3.417	1.71	9.417	4.28	15.417	4.01	21.42	1.60
3.500	1.71	9.500	4.28	15.500	4.01	21.50	1.60
3.583	1.76	9.583	4.81	15.583	4.01	21.58	1.60
3.667	1.76	9.667	4.81	15.667	4.01	21.67	1.60
3.750	1.76	9.750	4.81	15.750	4.01	21.75	1.60
3.833	1.71	9.833	4.81	15.833	4.01	21.83	1.60
3.917	1.71	9.917	4.81	15.917	4.01	21.92	1.60
4.000	1.71	10.000	4.81	16.000	4.01	22.00	1.60
4.083	2.14	10.083	6.15	16.083	2.41	22.08	1.60
4.167	2.14	10.167	6.15	16.167	2.40	22.17	1.60
4.250	2.14	10.250	6.15	16.250	2.40	22.25	1.60
4.333	2.14	10.333	6.15	16.333	2.40	22.33	1.60
4.417	2.14	10.417	6.15	16.417	2.40	22.42	1.60

4.500	2.14	10.500	6.15	16.500	2.40	22.50	1.60
4.583	2.14	10.583	8.28	16.583	2.40	22.58	1.60
4.667	2.14	10.667	8.28	16.667	2.40	22.67	1.60
4.750	2.14	10.750	8.28	16.750	2.40	22.75	1.60
4.833	2.14	10.833	8.28	16.833	2.40	22.83	1.60
4.917	2.14	10.917	8.28	16.917	2.40	22.92	1.60
5.000	2.14	11.000	8.28	17.000	2.40	23.00	1.60
5.083	2.14	11.083	12.83	17.083	2.40	23.08	1.60
5.167	2.14	11.167	12.83	17.167	2.40	23.17	1.60
5.250	2.14	11.250	12.83	17.250	2.40	23.25	1.60
5.333	2.14	11.333	12.83	17.333	2.40	23.33	1.60
5.417	2.14	11.417	12.83	17.417	2.40	23.42	1.60
5.500	2.14	11.500	12.83	17.500	2.40	23.50	1.60
5.583	2.14	11.583	101.53	17.583	2.40	23.58	1.60
5.667	2.14	11.667	101.54	17.667	2.40	23.67	1.60
5.750	2.14	11.750	101.54	17.750	2.40	23.75	1.60
5.833	2.14	11.833	101.54	17.833	2.40	23.83	1.60
5.917	2.14	11.917	101.54	17.917	2.40	23.92	1.60
6.000	2.14	12.000	101.54	18.000	2.40	24.00	1.60

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.385 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 55.509
TOTAL RAINFALL (mm)= 133.600
RUNOFF COEFFICIENT = 0.415

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

CALIB					
NASHYD (0007)	Area (ha)=	1.20	Curve Number (CN)=	72.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.20			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.50	6.083	2.67	12.083	19.25	18.08	2.40
0.167	1.50	6.167	2.67	12.167	19.24	18.17	2.40
0.250	1.50	6.250	2.67	12.250	19.24	18.25	2.40
0.333	1.44	6.333	2.67	12.333	19.24	18.33	2.40
0.417	1.44	6.417	2.67	12.417	19.24	18.42	2.40
0.500	1.44	6.500	2.67	12.500	19.24	18.50	2.40
0.583	1.50	6.583	2.67	12.583	9.89	18.58	2.40
0.667	1.50	6.667	2.67	12.667	9.89	18.67	2.40
0.750	1.50	6.750	2.67	12.750	9.89	18.75	2.40
0.833	1.44	6.833	2.67	12.833	9.89	18.83	2.40
0.917	1.44	6.917	2.67	12.917	9.89	18.92	2.40
1.000	1.44	7.000	2.67	13.000	9.89	19.00	2.40
1.083	1.50	7.083	2.67	13.083	6.41	19.08	2.40
1.167	1.50	7.167	2.67	13.167	6.41	19.17	2.40
1.250	1.50	7.250	2.67	13.250	6.41	19.25	2.40
1.333	1.44	7.333	2.67	13.333	6.41	19.33	2.40
1.417	1.44	7.417	2.67	13.417	6.41	19.42	2.40
1.500	1.44	7.500	2.67	13.500	6.41	19.50	2.40
1.583	1.50	7.583	2.67	13.583	6.41	19.58	2.40
1.667	1.50	7.667	2.67	13.667	6.41	19.67	2.40
1.750	1.50	7.750	2.67	13.750	6.41	19.75	2.40
1.833	1.44	7.833	2.67	13.833	6.41	19.83	2.40
1.917	1.44	7.917	2.67	13.917	6.41	19.92	2.40
2.000	1.44	8.000	2.67	14.000	6.41	20.00	2.40
2.083	1.76	8.083	3.63	14.083	4.01	20.08	1.60
2.167	1.76	8.167	3.63	14.167	4.01	20.17	1.60
2.250	1.76	8.250	3.63	14.250	4.01	20.25	1.60
2.333	1.71	8.333	3.58	14.333	4.01	20.33	1.60
2.417	1.71	8.417	3.58	14.417	4.01	20.42	1.60
2.500	1.71	8.500	3.58	14.500	4.01	20.50	1.60
2.583	1.76	8.583	3.63	14.583	4.01	20.58	1.60
2.667	1.76	8.667	3.63	14.667	4.01	20.67	1.60
2.750	1.76	8.750	3.63	14.750	4.01	20.75	1.60
2.833	1.71	8.833	3.58	14.833	4.01	20.83	1.60
2.917	1.71	8.917	3.58	14.917	4.01	20.92	1.60
3.000	1.71	9.000	3.58	15.000	4.01	21.00	1.60
3.083	1.76	9.083	4.28	15.083	4.01	21.08	1.60
3.167	1.76	9.167	4.28	15.167	4.01	21.17	1.60
3.250	1.76	9.250	4.28	15.250	4.01	21.25	1.60
3.333	1.71	9.333	4.28	15.333	4.01	21.33	1.60
3.417	1.71	9.417	4.28	15.417	4.01	21.42	1.60
3.500	1.71	9.500	4.28	15.500	4.01	21.50	1.60
3.583	1.76	9.583	4.81	15.583	4.01	21.58	1.60
3.667	1.76	9.667	4.81	15.667	4.01	21.67	1.60
3.750	1.76	9.750	4.81	15.750	4.01	21.75	1.60
3.833	1.71	9.833	4.81	15.833	4.01	21.83	1.60
3.917	1.71	9.917	4.81	15.917	4.01	21.92	1.60
4.000	1.71	10.000	4.81	16.000	4.01	22.00	1.60
4.083	2.14	10.083	6.15	16.083	2.41	22.08	1.60
4.167	2.14	10.167	6.15	16.167	2.40	22.17	1.60
4.250	2.14	10.250	6.15	16.250	2.40	22.25	1.60
4.333	2.14	10.333	6.15	16.333	2.40	22.33	1.60
4.417	2.14	10.417	6.15	16.417	2.40	22.42	1.60
4.500	2.14	10.500	6.15	16.500	2.40	22.50	1.60
4.583	2.14	10.583	8.28	16.583	2.40	22.58	1.60
4.667	2.14	10.667	8.28	16.667	2.40	22.67	1.60
4.750	2.14	10.750	8.28	16.750	2.40	22.75	1.60
4.833	2.14	10.833	8.28	16.833	2.40	22.83	1.60
4.917	2.14	10.917	8.28	16.917	2.40	22.92	1.60
5.000	2.14	11.000	8.28	17.000	2.40	23.00	1.60
5.083	2.14	11.083	12.83	17.083	2.40	23.08	1.60
5.167	2.14	11.167	12.83	17.167	2.40	23.17	1.60
5.250	2.14	11.250	12.83	17.250	2.40	23.25	1.60
5.333	2.14	11.333	12.83	17.333	2.40	23.33	1.60
5.417	2.14	11.417	12.83	17.417	2.40	23.42	1.60
5.500	2.14	11.500	12.83	17.500	2.40	23.50	1.60
5.583	2.14	11.583	101.53	17.583	2.40	23.58	1.60
5.667	2.14	11.667	101.54	17.667	2.40	23.67	1.60
5.750	2.14	11.750	101.54	17.750	2.40	23.75	1.60
5.833	2.14	11.833	101.54	17.833	2.40	23.83	1.60
5.917	2.14	11.917	101.54	17.917	2.40	23.92	1.60
6.000	2.14	12.000	101.54	18.000	2.40	24.00	1.60

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.189 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 72.595
TOTAL RAINFALL (mm)= 133.600
RUNOFF COEFFICIENT = 0.543

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

STANDHYD (0002)				
ID= 1 DT= 5.0 min	Area (ha)=	2.65		
	Total Imp(%)=	94.00	Dir. Conn.(%)=	94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.50	6.083	2.67	12.083	19.25	18.08	2.40
0.167	1.50	6.167	2.67	12.167	19.24	18.17	2.40
0.250	1.50	6.250	2.67	12.250	19.24	18.25	2.40
0.333	1.44	6.333	2.67	12.333	19.24	18.33	2.40
0.417	1.44	6.417	2.67	12.417	19.24	18.42	2.40
0.500	1.44	6.500	2.67	12.500	19.24	18.50	2.40
0.583	1.50	6.583	2.67	12.583	9.89	18.58	2.40
0.667	1.50	6.667	2.67	12.667	9.89	18.67	2.40
0.750	1.50	6.750	2.67	12.750	9.89	18.75	2.40
0.833	1.44	6.833	2.67	12.833	9.89	18.83	2.40
0.917	1.44	6.917	2.67	12.917	9.89	18.92	2.40
1.000	1.44	7.000	2.67	13.000	9.89	19.00	2.40
1.083	1.50	7.083	2.67	13.083	6.41	19.08	2.40
1.167	1.50	7.167	2.67	13.167	6.41	19.17	2.40
1.250	1.50	7.250	2.67	13.250	6.41	19.25	2.40
1.333	1.44	7.333	2.67	13.333	6.41	19.33	2.40
1.417	1.44	7.417	2.67	13.417	6.41	19.42	2.40
1.500	1.44	7.500	2.67	13.500	6.41	19.50	2.40
1.583	1.50	7.583	2.67	13.583	6.41	19.58	2.40
1.667	1.50	7.667	2.67	13.667	6.41	19.67	2.40
1.750	1.50	7.750	2.67	13.750	6.41	19.75	2.40
1.833	1.44	7.833	2.67	13.833	6.41	19.83	2.40
1.917	1.44	7.917	2.67	13.917	6.41	19.92	2.40

2.000	1.44	8.000	2.67	14.000	6.41	20.00	2.40
2.083	1.76	8.083	3.63	14.083	4.01	20.08	1.60
2.167	1.76	8.167	3.63	14.167	4.01	20.17	1.60
2.250	1.76	8.250	3.63	14.250	4.01	20.25	1.60
2.333	1.71	8.333	3.58	14.333	4.01	20.33	1.60
2.417	1.71	8.417	3.58	14.417	4.01	20.42	1.60
2.500	1.71	8.500	3.58	14.500	4.01	20.50	1.60
2.583	1.76	8.583	3.63	14.583	4.01	20.58	1.60
2.667	1.76	8.667	3.63	14.667	4.01	20.67	1.60
2.750	1.76	8.750	3.63	14.750	4.01	20.75	1.60
2.833	1.71	8.833	3.58	14.833	4.01	20.83	1.60
2.917	1.71	8.917	3.58	14.917	4.01	20.92	1.60
3.000	1.71	9.000	3.58	15.000	4.01	21.00	1.60
3.083	1.76	9.083	4.28	15.083	4.01	21.08	1.60
3.167	1.76	9.167	4.28	15.167	4.01	21.17	1.60
3.250	1.76	9.250	4.28	15.250	4.01	21.25	1.60
3.333	1.71	9.333	4.28	15.333	4.01	21.33	1.60
3.417	1.71	9.417	4.28	15.417	4.01	21.42	1.60
3.500	1.71	9.500	4.28	15.500	4.01	21.50	1.60
3.583	1.76	9.583	4.81	15.583	4.01	21.58	1.60
3.667	1.76	9.667	4.81	15.667	4.01	21.67	1.60
3.750	1.76	9.750	4.81	15.750	4.01	21.75	1.60
3.833	1.71	9.833	4.81	15.833	4.01	21.83	1.60
3.917	1.71	9.917	4.81	15.917	4.01	21.92	1.60
4.000	1.71	10.000	4.81	16.000	4.01	22.00	1.60
4.083	2.14	10.083	6.15	16.083	2.41	22.08	1.60
4.167	2.14	10.167	6.15	16.167	2.40	22.17	1.60
4.250	2.14	10.250	6.15	16.250	2.40	22.25	1.60
4.333	2.14	10.333	6.15	16.333	2.40	22.33	1.60
4.417	2.14	10.417	6.15	16.417	2.40	22.42	1.60
4.500	2.14	10.500	6.15	16.500	2.40	22.50	1.60
4.583	2.14	10.583	8.28	16.583	2.40	22.58	1.60
4.667	2.14	10.667	8.28	16.667	2.40	22.67	1.60
4.750	2.14	10.750	8.28	16.750	2.40	22.75	1.60
4.833	2.14	10.833	8.28	16.833	2.40	22.83	1.60
4.917	2.14	10.917	8.28	16.917	2.40	22.92	1.60
5.000	2.14	11.000	8.28	17.000	2.40	23.00	1.60
5.083	2.14	11.083	12.83	17.083	2.40	23.08	1.60
5.167	2.14	11.167	12.83	17.167	2.40	23.17	1.60
5.250	2.14	11.250	12.83	17.250	2.40	23.25	1.60
5.333	2.14	11.333	12.83	17.333	2.40	23.33	1.60
5.417	2.14	11.417	12.83	17.417	2.40	23.42	1.60
5.500	2.14	11.500	12.83	17.500	2.40	23.50	1.60
5.583	2.14	11.583	101.53	17.583	2.40	23.58	1.60
5.667	2.14	11.667	101.54	17.667	2.40	23.67	1.60
5.750	2.14	11.750	101.54	17.750	2.40	23.75	1.60
5.833	2.14	11.833	101.54	17.833	2.40	23.83	1.60
5.917	2.14	11.917	101.54	17.917	2.40	23.92	1.60
6.000	2.14	12.000	101.54	18.000	2.40	24.00	1.60

Max.Eff.Inten.(mm/hr)=	101.54	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.01 (ii)	5.35 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.28	0.16	
			TOTALS
PEAK FLOW (cms)=	0.70	0.04	0.747 (iii)
TIME TO PEAK (hrs)=	12.00	12.00	12.00
RUNOFF VOLUME (mm)=	132.60	129.58	132.42
TOTAL RAINFALL (mm)=	133.60	133.60	133.60
RUNOFF COEFFICIENT =	0.99	0.97	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB
STANDHYD (0004)| Area (ha)= 3.23
ID= 1 DT= 5.0 min | Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.50	6.083	2.67	12.083	19.25	18.08	2.40
0.167	1.50	6.167	2.67	12.167	19.24	18.17	2.40
0.250	1.50	6.250	2.67	12.250	19.24	18.25	2.40
0.333	1.44	6.333	2.67	12.333	19.24	18.33	2.40
0.417	1.44	6.417	2.67	12.417	19.24	18.42	2.40
0.500	1.44	6.500	2.67	12.500	19.24	18.50	2.40
0.583	1.50	6.583	2.67	12.583	9.89	18.58	2.40
0.667	1.50	6.667	2.67	12.667	9.89	18.67	2.40
0.750	1.50	6.750	2.67	12.750	9.89	18.75	2.40
0.833	1.44	6.833	2.67	12.833	9.89	18.83	2.40
0.917	1.44	6.917	2.67	12.917	9.89	18.92	2.40
1.000	1.44	7.000	2.67	13.000	9.89	19.00	2.40
1.083	1.50	7.083	2.67	13.083	6.41	19.08	2.40
1.167	1.50	7.167	2.67	13.167	6.41	19.17	2.40
1.250	1.50	7.250	2.67	13.250	6.41	19.25	2.40
1.333	1.44	7.333	2.67	13.333	6.41	19.33	2.40
1.417	1.44	7.417	2.67	13.417	6.41	19.42	2.40
1.500	1.44	7.500	2.67	13.500	6.41	19.50	2.40
1.583	1.50	7.583	2.67	13.583	6.41	19.58	2.40
1.667	1.50	7.667	2.67	13.667	6.41	19.67	2.40
1.750	1.50	7.750	2.67	13.750	6.41	19.75	2.40
1.833	1.44	7.833	2.67	13.833	6.41	19.83	2.40
1.917	1.44	7.917	2.67	13.917	6.41	19.92	2.40
2.000	1.44	8.000	2.67	14.000	6.41	20.00	2.40
2.083	1.76	8.083	3.63	14.083	4.01	20.08	1.60
2.167	1.76	8.167	3.63	14.167	4.01	20.17	1.60
2.250	1.76	8.250	3.63	14.250	4.01	20.25	1.60
2.333	1.71	8.333	3.58	14.333	4.01	20.33	1.60
2.417	1.71	8.417	3.58	14.417	4.01	20.42	1.60
2.500	1.71	8.500	3.58	14.500	4.01	20.50	1.60
2.583	1.76	8.583	3.63	14.583	4.01	20.58	1.60
2.667	1.76	8.667	3.63	14.667	4.01	20.67	1.60
2.750	1.76	8.750	3.63	14.750	4.01	20.75	1.60
2.833	1.71	8.833	3.58	14.833	4.01	20.83	1.60
2.917	1.71	8.917	3.58	14.917	4.01	20.92	1.60
3.000	1.71	9.000	3.58	15.000	4.01	21.00	1.60
3.083	1.76	9.083	4.28	15.083	4.01	21.08	1.60
3.167	1.76	9.167	4.28	15.167	4.01	21.17	1.60
3.250	1.76	9.250	4.28	15.250	4.01	21.25	1.60
3.333	1.71	9.333	4.28	15.333	4.01	21.33	1.60
3.417	1.71	9.417	4.28	15.417	4.01	21.42	1.60
3.500	1.71	9.500	4.28	15.500	4.01	21.50	1.60
3.583	1.76	9.583	4.81	15.583	4.01	21.58	1.60
3.667	1.76	9.667	4.81	15.667	4.01	21.67	1.60
3.750	1.76	9.750	4.81	15.750	4.01	21.75	1.60
3.833	1.71	9.833	4.81	15.833	4.01	21.83	1.60
3.917	1.71	9.917	4.81	15.917	4.01	21.92	1.60
4.000	1.71	10.000	4.81	16.000	4.01	22.00	1.60
4.083	2.14	10.083	6.15	16.083	2.41	22.08	1.60
4.167	2.14	10.167	6.15	16.167	2.40	22.17	1.60
4.250	2.14	10.250	6.15	16.250	2.40	22.25	1.60
4.333	2.14	10.333	6.15	16.333	2.40	22.33	1.60
4.417	2.14	10.417	6.15	16.417	2.40	22.42	1.60
4.500	2.14	10.500	6.15	16.500	2.40	22.50	1.60
4.583	2.14	10.583	8.28	16.583	2.40	22.58	1.60
4.667	2.14	10.667	8.28	16.667	2.40	22.67	1.60
4.750	2.14	10.750	8.28	16.750	2.40	22.75	1.60
4.833	2.14	10.833	8.28	16.833	2.40	22.83	1.60
4.917	2.14	10.917	8.28	16.917	2.40	22.92	1.60
5.000	2.14	11.000	8.28	17.000	2.40	23.00	1.60
5.083	2.14	11.083	12.83	17.083	2.40	23.08	1.60
5.167	2.14	11.167	12.83	17.167	2.40	23.17	1.60
5.250	2.14	11.250	12.83	17.250	2.40	23.25	1.60
5.333	2.14	11.333	12.83	17.333	2.40	23.33	1.60
5.417	2.14	11.417	12.83	17.417	2.40	23.42	1.60
5.500	2.14	11.500	12.83	17.500	2.40	23.50	1.60
5.583	2.14	11.583	101.53	17.583	2.40	23.58	1.60
5.667	2.14	11.667	101.54	17.667	2.40	23.67	1.60
5.750	2.14	11.750	101.54	17.750	2.40	23.75	1.60
5.833	2.14	11.833	101.54	17.833	2.40	23.83	1.60
5.917	2.14	11.917	101.54	17.917	2.40	23.92	1.60
6.000	2.14	12.000	101.54	18.000	2.40	24.00	1.60

Max.Eff.Inten.(mm/hr)=	101.54	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.20 (ii)	5.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.16	
			TOTALS

```
     PEAK FLOW       (cms)=       0.86         0.05          0.910 (iii)
     TIME TO PEAK    (hrs)=      12.00        12.00           12.00
     RUNOFF VOLUME    (mm)=     132.60       129.58          132.42
     TOTAL RAINFALL   (mm)=     133.60       133.60          133.60
     RUNOFF COEFFICIENT   =       0.99         0.97            0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1360      0.2300

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)     3.230     0.910     12.00      132.42
   OUTFLOW: ID= 1 (  0005)     3.230     0.132     12.58      132.29

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.47
                  TIME SHIFT OF PEAK FLOW         (min)= 35.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.2231

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--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46         0.46
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      78.32        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
 0.083    1.50 | 6.083    2.67 |12.083   19.25 | 18.08    2.40
 0.167    1.50 | 6.167    2.67 |12.167   19.24 | 18.17    2.40
 0.250    1.50 | 6.250    2.67 |12.250   19.24 | 18.25    2.40
 0.333    1.44 | 6.333    2.67 |12.333   19.24 | 18.33    2.40
 0.417    1.44 | 6.417    2.67 |12.417   19.24 | 18.42    2.40
 0.500    1.44 | 6.500    2.67 |12.500   19.24 | 18.50    2.40
 0.583    1.50 | 6.583    2.67 |12.583    9.89 | 18.58    2.40
 0.667    1.50 | 6.667    2.67 |12.667    9.89 | 18.67    2.40
 0.750    1.50 | 6.750    2.67 |12.750    9.89 | 18.75    2.40
 0.833    1.44 | 6.833    2.67 |12.833    9.89 | 18.83    2.40
 0.917    1.44 | 6.917    2.67 |12.917    9.89 | 18.92    2.40
 1.000    1.44 | 7.000    2.67 |13.000    9.89 | 19.00    2.40
 1.083    1.50 | 7.083    2.67 |13.083    6.41 | 19.08    2.40
 1.167    1.50 | 7.167    2.67 |13.167    6.41 | 19.17    2.40
 1.250    1.50 | 7.250    2.67 |13.250    6.41 | 19.25    2.40
 1.333    1.44 | 7.333    2.67 |13.333    6.41 | 19.33    2.40
 1.417    1.44 | 7.417    2.67 |13.417    6.41 | 19.42    2.40
 1.500    1.44 | 7.500    2.67 |13.500    6.41 | 19.50    2.40
 1.583    1.50 | 7.583    2.67 |13.583    6.41 | 19.58    2.40
 1.667    1.50 | 7.667    2.67 |13.667    6.41 | 19.67    2.40
 1.750    1.50 | 7.750    2.67 |13.750    6.41 | 19.75    2.40
 1.833    1.44 | 7.833    2.67 |13.833    6.41 | 19.83    2.40
 1.917    1.44 | 7.917    2.67 |13.917    6.41 | 19.92    2.40
 2.000    1.44 | 8.000    2.67 |14.000    6.41 | 20.00    2.40
 2.083    1.76 | 8.083    3.63 |14.083    4.01 | 20.08    1.60
 2.167    1.76 | 8.167    3.63 |14.167    4.01 | 20.17    1.60
 2.250    1.76 | 8.250    3.63 |14.250    4.01 | 20.25    1.60
 2.333    1.71 | 8.333    3.58 |14.333    4.01 | 20.33    1.60
 2.417    1.71 | 8.417    3.58 |14.417    4.01 | 20.42    1.60
 2.500    1.71 | 8.500    3.58 |14.500    4.01 | 20.50    1.60
 2.583    1.76 | 8.583    3.63 |14.583    4.01 | 20.58    1.60
 2.667    1.76 | 8.667    3.63 |14.667    4.01 | 20.67    1.60
 2.750    1.76 | 8.750    3.63 |14.750    4.01 | 20.75    1.60
 2.833    1.71 | 8.833    3.58 |14.833    4.01 | 20.83    1.60
 2.917    1.71 | 8.917    3.58 |14.917    4.01 | 20.92    1.60
 3.000    1.71 | 9.000    3.58 |15.000    4.01 | 21.00    1.60
 3.083    1.76 | 9.083    4.28 |15.083    4.01 | 21.08    1.60
 3.167    1.76 | 9.167    4.28 |15.167    4.01 | 21.17    1.60
 3.250    1.76 | 9.250    4.28 |15.250    4.01 | 21.25    1.60
 3.333    1.71 | 9.333    4.28 |15.333    4.01 | 21.33    1.60
 3.417    1.71 | 9.417    4.28 |15.417    4.01 | 21.42    1.60
 3.500    1.71 | 9.500    4.28 |15.500    4.01 | 21.50    1.60
 3.583    1.76 | 9.583    4.81 |15.583    4.01 | 21.58    1.60
 3.667    1.76 | 9.667    4.81 |15.667    4.01 | 21.67    1.60
 3.750    1.76 | 9.750    4.81 |15.750    4.01 | 21.75    1.60
 3.833    1.71 | 9.833    4.81 |15.833    4.01 | 21.83    1.60
 3.917    1.71 | 9.917    4.81 |15.917    4.01 | 21.92    1.60
 4.000    1.71 |10.000    4.81 |16.000    4.01 | 22.00    1.60
 4.083    2.14 |10.083    6.15 |16.083    2.41 | 22.08    1.60
 4.167    2.14 |10.167    6.15 |16.167    2.40 | 22.17    1.60
 4.250    2.14 |10.250    6.15 |16.250    2.40 | 22.25    1.60
 4.333    2.14 |10.333    6.15 |16.333    2.40 | 22.33    1.60
 4.417    2.14 |10.417    6.15 |16.417    2.40 | 22.42    1.60
 4.500    2.14 |10.500    6.15 |16.500    2.40 | 22.50    1.60
 4.583    2.14 |10.583    8.28 |16.583    2.40 | 22.58    1.60
 4.667    2.14 |10.667    8.28 |16.667    2.40 | 22.67    1.60
 4.750    2.14 |10.750    8.28 |16.750    2.40 | 22.75    1.60
 4.833    2.14 |10.833    8.28 |16.833    2.40 | 22.83    1.60
 4.917    2.14 |10.917    8.28 |16.917    2.40 | 22.92    1.60
 5.000    2.14 |11.000    8.28 |17.000    2.40 | 23.00    1.60
 5.083    2.14 |11.083   12.83 |17.083    2.40 | 23.08    1.60
 5.167    2.14 |11.167   12.83 |17.167    2.40 | 23.17    1.60
 5.250    2.14 |11.250   12.83 |17.250    2.40 | 23.25    1.60
 5.333    2.14 |11.333   12.83 |17.333    2.40 | 23.33    1.60
 5.417    2.14 |11.417   12.83 |17.417    2.40 | 23.42    1.60
 5.500    2.14 |11.500   12.83 |17.500    2.40 | 23.50    1.60
 5.583    2.14 |11.583  101.53 |17.583    2.40 | 23.58    1.60
 5.667    2.14 |11.667  101.54 |17.667    2.40 | 23.67    1.60
 5.750    2.14 |11.750  101.54 |17.750    2.40 | 23.75    1.60
 5.833    2.14 |11.833  101.54 |17.833    2.40 | 23.83    1.60
 5.917    2.14 |11.917  101.54 |17.917    2.40 | 23.92    1.60
 6.000    2.14 |12.000  101.54 |18.000    2.40 | 24.00    1.60

     Max.Eff.Inten.(mm/hr)=     101.54        65.87
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.19 (ii)   10.53 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09

                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.13         0.07          0.198 (iii)
     TIME TO PEAK    (hrs)=      12.00        12.00           12.00
     RUNOFF VOLUME    (mm)=     132.60        70.87          101.73
     TOTAL RAINFALL   (mm)=     133.60       133.60          133.60
     RUNOFF COEFFICIENT   =       0.99         0.53            0.76

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK     TPEAK      R.V.
--------------------          (ha)    (cms)     (hrs)      (mm)
        ID1= 1 (  0010):     0.92   0.198     12.00   101.73
      + ID2= 2 (  0002):     2.65   0.747     12.00   132.42
        ==================================================
        ID = 3 (  0006):     3.57   0.945     12.00   124.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK     TPEAK      R.V.
--------------------          (ha)    (cms)     (hrs)      (mm)
        ID1= 3 (  0006):     3.57   0.945     12.00   124.51
      + ID2= 2 (  0005):     3.23   0.132     12.58   132.29
        ==================================================
        ID = 1 (  0006):     6.80   1.061     12.00   128.20

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

```
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000    |  0.0720      0.3590
                         0.0060     0.0320    |  0.1000      0.4070
                         0.0110     0.0650    |  0.1370      0.4570
                         0.0140     0.1010    |  0.1810      0.5090
                         0.0170     0.1400    |  0.2300      0.5620
                         0.0270     0.1800    |  0.5740      0.6180
                         0.0420     0.2220    |  1.3000      0.6780
                         0.0520     0.2660    |  2.4830      0.7440
                         0.0600     0.3120    |  0.0000      0.0000

                              AREA      QPEAK     TPEAK       R.V.
                              (ha)      (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)    6.800     1.061     12.00      128.20
   OUTFLOW: ID= 1 (  0003)    6.800     0.121     16.00      128.01

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.38
                  TIME SHIFT OF PEAK FLOW          (min)=240.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.4351

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):      6.80    0.121    16.00   128.01
     + ID2= 2 (  0007):      1.20    0.189    12.00    72.59
       ================================================
       ID = 3 (  0008):      8.00    0.245    12.00   119.69

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\12437437-19
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\12437437-19


DATE: 01/16/2023                          TIME: 06:10:51

USER:



COMMENTS: _____________________________________________________


--------------------------------------------------------------------------------------------------------------------
  ***********************************************
  ** SIMULATION : SCS MTO ii 24 Hour 10yr Barri **
  ***********************************************

--------------------
| MASS STORM       |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              4d115e28-8689-44fe-a23c-8ba2dad70c48\5c3a6e3e
| Ptotal= 89.90 mm |    Comments: 24 Hour SCSii Storm Based on MTO Design
--------------------
                       Duration of storm    = 24.00 hrs
                       Mass curve time step = 15.00 min
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.01	6.00	1.80	12.00	12.95	18.00	1.62
0.25	0.97	6.25	1.80	12.25	12.95	18.25	1.62
0.50	1.01	6.50	1.80	12.50	6.65	18.50	1.62
0.75	0.97	6.75	1.80	12.75	6.65	18.75	1.62
1.00	1.01	7.00	1.80	13.00	4.32	19.00	1.62
1.25	0.97	7.25	1.80	13.25	4.32	19.25	1.62
1.50	1.01	7.50	1.80	13.50	4.32	19.50	1.62
1.75	0.97	7.75	1.80	13.75	4.32	19.75	1.62
2.00	1.19	8.00	2.45	14.00	2.70	20.00	1.08
2.25	1.15	8.25	2.41	14.25	2.70	20.25	1.08
2.50	1.19	8.50	2.45	14.50	2.70	20.50	1.08
2.75	1.15	8.75	2.41	14.75	2.70	20.75	1.08
3.00	1.19	9.00	2.88	15.00	2.70	21.00	1.08
3.25	1.15	9.25	2.88	15.25	2.70	21.25	1.08
3.50	1.19	9.50	3.24	15.50	2.70	21.50	1.08
3.75	1.15	9.75	3.24	15.75	2.70	21.75	1.08
4.00	1.44	10.00	4.14	16.00	1.62	22.00	1.08
4.25	1.44	10.25	4.14	16.25	1.62	22.25	1.08
4.50	1.44	10.50	5.57	16.50	1.62	22.50	1.08
4.75	1.44	10.75	5.57	16.75	1.62	22.75	1.08
5.00	1.44	11.00	8.63	17.00	1.62	23.00	1.08
5.25	1.44	11.25	8.63	17.25	1.62	23.25	1.08
5.50	1.44	11.50	68.32	17.50	1.62	23.50	1.08
5.75	1.44	11.75	68.32	17.75	1.62	23.75	1.08

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.01	6.083	1.80	12.083	12.95	18.08	1.62
0.167	1.01	6.167	1.80	12.167	12.95	18.17	1.62
0.250	1.01	6.250	1.80	12.250	12.95	18.25	1.62
0.333	0.97	6.333	1.80	12.333	12.95	18.33	1.62
0.417	0.97	6.417	1.80	12.417	12.95	18.42	1.62
0.500	0.97	6.500	1.80	12.500	12.95	18.50	1.62
0.583	1.01	6.583	1.80	12.583	6.65	18.58	1.62
0.667	1.01	6.667	1.80	12.667	6.65	18.67	1.62
0.750	1.01	6.750	1.80	12.750	6.65	18.75	1.62
0.833	0.97	6.833	1.80	12.833	6.65	18.83	1.62
0.917	0.97	6.917	1.80	12.917	6.65	18.92	1.62
1.000	0.97	7.000	1.80	13.000	6.65	19.00	1.62
1.083	1.01	7.083	1.80	13.083	4.32	19.08	1.62
1.167	1.01	7.167	1.80	13.167	4.32	19.17	1.62
1.250	1.01	7.250	1.80	13.250	4.32	19.25	1.62
1.333	0.97	7.333	1.80	13.333	4.32	19.33	1.62
1.417	0.97	7.417	1.80	13.417	4.32	19.42	1.62
1.500	0.97	7.500	1.80	13.500	4.32	19.50	1.62
1.583	1.01	7.583	1.80	13.583	4.32	19.58	1.62
1.667	1.01	7.667	1.80	13.667	4.32	19.67	1.62
1.750	1.01	7.750	1.80	13.750	4.32	19.75	1.62
1.833	0.97	7.833	1.80	13.833	4.32	19.83	1.62
1.917	0.97	7.917	1.80	13.917	4.32	19.92	1.62
2.000	0.97	8.000	1.80	14.000	4.32	20.00	1.62
2.083	1.19	8.083	2.45	14.083	2.70	20.08	1.08
2.167	1.19	8.167	2.45	14.167	2.70	20.17	1.08
2.250	1.19	8.250	2.45	14.250	2.70	20.25	1.08
2.333	1.15	8.333	2.41	14.333	2.70	20.33	1.08
2.417	1.15	8.417	2.41	14.417	2.70	20.42	1.08
2.500	1.15	8.500	2.41	14.500	2.70	20.50	1.08
2.583	1.19	8.583	2.45	14.583	2.70	20.58	1.08
2.667	1.19	8.667	2.45	14.667	2.70	20.67	1.08
2.750	1.19	8.750	2.45	14.750	2.70	20.75	1.08
2.833	1.15	8.833	2.41	14.833	2.70	20.83	1.08
2.917	1.15	8.917	2.41	14.917	2.70	20.92	1.08
3.000	1.15	9.000	2.41	15.000	2.70	21.00	1.08
3.083	1.19	9.083	2.88	15.083	2.70	21.08	1.08
3.167	1.19	9.167	2.88	15.167	2.70	21.17	1.08
3.250	1.19	9.250	2.88	15.250	2.70	21.25	1.08
3.333	1.15	9.333	2.88	15.333	2.70	21.33	1.08
3.417	1.15	9.417	2.88	15.417	2.70	21.42	1.08
3.500	1.15	9.500	2.88	15.500	2.70	21.50	1.08
3.583	1.19	9.583	3.24	15.583	2.70	21.58	1.08

3.667	1.19	9.667	3.24	15.667	2.70	21.67	1.08
3.750	1.19	9.750	3.24	15.750	2.70	21.75	1.08
3.833	1.15	9.833	3.24	15.833	2.70	21.83	1.08
3.917	1.15	9.917	3.24	15.917	2.70	21.92	1.08
4.000	1.15	10.000	3.24	16.000	2.70	22.00	1.08
4.083	1.44	10.083	4.14	16.083	1.62	22.08	1.08
4.167	1.44	10.167	4.14	16.167	1.62	22.17	1.08
4.250	1.44	10.250	4.14	16.250	1.62	22.25	1.08
4.333	1.44	10.333	4.14	16.333	1.62	22.33	1.08
4.417	1.44	10.417	4.14	16.417	1.62	22.42	1.08
4.500	1.44	10.500	4.14	16.500	1.62	22.50	1.08
4.583	1.44	10.583	5.57	16.583	1.62	22.58	1.08
4.667	1.44	10.667	5.57	16.667	1.62	22.67	1.08
4.750	1.44	10.750	5.57	16.750	1.62	22.75	1.08
4.833	1.44	10.833	5.57	16.833	1.62	22.83	1.08
4.917	1.44	10.917	5.57	16.917	1.62	22.92	1.08
5.000	1.44	11.000	5.57	17.000	1.62	23.00	1.08
5.083	1.44	11.083	8.63	17.083	1.62	23.08	1.08
5.167	1.44	11.167	8.63	17.167	1.62	23.17	1.08
5.250	1.44	11.250	8.63	17.250	1.62	23.25	1.08
5.333	1.44	11.333	8.63	17.333	1.62	23.33	1.08
5.417	1.44	11.417	8.63	17.417	1.62	23.42	1.08
5.500	1.44	11.500	8.63	17.500	1.62	23.50	1.08
5.583	1.44	11.583	68.32	17.583	1.62	23.58	1.08
5.667	1.44	11.667	68.32	17.667	1.62	23.67	1.08
5.750	1.44	11.750	68.32	17.750	1.62	23.75	1.08
5.833	1.44	11.833	68.32	17.833	1.62	23.83	1.08
5.917	1.44	11.917	68.32	17.917	1.62	23.92	1.08
6.000	1.44	12.000	68.32	18.000	1.62	24.00	1.08

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.193 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 28.352
TOTAL RAINFALL (mm)= 89.900
RUNOFF COEFFICIENT = 0.315

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

CALIB			
NASHYD (0007)	Area (ha)=	1.20	Curve Number (CN)= 72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.01	6.083	1.80	12.083	12.95	18.08	1.62
0.167	1.01	6.167	1.80	12.167	12.95	18.17	1.62
0.250	1.01	6.250	1.80	12.250	12.95	18.25	1.62
0.333	0.97	6.333	1.80	12.333	12.95	18.33	1.62
0.417	0.97	6.417	1.80	12.417	12.95	18.42	1.62
0.500	0.97	6.500	1.80	12.500	12.95	18.50	1.62
0.583	1.01	6.583	1.80	12.583	6.65	18.58	1.62
0.667	1.01	6.667	1.80	12.667	6.65	18.67	1.62
0.750	1.01	6.750	1.80	12.750	6.65	18.75	1.62
0.833	0.97	6.833	1.80	12.833	6.65	18.83	1.62
0.917	0.97	6.917	1.80	12.917	6.65	18.92	1.62
1.000	0.97	7.000	1.80	13.000	6.65	19.00	1.62
1.083	1.01	7.083	1.80	13.083	4.32	19.08	1.62
1.167	1.01	7.167	1.80	13.167	4.32	19.17	1.62
1.250	1.01	7.250	1.80	13.250	4.32	19.25	1.62
1.333	0.97	7.333	1.80	13.333	4.32	19.33	1.62
1.417	0.97	7.417	1.80	13.417	4.32	19.42	1.62
1.500	0.97	7.500	1.80	13.500	4.32	19.50	1.62
1.583	1.01	7.583	1.80	13.583	4.32	19.58	1.62
1.667	1.01	7.667	1.80	13.667	4.32	19.67	1.62
1.750	1.01	7.750	1.80	13.750	4.32	19.75	1.62
1.833	0.97	7.833	1.80	13.833	4.32	19.83	1.62
1.917	0.97	7.917	1.80	13.917	4.32	19.92	1.62
2.000	0.97	8.000	1.80	14.000	4.32	20.00	1.62
2.083	1.19	8.083	2.45	14.083	2.70	20.08	1.08
2.167	1.19	8.167	2.45	14.167	2.70	20.17	1.08
2.250	1.19	8.250	2.45	14.250	2.70	20.25	1.08
2.333	1.15	8.333	2.41	14.333	2.70	20.33	1.08
2.417	1.15	8.417	2.41	14.417	2.70	20.42	1.08
2.500	1.15	8.500	2.41	14.500	2.70	20.50	1.08
2.583	1.19	8.583	2.45	14.583	2.70	20.58	1.08
2.667	1.19	8.667	2.45	14.667	2.70	20.67	1.08
2.750	1.19	8.750	2.45	14.750	2.70	20.75	1.08
2.833	1.15	8.833	2.41	14.833	2.70	20.83	1.08
2.917	1.15	8.917	2.41	14.917	2.70	20.92	1.08
3.000	1.15	9.000	2.41	15.000	2.70	21.00	1.08
3.083	1.19	9.083	2.88	15.083	2.70	21.08	1.08
3.167	1.19	9.167	2.88	15.167	2.70	21.17	1.08
3.250	1.19	9.250	2.88	15.250	2.70	21.25	1.08
3.333	1.15	9.333	2.88	15.333	2.70	21.33	1.08
3.417	1.15	9.417	2.88	15.417	2.70	21.42	1.08
3.500	1.15	9.500	2.88	15.500	2.70	21.50	1.08
3.583	1.19	9.583	3.24	15.583	2.70	21.58	1.08
3.667	1.19	9.667	3.24	15.667	2.70	21.67	1.08
3.750	1.19	9.750	3.24	15.750	2.70	21.75	1.08
3.833	1.15	9.833	3.24	15.833	2.70	21.83	1.08
3.917	1.15	9.917	3.24	15.917	2.70	21.92	1.08
4.000	1.15	10.000	3.24	16.000	2.70	22.00	1.08
4.083	1.44	10.083	4.14	16.083	1.62	22.08	1.08
4.167	1.44	10.167	4.14	16.167	1.62	22.17	1.08
4.250	1.44	10.250	4.14	16.250	1.62	22.25	1.08
4.333	1.44	10.333	4.14	16.333	1.62	22.33	1.08
4.417	1.44	10.417	4.14	16.417	1.62	22.42	1.08
4.500	1.44	10.500	4.14	16.500	1.62	22.50	1.08
4.583	1.44	10.583	5.57	16.583	1.62	22.58	1.08
4.667	1.44	10.667	5.57	16.667	1.62	22.67	1.08
4.750	1.44	10.750	5.57	16.750	1.62	22.75	1.08
4.833	1.44	10.833	5.57	16.833	1.62	22.83	1.08
4.917	1.44	10.917	5.57	16.917	1.62	22.92	1.08
5.000	1.44	11.000	5.57	17.000	1.62	23.00	1.08
5.083	1.44	11.083	8.63	17.083	1.62	23.08	1.08
5.167	1.44	11.167	8.63	17.167	1.62	23.17	1.08
5.250	1.44	11.250	8.63	17.250	1.62	23.25	1.08
5.333	1.44	11.333	8.63	17.333	1.62	23.33	1.08
5.417	1.44	11.417	8.63	17.417	1.62	23.42	1.08
5.500	1.44	11.500	8.63	17.500	1.62	23.50	1.08
5.583	1.44	11.583	68.32	17.583	1.62	23.58	1.08
5.667	1.44	11.667	68.32	17.667	1.62	23.67	1.08
5.750	1.44	11.750	68.32	17.750	1.62	23.75	1.08
5.833	1.44	11.833	68.32	17.833	1.62	23.83	1.08
5.917	1.44	11.917	68.32	17.917	1.62	23.92	1.08
6.000	1.44	12.000	68.32	18.000	1.62	24.00	1.08

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.101 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 39.168
TOTAL RAINFALL (mm)= 89.900
RUNOFF COEFFICIENT = 0.436

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

CALIB			
STANDHYD (0002)	Area (ha)=	2.65	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00	Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.01	6.083	1.80	12.083	12.95	18.08	1.62
0.167	1.01	6.167	1.80	12.167	12.95	18.17	1.62
0.250	1.01	6.250	1.80	12.250	12.95	18.25	1.62
0.333	0.97	6.333	1.80	12.333	12.95	18.33	1.62
0.417	0.97	6.417	1.80	12.417	12.95	18.42	1.62
0.500	0.97	6.500	1.80	12.500	12.95	18.50	1.62
0.583	1.01	6.583	1.80	12.583	6.65	18.58	1.62
0.667	1.01	6.667	1.80	12.667	6.65	18.67	1.62
0.750	1.01	6.750	1.80	12.750	6.65	18.75	1.62
0.833	0.97	6.833	1.80	12.833	6.65	18.83	1.62
0.917	0.97	6.917	1.80	12.917	6.65	18.92	1.62
1.000	0.97	7.000	1.80	13.000	6.65	19.00	1.62
1.083	1.01	7.083	1.80	13.083	4.32	19.08	1.62

1.167	1.01	7.167	1.80	13.167	4.32	19.17	1.62
1.250	1.01	7.250	1.80	13.250	4.32	19.25	1.62
1.333	0.97	7.333	1.80	13.333	4.32	19.33	1.62
1.417	0.97	7.417	1.80	13.417	4.32	19.42	1.62
1.500	0.97	7.500	1.80	13.500	4.32	19.50	1.62
1.583	1.01	7.583	1.80	13.583	4.32	19.58	1.62
1.667	1.01	7.667	1.80	13.667	4.32	19.67	1.62
1.750	1.01	7.750	1.80	13.750	4.32	19.75	1.62
1.833	0.97	7.833	1.80	13.833	4.32	19.83	1.62
1.917	0.97	7.917	1.80	13.917	4.32	19.92	1.62
2.000	0.97	8.000	1.80	14.000	4.32	20.00	1.62
2.083	1.19	8.083	2.45	14.083	2.70	20.08	1.08
2.167	1.19	8.167	2.45	14.167	2.70	20.17	1.08
2.250	1.19	8.250	2.45	14.250	2.70	20.25	1.08
2.333	1.15	8.333	2.41	14.333	2.70	20.33	1.08
2.417	1.15	8.417	2.41	14.417	2.70	20.42	1.08
2.500	1.15	8.500	2.41	14.500	2.70	20.50	1.08
2.583	1.19	8.583	2.45	14.583	2.70	20.58	1.08
2.667	1.19	8.667	2.45	14.667	2.70	20.67	1.08
2.750	1.19	8.750	2.45	14.750	2.70	20.75	1.08
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2.917	1.15	8.917	2.41	14.917	2.70	20.92	1.08
3.000	1.15	9.000	2.41	15.000	2.70	21.00	1.08
3.083	1.19	9.083	2.88	15.083	2.70	21.08	1.08
3.167	1.19	9.167	2.88	15.167	2.70	21.17	1.08
3.250	1.19	9.250	2.88	15.250	2.70	21.25	1.08
3.333	1.15	9.333	2.88	15.333	2.70	21.33	1.08
3.417	1.15	9.417	2.88	15.417	2.70	21.42	1.08
3.500	1.15	9.500	2.88	15.500	2.70	21.50	1.08
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3.833	1.15	9.833	3.24	15.833	2.70	21.83	1.08
3.917	1.15	9.917	3.24	15.917	2.70	21.92	1.08
4.000	1.15	10.000	3.24	16.000	2.70	22.00	1.08
4.083	1.44	10.083	4.14	16.083	1.62	22.08	1.08
4.167	1.44	10.167	4.14	16.167	1.62	22.17	1.08
4.250	1.44	10.250	4.14	16.250	1.62	22.25	1.08
4.333	1.44	10.333	4.14	16.333	1.62	22.33	1.08
4.417	1.44	10.417	4.14	16.417	1.62	22.42	1.08
4.500	1.44	10.500	4.14	16.500	1.62	22.50	1.08
4.583	1.44	10.583	5.57	16.583	1.62	22.58	1.08
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4.833	1.44	10.833	5.57	16.833	1.62	22.83	1.08
4.917	1.44	10.917	5.57	16.917	1.62	22.92	1.08
5.000	1.44	11.000	5.57	17.000	1.62	23.00	1.08
5.083	1.44	11.083	8.63	17.083	1.62	23.08	1.08
5.167	1.44	11.167	8.63	17.167	1.62	23.17	1.08
5.250	1.44	11.250	8.63	17.250	1.62	23.25	1.08
5.333	1.44	11.333	8.63	17.333	1.62	23.33	1.08
5.417	1.44	11.417	8.63	17.417	1.62	23.42	1.08
5.500	1.44	11.500	8.63	17.500	1.62	23.50	1.08
5.583	1.44	11.583	68.32	17.583	1.62	23.58	1.08
5.667	1.44	11.667	68.32	17.667	1.62	23.67	1.08
5.750	1.44	11.750	68.32	17.750	1.62	23.75	1.08
5.833	1.44	11.833	68.32	17.833	1.62	23.83	1.08
5.917	1.44	11.917	68.32	17.917	1.62	23.92	1.08
6.000	1.44	12.000	68.32	18.000	1.62	24.00	1.08

Max.Eff.Inten.(mm/hr)=		68.32	********	
over (min)		5.00	10.00	
Storage Coeff. (min)=		3.53 (ii)	6.26 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.26	0.15	
				TOTALS
PEAK FLOW	(cms)=	0.47	0.03	0.502 (iii)
TIME TO PEAK	(hrs)=	12.00	12.00	12.00
RUNOFF VOLUME	(mm)=	88.90	85.91	88.72
TOTAL RAINFALL	(mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT	=	0.99	0.96	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0004)	Area (ha)= 3.23

|ID= 1 DT= 5.0 min | Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.01	6.083	1.80	12.083	12.95	18.08	1.62
0.167	1.01	6.167	1.80	12.167	12.95	18.17	1.62
0.250	1.01	6.250	1.80	12.250	12.95	18.25	1.62
0.333	0.97	6.333	1.80	12.333	12.95	18.33	1.62
0.417	0.97	6.417	1.80	12.417	12.95	18.42	1.62
0.500	0.97	6.500	1.80	12.500	12.95	18.50	1.62
0.583	1.01	6.583	1.80	12.583	6.65	18.58	1.62
0.667	1.01	6.667	1.80	12.667	6.65	18.67	1.62
0.750	1.01	6.750	1.80	12.750	6.65	18.75	1.62
0.833	0.97	6.833	1.80	12.833	6.65	18.83	1.62
0.917	0.97	6.917	1.80	12.917	6.65	18.92	1.62
1.000	0.97	7.000	1.80	13.000	6.65	19.00	1.62
1.083	1.01	7.083	1.80	13.083	4.32	19.08	1.62
1.167	1.01	7.167	1.80	13.167	4.32	19.17	1.62
1.250	1.01	7.250	1.80	13.250	4.32	19.25	1.62
1.333	0.97	7.333	1.80	13.333	4.32	19.33	1.62
1.417	0.97	7.417	1.80	13.417	4.32	19.42	1.62
1.500	0.97	7.500	1.80	13.500	4.32	19.50	1.62
1.583	1.01	7.583	1.80	13.583	4.32	19.58	1.62
1.667	1.01	7.667	1.80	13.667	4.32	19.67	1.62
1.750	1.01	7.750	1.80	13.750	4.32	19.75	1.62
1.833	0.97	7.833	1.80	13.833	4.32	19.83	1.62
1.917	0.97	7.917	1.80	13.917	4.32	19.92	1.62
2.000	0.97	8.000	1.80	14.000	4.32	20.00	1.62
2.083	1.19	8.083	2.45	14.083	2.70	20.08	1.08
2.167	1.19	8.167	2.45	14.167	2.70	20.17	1.08
2.250	1.19	8.250	2.45	14.250	2.70	20.25	1.08
2.333	1.15	8.333	2.41	14.333	2.70	20.33	1.08
2.417	1.15	8.417	2.41	14.417	2.70	20.42	1.08
2.500	1.15	8.500	2.41	14.500	2.70	20.50	1.08
2.583	1.19	8.583	2.45	14.583	2.70	20.58	1.08
2.667	1.19	8.667	2.45	14.667	2.70	20.67	1.08
2.750	1.19	8.750	2.45	14.750	2.70	20.75	1.08
2.833	1.15	8.833	2.41	14.833	2.70	20.83	1.08
2.917	1.15	8.917	2.41	14.917	2.70	20.92	1.08
3.000	1.15	9.000	2.41	15.000	2.70	21.00	1.08
3.083	1.19	9.083	2.88	15.083	2.70	21.08	1.08
3.167	1.19	9.167	2.88	15.167	2.70	21.17	1.08
3.250	1.19	9.250	2.88	15.250	2.70	21.25	1.08
3.333	1.15	9.333	2.88	15.333	2.70	21.33	1.08
3.417	1.15	9.417	2.88	15.417	2.70	21.42	1.08
3.500	1.15	9.500	2.88	15.500	2.70	21.50	1.08
3.583	1.19	9.583	3.24	15.583	2.70	21.58	1.08
3.667	1.19	9.667	3.24	15.667	2.70	21.67	1.08
3.750	1.19	9.750	3.24	15.750	2.70	21.75	1.08
3.833	1.15	9.833	3.24	15.833	2.70	21.83	1.08
3.917	1.15	9.917	3.24	15.917	2.70	21.92	1.08
4.000	1.15	10.000	3.24	16.000	2.70	22.00	1.08
4.083	1.44	10.083	4.14	16.083	1.62	22.08	1.08
4.167	1.44	10.167	4.14	16.167	1.62	22.17	1.08
4.250	1.44	10.250	4.14	16.250	1.62	22.25	1.08
4.333	1.44	10.333	4.14	16.333	1.62	22.33	1.08
4.417	1.44	10.417	4.14	16.417	1.62	22.42	1.08
4.500	1.44	10.500	4.14	16.500	1.62	22.50	1.08
4.583	1.44	10.583	5.57	16.583	1.62	22.58	1.08
4.667	1.44	10.667	5.57	16.667	1.62	22.67	1.08
4.750	1.44	10.750	5.57	16.750	1.62	22.75	1.08
4.833	1.44	10.833	5.57	16.833	1.62	22.83	1.08
4.917	1.44	10.917	5.57	16.917	1.62	22.92	1.08
5.000	1.44	11.000	5.57	17.000	1.62	23.00	1.08
5.083	1.44	11.083	8.63	17.083	1.62	23.08	1.08
5.167	1.44	11.167	8.63	17.167	1.62	23.17	1.08
5.250	1.44	11.250	8.63	17.250	1.62	23.25	1.08
5.333	1.44	11.333	8.63	17.333	1.62	23.33	1.08
5.417	1.44	11.417	8.63	17.417	1.62	23.42	1.08
5.500	1.44	11.500	8.63	17.500	1.62	23.50	1.08
5.583	1.44	11.583	68.32	17.583	1.62	23.58	1.08
5.667	1.44	11.667	68.32	17.667	1.62	23.67	1.08
5.750	1.44	11.750	68.32	17.750	1.62	23.75	1.08

5.833	1.44	11.833	68.32	17.833	1.62	23.83	1.08
5.917	1.44	11.917	68.32	17.917	1.62	23.92	1.08
6.000	1.44	12.000	68.32	18.000	1.62	24.00	1.08

Max.Eff.Inten.(mm/hr)=	68.32	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.74 (ii)	6.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.14	
			TOTALS
PEAK FLOW (cms)=	0.58	0.04	0.612 (iii)
TIME TO PEAK (hrs)=	12.00	12.00	12.00
RUNOFF VOLUME (mm)=	88.90	85.91	88.72
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.99	0.96	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF				
IN= 2---> OUT= 1					
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.1360	0.2300	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	0.612	12.00	88.72
OUTFLOW: ID= 1 (0005)	3.230	0.089	12.58	88.59

PEAK FLOW REDUCTION [Qout/Qin](%)= 14.46
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.1499

CALIB			
STANDHYD (0010)	Area (ha)= 0.92		
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.46	0.46	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	78.32	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.01	6.083	1.80	12.083	12.95	18.08	1.62
0.167	1.01	6.167	1.80	12.167	12.95	18.17	1.62
0.250	1.01	6.250	1.80	12.250	12.95	18.25	1.62
0.333	0.97	6.333	1.80	12.333	12.95	18.33	1.62
0.417	0.97	6.417	1.80	12.417	12.95	18.42	1.62
0.500	0.97	6.500	1.80	12.500	12.95	18.50	1.62
0.583	1.01	6.583	1.80	12.583	6.65	18.58	1.62
0.667	1.01	6.667	1.80	12.667	6.65	18.67	1.62
0.750	1.01	6.750	1.80	12.750	6.65	18.75	1.62
0.833	0.97	6.833	1.80	12.833	6.65	18.83	1.62
0.917	0.97	6.917	1.80	12.917	6.65	18.92	1.62
1.000	0.97	7.000	1.80	13.000	6.65	19.00	1.62
1.083	1.01	7.083	1.80	13.083	4.32	19.08	1.62
1.167	1.01	7.167	1.80	13.167	4.32	19.17	1.62
1.250	1.01	7.250	1.80	13.250	4.32	19.25	1.62
1.333	0.97	7.333	1.80	13.333	4.32	19.33	1.62
1.417	0.97	7.417	1.80	13.417	4.32	19.42	1.62
1.500	0.97	7.500	1.80	13.500	4.32	19.50	1.62
1.583	1.01	7.583	1.80	13.583	4.32	19.58	1.62
1.667	1.01	7.667	1.80	13.667	4.32	19.67	1.62
1.750	1.01	7.750	1.80	13.750	4.32	19.75	1.62
1.833	0.97	7.833	1.80	13.833	4.32	19.83	1.62
1.917	0.97	7.917	1.80	13.917	4.32	19.92	1.62
2.000	0.97	8.000	1.80	14.000	4.32	20.00	1.62
2.083	1.19	8.083	2.45	14.083	2.70	20.08	1.08
2.167	1.19	8.167	2.45	14.167	2.70	20.17	1.08
2.250	1.19	8.250	2.45	14.250	2.70	20.25	1.08
2.333	1.15	8.333	2.41	14.333	2.70	20.33	1.08
2.417	1.15	8.417	2.41	14.417	2.70	20.42	1.08
2.500	1.15	8.500	2.41	14.500	2.70	20.50	1.08
2.583	1.19	8.583	2.45	14.583	2.70	20.58	1.08
2.667	1.19	8.667	2.45	14.667	2.70	20.67	1.08
2.750	1.19	8.750	2.45	14.750	2.70	20.75	1.08
2.833	1.15	8.833	2.41	14.833	2.70	20.83	1.08
2.917	1.15	8.917	2.41	14.917	2.70	20.92	1.08
3.000	1.15	9.000	2.41	15.000	2.70	21.00	1.08
3.083	1.19	9.083	2.88	15.083	2.70	21.08	1.08
3.167	1.19	9.167	2.88	15.167	2.70	21.17	1.08
3.250	1.19	9.250	2.88	15.250	2.70	21.25	1.08
3.333	1.15	9.333	2.88	15.333	2.70	21.33	1.08
3.417	1.15	9.417	2.88	15.417	2.70	21.42	1.08
3.500	1.15	9.500	2.88	15.500	2.70	21.50	1.08
3.583	1.19	9.583	3.24	15.583	2.70	21.58	1.08
3.667	1.19	9.667	3.24	15.667	2.70	21.67	1.08
3.750	1.19	9.750	3.24	15.750	2.70	21.75	1.08
3.833	1.15	9.833	3.24	15.833	2.70	21.83	1.08
3.917	1.15	9.917	3.24	15.917	2.70	21.92	1.08
4.000	1.15	10.000	3.24	16.000	2.70	22.00	1.08
4.083	1.44	10.083	4.14	16.083	1.62	22.08	1.08
4.167	1.44	10.167	4.14	16.167	1.62	22.17	1.08
4.250	1.44	10.250	4.14	16.250	1.62	22.25	1.08
4.333	1.44	10.333	4.14	16.333	1.62	22.33	1.08
4.417	1.44	10.417	4.14	16.417	1.62	22.42	1.08
4.500	1.44	10.500	4.14	16.500	1.62	22.50	1.08
4.583	1.44	10.583	5.57	16.583	1.62	22.58	1.08
4.667	1.44	10.667	5.57	16.667	1.62	22.67	1.08
4.750	1.44	10.750	5.57	16.750	1.62	22.75	1.08
4.833	1.44	10.833	5.57	16.833	1.62	22.83	1.08
4.917	1.44	10.917	5.57	16.917	1.62	22.92	1.08
5.000	1.44	11.000	5.57	17.000	1.62	23.00	1.08
5.083	1.44	11.083	8.63	17.083	1.62	23.08	1.08
5.167	1.44	11.167	8.63	17.167	1.62	23.17	1.08
5.250	1.44	11.250	8.63	17.250	1.62	23.25	1.08
5.333	1.44	11.333	8.63	17.333	1.62	23.33	1.08
5.417	1.44	11.417	8.63	17.417	1.62	23.42	1.08
5.500	1.44	11.500	8.63	17.500	1.62	23.50	1.08
5.583	1.44	11.583	68.32	17.583	1.62	23.58	1.08
5.667	1.44	11.667	68.32	17.667	1.62	23.67	1.08
5.750	1.44	11.750	68.32	17.750	1.62	23.75	1.08
5.833	1.44	11.833	68.32	17.833	1.62	23.83	1.08
5.917	1.44	11.917	68.32	17.917	1.62	23.92	1.08
6.000	1.44	12.000	68.32	18.000	1.62	24.00	1.08

Max.Eff.Inten.(mm/hr)=	68.32	35.02	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.57 (ii)	13.31 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.08	
			TOTALS
PEAK FLOW (cms)=	0.09	0.03	0.121 (iii)
TIME TO PEAK (hrs)=	12.00	12.08	12.00
RUNOFF VOLUME (mm)=	88.90	38.59	63.74
TOTAL RAINFALL (mm)=	89.90	89.90	89.90
RUNOFF COEFFICIENT =	0.99	0.43	0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0006)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	0.92	0.121	12.00	63.74
+ ID2= 2 (0002):	2.65	0.502	12.00	88.72
ID = 3 (0006):	3.57	0.624	12.00	82.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK      R.V.
-------------------           (ha)    (cms)    (hrs)      (mm)
       ID1= 3 (  0006):     3.57   0.624    12.00    82.28
     + ID2= 2 (  0005):     3.23   0.089    12.58    88.59
       ========================================================
       ID = 1 (  0006):     6.80   0.701    12.00    85.28

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0720      0.3590
                          0.0060     0.0320   |   0.1000      0.4070
                          0.0110     0.0650   |   0.1370      0.4570
                          0.0140     0.1010   |   0.1810      0.5090
                          0.0170     0.1400   |   0.2300      0.5620
                          0.0270     0.1800   |   0.5740      0.6180
                          0.0420     0.2220   |   1.3000      0.6780
                          0.0520     0.2660   |   2.4830      0.7440
                          0.0600     0.3120   |   0.0000      0.0000

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)    6.800     0.701     12.00      85.28
   OUTFLOW: ID= 1 (  0003)    6.800     0.060     17.83      85.08

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.62
                  TIME SHIFT OF PEAK FLOW         (min)=350.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3135

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
-------------------           (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0003):     6.80   0.060    17.83    85.08
     + ID2= 2 (  0007):     1.20   0.101    12.00    39.17
       ========================================================
       ID = 3 (  0008):     8.00   0.134    12.08    78.19

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\60980d1d-1b
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\60980d1d-1b


DATE: 01/16/2023                          TIME: 06:10:51

USER:


COMMENTS: _____


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  ************************************************
  ** SIMULATION : SCS MTO ii 24 Hour 25yr Barri **
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  ************************************************

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| MASS STORM       |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              4d115e28-8689-44fe-a23c-8ba2dad70c48\ccbcfbb2
| Ptotal=107.50 mm |    Comments: 24 Hour SCSii Storm Based on MTO Design
-------------------

                     Duration of storm    = 24.00 hrs
                     Mass curve time step = 15.00 min

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.00    1.20 |  6.00    2.15 | 12.00   15.48 | 18.00    1.93
          0.25    1.16 |  6.25    2.15 | 12.25   15.48 | 18.25    1.94
          0.50    1.20 |  6.50    2.15 | 12.50    7.95 | 18.50    1.93
          0.75    1.16 |  6.75    2.15 | 12.75    7.96 | 18.75    1.94
          1.00    1.20 |  7.00    2.15 | 13.00    5.16 | 19.00    1.93
          1.25    1.16 |  7.25    2.15 | 13.25    5.16 | 19.25    1.94
          1.50    1.20 |  7.50    2.15 | 13.50    5.16 | 19.50    1.93
          1.75    1.16 |  7.75    2.15 | 13.75    5.16 | 19.75    1.94
          2.00    1.42 |  8.00    2.92 | 14.00    3.22 | 20.00    1.29
          2.25    1.38 |  8.25    2.88 | 14.25    3.22 | 20.25    1.29
          2.50    1.42 |  8.50    2.92 | 14.50    3.22 | 20.50    1.29
          2.75    1.38 |  8.75    2.88 | 14.75    3.23 | 20.75    1.29
          3.00    1.42 |  9.00    3.44 | 15.00    3.22 | 21.00    1.29
          3.25    1.38 |  9.25    3.44 | 15.25    3.22 | 21.25    1.29
          3.50    1.42 |  9.50    3.87 | 15.50    3.22 | 21.50    1.29
          3.75    1.38 |  9.75    3.87 | 15.75    3.22 | 21.75    1.29
          4.00    1.72 | 10.00    4.95 | 16.00    1.94 | 22.00    1.29
          4.25    1.72 | 10.25    4.95 | 16.25    1.93 | 22.25    1.29
          4.50    1.72 | 10.50    6.67 | 16.50    1.93 | 22.50    1.29
          4.75    1.72 | 10.75    6.66 | 16.75    1.94 | 22.75    1.29
          5.00    1.72 | 11.00   10.32 | 17.00    1.93 | 23.00    1.29
          5.25    1.72 | 11.25   10.32 | 17.25    1.94 | 23.25    1.29
          5.50    1.72 | 11.50   81.70 | 17.50    1.93 | 23.50    1.29
          5.75    1.72 | 11.75   81.70 | 17.75    1.94 | 23.75    1.29

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    1.20 | 6.083    2.15 |12.083   15.49 | 18.08    1.94
         0.167    1.20 | 6.167    2.15 |12.167   15.48 | 18.17    1.93
         0.250    1.20 | 6.250    2.15 |12.250   15.48 | 18.25    1.93
         0.333    1.16 | 6.333    2.15 |12.333   15.48 | 18.33    1.94
         0.417    1.16 | 6.417    2.15 |12.417   15.48 | 18.42    1.94
         0.500    1.16 | 6.500    2.15 |12.500   15.48 | 18.50    1.94
         0.583    1.20 | 6.583    2.15 |12.583    7.96 | 18.58    1.94
         0.667    1.20 | 6.667    2.15 |12.667    7.95 | 18.67    1.93
         0.750    1.20 | 6.750    2.15 |12.750    7.95 | 18.75    1.93
         0.833    1.16 | 6.833    2.15 |12.833    7.95 | 18.83    1.94
         0.917    1.16 | 6.917    2.15 |12.917    7.96 | 18.92    1.94
         1.000    1.16 | 7.000    2.15 |13.000    7.96 | 19.00    1.94
         1.083    1.20 | 7.083    2.15 |13.083    5.16 | 19.08    1.94
         1.167    1.20 | 7.167    2.15 |13.167    5.16 | 19.17    1.93
         1.250    1.20 | 7.250    2.15 |13.250    5.16 | 19.25    1.93
         1.333    1.16 | 7.333    2.15 |13.333    5.16 | 19.33    1.94
         1.417    1.16 | 7.417    2.15 |13.417    5.16 | 19.42    1.94
         1.500    1.16 | 7.500    2.15 |13.500    5.16 | 19.50    1.94
         1.583    1.20 | 7.583    2.15 |13.583    5.16 | 19.58    1.93
         1.667    1.20 | 7.667    2.15 |13.667    5.16 | 19.67    1.93
         1.750    1.20 | 7.750    2.15 |13.750    5.16 | 19.75    1.94
         1.833    1.16 | 7.833    2.15 |13.833    5.16 | 19.83    1.94
         1.917    1.16 | 7.917    2.15 |13.917    5.16 | 19.92    1.94
         2.000    1.16 | 8.000    2.15 |14.000    5.16 | 20.00    1.93
         2.083    1.42 | 8.083    2.92 |14.083    3.23 | 20.08    1.29
         2.167    1.42 | 8.167    2.92 |14.167    3.22 | 20.17    1.29
         2.250    1.42 | 8.250    2.92 |14.250    3.22 | 20.25    1.29
         2.333    1.38 | 8.333    2.88 |14.333    3.22 | 20.33    1.29
         2.417    1.38 | 8.417    2.88 |14.417    3.22 | 20.42    1.29
         2.500    1.38 | 8.500    2.88 |14.500    3.22 | 20.50    1.29
         2.583    1.42 | 8.583    2.92 |14.583    3.22 | 20.58    1.29
         2.667    1.42 | 8.667    2.92 |14.667    3.22 | 20.67    1.29
         2.750    1.42 | 8.750    2.92 |14.750    3.22 | 20.75    1.29
```

2.833	1.38	8.833	2.88	14.833	3.23	20.83	1.29
2.917	1.38	8.917	2.88	14.917	3.23	20.92	1.29
3.000	1.38	9.000	2.88	15.000	3.23	21.00	1.29
3.083	1.42	9.083	3.44	15.083	3.22	21.08	1.29
3.167	1.42	9.167	3.44	15.167	3.22	21.17	1.29
3.250	1.42	9.250	3.44	15.250	3.22	21.25	1.29
3.333	1.38	9.333	3.44	15.333	3.22	21.33	1.29
3.417	1.38	9.417	3.44	15.417	3.22	21.42	1.29
3.500	1.38	9.500	3.44	15.500	3.22	21.50	1.29
3.583	1.42	9.583	3.87	15.583	3.22	21.58	1.29
3.667	1.42	9.667	3.87	15.667	3.22	21.67	1.29
3.750	1.42	9.750	3.87	15.750	3.22	21.75	1.29
3.833	1.38	9.833	3.87	15.833	3.22	21.83	1.29
3.917	1.38	9.917	3.87	15.917	3.22	21.92	1.29
4.000	1.38	10.000	3.87	16.000	3.22	22.00	1.29
4.083	1.72	10.083	4.94	16.083	1.94	22.08	1.29
4.167	1.72	10.167	4.95	16.167	1.94	22.17	1.29
4.250	1.72	10.250	4.95	16.250	1.94	22.25	1.29
4.333	1.72	10.333	4.94	16.333	1.94	22.33	1.29
4.417	1.72	10.417	4.95	16.417	1.93	22.42	1.29
4.500	1.72	10.500	4.95	16.500	1.93	22.50	1.29
4.583	1.72	10.583	6.66	16.583	1.94	22.58	1.29
4.667	1.72	10.667	6.67	16.667	1.93	22.67	1.29
4.750	1.72	10.750	6.67	16.750	1.93	22.75	1.29
4.833	1.72	10.833	6.66	16.833	1.94	22.83	1.29
4.917	1.72	10.917	6.66	16.917	1.94	22.92	1.29
5.000	1.72	11.000	6.66	17.000	1.94	23.00	1.29
5.083	1.72	11.083	10.32	17.083	1.94	23.08	1.29
5.167	1.72	11.167	10.32	17.167	1.93	23.17	1.29
5.250	1.72	11.250	10.32	17.250	1.93	23.25	1.29
5.333	1.72	11.333	10.32	17.333	1.94	23.33	1.29
5.417	1.72	11.417	10.32	17.417	1.94	23.42	1.29
5.500	1.72	11.500	10.32	17.500	1.94	23.50	1.29
5.583	1.72	11.583	81.69	17.583	1.94	23.58	1.29
5.667	1.72	11.667	81.70	17.667	1.93	23.67	1.29
5.750	1.72	11.750	81.70	17.750	1.93	23.75	1.29
5.833	1.72	11.833	81.70	17.833	1.94	23.83	1.29
5.917	1.72	11.917	81.70	17.917	1.94	23.92	1.29
6.000	1.72	12.000	81.70	18.000	1.94	24.00	1.29

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.266 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 38.649
TOTAL RAINFALL (mm)= 107.500
RUNOFF COEFFICIENT = 0.360

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

CALIB			
NASHYD (0007)	Area (ha)=	1.20	Curve Number (CN)= 72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.20	6.083	2.15	12.083	15.49	18.08	1.94
0.167	1.20	6.167	2.15	12.167	15.48	18.17	1.93
0.250	1.20	6.250	2.15	12.250	15.48	18.25	1.93
0.333	1.16	6.333	2.15	12.333	15.48	18.33	1.94
0.417	1.16	6.417	2.15	12.417	15.48	18.42	1.94
0.500	1.16	6.500	2.15	12.500	15.48	18.50	1.94
0.583	1.20	6.583	2.15	12.583	7.96	18.58	1.94
0.667	1.20	6.667	2.15	12.667	7.95	18.67	1.93
0.750	1.20	6.750	2.15	12.750	7.95	18.75	1.93
0.833	1.16	6.833	2.15	12.833	7.95	18.83	1.94
0.917	1.16	6.917	2.15	12.917	7.96	18.92	1.94
1.000	1.16	7.000	2.15	13.000	7.96	19.00	1.94
1.083	1.20	7.083	2.15	13.083	5.16	19.08	1.94
1.167	1.20	7.167	2.15	13.167	5.16	19.17	1.93
1.250	1.20	7.250	2.15	13.250	5.16	19.25	1.93
1.333	1.16	7.333	2.15	13.333	5.16	19.33	1.94
1.417	1.16	7.417	2.15	13.417	5.16	19.42	1.94
1.500	1.16	7.500	2.15	13.500	5.16	19.50	1.94
1.583	1.20	7.583	2.15	13.583	5.16	19.58	1.93
1.667	1.20	7.667	2.15	13.667	5.16	19.67	1.93
1.750	1.20	7.750	2.15	13.750	5.16	19.75	1.94
1.833	1.16	7.833	2.15	13.833	5.16	19.83	1.94
1.917	1.16	7.917	2.15	13.917	5.16	19.92	1.94
2.000	1.16	8.000	2.15	14.000	5.16	20.00	1.93
2.083	1.42	8.083	2.92	14.083	3.23	20.08	1.29
2.167	1.42	8.167	2.92	14.167	3.22	20.17	1.29
2.250	1.42	8.250	2.92	14.250	3.22	20.25	1.29
2.333	1.38	8.333	2.88	14.333	3.22	20.33	1.29
2.417	1.38	8.417	2.88	14.417	3.22	20.42	1.29
2.500	1.38	8.500	2.88	14.500	3.22	20.50	1.29
2.583	1.42	8.583	2.92	14.583	3.22	20.58	1.29
2.667	1.42	8.667	2.92	14.667	3.22	20.67	1.29
2.750	1.42	8.750	2.92	14.750	3.22	20.75	1.29
2.833	1.38	8.833	2.88	14.833	3.23	20.83	1.29
2.917	1.38	8.917	2.88	14.917	3.23	20.92	1.29
3.000	1.38	9.000	2.88	15.000	3.23	21.00	1.29
3.083	1.42	9.083	3.44	15.083	3.22	21.08	1.29
3.167	1.42	9.167	3.44	15.167	3.22	21.17	1.29
3.250	1.42	9.250	3.44	15.250	3.22	21.25	1.29
3.333	1.38	9.333	3.44	15.333	3.22	21.33	1.29
3.417	1.38	9.417	3.44	15.417	3.22	21.42	1.29
3.500	1.38	9.500	3.44	15.500	3.22	21.50	1.29
3.583	1.42	9.583	3.87	15.583	3.22	21.58	1.29
3.667	1.42	9.667	3.87	15.667	3.22	21.67	1.29
3.750	1.42	9.750	3.87	15.750	3.22	21.75	1.29
3.833	1.38	9.833	3.87	15.833	3.22	21.83	1.29
3.917	1.38	9.917	3.87	15.917	3.22	21.92	1.29
4.000	1.38	10.000	3.87	16.000	3.22	22.00	1.29
4.083	1.72	10.083	4.94	16.083	1.94	22.08	1.29
4.167	1.72	10.167	4.95	16.167	1.94	22.17	1.29
4.250	1.72	10.250	4.95	16.250	1.94	22.25	1.29
4.333	1.72	10.333	4.94	16.333	1.94	22.33	1.29
4.417	1.72	10.417	4.95	16.417	1.93	22.42	1.29
4.500	1.72	10.500	4.95	16.500	1.93	22.50	1.29
4.583	1.72	10.583	6.66	16.583	1.94	22.58	1.29
4.667	1.72	10.667	6.67	16.667	1.93	22.67	1.29
4.750	1.72	10.750	6.67	16.750	1.93	22.75	1.29
4.833	1.72	10.833	6.66	16.833	1.94	22.83	1.29
4.917	1.72	10.917	6.66	16.917	1.94	22.92	1.29
5.000	1.72	11.000	6.66	17.000	1.94	23.00	1.29
5.083	1.72	11.083	10.32	17.083	1.94	23.08	1.29
5.167	1.72	11.167	10.32	17.167	1.93	23.17	1.29
5.250	1.72	11.250	10.32	17.250	1.93	23.25	1.29
5.333	1.72	11.333	10.32	17.333	1.94	23.33	1.29
5.417	1.72	11.417	10.32	17.417	1.94	23.42	1.29
5.500	1.72	11.500	10.32	17.500	1.94	23.50	1.29
5.583	1.72	11.583	81.69	17.583	1.94	23.58	1.29
5.667	1.72	11.667	81.70	17.667	1.93	23.67	1.29
5.750	1.72	11.750	81.70	17.750	1.93	23.75	1.29
5.833	1.72	11.833	81.70	17.833	1.94	23.83	1.29
5.917	1.72	11.917	81.70	17.917	1.94	23.92	1.29
6.000	1.72	12.000	81.70	18.000	1.94	24.00	1.29

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.135 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 52.098
TOTAL RAINFALL (mm)= 107.500
RUNOFF COEFFICIENT = 0.485

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

CALIB			
STANDHYD (0002)	Area (ha)=	2.65	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00	Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.20	6.083	2.15	12.083	15.49	18.08	1.94
0.167	1.20	6.167	2.15	12.167	15.48	18.17	1.93
0.250	1.20	6.250	2.15	12.250	15.48	18.25	1.93

0.333	1.16	6.333	2.15	12.333	15.48	18.33	1.94
0.417	1.16	6.417	2.15	12.417	15.48	18.42	1.94
0.500	1.16	6.500	2.15	12.500	15.48	18.50	1.94
0.583	1.20	6.583	2.15	12.583	7.96	18.58	1.94
0.667	1.20	6.667	2.15	12.667	7.95	18.67	1.93
0.750	1.20	6.750	2.15	12.750	7.95	18.75	1.93
0.833	1.16	6.833	2.15	12.833	7.95	18.83	1.94
0.917	1.16	6.917	2.15	12.917	7.96	18.92	1.94
1.000	1.16	7.000	2.15	13.000	7.96	19.00	1.94
1.083	1.20	7.083	2.15	13.083	5.16	19.08	1.94
1.167	1.20	7.167	2.15	13.167	5.16	19.17	1.93
1.250	1.20	7.250	2.15	13.250	5.16	19.25	1.93
1.333	1.16	7.333	2.15	13.333	5.16	19.33	1.94
1.417	1.16	7.417	2.15	13.417	5.16	19.42	1.94
1.500	1.16	7.500	2.15	13.500	5.16	19.50	1.94
1.583	1.20	7.583	2.15	13.583	5.16	19.58	1.93
1.667	1.20	7.667	2.15	13.667	5.16	19.67	1.93
1.750	1.20	7.750	2.15	13.750	5.16	19.75	1.94
1.833	1.16	7.833	2.15	13.833	5.16	19.83	1.94
1.917	1.16	7.917	2.15	13.917	5.16	19.92	1.94
2.000	1.16	8.000	2.15	14.000	5.16	20.00	1.93
2.083	1.42	8.083	2.92	14.083	3.23	20.08	1.29
2.167	1.42	8.167	2.92	14.167	3.22	20.17	1.29
2.250	1.42	8.250	2.92	14.250	3.22	20.25	1.29
2.333	1.38	8.333	2.88	14.333	3.22	20.33	1.29
2.417	1.38	8.417	2.88	14.417	3.22	20.42	1.29
2.500	1.38	8.500	2.88	14.500	3.22	20.50	1.29
2.583	1.42	8.583	2.92	14.583	3.22	20.58	1.29
2.667	1.42	8.667	2.92	14.667	3.22	20.67	1.29
2.750	1.42	8.750	2.92	14.750	3.22	20.75	1.29
2.833	1.38	8.833	2.88	14.833	3.23	20.83	1.29
2.917	1.38	8.917	2.88	14.917	3.23	20.92	1.29
3.000	1.38	9.000	2.88	15.000	3.23	21.00	1.29
3.083	1.42	9.083	3.44	15.083	3.22	21.08	1.29
3.167	1.42	9.167	3.44	15.167	3.22	21.17	1.29
3.250	1.42	9.250	3.44	15.250	3.22	21.25	1.29
3.333	1.38	9.333	3.44	15.333	3.22	21.33	1.29
3.417	1.38	9.417	3.44	15.417	3.22	21.42	1.29
3.500	1.38	9.500	3.44	15.500	3.22	21.50	1.29
3.583	1.42	9.583	3.87	15.583	3.22	21.58	1.29
3.667	1.42	9.667	3.87	15.667	3.22	21.67	1.29
3.750	1.42	9.750	3.87	15.750	3.22	21.75	1.29
3.833	1.38	9.833	3.87	15.833	3.22	21.83	1.29
3.917	1.38	9.917	3.87	15.917	3.22	21.92	1.29
4.000	1.38	10.000	3.87	16.000	3.22	22.00	1.29
4.083	1.72	10.083	4.94	16.083	1.94	22.08	1.29
4.167	1.72	10.167	4.95	16.167	1.94	22.17	1.29
4.250	1.72	10.250	4.95	16.250	1.94	22.25	1.29
4.333	1.72	10.333	4.94	16.333	1.94	22.33	1.29
4.417	1.72	10.417	4.95	16.417	1.93	22.42	1.29
4.500	1.72	10.500	4.95	16.500	1.93	22.50	1.29
4.583	1.72	10.583	6.66	16.583	1.94	22.58	1.29
4.667	1.72	10.667	6.67	16.667	1.93	22.67	1.29
4.750	1.72	10.750	6.67	16.750	1.93	22.75	1.29
4.833	1.72	10.833	6.66	16.833	1.94	22.83	1.29
4.917	1.72	10.917	6.66	16.917	1.94	22.92	1.29
5.000	1.72	11.000	6.66	17.000	1.94	23.00	1.29
5.083	1.72	11.083	10.32	17.083	1.94	23.08	1.29
5.167	1.72	11.167	10.32	17.167	1.93	23.17	1.29
5.250	1.72	11.250	10.32	17.250	1.93	23.25	1.29
5.333	1.72	11.333	10.32	17.333	1.94	23.33	1.29
5.417	1.72	11.417	10.32	17.417	1.94	23.42	1.29
5.500	1.72	11.500	10.32	17.500	1.94	23.50	1.29
5.583	1.72	11.583	81.69	17.583	1.94	23.58	1.29
5.667	1.72	11.667	81.70	17.667	1.93	23.67	1.29
5.750	1.72	11.750	81.70	17.750	1.93	23.75	1.29
5.833	1.72	11.833	81.70	17.833	1.94	23.83	1.29
5.917	1.72	11.917	81.70	17.917	1.94	23.92	1.29
6.000	1.72	12.000	81.70	18.000	1.94	24.00	1.29

Max.Eff.Inten.(mm/hr)=	81.70	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.29 (ii)	5.83 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.15	
			TOTALS
PEAK FLOW (cms)=	0.57	0.04	0.601 (iii)
TIME TO PEAK (hrs)=	12.00	12.00	12.00
RUNOFF VOLUME (mm)=	106.50	103.49	106.32
TOTAL RAINFALL (mm)=	107.50	107.50	107.50
RUNOFF COEFFICIENT =	0.99	0.96	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0004)	Area (ha)=	3.23	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00	Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.20	6.083	2.15	12.083	15.49	18.08	1.94
0.167	1.20	6.167	2.15	12.167	15.48	18.17	1.93
0.250	1.20	6.250	2.15	12.250	15.48	18.25	1.93
0.333	1.16	6.333	2.15	12.333	15.48	18.33	1.94
0.417	1.16	6.417	2.15	12.417	15.48	18.42	1.94
0.500	1.16	6.500	2.15	12.500	15.48	18.50	1.94
0.583	1.20	6.583	2.15	12.583	7.96	18.58	1.94
0.667	1.20	6.667	2.15	12.667	7.95	18.67	1.93
0.750	1.20	6.750	2.15	12.750	7.95	18.75	1.93
0.833	1.16	6.833	2.15	12.833	7.95	18.83	1.94
0.917	1.16	6.917	2.15	12.917	7.96	18.92	1.94
1.000	1.16	7.000	2.15	13.000	7.96	19.00	1.94
1.083	1.20	7.083	2.15	13.083	5.16	19.08	1.94
1.167	1.20	7.167	2.15	13.167	5.16	19.17	1.93
1.250	1.20	7.250	2.15	13.250	5.16	19.25	1.93
1.333	1.16	7.333	2.15	13.333	5.16	19.33	1.94
1.417	1.16	7.417	2.15	13.417	5.16	19.42	1.94
1.500	1.16	7.500	2.15	13.500	5.16	19.50	1.94
1.583	1.20	7.583	2.15	13.583	5.16	19.58	1.93
1.667	1.20	7.667	2.15	13.667	5.16	19.67	1.93
1.750	1.20	7.750	2.15	13.750	5.16	19.75	1.94
1.833	1.16	7.833	2.15	13.833	5.16	19.83	1.94
1.917	1.16	7.917	2.15	13.917	5.16	19.92	1.94
2.000	1.16	8.000	2.15	14.000	5.16	20.00	1.93
2.083	1.42	8.083	2.92	14.083	3.23	20.08	1.29
2.167	1.42	8.167	2.92	14.167	3.22	20.17	1.29
2.250	1.42	8.250	2.92	14.250	3.22	20.25	1.29
2.333	1.38	8.333	2.88	14.333	3.22	20.33	1.29
2.417	1.38	8.417	2.88	14.417	3.22	20.42	1.29
2.500	1.38	8.500	2.88	14.500	3.22	20.50	1.29
2.583	1.42	8.583	2.92	14.583	3.22	20.58	1.29
2.667	1.42	8.667	2.92	14.667	3.22	20.67	1.29
2.750	1.42	8.750	2.92	14.750	3.22	20.75	1.29
2.833	1.38	8.833	2.88	14.833	3.23	20.83	1.29
2.917	1.38	8.917	2.88	14.917	3.23	20.92	1.29
3.000	1.38	9.000	2.88	15.000	3.23	21.00	1.29
3.083	1.42	9.083	3.44	15.083	3.22	21.08	1.29
3.167	1.42	9.167	3.44	15.167	3.22	21.17	1.29
3.250	1.42	9.250	3.44	15.250	3.22	21.25	1.29
3.333	1.38	9.333	3.44	15.333	3.22	21.33	1.29
3.417	1.38	9.417	3.44	15.417	3.22	21.42	1.29
3.500	1.38	9.500	3.44	15.500	3.22	21.50	1.29
3.583	1.42	9.583	3.87	15.583	3.22	21.58	1.29
3.667	1.42	9.667	3.87	15.667	3.22	21.67	1.29
3.750	1.42	9.750	3.87	15.750	3.22	21.75	1.29
3.833	1.38	9.833	3.87	15.833	3.22	21.83	1.29
3.917	1.38	9.917	3.87	15.917	3.22	21.92	1.29
4.000	1.38	10.000	3.87	16.000	3.22	22.00	1.29
4.083	1.72	10.083	4.94	16.083	1.94	22.08	1.29
4.167	1.72	10.167	4.95	16.167	1.94	22.17	1.29
4.250	1.72	10.250	4.95	16.250	1.94	22.25	1.29
4.333	1.72	10.333	4.94	16.333	1.94	22.33	1.29
4.417	1.72	10.417	4.95	16.417	1.93	22.42	1.29
4.500	1.72	10.500	4.95	16.500	1.93	22.50	1.29
4.583	1.72	10.583	6.66	16.583	1.94	22.58	1.29
4.667	1.72	10.667	6.67	16.667	1.93	22.67	1.29
4.750	1.72	10.750	6.67	16.750	1.93	22.75	1.29
4.833	1.72	10.833	6.66	16.833	1.94	22.83	1.29
4.917	1.72	10.917	6.66	16.917	1.94	22.92	1.29

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              5.000    1.72 |11.000    6.66 |17.000    1.94 | 23.00    1.29
              5.083    1.72 |11.083   10.32 |17.083    1.94 | 23.08    1.29
              5.167    1.72 |11.167   10.32 |17.167    1.93 | 23.17    1.29
              5.250    1.72 |11.250   10.32 |17.250    1.93 | 23.25    1.29
              5.333    1.72 |11.333   10.32 |17.333    1.94 | 23.33    1.29
              5.417    1.72 |11.417   10.32 |17.417    1.94 | 23.42    1.29
              5.500    1.72 |11.500   10.32 |17.500    1.94 | 23.50    1.29
              5.583    1.72 |11.583   81.69 |17.583    1.94 | 23.58    1.29
              5.667    1.72 |11.667   81.70 |17.667    1.93 | 23.67    1.29
              5.750    1.72 |11.750   81.70 |17.750    1.93 | 23.75    1.29
              5.833    1.72 |11.833   81.70 |17.833    1.94 | 23.83    1.29
              5.917    1.72 |11.917   81.70 |17.917    1.94 | 23.92    1.29
              6.000    1.72 |12.000   81.70 |18.000    1.94 | 24.00    1.29

     Max.Eff.Inten.(mm/hr)=      81.70     ********
               over (min)         5.00       10.00
     Storage Coeff.  (min)=       3.49 (ii)    6.03 (ii)
     Unit Hyd. Tpeak (min)=       5.00       10.00
     Unit Hyd. peak  (cms)=       0.26        0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.69        0.04         0.732 (iii)
     TIME TO PEAK    (hrs)=      12.00       12.00         12.00
     RUNOFF VOLUME    (mm)=     106.50      103.50        106.32
     TOTAL RAINFALL   (mm)=     107.50      107.50        107.50
     RUNOFF COEFFICIENT   =       0.99        0.96          0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.1360     0.2300

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)      3.230     0.732     12.00     106.32
   OUTFLOW: ID= 1 (  0005)      3.230     0.106     12.58     106.19

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.46
                  TIME SHIFT OF PEAK FLOW         (min)= 35.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1794

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--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46        0.46
     Dep. Storage     (mm)=       1.00        1.50
     Average Slope     (%)=       1.00        2.00
     Length            (m)=      78.32       40.00
     Mannings n             =     0.013       0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
     0.083    1.20 | 6.083    2.15 |12.083   15.49 | 18.08    1.94
     0.167    1.20 | 6.167    2.15 |12.167   15.48 | 18.17    1.93
     0.250    1.20 | 6.250    2.15 |12.250   15.48 | 18.25    1.93
     0.333    1.16 | 6.333    2.15 |12.333   15.48 | 18.33    1.94
     0.417    1.16 | 6.417    2.15 |12.417   15.48 | 18.42    1.94
     0.500    1.16 | 6.500    2.15 |12.500   15.48 | 18.50    1.94
     0.583    1.20 | 6.583    2.15 |12.583    7.96 | 18.58    1.94
     0.667    1.20 | 6.667    2.15 |12.667    7.95 | 18.67    1.93
     0.750    1.20 | 6.750    2.15 |12.750    7.95 | 18.75    1.93
     0.833    1.16 | 6.833    2.15 |12.833    7.95 | 18.83    1.94
     0.917    1.16 | 6.917    2.15 |12.917    7.96 | 18.92    1.94
     1.000    1.16 | 7.000    2.15 |13.000    7.96 | 19.00    1.94
     1.083    1.20 | 7.083    2.15 |13.083    5.16 | 19.08    1.94
     1.167    1.20 | 7.167    2.15 |13.167    5.16 | 19.17    1.93
     1.250    1.20 | 7.250    2.15 |13.250    5.16 | 19.25    1.93
     1.333    1.16 | 7.333    2.15 |13.333    5.16 | 19.33    1.94
     1.417    1.16 | 7.417    2.15 |13.417    5.16 | 19.42    1.94
     1.500    1.16 | 7.500    2.15 |13.500    5.16 | 19.50    1.94
     1.583    1.20 | 7.583    2.15 |13.583    5.16 | 19.58    1.93
     1.667    1.20 | 7.667    2.15 |13.667    5.16 | 19.67    1.93
     1.750    1.20 | 7.750    2.15 |13.750    5.16 | 19.75    1.94
     1.833    1.16 | 7.833    2.15 |13.833    5.16 | 19.83    1.94
     1.917    1.16 | 7.917    2.15 |13.917    5.16 | 19.92    1.94
     2.000    1.16 | 8.000    2.15 |14.000    5.16 | 20.00    1.93
     2.083    1.42 | 8.083    2.92 |14.083    3.23 | 20.08    1.29
     2.167    1.42 | 8.167    2.92 |14.167    3.22 | 20.17    1.29
     2.250    1.42 | 8.250    2.92 |14.250    3.22 | 20.25    1.29
     2.333    1.38 | 8.333    2.88 |14.333    3.22 | 20.33    1.29
     2.417    1.38 | 8.417    2.88 |14.417    3.22 | 20.42    1.29
     2.500    1.38 | 8.500    2.88 |14.500    3.22 | 20.50    1.29
     2.583    1.42 | 8.583    2.92 |14.583    3.22 | 20.58    1.29
     2.667    1.42 | 8.667    2.92 |14.667    3.22 | 20.67    1.29
     2.750    1.42 | 8.750    2.92 |14.750    3.22 | 20.75    1.29
     2.833    1.38 | 8.833    2.88 |14.833    3.23 | 20.83    1.29
     2.917    1.38 | 8.917    2.88 |14.917    3.23 | 20.92    1.29
     3.000    1.38 | 9.000    2.88 |15.000    3.23 | 21.00    1.29
     3.083    1.42 | 9.083    3.44 |15.083    3.22 | 21.08    1.29
     3.167    1.42 | 9.167    3.44 |15.167    3.22 | 21.17    1.29
     3.250    1.42 | 9.250    3.44 |15.250    3.22 | 21.25    1.29
     3.333    1.38 | 9.333    3.44 |15.333    3.22 | 21.33    1.29
     3.417    1.38 | 9.417    3.44 |15.417    3.22 | 21.42    1.29
     3.500    1.38 | 9.500    3.44 |15.500    3.22 | 21.50    1.29
     3.583    1.42 | 9.583    3.87 |15.583    3.22 | 21.58    1.29
     3.667    1.42 | 9.667    3.87 |15.667    3.22 | 21.67    1.29
     3.750    1.42 | 9.750    3.87 |15.750    3.22 | 21.75    1.29
     3.833    1.38 | 9.833    3.87 |15.833    3.22 | 21.83    1.29
     3.917    1.38 | 9.917    3.87 |15.917    3.22 | 21.92    1.29
     4.000    1.38 |10.000    3.87 |16.000    3.22 | 22.00    1.29
     4.083    1.72 |10.083    4.94 |16.083    1.94 | 22.08    1.29
     4.167    1.72 |10.167    4.95 |16.167    1.94 | 22.17    1.29
     4.250    1.72 |10.250    4.95 |16.250    1.94 | 22.25    1.29
     4.333    1.72 |10.333    4.94 |16.333    1.94 | 22.33    1.29
     4.417    1.72 |10.417    4.95 |16.417    1.93 | 22.42    1.29
     4.500    1.72 |10.500    4.95 |16.500    1.93 | 22.50    1.29
     4.583    1.72 |10.583    6.66 |16.583    1.94 | 22.58    1.29
     4.667    1.72 |10.667    6.67 |16.667    1.93 | 22.67    1.29
     4.750    1.72 |10.750    6.67 |16.750    1.93 | 22.75    1.29
     4.833    1.72 |10.833    6.66 |16.833    1.94 | 22.83    1.29
     4.917    1.72 |10.917    6.66 |16.917    1.94 | 22.92    1.29
     5.000    1.72 |11.000    6.66 |17.000    1.94 | 23.00    1.29
     5.083    1.72 |11.083   10.32 |17.083    1.94 | 23.08    1.29
     5.167    1.72 |11.167   10.32 |17.167    1.93 | 23.17    1.29
     5.250    1.72 |11.250   10.32 |17.250    1.93 | 23.25    1.29
     5.333    1.72 |11.333   10.32 |17.333    1.94 | 23.33    1.29
     5.417    1.72 |11.417   10.32 |17.417    1.94 | 23.42    1.29
     5.500    1.72 |11.500   10.32 |17.500    1.94 | 23.50    1.29
     5.583    1.72 |11.583   81.69 |17.583    1.94 | 23.58    1.29
     5.667    1.72 |11.667   81.70 |17.667    1.93 | 23.67    1.29
     5.750    1.72 |11.750   81.70 |17.750    1.93 | 23.75    1.29
     5.833    1.72 |11.833   81.70 |17.833    1.94 | 23.83    1.29
     5.917    1.72 |11.917   81.70 |17.917    1.94 | 23.92    1.29
     6.000    1.72 |12.000   81.70 |18.000    1.94 | 24.00    1.29

     Max.Eff.Inten.(mm/hr)=      81.70       47.72
               over (min)         5.00       15.00
     Storage Coeff.  (min)=       2.39 (ii)   11.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00       15.00
     Unit Hyd. peak  (cms)=       0.30        0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.10        0.05         0.151 (iii)
     TIME TO PEAK    (hrs)=      12.00       12.08        12.00
     RUNOFF VOLUME    (mm)=     106.50       51.05        78.77
     TOTAL RAINFALL   (mm)=     107.50      107.50       107.50
     RUNOFF COEFFICIENT   =       0.99        0.47         0.73

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
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--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.151    12.00    78.77
     + ID2= 2 (  0002):     2.65   0.601    12.00   106.32
       ==================================================
       ID = 3 (  0006):     3.57   0.752    12.00    99.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   0.752    12.00    99.22
     + ID2= 2 (  0005):     3.23   0.106    12.58   106.19
       ==================================================
       ID = 1 (  0006):     6.80   0.845    12.00   102.53

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)    |   (cms)     (ha.m.)
                           0.0000     0.0000    |   0.0720     0.3590
                           0.0060     0.0320    |   0.1000     0.4070
                           0.0110     0.0650    |   0.1370     0.4570
                           0.0140     0.1010    |   0.1810     0.5090
                           0.0170     0.1400    |   0.2300     0.5620
                           0.0270     0.1800    |   0.5740     0.6180
                           0.0420     0.2220    |   1.3000     0.6780
                           0.0520     0.2660    |   2.4830     0.7440
                           0.0600     0.3120    |   0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)     6.800     0.845     12.00     102.53
   OUTFLOW: ID= 1 (  0003)     6.800     0.079     17.00     102.33

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.36
                  TIME SHIFT OF PEAK FLOW         (min)=300.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3712

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--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.079    17.00   102.33
     + ID2= 2 (  0007):     1.20   0.135    12.00    52.10
       ==================================================
       ID = 3 (  0008):     8.00   0.179    12.00    94.80

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\319681fe-2a
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\319681fe-2a

DATE: 01/16/2023                          TIME: 06:10:51
```

USER:

COMMENTS: _____

```
--------------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : SCS MTO ii 24 Hour 2yr Barrie **
  ************************************************

--------------------
| MASS STORM       |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              4d115e28-8689-44fe-a23c-8ba2dad70c48\5f588edc
| Ptotal= 55.00 mm |    Comments: 24 Hour SCSii Storm Based on MTO Design
--------------------

                     Duration of storm    = 24.00 hrs
                     Mass curve time step = 15.00 min

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    0.62 |  6.00    1.10 | 12.00    7.92 | 18.00    0.99
               0.25    0.59 |  6.25    1.10 | 12.25    7.92 | 18.25    0.99
               0.50    0.62 |  6.50    1.10 | 12.50    4.07 | 18.50    0.99
               0.75    0.59 |  6.75    1.10 | 12.75    4.07 | 18.75    0.99
               1.00    0.62 |  7.00    1.10 | 13.00    2.64 | 19.00    0.99
               1.25    0.59 |  7.25    1.10 | 13.25    2.64 | 19.25    0.99
               1.50    0.62 |  7.50    1.10 | 13.50    2.64 | 19.50    0.99
               1.75    0.59 |  7.75    1.10 | 13.75    2.64 | 19.75    0.99
               2.00    0.73 |  8.00    1.50 | 14.00    1.65 | 20.00    0.66
               2.25    0.70 |  8.25    1.47 | 14.25    1.65 | 20.25    0.66
               2.50    0.73 |  8.50    1.50 | 14.50    1.65 | 20.50    0.66
               2.75    0.70 |  8.75    1.47 | 14.75    1.65 | 20.75    0.66
               3.00    0.73 |  9.00    1.76 | 15.00    1.65 | 21.00    0.66
               3.25    0.70 |  9.25    1.76 | 15.25    1.65 | 21.25    0.66
               3.50    0.73 |  9.50    1.98 | 15.50    1.65 | 21.50    0.66
               3.75    0.70 |  9.75    1.98 | 15.75    1.65 | 21.75    0.66
               4.00    0.88 | 10.00    2.53 | 16.00    0.99 | 22.00    0.66
               4.25    0.88 | 10.25    2.53 | 16.25    0.99 | 22.25    0.66
               4.50    0.88 | 10.50    3.41 | 16.50    0.99 | 22.50    0.66
               4.75    0.88 | 10.75    3.41 | 16.75    0.99 | 22.75    0.66
               5.00    0.88 | 11.00    5.28 | 17.00    0.99 | 23.00    0.66
               5.25    0.88 | 11.25    5.28 | 17.25    0.99 | 23.25    0.66
               5.50    0.88 | 11.50   41.80 | 17.50    0.99 | 23.50    0.66
               5.75    0.88 | 11.75   41.80 | 17.75    0.99 | 23.75    0.66

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--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number   (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                              ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    0.62 | 6.083    1.10 |12.083    7.92 | 18.08    0.99
              0.167    0.62 | 6.167    1.10 |12.167    7.92 | 18.17    0.99
              0.250    0.62 | 6.250    1.10 |12.250    7.92 | 18.25    0.99
              0.333    0.59 | 6.333    1.10 |12.333    7.92 | 18.33    0.99
              0.417    0.59 | 6.417    1.10 |12.417    7.92 | 18.42    0.99
              0.500    0.59 | 6.500    1.10 |12.500    7.92 | 18.50    0.99
              0.583    0.62 | 6.583    1.10 |12.583    4.07 | 18.58    0.99
              0.667    0.62 | 6.667    1.10 |12.667    4.07 | 18.67    0.99
              0.750    0.62 | 6.750    1.10 |12.750    4.07 | 18.75    0.99
              0.833    0.59 | 6.833    1.10 |12.833    4.07 | 18.83    0.99
              0.917    0.59 | 6.917    1.10 |12.917    4.07 | 18.92    0.99
              1.000    0.59 | 7.000    1.10 |13.000    4.07 | 19.00    0.99
              1.083    0.62 | 7.083    1.10 |13.083    2.64 | 19.08    0.99
              1.167    0.62 | 7.167    1.10 |13.167    2.64 | 19.17    0.99
              1.250    0.62 | 7.250    1.10 |13.250    2.64 | 19.25    0.99
              1.333    0.59 | 7.333    1.10 |13.333    2.64 | 19.33    0.99
              1.417    0.59 | 7.417    1.10 |13.417    2.64 | 19.42    0.99
              1.500    0.59 | 7.500    1.10 |13.500    2.64 | 19.50    0.99
              1.583    0.62 | 7.583    1.10 |13.583    2.64 | 19.58    0.99
              1.667    0.62 | 7.667    1.10 |13.667    2.64 | 19.67    0.99
              1.750    0.62 | 7.750    1.10 |13.750    2.64 | 19.75    0.99
              1.833    0.59 | 7.833    1.10 |13.833    2.64 | 19.83    0.99
              1.917    0.59 | 7.917    1.10 |13.917    2.64 | 19.92    0.99
```

2.000	0.59	8.000	1.10	14.000	2.64	20.00	0.99
2.083	0.73	8.083	1.50	14.083	1.65	20.08	0.66
2.167	0.73	8.167	1.50	14.167	1.65	20.17	0.66
2.250	0.73	8.250	1.50	14.250	1.65	20.25	0.66
2.333	0.70	8.333	1.47	14.333	1.65	20.33	0.66
2.417	0.70	8.417	1.47	14.417	1.65	20.42	0.66
2.500	0.70	8.500	1.47	14.500	1.65	20.50	0.66
2.583	0.73	8.583	1.50	14.583	1.65	20.58	0.66
2.667	0.73	8.667	1.50	14.667	1.65	20.67	0.66
2.750	0.73	8.750	1.50	14.750	1.65	20.75	0.66
2.833	0.70	8.833	1.47	14.833	1.65	20.83	0.66
2.917	0.70	8.917	1.47	14.917	1.65	20.92	0.66
3.000	0.70	9.000	1.47	15.000	1.65	21.00	0.66
3.083	0.73	9.083	1.76	15.083	1.65	21.08	0.66
3.167	0.73	9.167	1.76	15.167	1.65	21.17	0.66
3.250	0.73	9.250	1.76	15.250	1.65	21.25	0.66
3.333	0.70	9.333	1.76	15.333	1.65	21.33	0.66
3.417	0.70	9.417	1.76	15.417	1.65	21.42	0.66
3.500	0.70	9.500	1.76	15.500	1.65	21.50	0.66
3.583	0.73	9.583	1.98	15.583	1.65	21.58	0.66
3.667	0.73	9.667	1.98	15.667	1.65	21.67	0.66
3.750	0.73	9.750	1.98	15.750	1.65	21.75	0.66
3.833	0.70	9.833	1.98	15.833	1.65	21.83	0.66
3.917	0.70	9.917	1.98	15.917	1.65	21.92	0.66
4.000	0.70	10.000	1.98	16.000	1.65	22.00	0.66
4.083	0.88	10.083	2.53	16.083	0.99	22.08	0.66
4.167	0.88	10.167	2.53	16.167	0.99	22.17	0.66
4.250	0.88	10.250	2.53	16.250	0.99	22.25	0.66
4.333	0.88	10.333	2.53	16.333	0.99	22.33	0.66
4.417	0.88	10.417	2.53	16.417	0.99	22.42	0.66
4.500	0.88	10.500	2.53	16.500	0.99	22.50	0.66
4.583	0.88	10.583	3.41	16.583	0.99	22.58	0.66
4.667	0.88	10.667	3.41	16.667	0.99	22.67	0.66
4.750	0.88	10.750	3.41	16.750	0.99	22.75	0.66
4.833	0.88	10.833	3.41	16.833	0.99	22.83	0.66
4.917	0.88	10.917	3.41	16.917	0.99	22.92	0.66
5.000	0.88	11.000	3.41	17.000	0.99	23.00	0.66
5.083	0.88	11.083	5.28	17.083	0.99	23.08	0.66
5.167	0.88	11.167	5.28	17.167	0.99	23.17	0.66
5.250	0.88	11.250	5.28	17.250	0.99	23.25	0.66
5.333	0.88	11.333	5.28	17.333	0.99	23.33	0.66
5.417	0.88	11.417	5.28	17.417	0.99	23.42	0.66
5.500	0.88	11.500	5.28	17.500	0.99	23.50	0.66
5.583	0.88	11.583	41.80	17.583	0.99	23.58	0.66
5.667	0.88	11.667	41.80	17.667	0.99	23.67	0.66
5.750	0.88	11.750	41.80	17.750	0.99	23.75	0.66
5.833	0.88	11.833	41.80	17.833	0.99	23.83	0.66
5.917	0.88	11.917	41.80	17.917	0.99	23.92	0.66
6.000	0.88	12.000	41.80	18.000	0.99	24.00	0.66

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.075 (i)
TIME TO PEAK (hrs)= 12.833
RUNOFF VOLUME (mm)= 11.398
TOTAL RAINFALL (mm)= 55.000
RUNOFF COEFFICIENT = 0.207

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

CALIB
NASHYD (0007)
ID= 1 DT= 5.0 min

Area (ha)= 1.20 Curve Number (CN)= 72.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.62	6.083	1.10	12.083	7.92	18.08	0.99
0.167	0.62	6.167	1.10	12.167	7.92	18.17	0.99
0.250	0.62	6.250	1.10	12.250	7.92	18.25	0.99
0.333	0.59	6.333	1.10	12.333	7.92	18.33	0.99
0.417	0.59	6.417	1.10	12.417	7.92	18.42	0.99
0.500	0.59	6.500	1.10	12.500	7.92	18.50	0.99
0.583	0.62	6.583	1.10	12.583	4.07	18.58	0.99
0.667	0.62	6.667	1.10	12.667	4.07	18.67	0.99
0.750	0.62	6.750	1.10	12.750	4.07	18.75	0.99
0.833	0.59	6.833	1.10	12.833	4.07	18.83	0.99
0.917	0.59	6.917	1.10	12.917	4.07	18.92	0.99
1.000	0.59	7.000	1.10	13.000	4.07	19.00	0.99
1.083	0.62	7.083	1.10	13.083	2.64	19.08	0.99
1.167	0.62	7.167	1.10	13.167	2.64	19.17	0.99
1.250	0.62	7.250	1.10	13.250	2.64	19.25	0.99
1.333	0.59	7.333	1.10	13.333	2.64	19.33	0.99
1.417	0.59	7.417	1.10	13.417	2.64	19.42	0.99
1.500	0.59	7.500	1.10	13.500	2.64	19.50	0.99
1.583	0.62	7.583	1.10	13.583	2.64	19.58	0.99
1.667	0.62	7.667	1.10	13.667	2.64	19.67	0.99
1.750	0.62	7.750	1.10	13.750	2.64	19.75	0.99
1.833	0.59	7.833	1.10	13.833	2.64	19.83	0.99
1.917	0.59	7.917	1.10	13.917	2.64	19.92	0.99
2.000	0.59	8.000	1.10	14.000	2.64	20.00	0.99
2.083	0.73	8.083	1.50	14.083	1.65	20.08	0.66
2.167	0.73	8.167	1.50	14.167	1.65	20.17	0.66
2.250	0.73	8.250	1.50	14.250	1.65	20.25	0.66
2.333	0.70	8.333	1.47	14.333	1.65	20.33	0.66
2.417	0.70	8.417	1.47	14.417	1.65	20.42	0.66
2.500	0.70	8.500	1.47	14.500	1.65	20.50	0.66
2.583	0.73	8.583	1.50	14.583	1.65	20.58	0.66
2.667	0.73	8.667	1.50	14.667	1.65	20.67	0.66
2.750	0.73	8.750	1.50	14.750	1.65	20.75	0.66
2.833	0.70	8.833	1.47	14.833	1.65	20.83	0.66
2.917	0.70	8.917	1.47	14.917	1.65	20.92	0.66
3.000	0.70	9.000	1.47	15.000	1.65	21.00	0.66
3.083	0.73	9.083	1.76	15.083	1.65	21.08	0.66
3.167	0.73	9.167	1.76	15.167	1.65	21.17	0.66
3.250	0.73	9.250	1.76	15.250	1.65	21.25	0.66
3.333	0.70	9.333	1.76	15.333	1.65	21.33	0.66
3.417	0.70	9.417	1.76	15.417	1.65	21.42	0.66
3.500	0.70	9.500	1.76	15.500	1.65	21.50	0.66
3.583	0.73	9.583	1.98	15.583	1.65	21.58	0.66
3.667	0.73	9.667	1.98	15.667	1.65	21.67	0.66
3.750	0.73	9.750	1.98	15.750	1.65	21.75	0.66
3.833	0.70	9.833	1.98	15.833	1.65	21.83	0.66
3.917	0.70	9.917	1.98	15.917	1.65	21.92	0.66
4.000	0.70	10.000	1.98	16.000	1.65	22.00	0.66
4.083	0.88	10.083	2.53	16.083	0.99	22.08	0.66
4.167	0.88	10.167	2.53	16.167	0.99	22.17	0.66
4.250	0.88	10.250	2.53	16.250	0.99	22.25	0.66
4.333	0.88	10.333	2.53	16.333	0.99	22.33	0.66
4.417	0.88	10.417	2.53	16.417	0.99	22.42	0.66
4.500	0.88	10.500	2.53	16.500	0.99	22.50	0.66
4.583	0.88	10.583	3.41	16.583	0.99	22.58	0.66
4.667	0.88	10.667	3.41	16.667	0.99	22.67	0.66
4.750	0.88	10.750	3.41	16.750	0.99	22.75	0.66
4.833	0.88	10.833	3.41	16.833	0.99	22.83	0.66
4.917	0.88	10.917	3.41	16.917	0.99	22.92	0.66
5.000	0.88	11.000	3.41	17.000	0.99	23.00	0.66
5.083	0.88	11.083	5.28	17.083	0.99	23.08	0.66
5.167	0.88	11.167	5.28	17.167	0.99	23.17	0.66
5.250	0.88	11.250	5.28	17.250	0.99	23.25	0.66
5.333	0.88	11.333	5.28	17.333	0.99	23.33	0.66
5.417	0.88	11.417	5.28	17.417	0.99	23.42	0.66
5.500	0.88	11.500	5.28	17.500	0.99	23.50	0.66
5.583	0.88	11.583	41.80	17.583	0.99	23.58	0.66
5.667	0.88	11.667	41.80	17.667	0.99	23.67	0.66
5.750	0.88	11.750	41.80	17.750	0.99	23.75	0.66
5.833	0.88	11.833	41.80	17.833	0.99	23.83	0.66
5.917	0.88	11.917	41.80	17.917	0.99	23.92	0.66
6.000	0.88	12.000	41.80	18.000	0.99	24.00	0.66

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.042 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 16.771
TOTAL RAINFALL (mm)= 55.000
RUNOFF COEFFICIENT = 0.305

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

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 2.65
Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.62	6.083	1.10	12.083	7.92	18.08	0.99
0.167	0.62	6.167	1.10	12.167	7.92	18.17	0.99
0.250	0.62	6.250	1.10	12.250	7.92	18.25	0.99
0.333	0.59	6.333	1.10	12.333	7.92	18.33	0.99
0.417	0.59	6.417	1.10	12.417	7.92	18.42	0.99
0.500	0.59	6.500	1.10	12.500	7.92	18.50	0.99
0.583	0.62	6.583	1.10	12.583	4.07	18.58	0.99
0.667	0.62	6.667	1.10	12.667	4.07	18.67	0.99
0.750	0.62	6.750	1.10	12.750	4.07	18.75	0.99
0.833	0.59	6.833	1.10	12.833	4.07	18.83	0.99
0.917	0.59	6.917	1.10	12.917	4.07	18.92	0.99
1.000	0.59	7.000	1.10	13.000	4.07	19.00	0.99
1.083	0.62	7.083	1.10	13.083	2.64	19.08	0.99
1.167	0.62	7.167	1.10	13.167	2.64	19.17	0.99
1.250	0.62	7.250	1.10	13.250	2.64	19.25	0.99
1.333	0.59	7.333	1.10	13.333	2.64	19.33	0.99
1.417	0.59	7.417	1.10	13.417	2.64	19.42	0.99
1.500	0.59	7.500	1.10	13.500	2.64	19.50	0.99
1.583	0.62	7.583	1.10	13.583	2.64	19.58	0.99
1.667	0.62	7.667	1.10	13.667	2.64	19.67	0.99
1.750	0.62	7.750	1.10	13.750	2.64	19.75	0.99
1.833	0.59	7.833	1.10	13.833	2.64	19.83	0.99
1.917	0.59	7.917	1.10	13.917	2.64	19.92	0.99
2.000	0.59	8.000	1.10	14.000	2.64	20.00	0.99
2.083	0.73	8.083	1.50	14.083	1.65	20.08	0.66
2.167	0.73	8.167	1.50	14.167	1.65	20.17	0.66
2.250	0.73	8.250	1.50	14.250	1.65	20.25	0.66
2.333	0.70	8.333	1.47	14.333	1.65	20.33	0.66
2.417	0.70	8.417	1.47	14.417	1.65	20.42	0.66
2.500	0.70	8.500	1.47	14.500	1.65	20.50	0.66
2.583	0.73	8.583	1.50	14.583	1.65	20.58	0.66
2.667	0.73	8.667	1.50	14.667	1.65	20.67	0.66
2.750	0.73	8.750	1.50	14.750	1.65	20.75	0.66
2.833	0.70	8.833	1.47	14.833	1.65	20.83	0.66
2.917	0.70	8.917	1.47	14.917	1.65	20.92	0.66
3.000	0.70	9.000	1.47	15.000	1.65	21.00	0.66
3.083	0.73	9.083	1.76	15.083	1.65	21.08	0.66
3.167	0.73	9.167	1.76	15.167	1.65	21.17	0.66
3.250	0.73	9.250	1.76	15.250	1.65	21.25	0.66
3.333	0.70	9.333	1.76	15.333	1.65	21.33	0.66
3.417	0.70	9.417	1.76	15.417	1.65	21.42	0.66
3.500	0.70	9.500	1.76	15.500	1.65	21.50	0.66
3.583	0.73	9.583	1.98	15.583	1.65	21.58	0.66
3.667	0.73	9.667	1.98	15.667	1.65	21.67	0.66
3.750	0.73	9.750	1.98	15.750	1.65	21.75	0.66
3.833	0.70	9.833	1.98	15.833	1.65	21.83	0.66
3.917	0.70	9.917	1.98	15.917	1.65	21.92	0.66
4.000	0.70	10.000	1.98	16.000	1.65	22.00	0.66
4.083	0.88	10.083	2.53	16.083	0.99	22.08	0.66
4.167	0.88	10.167	2.53	16.167	0.99	22.17	0.66
4.250	0.88	10.250	2.53	16.250	0.99	22.25	0.66
4.333	0.88	10.333	2.53	16.333	0.99	22.33	0.66
4.417	0.88	10.417	2.53	16.417	0.99	22.42	0.66
4.500	0.88	10.500	2.53	16.500	0.99	22.50	0.66
4.583	0.88	10.583	3.41	16.583	0.99	22.58	0.66
4.667	0.88	10.667	3.41	16.667	0.99	22.67	0.66
4.750	0.88	10.750	3.41	16.750	0.99	22.75	0.66
4.833	0.88	10.833	3.41	16.833	0.99	22.83	0.66
4.917	0.88	10.917	3.41	16.917	0.99	22.92	0.66
5.000	0.88	11.000	3.41	17.000	0.99	23.00	0.66
5.083	0.88	11.083	5.28	17.083	0.99	23.08	0.66
5.167	0.88	11.167	5.28	17.167	0.99	23.17	0.66
5.250	0.88	11.250	5.28	17.250	0.99	23.25	0.66
5.333	0.88	11.333	5.28	17.333	0.99	23.33	0.66
5.417	0.88	11.417	5.28	17.417	0.99	23.42	0.66
5.500	0.88	11.500	5.28	17.500	0.99	23.50	0.66
5.583	0.88	11.583	41.80	17.583	0.99	23.58	0.66
5.667	0.88	11.667	41.80	17.667	0.99	23.67	0.66
5.750	0.88	11.750	41.80	17.750	0.99	23.75	0.66
5.833	0.88	11.833	41.80	17.833	0.99	23.83	0.66
5.917	0.88	11.917	41.80	17.917	0.99	23.92	0.66
6.000	0.88	12.000	41.80	18.000	0.99	24.00	0.66

Max.Eff.Inten.(mm/hr)=	41.80	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.30 (ii)	7.62 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.23	0.13	
			TOTALS
PEAK FLOW (cms)=	0.29	0.02	0.307 (iii)
TIME TO PEAK (hrs)=	12.00	12.00	12.00
RUNOFF VOLUME (mm)=	54.00	51.05	53.82
TOTAL RAINFALL (mm)=	55.00	55.00	55.00
RUNOFF COEFFICIENT =	0.98	0.93	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0004)	Area (ha)=	3.23	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00	Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.62	6.083	1.10	12.083	7.92	18.08	0.99
0.167	0.62	6.167	1.10	12.167	7.92	18.17	0.99
0.250	0.62	6.250	1.10	12.250	7.92	18.25	0.99
0.333	0.59	6.333	1.10	12.333	7.92	18.33	0.99
0.417	0.59	6.417	1.10	12.417	7.92	18.42	0.99
0.500	0.59	6.500	1.10	12.500	7.92	18.50	0.99
0.583	0.62	6.583	1.10	12.583	4.07	18.58	0.99
0.667	0.62	6.667	1.10	12.667	4.07	18.67	0.99
0.750	0.62	6.750	1.10	12.750	4.07	18.75	0.99
0.833	0.59	6.833	1.10	12.833	4.07	18.83	0.99
0.917	0.59	6.917	1.10	12.917	4.07	18.92	0.99
1.000	0.59	7.000	1.10	13.000	4.07	19.00	0.99
1.083	0.62	7.083	1.10	13.083	2.64	19.08	0.99
1.167	0.62	7.167	1.10	13.167	2.64	19.17	0.99
1.250	0.62	7.250	1.10	13.250	2.64	19.25	0.99
1.333	0.59	7.333	1.10	13.333	2.64	19.33	0.99
1.417	0.59	7.417	1.10	13.417	2.64	19.42	0.99
1.500	0.59	7.500	1.10	13.500	2.64	19.50	0.99
1.583	0.62	7.583	1.10	13.583	2.64	19.58	0.99
1.667	0.62	7.667	1.10	13.667	2.64	19.67	0.99
1.750	0.62	7.750	1.10	13.750	2.64	19.75	0.99
1.833	0.59	7.833	1.10	13.833	2.64	19.83	0.99
1.917	0.59	7.917	1.10	13.917	2.64	19.92	0.99
2.000	0.59	8.000	1.10	14.000	2.64	20.00	0.99
2.083	0.73	8.083	1.50	14.083	1.65	20.08	0.66
2.167	0.73	8.167	1.50	14.167	1.65	20.17	0.66
2.250	0.73	8.250	1.50	14.250	1.65	20.25	0.66
2.333	0.70	8.333	1.47	14.333	1.65	20.33	0.66
2.417	0.70	8.417	1.47	14.417	1.65	20.42	0.66
2.500	0.70	8.500	1.47	14.500	1.65	20.50	0.66
2.583	0.73	8.583	1.50	14.583	1.65	20.58	0.66
2.667	0.73	8.667	1.50	14.667	1.65	20.67	0.66
2.750	0.73	8.750	1.50	14.750	1.65	20.75	0.66
2.833	0.70	8.833	1.47	14.833	1.65	20.83	0.66
2.917	0.70	8.917	1.47	14.917	1.65	20.92	0.66
3.000	0.70	9.000	1.47	15.000	1.65	21.00	0.66
3.083	0.73	9.083	1.76	15.083	1.65	21.08	0.66
3.167	0.73	9.167	1.76	15.167	1.65	21.17	0.66
3.250	0.73	9.250	1.76	15.250	1.65	21.25	0.66
3.333	0.70	9.333	1.76	15.333	1.65	21.33	0.66
3.417	0.70	9.417	1.76	15.417	1.65	21.42	0.66
3.500	0.70	9.500	1.76	15.500	1.65	21.50	0.66
3.583	0.73	9.583	1.98	15.583	1.65	21.58	0.66
3.667	0.73	9.667	1.98	15.667	1.65	21.67	0.66
3.750	0.73	9.750	1.98	15.750	1.65	21.75	0.66
3.833	0.70	9.833	1.98	15.833	1.65	21.83	0.66
3.917	0.70	9.917	1.98	15.917	1.65	21.92	0.66
4.000	0.70	10.000	1.98	16.000	1.65	22.00	0.66
4.083	0.88	10.083	2.53	16.083	0.99	22.08	0.66

```
              4.167    0.88 |10.167    2.53 |16.167    0.99 | 22.17    0.66
              4.250    0.88 |10.250    2.53 |16.250    0.99 | 22.25    0.66
              4.333    0.88 |10.333    2.53 |16.333    0.99 | 22.33    0.66
              4.417    0.88 |10.417    2.53 |16.417    0.99 | 22.42    0.66
              4.500    0.88 |10.500    2.53 |16.500    0.99 | 22.50    0.66
              4.583    0.88 |10.583    3.41 |16.583    0.99 | 22.58    0.66
              4.667    0.88 |10.667    3.41 |16.667    0.99 | 22.67    0.66
              4.750    0.88 |10.750    3.41 |16.750    0.99 | 22.75    0.66
              4.833    0.88 |10.833    3.41 |16.833    0.99 | 22.83    0.66
              4.917    0.88 |10.917    3.41 |16.917    0.99 | 22.92    0.66
              5.000    0.88 |11.000    3.41 |17.000    0.99 | 23.00    0.66
              5.083    0.88 |11.083    5.28 |17.083    0.99 | 23.08    0.66
              5.167    0.88 |11.167    5.28 |17.167    0.99 | 23.17    0.66
              5.250    0.88 |11.250    5.28 |17.250    0.99 | 23.25    0.66
              5.333    0.88 |11.333    5.28 |17.333    0.99 | 23.33    0.66
              5.417    0.88 |11.417    5.28 |17.417    0.99 | 23.42    0.66
              5.500    0.88 |11.500    5.28 |17.500    0.99 | 23.50    0.66
              5.583    0.88 |11.583   41.80 |17.583    0.99 | 23.58    0.66
              5.667    0.88 |11.667   41.80 |17.667    0.99 | 23.67    0.66
              5.750    0.88 |11.750   41.80 |17.750    0.99 | 23.75    0.66
              5.833    0.88 |11.833   41.80 |17.833    0.99 | 23.83    0.66
              5.917    0.88 |11.917   41.80 |17.917    0.99 | 23.92    0.66
              6.000    0.88 |12.000   41.80 |18.000    0.99 | 24.00    0.66

     Max.Eff.Inten.(mm/hr)=      41.80     ********
               over (min)         5.00       10.00
     Storage Coeff.  (min)=       4.56 (ii)    7.89 (ii)
     Unit Hyd. Tpeak (min)=       5.00       10.00
     Unit Hyd. peak  (cms)=       0.23        0.13
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.35        0.02          0.374 (iii)
     TIME TO PEAK    (hrs)=      12.00       12.00         12.00
     RUNOFF VOLUME    (mm)=      54.00       51.05         53.82
     TOTAL RAINFALL   (mm)=      55.00       55.00         55.00
     RUNOFF COEFFICIENT   =       0.98        0.93          0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0005)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.1360      0.2300

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0004)     3.230     0.374     12.00      53.82
   OUTFLOW: ID= 1 (  0005)     3.230     0.054     12.58      53.69

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.45
                  TIME SHIFT OF PEAK FLOW          (min)= 35.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0914

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.46         0.46
     Dep. Storage     (mm)=       1.00         1.50
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      78.32        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                         ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.62 | 6.083    1.10 |12.083    7.92 | 18.08    0.99
               0.167    0.62 | 6.167    1.10 |12.167    7.92 | 18.17    0.99
               0.250    0.62 | 6.250    1.10 |12.250    7.92 | 18.25    0.99
               0.333    0.59 | 6.333    1.10 |12.333    7.92 | 18.33    0.99
               0.417    0.59 | 6.417    1.10 |12.417    7.92 | 18.42    0.99
               0.500    0.59 | 6.500    1.10 |12.500    7.92 | 18.50    0.99
               0.583    0.62 | 6.583    1.10 |12.583    4.07 | 18.58    0.99
               0.667    0.62 | 6.667    1.10 |12.667    4.07 | 18.67    0.99
               0.750    0.62 | 6.750    1.10 |12.750    4.07 | 18.75    0.99
               0.833    0.59 | 6.833    1.10 |12.833    4.07 | 18.83    0.99
               0.917    0.59 | 6.917    1.10 |12.917    4.07 | 18.92    0.99
               1.000    0.59 | 7.000    1.10 |13.000    4.07 | 19.00    0.99
               1.083    0.62 | 7.083    1.10 |13.083    2.64 | 19.08    0.99
               1.167    0.62 | 7.167    1.10 |13.167    2.64 | 19.17    0.99
               1.250    0.62 | 7.250    1.10 |13.250    2.64 | 19.25    0.99
               1.333    0.59 | 7.333    1.10 |13.333    2.64 | 19.33    0.99
               1.417    0.59 | 7.417    1.10 |13.417    2.64 | 19.42    0.99
               1.500    0.59 | 7.500    1.10 |13.500    2.64 | 19.50    0.99
               1.583    0.62 | 7.583    1.10 |13.583    2.64 | 19.58    0.99
               1.667    0.62 | 7.667    1.10 |13.667    2.64 | 19.67    0.99
               1.750    0.62 | 7.750    1.10 |13.750    2.64 | 19.75    0.99
               1.833    0.59 | 7.833    1.10 |13.833    2.64 | 19.83    0.99
               1.917    0.59 | 7.917    1.10 |13.917    2.64 | 19.92    0.99
               2.000    0.59 | 8.000    1.10 |14.000    2.64 | 20.00    0.99
               2.083    0.73 | 8.083    1.50 |14.083    1.65 | 20.08    0.66
               2.167    0.73 | 8.167    1.50 |14.167    1.65 | 20.17    0.66
               2.250    0.73 | 8.250    1.50 |14.250    1.65 | 20.25    0.66
               2.333    0.70 | 8.333    1.47 |14.333    1.65 | 20.33    0.66
               2.417    0.70 | 8.417    1.47 |14.417    1.65 | 20.42    0.66
               2.500    0.70 | 8.500    1.47 |14.500    1.65 | 20.50    0.66
               2.583    0.73 | 8.583    1.50 |14.583    1.65 | 20.58    0.66
               2.667    0.73 | 8.667    1.50 |14.667    1.65 | 20.67    0.66
               2.750    0.73 | 8.750    1.50 |14.750    1.65 | 20.75    0.66
               2.833    0.70 | 8.833    1.47 |14.833    1.65 | 20.83    0.66
               2.917    0.70 | 8.917    1.47 |14.917    1.65 | 20.92    0.66
               3.000    0.70 | 9.000    1.47 |15.000    1.65 | 21.00    0.66
               3.083    0.73 | 9.083    1.76 |15.083    1.65 | 21.08    0.66
               3.167    0.73 | 9.167    1.76 |15.167    1.65 | 21.17    0.66
               3.250    0.73 | 9.250    1.76 |15.250    1.65 | 21.25    0.66
               3.333    0.70 | 9.333    1.76 |15.333    1.65 | 21.33    0.66
               3.417    0.70 | 9.417    1.76 |15.417    1.65 | 21.42    0.66
               3.500    0.70 | 9.500    1.76 |15.500    1.65 | 21.50    0.66
               3.583    0.73 | 9.583    1.98 |15.583    1.65 | 21.58    0.66
               3.667    0.73 | 9.667    1.98 |15.667    1.65 | 21.67    0.66
               3.750    0.73 | 9.750    1.98 |15.750    1.65 | 21.75    0.66
               3.833    0.70 | 9.833    1.98 |15.833    1.65 | 21.83    0.66
               3.917    0.70 | 9.917    1.98 |15.917    1.65 | 21.92    0.66
               4.000    0.70 |10.000    1.98 |16.000    1.65 | 22.00    0.66
               4.083    0.88 |10.083    2.53 |16.083    0.99 | 22.08    0.66
               4.167    0.88 |10.167    2.53 |16.167    0.99 | 22.17    0.66
               4.250    0.88 |10.250    2.53 |16.250    0.99 | 22.25    0.66
               4.333    0.88 |10.333    2.53 |16.333    0.99 | 22.33    0.66
               4.417    0.88 |10.417    2.53 |16.417    0.99 | 22.42    0.66
               4.500    0.88 |10.500    2.53 |16.500    0.99 | 22.50    0.66
               4.583    0.88 |10.583    3.41 |16.583    0.99 | 22.58    0.66
               4.667    0.88 |10.667    3.41 |16.667    0.99 | 22.67    0.66
               4.750    0.88 |10.750    3.41 |16.750    0.99 | 22.75    0.66
               4.833    0.88 |10.833    3.41 |16.833    0.99 | 22.83    0.66
               4.917    0.88 |10.917    3.41 |16.917    0.99 | 22.92    0.66
               5.000    0.88 |11.000    3.41 |17.000    0.99 | 23.00    0.66
               5.083    0.88 |11.083    5.28 |17.083    0.99 | 23.08    0.66
               5.167    0.88 |11.167    5.28 |17.167    0.99 | 23.17    0.66
               5.250    0.88 |11.250    5.28 |17.250    0.99 | 23.25    0.66
               5.333    0.88 |11.333    5.28 |17.333    0.99 | 23.33    0.66
               5.417    0.88 |11.417    5.28 |17.417    0.99 | 23.42    0.66
               5.500    0.88 |11.500    5.28 |17.500    0.99 | 23.50    0.66
               5.583    0.88 |11.583   41.80 |17.583    0.99 | 23.58    0.66
               5.667    0.88 |11.667   41.80 |17.667    0.99 | 23.67    0.66
               5.750    0.88 |11.750   41.80 |17.750    0.99 | 23.75    0.66
               5.833    0.88 |11.833   41.80 |17.833    0.99 | 23.83    0.66
               5.917    0.88 |11.917   41.80 |17.917    0.99 | 23.92    0.66
               6.000    0.88 |12.000   41.80 |18.000    0.99 | 24.00    0.66

     Max.Eff.Inten.(mm/hr)=      41.80       15.46
               over (min)         5.00       20.00
     Storage Coeff.  (min)=       3.13 (ii)   18.02 (ii)
     Unit Hyd. Tpeak (min)=       5.00       20.00
     Unit Hyd. peak  (cms)=       0.27        0.06
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.05        0.01          0.065 (iii)
     TIME TO PEAK    (hrs)=      12.00       12.17         12.00
     RUNOFF VOLUME    (mm)=      54.00       17.08         35.53
     TOTAL RAINFALL   (mm)=      55.00       55.00         55.00
     RUNOFF COEFFICIENT   =       0.98        0.31          0.65

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
```

```
        CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

ADD HYD (0006)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):		0.92	0.065	12.00	35.53
+ ID2= 2 (0002):		2.65	0.307	12.00	53.82
ID = 3 (0006):		3.57	0.372	12.00	49.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0006)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0006):		3.57	0.372	12.00	49.11
+ ID2= 2 (0005):		3.23	0.054	12.58	53.69
ID = 1 (0006):		6.80	0.418	12.00	51.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0003) | IN= 2---> OUT= 1 | DT= 5.0 min — OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0720	0.3590
0.0060	0.0320	0.1000	0.4070
0.0110	0.0650	0.1370	0.4570
0.0140	0.1010	0.1810	0.5090
0.0170	0.1400	0.2300	0.5620
0.0270	0.1800	0.5740	0.6180
0.0420	0.2220	1.3000	0.6780
0.0520	0.2660	2.4830	0.7440
0.0600	0.3120	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	6.800	0.418	12.00	51.28
OUTFLOW: ID= 1 (0003)	6.800	0.034	18.50	51.09

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.17
TIME SHIFT OF PEAK FLOW         (min)=390.00
MAXIMUM  STORAGE   USED       (ha.m.)=  0.2000
```

ADD HYD (0008)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0003):		6.80	0.034	18.50	51.09
+ ID2= 2 (0007):		1.20	0.042	12.00	16.77
ID = 3 (0008):		8.00	0.057	12.08	45.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       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
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***** D E T A I L E D O U T P U T *****

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\d7ffbeca-bd
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\d7ffbeca-bd

DATE: 01/16/2023                          TIME: 06:10:51

USER:


COMMENTS: _____________________________________________________
```

```
  ************************************************
  ** SIMULATION : SCS MTO ii 24 Hour 50yr Barri **
  ************************************************
```

MASS STORM	Ptotal=120.60 mm

```
Filename: C:\Users\aquader\AppD
          ata\Local\Temp\
          4d115e28-8689-44fe-a23c-8ba2dad70c48\2286c21d
Comments: 24 Hour SCSii Storm Based on MTO Design
Duration of storm    = 24.00 hrs
Mass curve time step = 15.00 min
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.35	6.00	2.41	12.00	17.37	18.00	2.17
0.25	1.30	6.25	2.41	12.25	17.37	18.25	2.17
0.50	1.35	6.50	2.41	12.50	8.92	18.50	2.17
0.75	1.30	6.75	2.41	12.75	8.92	18.75	2.17
1.00	1.35	7.00	2.41	13.00	5.79	19.00	2.17
1.25	1.30	7.25	2.41	13.25	5.79	19.25	2.17
1.50	1.35	7.50	2.41	13.50	5.79	19.50	2.17
1.75	1.30	7.75	2.41	13.75	5.79	19.75	2.17
2.00	1.59	8.00	3.28	14.00	3.62	20.00	1.45
2.25	1.54	8.25	3.23	14.25	3.62	20.25	1.45
2.50	1.59	8.50	3.28	14.50	3.62	20.50	1.45
2.75	1.54	8.75	3.23	14.75	3.62	20.75	1.45
3.00	1.59	9.00	3.86	15.00	3.62	21.00	1.45
3.25	1.54	9.25	3.86	15.25	3.62	21.25	1.45
3.50	1.59	9.50	4.34	15.50	3.62	21.50	1.45
3.75	1.54	9.75	4.34	15.75	3.62	21.75	1.45
4.00	1.93	10.00	5.55	16.00	2.17	22.00	1.45
4.25	1.93	10.25	5.55	16.25	2.17	22.25	1.45
4.50	1.93	10.50	7.48	16.50	2.17	22.50	1.45
4.75	1.93	10.75	7.48	16.75	2.17	22.75	1.45
5.00	1.93	11.00	11.58	17.00	2.17	23.00	1.45
5.25	1.93	11.25	11.58	17.25	2.17	23.25	1.45
5.50	1.93	11.50	91.66	17.50	2.17	23.50	1.45
5.75	1.93	11.75	91.66	17.75	2.17	23.75	1.45

CALIB NASHYD (0001) ID= 1 DT= 5.0 min					
	Area	(ha)=	8.00	Curve Number	(CN)= 60.0
	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)=		0.86		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.35	6.083	2.41	12.083	17.37	18.08	2.17
0.167	1.35	6.167	2.41	12.167	17.37	18.17	2.17
0.250	1.35	6.250	2.41	12.250	17.37	18.25	2.17
0.333	1.30	6.333	2.41	12.333	17.37	18.33	2.17
0.417	1.30	6.417	2.41	12.417	17.37	18.42	2.17
0.500	1.30	6.500	2.41	12.500	17.37	18.50	2.17
0.583	1.35	6.583	2.41	12.583	8.93	18.58	2.17
0.667	1.35	6.667	2.41	12.667	8.92	18.67	2.17
0.750	1.35	6.750	2.41	12.750	8.92	18.75	2.17
0.833	1.30	6.833	2.41	12.833	8.92	18.83	2.17
0.917	1.30	6.917	2.41	12.917	8.92	18.92	2.17
1.000	1.30	7.000	2.41	13.000	8.92	19.00	2.17
1.083	1.35	7.083	2.41	13.083	5.79	19.08	2.17

1.167	1.35	7.167	2.41	13.167	5.79	19.17	2.17
1.250	1.35	7.250	2.41	13.250	5.79	19.25	2.17
1.333	1.30	7.333	2.41	13.333	5.79	19.33	2.17
1.417	1.30	7.417	2.41	13.417	5.79	19.42	2.17
1.500	1.30	7.500	2.41	13.500	5.79	19.50	2.17
1.583	1.35	7.583	2.41	13.583	5.79	19.58	2.17
1.667	1.35	7.667	2.41	13.667	5.79	19.67	2.17
1.750	1.35	7.750	2.41	13.750	5.79	19.75	2.17
1.833	1.30	7.833	2.41	13.833	5.79	19.83	2.17
1.917	1.30	7.917	2.41	13.917	5.79	19.92	2.17
2.000	1.30	8.000	2.41	14.000	5.79	20.00	2.17
2.083	1.59	8.083	3.28	14.083	3.62	20.08	1.45
2.167	1.59	8.167	3.28	14.167	3.62	20.17	1.45
2.250	1.59	8.250	3.28	14.250	3.62	20.25	1.45
2.333	1.54	8.333	3.23	14.333	3.62	20.33	1.45
2.417	1.54	8.417	3.23	14.417	3.62	20.42	1.45
2.500	1.54	8.500	3.23	14.500	3.62	20.50	1.45
2.583	1.59	8.583	3.28	14.583	3.62	20.58	1.45
2.667	1.59	8.667	3.28	14.667	3.62	20.67	1.45
2.750	1.59	8.750	3.28	14.750	3.62	20.75	1.45
2.833	1.54	8.833	3.23	14.833	3.62	20.83	1.45
2.917	1.54	8.917	3.23	14.917	3.62	20.92	1.45
3.000	1.54	9.000	3.23	15.000	3.62	21.00	1.45
3.083	1.59	9.083	3.86	15.083	3.62	21.08	1.45
3.167	1.59	9.167	3.86	15.167	3.62	21.17	1.45
3.250	1.59	9.250	3.86	15.250	3.62	21.25	1.45
3.333	1.54	9.333	3.86	15.333	3.62	21.33	1.45
3.417	1.54	9.417	3.86	15.417	3.62	21.42	1.45
3.500	1.54	9.500	3.86	15.500	3.62	21.50	1.45
3.583	1.59	9.583	4.34	15.583	3.62	21.58	1.45
3.667	1.59	9.667	4.34	15.667	3.62	21.67	1.45
3.750	1.59	9.750	4.34	15.750	3.62	21.75	1.45
3.833	1.54	9.833	4.34	15.833	3.62	21.83	1.45
3.917	1.54	9.917	4.34	15.917	3.62	21.92	1.45
4.000	1.54	10.000	4.34	16.000	3.62	22.00	1.45
4.083	1.93	10.083	5.55	16.083	2.17	22.08	1.45
4.167	1.93	10.167	5.55	16.167	2.17	22.17	1.45
4.250	1.93	10.250	5.55	16.250	2.17	22.25	1.45
4.333	1.93	10.333	5.55	16.333	2.17	22.33	1.45
4.417	1.93	10.417	5.55	16.417	2.17	22.42	1.45
4.500	1.93	10.500	5.55	16.500	2.17	22.50	1.45
4.583	1.93	10.583	7.48	16.583	2.17	22.58	1.45
4.667	1.93	10.667	7.48	16.667	2.17	22.67	1.45
4.750	1.93	10.750	7.48	16.750	2.17	22.75	1.45
4.833	1.93	10.833	7.48	16.833	2.17	22.83	1.45
4.917	1.93	10.917	7.48	16.917	2.17	22.92	1.45
5.000	1.93	11.000	7.48	17.000	2.17	23.00	1.45
5.083	1.93	11.083	11.58	17.083	2.17	23.08	1.45
5.167	1.93	11.167	11.58	17.167	2.17	23.17	1.45
5.250	1.93	11.250	11.58	17.250	2.17	23.25	1.45
5.333	1.93	11.333	11.58	17.333	2.17	23.33	1.45
5.417	1.93	11.417	11.58	17.417	2.17	23.42	1.45
5.500	1.93	11.500	11.58	17.500	2.17	23.50	1.45
5.583	1.93	11.583	91.65	17.583	2.17	23.58	1.45
5.667	1.93	11.667	91.66	17.667	2.17	23.67	1.45
5.750	1.93	11.750	91.66	17.750	2.17	23.75	1.45
5.833	1.93	11.833	91.66	17.833	2.17	23.83	1.45
5.917	1.93	11.917	91.66	17.917	2.17	23.92	1.45
6.000	1.93	12.000	91.66	18.000	2.17	24.00	1.45

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.324 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 46.899
TOTAL RAINFALL (mm)= 120.600
RUNOFF COEFFICIENT = 0.389

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

CALIB			
NASHYD (0007)	Area (ha)=	1.20	Curve Number (CN)= 72.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.35	6.083	2.41	12.083	17.37	18.08	2.17
0.167	1.35	6.167	2.41	12.167	17.37	18.17	2.17
0.250	1.35	6.250	2.41	12.250	17.37	18.25	2.17
0.333	1.30	6.333	2.41	12.333	17.37	18.33	2.17
0.417	1.30	6.417	2.41	12.417	17.37	18.42	2.17
0.500	1.30	6.500	2.41	12.500	17.37	18.50	2.17
0.583	1.35	6.583	2.41	12.583	8.93	18.58	2.17
0.667	1.35	6.667	2.41	12.667	8.92	18.67	2.17
0.750	1.35	6.750	2.41	12.750	8.92	18.75	2.17
0.833	1.30	6.833	2.41	12.833	8.92	18.83	2.17
0.917	1.30	6.917	2.41	12.917	8.92	18.92	2.17
1.000	1.30	7.000	2.41	13.000	8.92	19.00	2.17
1.083	1.35	7.083	2.41	13.083	5.79	19.08	2.17
1.167	1.35	7.167	2.41	13.167	5.79	19.17	2.17
1.250	1.35	7.250	2.41	13.250	5.79	19.25	2.17
1.333	1.30	7.333	2.41	13.333	5.79	19.33	2.17
1.417	1.30	7.417	2.41	13.417	5.79	19.42	2.17
1.500	1.30	7.500	2.41	13.500	5.79	19.50	2.17
1.583	1.35	7.583	2.41	13.583	5.79	19.58	2.17
1.667	1.35	7.667	2.41	13.667	5.79	19.67	2.17
1.750	1.35	7.750	2.41	13.750	5.79	19.75	2.17
1.833	1.30	7.833	2.41	13.833	5.79	19.83	2.17
1.917	1.30	7.917	2.41	13.917	5.79	19.92	2.17
2.000	1.30	8.000	2.41	14.000	5.79	20.00	2.17
2.083	1.59	8.083	3.28	14.083	3.62	20.08	1.45
2.167	1.59	8.167	3.28	14.167	3.62	20.17	1.45
2.250	1.59	8.250	3.28	14.250	3.62	20.25	1.45
2.333	1.54	8.333	3.23	14.333	3.62	20.33	1.45
2.417	1.54	8.417	3.23	14.417	3.62	20.42	1.45
2.500	1.54	8.500	3.23	14.500	3.62	20.50	1.45
2.583	1.59	8.583	3.28	14.583	3.62	20.58	1.45
2.667	1.59	8.667	3.28	14.667	3.62	20.67	1.45
2.750	1.59	8.750	3.28	14.750	3.62	20.75	1.45
2.833	1.54	8.833	3.23	14.833	3.62	20.83	1.45
2.917	1.54	8.917	3.23	14.917	3.62	20.92	1.45
3.000	1.54	9.000	3.23	15.000	3.62	21.00	1.45
3.083	1.59	9.083	3.86	15.083	3.62	21.08	1.45
3.167	1.59	9.167	3.86	15.167	3.62	21.17	1.45
3.250	1.59	9.250	3.86	15.250	3.62	21.25	1.45
3.333	1.54	9.333	3.86	15.333	3.62	21.33	1.45
3.417	1.54	9.417	3.86	15.417	3.62	21.42	1.45
3.500	1.54	9.500	3.86	15.500	3.62	21.50	1.45
3.583	1.59	9.583	4.34	15.583	3.62	21.58	1.45
3.667	1.59	9.667	4.34	15.667	3.62	21.67	1.45
3.750	1.59	9.750	4.34	15.750	3.62	21.75	1.45
3.833	1.54	9.833	4.34	15.833	3.62	21.83	1.45
3.917	1.54	9.917	4.34	15.917	3.62	21.92	1.45
4.000	1.54	10.000	4.34	16.000	3.62	22.00	1.45
4.083	1.93	10.083	5.55	16.083	2.17	22.08	1.45
4.167	1.93	10.167	5.55	16.167	2.17	22.17	1.45
4.250	1.93	10.250	5.55	16.250	2.17	22.25	1.45
4.333	1.93	10.333	5.55	16.333	2.17	22.33	1.45
4.417	1.93	10.417	5.55	16.417	2.17	22.42	1.45
4.500	1.93	10.500	5.55	16.500	2.17	22.50	1.45
4.583	1.93	10.583	7.48	16.583	2.17	22.58	1.45
4.667	1.93	10.667	7.48	16.667	2.17	22.67	1.45
4.750	1.93	10.750	7.48	16.750	2.17	22.75	1.45
4.833	1.93	10.833	7.48	16.833	2.17	22.83	1.45
4.917	1.93	10.917	7.48	16.917	2.17	22.92	1.45
5.000	1.93	11.000	7.48	17.000	2.17	23.00	1.45
5.083	1.93	11.083	11.58	17.083	2.17	23.08	1.45
5.167	1.93	11.167	11.58	17.167	2.17	23.17	1.45
5.250	1.93	11.250	11.58	17.250	2.17	23.25	1.45
5.333	1.93	11.333	11.58	17.333	2.17	23.33	1.45
5.417	1.93	11.417	11.58	17.417	2.17	23.42	1.45
5.500	1.93	11.500	11.58	17.500	2.17	23.50	1.45
5.583	1.93	11.583	91.65	17.583	2.17	23.58	1.45
5.667	1.93	11.667	91.66	17.667	2.17	23.67	1.45
5.750	1.93	11.750	91.66	17.750	2.17	23.75	1.45
5.833	1.93	11.833	91.66	17.833	2.17	23.83	1.45
5.917	1.93	11.917	91.66	17.917	2.17	23.92	1.45
6.000	1.93	12.000	91.66	18.000	2.17	24.00	1.45

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.162 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 62.217
TOTAL RAINFALL (mm)= 120.600
RUNOFF COEFFICIENT = 0.516

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

CALIB								
STANDHYD (0002)	Area (ha)= 2.65							
ID= 1 DT= 5.0 min	Total Imp(%)= 94.00	Dir. Conn.(%)= 94.00						

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.35	6.083	2.41	12.083	17.37	18.08	2.17
0.167	1.35	6.167	2.41	12.167	17.37	18.17	2.17
0.250	1.35	6.250	2.41	12.250	17.37	18.25	2.17
0.333	1.30	6.333	2.41	12.333	17.37	18.33	2.17
0.417	1.30	6.417	2.41	12.417	17.37	18.42	2.17
0.500	1.30	6.500	2.41	12.500	17.37	18.50	2.17
0.583	1.35	6.583	2.41	12.583	8.93	18.58	2.17
0.667	1.35	6.667	2.41	12.667	8.92	18.67	2.17
0.750	1.35	6.750	2.41	12.750	8.92	18.75	2.17
0.833	1.30	6.833	2.41	12.833	8.92	18.83	2.17
0.917	1.30	6.917	2.41	12.917	8.92	18.92	2.17
1.000	1.30	7.000	2.41	13.000	8.92	19.00	2.17
1.083	1.35	7.083	2.41	13.083	5.79	19.08	2.17
1.167	1.35	7.167	2.41	13.167	5.79	19.17	2.17
1.250	1.35	7.250	2.41	13.250	5.79	19.25	2.17
1.333	1.30	7.333	2.41	13.333	5.79	19.33	2.17
1.417	1.30	7.417	2.41	13.417	5.79	19.42	2.17
1.500	1.30	7.500	2.41	13.500	5.79	19.50	2.17
1.583	1.35	7.583	2.41	13.583	5.79	19.58	2.17
1.667	1.35	7.667	2.41	13.667	5.79	19.67	2.17
1.750	1.35	7.750	2.41	13.750	5.79	19.75	2.17
1.833	1.30	7.833	2.41	13.833	5.79	19.83	2.17
1.917	1.30	7.917	2.41	13.917	5.79	19.92	2.17
2.000	1.30	8.000	2.41	14.000	5.79	20.00	2.17
2.083	1.59	8.083	3.28	14.083	3.62	20.08	1.45
2.167	1.59	8.167	3.28	14.167	3.62	20.17	1.45
2.250	1.59	8.250	3.28	14.250	3.62	20.25	1.45
2.333	1.54	8.333	3.23	14.333	3.62	20.33	1.45
2.417	1.54	8.417	3.23	14.417	3.62	20.42	1.45
2.500	1.54	8.500	3.23	14.500	3.62	20.50	1.45
2.583	1.59	8.583	3.28	14.583	3.62	20.58	1.45
2.667	1.59	8.667	3.28	14.667	3.62	20.67	1.45
2.750	1.59	8.750	3.28	14.750	3.62	20.75	1.45
2.833	1.54	8.833	3.23	14.833	3.62	20.83	1.45
2.917	1.54	8.917	3.23	14.917	3.62	20.92	1.45
3.000	1.54	9.000	3.23	15.000	3.62	21.00	1.45
3.083	1.59	9.083	3.86	15.083	3.62	21.08	1.45
3.167	1.59	9.167	3.86	15.167	3.62	21.17	1.45
3.250	1.59	9.250	3.86	15.250	3.62	21.25	1.45
3.333	1.54	9.333	3.86	15.333	3.62	21.33	1.45
3.417	1.54	9.417	3.86	15.417	3.62	21.42	1.45
3.500	1.54	9.500	3.86	15.500	3.62	21.50	1.45
3.583	1.59	9.583	4.34	15.583	3.62	21.58	1.45
3.667	1.59	9.667	4.34	15.667	3.62	21.67	1.45
3.750	1.59	9.750	4.34	15.750	3.62	21.75	1.45
3.833	1.54	9.833	4.34	15.833	3.62	21.83	1.45
3.917	1.54	9.917	4.34	15.917	3.62	21.92	1.45
4.000	1.54	10.000	4.34	16.000	3.62	22.00	1.45
4.083	1.93	10.083	5.55	16.083	2.17	22.08	1.45
4.167	1.93	10.167	5.55	16.167	2.17	22.17	1.45
4.250	1.93	10.250	5.55	16.250	2.17	22.25	1.45
4.333	1.93	10.333	5.55	16.333	2.17	22.33	1.45
4.417	1.93	10.417	5.55	16.417	2.17	22.42	1.45
4.500	1.93	10.500	5.55	16.500	2.17	22.50	1.45
4.583	1.93	10.583	7.48	16.583	2.17	22.58	1.45
4.667	1.93	10.667	7.48	16.667	2.17	22.67	1.45
4.750	1.93	10.750	7.48	16.750	2.17	22.75	1.45
4.833	1.93	10.833	7.48	16.833	2.17	22.83	1.45
4.917	1.93	10.917	7.48	16.917	2.17	22.92	1.45
5.000	1.93	11.000	7.48	17.000	2.17	23.00	1.45
5.083	1.93	11.083	11.58	17.083	2.17	23.08	1.45
5.167	1.93	11.167	11.58	17.167	2.17	23.17	1.45
5.250	1.93	11.250	11.58	17.250	2.17	23.25	1.45
5.333	1.93	11.333	11.58	17.333	2.17	23.33	1.45
5.417	1.93	11.417	11.58	17.417	2.17	23.42	1.45
5.500	1.93	11.500	11.58	17.500	2.17	23.50	1.45
5.583	1.93	11.583	91.65	17.583	2.17	23.58	1.45
5.667	1.93	11.667	91.66	17.667	2.17	23.67	1.45
5.750	1.93	11.750	91.66	17.750	2.17	23.75	1.45
5.833	1.93	11.833	91.66	17.833	2.17	23.83	1.45
5.917	1.93	11.917	91.66	17.917	2.17	23.92	1.45
6.000	1.93	12.000	91.66	18.000	2.17	24.00	1.45

Max.Eff.Inten.	(mm/hr)=	91.66	********	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	3.14 (ii)	5.57 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.27	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.63	0.04	0.674 (iii)
TIME TO PEAK	(hrs)=	12.00	12.00	12.00
RUNOFF VOLUME	(mm)=	119.60	116.59	119.42
TOTAL RAINFALL	(mm)=	120.60	120.60	120.60
RUNOFF COEFFICIENT	=	0.99	0.97	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB								
STANDHYD (0004)	Area (ha)= 3.23							
ID= 1 DT= 5.0 min	Total Imp(%)= 94.00	Dir. Conn.(%)= 94.00						

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.35	6.083	2.41	12.083	17.37	18.08	2.17
0.167	1.35	6.167	2.41	12.167	17.37	18.17	2.17
0.250	1.35	6.250	2.41	12.250	17.37	18.25	2.17
0.333	1.30	6.333	2.41	12.333	17.37	18.33	2.17
0.417	1.30	6.417	2.41	12.417	17.37	18.42	2.17
0.500	1.30	6.500	2.41	12.500	17.37	18.50	2.17
0.583	1.35	6.583	2.41	12.583	8.93	18.58	2.17
0.667	1.35	6.667	2.41	12.667	8.92	18.67	2.17
0.750	1.35	6.750	2.41	12.750	8.92	18.75	2.17
0.833	1.30	6.833	2.41	12.833	8.92	18.83	2.17
0.917	1.30	6.917	2.41	12.917	8.92	18.92	2.17
1.000	1.30	7.000	2.41	13.000	8.92	19.00	2.17
1.083	1.35	7.083	2.41	13.083	5.79	19.08	2.17
1.167	1.35	7.167	2.41	13.167	5.79	19.17	2.17
1.250	1.35	7.250	2.41	13.250	5.79	19.25	2.17
1.333	1.30	7.333	2.41	13.333	5.79	19.33	2.17
1.417	1.30	7.417	2.41	13.417	5.79	19.42	2.17
1.500	1.30	7.500	2.41	13.500	5.79	19.50	2.17
1.583	1.35	7.583	2.41	13.583	5.79	19.58	2.17
1.667	1.35	7.667	2.41	13.667	5.79	19.67	2.17
1.750	1.35	7.750	2.41	13.750	5.79	19.75	2.17
1.833	1.30	7.833	2.41	13.833	5.79	19.83	2.17
1.917	1.30	7.917	2.41	13.917	5.79	19.92	2.17
2.000	1.30	8.000	2.41	14.000	5.79	20.00	2.17
2.083	1.59	8.083	3.28	14.083	3.62	20.08	1.45
2.167	1.59	8.167	3.28	14.167	3.62	20.17	1.45
2.250	1.59	8.250	3.28	14.250	3.62	20.25	1.45
2.333	1.54	8.333	3.23	14.333	3.62	20.33	1.45
2.417	1.54	8.417	3.23	14.417	3.62	20.42	1.45
2.500	1.54	8.500	3.23	14.500	3.62	20.50	1.45
2.583	1.59	8.583	3.28	14.583	3.62	20.58	1.45
2.667	1.59	8.667	3.28	14.667	3.62	20.67	1.45
2.750	1.59	8.750	3.28	14.750	3.62	20.75	1.45
2.833	1.54	8.833	3.23	14.833	3.62	20.83	1.45
2.917	1.54	8.917	3.23	14.917	3.62	20.92	1.45
3.000	1.54	9.000	3.23	15.000	3.62	21.00	1.45
3.083	1.59	9.083	3.86	15.083	3.62	21.08	1.45
3.167	1.59	9.167	3.86	15.167	3.62	21.17	1.45
3.250	1.59	9.250	3.86	15.250	3.62	21.25	1.45

3.333	1.54	9.333	3.86	15.333	3.62	21.33	1.45
3.417	1.54	9.417	3.86	15.417	3.62	21.42	1.45
3.500	1.54	9.500	3.86	15.500	3.62	21.50	1.45
3.583	1.59	9.583	4.34	15.583	3.62	21.58	1.45
3.667	1.59	9.667	4.34	15.667	3.62	21.67	1.45
3.750	1.59	9.750	4.34	15.750	3.62	21.75	1.45
3.833	1.54	9.833	4.34	15.833	3.62	21.83	1.45
3.917	1.54	9.917	4.34	15.917	3.62	21.92	1.45
4.000	1.54	10.000	4.34	16.000	3.62	22.00	1.45
4.083	1.93	10.083	5.55	16.083	2.17	22.08	1.45
4.167	1.93	10.167	5.55	16.167	2.17	22.17	1.45
4.250	1.93	10.250	5.55	16.250	2.17	22.25	1.45
4.333	1.93	10.333	5.55	16.333	2.17	22.33	1.45
4.417	1.93	10.417	5.55	16.417	2.17	22.42	1.45
4.500	1.93	10.500	5.55	16.500	2.17	22.50	1.45
4.583	1.93	10.583	7.48	16.583	2.17	22.58	1.45
4.667	1.93	10.667	7.48	16.667	2.17	22.67	1.45
4.750	1.93	10.750	7.48	16.750	2.17	22.75	1.45
4.833	1.93	10.833	7.48	16.833	2.17	22.83	1.45
4.917	1.93	10.917	7.48	16.917	2.17	22.92	1.45
5.000	1.93	11.000	7.48	17.000	2.17	23.00	1.45
5.083	1.93	11.083	11.58	17.083	2.17	23.08	1.45
5.167	1.93	11.167	11.58	17.167	2.17	23.17	1.45
5.250	1.93	11.250	11.58	17.250	2.17	23.25	1.45
5.333	1.93	11.333	11.58	17.333	2.17	23.33	1.45
5.417	1.93	11.417	11.58	17.417	2.17	23.42	1.45
5.500	1.93	11.500	11.58	17.500	2.17	23.50	1.45
5.583	1.93	11.583	91.65	17.583	2.17	23.58	1.45
5.667	1.93	11.667	91.66	17.667	2.17	23.67	1.45
5.750	1.93	11.750	91.66	17.750	2.17	23.75	1.45
5.833	1.93	11.833	91.66	17.833	2.17	23.83	1.45
5.917	1.93	11.917	91.66	17.917	2.17	23.92	1.45
6.000	1.93	12.000	91.66	18.000	2.17	24.00	1.45

Max.Eff.Inten.(mm/hr)=	91.66	********		
over (min)	5.00	10.00		
Storage Coeff. (min)=	3.33 (ii)	5.76 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.26	0.15		
			TOTALS	
PEAK FLOW (cms)=	0.77	0.05	0.822 (iii)	
TIME TO PEAK (hrs)=	12.00	12.00	12.00	
RUNOFF VOLUME (mm)=	119.60	116.59	119.42	
TOTAL RAINFALL (mm)=	120.60	120.60	120.60	
RUNOFF COEFFICIENT =	0.99	0.97	0.99	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1360	0.2300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	0.822	12.00	119.42
OUTFLOW: ID= 1 (0005)	3.230	0.119	12.58	119.29

PEAK FLOW REDUCTION [Qout/Qin](%)= 14.47
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.2013

CALIB				
STANDHYD (0010)	Area (ha)= 0.92			
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.46	0.46
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	78.32	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.35	6.083	2.41	12.083	17.37	18.08	2.17
0.167	1.35	6.167	2.41	12.167	17.37	18.17	2.17
0.250	1.35	6.250	2.41	12.250	17.37	18.25	2.17
0.333	1.30	6.333	2.41	12.333	17.37	18.33	2.17
0.417	1.30	6.417	2.41	12.417	17.37	18.42	2.17
0.500	1.30	6.500	2.41	12.500	17.37	18.50	2.17
0.583	1.35	6.583	2.41	12.583	8.93	18.58	2.17
0.667	1.35	6.667	2.41	12.667	8.92	18.67	2.17
0.750	1.35	6.750	2.41	12.750	8.92	18.75	2.17
0.833	1.30	6.833	2.41	12.833	8.92	18.83	2.17
0.917	1.30	6.917	2.41	12.917	8.92	18.92	2.17
1.000	1.30	7.000	2.41	13.000	8.92	19.00	2.17
1.083	1.35	7.083	2.41	13.083	5.79	19.08	2.17
1.167	1.35	7.167	2.41	13.167	5.79	19.17	2.17
1.250	1.35	7.250	2.41	13.250	5.79	19.25	2.17
1.333	1.30	7.333	2.41	13.333	5.79	19.33	2.17
1.417	1.30	7.417	2.41	13.417	5.79	19.42	2.17
1.500	1.30	7.500	2.41	13.500	5.79	19.50	2.17
1.583	1.35	7.583	2.41	13.583	5.79	19.58	2.17
1.667	1.35	7.667	2.41	13.667	5.79	19.67	2.17
1.750	1.35	7.750	2.41	13.750	5.79	19.75	2.17
1.833	1.30	7.833	2.41	13.833	5.79	19.83	2.17
1.917	1.30	7.917	2.41	13.917	5.79	19.92	2.17
2.000	1.30	8.000	2.41	14.000	5.79	20.00	2.17
2.083	1.59	8.083	3.28	14.083	3.62	20.08	1.45
2.167	1.59	8.167	3.28	14.167	3.62	20.17	1.45
2.250	1.59	8.250	3.28	14.250	3.62	20.25	1.45
2.333	1.54	8.333	3.23	14.333	3.62	20.33	1.45
2.417	1.54	8.417	3.23	14.417	3.62	20.42	1.45
2.500	1.54	8.500	3.23	14.500	3.62	20.50	1.45
2.583	1.59	8.583	3.28	14.583	3.62	20.58	1.45
2.667	1.59	8.667	3.28	14.667	3.62	20.67	1.45
2.750	1.59	8.750	3.28	14.750	3.62	20.75	1.45
2.833	1.54	8.833	3.23	14.833	3.62	20.83	1.45
2.917	1.54	8.917	3.23	14.917	3.62	20.92	1.45
3.000	1.54	9.000	3.23	15.000	3.62	21.00	1.45
3.083	1.59	9.083	3.86	15.083	3.62	21.08	1.45
3.167	1.59	9.167	3.86	15.167	3.62	21.17	1.45
3.250	1.59	9.250	3.86	15.250	3.62	21.25	1.45
3.333	1.54	9.333	3.86	15.333	3.62	21.33	1.45
3.417	1.54	9.417	3.86	15.417	3.62	21.42	1.45
3.500	1.54	9.500	3.86	15.500	3.62	21.50	1.45
3.583	1.59	9.583	4.34	15.583	3.62	21.58	1.45
3.667	1.59	9.667	4.34	15.667	3.62	21.67	1.45
3.750	1.59	9.750	4.34	15.750	3.62	21.75	1.45
3.833	1.54	9.833	4.34	15.833	3.62	21.83	1.45
3.917	1.54	9.917	4.34	15.917	3.62	21.92	1.45
4.000	1.54	10.000	4.34	16.000	3.62	22.00	1.45
4.083	1.93	10.083	5.55	16.083	2.17	22.08	1.45
4.167	1.93	10.167	5.55	16.167	2.17	22.17	1.45
4.250	1.93	10.250	5.55	16.250	2.17	22.25	1.45
4.333	1.93	10.333	5.55	16.333	2.17	22.33	1.45
4.417	1.93	10.417	5.55	16.417	2.17	22.42	1.45
4.500	1.93	10.500	5.55	16.500	2.17	22.50	1.45
4.583	1.93	10.583	7.48	16.583	2.17	22.58	1.45
4.667	1.93	10.667	7.48	16.667	2.17	22.67	1.45
4.750	1.93	10.750	7.48	16.750	2.17	22.75	1.45
4.833	1.93	10.833	7.48	16.833	2.17	22.83	1.45
4.917	1.93	10.917	7.48	16.917	2.17	22.92	1.45
5.000	1.93	11.000	7.48	17.000	2.17	23.00	1.45
5.083	1.93	11.083	11.58	17.083	2.17	23.08	1.45
5.167	1.93	11.167	11.58	17.167	2.17	23.17	1.45
5.250	1.93	11.250	11.58	17.250	2.17	23.25	1.45
5.333	1.93	11.333	11.58	17.333	2.17	23.33	1.45
5.417	1.93	11.417	11.58	17.417	2.17	23.42	1.45
5.500	1.93	11.500	11.58	17.500	2.17	23.50	1.45
5.583	1.93	11.583	91.65	17.583	2.17	23.58	1.45
5.667	1.93	11.667	91.66	17.667	2.17	23.67	1.45
5.750	1.93	11.750	91.66	17.750	2.17	23.75	1.45
5.833	1.93	11.833	91.66	17.833	2.17	23.83	1.45
5.917	1.93	11.917	91.66	17.917	2.17	23.92	1.45
6.000	1.93	12.000	91.66	18.000	2.17	24.00	1.45

Max.Eff.Inten.(mm/hr)=	91.66	56.70
over (min)	5.00	15.00
Storage Coeff. (min)=	2.28 (ii)	11.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.09

```
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.06          0.174 (iii)
     TIME TO PEAK    (hrs)=      12.00        12.08         12.00
     RUNOFF VOLUME    (mm)=     119.60        60.82         90.21
     TOTAL RAINFALL   (mm)=     120.60       120.60        120.60
     RUNOFF COEFFICIENT   =       0.99         0.50          0.75

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.174    12.00    90.21
     + ID2= 2 (  0002):     2.65   0.674    12.00   119.42
       ================================================
       ID = 3 (  0006):     3.57   0.849    12.00   111.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   0.849    12.00   111.89
     + ID2= 2 (  0005):     3.23   0.119    12.58   119.29
       ================================================
       ID = 1 (  0006):     6.80   0.953    12.00   115.40

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0720     0.3590
                          0.0060     0.0320   |   0.1000     0.4070
                          0.0110     0.0650   |   0.1370     0.4570
                          0.0140     0.1010   |   0.1810     0.5090
                          0.0170     0.1400   |   0.2300     0.5620
                          0.0270     0.1800   |   0.5740     0.6180
                          0.0420     0.2220   |   1.3000     0.6780
                          0.0520     0.2660   |   2.4830     0.7440
                          0.0600     0.3120   |   0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)     6.800     0.953     12.00     115.40
   OUTFLOW: ID= 1 (  0003)     6.800     0.099     16.17     115.20

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 10.39
                  TIME SHIFT OF PEAK FLOW         (min)=250.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.4053

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.099    16.17   115.20
     + ID2= 2 (  0007):     1.20   0.162    12.00    62.22
       ================================================
       ID = 3 (  0008):     8.00   0.212    12.00   107.26

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

 FINISH
================================================================================================================================

================================================================================================================================

       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
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\be884885-04
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\be884885-04


DATE: 01/16/2023                          TIME: 06:10:51

USER:


COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : SCS MTO ii 24 Hour 5yr Barrie **
  ************************************************

--------------------
| MASS STORM       |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              4d115e28-8689-44fe-a23c-8ba2dad70c48\f329e743
| Ptotal= 76.00 mm |    Comments: 24 Hour SCSii Storm Based on MTO Design
--------------------
                       Duration of storm    = 24.00 hrs
                       Mass curve time step = 15.00 min

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.00    0.85 |  6.00    1.52 | 12.00   10.94 | 18.00    1.37
              0.25    0.82 |  6.25    1.52 | 12.25   10.94 | 18.25    1.37
              0.50    0.85 |  6.50    1.52 | 12.50    5.62 | 18.50    1.37
              0.75    0.82 |  6.75    1.52 | 12.75    5.62 | 18.75    1.37
              1.00    0.85 |  7.00    1.52 | 13.00    3.65 | 19.00    1.37
              1.25    0.82 |  7.25    1.52 | 13.25    3.65 | 19.25    1.37
              1.50    0.85 |  7.50    1.52 | 13.50    3.65 | 19.50    1.37
              1.75    0.82 |  7.75    1.52 | 13.75    3.65 | 19.75    1.37
              2.00    1.00 |  8.00    2.07 | 14.00    2.28 | 20.00    0.91
              2.25    0.97 |  8.25    2.04 | 14.25    2.28 | 20.25    0.91
              2.50    1.00 |  8.50    2.07 | 14.50    2.28 | 20.50    0.91
              2.75    0.97 |  8.75    2.04 | 14.75    2.28 | 20.75    0.91
              3.00    1.00 |  9.00    2.43 | 15.00    2.28 | 21.00    0.91
              3.25    0.97 |  9.25    2.43 | 15.25    2.28 | 21.25    0.91
              3.50    1.00 |  9.50    2.74 | 15.50    2.28 | 21.50    0.91
              3.75    0.97 |  9.75    2.74 | 15.75    2.28 | 21.75    0.91
              4.00    1.22 | 10.00    3.50 | 16.00    1.37 | 22.00    0.91
              4.25    1.22 | 10.25    3.50 | 16.25    1.37 | 22.25    0.91
              4.50    1.22 | 10.50    4.71 | 16.50    1.37 | 22.50    0.91
              4.75    1.22 | 10.75    4.71 | 16.75    1.37 | 22.75    0.91
              5.00    1.22 | 11.00    7.30 | 17.00    1.37 | 23.00    0.91
              5.25    1.22 | 11.25    7.30 | 17.25    1.37 | 23.25    0.91
              5.50    1.22 | 11.50   57.76 | 17.50    1.37 | 23.50    0.91
              5.75    1.22 | 11.75   57.76 | 17.75    1.37 | 23.75    0.91

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area    (ha)=   8.00   Curve Number    (CN)= 60.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
```

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.85	6.083	1.52	12.083	10.95	18.08	1.37
0.167	0.85	6.167	1.52	12.167	10.94	18.17	1.37
0.250	0.85	6.250	1.52	12.250	10.94	18.25	1.37
0.333	0.82	6.333	1.52	12.333	10.94	18.33	1.37
0.417	0.82	6.417	1.52	12.417	10.94	18.42	1.37
0.500	0.82	6.500	1.52	12.500	10.94	18.50	1.37
0.583	0.85	6.583	1.52	12.583	5.62	18.58	1.37
0.667	0.85	6.667	1.52	12.667	5.62	18.67	1.37
0.750	0.85	6.750	1.52	12.750	5.62	18.75	1.37
0.833	0.82	6.833	1.52	12.833	5.62	18.83	1.37
0.917	0.82	6.917	1.52	12.917	5.62	18.92	1.37
1.000	0.82	7.000	1.52	13.000	5.62	19.00	1.37
1.083	0.85	7.083	1.52	13.083	3.65	19.08	1.37
1.167	0.85	7.167	1.52	13.167	3.65	19.17	1.37
1.250	0.85	7.250	1.52	13.250	3.65	19.25	1.37
1.333	0.82	7.333	1.52	13.333	3.65	19.33	1.37
1.417	0.82	7.417	1.52	13.417	3.65	19.42	1.37
1.500	0.82	7.500	1.52	13.500	3.65	19.50	1.37
1.583	0.85	7.583	1.52	13.583	3.65	19.58	1.37
1.667	0.85	7.667	1.52	13.667	3.65	19.67	1.37
1.750	0.85	7.750	1.52	13.750	3.65	19.75	1.37
1.833	0.82	7.833	1.52	13.833	3.65	19.83	1.37
1.917	0.82	7.917	1.52	13.917	3.65	19.92	1.37
2.000	0.82	8.000	1.52	14.000	3.65	20.00	1.37
2.083	1.00	8.083	2.07	14.083	2.28	20.08	0.91
2.167	1.00	8.167	2.07	14.167	2.28	20.17	0.91
2.250	1.00	8.250	2.07	14.250	2.28	20.25	0.91
2.333	0.97	8.333	2.04	14.333	2.28	20.33	0.91
2.417	0.97	8.417	2.04	14.417	2.28	20.42	0.91
2.500	0.97	8.500	2.04	14.500	2.28	20.50	0.91
2.583	1.00	8.583	2.07	14.583	2.28	20.58	0.91
2.667	1.00	8.667	2.07	14.667	2.28	20.67	0.91
2.750	1.00	8.750	2.07	14.750	2.28	20.75	0.91
2.833	0.97	8.833	2.04	14.833	2.28	20.83	0.91
2.917	0.97	8.917	2.04	14.917	2.28	20.92	0.91
3.000	0.97	9.000	2.04	15.000	2.28	21.00	0.91
3.083	1.00	9.083	2.43	15.083	2.28	21.08	0.91
3.167	1.00	9.167	2.43	15.167	2.28	21.17	0.91
3.250	1.00	9.250	2.43	15.250	2.28	21.25	0.91
3.333	0.97	9.333	2.43	15.333	2.28	21.33	0.91
3.417	0.97	9.417	2.43	15.417	2.28	21.42	0.91
3.500	0.97	9.500	2.43	15.500	2.28	21.50	0.91
3.583	1.00	9.583	2.74	15.583	2.28	21.58	0.91
3.667	1.00	9.667	2.74	15.667	2.28	21.67	0.91
3.750	1.00	9.750	2.74	15.750	2.28	21.75	0.91
3.833	0.97	9.833	2.74	15.833	2.28	21.83	0.91
3.917	0.97	9.917	2.74	15.917	2.28	21.92	0.91
4.000	0.97	10.000	2.74	16.000	2.28	22.00	0.91
4.083	1.22	10.083	3.50	16.083	1.37	22.08	0.91
4.167	1.22	10.167	3.50	16.167	1.37	22.17	0.91
4.250	1.22	10.250	3.50	16.250	1.37	22.25	0.91
4.333	1.22	10.333	3.50	16.333	1.37	22.33	0.91
4.417	1.22	10.417	3.50	16.417	1.37	22.42	0.91
4.500	1.22	10.500	3.50	16.500	1.37	22.50	0.91
4.583	1.22	10.583	4.71	16.583	1.37	22.58	0.91
4.667	1.22	10.667	4.71	16.667	1.37	22.67	0.91
4.750	1.22	10.750	4.71	16.750	1.37	22.75	0.91
4.833	1.22	10.833	4.71	16.833	1.37	22.83	0.91
4.917	1.22	10.917	4.71	16.917	1.37	22.92	0.91
5.000	1.22	11.000	4.71	17.000	1.37	23.00	0.91
5.083	1.22	11.083	7.30	17.083	1.37	23.08	0.91
5.167	1.22	11.167	7.30	17.167	1.37	23.17	0.91
5.250	1.22	11.250	7.30	17.250	1.37	23.25	0.91
5.333	1.22	11.333	7.30	17.333	1.37	23.33	0.91
5.417	1.22	11.417	7.30	17.417	1.37	23.42	0.91
5.500	1.22	11.500	7.30	17.500	1.37	23.50	0.91
5.583	1.22	11.583	57.76	17.583	1.37	23.58	0.91
5.667	1.22	11.667	57.76	17.667	1.37	23.67	0.91
5.750	1.22	11.750	57.76	17.750	1.37	23.75	0.91
5.833	1.22	11.833	57.76	17.833	1.37	23.83	0.91
5.917	1.22	11.917	57.76	17.917	1.37	23.92	0.91
6.000	1.22	12.000	57.76	18.000	1.37	24.00	0.91

Unit Hyd Qpeak (cms)= 0.355

PEAK FLOW (cms)= 0.141 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 20.975
TOTAL RAINFALL (mm)= 76.000
RUNOFF COEFFICIENT = 0.276

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

CALIB				
NASHYD (0007)	Area (ha)= 1.20	Curve Number (CN)= 72.0		
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00		
	U.H. Tp(hrs)= 0.20			

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.85	6.083	1.52	12.083	10.95	18.08	1.37
0.167	0.85	6.167	1.52	12.167	10.94	18.17	1.37
0.250	0.85	6.250	1.52	12.250	10.94	18.25	1.37
0.333	0.82	6.333	1.52	12.333	10.94	18.33	1.37
0.417	0.82	6.417	1.52	12.417	10.94	18.42	1.37
0.500	0.82	6.500	1.52	12.500	10.94	18.50	1.37
0.583	0.85	6.583	1.52	12.583	5.62	18.58	1.37
0.667	0.85	6.667	1.52	12.667	5.62	18.67	1.37
0.750	0.85	6.750	1.52	12.750	5.62	18.75	1.37
0.833	0.82	6.833	1.52	12.833	5.62	18.83	1.37
0.917	0.82	6.917	1.52	12.917	5.62	18.92	1.37
1.000	0.82	7.000	1.52	13.000	5.62	19.00	1.37
1.083	0.85	7.083	1.52	13.083	3.65	19.08	1.37
1.167	0.85	7.167	1.52	13.167	3.65	19.17	1.37
1.250	0.85	7.250	1.52	13.250	3.65	19.25	1.37
1.333	0.82	7.333	1.52	13.333	3.65	19.33	1.37
1.417	0.82	7.417	1.52	13.417	3.65	19.42	1.37
1.500	0.82	7.500	1.52	13.500	3.65	19.50	1.37
1.583	0.85	7.583	1.52	13.583	3.65	19.58	1.37
1.667	0.85	7.667	1.52	13.667	3.65	19.67	1.37
1.750	0.85	7.750	1.52	13.750	3.65	19.75	1.37
1.833	0.82	7.833	1.52	13.833	3.65	19.83	1.37
1.917	0.82	7.917	1.52	13.917	3.65	19.92	1.37
2.000	0.82	8.000	1.52	14.000	3.65	20.00	1.37
2.083	1.00	8.083	2.07	14.083	2.28	20.08	0.91
2.167	1.00	8.167	2.07	14.167	2.28	20.17	0.91
2.250	1.00	8.250	2.07	14.250	2.28	20.25	0.91
2.333	0.97	8.333	2.04	14.333	2.28	20.33	0.91
2.417	0.97	8.417	2.04	14.417	2.28	20.42	0.91
2.500	0.97	8.500	2.04	14.500	2.28	20.50	0.91
2.583	1.00	8.583	2.07	14.583	2.28	20.58	0.91
2.667	1.00	8.667	2.07	14.667	2.28	20.67	0.91
2.750	1.00	8.750	2.07	14.750	2.28	20.75	0.91
2.833	0.97	8.833	2.04	14.833	2.28	20.83	0.91
2.917	0.97	8.917	2.04	14.917	2.28	20.92	0.91
3.000	0.97	9.000	2.04	15.000	2.28	21.00	0.91
3.083	1.00	9.083	2.43	15.083	2.28	21.08	0.91
3.167	1.00	9.167	2.43	15.167	2.28	21.17	0.91
3.250	1.00	9.250	2.43	15.250	2.28	21.25	0.91
3.333	0.97	9.333	2.43	15.333	2.28	21.33	0.91
3.417	0.97	9.417	2.43	15.417	2.28	21.42	0.91
3.500	0.97	9.500	2.43	15.500	2.28	21.50	0.91
3.583	1.00	9.583	2.74	15.583	2.28	21.58	0.91
3.667	1.00	9.667	2.74	15.667	2.28	21.67	0.91
3.750	1.00	9.750	2.74	15.750	2.28	21.75	0.91
3.833	0.97	9.833	2.74	15.833	2.28	21.83	0.91
3.917	0.97	9.917	2.74	15.917	2.28	21.92	0.91
4.000	0.97	10.000	2.74	16.000	2.28	22.00	0.91
4.083	1.22	10.083	3.50	16.083	1.37	22.08	0.91
4.167	1.22	10.167	3.50	16.167	1.37	22.17	0.91
4.250	1.22	10.250	3.50	16.250	1.37	22.25	0.91
4.333	1.22	10.333	3.50	16.333	1.37	22.33	0.91
4.417	1.22	10.417	3.50	16.417	1.37	22.42	0.91
4.500	1.22	10.500	3.50	16.500	1.37	22.50	0.91
4.583	1.22	10.583	4.71	16.583	1.37	22.58	0.91
4.667	1.22	10.667	4.71	16.667	1.37	22.67	0.91
4.750	1.22	10.750	4.71	16.750	1.37	22.75	0.91
4.833	1.22	10.833	4.71	16.833	1.37	22.83	0.91
4.917	1.22	10.917	4.71	16.917	1.37	22.92	0.91
5.000	1.22	11.000	4.71	17.000	1.37	23.00	0.91
5.083	1.22	11.083	7.30	17.083	1.37	23.08	0.91
5.167	1.22	11.167	7.30	17.167	1.37	23.17	0.91
5.250	1.22	11.250	7.30	17.250	1.37	23.25	0.91
5.333	1.22	11.333	7.30	17.333	1.37	23.33	0.91
5.417	1.22	11.417	7.30	17.417	1.37	23.42	0.91
5.500	1.22	11.500	7.30	17.500	1.37	23.50	0.91
5.583	1.22	11.583	57.76	17.583	1.37	23.58	0.91
5.667	1.22	11.667	57.76	17.667	1.37	23.67	0.91
5.750	1.22	11.750	57.76	17.750	1.37	23.75	0.91
5.833	1.22	11.833	57.76	17.833	1.37	23.83	0.91
5.917	1.22	11.917	57.76	17.917	1.37	23.92	0.91

6.000	1.22	12.000	57.76	18.000	1.37	24.00	0.91

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.076 (i)
TIME TO PEAK (hrs)= 12.000
RUNOFF VOLUME (mm)= 29.635
TOTAL RAINFALL (mm)= 76.000
RUNOFF COEFFICIENT = 0.390

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

CALIB		
STANDHYD (0002)	Area (ha)=	2.65
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.85	6.083	1.52	12.083	10.95	18.08	1.37
0.167	0.85	6.167	1.52	12.167	10.94	18.17	1.37
0.250	0.85	6.250	1.52	12.250	10.94	18.25	1.37
0.333	0.82	6.333	1.52	12.333	10.94	18.33	1.37
0.417	0.82	6.417	1.52	12.417	10.94	18.42	1.37
0.500	0.82	6.500	1.52	12.500	10.94	18.50	1.37
0.583	0.85	6.583	1.52	12.583	5.62	18.58	1.37
0.667	0.85	6.667	1.52	12.667	5.62	18.67	1.37
0.750	0.85	6.750	1.52	12.750	5.62	18.75	1.37
0.833	0.82	6.833	1.52	12.833	5.62	18.83	1.37
0.917	0.82	6.917	1.52	12.917	5.62	18.92	1.37
1.000	0.82	7.000	1.52	13.000	5.62	19.00	1.37
1.083	0.85	7.083	1.52	13.083	3.65	19.08	1.37
1.167	0.85	7.167	1.52	13.167	3.65	19.17	1.37
1.250	0.85	7.250	1.52	13.250	3.65	19.25	1.37
1.333	0.82	7.333	1.52	13.333	3.65	19.33	1.37
1.417	0.82	7.417	1.52	13.417	3.65	19.42	1.37
1.500	0.82	7.500	1.52	13.500	3.65	19.50	1.37
1.583	0.85	7.583	1.52	13.583	3.65	19.58	1.37
1.667	0.85	7.667	1.52	13.667	3.65	19.67	1.37
1.750	0.85	7.750	1.52	13.750	3.65	19.75	1.37
1.833	0.82	7.833	1.52	13.833	3.65	19.83	1.37
1.917	0.82	7.917	1.52	13.917	3.65	19.92	1.37
2.000	0.82	8.000	1.52	14.000	3.65	20.00	1.37
2.083	1.00	8.083	2.07	14.083	2.28	20.08	0.91
2.167	1.00	8.167	2.07	14.167	2.28	20.17	0.91
2.250	1.00	8.250	2.07	14.250	2.28	20.25	0.91
2.333	0.97	8.333	2.04	14.333	2.28	20.33	0.91
2.417	0.97	8.417	2.04	14.417	2.28	20.42	0.91
2.500	0.97	8.500	2.04	14.500	2.28	20.50	0.91
2.583	1.00	8.583	2.07	14.583	2.28	20.58	0.91
2.667	1.00	8.667	2.07	14.667	2.28	20.67	0.91
2.750	1.00	8.750	2.07	14.750	2.28	20.75	0.91
2.833	0.97	8.833	2.04	14.833	2.28	20.83	0.91
2.917	0.97	8.917	2.04	14.917	2.28	20.92	0.91
3.000	0.97	9.000	2.04	15.000	2.28	21.00	0.91
3.083	1.00	9.083	2.43	15.083	2.28	21.08	0.91
3.167	1.00	9.167	2.43	15.167	2.28	21.17	0.91
3.250	1.00	9.250	2.43	15.250	2.28	21.25	0.91
3.333	0.97	9.333	2.43	15.333	2.28	21.33	0.91
3.417	0.97	9.417	2.43	15.417	2.28	21.42	0.91
3.500	0.97	9.500	2.43	15.500	2.28	21.50	0.91
3.583	1.00	9.583	2.74	15.583	2.28	21.58	0.91
3.667	1.00	9.667	2.74	15.667	2.28	21.67	0.91
3.750	1.00	9.750	2.74	15.750	2.28	21.75	0.91
3.833	0.97	9.833	2.74	15.833	2.28	21.83	0.91
3.917	0.97	9.917	2.74	15.917	2.28	21.92	0.91
4.000	0.97	10.000	2.74	16.000	2.28	22.00	0.91
4.083	1.22	10.083	3.50	16.083	1.37	22.08	0.91
4.167	1.22	10.167	3.50	16.167	1.37	22.17	0.91
4.250	1.22	10.250	3.50	16.250	1.37	22.25	0.91
4.333	1.22	10.333	3.50	16.333	1.37	22.33	0.91
4.417	1.22	10.417	3.50	16.417	1.37	22.42	0.91
4.500	1.22	10.500	3.50	16.500	1.37	22.50	0.91
4.583	1.22	10.583	4.71	16.583	1.37	22.58	0.91
4.667	1.22	10.667	4.71	16.667	1.37	22.67	0.91
4.750	1.22	10.750	4.71	16.750	1.37	22.75	0.91
4.833	1.22	10.833	4.71	16.833	1.37	22.83	0.91
4.917	1.22	10.917	4.71	16.917	1.37	22.92	0.91
5.000	1.22	11.000	4.71	17.000	1.37	23.00	0.91
5.083	1.22	11.083	7.30	17.083	1.37	23.08	0.91
5.167	1.22	11.167	7.30	17.167	1.37	23.17	0.91
5.250	1.22	11.250	7.30	17.250	1.37	23.25	0.91
5.333	1.22	11.333	7.30	17.333	1.37	23.33	0.91
5.417	1.22	11.417	7.30	17.417	1.37	23.42	0.91
5.500	1.22	11.500	7.30	17.500	1.37	23.50	0.91
5.583	1.22	11.583	57.76	17.583	1.37	23.58	0.91
5.667	1.22	11.667	57.76	17.667	1.37	23.67	0.91
5.750	1.22	11.750	57.76	17.750	1.37	23.75	0.91
5.833	1.22	11.833	57.76	17.833	1.37	23.83	0.91
5.917	1.22	11.917	57.76	17.917	1.37	23.92	0.91
6.000	1.22	12.000	57.76	18.000	1.37	24.00	0.91

Max.Eff.Inten.(mm/hr)=	57.76	********	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.77 (ii)	6.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.14	

				TOTALS
PEAK FLOW	(cms)=	0.40	0.02	0.425 (iii)
TIME TO PEAK	(hrs)=	12.00	12.00	12.00
RUNOFF VOLUME	(mm)=	75.00	72.02	74.82
TOTAL RAINFALL	(mm)=	76.00	76.00	76.00
RUNOFF COEFFICIENT	=	0.99	0.95	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB		
STANDHYD (0004)	Area (ha)=	3.23
ID= 1 DT= 5.0 min	Total Imp(%)=	94.00 Dir. Conn.(%)= 94.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.85	6.083	1.52	12.083	10.95	18.08	1.37
0.167	0.85	6.167	1.52	12.167	10.94	18.17	1.37
0.250	0.85	6.250	1.52	12.250	10.94	18.25	1.37
0.333	0.82	6.333	1.52	12.333	10.94	18.33	1.37
0.417	0.82	6.417	1.52	12.417	10.94	18.42	1.37
0.500	0.82	6.500	1.52	12.500	10.94	18.50	1.37
0.583	0.85	6.583	1.52	12.583	5.62	18.58	1.37
0.667	0.85	6.667	1.52	12.667	5.62	18.67	1.37
0.750	0.85	6.750	1.52	12.750	5.62	18.75	1.37
0.833	0.82	6.833	1.52	12.833	5.62	18.83	1.37
0.917	0.82	6.917	1.52	12.917	5.62	18.92	1.37
1.000	0.82	7.000	1.52	13.000	5.62	19.00	1.37
1.083	0.85	7.083	1.52	13.083	3.65	19.08	1.37
1.167	0.85	7.167	1.52	13.167	3.65	19.17	1.37
1.250	0.85	7.250	1.52	13.250	3.65	19.25	1.37
1.333	0.82	7.333	1.52	13.333	3.65	19.33	1.37
1.417	0.82	7.417	1.52	13.417	3.65	19.42	1.37
1.500	0.82	7.500	1.52	13.500	3.65	19.50	1.37
1.583	0.85	7.583	1.52	13.583	3.65	19.58	1.37
1.667	0.85	7.667	1.52	13.667	3.65	19.67	1.37
1.750	0.85	7.750	1.52	13.750	3.65	19.75	1.37
1.833	0.82	7.833	1.52	13.833	3.65	19.83	1.37
1.917	0.82	7.917	1.52	13.917	3.65	19.92	1.37
2.000	0.82	8.000	1.52	14.000	3.65	20.00	1.37
2.083	1.00	8.083	2.07	14.083	2.28	20.08	0.91

2.167	1.00	8.167	2.07	14.167	2.28	20.17	0.91
2.250	1.00	8.250	2.07	14.250	2.28	20.25	0.91
2.333	0.97	8.333	2.04	14.333	2.28	20.33	0.91
2.417	0.97	8.417	2.04	14.417	2.28	20.42	0.91
2.500	0.97	8.500	2.04	14.500	2.28	20.50	0.91
2.583	1.00	8.583	2.07	14.583	2.28	20.58	0.91
2.667	1.00	8.667	2.07	14.667	2.28	20.67	0.91
2.750	1.00	8.750	2.07	14.750	2.28	20.75	0.91
2.833	0.97	8.833	2.04	14.833	2.28	20.83	0.91
2.917	0.97	8.917	2.04	14.917	2.28	20.92	0.91
3.000	0.97	9.000	2.04	15.000	2.28	21.00	0.91
3.083	1.00	9.083	2.43	15.083	2.28	21.08	0.91
3.167	1.00	9.167	2.43	15.167	2.28	21.17	0.91
3.250	1.00	9.250	2.43	15.250	2.28	21.25	0.91
3.333	0.97	9.333	2.43	15.333	2.28	21.33	0.91
3.417	0.97	9.417	2.43	15.417	2.28	21.42	0.91
3.500	0.97	9.500	2.43	15.500	2.28	21.50	0.91
3.583	1.00	9.583	2.74	15.583	2.28	21.58	0.91
3.667	1.00	9.667	2.74	15.667	2.28	21.67	0.91
3.750	1.00	9.750	2.74	15.750	2.28	21.75	0.91
3.833	0.97	9.833	2.74	15.833	2.28	21.83	0.91
3.917	0.97	9.917	2.74	15.917	2.28	21.92	0.91
4.000	0.97	10.000	2.74	16.000	2.28	22.00	0.91
4.083	1.22	10.083	3.50	16.083	1.37	22.08	0.91
4.167	1.22	10.167	3.50	16.167	1.37	22.17	0.91
4.250	1.22	10.250	3.50	16.250	1.37	22.25	0.91
4.333	1.22	10.333	3.50	16.333	1.37	22.33	0.91
4.417	1.22	10.417	3.50	16.417	1.37	22.42	0.91
4.500	1.22	10.500	3.50	16.500	1.37	22.50	0.91
4.583	1.22	10.583	4.71	16.583	1.37	22.58	0.91
4.667	1.22	10.667	4.71	16.667	1.37	22.67	0.91
4.750	1.22	10.750	4.71	16.750	1.37	22.75	0.91
4.833	1.22	10.833	4.71	16.833	1.37	22.83	0.91
4.917	1.22	10.917	4.71	16.917	1.37	22.92	0.91
5.000	1.22	11.000	4.71	17.000	1.37	23.00	0.91
5.083	1.22	11.083	7.30	17.083	1.37	23.08	0.91
5.167	1.22	11.167	7.30	17.167	1.37	23.17	0.91
5.250	1.22	11.250	7.30	17.250	1.37	23.25	0.91
5.333	1.22	11.333	7.30	17.333	1.37	23.33	0.91
5.417	1.22	11.417	7.30	17.417	1.37	23.42	0.91
5.500	1.22	11.500	7.30	17.500	1.37	23.50	0.91
5.583	1.22	11.583	57.76	17.583	1.37	23.58	0.91
5.667	1.22	11.667	57.76	17.667	1.37	23.67	0.91
5.750	1.22	11.750	57.76	17.750	1.37	23.75	0.91
5.833	1.22	11.833	57.76	17.833	1.37	23.83	0.91
5.917	1.22	11.917	57.76	17.917	1.37	23.92	0.91
6.000	1.22	12.000	57.76	18.000	1.37	24.00	0.91

Max.Eff.Inten.(mm/hr)=		57.76	********	
over (min)		5.00	10.00	
Storage Coeff. (min)=		4.01 (ii)	6.93 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.24	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.49	0.03	0.517 (iii)
TIME TO PEAK	(hrs)=	12.00	12.00	12.00
RUNOFF VOLUME	(mm)=	75.00	72.02	74.82
TOTAL RAINFALL	(mm)=	76.00	76.00	76.00
RUNOFF COEFFICIENT	=	0.99	0.95	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 99.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1360	0.2300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	0.517	12.00	74.82
OUTFLOW: ID= 1 (0005)	3.230	0.075	12.58	74.69

PEAK FLOW REDUCTION [Qout/Qin](%)= 14.46
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.1266

CALIB			
STANDHYD (0010)	Area (ha)= 0.92		
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)= 0.46	0.46	
Dep. Storage	(mm)= 1.00	1.50	
Average Slope	(%)= 1.00	2.00	
Length	(m)= 78.32	40.00	
Mannings n	= 0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.85	6.083	1.52	12.083	10.95	18.08	1.37
0.167	0.85	6.167	1.52	12.167	10.94	18.17	1.37
0.250	0.85	6.250	1.52	12.250	10.94	18.25	1.37
0.333	0.82	6.333	1.52	12.333	10.94	18.33	1.37
0.417	0.82	6.417	1.52	12.417	10.94	18.42	1.37
0.500	0.82	6.500	1.52	12.500	10.94	18.50	1.37
0.583	0.85	6.583	1.52	12.583	5.62	18.58	1.37
0.667	0.85	6.667	1.52	12.667	5.62	18.67	1.37
0.750	0.85	6.750	1.52	12.750	5.62	18.75	1.37
0.833	0.82	6.833	1.52	12.833	5.62	18.83	1.37
0.917	0.82	6.917	1.52	12.917	5.62	18.92	1.37
1.000	0.82	7.000	1.52	13.000	5.62	19.00	1.37
1.083	0.85	7.083	1.52	13.083	3.65	19.08	1.37
1.167	0.85	7.167	1.52	13.167	3.65	19.17	1.37
1.250	0.85	7.250	1.52	13.250	3.65	19.25	1.37
1.333	0.82	7.333	1.52	13.333	3.65	19.33	1.37
1.417	0.82	7.417	1.52	13.417	3.65	19.42	1.37
1.500	0.82	7.500	1.52	13.500	3.65	19.50	1.37
1.583	0.85	7.583	1.52	13.583	3.65	19.58	1.37
1.667	0.85	7.667	1.52	13.667	3.65	19.67	1.37
1.750	0.85	7.750	1.52	13.750	3.65	19.75	1.37
1.833	0.82	7.833	1.52	13.833	3.65	19.83	1.37
1.917	0.82	7.917	1.52	13.917	3.65	19.92	1.37
2.000	0.82	8.000	1.52	14.000	3.65	20.00	1.37
2.083	1.00	8.083	2.07	14.083	2.28	20.08	0.91
2.167	1.00	8.167	2.07	14.167	2.28	20.17	0.91
2.250	1.00	8.250	2.07	14.250	2.28	20.25	0.91
2.333	0.97	8.333	2.04	14.333	2.28	20.33	0.91
2.417	0.97	8.417	2.04	14.417	2.28	20.42	0.91
2.500	0.97	8.500	2.04	14.500	2.28	20.50	0.91
2.583	1.00	8.583	2.07	14.583	2.28	20.58	0.91
2.667	1.00	8.667	2.07	14.667	2.28	20.67	0.91
2.750	1.00	8.750	2.07	14.750	2.28	20.75	0.91
2.833	0.97	8.833	2.04	14.833	2.28	20.83	0.91
2.917	0.97	8.917	2.04	14.917	2.28	20.92	0.91
3.000	0.97	9.000	2.04	15.000	2.28	21.00	0.91
3.083	1.00	9.083	2.43	15.083	2.28	21.08	0.91
3.167	1.00	9.167	2.43	15.167	2.28	21.17	0.91
3.250	1.00	9.250	2.43	15.250	2.28	21.25	0.91
3.333	0.97	9.333	2.43	15.333	2.28	21.33	0.91
3.417	0.97	9.417	2.43	15.417	2.28	21.42	0.91
3.500	0.97	9.500	2.43	15.500	2.28	21.50	0.91
3.583	1.00	9.583	2.74	15.583	2.28	21.58	0.91
3.667	1.00	9.667	2.74	15.667	2.28	21.67	0.91
3.750	1.00	9.750	2.74	15.750	2.28	21.75	0.91
3.833	0.97	9.833	2.74	15.833	2.28	21.83	0.91
3.917	0.97	9.917	2.74	15.917	2.28	21.92	0.91
4.000	0.97	10.000	2.74	16.000	2.28	22.00	0.91
4.083	1.22	10.083	3.50	16.083	1.37	22.08	0.91
4.167	1.22	10.167	3.50	16.167	1.37	22.17	0.91
4.250	1.22	10.250	3.50	16.250	1.37	22.25	0.91
4.333	1.22	10.333	3.50	16.333	1.37	22.33	0.91
4.417	1.22	10.417	3.50	16.417	1.37	22.42	0.91
4.500	1.22	10.500	3.50	16.500	1.37	22.50	0.91
4.583	1.22	10.583	4.71	16.583	1.37	22.58	0.91
4.667	1.22	10.667	4.71	16.667	1.37	22.67	0.91
4.750	1.22	10.750	4.71	16.750	1.37	22.75	0.91
4.833	1.22	10.833	4.71	16.833	1.37	22.83	0.91
4.917	1.22	10.917	4.71	16.917	1.37	22.92	0.91
5.000	1.22	11.000	4.71	17.000	1.37	23.00	0.91
5.083	1.22	11.083	7.30	17.083	1.37	23.08	0.91
5.167	1.22	11.167	7.30	17.167	1.37	23.17	0.91
5.250	1.22	11.250	7.30	17.250	1.37	23.25	0.91
5.333	1.22	11.333	7.30	17.333	1.37	23.33	0.91

```
              5.417    1.22 |11.417    7.30 |17.417    1.37 | 23.42    0.91
              5.500    1.22 |11.500    7.30 |17.500    1.37 | 23.50    0.91
              5.583    1.22 |11.583   57.76 |17.583    1.37 | 23.58    0.91
              5.667    1.22 |11.667   57.76 |17.667    1.37 | 23.67    0.91
              5.750    1.22 |11.750   57.76 |17.750    1.37 | 23.75    0.91
              5.833    1.22 |11.833   57.76 |17.833    1.37 | 23.83    0.91
              5.917    1.22 |11.917   57.76 |17.917    1.37 | 23.92    0.91
              6.000    1.22 |12.000   57.76 |18.000    1.37 | 24.00    0.91

     Max.Eff.Inten.(mm/hr)=      57.76        26.70
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       2.75 (ii)   14.72 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.28         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.03          0.098 (iii)
     TIME TO PEAK    (hrs)=      12.00        12.08          12.00
     RUNOFF VOLUME    (mm)=      75.00        29.43          52.20
     TOTAL RAINFALL   (mm)=      76.00        76.00          76.00
     RUNOFF COEFFICIENT   =       0.99         0.39           0.69

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     0.92   0.098    12.00    52.20
     + ID2= 2 (  0002):     2.65   0.425    12.00    74.82
       ==========================================================
       ID = 3 (  0006):     3.57   0.523    12.00    68.99

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0006):     3.57   0.523    12.00    68.99
     + ID2= 2 (  0005):     3.23   0.075    12.58    74.69
       ==========================================================
       ID = 1 (  0006):     6.80   0.588    12.00    71.70

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0720     0.3590
                          0.0060     0.0320   |   0.1000     0.4070
                          0.0110     0.0650   |   0.1370     0.4570
                          0.0140     0.1010   |   0.1810     0.5090
                          0.0170     0.1400   |   0.2300     0.5620
                          0.0270     0.1800   |   0.5740     0.6180
                          0.0420     0.2220   |   1.3000     0.6780
                          0.0520     0.2660   |   2.4830     0.7440
                          0.0600     0.3120   |   0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)     6.800     0.588     12.00      71.70
   OUTFLOW: ID= 1 (  0003)     6.800     0.052     17.67      71.50

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.78
                  TIME SHIFT OF PEAK FLOW         (min)=340.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.2643

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):     6.80   0.052    17.67    71.50
     + ID2= 2 (  0007):     1.20   0.076    12.00    29.63
       ==========================================================
       ID = 3 (  0008):     8.00   0.099    12.08    65.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

```
       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
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```

Hazel - VO Output

```
                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\865d76cf-81
  Summary filename: C:\Users\aquader\AppData\Local\Civica\VH5\93688f7b-e37c-4e83-b942-423e5d9ea870\865d76cf-81


DATE: 01/16/2023                          TIME: 06:45:52

USER:


COMMENTS: _____________________________________________________
```

```
  ************************************************
  ** SIMULATION : Hazel                         **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\aquader\AppD
|                  |              ata\Local\Temp\
|                  |              d50ca29b-4f68-4b43-9ebf-e0c94e599095\119c5980
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
                 hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
               0.00     6.00 |  3.00   13.00  |  6.00   23.00 |  9.00   53.00
               1.00     4.00 |  4.00   17.00  |  7.00   13.00 | 10.00   38.00
               2.00     6.00 |  5.00   13.00  |  8.00   13.00 | 11.00   13.00

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0001)|   Area     (ha)=   8.00   Curve Number    (CN)= 78.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.86

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
                 hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.355

     PEAK FLOW       (cms)=   0.801 (i)
     TIME TO PEAK    (hrs)=  11.083
     RUNOFF VOLUME    (mm)= 153.778
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.725

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

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| CALIB            |
| NASHYD   (  0007)|   Area     (ha)=   1.20   Curve Number    (CN)= 86.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                          ---- TRANSFORMED HYETOGRAPH ----
                TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
                 hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.167 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 172.207
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TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.812

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

CALIB	Area (ha)= 2.65
STANDHYD (0002)	Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00
ID= 1 DT= 5.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.49	0.16
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	132.92	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=		53.00	********	
over (min)		5.00	10.00	
Storage Coeff. (min)=		3.91 (ii)	6.93 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.25	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.37	0.02	0.390 (iii)
TIME TO PEAK	(hrs)=	10.00	10.00	10.00
RUNOFF VOLUME	(mm)=	211.00	210.50	210.97
TOTAL RAINFALL	(mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT	=	1.00	0.99	1.00

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 100.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	Area (ha)= 3.23
STANDHYD (0004)	Total Imp(%)= 94.00 Dir. Conn.(%)= 94.00
ID= 1 DT= 5.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	3.04	0.19
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	146.74	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=		53.00	********	
over (min)		5.00	10.00	
Storage Coeff. (min)=		4.15 (ii)	7.17 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.24	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.45	0.03	0.476 (iii)
TIME TO PEAK	(hrs)=	10.00	10.00	10.00
RUNOFF VOLUME	(mm)=	211.00	210.50	210.97
TOTAL RAINFALL	(mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT	=	1.00	0.99	1.00

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 100.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0005)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 5.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1360	0.2300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0004)	3.230	0.476	10.00	210.97

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   OUTFLOW: ID= 1 (  0005)      3.230      0.206     11.08     210.84

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 43.29
                  TIME SHIFT OF PEAK FLOW         (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3484

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| CALIB            |
| STANDHYD (  0010)|   Area    (ha)=   0.92
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.46         0.46
     Dep. Storage     (mm)=      1.00         1.50
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     78.32        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
              0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
              0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
              0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
              0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
              0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
              0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
              0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
              0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
              0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
              0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
              1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
              1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
              1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
              1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
              1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
              1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
              1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
              1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
              1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
              1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
              1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
              1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
              2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
              2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
              2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
              2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
              2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
              2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
              2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
              2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
              2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
              2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
              2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
              2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
              3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        50.00
               over (min)         5.00        15.00
     Storage Coeff.  (min)=      2.84 (ii)   12.16 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.28         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.07         0.06         0.131 (iii)
     TIME TO PEAK    (hrs)=      9.75        10.00        10.00
     RUNOFF VOLUME    (mm)=    211.00       171.16       191.07
     TOTAL RAINFALL   (mm)=    212.00       212.00       212.00
     RUNOFF COEFFICIENT   =      1.00         0.81         0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  84.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

```
--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0010):      0.92   0.131    10.00   191.07
     + ID2= 2 (  0002):      2.65   0.390    10.00   210.97
       ================================================
       ID = 3 (  0006):      3.57   0.521    10.00   205.84

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0006)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK      R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
       ID1= 3 (  0006):      3.57   0.521    10.00   205.84
     + ID2= 2 (  0005):      3.23   0.206    11.08   210.84
       ================================================
       ID = 1 (  0006):      6.80   0.691    10.00   208.21

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0003)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                         0.0000     0.0000     |  0.0720      0.3590
                         0.0060     0.0320     |  0.1000      0.4070
                         0.0110     0.0650     |  0.1370      0.4570
                         0.0140     0.1010     |  0.1810      0.5090
                         0.0170     0.1400     |  0.2300      0.5620
                         0.0270     0.1800     |  0.5740      0.6180
                         0.0420     0.2220     |  1.3000      0.6780
                         0.0520     0.2660     |  2.4830      0.7440
                         0.0600     0.3120     |  0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)      6.800     0.691     10.00     208.21
   OUTFLOW: ID= 1 (  0003)      6.800     0.549     11.00     208.02

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 79.45
                  TIME SHIFT OF PEAK FLOW         (min)= 60.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.6144

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0003):      6.80   0.549    11.00   208.02
     + ID2= 2 (  0007):      1.20   0.167    10.00   172.21
       ================================================
       ID = 3 (  0008):      8.00   0.671    11.00   202.64

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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Appendix D WATER DEMAND CALCULATIONS

PRELIMINARY ESTIMATE of Required Fire Flow ***Stantec File # 160623106***
Fire Underwriters Survey (FUS) "Water Supply for Public Fire Protection", 1999
545 Dunlop Street West
Barrie, ON

F = Required Fire Flow in litres per minute
= 220 · C · √A

where,

C = coefficient related to the type of construction
= 1.5 for wood frame constuction (structure essentially all combustible)
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
= 0.8 for non-combustible construction (unprotected metal structural components, masonry or metal walls)
= 0.6 for fire resistive construction (fully protected frame, floors, roof)

= **0.60**

A = The total floor area in square metres (including all storeys, but excluding basements at least 50% below grade) in the building being considered. Note: for fire-resistive buildings, consider the two largest adjoining floors plus 50% of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected. If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor plus 25% of each of the two immediately adjoining floors. *

*** vertical openings and exterior vertical communications properly protected (minimum one hour rating):**

Level 1 **32,300** sq.m. (Largest floor)

A = **32,300** **sq.m.**

F = 220 · (C) · √(A)

= 23,723 **Lpm**

= 24,000 **Lpm** (Rounded to the nearest 1,000 L/min)

The value obtained above may be reduced by as much as 25% for occupancies having a low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Apply a reduction of **0%** **(Warehouse/Light Industrial),** or **0** **Lpm**

F = 24,000 **Lpm**

The value obtained above may be reduced by up to 50% for complete automatic sprinkler protection depending upon the adequacy of the system. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. Additional credit of up to 10% may be granted if the water supply is standard for both the system and fire department hose lines required.

Apply a reduction of **50%** or **-12,000** **Lpm**

(per the OBC, a fully supervised NFPA 13 sprinkler system is required for this building, and the water supply is standard being provided from municipal supply).

Reduction = **-12,000** **Lpm**

To the value obtained, a percentage should be added for structures exposed **within 45 metres**:

North side	-	**>45**	m	-	**0%**	**(existing building north side of Carrier Drive)**
East side	-	**>45**	m	-	**0%**	
South side	-	**>45**	m	-	**0%**	
West side	-	**>45**	m	-	**0%**	
					0%	(not to exceed 75%)

Increase = **0** **Lpm**

F = 24,000 Lpm
-12,000
0
12,000 **Lpm**

= 12,000 **Lpm** (Rounded to the nearest 1,000 L/min)

= 3170 USGPM

ESTIMATE of Expected Water Demand *Project #160623106*

545 Dunlop Street West
Barrie, Ontario

Program Details

Industrial / Commercial:

Gross Floor Area Proposed	=	32,300	*sq.m.*
	=	3.23	ha

Flow Rate =	**35,000**	litres/capita/day *		* Industrial Water Consumption Rate
For a total GFA of	**3.23**	ha		
The total flow is:	**113,050**	litres/day		
Applying a peaking factor of *	**2.00**	(maximum day)		* Peaking usage as per Section 3.4.4 of MECP Design Guidelines for Drinking Water System
Maximum Day Demand =	**226,100**	litres/day		
or,	**157**	litres/minute	**(A)**	
Fire Flow Demand **	**20,000**	litres/minute	**(B)**	

** Min. Fire Flow Requirement as per City of Barrie Water Transmission Policies and Design Standard (2022)

Total Flow = (A) + (B) = 20,157 litres/minute (maximum day demand plus fire flow)

Check peak hour demand:

The total flow is:	**113,050**	litres/day	
or,	**79**	litres/minute	
Applying a peaking factor of	**1.50**	(peak hour)	
Peak Hour Demand =	**118**	litres/minute	

Total water demand (on basis of maximum day demand plus fire flow) = **20,157** **litres/minute**

5325 USGPM

References made to City of Barrie Water Transmission Policies and Design Standard (2022)

Appendix E SANITARY DEMAND CALCULATIONS

ESTIMATE of Expected SANITARY FLOW Project #160623106

545 Dunlop Street West
Barrie, Ontario

Industrial:

Gross Floor Area Proposed	**=**	32,300	sq.m.
	=	3.23	Hectare

Total Site Development Area: **8.00** Ha.

Average Daily Dry Weather Flow

Average Daily Dry Weather Flow = **35,000** litres/ha/day *

for a Total Floor Area of **3.23** hectares

the Average Daily Dry Weather Flow is: **113,050** litres/day
or, **1.3** litres/second **(A)**

Sanitary Flow Peaking Factor

Industrial Peaking Factor (PF)* = 2.0 **(B)**

* As per Section 3.3.3 of Sanitary Sewage Collection System Policies and Design Guidelines, City of Barrie (2017)

Infiltration Allowance (Site Area Basis)

Inflow/Infiltration allowance calculated on the basis of **0.1** L/s/ha of Site Area *

for a total site development area of **8.00** Ha.,

the Infiltration Allowance is: **0.80** litres/second **(C)**

Sanitary Design Flow

Sanitary Design Flow

= **3.4** **litres/second**

* Sanitary Sewage Collection System Policies and Design Guidelines, City of Barrie (2017)