# FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

# FLATO IDA FLATO IDA DUNDALK INC.

### **TOWNSHIP OF SOUTHGATE**

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### 1. INTRODUCTION

CF Crozier & Associates Inc. ("Crozier") has been retained by Flato Ida Dundalk Inc. (the Developer) to prepare a Functional Servicing and Stormwater Management Report in support of a Draft Plan Application for a proposed development located in the southwest end the Community of Dundalk, Township of Southgate. Please refer to **Figure 1** for the Site Location.

The overall property is approximately 36 ha, with 5 ha being conveyed to the Township as part of a land swap with the Developer and the Township. The Developer's portion of the property known as the lda Street Development herein referred to as the "Subject Development" is approximately 20 ha, and is bounded by Ida Street to the east, residential properties and County Road 9 to the south, agricultural lands to the north, and environmental protection to west.

The Subject Development will consist of 269 single detached units, 52 townhouse units, park blocks, an environmental protected area, two stormwater management blocks, and approximately 4.6 ha of urban right of way. The Draft Plan prepared by MHBC Planning Urban Design & Landscape Architecture (MHBC) on April 30, 2024, has been included as **Figure 2**.

The Developer has assembled a multi-disciplinary consulting team to assist with the technical studies in support of this development. The consulting team includes:

- SLR Consulting (environmental and hydrogeological)
- Soil Engineers Limited (geotechnical)
- MHBC Planning Urban Design & Landscape Architecture (planning)
- CF Crozier & Associates Inc. (civil and transportation engineering)

This report should be read in conjunction with the studies, plans and reports prepared by other members of the development team.

This report has been prepared to provide information concerning the servicing (water, sewer, utilities, and roads) and stormwater management strategy for the Subject Development.

### 2. DEVELOPMENT BACKGROUND

Zoning of the Subject Development was recently approved by way of a Minister's Zoning Order through Ontario Regulation 165/22 under the Planning Act. The zoning was approved on March 4, 2022. The approved zoning specifies the allowed uses for the development. The approved uses allow for:

- Residential Zone (R7-515)
- Environmental Protection Zone (EP)

The Subject Development is currently designated as Neighborhood Area, within Schedule 'A' Map 2 of the Township of Southgate Official Plan (2022) and associated amendments. The hazard lands are taken into consideration in the Draft Plan as that area will be designated as Environmental Protection.

The Subject Development includes more parkland area than required since there was an agreement during the draft plan approval of Glenelg Phase 3 to transfer park lands to the Subject Development. The Township requires 5% of the developable area to be parkland which is around 0.9 ha. An additional 1.1 ha of parkland will be transferred from Glenelg Phase 3 to the Subject Development for a total of 2 ha of parkland area.

In February of 2024 the Township and the Developer agreed to a land swap that would give up just about 5.5 acres of vacant land at the rear (north) of Maple Grove Cemetery in exchange for land west of the Subject Development for the Township to develop. Preliminary plans for the Township Lands could include a new administration center, public works depot (or fire hall), cultural space, park, outdoor event venue, community hall, and/or a gymnasium/fieldhouse. A Master Plan will be developed by the Township.

Per the request of the Township and County a potential roundabout at the intersection of Ida Street and County Road 9 will be proposed. As such, preliminary design of a roundabout was completed and is shown on the draft plan. Since additional lands are required for a roundabout versus and standard intersection there will be 0.07 ha of land transferred to the County in the event a roundabout is constructed in the future.

### 3. SITE DESCRIPTION

The 36-ha property is legally described as Part of Lots 229 & 230 Concession 3, Southwest of the Toronto and Sydenham Road and consists largely of agricultural fields, with several farming and residential structures. The Subject Development is bounded by agricultural lands to the north, existing residential properties, Ida Street to the east, an existing cemetery, County Road 9 to the south and a forested area to the west.

Per Conservation Authority mapping, it appears that a portion of the development is located in the Grand River Conservation Authority (GRCA) regulation area and a portion in the Saugeen Valley Conservation Authority (SVCA) regulation area. As such, the appropriate permits and approvals will need to be obtained from both the GRCA and the SVCA.

The existing topography of the site exhibits a split drainage runoff pattern due to the site lying on the drainage divide between the Saugeen River Watershed and the Grand River Watershed. The southwestern portion of the site drains towards the Environmental Protection area that consists of wetland/woodland. The remaining northeastern portion of the site drains towards County Road 9. There is an approximate elevation difference of 10 m across the site.

A Geotechnical Investigation for the Subject Development was completed in January 2023 by Soil Engineers Ltd. (SEL) Within this investigation a total of nine (9) boreholes were advanced across the site in April 2022. These boreholes revealed that the site is underlain by sandy silt till/silty sand till deposits, with localized sand. (Soil Engineers Limited, January 2023) These findings are supplemented by the Soil Survey Map of Grey County (1962) which indicates that the site is underlain by Parkhill Loam and Listowel Silty Loam soils. The Geotechnical Investigation also indicated that the stabilized groundwater table post drilling on July 13, 2022, was found within the boreholes at depths ranging from 0.93 m to 3.38 m below existing grade. Refer to **Appendix A** for the Geotechnical Investigation.

A hydrogeological assessment for the proposed development was completed in October 2022 by SLR Consulting (Canada) Ltd. (SLR) The nine boreholes that were advanced in April 2022 were completed as monitoring wells. In-situ hydraulic conductivity tests were completed in select monitoring wells to establish the permeability of the formation. Groundwater levels were collected manually beginning in May 2022. Mini piezometers were also installed at select monitoring wells to obtain continuous groundwater readings (SLR Consulting, October 11, 2023).

### 4. ROAD STANDARD

Access to the development is proposed to be provided through two entrances located along County Road 9 and one entrance along Ida Street. The eastern County Road 9 entrance is approximately 150 m west of Ida Street. The western County Road 9 entrance is approximately 600 m west of the eastern access. The Grey County Entrance Permit indicates that the distance between municipal intersecting roads shall be at least 400 m. The Roadways and entrances will be constructed in conformance with the Township of Southgate and County of Grey Standards.

The Transportation Association of Canada Geometric Design Guidelines for Canadian Roads identifies typical spacing of 60 m on collector roadways and 200 m on arterial roadways. As the proposed development would expand the urban core of Dundalk, the proposed entrance spacing is considered appropriate, and is greater than the typical intersection spacing provided on Main Street, east of Ida Street. The proposed entrance location and geometry will continue to be refined through future design efforts and development applications.

While detailed analysis will be completed as part of future applications, sight distance issues are not expected given the relatively straight and flat profile of County Road 9 and Ida Street.

A Traffic Impact Study has been prepared by our office under separate cover, which details transportation engineering considerations and mitigative measures related to the development. Roadway slopes will range between 0.5% and 8% in conformance with Township of Southgate Engineering Standards. The general grading strategy for the development is presented in **Figure 3**.

Design criteria for the entrances will meet Township guidelines as well as the applicable sections from the Ontario Building Code (i.e., fire routes). Internal roadways of the development will be assumed by the Township upon registration of the subdivision.

### 5. SANITARY SEWAGE SYSTEM

### 5.1. Existing Sanitary Infrastructure

### 5.1.1. Wastewater Treatment Facility Capacity

The existing wastewater treatment facility (WWTF) is located on Eco Parkway at the south end of Dundalk. The facility treats sewage and discharges the treated effluent to the Foley Drain/ Grand River. Per the Township of Southgate 2024 Reserve Capacity Study (Triton Engineering, 2024), the facility currently operates on average at 1,149 m³/day. The uncommitted reserve capacity for the sewage treatment facility is 464 new development ERU's (Equivalent Residential Units). Since this reserve capacity will not be sufficient to service various potential developments that have been granted Draft Plan Approval the municipality is currently in the process of upgrading the wastewater treatment facility to increase capacity in Dundalk from 1,832 m³/day to 3,025 m³/day to support growth.

The wastewater treatment facility is expected to be tendered in 2024, which is well ahead of building permit submission for the Subject Development. **Table 1** details the Township of Southgate '2024 Reserve Sewage Capacity' and project the wastewater treatment capacities after the upgrades have been completed.

Table 1: Township of Southgate Dundalk Sewage Treatment Facility Capacity Projections

Dundalk Sewage Treatment Facility Summary			
Description	2024	Post Upgrades	
Wastewater Treatment Facility Design Capacity (m³/day)	1,832	3,025	
Current Daily Average Flow (m³/day)	1,1	49	
Available Capacity (m³/day)	683	1,876	
Average New Development Per Capita Flow (1)	0.300	0.300	
Additional Population that can be Served	2,277	6,253	
Person Per ERU (1)	2.61	2.61	
Additional ERU Capacity	872	2,396	
Committed ERUs	408	408	
Available Uncommitted ERUs	464	1,988	

There is currently no existing sanitary infrastructure along the portion of County Road 9 and Ida Street which bounds the Subject Development. The nearest sanitary infrastructure includes:

- 200 mm Gravity sanitary sewer on County Road 9 (Main Street) approximately 200 m east of the intersection of County Road 9 and Ida Street.
- 200 mm Gravity sanitary sewer on Victoria Street West approximately 350 m east of Ida Street.
- 300 mm sanitary sewer along Ida Street terminating 27 m north of Victora Street.

### 5.2. Proposed Sanitary Servicing Strategy

The following section provides an analysis of the servicing strategy for the proposed sanitary sewage system at the development. Sanitary servicing for the development will be supplied by way of connection to the existing Dundalk sanitary sewer collection network with flows from the site ultimately receiving treatment at the Dundalk Wastewater Treatment Facility.

Based on review of all possible connection and assessment of capacity and gravity servicing feasibility, it is recommended that the east half of the Subject Development be serviced via connection to the gravity sanitary sewer system on Ida Street. To facilitate this connection, approximately 260 m of sanitary sewer will be required along Ida Street from the 300 mm diameter stub 27 m north of Victoria Street to the proposed intersection north of County Road 9.

The western half of the subject development will be serviced by a gravity sanitary sewer network that will discharge to a sanitary pumping station located within the Township Development Lands. Wastewater will then be conveyed via a forcemain following the internal road network to the west gravity sewer system, which will then ultimately be conveyed by the proposed and existing gravity sewers along Ida Street to the WWTF.

It is estimated that peak sanitary flow from the Subject Development is 14.20 L/s based on a developable area of 20.07 ha and 321 residential units. Sanitary flow calculations have been provided in **Appendix B**. Local sanitary sewers required will be in the range of 200 mm to 250 mm in diameter. In accordance with Town Standards, the sanitary sewer obverts were set at minimum 2.40 m below the centerline road grades. The preliminary sanitary sewer layout has been illustrated in **Figure 4** and **Figure 4A**. Detailed analysis and profiles are to be provided at the detailed design stage.

Peak sanitary flows from the Township Lands have not been calculated as the potential uses for those Lands is pending. It is anticipated that the capacity of the sewers should be able to accommodate flows. The proposed sanitary pumping station within the Township Lands will be sized in a future submission once more information regarding uses of the Lands is known.

### 6. POTABLE WATER SUPPLY

### 6.1. Existing Water Servicing

The existing water treatment system in Dundalk includes three production wells. Per the 2024 Reserve Capacity Study, the well system operates at a maximum daily flow of 1,180 m³/day. This value represents approximately 42 % of the system's allowable withdrawal capacity of 2,817 m³/day, as specified in the Township's Permit to Take Water. Based on this, the existing system has the capacity to service the Subject Development.

The Township of Southgate within their 2024 Reserve Capacity Calculations determined the Township's water supply system has an available uncommitted reserve capacity of 1,714 units. Therefore, the Township has sufficient water supply to service the proposed development. An existing 150mm watermain runs along Ida Street, fronting the proposed development. There is currently no existing watermain along County Road 9.

### 6.2. Proposed Water Servicing Strategy

Potable water for the development will be supplied by the Dundalk municipal water distribution system.

Internal watermain layout will follow the alignment of the development's rights-of-way (ROW) and will service the development. External watermain along County Road 9 will be required to connect to the existing watermain on Ida Street to complete a looped system. This will facilitate a looped distribution network satisfying the watermain looping requirement of the Ministry of the Environment, Conservation and Parks. Preliminary water demands for the Subject Development have been estimated in conjunction with Township Standards that concur with Table 3-1 of the MECP Design Guidelines for Drinking Water Systems.

Fire hydrants will be spaced as required to provide the necessary fire protection per municipal standards. Required domestic water flows have been calculated in conformance with the Township of Southgate's Engineering Design Standards and the "New Development Unit Flow Rates" specified within the 2024 Reserve Capacity Study. The maximum day and peak hour water demands for the Subject Development have been estimated to be 7.89 L/s and 11.85 L/s, respectively. Internal watermain sizing will be subject to detailed design and confirmation by the Township's Engineering Consultant. Water demand calculations have not been calculated for the Township Lands as the proposed uses of the Lands have not been confirmed. Refer to **Appendix C** for relevant water demand calculations. The proposed watermain layout is illustrated in **Figure 4.** 

### Fire Flow Estimates

Water Supply for Fire Protection, A Guide to Recommend Practice (Fire Underwriters Survey (FUS), 2020) will be used to estimate fire flows for the Subject Development. Estimated flows are based on the largest townhouse block which has 5 units. Building floor area, construction type and structure exposure distance was calculated based on the townhouse block with no fire walls. The floor area and separation distances between buildings for the fire flow calculations were calculated using the

maximum lot coverage and minimum front, side, and rear yard setback distances. Fire flow calculations have been provided in **Appendix C**. The required fire flow is 183.3 L/s.

### 7. PROPOSED STORMWATER MANAGEMENT, SITE GRADING AND DRAINAGE

### 7.1. Stormwater Management (SWM) Criteria

The management of stormwater and site drainage for the proposed development must comply with the policies and standards of the various agencies including the Township of Southgate, Saugeen Valley Conservation Authority (SVCA), Grand River Conservation Authority (GRCA), and the Ministry of Environment, Conservation and Parks (MECP).

The stormwater management criteria that will be met for the Subject Development are as follows:

- Water Quantity Control
  - o Control of post development peak flows to pre-development levels for all storms up to and including the 100-year event.
- Water Quality Control
  - 80% removal efficiency of total suspended solids per MECP "enhanced protection" requirements.
- Erosion Control
  - o 24-hour detention of the 25mm event.
- Development Standards
  - o Urban cross section for public roadway with 5-year storm sewer system.
  - o Lot grading at 2% optimum.
  - o Minor and major drainage system to convey frequent and infrequent rainfall/runoff events, respectively.

In meeting the applicable policies and standards of the aforementioned agencies, the development will also be required to meet the following criteria.

- Manage the internal stormwater by safely conveying peak flows to suitable outlets and provide the necessary water quality controls.
- Manage any external drainage entering the site by providing safe conveyance across the subject development.
- Ensuring the development lands are not susceptible to flood inundation during all modeled storm events.

## 7.2. Site Grading Criteria

The grading criteria that will be applied to the proposed residential subdivision includes the following:

- All proposed residential dwellings must meet the minimum groundwater separation.
- Site grading must enable all proposed residential dwellings to be serviced by 'gravity' sanitary services.
- Site grading must provide suitable cover over the storm sewer to prevent frost heave (i.e., 1.2 m minimum cover) and provide overland flow routes for major storm runoff.

Proposed site grades including building elevations will be determined during the detailed design stage.

### 7.3. Existing Drainage Conditions

The existing drainage patterns of the site have been reflected in the Pre-Development Drainage Plan (Figure 5). Topographic survey indicates a split drainage runoff pattern. Since the site lies at the headwater of two watersheds, existing drainage either goes towards the GRCA or the SVCA. There is an approximate elevation difference of 10m across the site. To facilitate the pre-development stormwater analysis, the site will have catchments that are within SVCA and GRCA jurisdictions. The following catchment has been delineated based on the existing drainage conditions that are within the SVCA jurisdiction:

• Catchment PRE-S1: This catchment area is approximately 10.54 ha and is located on the southwestern portion of the site. It consists of agricultural fields. Stormwater from this catchment drains to the southwest towards the Environmental Protection Area that consists of wetland/woodlands. A small portion also drains towards the smaller SVCA screening area that lies northeast of the Environmental Protection Area. From the Environmental Protection Area stormwater will continue south along the County Road 9 ditch to a box culvert under County Road 9 which continues to the South Saugeen River.

The following three (3) catchments have been delineated based on the existing drainage conditions that are within the GRCA jurisdiction:

- Catchment PRE-G2: This catchment area is approximately 1.57 ha. It consists of overgrown meadows. Stormwater from this catchment drains to the southeast towards the County Road 9 ditch. Drainage then follows the grading of the ditch towards a 700 mm diameter CSP culvert under County Road 9 which discharges to a wetland.
- Catchment PRE-G3: This catchment area is approximately 7.36 ha and is located on the northern portion of the site. It consists of agricultural fields. Stormwater from this catchment drains to the south along a swale on a property adjacent to the site towards a 1000 mm diameter CSP culvert under County Road 9 which outlets to the same wetland as PRE-G2 and discharges to the Grand River.
- Catchment PRE-G4: This catchment area is approximately 5.75 ha. It consists of wooded area a small pond, and grass areas. Stormwater from this catchment drains to the southeast towards the County Road 9 ditch, then to a 1000 mm diameter CSP culvert which outlets to a wetland/tributary that differs from PRE-G2 and PRE-G3. The outlet tributary of PRE-G4 joins with the tributary of PRE-G2 and PRE-G3 downstream at the Grand River.
- Catchment EXT-1: This catchment area is approximately 14.5 ha. It consists of mainly agricultural land and a few farm buildings. Runoff from this catchment area flows south through Catchment PRE-G3 towards the same outlet as PRE-G3.

These catchments generally drain towards three culverts under County Road 9 which become tributaries that flow though the GRCA wetland and eventually drain to the Grand River.

No watercourses traverse the property nor do any significant external drainage areas. Natural hazards associated with a floodplain are defined by a minimum drainage area of 125 ha according

to the Ministry of Natural Resources and Forestry. As such no flood hazard constraints exist on the property.

### 7.4. Proposed Drainage Conditions

The Subject Development will be constructed to a fully urbanized ROW complete with curb and gutter and storm sewers. A dual drainage approach will consist of minor and major stormwater flow routes to ensure adequate conveyance for runoff. The minor drainage system will consist of storm sewers and catch basins sized to convey the 5-year design storm event. The major drainage system will provide overland stormwater flow routes within the road allowance for the 100-year storm event. Refer to **Figure 4** and **Figure 4B** for proposed storm sewer layout. Internal flows from the development will be directed via both the minor and major systems to outlet into one of the two stormwater management facilities (SWMF).

To facilitate the post-development stormwater analysis, the site will have catchments that are within SVCA and GRCA jurisdictions.

The following four (4) catchments have been delineated based on the proposed drainage conditions that are within the SVCA jurisdiction:

- Catchment POST-S1: This catchment area is approximately 9.81 ha and is located on the southern portion of the site. Runoff from this catchment drains towards the stormwater management facility (SWMF-SV) that outlets to the SVCA jurisdiction area.
- Catchment SWMF-SV: This catchment represents the proposed 1.28 ha SWM Facility block. Runoff from this catchment will drain to the SWM Facility. The SWM Facility will then discharge flows towards the County Road 9 ditch. Drainage will continue south along the ditch to a box culvert under County Road 9 which continues to the South Saugeen River.
- Catchment UCTL-SV: This catchment area is approximately 0.61 ha and includes clean runoff from roofs and rear yards.
- Catchment UCTL-SV2: This catchment area is approximately 0.41 ha and includes clean runoff from roofs and rear yards. Runoff flows west towards the wetland feature.

The following five (5) catchments have been delineated based on the proposed drainage conditions that are within the GRCA jurisdiction:

- Catchment POST-G2: This catchment area is approximately 9.66 ha. Stormwater from this catchment drains to the south towards the stormwater management facility (SWMF-GR) that outlets to the GRCA jurisdiction area.
- Catchment SWMF-GR: This catchment area is approximately 1,28 ha. Runoff from this catchment will drain to the SWM Facility. The SWM Facility will then discharge flows towards the County Road 9 ditch to the existing culvert under County Road 9. Flows continue from the culvert to a stream that flows south through open space and joins with the Grand River downstream.
- Catchment PARK-GR: This catchment area is approximately 0.43 ha and is located on the southeastern portion of the site. It consists of the clean runoff off the roofs and lawn from the lots. Stormwater from this catchment drains towards the Ida Street ditch south towards a

culvert under County Road 9. Flows then head southeast to a stream that connects to the Grand River.

- Catchment UCTL-GR: This catchment area is approximately 0.83 ha and includes clean runoff from roofs and rear yards.
- Catchment UCTL-GR2: This catchment area is approximately 0.76 ha and includes clean runoff from roofs and rear yards. Runoff flows towards the headwall that captures external drainage at the future ROW and is conveyed to the SWMF-GR.
- Catchment EXT-1: This catchment area is approximately 14.5 ha. It consists of mainly agricultural land and a few farm buildings. Runoff from this catchment area flows south through Catchment PRE-G3 towards the same outlet as PRE-G3. In the post development scenario runoff from this catchment will be captured and directed through storm sewers and into SWMF-GR.

The post-development drainage conditions and catchment areas have been presented in Figure 6.

### 7.4.1. Quantity Control

Quantity control for the Subject Development will be provided by the two SWM Facilities. A hydrologic model was prepared for the pre-development and post-development scenarios using the stormwater management hydrologic computer program Visual OTTHYMO 6.2 (VO6). The purpose of the modeling was to ensure that quantity control requirements are met (i.e., post-development peak flow rates do not exceed the pre-development flows to the respective drainage area). Pre-development and post-development drainage areas have been reflected in **Figure 5** and **Figure 6**, respectively.

Rainfall was simulated using a 24-hour SCS Type II distribution and a 3-hour Chicago distribution consistent with Township Standards. Rainfall depths and intensities were obtained from the MTO IDF Look Up Tool based on the location of the Subject Development. The MTO IDF data and hydrologic modelling parameter sheets have been provided in **Appendix D**. VO6 modelling files, including input and output have been provided in **Appendix E**.

A summary of the pre-development and post-development stormwater flows towards SWM Facility (SWMF-SV) has been provided in **Table 2** below.

Table 2: Summary of "Post to Pre" Peak Flows - SWM Facility (SWMF-SV)

Return Period	Flow Rates (m³/s)		
(Years)	Pre-Development (10.54 ha)	Post-Development (11.09 ha)	
	3 Hour Chicago		
2	0.084	0.045	
5	0.158	0.055	
10	0.217	0.084	
25	0.297	0.152	
50	0.361	0.198	
100	0.429	0.247	
	24 Hour SCS Type II		
2	0.241	0.059	
5	0.399	0.182	
10	0.514	0.278	
25	0.664	0.429	
50	0.779	0.568	
100	0.897	0.709	
Hurricane Hazel			
Regional	1.094	1.122	

As shown in **Table 2**, the proposed SWM Facility (SWMF-SV) provides 'Post-to-Pre' peak flow control for all storm events up to and including the 100-year storm event. The Regional event will outlet via an overland flow route from the pond to the ditch along County Road 9.

A preliminary outlet structure has been designed to address both erosion and quantity control requirements. The outlet structure will consist of a 195 mm diameter extended detention orifice set at the permanent pool elevation. A secondary outlet structure has been included above the extended detention storage elevation to control effluent from the pond for storms exceeding the 25 mm event.

Using the ROUTE RESERVOIR command in VO6, the volume of detention storage required in the SWMF to attenuate the post-development peak flows to pre-development was determined based on a storage – discharge relationship. The ROUTE RESERVOIR command was used to model the SWM facility storage.

A summary of the release rates and storage volumes for the SWM Facility (SWMF-SV) has been provided in **Table 3** below.

Table 3: Summary of SWM Facility (SWMF-SV) Release Rate & Storage Volumes

Return Period	SWM Facility (	SWMF-SV)			
(Years)	Release Rate (m³/s)	Storage Volume (m³)			
	3 Hour Chicago				
2	0.045	1772			
5	0.055	2566			
10	0.084	3096			
25	0.152	3507			
50	0.198	3784			
100	0.247	4081			
	24 Hour SCS Type II				
2	0.059	2866			
5	0.182	3691			
10	0.278	4268			
25	0.429	4993			
50	0.568	5501			
100	0.709	6026			

The proposed SWM Facility (SWMF-GR) provides 'Post-to-Pre' peak flow control for all storm events up to and including the 100-year storm event. The Regional event will outlet to by an overland flow route from the pond to the ditch along County Road 9.

A summary of the pre-development and post-development stormwater flows towards SWM Facility (SWMF-GR) has been provided in **Table 4** below.

Table 4: Summary of "Post to Pre" Peak Flows - SWM Facility (SWMF-GR)

Return Period	Flow Rates (m³/s)		
(Years)	Pre-Development (5.75 ha)	Post-Development (26.20 ha)	
	3 Hour Chicago		
2	0.053	0.031	
5	0.101	0.066	
10	0.140	0.103	
25	0.194	0.152	
50	0.238	0.200	
100	0.285	0.249	
	24 Hour SCS Type II		
2	0.163	0.100	
5	0.273	0.198	
10	0.354	0.278	
25	0.461	0.388	
50	0.544	0.476	
100	0.629	0.568	
Hurricane Hazel			
Regional	0.644	1.332	

A preliminary outlet structure has been designed to address both erosion and quantity control requirements. The outlet structure will consist of a 140 mm diameter extended detention orifice set at

the permanent pool elevation. A secondary outlet structure has been included above the extended detention storage elevation to control effluent from the pond for storms exceeding the 25 mm event.

Similarly, to SWMF-SV, the ROUTE RESERVOIR command in VO6 was used to determine the volume of detention storage required in the SWMF to attenuate the post-development peak flows to predevelopment based on a storage – discharge relationship. The ROUTE RESERVOIR command was used to model the wet pond storage.

A summary of the release rates and storage volumes for the SWM Facility (SWMF-GR) has been provided in **Table 5**.

Table 5: Summary of SWM Facility (SWMF-GR) Release Rate & Storage Volumes

Return Period	SWM Facility	(SWMF-GR)
(Years)	Release Rate (m³/s)	Storage Volume (m³)
	3 Hour Chicago	
2	0.031	2881
5	0.066	4367
10	0.103	5353
25	0.152	6625
50	0.200	7570
100	0.249	8526
	24 Hour SCS Type II	
2	0.163	5270
5	0.273	7529
10	0.354	9075
25	0.461	11039
50	0.544	12520
100	0.629	14014

### 7.4.2. Stormwater Quality & Erosion Control

Stormwater management quality and erosion control will be provided by the SWMF-SV and SWMF-GR. The conceptual design of the proposed SWM Facilities has incorporated permanent pools and sediment forebays to provide appropriate water quality treatment. As the Grand River and Saugeen River are the ultimate receivers from the Subject Lands, the development must incorporate measures to provide "enhanced protection" (Stormwater Management Planning and Design Manual, Ministry of the Environment, 2003).

Erosion control will be principally achieved by incorporating extended detention into the operation of the ponds. Sizing was based on providing minimum 24-hour drawdown of the runoff volume produced during the 25mm event.

The Subject Development drainage area for the SWM Facility (SWMF-SV) is 57.1% impervious and 11.09 ha. As such, the minimum water quality volume for a stormwater wet pond is 195 m³/ha (Stormwater Management Planning and Design Manual, Ministry of the Environment, 2003). The total water quality volume consists of 155 m³/ha for permanent pool and 40 m³/ha for extended detention. The required and provided extended detention and permanent pool values on SWMF-SV have been summarized in **Table 6**. Refer to **Appendix F** for the water quality and extended detention calculations.

Table 6: Stormwater Management Facility (SWMF-SV) Quality Control Characteristics

	SWM Facility (SWMF-SV)	
	Required Volume (m³)	Provided Volume (m³)
Permanent Pool	1717	4338
MOE Extended Detention	444	2946
Erosion Control	1552	

The Subject Development drainage area for the SWM Facility (SWMF-GR) is 28.4% impervious and 25.44 ha. As such, the minimum water quality volume for a stormwater wet pond is 123 m³/ha (Stormwater Management Planning and Design Manual, Ministry of the Environment, 2003). The total water quality volume consists of 83 m³/ha for permanent pool and 40 m³/ha for extended detention. The required and provided extended detention and permanent pool values on SWMF-GR have been summarized in **Table 7**.

Table 7: Stormwater Management Facility (SWMF-GR) Quality Control Characteristics

	SWM Facility (SWMF-GR)		
	Required Volume (m³)	Provided Volume (m³)	
Permanent Pool	2121	7589	
MOE Extended Detention	2077	2743	
Erosion Control	1018		

### 7.4.3. Stormwater Management Facility Operating Characteristics

Considering the water quantity and quality storage requirements for the POST-S1, and SWMF-SV drainage areas, a preliminary design for the SWM Facility (SMF-SV) has been completed to demonstrate that the SWM block is adequately sized. A preliminary operating profile of the SWM facility is presented in **Table 8**.

Table 8: SWM Facility (SWMF-SV) Operating Characteristics

Component	Elevation (m)	Storage Required (m³)	Storage Provided (m³)
Bottom	511.70		
Permanent Pool	513.20	1,717	4,338
Extended Detention	513.80	1,552	2,946
High-Water Level	514.70	6,026	8,587
Top of Berm	515.00		

As evidenced by **Table 8**, the pond presented herein is sufficiently sized to provide the required stormwater quantity and quality controls. Permits and other regulatory instruments such as an Environmental Compliance Approval (MECP) and Conservation Authority approval will be secured at the detailed design stage.

Considering the water quantity and quality storage requirements for the POST-G2, and SWMF-GR drainage areas, a preliminary design for the SWM Facility (SMF-GR) has been completed to demonstrate that the SWM block is adequately sized. A preliminary operating profile of the SWM facility is presented in **Table 9**.

Table 9: SWM Facility (SWMF-GR) Operating Characteristics

Component	Elevation (m)	Storage Required (m³)	Storage Provided (m³)
Bottom	509.80		
Permanent Pool	511.80	2,387	7,589
Extended Detention	512.30	2,284	3,035
Regional High-Water Level	513.80	13,974	14,584
Top of Berm	514.10		

As evidenced by **Table 9**, the pond presented herein is sufficiently sized to provide the required stormwater quantity and quality controls. Permits and other regulatory instruments such as an Environmental Compliance Approval (MECP) and Conservation Authority approval will be secured at the detailed design stage.

### 7.5. Water Balance

A water balance was completed to assess the impacts of development within the catchments of the wetland feature located in the southwestern portion of the Subject Lands. The Thornthwaite-Mather method was selected to calculate the pre- and post-development runoff, infiltration, and evapotranspiration contributions to the feature. As noted in the EIS completed by SLR (May 2024), the infiltration contributions for the PRE-G2 wetland impact the larger wetland at the southwest limit of the site. The smaller wetland within catchment PRE-G2 is slated for removal, and it is important that the contributions of that wetland are maintained. The pre-development water balance was established to set the post-development annual water balance targets.

Under post-development conditions, the runoff from the area draining to SWMF-SV was removed from the water balance calculation since it is proposed to outlet SWMF-SV to the Road 9 ditch. Combined with the typical reduction in evapotranspiration and infiltration associated with the increased impervious area coverage, the runoff directed to the wetland was also reduced. As noted in the EIS (SLR 2024), the differentiation between runoff and infiltration contributions to the wetland feature was not deemed to be critical, therefore the deficit to the wetland was calculated as a combination of these two parameters. This combined deficit was mitigated by adding an additional outlet from SWMF-SV. This additional outlet will be designed such that the runoff volume from the 3 mm storm event (roughly 2.2 mm) from the drainage area contributing to SWMF-SV will be directed to the wetland, and any additional flows will be directed to the County Rd 9 ditch, by-passing the wetland. The results of the assessment are summarized in **Table 10** and detailed calculations are included in **Appendix F**.

Table 10: Wetland Water Balance

Parameter	Pre- Development	Post Development	Post- Development with Mitigation	% Change (Pre to Post) with Mitigation
Precipitation (m³/yr)	96081	91241	91241	-5%
Evapotranspiration (m³/yr)	71500	35084	35084	-51%
Total Infiltration (m³/yr)	17206	6047	6047	-65%
Total Runoff (m³/yr)	7374	1612	18166	146%
Total Runoff + Infiltration (m³/yr)	24581	7659	24213	-1%

C.F. Crozier & Associates Inc. Project No. 1060-5590

### 8. UTILITIES

The development will be serviced with natural gas, telephone, cable TV, and hydro. All such utilities are available in the area of development. Coordination for extension of and connection to existing services will be undertaken as development approvals advance. Utilities are proposed to follow the alignment of the internal road network, with individual service connections to each lot. A joint utility trench is proposed for the development.

### 9. CONCLUSIONS & RECOMMENDATIONS

Based on the foregoing, we conclude that the proposed Ida Street Development can be adequately serviced.

- Access to the Subject Development will be provided by two entrances along County Road 9 and one entrance along Ida Street. The internal roadways will meet Township Standards and provide access for emergency vehicles.
- The northeast half of the site will be serviced by gravity sanitary sewers along internal roadways and a proposed Ida Street sewer connected to the existing 300mm diameter gravity sewer network on Ida Street. Wastewater will then follow the existing sewer network, ultimately discharging to the Dundalk WWTF.
- The southwest half for the site will be serviced by a gravity sanitary sewer network discharging to a proposed pumping station along County Road 9 at the site's southwest boundary. Wastewater will then be conveyed from the SPS to the internal gravity sewer network via an internal forcemain.
- An internal watermain system will be provided through the Subject Development with two connections to the existing watermain on Ida Street.
- The development will be fully serviced by hydro, natural gas, cable, and telecommunications.
- Two SWM Facilities will provide both quality and quantity control. The proposed SWM Facilities are adequately sized to provide "enhanced protection" level treatment while controlling post-development flows to pre-development levels for all storms up to the 100year storm event. The facility will incorporate 24-hour retention of the 25mm event to provide erosion control.
- Flood hazard constraints do not exist for the Subject Development.
- A secondary outlet from SWMF-SV is proposed to mitigate the post-development water balance deficit in the wetland located at the southwest limit of the Subject Development.

Based on the above, we recommend approval of the Planning Applications for the subject lands from the perspective of engineering servicing requirements.

Respectfully Submitted,

C.F. Crozier & Associates Inc.

Justin L'Abbe, P.Eng. Project Manager

C.F. Crozier & Associates Inc.

Nicole O'Connor, P.Eng.

Project Engineer

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# APPENDIX A

Geotechnical Investigation



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# A REPORT TO FLATO DEVELOPMENTS INC.

# A GEOTECHNICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT

### 2 IDA STREET TOWNSHIP OF SOUTHGATE (DUNDALK)

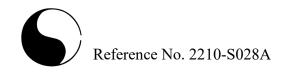
REFERENCE NO. 2210-S028A

**JANUARY 2023** 

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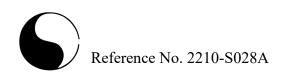
Digital Copy - Flato Developments Inc.

1 Copy- Soil Engineers Ltd. (Mississauga)1 Copy- Soil Engineers Ltd. (Richmond Hill)



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### 1.0 <u>INTRODUCTION</u>

In accordance with a written authorization from Ms. Nazy Majidi of Flato Developments Inc. dated September 20, 2022, Soil Engineers Ltd. was retained to carry out a geotechnical review based on the monitoring well logs and groundwater monitoring data prepared by SLR Consulting (Canada) Ltd. (SLR) on a land parcel located at the northwest of Ida Street and County Road 9 in the Township of Southgate.

The purpose of this review was to evaluate the subsurface conditions and determine the engineering properties of the disclosed soils from SLR boreholes for the design and construction of the proposed residential development. The geotechnical findings and resulting recommendations are presented in this report.

### 2.0 SITE AND PROJECT DESCRIPTION

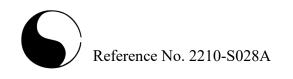
The Township of Southgate (Dundalk) is situated in the physiographic region known as Dundalk Till Plain, where moraines and eskers occur in areas that have been partly eroded by glacial Lake Algonquin and filled with lacustrine sands, silts, and reworked till.

The subject site, approximately 35 hectares in area, is located at the northwest of Ida Street and County Road 9 in the Township of Southgate. Based on the aerial photographs, the subject site is mainly used for agricultural purposed with multiple residential dwellings. The existing site gradient is undulating, and generally dropping towards the southwest.

Based on the concept plan provided by Croizier Consulting Engineers, the subject site will be developed into a residential subdivision with park blocks and two stormwater management (SWM) ponds. The subdivision will be serviced with municipal sewers and roadways meeting urban standards.

### 3.0 FIELD WORK AND LABORATORY TESTS

The field work, consisting of nine (9) boreholes extending to depths of 5.79 to 10.67 m, was supervised by SLR between April 11 and 18, 2022. Upon the completion of drilling and sampling, ten (10) monitoring wells were also installed to facilitate groundwater monitoring and hydrogeological study, where a pair of nested wells were installed in one of the borehole locations. All borehole and monitoring well locations are shown on the Borehole and Monitoring Well Location Plan, Drawing No.1.



Standard Penetration Tests (SPT) were performed at regular sample interval to determine the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the non-cohesive strata is inferred from the 'N' values. The results of the SPT were documented in the Monitoring Well Logs in Appendix A of this report.

Aside from the SPT during the field work, grain size analyses were also performed on selected soil samples to determine the gradation of the subsoils. The gradation graphs were presented in Appendix B of this report.

### 4.0 **SUBSURFACE CONDITIONS**

The investigation revealed that beneath a topsoil veneer, the site is underlain by sandy silt till/silty sand till deposits, with localized sand layers.

Detailed descriptions of the encountered subsurface conditions are presented on SLR Monitoring Well Logs attached in the Appendix A. The engineering properties of the disclosed soils are discussed herein.

# 4.1 **Topsoil**

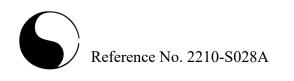
The topsoil veneer, 10 to 43 cm in thickness, was contacted at the ground surface in all boreholes. Thicker topsoil may be encountered in areas beyond the borehole locations, especially in low lying areas and treed areas.

## 4.2 Sand/Silty Sand

Layers of sand was encountered beneath the topsoil and within the till stratum in MW22-403 to MW22-407, inclusive, at various depths. The sand is generally fine to medium grained with a trace of silt to being silty. In some locations, the sand becomes coarse grained and gravelly.

The obtained 'N' values of the sand range between 4 and over 50 blows per 30 cm of penetration, indicating the sand is loose to dense in relative density.

The loose sand was generally encountered near the ground surface, which may have been disturbed by farming activities and/or weathering process. This sand deposit is generally in moist condition. Where the sand layer was contacted within the till deposit at a deeper depth, the sand layer appeared to be in wet condition.



The engineering properties of the sand deposit are given below:

- Low to high frost-susceptibility, depending on its fine content.
- High water erodibility; the fine particles are susceptible to migration under seepage condition.
- In excavation, the sand will slough to its angle of repose, run with water seepage and boil with a piezometric head of about 0.3 m.

### 4.3 Silty Sand Till/Sandy Silt Till

The native silty sand till/sandy silt till predominates the soil stratigraphy within the depth of the investigation. It consists of a random mixture of soil particle sizes ranging from clay to gravel, with silt and sand being the dominant influence on its soil properties. Four grain size analyses were carried out in selected till samples and the gradations are presented in Appendix B of this report.

Generally, the till stratum is in moist to very moist conditions, with occasional wet sand layers as noted by SLR during drilling and sample examinations.

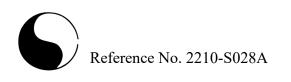
The obtained 'N' values of the till samples range from 4 to over 50, with a median of over 50 blows per 30 cm of penetration, indicating the till deposit is loose to very dense, being generally very dense in relative density. Large cobbles and possible rock fragments were identified within the till samples by SLR.

The engineering properties of the till deposit are listed below:

- High frost susceptibility and low water erodibility.
- The till will be stable in relatively steep excavation; however, localized sheet collapse may occur under prolonged exposure.

### 5.0 GROUNDWATER CONDITION

Groundwater levels were recorded in the monitoring wells on July 13, 2022, and the records are presented on the logs and summarized in Table 1.



**Table 1 -** Groundwater Level in Monitoring Wells

Monitoring Well	Well	Ground	July 13, 2022		
No.	Depth (m)	Elevation (m)	Depth (m)	Elevation (m)	
MW22-401	6.10	518.60	3.38	515.22	
MW22-402	6.10	516.82	2.09	514.73	
MW22-403	6.10	514.27	1.85	512.42	
MW22-404	6.10	514.16	0.93	513.23	
MW22-405D	10.67	512.10	1.86	510.24	
MW22-405S	6.10	512.06	1.80	510.26	
MW22-406	5.79	511.50	1.11	510.39	
MW22-407	6.10	509.61	1.61	508.00	
MW22-408	6.10	509.31	1.21	508.10	
ESA-1	4.57	514.16	1.44	512.72	

Groundwater was recorded at a depth of 0.93 to 3.38 m from the prevailing ground surface, or between El. 508.00 m and El. 515.22 m. On-going groundwater monitoring will be completed by SLR and presented in the hydrogeological report under separate cover.

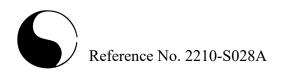
# 6.0 **DISCUSSION AND RECOMMENDATIONS**

The investigation revealed that beneath a topsoil veneer, the site is underlain by sandy silt till/silty sand till deposits, with localized sand layers.

Groundwater was recorded at a depth of 0.93 to 3.38 m from the prevailing ground surface, or between El. 508.00 m and El. 515.22 m.

It is understood that subject site will be developed into a residential subdivision with park blocks and two SWM ponds. The geotechnical findings warranting special consideration for the proposed development are presented below:

- The topsoil must be removed for site development. The topsoil can be re-used for landscaping only. Any surplus should be removed off-site
- Where the surface soil is weathered or disturbed, it should be subexcavated and inspected before reusing for structural backfill.



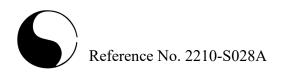
- In areas where the site will be regraded with additional fill, the earth fill can be placed in an engineered manner for foundation, site services and pavement construction.
- The proposed residential houses can be supported on conventional spread and strip footings founded on engineered fill or undisturbed native subsoil. The foundation subgrade must be inspected by a geotechnical engineer, or a senior geotechnical technician, to ensure that the revealed conditions are compatible with the design of foundations.
- For conventional basement design, the foundation wall should be damp-proofed and provided with perimeter subdivisions at wall base. Where wet subgrade is evident below the basement slab, underfloor weepers must be considered.
- A Class 'B' bedding, consisting of compacted 19-mm Crusher-Run Limestone (CRL), or equivalent, is recommended for the construction of the underground utilities. Where wet subgrade or dewatering is required, A Class 'A' concrete bedding should be used instead.

The recommendations appropriate for the project are presented herein. One must be aware that the subsurface conditions may vary. Should this become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

## 6.1 Site Preparation

In areas where the site will be regraded with additional fill, the earth fill should be place in an engineered manner for foundation, site services and pavement construction. The engineering requirements for a certifiable fill are presented below:

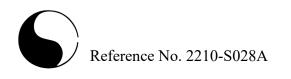
- 1. All the existing topsoil must be removed. Any weathered/disturbed soil encountered on the ground surface should be subexcavated, sorted free of organics or deleterious material, if any, aerated before reusing for structural backfill. The exposed subgrade must be inspected and proof-rolled prior to any fill placement.
- 2. Inorganic soils must be used, and they must be uniformly compacted in 20 cm thick lifts to at least 98% Standard Proctor dry density (SPDD) up to the proposed finished grade. The soil moisture must be properly controlled near the optimum. If the foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPDD.
- 3. If the engineered fill is compacted with the moisture content on the wet side of the optimum, the underground services and pavement construction should not begin until



- the pore pressure within the fill mantle has completely dissipated. This must be further assessed at the time of the engineered fill construction.
- 4. If imported fill is to be used, it should be inorganic soils, free of deleterious or any material with environmental issue (contamination). Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the appropriate personnel as authorized by the developer or agency, before it is hauled to the site.
- 5. The engineered fill must not be placed during the period where freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow. If the engineered fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
- 6. The fill operation must be supervised and monitored on a full-time basis by a technician under the direction of a geotechnical engineer.
- 7. The engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented.
- 8. The foundations and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
- 9. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of the excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
- 10. Despite stringent control in the placement of the engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the foundations must be reinforced and designed by a structural engineer.
- 11. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

### 6.2 Foundations

The proposed residential dwellings can be constructed on conventional footings founded on the undisturbed native soil or engineered fill. The recommended bearing pressures for conventional footing design are presented below:



- Maximum Soil Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa
- Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 250 kPa

The total and differential settlements of the conventional spread and strip footings, designed for the bearing pressure at SLS, are estimated to be 25 mm and 20 mm, respectively.

The footing subgrade must be inspected by a geotechnical engineer, or a geotechnical technician under the supervision of a geotechnical engineer; this is to ensure that the subgrade conditions are compatible with the foundation design requirements.

Where water seepage is encountered during footing excavations, or where the subgrade of the foundations is found to be wet, the subgrade should be protected by a concrete mud-slab immediately after exposure and inspection. This will prevent construction disturbance and costly rectification.

Footings exposed to weathering or in unheated areas, should have at least 1.6 m of earth cover for protection against frost action or must be adequately insulated.

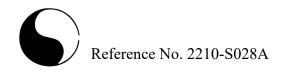
The foundations shall meet the requirements specified in the latest Ontario Building Code. The proposed development should be designed to resist an earthquake force using Site Classification 'D' (stiff soil).

### 6.3 **Basement Construction**

The basement walls should be designed to sustain a lateral earth pressure calculated using the soil parameters stated in Section 6.8. Any applicable surcharge loads beside the basement must also be included in the design of underground structure.

In conventional design, perimeter subdrains and damp-proofing of the foundation walls will be required. The subdrains should be encased in a fabric filter to protect them against blockage by silting and connected to a positive outlet. Typical details of the perimeter subdrain are illustrated on Drawing No. 2.

Where wet subgrade is evident below the basement, underfloor weepers should be implemented. In addition, a vapour barrier should also be placed between the concrete slab and the granular bedding to prevent upfiltration of water vapour. Details of the underfloor weepers are illustrated on Drawing No. 3. The necessity of the underfloor weepers should be further verified once the basement elevation is available for review.



The subgrade must consist of sound native soils or properly compacted inorganic fill. Any weak or wet soil should be subexcavated and replaced with suitable inorganic soil compacted to at least 98% SPDD. The final subgrade must be inspected and assessed by proof-rolling prior to placement of granular bedding.

The basement floor slab should be constructed on a granular bedding, at least 20 cm in thickness, consisting of 19-mm CRL, or equivalent, compacted to 100% SPDD. Where underfloor weepers are required, the thickness of the granular bedding should be increased to 30 cm in thickness.

The exterior grading around the buildings must be such that it directs runoff away from the structures.

### 6.4 <u>Underground Services</u>

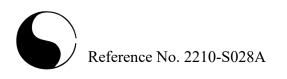
The subgrade for underground services should consist of properly compacted inorganic earth fill or sound native soils. Where weak or wet subgrade is encountered, it can be further subexcavated to competent soil and replaced with bedding material compacted to 98% SPDD in lifts no more than 20 cm in thickness.

A Class 'B' bedding, consisting of compacted 19-mm CRL or equivalent, is recommended for the design of the underground services construction. Where saturated soils and/or dewatering is required for the construction of the underground services, Class 'A' concrete bedding should be used instead.

In order to prevent pipe floatation when the sewer trench is deluged with water, a soil cover with a thickness equal to two times the pipe diameter should be in place at all times after completion of the pipe installation.

The pipe joints connecting into manholes and catch basins should be leak-proof or wrapped with a waterproof membrane. Openings to subdrains should be shielded by a fabric filter to prevent blockage by silting.

All metal fittings for the underground services should be protected against soil corrosion. The in-situ soils have moderately high corrosivity to buried metal. In determining the mode of protection, an estimated electrical resistivity of the disclosed soil should be used and must meet the minimum requirement as specified by the Municipality.



### 6.5 **Backfilling in Trenches and Excavation**

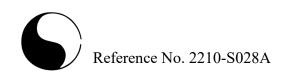
The on-site inorganic soils are suitable in general to be reused for structural backfill. However, the wet soils, if any, should be spread thinly on the ground to allow aeration in warm and dry weather prior to be reused for structural backfill. They should be free of deleterious materials or oversized (over 15 cm) boulders and cobbles.

The backfill in service trenches or beside foundation walls should be compacted to at least 95% SPDD. In zone within 1.0 m below the pavement subgrade or floor slab, the subgrade must be compacted to at least 98% SPDD. The lift thickness should be limited to 20 cm, or the lift thickness should be determined by test strips.

In normal construction practice, the problem areas of pavement settlement largely occur adjacent to foundation walls, manholes, catch basins and services crossings. In areas which are inaccessible to a heavy compactor, granular backfill should be used in order to achieve the compaction with a light equipment.

One must be aware of the possible consequences during trench backfilling and exercise caution as described below:

- When construction is carried out in freezing winter weather, allowance should be made for these following conditions. Despite stringent backfill monitoring, frozen soil layers may inadvertently be mixed with the structural trench backfill. Should the in-situ soils have a water content on the dry side of the optimum, it would be impossible to wet the soils due to the freezing condition, rendering difficulties in obtaining uniform and proper compaction. Furthermore, the freezing condition will prevent wetting of the backfill when it is required, such as in a narrow vertical trench section, or when the trench box is removed. The above will invariably cause backfill settlement that may become evident within 1 to several years, depending on the depth of the trench which has been backfilled.
- In areas where the construction is carried out during the winter months, prolonged exposure of the trench walls will result in frost heave within the soil mantle of the walls. This may result in some settlement as the frost recedes, and repair costs will be incurred prior to final surfacing of the new pavement and the slab-on-grade construction.
- In deep trench backfill, one must be aware that future settlement may occur, unless the side of the cut is flattened to at least 2H:1V, and the lifts of the fill and its moisture content are stringently controlled; i.e., lifts should be no more than 20 cm (or less if the



- backfilling conditions dictate) and uniformly compacted to achieve at least 98% SPDD, with the moisture content controlled near the optimum.
- It is often difficult to achieve uniform compaction of the backfill in the lower vertical section of a trench which is stabilized by a trench box. These sectors must be backfilled with sand or non shrinkable fill, and the compaction must be carried out diligently prior to the placement of the backfill above this sector; i.e., in the upper sloped trench section. This measure is necessary in order to prevent consolidation of inadvertent voids and loose backfill which will compromise the compaction of the backfill in the upper section.
- In areas where groundwater movement is expected in the trench backfill, anti-seepage collars (OPSS 802.095) should be provided.

### 6.6 Garages and Driveways

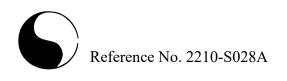
Due to the frost susceptible characteristics of the subgrade soils, heaving of the pavement is anticipated during cold weather and the surface structures should be designed to tolerate the movement.

The driveway leading to the garage should be backfilled with non-frost susceptible granular material with a frost taper at a slope of 1H:1V or gentler. The subgrade of the garage floor and the interior garage foundation walls should be insulated with 75-mm Styrofoam, or its thermal equivalent.

The ground surface must be graded to direct water away from the structures to minimize the frost heave phenomenon generally associated with the disclosed soil.

# 6.7 **Pavement Design**

The recommended pavement design for both Local Road and Collectors is presented in Table 2.



<b>Table 2 -</b> Pavement Design
----------------------------------

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL3
Asphalt Binder		HL4
- Local Road	50	
- Collectors	70	
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base	450	Granular 'B' or equivalent

In preparation of the pavement subgrade, the subgrade must be proof-rolled. Any soft spot identified must be subexcavated, and replaced with inorganic material and properly compacted to at least 98% SPDD, with the water content 2% to 3% drier than the optimum in 20 cm layers, or the lift thickness should be determined by test strips. All the granular bases should be compacted to 100% SPDD.

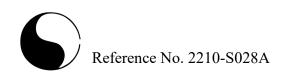
The pavement subgrade will suffer a strength regression if water is allowed to infiltrate prior to paving. The following measures should be incorporated in the construction procedures and pavement design:

- The lot areas adjacent to the pavement should be properly graded to prevent ponding of water.
- The pavement subgrade should be properly crowned and smooth-rolled to allow interim precipitation to be properly drained.
- Fabric filter-encased curb subdrains on both sides of the roadway are required to meet the Town's requirements.
- If the pavement is to be constructed during the wet seasons and extremely soft subgrade occurs, the granular sub-base may require thickening. This can be further assessed during construction.

# 6.8 Stormwater Management Areas

Based on the concept plan, two SWM areas were proposed within the subject site: one is located to the southeast corner of the site and the other one is located at the southwest corner of the site. Details of both SWM areas are not available for review at the time of preparation of this report.

MW22-408 and ESA-1 were completed at the SWM areas, which consists of silty sand till, extending to the maximum investigated depths of the boreholes. Groundwater was recorded



at 1.21 m and 1.44 m below the ground surface, or at El. 508.10 m and El. 512.72 m, in MW22-408 and ESA-1, respectively. Where the SWM facility is to be constructed by subexcavation, a clay liner will likely be required. Where necessary, perimeter and under pond subdrains may be required. This should be confirmed once the SWM design is available for review.

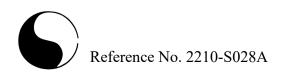
Where the bottom of the SWM facility is deeper than the depths of the boreholes, additional boreholes, extending to at least 1.0 m below the bottom of the SWM facility, will be required.

# 6.9 **Soil Parameters**

The recommended soil parameters for the project design are given in Table 3.

Table 3 - Soil Parameters

Unit Weight and Bulk Factor	Unit Weight (kN/m³)		Estimated Bulk Factor		
	<b>Bulk</b>	Submerged	Loose	<b>Compacted</b>	
Silty Sand/Sand	20.5	10.5	1.20	1.00	
Silty Sand Till/Sandy Silt Till	22.5	12.5	1.25	1.03	
Lateral Earth Pressure Coefficients		Active Ka	At Rest K <sub>0</sub>	Passive K <sub>p</sub>	
Sand		0.29	0.46	3.36	
Silty Sand Till/Sandy Silt Till/Silty Sand		0.30	0.40	3.33	
Estimated Coefficient of Permeability (K)					
and Percolation Time (T)			K (cm/sec)	T (min/cm)	
Sand			$10^{-2}$ to $10^{-3}$	4 to 8	
Silty Sand			10-4	15	
Silty Sand Till/Sandy Silt Till			10 <sup>-4</sup> to 10 <sup>-6</sup>	15 to 50	
Estimated California Bearing Ratio					
Sand			15%		
Silty Sand/Silty Sand Till/Sandy Sit Till			5% to 8%		



**Table 4 - Soil Parameters (cont'd)** 

Tuble 1 Son Turameters (cont a)				
Estimated Electrical Resistivity				
Sand	5500 ohm.cm			
Silty Sand/Silty Sand Till/Sandy Silt Till	4500 ohm.cm			
Maximum Allowable Soil Pressure (SLS) For Thrust Block Design				
Engineered Fill and Sound Native Soils	75 kPa			
Coefficients of Friction				
Between Concrete and Granular Base	0.50			
Between Concrete and Sound Native Soil	0.35			

# 6.10 Excavation

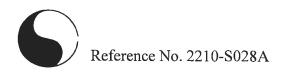
Excavation should be carried out in accordance with Ontario Regulation 213/91. The types of excavated soils are classified in Table 5.

**Table 5 -** Classification of Soils for Excavation

Material	Туре
Silty Sand Till/Sandy Silt Till	2
Disturbed/weathered Soils, drained Soils	3
Saturated Soils	4

Water seepage within the till deposits, if any, will likely be slow in rate and limited in quantity, and can be removed by pumping from sumps. Where the excavation extends into the saturated soils, the water seepage will be appreciable and likely persistent. Dewatering from closely spaced sumps and sump wells may be required. Details related to the rate and volume of dewatering will be discussed in the hydrogeological assessment. The method of dewatering should be confirmed with the hydrogeological consultant and the dewatering contractor.

Prospective contractors should assess the in situ subsurface conditions for excavation by digging test pits to at least 0.5 m below the intended bottom of excavation prior to excavating. These test pits may be allowed to remain open for a few hours to assess its seepage and stability conditions.



# 7.0 <u>LIMITATIONS OF REPORT</u>

This report was prepared by Soil Engineers Ltd. for the account of Flato Developments Inc. and for review by the designated consultants, financial institutions, and government agencies. Use of the report is subject to the conditions and limitations of the contractual agreement.

The material in the report reflects the judgment of Poh Fung Kwok and Kin Fung Li, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it are the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

100169280

SOIL ENGINEERS LTD.

Poh Fung (Derek) Kwok, M.Sc.

Kin Fung L. P.Eng. PFK/KFL



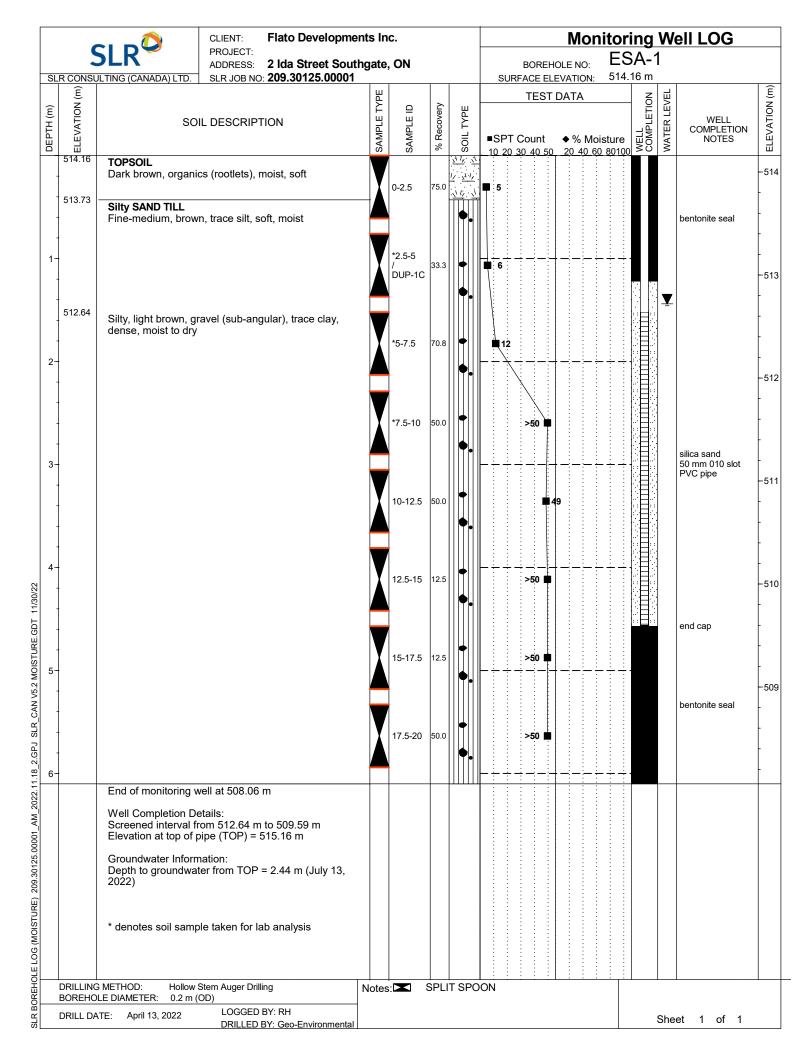
90 WEST BEAVER CREEK ROAD, SUITE 100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335

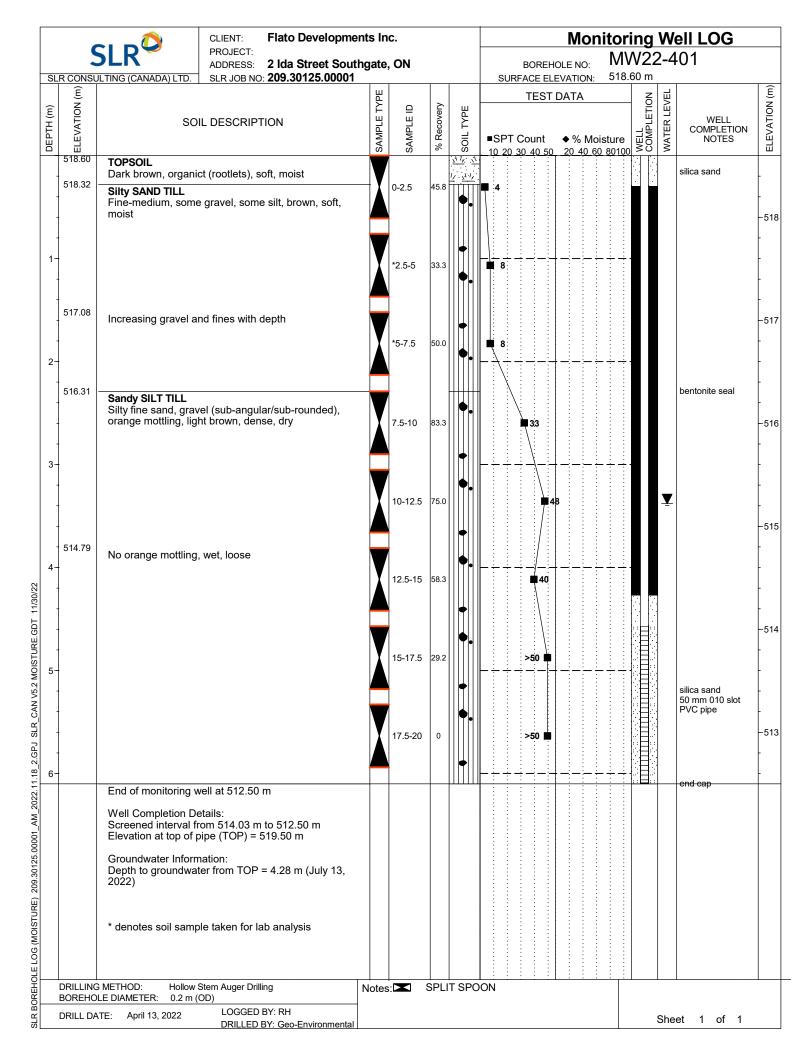
BARRIE TEL: (705) 721-7863 FAX: (705) 721-7864 MISSISSAUGA TEL: (905) 542-7605 FAX: (905) 542-2769 OSHAWA TEL: (905) 440-2040 FAX: (905) 725-1315 NEWMARKET TEL: (905) 853-0647 FAX: (905) 881-8335 GRAVENHURST TEL: (705) 684-4242 FAX: (705) 684-8522 HAMILTON TEL: (905) 777-7956 FAX: (905) 542-2769

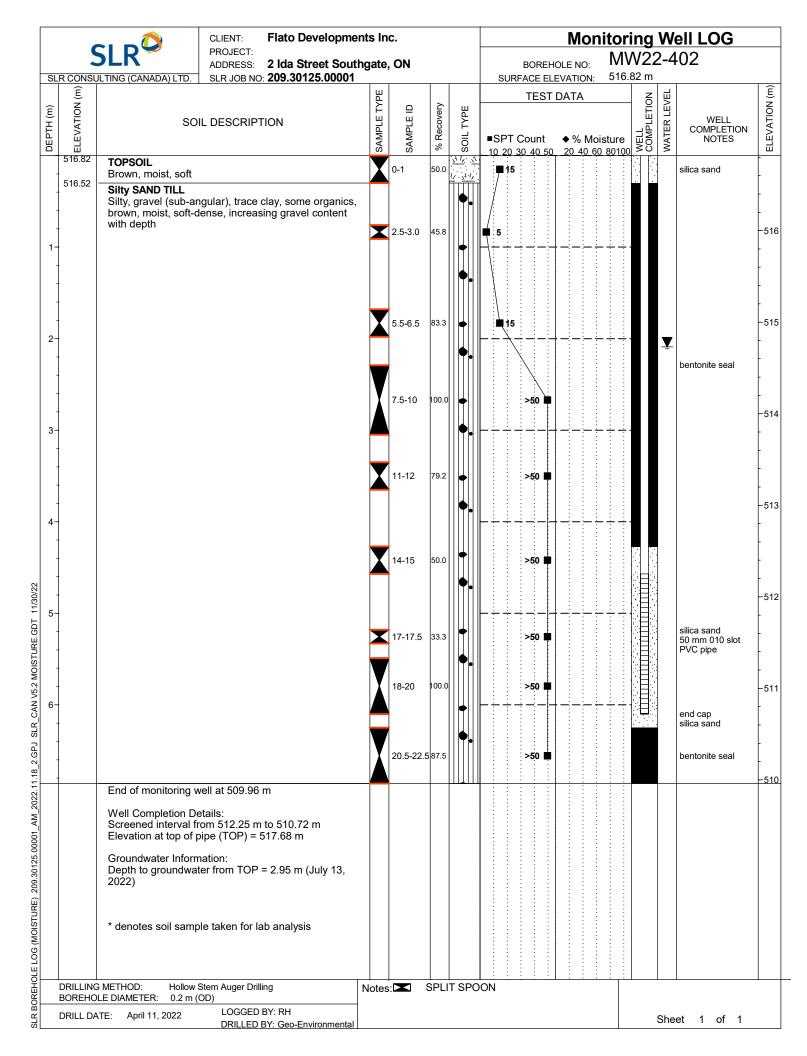
# **APPENDIX A**

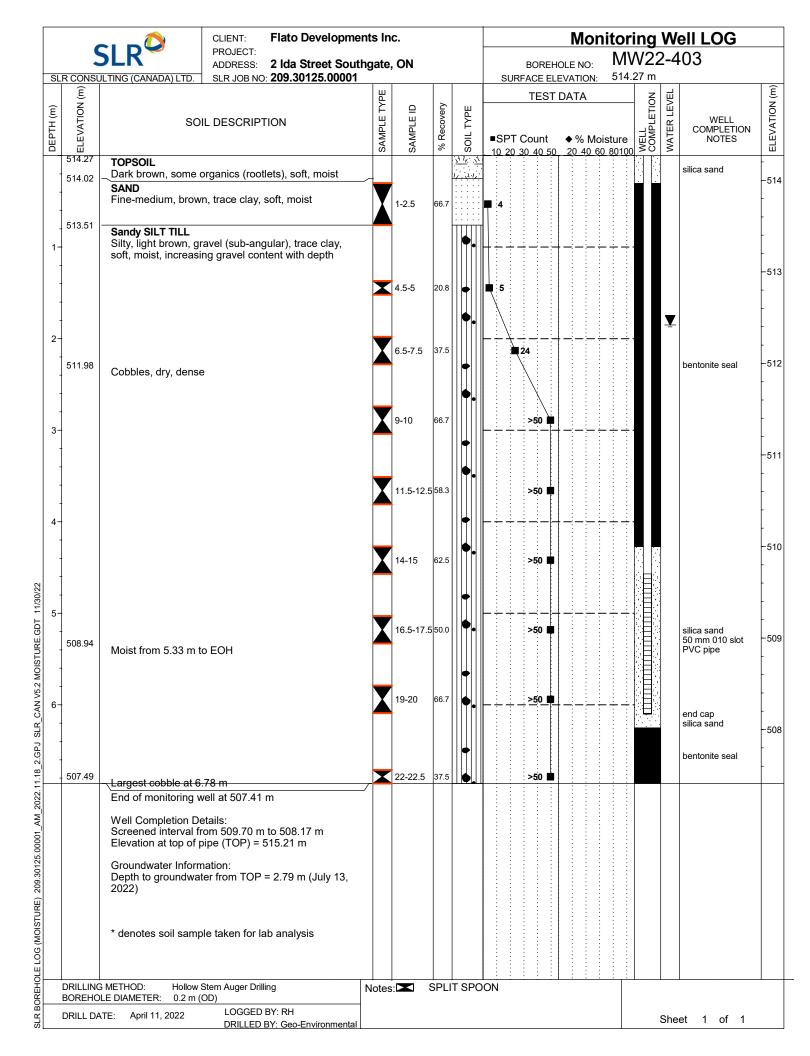
MONITORING WELL LOGS

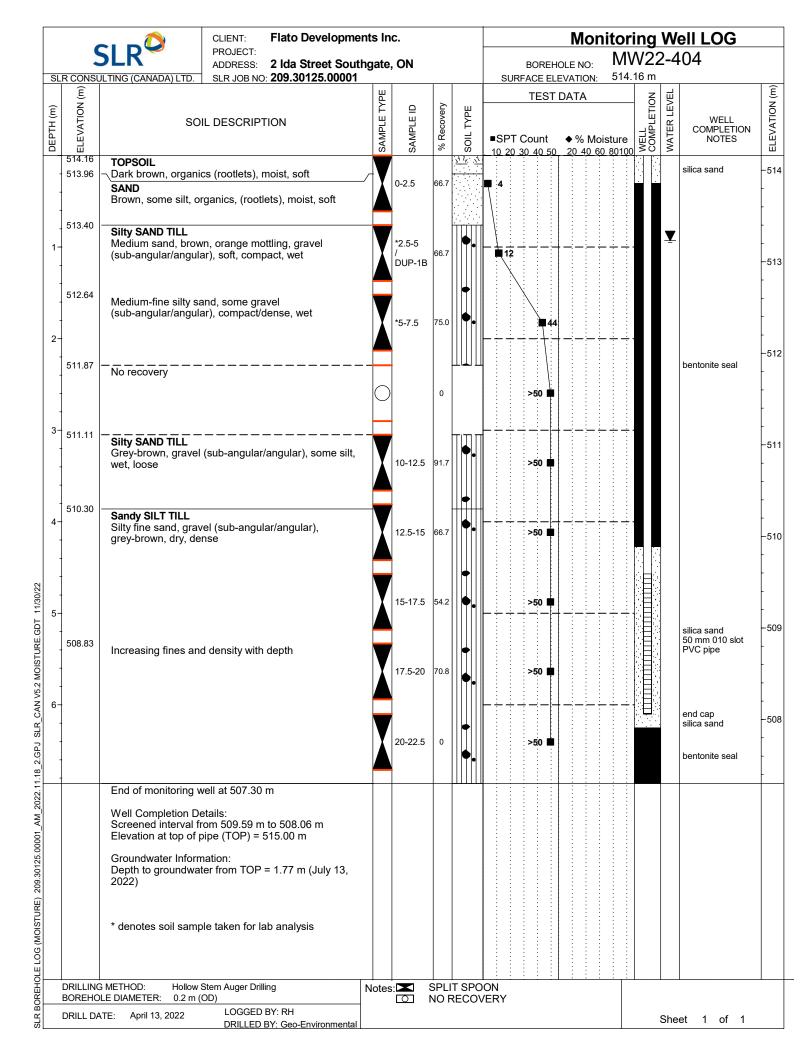
REFERENCE NO. 2210-S028A

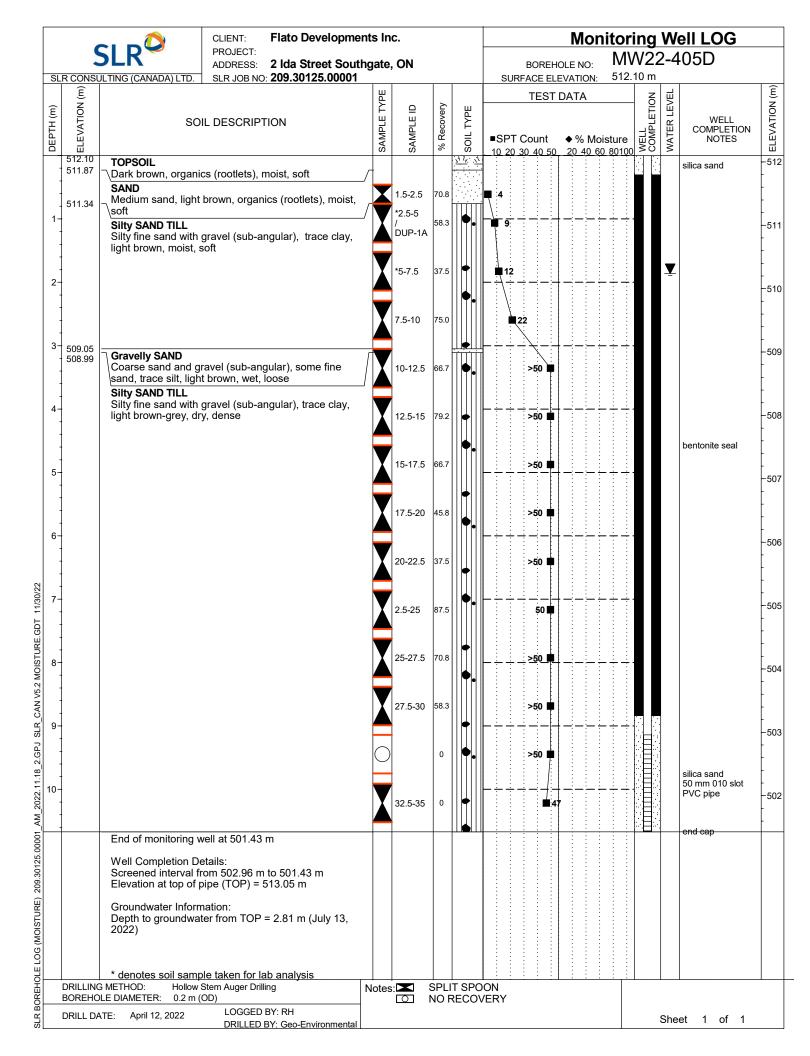




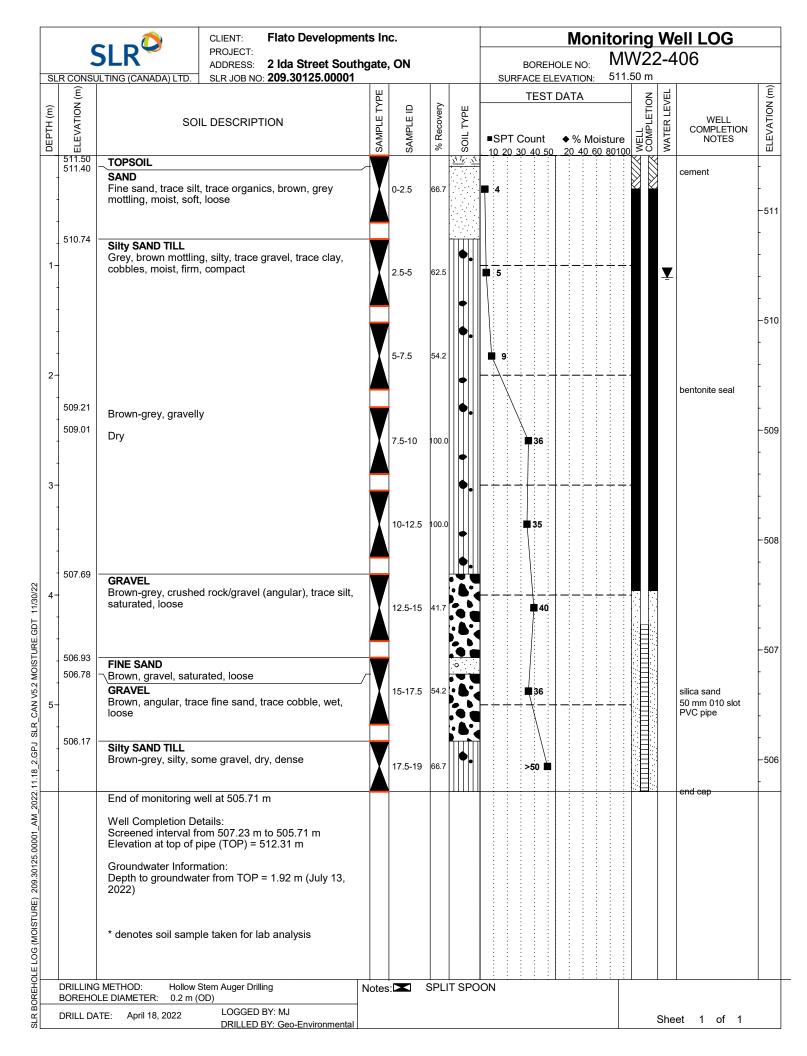


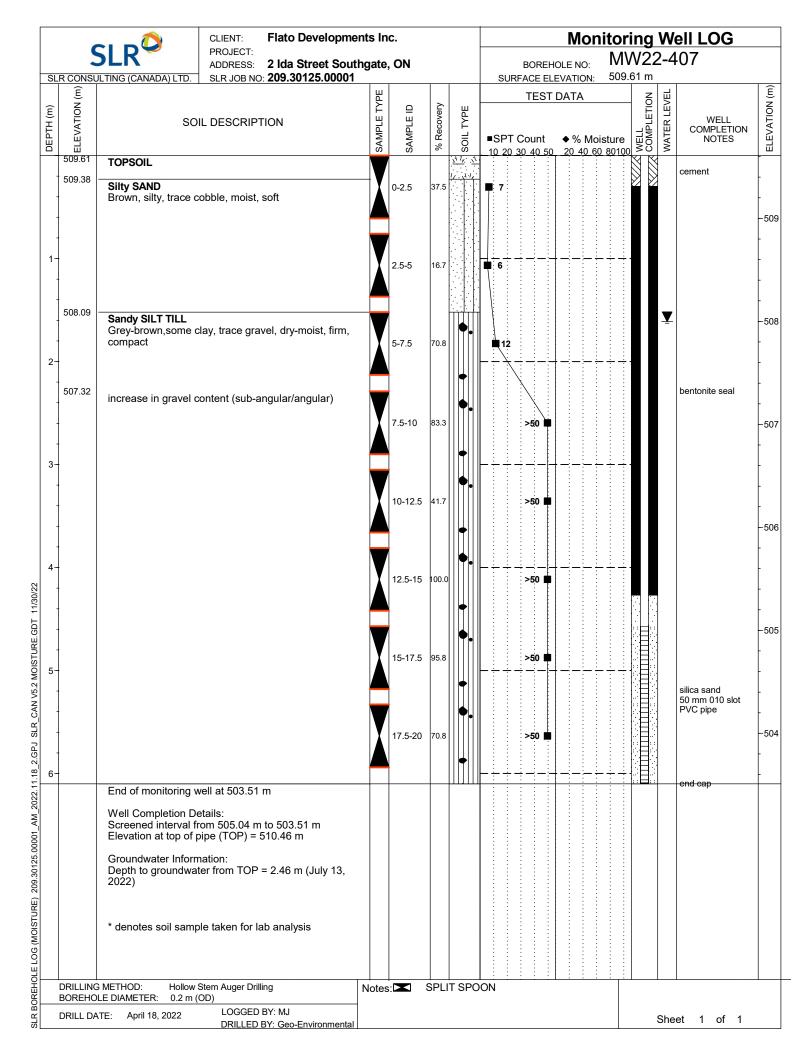


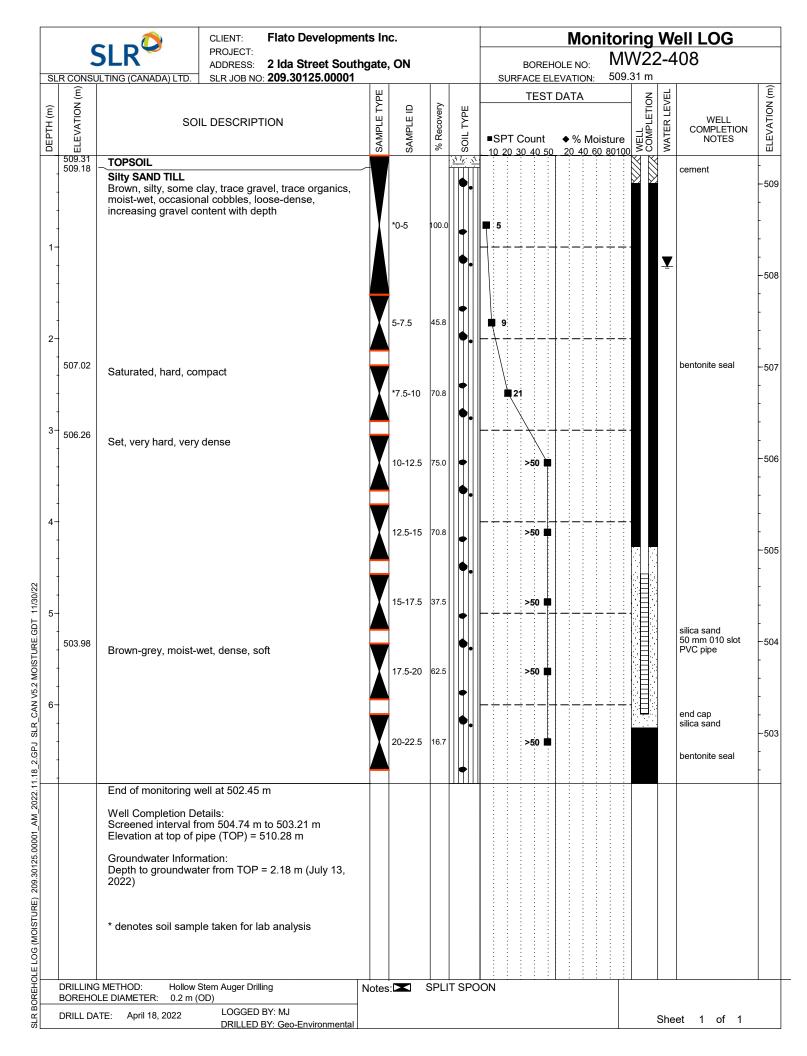




		CLIENT: Flato Developme	ents in	C.							ell LOG	_
SI I	D CONSI	ADDRESS: 2 Ida Street Sout SLR JOB NO: 209.30125.00001	hgate	, ON			DOTAL HOLL ING.	<b>IVIV</b> \ 512.0			105S	
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE ID	% Recovery	SOIL TYPE	TEST DATA  ■SPT Count ◆ % Moist		WELL COMPLETION		WELL COMPLETION NOTES	
	ш 512.06	TOPSOIL	S	, v	-	\(\frac{1}{2}\frac{1}{1}\frac{1}\frac{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\frac{1}\	10 20 30 40 50 20 40 60 8	0100	> C	) <u>&gt;</u>	,	+
-	511.83	Dark brown, organics (rootlets), moist, soft  SAND  Medium sand, light brown, organics (rootlets), moist, soft  Silty SAND TILL									silica sand	-
1		Silty fine sand with gravel (sub-angular), trace clay, light brown, moist, soft				•				Ā	bentonite seal	
3-	509.01 508.95	Gravelly SAND Coarse sand and gravel (sub-angular), some fine sand, trace silt, light brown, wet, loose Silty SAND TILL Silty fine sand with gravel (sub-angular), trace clay, light brown-grey, dry, dense				•						-
4						•. •.						
6-		End of monitoring well at 505.96 m				•. •.					silica sand 50 mm 010 slot PVC pipe	-
		Well Completion Details: Screened interval from 507.49 m to 505.96 m Elevation at top of pipe (TOP) = 513.05 m										
		Groundwater Information: Depth to groundwater from TOP = 2.79 m (July 13, 2022)										
		* denotes soil sample taken for lab analysis  MW22-405S was straight drilled adjacent to  MW22-405D										
		6 METHOD: Hollow Stem Auger Drilling	Notes	 s:								_
		LE DIAMETER: 0.2 m (OD)  LE: April 12, 2022 LOGGED BY: RH										









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### **APPENDIX B**

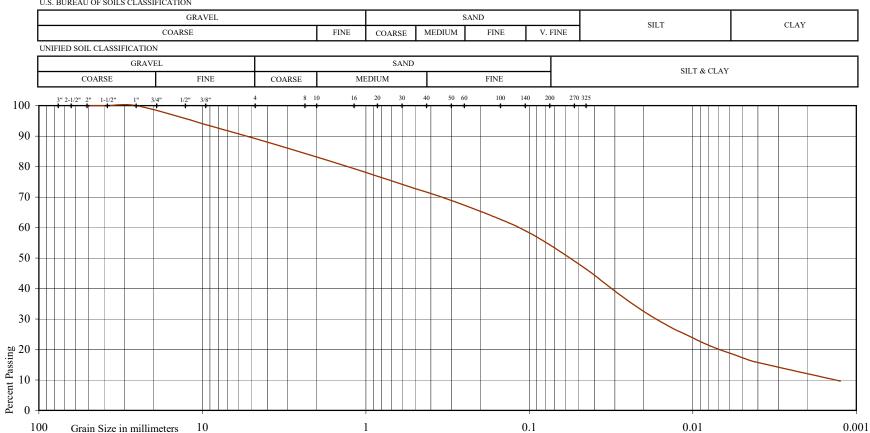
#### **GRAIN SIZE DISTRIBUTION GRAPHS**

REFERENCE NO. 2210-S028A



Reference No: 2210-S028A

U.S. BUREAU OF SOILS CLASSIFICATION



Project: Proposed Residential Development

2 Ida Street, Township of Southgate (Dundalk) Liquid Limit (%) = Location:

Plastic Limit (%) =

Plasticity Index (%) = Borehole No: MW22 -401

Sample No: Moisture Content (%) = 10 - 12.5

Depth (m): **Estimated Permeability** 3.4

 $(cm./sec.) = 10^{-6}$ Elevation (m): 515.2

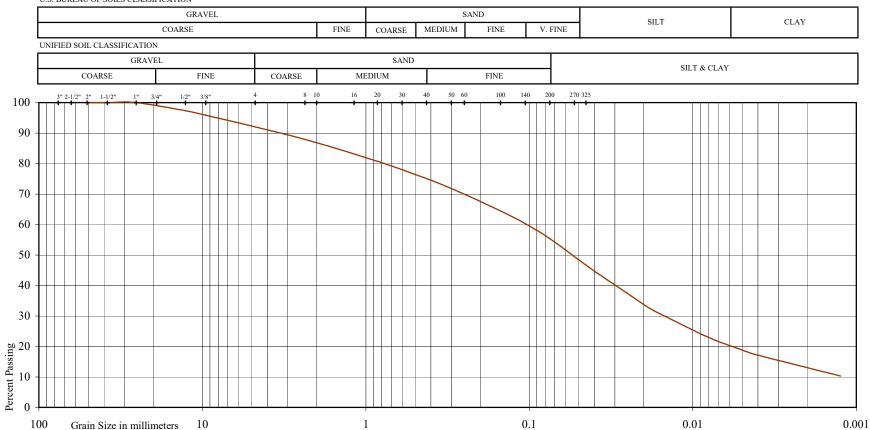
Classification of Sample [& Group Symbol]: SANDY SILT, TILL

some clay and gravel



Reference No: 2210-S028A

U.S. BUREAU OF SOILS CLASSIFICATION



Project: Proposed Residential Development

Location: 2 Ida Street, Township of Southgate (Dundalk)

Liquid Limit (%) =

Plastic Limit (%) = -

Borehole No: MW22 -404 Plasticity Index (%) = -

Sample No: 15 - 17.5 Moisture Content (%) =

Depth (m): 5.0 Estimated Permeability

Elevation (m): 509.2 (cm./sec.) =  $10^{-6}$ 

Classification of Sample [& Group Symbol]: SANDY SILT, TILL

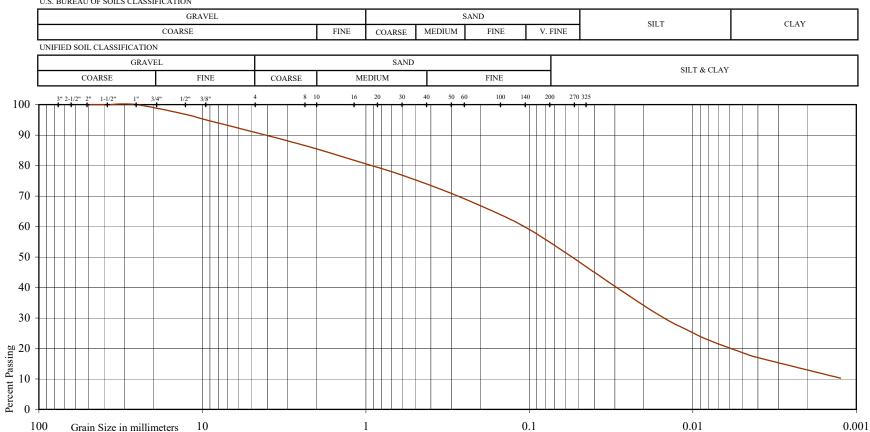
some clay, a trace of gravel

Figure.



Reference No: 2210-S028A

U.S. BUREAU OF SOILS CLASSIFICATION



Project: Proposed Residential Development

Location: 2 Ida Street, Township of Southgate (Dundalk)

Liquid Limit (%) =

Plastic Limit (%) = -

Borehole No: MW22 -407 Plasticity Index (%) = -

Sample No: 5 - 7.5 Moisture Content (%) =

Depth (m): 1.9 Estimated Permeability

Elevation (m): 507.7 (cm./sec.) =  $10^{-6}$ 

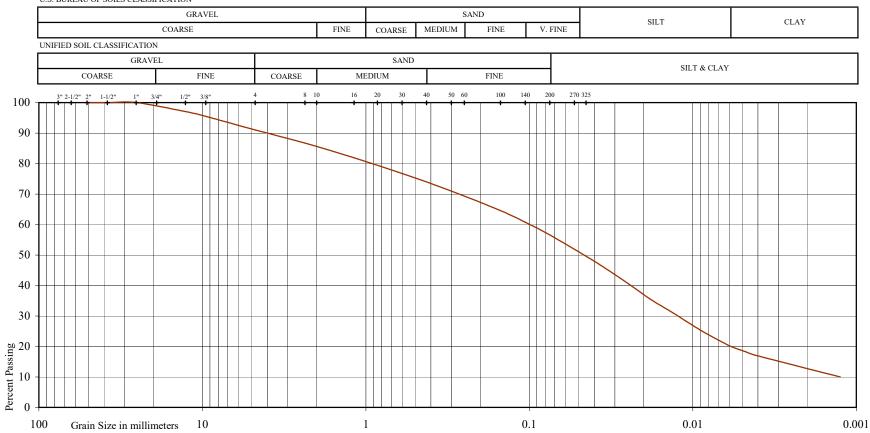
Classification of Sample [& Group Symbol]: SANDY SILT, TILL

some clay, a trace of gravel



Reference No: 2210-S028A

U.S. BUREAU OF SOILS CLASSIFICATION



Project: Proposed Residential Development

Borehole No: MW22 -408

Elevation (m): 505.1

12.5 - 15

Sample No:

2 Ida Street, Township of Southgate (Dundalk) Location:

Liquid Limit (%) = Plastic Limit (%) =

Plasticity Index (%) =

 $(cm./sec.) = 10^{-6}$ 

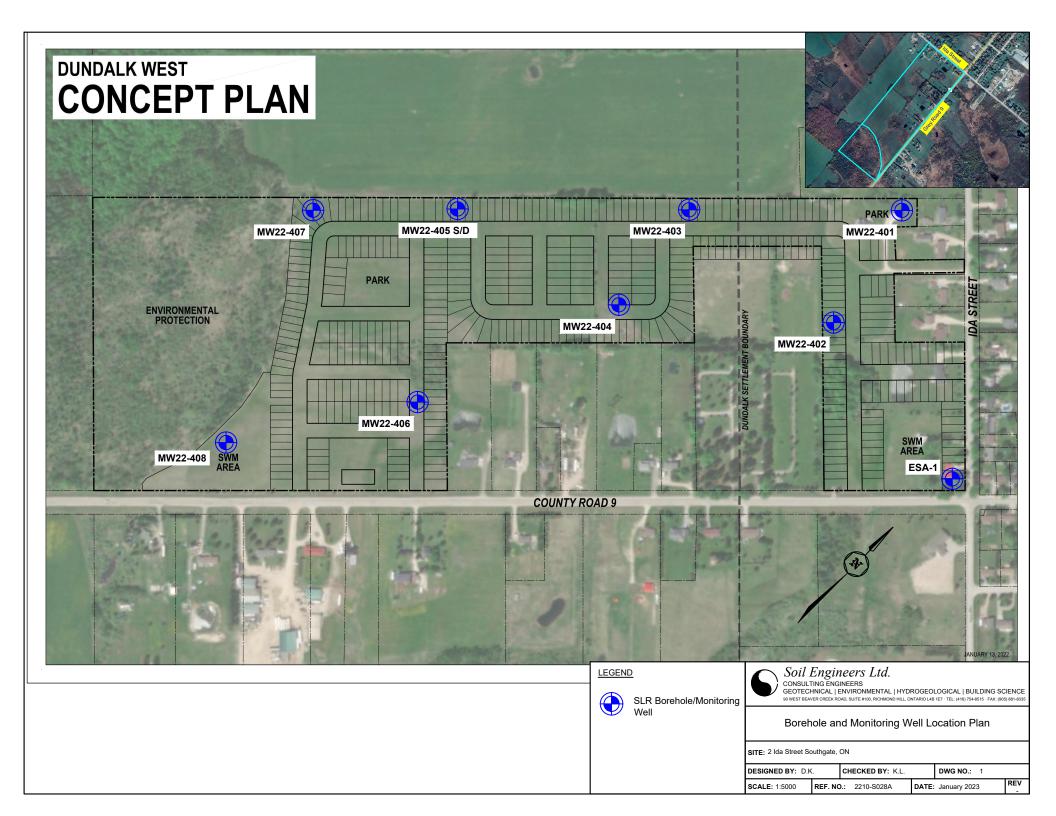
Moisture Content (%) =

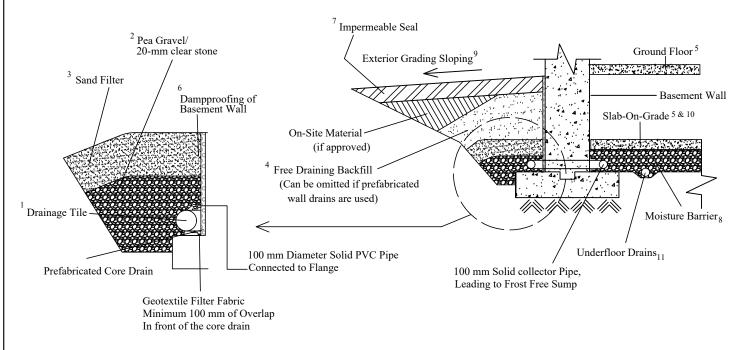
**Estimated Permeability** 

Depth (m): 4.2

Classification of Sample [& Group Symbol]: SANDY SILT, TILL

some clay, a trace of gravel





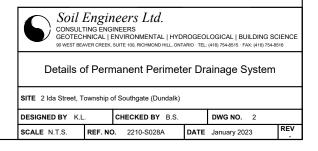
#### NOTES:

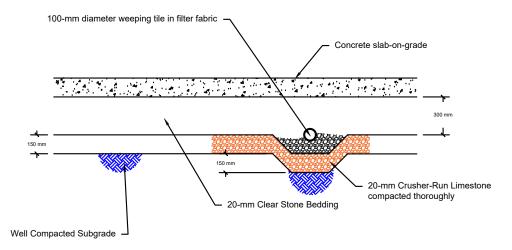
- 1. **Drainage tile**: consists of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet. Invert to be at minimum of 150 mm (6") below underside of basement floor slab.
- 2. Pea gravel: at 150 mm (6") on the top and sides of drain. If drain is not placed on concrete footing, provide 100 mm (4") of pea gravel below drain. The pea gravel may be replaced by 20 mm clear stone provided that the drain is covered by a porous geotextile membrane of Terrafix 270R or equivalent.
- 3. **Filter material**: consists of C.S.A. fine concrete aggregate. A minimum of 300 mm (12") on the top and sides of gravel. This may be replaced by an approved porous geotextile membrane of Terrafix 270R or equivalent.
- 4. Free-draining backfill: OPSS Granular 'B' or equivalent, compacted to 95% to 98% (maximum) Standard Proctor dry density.

  Do not compact closer than 1.8 m (6') from wall with heavy equipment.

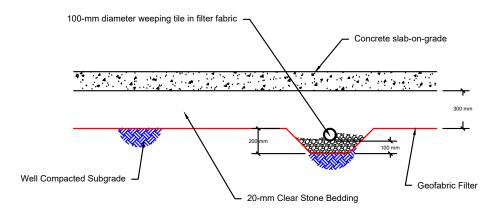
  This may be replaced by on-site material if prefabricated wall drains (Miradrain) extending from the finished grade to the bottom of the basement wall are used.
- 5. Do not backfill until the wall is supported by the basement floor slab and ground floor framing, or adquate bracing.
- 6. Dampproofing of the basement wall is required before backfilling
- 7. Impermeable backfill seal of compacted clay, clayey silt or equivalent. If the original soil in the vicinity is a free-draining sand, the seal may be omitted.
- 8. Moisture barrier: 20-mm clear stone or compacted OPSS Granular 'A', or equivalent. The thickness of this layer should be 150 mm (6") minimum.
- 9. Exterior Grade: slope away from basement wall on all the sides of the building.
- 10. **Slab-On-Grade** should not be structurally connected to walls or foundations.
- 11. **Underfloor drains**\* should be placed in parallel rows at 6 to 8 m (20'-25') centre, on 100 mm (4") of pea gravel with 150 mm (6") of pea gravel on top and sides. The invert should be at least 300 mm (12") below the underside of the floor slab.

  The drains should be connected to positive sumps or outlets. Do not connect the underfloor drains to the perimeter drains.
- \*Underfloor drains can be deleted where not required.

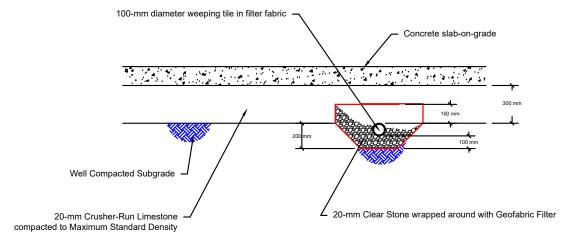




# **Option 'A'**



# Option 'B'



# Option 'C'

#### Note:

- Weepers should be placed in 6 m grids, draining in a positive gradient towards an outlet or a sump pit for removal by pumping.
- A 10-mil polyethylene sheet should be specified between the gravel bedding and concrete slab.

CONSULT GEOTECH	Soil Engineers Ltd. CONSULTING ENGINEERS GEOTECHNICAL, [ENVIRONMENTAL   HYDROGEOLOGICAL   BUILDING SCIENCE 100 NUGGET AVENUE, TORONTO, ONTARIO MIS 3A7 - TEL (416) 7548515 FAX: (416) 75448516												
	Und	ler	rfloor Subdrai	n Det	ails								
SITE: 2 Ida Street, To	SITE: 2 Ida Street, Township of Southgate (Dundalk)												
DESIGNED BY: K.L		CH	HECKED BY: B.L.		DWG NO.: 3								
SCALE: N.T.S.	REF. NO	).:	2210-S028A	DATE:	January 2023	REV -							

# APPENDIX B

Sanitary Demand Calculations



Total Peak Daily Flow

File: 1060-5590 Date: 15-May-24 By: AM

Check By: JLA

14.20 L/sec

# Ida Street Development - Sanitary Design Criteria (FLATO Lands)

Developed Site Area	20.07	ha
Number of Residential Units Single Detatched Townhouses TOTAL	52	units units <b>units</b>
Persons Per New Equivalnet Residential Unit (ERU) (2022 DC Background Study) Residential Population	2.61 838	persons/unit persons
<u>Unit Sewage flows</u> Residential (Per New Development Per Capita Flow) (Triton 2023 Reserve Capacity Infiltration (typical)		L/C-day L/s/ha
<u>Total Design Sewage Flows</u>		
Infiltration/Inflow Residential	3.01	L/sec
Average Daily Residential Flow	2.91	L/sec
Residential Peak Factor (Harmon Formula)	3.8	

# APPENDIX C

Water Demand & Fire Flow Calculations



File: 1060-5590 Date: 15-May-24 By: AM

Check By: JLA

### Ida Street Development - Domestic Water Design Criteria (FLATO Lands)

Developed Site Area	20.07 ha
Number of Residential Units- Single Detached	269 units
Number of Residential Units- Apartment	52 units
Total Number of Units	321 units

Persons Per New Equivalnet Residential Unit (ERU) (2022 DC Background Study)

2.61 persons/unit
Residential Population

838 persons

**Domestic Water Design Flows** 

Residential [Max Day per Capita Demand, Triton Engineering (2024)] 296 L/C-day

Total Domestic Water Design Flows

Average Residential Daily Flow 2.87 L/sec 2.87

Max Day Peak Factor 2.75

Max Day Demand Flow 7.89 L/sec

Peak Hour Factor 4.13
Peak Hour Flow 11.85 L/sec



Project Name: Ida Street Project No: 1060-5590 Prepared By: AM Checked By: JL'A

Date: 5/15/2024

#### Water Supply for Public Fire Protection - 2020

Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flows for Public Fire Protection in Canada

An estimate of fire flow required for a given area may be determined by the formula:

#### RFF = 220 \* C \* sqrt A

where:

RFF = the required fire flow in litres per minute (L/min)

C = the construction coefficient is related to the type of construction of the building

= 1.5 for Type V Wood Frame Construction

= 0.8 for Type IV-A Mass Timber Construction

= 0.9 for Type IV-B Mass Timber Construction

= 1.0 for Type IV-C Mass Timber Construction

= 1.5 for Type IV-D Mass Timber Construction

= 1.0 for Type III Ordinary Construction

= 0.8 for Type II Non-combustible Construction

= 0.6 for Type I Fire Resistive Construction

A = the total effective floor area (effective building area) in square metres (excluding basements at least 50 percent below grade) in the building considered

Step A.	Construction Coefficient (C)	1.0	= 1.0 for Type III Ordinary Construction
	-		
		Yes/No/Unknown	
Is ba	sement at least 50% below grade?	Yes	If yes, basement floor area excluded
	Vertical openings protected?	Yes	*For consideration for effective area calculations

#### Step B. Proposed Building

Townhouse Row

#### Calculate Effective Floor Area based on the highlighted cell

-C value from 1.0 to 1.5: 100% of all floor areas are used

-C value below 1 and vertical openings are not protected: Consider two largest

floors plus 50% of all floor above to a max of eight

-C value below 1 and vertical openings are protected: Consider single largest floor plus 25% of the two immediately adjoining floors

Floors Above Grade	Total Floor Area (m²)	% of Area Considered	Effective Floor Area (m²)	
Basement		NA	NA	
Ground Floor	500.0	100%	500.0	
Level 2	500.0	100%	500.0	*A building may be subdivided if there is a vertical firewall with a
Level 3			0.0	fire-resistance rating greater than 2 hours, and meets the
Level 4			0.0	requirements of the National Building Code.
Level 5			0.0	·
Level 6			0.0	
Level 7			0.0	
Level 8			0.0	
Total	1000.0		1000.0	
			0	

Total Effective Floor Area 1000.0 m<sup>2</sup>

Step C. Therefore RFF = 7,000 L/min (rounded to nearest 1000 L/min)

Step D. The required fire flow may be reduced by as much as -25% for occupancies having contents with very low fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Type of Occu	pancy Adjustment Factor		Occupancy and Contents Adj	ustment Factor
Townhouse	Row Combustible	0%	Non-Combustible	-25%
			Limited Combustible	-15%
	0 L/min surcharge		Combustible	0%
			Free Burning	15%
RFF =	7,000 L/min (not rounded)		Rapid Burning	25%

Step E. Sprinklers - The required fire flow may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of system. Actual Yes/No/Unknown Possible Reduction Reduction Provided Available Automatic sprinkler protection designed and installed in accordance with NFPA 13? No -30% 0% Water supply is standard for both the system and Fire Department hose lines? Nο -10% 0% Fully supervised system? No -10% 0% \*Reduction available assumes complete building coverage Total Reduction % 0% (reduction) \*30% reduction typical for building requiring sprinkler system Total Reduced Flow 0 L/min (reduction, not rounded) Step F. Exposure - A percentage of water for the exposures should be added to the required fire flow for the subject building to provide adequate flow rates for hose streams used to reduce the spreading of fire from the subject building to exposed risks. The required fire flow of a subject building may be increased depending on the severity of exposed risks to the subject building and the distance between the exposed risks and the subject building. This charge considers the usage of water supplies to prevent exposed risks from igniting or being damaged during a major fire incident in the subject building. \*If a vertical fire wall is properly constructed and Separation Maximum Exposure Distance **Adjustment Charge** has a rating of no less than 2 hours, then the boundary can be treated as protected with no exposure charge 0 to 3m 25% 3.1 to 10m 20% \*The maximum exposure adjustment charge to 10.1 to 20m 15% be applied to a subject building is 75% 20.1 to 30m 10% Greater than 30m 0% **Exposed buildings** Surcharge Distance Name Adjacent Dwelling 20% 1400 North East Adjacent Dwelling 16 15% 1050 South Adjacent Dwelling 20% 1400 Adjacent Dwelling West 35 0% 0 3,850 L/min Surcharge (not rounded) Step G. Final Required Fire Flow Step D - Occupancy Adjusted Fire Flow Demand 7,000 L/min Step E - Sprinkler (Reduction) 0 L/min Step F - Exposure Charge 3,850 L/min 10,850 L/min Final Required Fire Flow: 11,000 1000L/min) 183.3 L/s 2,906 USGPM **Determine Required Fire Storage Volume** Flow from above 11,000 L/min 2.25 hours Refer to Table 1 for Duration Required duration Therefore: 1,485,000 Litres or <mark>1,485</mark> m<sup>3</sup> is the required fire storage volume. Table 1 - FUS 2020 Required Duration of Fire Flow Flow Required Duration L/min (hours) 2,000 or 12000 1.0 3.000 1.25 4,000 1.5 5,000 1.75 6,000 2.0 8,000 2.0 10,000 2.0 12,000 2.5 14,000 3.0 16,000 3.5 18,000 4.0 20,000 4.5 22,000 5.0 24,000 5.5 26,000 6.0 28,000 6.5 30,000 7.0 32,000 7.5 34,000 8.0 36,000 8.5 38,000 9.0

40,000 ar 40,000

\*Interpolate for intermediate figures

# APPENDIX D

Hydrologic Parameter Sheets



Project Name: Ida Street Project Number: 1060-5590

Date: 5/15/2024 By: AM D.A. NAME D.A. AREA (ha) PRE-\$1 10.54

Hydrologic Parameters: CALIB NASHYD Command Pre Development Drainage Area: Catchment PRE-S1

#### **Curve Number Calculation**

Soil Types Present:				
Type	ID	Hydrologic	% Area	Area
Listowell Silt Loam	Ls	BC	100.0%	10.54
Parkhill Loam	Pal	BC	0.0%	0.00
				0
				0
Total Area				10.54

Impervious Land	<u>luses Prese</u>	nt:										
	Road	way	Sidev	valk	Driveway		Buildir	ng	SWI	ЛF	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0	98	0	98	0	98	0	98	0	98	0.00	0.00
Pal		98		98		98		98		98	0	0
C	)	98		98		98		98		98	0	0
C	)	98		98		98		98		98	0	0
Subtotal Area	0		0		0		0		0			
Pervious Landus	es Present:											
	Wood	lland	Mead	wob	Wetl	and	Lawr	า	Cultiv	ated	Sub	ototals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
1	0.50	/ -	0.00	71	0.00		0.00	7.5	1001	70	10.54	01507

Pal Subtotal Area	0	0.53 0.00 0.00 0.00 0.53	65	0.00 0.00 0.00 0.00	71	0.00 0.00 0.00 0.00	50	0.00 0.00 0.00 0.00	75 75	0.00 0.00 0.00 0.00	78 78	0.00 0.00 0.00	0.00 0.00 0.00
						omposite /		Total Pervi Total Impe % Impervi Composite	ervious A ous e Curve	rea		10.54 0.0 0.0% 77.4	
<u> </u>								Total Area	Check			10.54	

Ini	tial Abstrac	tion			Composite Curve Number								
Landuse	IA (mm)	Area	A * IA	Listov	well Silt	Parkh	ill Loam		0		0		
Landuse	IA (mm)	(ha)	A * IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC	
Woodland	10	0.53	5.27	0.25	0.53	0.25	0		0		0	0.13175	
Meadow	8	0	0	0.28	0.00	0.28	0		0		0	0	
Wetland	16	0	0	0.05	0.00	0.05	0		0		0	0	
Lawn	5	0	0	0.18	0.00	0.18	0		0		0	0.000	
Cultivated	7	10	70.091	0.35	10.01	0.35	0		0		0	3.505	
Impervious	2	0	0	0.70	0.00	0.70	0		0		0	0.000	
Composite IA		10.54	7.15	Compo	site Runo	ff Coeffic	ient			•		0.345	

	Time	to Peak	Inputs			Uplands			Bransby '	Williams	Airport	
Flow Path Description	Length (m)	Drop (m)	Slope (%)	V/S <sup>0.5</sup>	Velocity (m/s)	Tc (hr)	Tp(hr)	TOTAL Tp (hr)	IC (hr)	Tp(hr)	Tc (hr)	Tp(hr)
Cultivated	688	7.5	1.09%	2.7	0.28	0.68	0.45	0.45	0.51	0.34	1.05	0.70

Alacale Airracet
ethod: Airport
7 11001



Project Name: Ida Street Project Number: 1060-5590 Date: 5/15/2024 By: AM D.A. NAME D.A. AREA (ha)

0.0%

PRE-G2 1.57

Hydrologic Parameters: CALIB NASHYD Command Pre Development Drainage Area: Catchment PRE-G2

#### **Curve Number Calculation**

Soil Types Present:				
Туре	ID	Hydrologic	% Area	Area
Listowell Silt Loam	Ls	BC	100.0%	1.57
				0
				0
				0
Total Area				1.57

Impervious Land	Jses Prese	ent:										
	Road	way	Sidev	valk	Drive	way	Buildir	ng	SWI	ИF	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0	98	0	98	0	98	0.000	98	0	98	0.00	0.00
0		98		98		98		98		98	0	0
0		98		98		98		98		98	0	0
0		98		98		98		98		98	0	0
Subtotal Area	0		0		0		0		0			
Pervious Landuse	s Present:											
	Wood	lland	Mead	wob	Wetl	and	Lawr	1	Cultiv	ated	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0.00	65	1.57	71	0.00	50	0.00	75	0.00	78	1.57	111.47
0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
Subtotal Area	0.00		1.57		0.00		0.00		0.00			
						Total Pervious Area					1.57	
				Co	mposite /	Area	Total Impervious Area				0.0	

Calculations

#### Initial Abstraction and Tp Calculations

Ini	tial Abstrac	tion			Composite Curve Number							
Landuse	IA (mm)	Area	A*IA	Listov	vell Silt		0		0		0	
Landose	IA (IIIII)	(ha)	A * IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC
Woodland	10	0.00	0	0.25	0.00		0		0		0	0
Meadow	8	1.57	12.56	0.28	1.57		0		0		0	0.4396
Wetland	16	0	0	0.05	0.00		0		0		0	0
Lawn	5	0	0	0.18	0.00		0		0		0	0.000
Cultivated	7	0	0	0.35	0.00		0		0		0	0.000
Impervious	2	0	0	0.70	0.00		0		0		0	0.000
Composite IA		1.57	8.00	Compo	site Runo	ff Coeffic	ient					0.280

% Impervious

Total Area Check

Composite Curve Number

Flow Path Description         Length (m)         Drop (m)         Slope (%)         V/S <sup>0.5</sup> Velocity (m/s)         Tc (hr)         Tp(hr)         TOTAL Tp (hr)         Tc (hr)         Tp (hr)         Tp (hr)         Tc (hr)         Tp (hr)	Time to Peak Inputs						Uplands			Bransby Williams		Airport	
		· ·	. :		V/S <sup>0.5</sup>	,	Tc (hr)	Tp(hr)		Tc (hr)	Tp(hr)	Tc (hr)	Tp(hr)
	Cultivated	100	0.6	0.60%	2.7	0.21	0.13	0.09	0.09	0.10	0.07	0.53	0.35

Appropriate calculated time to 0.35 Appropriate Method: Airport



Project Name: Ida Street Project Number: 1060-5590 Date: 5/15/2024

Date: 5/15/ By: AM D.A. NAME D.A. AREA (ha) PRE-G3 7.36

Hydrologic Parameters: CALIB NASHYD Command Pre Development Drainage Area: Catchment PRE-G3

#### **Curve Number Calculation**

Soil Types Present:				
Туре	ID	Hydrologic	% Area	Area
Listowell Silt Loam	Ls	BC	100.0%	7.36
				0
				0
				0
Total Area				7.36

Impervious Land	uses Prese	nt:										
	Road	way	Sidev	/alk	Drive	way	Buildir	ng	SWA	ΛF	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0	98	0	98	0	98		98	0	98	0.00	0.00
C		98		98		98		98		98	0	0
C		98		98		98		98		98	0	0
C		98		98		98		98		98	0	0
Subtotal Area	0		0		0		0		0			
Pervious Landus	es Present:											

												<u> </u>	
Pervious Land	Jses	Present:											
		Wood	lland	Mead	wob	Wetland		Lawn		Cultivated		Subtotals	
Soils		Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls Subtotal Area	0 0 0	0.00 0.00 0.00 0.00 0.00	65	2.21 0.00 0.00 0.00 2.21	71	0.00 0.00 0.00 0.00 0.00	50	0.00 0.00 0.00 0.00 0.00	75	5.15 0.00 0.00 0.00 5.15	78	7.36 0.00 0.00 0.00	558.62 0.00 0.00 0.00
						omposite / Calculatio		Total Pervic Total Imper % Impervio Composite	vious A us	rea		7.36 0.0 0.0% 75.9	

Total Area Check

Ini	tial Abstrac	tion		Composite Curve Number								
Landuse	IA (mm)	Area	A*IA	Listov	vell Silt		0		0		0	
Landose	IA (mm)	(ha)	A*IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC
Woodland	10	0.00	0	0.25	0.00		0		0		0	0
Meadow	8	2.208	17.664	0.28	2.21		0		0		0	0.61824
Wetland	16	0	0	0.05	0.00		0		0		0	0
Lawn	5	0	0	0.18	0.00		0		0		0	0.000
Cultivated	7	5	36.064	0.35	5.15		0		0		0	1.803
Impervious	2	0	0	0.70	0.00		0		0		0	0.000
Composite IA		7.36	7.3	Compo	site Runo	ff Coeffic	ient					0.329

			Uplands		Bransby \	Williams	Air	port				
Flow Path Description	Length (m)	Drop (m)	Slope (%)	V/S <sup>0.5</sup>	Velocity (m/s)	Tc (hr)	Tp(hr)	TOTAL Tp (hr)	Ic (hr)	Tp(hr)	Tc (hr)	Tp(hr)
Cultivated	405	5.8	1.43%	2.7	0.32	0.35	0.23	0.23	0.29	0.20	0.75	0.50

A	0.50 A	A :L
Appropriate calculated time to	0.50 Appropriate Method:	Airport
Appropriate calculated fifthere	0.50 Nobiopilaic Michiga.	7 (11 (2 (1) 1



Project Name: Ida Street Project Number: 1060-5590

Date: 5/15/2024 By: AM D.A. NAME D.A. AREA (ha) PRE-G4 5.75

Hydrologic Parameters: CALIB NASHYD Command Pre Development Drainage Area: Catchment PRE-G4

#### **Curve Number Calculation**

ID	Hydrologic	% Area	Area
Ls	BC	80.0%	4.60
Pal	BC	20.0%	1
			0
			0
			5.75
	ID Ls Pal	Ls BC	Ls BC 80.0%

Impervious Lan	<u>duses Prese</u>	ent:										
	Road	way	Sidev	valk	Drive	way	Buildir	ng	SWI	ΛF	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls		98		98	0.13	98	0.120	98	0.17	98	0.42	41.16
Pal		98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0		0		0.13		0.12		0.17			
Pervious Landu	ses Present:											
	Wood	lland	Меас	wob	Wetl	and	Lawr	1	Cultiv	ated	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN

		Wood	lland	Mead	dow Wetland			Lawn Cultiv			ated	Sub	totals
Soils		Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls		0.42	65	0.42	71	0.21	50	2.09	75	1.05	78	4.18	305.56
Pal		0.29	65	0.86	71	0.00	50	0.00	75	0.00	78	1.15	79.93
	0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
	0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
Subtotal Area		0.71		1.28		0.21		2.09		1.05			
								Total Pervi	ous Arec	a		5.33	
					Co	mposite /	Area	Total Imper	vious A	rea		0.4	
					(	Calculatio	ns	% Impervio	US			7.3%	
								Composite	Curve	Number		74.2	
								Total Aroa	Chack			E 7 E	

Ini	tial Abstrac	rtion			Composite Curve Number							
		Area	A * 1 A	Listov	vell Silt	Parkh	ill Loam	33110 001	0	O1	0	
Landuse	IA (mm)	(ha)	A * IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC
Woodland	10	0.71	7.055	0.25	0.42	0.25	0.29		0		0	0.176375
Meadow	8	1.2805	10.244	0.28	0.42	0.28	0.86		0		0	0.35854
Wetland	16	0.209	3.344	0.05	0.21	0.05	0.00		0		0	0.01045
Lawn	5	2.09	10.45	0.18	2.09	0.18	0.00		0		0	0.376
Cultivated	7	1	7.315	0.35	1.05	0.35	0.00		0		0	0.366
Impervious	2	0.42	0.84	0.70	0.42	0.70	0.00		0		0	0.294
Composite IA	•	5.75	6.83	Compo	site Runo	ff Coeffic	ient					0.275

	Time to Peak Inputs					Uplands			Bransby '	Williams	Airport	
Flow Path Description	Length (m)	Drop (m)	Slope (%)	V/S <sup>0.5</sup>	Velocity (m/s)	Tc (hr)	Tp(hr)	TOTAL Tp (hr)	Tc (hr)	Tp(hr)	Tc (hr)	Tp(hr)
Lawn	350	6.9	1.97%	2.7	0.38	0.26	0.17	0.17	0.24	0.16	0.67	0.45

Appropriate calculated time to 0.45 Appropriate Method: Airport			
	Appropriate calculated time to	0.45 Appropriate Method:	Airport



Project Name: Ida Street Project Number: 1060-5590 Date: 5/15/2024

Date: 5/15 By: AM D.A. NAME D.A. AREA (ha)

EXT-1 14.50

Hydrologic Parameters: CALIB NASHYD Command Pre Development Drainage Area: Catchment EXT-1

#### **Curve Number Calculation**

Soil Types Present:				
Type	ID	Hydrologic	% Area	Area
Listowell Silt Loam	Ls	BC	85.0%	12.33
Parkhill Loam	Pal	BC	15.0%	2
				0
				0
Total Area			100.0%	14.50

Impervious Land	uses Prese	nt:										
	Road	way	Sidev	valk	Drive	way	Buildir	ng	SWA	ΛF	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0	98	0	98		98	0.100	98	0	98	0.10	9.80
Pal		98		98		98		98		98	0	0
C		98		98		98		98		98	0	0
C		98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.1		0	,		
Pervious Landuse	es Present:											
	Wood	lland	Mead	wok	Wetl	and	Lawr	า	Cultive	ated	Sub	totals
Soils	Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls	0.61	65	0.61	71	0.00	50	0.00	75	11.00	78	12.23	941.33
Pal	0.00	65	0.00	71	0.00	50	0.00	75	2.18	78	2.18	169.65
C	0.00		0.00		0.00		0.00		0.00		0.00	0.00

Subtotal Area	Ö	0.00	0.00	0.00		0.00		0.00 13.18	0.00	0.00
				mposite A Calculation	Area ns	Total Pervi Total Impe % Impervio Composite	rvious Ar ous	ea	14.40 0.1 0.7% 77	
						Total Area	Check		14.50	

Ini	tial Abstrac	ction					Compo	osite Cur	ve Numb	er		
Landusa	IA (mm)	Area	A*IA	Listov	well Silt	Parkh	ill Loam		0		0	
Landuse	IA (mm)	(ha)	A * IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC
Woodland	10	0.61	6.1125	0.25	0.61	0.25	0		0		0	0.1528125
Meadow	8	0.6113	4.89	0.28	0.61	0.28	0		0		0	0.17115
Wetland	16	0	0	0.05	0.00	0.05	0		0		0	0
Lawn	5	0	0	0.18	0.00	0.18	0		0		0	0.000
Cultivated	7	13	92.2425	0.35	11.00	0.35	2		0		0	4.612
Impervious	2	0.1	0.2	0.70	0.10	0.70	0		0		0	0.070
Composite IA		14.5	7.13	Compo	site Runo	ff Coeffic	ient		·			0.345

	Time to Peak Inputs						Uplands			Williams	Airport	
Flow Path Description	Length (m)	Drop (m)	Slope (%)	V/S <sup>0.5</sup>	Velocity (m/s)	Tc (hr)	Tp(hr)	TOTAL Tp (hr)	IC Inri	Tp(hr)	Tc (hr)	Tp(hr)
Cultivated	400	3.5	0.88%	2.7	0.25	0.44	0.29	0.29	0.30	0.20	0.86	0.57

A to	O F7 A so so so so si osta A A a tla a al a	Δirnort
PADDIODIONE COICUIOTEO IIME IO	U 5/ Appropriate Method:	AIITICITI
Appropriate calculated little to	0.57 propriate Merida.	7 111 0011
Appropriate calculated time to	0.57 Appropriate Method:	Airpon



Ida Street Project Name: Project Number: Date:

1060-5590 5/15/2024 D.A. NAME D.A. AREA (ha)

POST-S1 9.81

Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment POST-\$1 Controlled Area to SWMF-SV

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowell Silt Loam	Ls	BC	100	9.81
				0
				0
				0
Total Area Check				9.81

Impervious Lanc	duses Present:											
	Roadway/Township Lands		Sidewalk		Driveway		Building		SWMF		Subtotals	
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls	4.71	98		98		98	0.96	98		50	5.673	555.905
		98		98		98		98		50	0	0
		98		98		98		98		98	0	0
		98		98		98		98		98	0	0
Subtotal Area	4.71		0.00		0.00		0.96		0			

Pervious Landuse	es Present:											
	Woodland		Mead	Meadow		Wetland		Lawn		ated	Subtotals	
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls	0	65	0	71	0	50	4.14	75		78	4.138	310.3125
	0		0		0		0		0		0	0
	0		0		0		0		0		0	0
	0		0		0		0		0		0	0
Subtotal Area	0		0		0		4.14		0			
				Perviou	us Area Calcu	ulations	Total Pervio		· w o Ni wala a		4.14	

Pervious Area Calculations	Total Pervious Area	4.14
1 et vious Area Calculations	Composite Pervious Curve Number	75
	Total Directly Connected Area	4.71
	Total Indirectly Connected Area	0.96
Impervious Area Calculations	Total Impervious Area	5.67
	% X imp	48.0
	% T imp	58
	Total Area Check	9.81

Landuse	IA (mm)	Area (ha)	A*IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	4.14	20.69
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	256	0.013



Project Name: Ida Street Project Number: 1060-5590 5/15/2024 Date:

AM

D.A. NAME

D.A. AREA (ha)

UCTL-SV2

0.41

#### Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment UCTL-SV2

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	0.41
Parkhill Loam	Pal	BC	0	0.00
Total Area Check			100	0.41

Impervious Land	luses Present:											
	Road	way	Sidev	valk	Drive	way	Build	ing	SWA	ΛF	Sub	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		98	0	98	0	98	0.205	98		50	0.2050	20.09
Pal		98		98		98		98		50	0	0
(		98		98		98		98		98	0	0
(		98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.205		0			

Pervious Land	ises F	Present:											
		Wood	dland	Mea	dow	Wetl	and	Lav	vn	Cultivated		Su	ıbtotals
Soils	Α	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.205	75	0	78	0.205	15.38
Pal		0		0		0			75	0		0	0
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.205		0			
					Penviou	s Area Calci	ulations	Total Pervio	us Area			0.205	
					1 61 100	3 Alea Calci	bidiloris	Composite	Pervious C	Curve Numbe	er	75	
								Total Direct	ly Connec	cted Area		0	
								Total Indired	ctly Conne	ected Area		0.205	
					Impervio	us Area Cal	culations	Total Imper	vious Arec	1		0.205	
								% X imp				0.0	*Min 15% used
								% Timp				50.0	
								Total Area (	Check			0.41	

Landuse	IA (mm)	Area (ha)	A*IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.205	1.025
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	52.28	0.013



Project Name: Ida Street Project Number: Date:

1060-5590 5/15/2024 AM

D.A. NAME D.A. AREA (ha) SWMF-SV 1.28

#### Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment SWMF-SV

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	1.28
Parkhill Loam	Pal	BC	0	0
				0
				0
Total Area Check				1.28

Impervious Lan	iduses Present	:										
	Road	way	Sidev	valk	Drive	vay	Build	ing	SWA	ΛF	Subt	otals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		98	0	98	0	98	0.000	98	0.64	50	0.6400	32.00
Pal		98		98		98		98		50	0	0
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.000		0.64			

Pervious Land	uses	Present:											
			Mea	dow	Wetlo	and	Law	vn	Cultiv	ated	Sub	totals	
Soils	Α	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.640	75	0	78	0.640	48.00
Pal		0	65	0	71	0	50	0.000	75	0	78	0	0
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.640		0			
					Porviou	ıs Area Calcu	lations	Total Pervio	us Area			0.640	
					1 61 1100	is Alea Calca	nanons	Composite	Pervious (	Curve Numbe	er	75	
								Total Directl	ly Connec	cted Area		0.64	
								Total Indired	ctly Conne	ected Area		0.000	
					Impervio	ous Area Calc	culations	Total Imper	vious Arec	1		0.640	
								% X imp				50.0	
								% T imp				50.0	
								Total Area C	Check			1.28	

#### Initial Abstraction and Tp Calculations

Landuse	IA (mm)	Area (ha)	A*IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.640	3.200
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	92	0.013



Project Name: Ida Street Project Number: 1060-5590 Date:

5/15/2024 AM

D.A. NAME D.A. AREA (ha) UCTL-SV 0.61

Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment UCTL-SV

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	0.61
Parkhill Loam	Pal	BC	0	0.00
Total Area Check			100	0.61

Impervious Lan	iduses Present											
	Roadway		Sidewalk		Driveway		Building		SWMF		Sub	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		98	0	98	0	98	0.305	98		50	0.3050	29.89
Pal		98		98		98		98	0	50	0	0
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.305		0			

Pervious Landu	uses F	Present:											
		Wood	dland	Mea	dow	Wetl	and	Lav	wn	Cultiv	ated	Su	btotals
Soils	Α	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.305	75	0	78	0.305	22.88
Pal		0		0		0		0.000	75	0		0	0
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.305		0			
				· ·									
					Perviou	s Area Calci	ulations	Total Pervi			0.305		
								Composite	Pervious (	Curve Numbe	r	75	
								Total Direct	fly Connec	cted Area		0	
								Total Indire	ctly Conn	ected Area		0.305	
					Impervio	us Area Cal	culations	Total Imper	vious Area	d		0.305	
								% X imp				0.0	*Min 15% used
								% Timp				50.0	
								Total Area	Check			0.61	

Landuse	IA (mm)	Area (ha)	A*IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.305	1.525
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	63.77	0.013



Project Name: 10
Project Number: 11
Date: 5

Ida Street 1060-5590 5/15/2024 D.A. NAME D.A. AREA (ha) POST-G2

By: AM

Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment POST-G2

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	9.66
				0.00
				0.00
				0.00
Total Area Check				9.66

Impervious Land	Impervious Landuses Present:											
	Roadv	vay	Sidew	ralk	Drive	way	Build	ing	SWA	ΛF	Sub.	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls	4.87	98		98		98	1.67	98		50	6.539	640.773
C	)	98		98		98		98		50	0	0
		98		98		98		98		98	0	0
		98		98		98		98		98	0	0
Subtotal Area	4.87		0.00		0.00		1.67		0			

	Woodlo	and	Mead	low	Wetle	and	Lav	vn	Cultivo	ated	Sub	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls	0	65	0	71	0	50	3.12	75		78	3.12	234.1125
	0		0		0		0		0			0
	0		0		0		0		0			0
	0		0		0		0		0			0
Subtotal Area	0		0		0		3.12		0			
							Total Pervio				2.12	

Danieus Area Calculations	Total Pervious Area	3.12
Pervious Area Calculations	Composite Pervious Curve Number	75
	Total Directly Connected Area	4.87
	Total Indirectly Connected Area	1.67
Impervious Area Calculations	Total Impervious Area	6.54
	% X imp	50
	% T imp	68
-	Total Area Check	9.66

Landuse	IA (mm)	Area (ha)	A * IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	3.12	15.61
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	254	0.013



Project Name: Ida Street
Project Number: 1060-5590
Date: 5/15/2024
By: AM

D.A. NAME D.A. AREA (ha) SWMF-GR 1.28

Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment SWMF-GR

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	95	1.22
Parkhill Loam	Pal	BC	5	0.06
Total Area Check			100	1.28

Impervious Landuses Present:												
	Road	way	Sidev	valk	Drive	way	Buildi	ing	SWN	٩F	Subt	otals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		98	0	98	0	98	0.000	98	0.608	50	0.6080	30.40
Pal		98		98		98		98	0.032	50	0.032	1.6
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.000		0.64			

Pervious Landuses Present:													
		Woodland M		Mea	adow Wetland		Lawn		Cultivated		Subtotals		
Soils	A	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.608	75	0	78	0.608	45.60
Pal		0		0		0		0.032	75	0		0.032	2.4
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.640		0			
					Penviou	s Area Calc	ulations	Total Perviou	us Area			0.640	
					Pervious Area Calculations Composite Pervious Curve Number					75			
							Total Directly Connected Area					0.64	
					Total Ind			Total Indirec	otal Indirectly Connected Area			0.000	
					Impervious Area Calculations			Total Impervious Area				0.640	
								% X imp				50.0	
								% T imp				50.0	
	Total Area Check 1.28												

Landuse	IA (mm)	Area (ha)	A*IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.640	3.200
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n		
Pervious	5.0	2	30	0.25		
Impervious	2.0	0.5	92.38	0.013		



Project Name: Project Number: Date: Ida Street 1060-5590 5/15/2024 AM D.A. NAME D.A. AREA (ha) UCTL-GR 0.83

Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment UCTL-GR

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	0.83
Parkhill Loam	Pal	BC	0	0.00
Total Area Check			100	0.83

Impervious Lar	<u>iduses Present</u>	:										
	Road	lway	Sidew	valk	Drive	way	Buildi	ing	SWI	MF	Subt	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		98	0	98	0	98	0.415	98	0	50	0.4150	40.67
Pal		98		98		98		98	0	50	0	0
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0		0		0		0.415		0			

		Wood	lland	Mea	dow	Wetle	and	Law	n	Cultivo	ated	Su	btotals
Soils	Α	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.415	75	0	78	0.415	31.13
Pal		0		0		0		0.000	75	0		0	0
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.415		0			
					Perviou	ıs Area Calcı	lations	Total Perviou	us Area			0.415	
					1 GI VIOC	3 Alea Calci	Jidiidiis	Composite F	Pervious	Curve Numbe	er	75	
								Total Directly	y Conne	cted Area		0	
								Total Indirec	tly Conn	ected Area		0.415	
					Impervio	ous Area Cald	culations	Total Imperv	ious Area	a		0.415	
								% X imp				0.0	*Min 15% used
								% Timp				50.0	
								Total Area C	Check			0.83	

#### Initial Abstraction and Tp Calculations

Landuse	IA (mm)	Area (ha)	A * IA
Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.415	2.075
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	74.39	0.013



Ida Street Project Name: Project Number: 1060-5590 Date:

5/15/2024 AM

D.A. NAME D.A. AREA (ha) UCTL-GR2 0.76

# Hydrologic Parameters: CALIB STANDHYD Command Post Development Drainage Area: Catchment UCTL-GR2

By:

#### Curve Number Calculation

Soil Types Present:				
Туре	ID	Hydrologic Group	% Area	Area
Listowel Silt Loam	Ls	BC	100	0.76
Parkhill Loam	Pal	ВС	0	0.00
Total Area Check			100	0.76

Impervious Lan	duses Present:	:										
	Roadway		Sidewalk		Driveway		Building		SWI	ΛF	Sub.	totals
Soils	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls	0.07	98	0	98	0	98	0.310	98	0	50	0.3800	37.24
Pal		98		98		98		98	0	50	0	0
	0	98		98		98		98		98	0	0
	0	98		98		98		98		98	0	0
Subtotal Area	0.07		0		0		0.310		0			

Pervious Land	ises f	Present:											
		Wood	dland	Mea	dow	Wetl	and	Lav	vn	Cultiv	ated	Su	ıbtotals
Soils	A	rea (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area (ha)	CN	Area	A*CN
Ls		0	65	0	71	0	50	0.380	75	0	78	0.380	28.50
Pal		0		0		0		0.000	75	0		0	0
	0	0		0		0		0		0		0	0
	0	0		0		0		0		0		0	0
Subtotal Area		0		0		0		0.380		0			
					Perviou	s Area Calci	ulations	Total Pervio				0.380	
					1 011100	37 TOG Calc	oranoris	Composite	Pervious (	Curve Numbe	er	75	
								Total Direct	ly Connec	cted Area		0.07	
								Total Indired	ctly Conn	ected Area		0.310	
					Impervio	us Area Cal	culations	Total Imper	vious Ared	a		0.380	
								% X imp				9.2	*Min 15% used
								% T imp				50.0	
								Total Area (	Check			0.76	

#### Initial Abstraction and Tp Calculations

Woodland	10	0	0
Meadow	8	0	0
Wetland	16	0	0
Lawn	5	0.380	1.900
Cultivated	7	0	0

Land Use	IA (mm)	Slope (%)	Travel Length (m)	Manning's n
Pervious	5.0	2	30	0.25
Impervious	2.0	0.5	71.18	0.013



Project Name: Ida Street Project Number: 1060-5590

Date: 5/15/2024 By: AM

D.A. NAME D.A. AREA (ha)

0.43

**UCTL-GR** 0.43

#### Hydrologic Parameters: CALIB NASHYD Command Post Development Drainage Area: Catchment UCTL-GR

#### **Curve Number Calculation**

Impervious Landuses Present:

Soil Types Present:				
Type	ID	Hydrologic	% Area	Area
Listowell Silt Loam	Ls	BC	100.0%	0.43
Parkhill Loam	Pal	BC	0.0%	0
				0
				0
Total Area				0.43

		Road	way	Sidev	valk	Drive	way	Buildir	ng	SWN	ΛF	Sub	totals
Soils		Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls			98	0.00	98		98		98		98	0.00	0.00
Pal			98		98		98		98		98	0	0
	0		98		98		98		98		98	0	0
	0		98		98		98		98		98	0	0
Subtotal Area		0		0		0		0		0			
Pervious Landu	ıses	Present:											
		Wood	lland	Mead	wok	Wetl	and	Lawr	1	Cultiv	ated	Sub	totals
Soils		Area	CN	Area	CN	Area	CN	Area (ha)	CN	Area	CN	Area	A*CN
Ls		0.00	65	0.00	71	0.00	50	0.43	75	0.00	78	0.43	32.25
Pal		0.00	65	0.00	71	0.00	50	0.00	75	0.00	78	0.00	0.00
	0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
	0	0.00		0.00		0.00		0.00		0.00		0.00	0.00
Subtotal Area		0.00		0.00		0.00		0.43		0.00			
								Total Pervio	ous Arec	a c		0.43	
					Co	mposite /	Area	Total Imper	vious A	rea		0.0	
					(	Calculations		% Impervious				0.0%	
								Composite	Curve	Number		75.0	

#### Initial Abstraction and Tp Calculations

Ini	tial Abstrac	tion			Composite Curve Number							
Landusa	IA (mama)	Area	A * I A	Listov	vell Silt	Parkh	II Loam		0		0	
Landuse	IA (mm)	(ha)	A * IA	RC	Area	RC	Area	RC	Area	RC	Area	A*RC
Woodland	10	0.00	0	0.25	0.00	0.25	0.00		0		0	0
Meadow	8	0	0	0.28	0.00	0.28	0.00		0		0	0
Wetland	16	0	0	0.05	0.00	0.05	0.00		0		0	0
Lawn	5	0.43	2.15	0.18	0.43	0.18	0.00		0		0	0.077
Cultivated	7	0	0	0.35	0.00	0.35	0.00		0		0	0.000
Impervious	2	0	0	0.70	0.00	0.70	0.00		0		0	0.000
Composite IA		0.43	5.00	Compo	site Runo	ff Coeffic	ient					0.180

Total Area Check

	Time to Peak Inputs						Uplands Bransk			sby Williams Airport		port
Flow Path Description	Length (m)	Drop (m)	Slope (%)	V/S <sup>0.5</sup>	Velocity (m/s)	Tc (hr)	Tp(hr)	TOTAL Tp (hr)	Tc (hr)	Tp(hr)	Tc (hr)	Tp(hr)
Lawn	50	3	6.00%	2.7	0.66	0.02	0.01	0.01	0.04	0.02	0.20	0.13

0.13 Appropriate Method: Appropriate calculated time to **Airport** 

# APPENDIX E

VO6 Modelling Files



Project: Ida Street Project No.: 1060-5590

File: Model Schematic (Pre-Development)

Design by: AM

Date: 5/15/2024

### Visual OTTHYMO 6 Model Schematic

## Pre-Development AREA [ha] - 14.500 10 PKFW [m<sup>3</sup>/s] - 1.417 PRE-G4 AREA [ha] - 5.750 PKFW [m³/s] - 0.629 PRE-G3 AREA [ha] - 7.360 PKFW [m3/s] - 0.770 PRE-S1 AREA [ha] - 10.540 PKFW [m3/s] - 0.897 PRE-G2 Flows to GRCA AREA [ha] - 1.570 AREA [ha] - 29.180 PKFW [m3/s] - 0.188 PKFW [m3/s] - 2.959

\*\*\*\*\*\* 

READ STORM

Filename: C:\Users\noconnor\AppD

ata\Local\Temp\

Ptotal= 8.41 mm

49753dce-993e-48a5-8960-fc674d25ac10\b2a6e831

Comments: 5mm

RATN TTMF RATN TTME RATN TTME mm/hr hrs mm/hr hrs mm/hr hrs mm/hr hrs 0.83 21.16 1.67 1.53 1.35 2.50 2.67 0.00 1.00 4.48 1.83 0.33 1.43 1.17 1.33 2 83 2.00 2.15 2.17 1.11 0.50 1.96

( 0001) NASHYD ID= 1 DT= 5.0 min

U.H. Tp(hrs)= 0.70

Area (ha)= 10.54 Curve Number (CN)= 77.4 Ia (mm)= 7.15 # of Linear Res.(N)= 3.00

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

---- TRANSFORMED HYETOGRAPH ----TIME TTMF RAIN TIME RATN I RATN I TIME mm/hr mm/hr mm/hr i mm/hr 0.167 0.98 0.917 21.16 1.667 2.42 1.02 2 50 2 58 2 67 21.16 4.48 4.48 0.250 1.161.000 1.750 1.02 0 333 0 417 1.083 1.167 1.833 1.917  $\frac{1.16}{1.43}$ 1 250 1 333 1 417 2 000 2 083 2 167 1 43 2 83 1 35 2.75 0.500 2.83 | 2.083 2.15 | 2.167 2.15 | 2.250 0.583 1.96 1.96 1.500

Unit Hyd Qpeak (cms)= 0.575

PEAK FLOW (cms)= 0.000 (i) TIME TO PEAK (hrs)= 3.333 RUNOFF VOLUME (mm)= 0.021 TOTAL RAINFALL (mm)= 8.412 RUNOFF COEFFICIENT = 0.002

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

CALTR

----- U.H. Tp(hrs)= 0.35

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

---- TRANSFORMED HYETOGRAPH ----TIME TIME RAIN TIME RAIN RAIN TIME mm/hr 0.083 0.98 0.833 1.583 2.42 0.167 0.98 0.917 21.16 1.667 0.2501.16 1.000 21.16 1.750 4 48 4 48 2 83 2.58 0.333 1.083 1.833 0.95 1.16 1.53 2.67 1.43 1.167 1.917 1.35 0.95 2.000 0.583 1.96 1 333 2.83 2.083 2.83 0.667 1.96 1.417 2.15 2.167 2.15 2.250 2.92 0.84 3 65 | 1 500 0.750

Unit Hyd Qpeak (cms)= 0.171

0.000 (i) TIME TO PEAK 3.167 (mm) = 0.001RUNOFF VOLUME TOTAL RATNEALL (mm)= RUNOFF COEFFICIENT =

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

CALTR NASHYD ( 0003) ID= 1 DT= 5.0 min Area (ha) = 7.36 Curve Number (CN) = 75.9 Ia (mm) = 7.30 # of Linear Res.(N) = 3.00# of Linear Res (N) = 3.00U.H. Tp(hrs) = 0.50

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	0.98	0.833	3.65	1.583	1.77	2 33	1.11				
0.167	0.98	0.917	21.16	1.667	1.77	2.42	1.02				
0.250	1.16	1.000	21.16	1.750	1.53	2.50	1.02				
0.333	1.16	1.083	4.48	1.833	1.53	2.58	0.95				
0.417	1.43	1.167	4.48	1.917	1.35	2.67	0.95				
0.500	1.43	1.250	2.83	2.000	1.35	2.75	0.89				
0.583	1.96	1.333	2.83	2.083	1.21	2.83	0.89				
0.667	1.96	1.417	2.15	2.167	1.21	2.92	0.84				
0.750	3.65	1.500	2.15	2.250	1.11	3.00	0.84				

Unit Hyd Qpeak (cms)= 0.562

0.000 (i) TIME TO PEAK (hrs)= 3.167 RUNOEE VOLUME (mm)= 0.015 (mm)= TOTAL RATNEALL RUNOFF COEFFICIENT = 0.002

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

----- U.H. Tp(hrs)= 0.45

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	0.98	0.833	3.65	1.583	1.77	2 33	1.11			
0.167	0.98	0.917	21.16	1.667	1.77	2.42	1.02			
0.250	1.16	1.000	21.16	1.750	1.53	2.50	1.02			
0.333	1.16	1.083	4.48	1.833	1.53	2.58	0.95			
0.417	1.43	1.167	4.48	1.917	1.35	2.67	0.95			
0.500	1.43	1.250	2.83	2.000	1.35	2.75	0.89			
0.583	1.96	1.333	2.83	2.083	1.21	2.83	0.89			
0.667	1.96	1.417	2.15	2.167	1.21	2.92	0.84			
0.750	3.65	1.500	2.15	2.250	1.11	3.00	0.84			

Unit Hyd Qpeak (cms)= 0.488

0.000 (i) PEAK FLOW (cms)= TIME TO PEAK (hrs) = 3.0830.028 (mm)= (mm)= NT = RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIENT

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

CALIB NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 U.H. Tp(hrs) = 0.57

TRANSFORMED HYETOGRAPH										
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN			
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr			
0.083	0.98	0.833	3.65	1.583	1.77	2.33	1.11			
0.167	0.98	0.917	21.16	1.667	1.77	2.42	1.02			
0.250	1.16	1.000	21.16	1.750	1.53	2.50	1.02			
0.333	1.16	1.083	4.48	1.833	1.53	2.58	0.95			

```
0.500
                      1.43
                             1.250
                                     2.83
                                           2.000
                                                    1.35
                                                           2.75
                                                                  0.89
                            1.333
              0.583
                      1.96
                                     2.83
                                           2.083
                                                   1.21
1.21
                                                          2 83
2 92
                                                                  0.89
              0.667
                      1.96
                             1.417
                                                                  0.84
              0.750
                      3.65 | 1.500
                                     2.15 | 2.250
                                                    1.11
    Unit Hyd Qpeak (cms)=
                          0.972
                  (cms)=
(hrs)=
(mm)=
    PEAK FLOW
                          0.001 (i)
    TIME TO PEAK
RUNOFF VOLUME
                          3.250
0.021
                    (mm)=
    TOTAL RAINFALL
                          8.412
    RUNOFF COEFFICIENT =
    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
 ADD HYD ( 0009)|
                          AREA
                                 QPEAK
                                         TPEAK
                          (ha)
                                 (cms)
                                          (hrs)
                                                   (mm)
     ID1= 1 ( 0010):
                         14.50
                                0.001
                                          3.25
                                                  0.02
     + ID2 = 2 (0002):
                          1.57
                                0.000
      ID = 3 (0009):
                        16.07 0.001
                                         3.17
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
                                 QPEAK
 _____
                          (ha)
                                 (cms)
                                          (hrs)
      ID1= 3 ( 0009):
                         16.07
                                0.001
                                          3 17
                                                  0.02
     + ID2= 2 ( 0003):
                         7.36
                                0.000
                                         3.17
                                                  0.01
      ID = 1 (0009):
                        23.43 0.001
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
1 + 2 = 3 |
                          AREA
                                 QPEAK
                                          TPEAK
                                                  R.V.
                          (ha)
                                 (cms)
                                          (hrs)
                                                   (mm)
    ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                         23.43
                                0.001
                                          3.17
                                                  0.02
                                0.000
                                                  0.03
      ID = 3 (0009):
                        29.18
                                0.001
                                         3.17
                                                 0.02
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
******
** SIMULATION:A. 2yr 3hr 10min Chicago **
                     IDF curve parameters: A= 404.147
 CHICAGO STORM
 Ptotal= 32.13 mm
                                         B= 0.000
C= 0.699
                     used in: INTENSITY = A / (t + B)^C
                     Duration of storm = 3.00 \text{ hrs}
                     Storm time step = 10.00 min
Time to peak ratio = 0.33
               TIME
                      RAIN
                              TTMF
                                     RAIN
                                             TIME
                                                    RAIN
                                                            TIME
                                                                   RAIN
                hrs
                     mm/hr
                              hrs
                                    mm/hr
                                              hrs
                                                    mm/hr
                                                            hrs
                                                                  mm/hr
3.63
                      3 76
                             0.83
                                    80 82
                                            1.67
                                                    5.83 I
                                                          2.50
               0.00
               0.17
                      4.42
                             1.00
                                    17.11
                                            1.83
                                                    5.15
                                                           2.67
                                                                  3.39
                      5.48
                             1.17
                                    10.79
                                            2.00
                                                    4.63
                                                           2.83
               0.50
                      7.50
                             1.33
                                     8.23
                                            2.17
                     13.95
                             1.50
                                     6.78
                                            2.33
                                                    3.90
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
```

```
--- TRANSFORMED HYETOGRAPH ----
                  TIME
                                                       TIME
                                                               RATN
                          RATN
                                   TTMF
                                             RAIN
                                                                         TIME
                                                                                 RATN
                   hrs
                          mm/hr
                                     hrs
                                            mm/hr
                                                        hrs
                                                               mm/hr
                                                                          hrs
                                                                                mm/hr
4.23
                 0.083
                           3 76
                                   0.833
                                                               6.78
6.78
                                                    1.583
                                            13.95
                                   0.917
                                            80.82
                                                     1.667
                                                                                 3 90
                                                                                 3.90
                 0.333
                           4 42
                                   1.083
                                            17.11
                                                    1.833
                                                               5.83
                                                                        2.58
                                                                                 3.63
                          5 48
5 48
7 50
7 50
                                           17 .11
10 .79
10 .79
                                                                       2 67
2 75
2 83
                 0.417
                                   1.167
                                                    1.917
                                                               5.15
                                                                                 3.63
                                                    2.000
                                  1.250
1.333
                                                               5.15
4.63
                                                                                 3.39
                                   1.417
                                                    2.167
                 0.667
                                             8.23
                                                               4.63
                                                                        2.92
                                                                                 3.20
                         13.95 1.500
                                             8.23 | 2.250
    Unit Hyd Qpeak (cms)= 0.575
    PEAK FLOW
TIME TO PEAK
                      (cms)=
                                0.084 (i)
                      (hrs) = 2.000
    RUNOFF VOLUME
TOTAL RAINFALL
                       (mm)=
                                6 294
                       (mm) = 32.132
    RUNOFF COEFFICIENT = 0.196
    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
                       Area (ha)= 1.57 Curve Number (CN)= 71.0
Ia (mm)= 8.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.35
 NASHYD
           ( 0002)
ID= 1 DT= 5.0 min
        NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  ---- TRANSFORMED HYETOGRAPH ----
                                                   TIME
                  TIME
                          RATN
                                   TIME
                                                               RATN
                                                                         TIME
                                                                                 RATN
                                            RATN
                   hrs
                          mm/hr
                                     hrs
                                            mm/hr
                                                        hrs
                                                               mm/hr
                                                                          hrs
                                                                                 mm/hr
                           3 76
                                   0.833
                                                                                 4.23
                 0.083
                                            13.95
                                                    1.583
                                                               6.78
                                   0.917
                                            80.82
                                                    1.667
                                                               6.78
                                                                                 3.90
                                   1.000
                                                                                 3.90
                          4 42
5 48
                                           17 11
17 11
                 0.333
                                   1.083
                                                    1.833
                                                               5.83
                                                                                 3.63
                                                    1 917
2 000
2 083
                                                              5 15
5 15
                                                                       2.67
2.75
                                   1.167
                                                                                 3.63
                          5 48
7 50
7 50
                                  \frac{1.250}{1.333}
                                           10.79
10.79
                 0.500
                                                                                 3.39
                 0.583
                                                               4.63
                                                                       2.83
                                                                                 3.39
                 0.667
                                   1.417
                                                    2.167
                                                               4.63
                        13.95 1.500
    Unit Hyd Qpeak (cms)=
                                0.171
    PEAK FLOW
                       (cms) =
                                0.013 (i)
     TIME TO PEAK
                      (hrs)= 1.500
     RUNOFF VOLUME
                       (mm)=
     TOTAL RAINFALL
                       (mm) = 32.132
    RUNOFF COEFFICIENT = 0.142
    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 CALIB
                      Area (ha)= 7.36 Curve Number (CN)= 75.9
Ia (mm)= 7.30 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.50
          ( 0003)
 NASHYD
ID= 1 DT= 5.0 min
        NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  ---- TRANSFORMED HYETOGRAPH ----
                                            RAIN |
                                                     TIME
                  TTMF
                                   TTMF
                                                               RATN
                                                                        TTMF
                          RATN
                                                                                 RATN
                   hrs
                          mm/hr
                                     hrs
                                                        hrs
                                                               mm/hr
                                                                          hrs
                                                                                 mm/hr
                                            mm/hr
                 0.167
                           3.76
                                   0.917
                                            80.82
                                                    1.667
                                                               6.78
                                                                                 3.90
                           4 42
4 42
5 48
                 0.250
                                   1.000
                                            80.82
                                                    1.750
                                                               5.83
                                                                        2.50
                                                                                 3.90
                                           17.11
17.11
                                                    1.833
1.917
                                                               5.83
5.15
                                                                       2.58
2.67
                 0.333
                                   1.083
                                                                                 3.63
                                   1.167
                 0 417
                                                                                 3.63
                           5 48
                                            10 79
                                                               5 15
                                                                       2.75
                 0.500
                                   1.250
                                                    2.000
                                                                                 3.39
                          7.50
7.50
                                   1.333
                                           10.79
                                                    2.083
                                                               4 63
                                                                       2.83
                                                                                 3.39
                 0.583
                 0.667
                                   1.417
                                             8.23 2.167
8.23 2.250
                                                                                 3.20
    Unit Hyd Qpeak (cms)= 0.562
    PEAK FLOW
                      (cms)=
                                0.065 (i)
    TIME TO PEAK
                      (hrs)= 1.667
```

RUNOFF VOLUME (mm)= 5.845 TOTAL RAINFALL (mm)= 32.132 RUNOFF COEFFICIENT = 0.182

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

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

		TR/	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	3.76	0.833	13.95	1.583	6.78	2 33	4.23
0.167	3.76	0.917	80.82	1.667	6.78	2.42	3.90
0.250	4.42	1.000	80.82	1.750	5.83	2.50	3.90
0.333	4.42	1.083	17.11	1.833	5.83	2.58	3.63
0.417	5.48	1.167	17.11	1.917	5.15	2.67	3.63
0.500	5.48	1.250	10.79	2.000	5.15	2.75	3.39
0.583	7.50	1.333	10.79	2.083	4.63	2.83	3.39
0.667	7.50	1.417	8.23	2.167	4.63	2.92	3.20
0.750	13.95	1.500	8.23	2.250	4.23	3.00	3.20

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.053 (1 TIME TO PEAK (hrs)= 1.583 RUNOFF VOLUME (mm)= 5.634 TOTAL RAINFALL (mm)= 32.132 RUNOFF COEFFICIENT = 0.175

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

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

		TR/	ANSFORME	HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	3.76	0.833	13.95	1.583	6.78	2.33	4.23
0.167	3.76	0.917	80.82	1.667	6.78	2.42	3.90
0.250	4.42	1.000	80.82	1.750	5.83	2.50	3.90
0.333	4.42	1.083	17.11	1.833	5.83	2.58	3.63
0.417	5.48	1.167	17.11	1.917	5.15	2.67	3.63
0.500	5.48	1.250	10.79	2.000	5.15	2.75	3.39
0.583	7.50	1.333	10.79	2.083	4.63	2.83	3.39
0.667	7.50	1.417	8.23	2.167	4.63	2.92	3.20
0.750	13.95	1.500	8.23	2.250	4.23	3.00	3.20

Unit Hyd Qpeak (cms)= 0.972

PEAK FLOW (cms)= 0.128 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 6.197
TOTAL RAINFALL (mm)= 32.132
RUNOFF COEFFICIENT = 0.193

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

ADD HYD ( 0009)   1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
	14.50	0.128	1.83	6.20
	1.57	0.013	1.50	4.55
ID = 3 (0009):	16.07	0.139	1.75	6.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
ADD HYD ( 0009)|
                              AREA
  3 + 2 = 1
                                       OPFAK
                                                TPFAK
                                                           R.V.
                             (ha)
16.07
                                       (cms)
                                                 (hrs)
                                                           (mm)
       ID1= 3 ( 0009):
      + ID2= 2 ( 0003):
        ID = 1 (0009):
                            23.43 0.204
                                                          5 98
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009) \begin{vmatrix} 1 + 2 = 3 \end{vmatrix}
                              AREA
                                      QPEAK
                                                 TPEAK
                                                           R.V.
                                       (cms)
                              (ha)
                                                           (mm)
                                                 (hrs)
       ID1= 1 ( 0009):
                             23.43
                                     0.204
                                                 1.75
                                                          5.98
     + ID2= 2 ( 0004):
                                                           5.63
       ID = 3 (0009):
                             29.18 0.255
                                                          5.91
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
********
** SIMULATION:B. 5yr 3hr 10min Chicago **
-----
 CHICAGO STORM
                         IDF curve parameters: A= 535.364
                                                B= 0.000
C= 0.699
 Ptotal= 42.56 mm
                         used in: INTENSITY = A / (t + B)^C
                         Duration of storm = 3.00 hrs
                         Storm time step = 10.00 min
Time to peak ratio = 0.33
                                                            mm/hr
7.72 |
6.82 |
6.14 |
5.60 |
                                                                    hrs
2.50
2.67
2.83
                                    hrs
                                         mm/hr
                                                      hrs
                                                                       hrs
                                                                              mm/hr
                                                   1.67
1.83
2.00
2.17
2.33
                                  0.83 107.07
                 0.00
                                                                              4.80
                                  1.00
1.17
1.33
1.50
                                         22 67
14 30
10 90
                          5.86
                                                                             4.50
                          7 26
9 93
                 0.33
                         18.47
U.H. Tp(hrs) = 0.70
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  --- TRANSFORMED HYETOGRAPH ----
                  TIME
                          RAIN
                                  TIME
                                           RAIN | TIME
                                                                     TIME
                         mm/hr
4.98
4.98
                                    hrs
                                                      hrs
                 0.083
0.167
0.250
                                 0.833
0.917
                                          18.47
                                                  1.583
                                                            8.98
8.98
                                                                              5.60
                                         107.07
107.07
                                                   1.667
                                                                     2.42
                                                                              5.16
5.16
                          5 86
                                  1.000
                                                   1.750
                                                             7 72
7 72
                          5.86
7.26
                 0.333
                                  1.083
                                          22.67
                                                   1.833
                                                                    2.58
2.67
                                  1.167
                                          22 67
                                                   1.917
                                                             6.82
                          7 26
9 93
9 93
                                1 250
1 333
1 417
                                         14.30
14.30
10.90
                                                  2 000
2 083
2 167
                                                             6.82
                                                                              4.50
                 0 583
0 667
                                                            6 14
6 14
                                                                     2 83
2 92
                                                                              4.50
                                                                              4.24
                        18.47 1.500
                                          10.90
                                                             5.60
                                                                     3.00
                                                   2.250
     Unit Hyd Qpeak (cms)= 0.575
    PEAK FLOW (cms)= 0.158 (i)
TIME TO PEAK (hrs)= 1.917
RUNOFF VOLUME (mm)= 11.445
TOTAL RAINFALL (mm)= 42.565
RUNOFF COEFFICIENT = 0.269
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 CALIB
 NASHYD ( 0002) Area (ha)= 1.57 Curve Number (CN)= 71.0
```

|ID= 1 DT= 5.0 min | Ia (mm)= 8.00 # of Linear Res.(N)= 3.00 ----- U.H. Tp(hrs)= 0.35

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

		TR	ANSFORME	D HYETOGR	ΔРН		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	4.98	0.833	18.47	1.583	8.98	2 33	5.60
0.167	4.98	0.917	107.07	1.667	8.98	2.42	5.16
0.250	5.86	1.000	107.07	1.750	7.72	2.50	5.16
0.333	5.86	1.083	22.67	1.833	7.72	2.58	4.80
0.417	7.26	1.167	22.67	1.917	6.82	2.67	4.80
0.500	7.26	1.250	14.30	2.000	6.82	2.75	4.50
0.583	9.93	1.333	14.30	2.083	6.14	2.83	4.50
0.667	9.93	1.417	10.90	2.167	6.14	2.92	4.24
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24

Unit Hyd Qpeak (cms)= 0.171

PEAK FLOW (cms)= 0.026 (i)
TIME TO PEAK (hrs)= 1.417
RUNOFF VOLUME (mm)= 8.636
TOTAL RAINFALL (mm)= 42.565
RUNOFF COEFFICIENT = 0.203

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

CALIB 

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

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	4.98	0.833	18.47	1.583	8.98	2.33	5.60
0.167	4.98	0.917	107.07	1.667	8.98	2.42	5.16
0.250	5.86	1.000	107.07	1.750	7.72	2.50	5.16
0.333	5.86	1.083	22.67	1.833	7.72	2.58	4.80
0.417	7.26	1.167	22.67	1.917	6.82	2.67	4.80
0.500	7.26	1.250	14.30	2.000	6.82	2.75	4.50
0.583	9.93	1.333	14.30	2.083	6.14	2.83	4.50
0.667	9.93	1.417	10.90	2.167	6.14	2.92	4.24
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24

Unit Hyd Qpeak (cms)= 0.562

(cms)= 0.126 (i) (hrs)= 1.667 (mm)= 10.728 PEAK FLOW TIME TO PEAK RUNOFF VOLUME (mm) = 10.728 TOTAL RAINFALL (mm) = 42.565 RUNOFF COEFFICIENT = 0.252

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

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

		TR	ANSFORME	D HYETOGR	ΔPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	4.98	0.833	18.47	1.583	8.98	2 33	5.60
0.167	4.98	0.917	107.07	1.667	8.98	2.42	5.16
0.250	5.86	1.000	107.07	1.750	7.72	2.50	5.16
0.333	5.86	1.083	22.67	1.833	7.72	2.58	4.80
0.417	7.26	1.167	22.67	1.917	6.82	2.67	4.80
0.500	7.26	1.250	14.30	2.000	6.82	2.75	4.50
0.583	9.93	1.333	14.30	2.083	6.14	2.83	4.50
0.667	9.93	1.417	10.90	2.167	6.14	2.92	4.24
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24

```
Unit Hyd Qpeak (cms)= 0.488
PEAK FLOW
                 (cms) = 0.101 (i)
                (hrs)= 1.583
(mm)= 10.293
TIME TO PEAK
RUNOFF VOLUME
TOTAL RAINFALL
                  (mm) = 42.565
RUNOFF COEFFICIENT = 0.242
(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

| CALIB | NASHYD ( 0010) | Area (ha)= 14.50 | Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 | # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.57

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	4.98	0.833	18.47	1.583	8.98	2 33	5.60			
0.167	4.98	0.917	107.07	1.667	8.98	2.42	5.16			
0.250	5.86	1.000	107.07	1.750	7.72	2.50	5.16			
0.333	5.86	1 083	22.67	1.833	7.72	2.58	4.80			
0.417	7.26	1.167	22.67	1.917	6.82	2.67	4.80			
0.500	7.26	1.250	14.30	2.000	6.82	2.75	4.50			
0.583	9.93	1.333	14.30	2.083	6.14	2.83	4.50			
0.667	9.93	1.417	10.90	2.167	6.14	2.92	4.24			
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24			

Unit Hyd Qpeak (cms)= 0.972

(cms) = 0.243 (i)PEAK FLOW TIME TO PEAK (hrs)= 1.750
RUNOFF VOLUME (mm)= 11.280
TOTAL RAINFALL (mm)= 42.565 RUNOFF COEFFICIENT = 0.265

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

ADD HYD ( 0009) | 1 + 2 = 3 | ΔRFΔ OPEAK TPFAK R.V. (ha) (cms) (hrs) (mm) ID1= 1 ( 0010): + ID2= 2 ( 0002): 14.50 0.243 1.75 11.28 0.026 1.57 8.64 ID = 3 (0009): 16.07 0.264 1.67 11.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0009)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 ( 0009) :	16.07	0.264	1.67	11.02
+ ID2= 2 ( 0003) :	7.36	0.126	1.67	10.73
ID = 1 ( 0009):	23.43	0.391	1.67	10.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

AREA	QPEAK	TPEAK	R.V.
(ha)	(cms)	(hrs)	(mm)
23.43	0.391	1.67	10.93
5.75	0.101	1.58	10.29
29.18	0.490	1.67	10.80
	(ha)	(ha) (cms)	(ha) (cms) (hrs)
	23.43	23.43 0.391	23.43 0.391 1.67
	5.75	5.75 0.101	5.75 0.101 1.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

\*\*\*\*\*\*\*\*\*\*\* \*\* SIMULATION:C. 10yr 3hr 10min Chicago \*\*

CHICAGO STORM Ptotal= 49.52 mm IDF curve parameters: A= 622.842 B= 0.000 C= 0.699

used in: INTENSITY = A /  $(t + B)^C$ 

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

TIME hrs 0.00 0.17 0.33 0.50	RAIN mm/hr 5.79 6.82 8.45 11.56	TIME hrs 0.83 1.00 1.17 1.33	RAIN mm/hr 124.56 26.38 16.63 12.68	TIME hrs 1.67 1.83 2.00 2.17	RAIN mm/hr 8.98 7.93 7.14 6.51	TIME hrs 2.50 2.67 2.83	RAIN mm/hr 5.59 5.23 4.93
0.67	21.49	1.50	10.45	2.33	6.01		

( 0001) NASHYD

ID= 1 DT= 5.0 min U.H. Tp(hrs)= 0.70

Area (ha)= 10.54 Curve Number (CN)= 77.4
Ia (mm)= 7.15 # of Linear Res.(N)= 3.00

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

---- TRANSFORMED HYETOGRAPH ----RAIN | TIME TTMF RAIN TIME RATN I TIME mm/hr mm/hr mm/hr 0.167 5.79 0.917 124.56 1.667 10.45 2.42 6.01 2 50 2 58 2 67 6 82 6 82 8 45 124.56 26.38 26.38 0.250 1.000 1.750 8.98 6.01 0 333 0 417 1.083 1.167 1.833 1.917 5.59 5.59 1 250 1 333 1 417 2.000 2.083 2.167 8 45 16 63 7 93 2.75 0.500 0.583 11.56 16.63 7.14 11.56 12.68 21.49 | 1.500 12.68

Unit Hyd Qpeak (cms)= 0.575

PEAK FLOW (cms) = 0.217 (i)TIME TO PEAK (hrs)= 1.917 RUNOFF VOLUME (mm)= 15.404 TOTAL RAINFALL (mm)= 49.520 RUNOFF COEFFICIENT = 0.311

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

CALTR

----- U.H. Tp(hrs)= 0.35

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

---- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN RAIN TIME mm/hr 0.083 0.833 21.49 1.583 5 79 6 82 124.56 124.56 2.42 0.167 0.917 1.667 10.45 0.2501.000 1.750 26 38 6.82 8.45 1 083 2.58 0.333 1.833 8.98 5.59 1.167 26 38 1.917 7.93 2.67 5.59 8 45 1.250 16 63 0.583 11.56 1.333 0.667 11.56 1.417 0.750 21.49 1.500 16.63 | 2.083 12.68 | 2.167 12.68 | 2.250 2.83 5.23 7.14 2.92 4.93

Unit Hyd Qpeak (cms)= 0.171

(cms) = 0.037 (i)(hrs)= 1.417 (mm)= 11.864 TIME TO PEAK RUNOFF VOLUME (mm) = 49.520 TOTAL RAINFALL RUNOFF COEFFICIENT = 0.240

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

NASHYD ( 0003) ID= 1 DT= 5.0 min Area (ha) = 7.36 Curve Number (CN) = 75.9 Ia (mm) = 7.30 # of Linear Res.(N) = 3.00# of Linear Res (N) = 3.00U.H. Tp(hrs) = 0.50

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

		TR	ANSFORME	HYETOGR	APH	-	
TIME	RAIN	TIME	KAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	5.79	0.833	21.49	1.583	10.45	2 33	6.51
0.167	5.79	0.917	124.56	1.667	10.45	2.42	6.01
0.250	6.82	1.000	124.56	1.750	8.98	2.50	6.01
0.333	6.82	1.083	26.38	1.833	8.98	2.58	5.59
0.417	8.45	1.167	26.38	1.917	7.93	2.67	5.59
0.500	8.45	1.250	16.63	2.000	7.93	2.75	5.23
0.583	11.56	1.333	16.63	2.083	7.14	2.83	5.23
0.667	11.56	1.417	12.68	2.167	7.14	2.92	4.93
0.750	21.49	1.500	12.68	2.250	6.51	3.00	4.93

Unit Hyd Qpeak (cms)= 0.562

0.175 (i) TIME TO PEAK (hrs)= 1.583 (mm) = 14.506RUNOEE VOLUME TOTAL RAINFALL (mm) = 49.520RUNOFF COEFFICIENT = 0.293

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

----- U.H. Tp(hrs)= 0.45

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

		TR	ANSFORME	D HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	5.79	0.833	21.49	1.583	10.45	2 33	6.51
0.167	5.79	0.917	124.56	1.667	10.45	2.42	6.01
0.250	6.82	1.000	124.56	1.750	8.98	2.50	6.01
0.333	6.82	1.083	26.38	1.833	8.98	2.58	5.59
0.417	8.45	1.167	26.38	1.917	7.93	2.67	5.59
0.500	8.45	1.250	16.63	2.000	7.93	2.75	5.23
0.583	11.56	1.333	16.63	2.083	7.14	2.83	5.23
0.667	11.56	1.417	12.68	2.167	7.14	2.92	4.93
0.750	21.49	1.500	12.68	2.250	6.51	3.00	4.93

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.140 (i) TIME TO PEAK (hrs) = 1.500 RUNOFF VOLUME (mm) = 13.909 TOTAL RAINFALL (mm) = 49.520 RUNOFF COEFFICIENT = 0.281

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

( 0010) NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 U.H. Tp(hrs) = 0.57

		TR	ANSFORME	HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	5.79	0.833	21.49	1.583	10.45	2.33	6.51
0.167	5.79	0.917	124.56	1.667	10.45	2.42	6.01
0.250	6.82	1.000	124.56	1.750	8.98	2.50	6.01
0.333	6.82	1.083	26.38	1.833	8.98	2.58	5.59

```
5 23
5 23
               0.500
                       8.45
                             1.250
                                     16.63
                                            2.000
                                                     7.93
                                                            2.75
              0.583
                     11.56
11.56
                             1 333
1 417
                                            2.083
                                                           2 83
2 92
                                    16.63
                                                     7.14
               0.667
                                    12.68
                                                     7.14
                                                                    4 93
                     21 49 | 1 500
                                    12.68 | 2.250
    Unit Hyd Qpeak (cms)= 0.972
                   (cms)= 0.334 (i)
(hrs)= 1.750
(mm)= 15.194
    PEAK FLOW
    TIME TO PEAK
RUNOFF VOLUME
    TOTAL RAINFALL (mm)= 49.520
RUNOFF COEFFICIENT = 0.307
    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
 ADD HYD ( 0009)|
                          AREA
                                  QPEAK
                                          TPEAK
                                          (hrs)
                          (ha)
                                  (cms)
                                                    (mm)
      ID1= 1 ( 0010):
                         14.50
                                 0.334
                                                  15.19
     + ID2 = 2 (0002):
                          1.57
                                 0.037
                                                  11.86
      ID = 3 (0009):
                         16.07 0.365
                                          1.67
                                                 14.87
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
                                  QPEAK
 _____
                          (ha)
                                  (cms)
                                           (hrs)
      ID1= 3 ( 0009):
                         16.07
                                 0.365
                                          1.67
                                                  14.87
     + ID2= 2 ( 0003):
                         7.36
                                 0.175
                                          1.58
                                                  14.51
      ID = 1 (0009):
                         23.43 0.539
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
1 + 2 = 3 |
                          AREA
                                  QPEAK
                                          TPEAK
                                                   R.V.
                          (ha)
                                  (cms)
                                           (hrs)
                                                    (mm)
     ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                         23.43
                                 0.539
                                                  14.75
                          5.75
                                                  13.91
      ID = 3 (0009):
                         29.18
                                0.675
                                          1.67
                                                 14.59
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
********
** SIMULATION:D. 25yr 3hr 10min Chicago **
 CHICAGO STORM
                      IDF curve parameters: A= 731.314
 Ptotal= 58.14 mm
                                         B= 0.000
C= 0.699
                      used in: INTENSITY = A / (t + B)^C
                      Duration of storm = 3.00 \text{ 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 i
                                                              hrs
                                                                   mm/hr
6.56
                              0.83 146 25
                                             1.67
                                                    10.54
                                                            2.50
               0.00
                       6.80
                                                                   6.14
               0.17
                       8.01
                              1.00
                                    30.97
                                             1.83
                                                     9.31
                                                            2.67
                              1.17
                                     19.53
                                             2.00
                                                     8.38
               0.50
                      13.57
                              1.33
                                     14.89
                                             2.17
                     25.24
                             1.50
                                    12.27
                                             2.33
                                                     7.05
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
```

```
--- TRANSFORMED HYETOGRAPH ----
                 TIME
                                                            RATN
                         RATN
                                  TTMF
                                           RAIN
                                                    TIME
                                                                     TTMF
                                                                              RATN
                  hrs
                         mm/hr
                                   hrs
                                          mm/hr
                                                     hrs
                                                            mm/hr
                                                                      hrs
                                                                             mm/hr
7.65
                0.083
                          6 80
                                 0.833
                                                           12,27
                                          25.24
                                                  1.583
                          6.80
                                 0.917
                                        146.25
                                                  1.667
                                                                             7.05
                                 1.000
                                        146.25
                0.333
                          8.01
                                 1.083
                                          30.97
                                                  1.833
                                                           10.54
                                                                     2.58
                                                                             6.56
                                                                    2.67
2.75
2.83
                0.417
                          9.92
                                 1.167
                                          30.97
                                                  1.917
                                                            9.31
                                                                             6.56
                        9.92
13.57
                                                  2 000
2 083
                                                            9 31
8 38
                                 1.250
1.333
                                         19.53
19.53
                                                                             6.14
                0.583
                        13.57
                                 1.417
                                                  2.167
                0.667
                                          14.89
                                                            8.38
                                                                    2.92
                                                                             5.79
                        25 24 | 1 500
                                                2.250
                                         14.89
    Unit Hyd Qpeak (cms)= 0.575
    PEAK FLOW
TIME TO PEAK
                     (cms)= 0.297
(hrs)= 1.917
                               0.297 (i)
    RUNOFF VOLUME
TOTAL RAINFALL
                       (mm) = 20.776
                       (mm) = 58.144
     RUNOFF COEFFICIENT =
                              0.357
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
           ( 0002)
                      Area (ha)= 1.57 Curve Number (CN)= 71.0
Ia (mm)= 8.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.35
 NASHYD
ID= 1 DT= 5.0 min
        NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                 ---- TRANSFORMED HYETOGRAPH ----
                                                 TIME
                 TIME
                         RATN
                                 TIME
                                                            RATN
                                                                     TIME
                                                                              RATN
                                          RATN
                  hrs
                         mm/hr
                                   hrs
                                         mm/hr
                                                     hrs
                                                            mm/hr
                                                                      hrs
                                                                             mm/hr
                                 0.833
                0.083
                          6.80
                                          25.24
                                                  1.583
                                                           12.27
                                                                             7.65
                          6.80
                                 0.917
                                        146.25
                                                  1.667
                                                           12.27
                                                                             7.05
                                                           10 54
10 54
                                 1.000
                                        146.25
                                                                             7.05
                        8 .01
9 .92
9 .92
13 .57
13 .57
                0.333
                                 1.083
                                          30.97
                                                  1.833
                                         30 97
19 53
19 53
                                                  1 917
2 000
2 083
                                                            9.31
9.31
                                                                    2.67
2.75
                                 1.167
                                                                             6.56
                                 1.250
1.333
1.417
                                                                             6 14
6 14
5 79
                0.500
                                                            8 38
8 38
                0.583
                                                                    2.83
                0.667
                                          14.89
                                                  2.167
                        25.24 1.500
                                          14.89
    Unit Hyd Qpeak (cms)=
                              0.171
     PEAK FLOW
                      (cms) =
                               0.053 (i)
                     (hrs) = 1.417
     TIME TO PEAK
     RUNOFF VOLUME
                       (mm)= 16.335
     TOTAL RAINFALL
                       (mm) = 58.144
     RUNOFF COEFFICIENT = 0.281
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 CALIB
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                 ---- TRANSFORMED HYETOGRAPH ----
                                           RAIN |
                                                   TIME
                 TTMF
                                 TTMF
                                                            RATN
                                                                     TTMF
                         RATN
                                                                              RATN
                  hrs
                         mm/hr
                                   hrs
                                                     hrs
                                                            mm/hr
                                                                      hrs
                                                                             mm/hr
                                          mm/hr
                0.167
                          6.80
                                 0.917
                                        146 25
                                                  1.667
                                                                             7.05
                                                           10.54
10.54
9.31
                0.250
                          8.01
                                 1.000
                                        146.25
                                                  1.750
                                                                     2.50
                                                                             7.05
                          8 01
9 92
                                                                    2.58
                                          30.97
30.97
                                                  1.833
1.917
                                                                             6.56
                0.333
                                 1.083
                                 1 167
                0 417
                          9 92
                                                  2 000
                                                            9.31
                                                                    2.75
                0.500
                                 1.250
                                          19.53
                                                                             6.14
                        13.57
13.57
                                 1.333
                                         19.53
                                                  2.083
                                                            8 38
                                                                    2.83
                                                                             6.14
                0.583
                0.667
                                 1.417
                                                  2 167
                                                            8 38
                                          14.89
    Unit Hyd Qpeak (cms)= 0.562
     PEAK FLOW
                      (cms)=
                               0.242 (i)
     TIME TO PEAK
                     (hrs) = 1.583
```

RUNOFF VOLUME (mm)= 19.658 TOTAL RAINFALL (mm)= 58.144 RUNOFF COEFFICIENT = 0.338

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

| CALIB | CALIB | | Area (ha)= 5.75 | Curve Number (CN)= 74.2 | ID= 1 DT= 5.0 min | Ia (mm)= 6.83 # of Linear Res.(N)= 3.00 | ID= 1 DT= 5.0 min | Ia (mm)= 6.83 # of Linear Res.(N)= 3.00 | ID= 1 DT= 1 DT

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

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	6.80	0.833	25.24	1.583	12.27	2.33	7.65
0.167	6.80	0.917	146.25	1.667	12.27	2.42	7.05
0.250	8.01	1.000	146.25	1.750	10.54	2.50	7.05
0.333	8.01	1.083	30.97	1.833	10.54	2.58	6.56
0.417	9.92	1.167	30.97	1.917	9.31	2.67	6.56
0.500	9.92	1.250	19.53	2.000	9.31	2.75	6.14
0.583	13.57	1.333	19.53	2.083	8.38	2.83	6.14
0.667	13.57	1.417	14.89	2.167	8.38	2.92	5.79
0.750	25.24	1.500	14.89	2.250	7.65	3.00	5.79

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.194 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 18.856
TOTAL RAINFALL (mm)= 58.144
RUNOFF COEFFICIENT = 0.324

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

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

		TR	ANSFORME	) HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	6.80	0.833	25.24	1.583	12.27	2 33	7.65
0.167	6.80	0.917	146 25	1.667	12.27	2.42	7.05
0.250	8.01	1.000	146.25	1.750	10.54	2.50	7.05
0.333	8.01	1.083	30.97	1.833	10.54	2.58	6.56
0.417	9.92	1.167	30.97	1.917	9.31	2.67	6.56
0.500	9.92	1.250	19.53	2.000	9.31	2.75	6.14
0.583	13.57	1.333	19.53	2.083	8.38	2.83	6.14
0.667	13.57	1.417	14.89	2.167	8.38	2.92	5.79
0.750	25.24	1.500	14.89	2.250	7.65	3.00	5.79

Unit Hyd Qpeak (cms)= 0.972

PEAK FLOW (cms)= 0.460 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 20.509
TOTAL RAINFALL (mm)= 58.144
RUNOFF COEFFICIENT = 0.353

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

ADD HYD ( 0009)   1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
	14.50	0.460	1.67	20.51
	1.57	0.053	1.42	16.33
ID = 3 (0009):	16.07	0.504	1.67	20.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
ADD HYD ( 0009)|
  3 + 2 = 1
                              AREA
                                      OPFAK
                                                TPFAK
                                                          R.V.
                             (ha)
16.07
                                       (cms)
                                                (hrs)
                                                           (mm)
       ID1= 3 ( 0009):
      + ID2= 2 ( 0003):
                                                        19.66
        ______
       ID = 1 (0009):
                            23.43 0.744
                                                        19.96
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009) | 1 + 2 = 3
                              AREA
                                      QPEAK
                                                TPEAK
                                                          R.V.
                                       (cms)
                              (ha)
                                                           (mm)
                                                (hrs)
       ID1= 1 ( 0009):
                             23.43
                                     0.744
                                                1.67
                                                        19.96
     + ID2= 2 ( 0004):
                                     0.194
       ID = 3 (0009):
                             29.18 0.934
                                                1 58
                                                        19 74
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
*********
** SIMULATION:E. 50yr 3hr 10min Chicago **
-----
                        IDF curve parameters: A= 811.794
 CHICAGO STORM
                                               B= 0.000
C= 0.699
 Ptotal= 64.54 mm
                        used in: INTENSITY = A / (t + B)^C
                         Duration of storm = 3.00 \text{ hrs}
                         Storm time step = 10.00 min
Time to peak ratio = 0.33
                                                                    hrs
2.50
2.67
2.83
                                   hrs
                                         mm/hr
                                                     hrs
                                                            mm/hr
                                 0.83 162.35
1.00 34.38
1.17 21.68
1.33 16.53
1.50 13.62
                                                  1.67
1.83
2.00
2.17
2.33
                          7.55
                                                          11.70
10.34
9.30
                                                                             7.28
                 0.00
                                 1.00
1.17
1.33
1.50
                          8.89
                                                                            6 82
6 42
                        11.01
15.06
                 0.33
                 0.50
                                                            8.49
U.H. Tp(hrs) = 0.70
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                 ---- TRANSFORMED HYETOGRAPH ----
                 TIME
                          RAIN
                                 TIME
                                           RAIN | TIME
                                                                    TIME
                         mm/hr
7.55
7.55
8.89
                                 hrs
0.833
0.917
                                                     hrs
                                                            mm/hr
                0.083
0.167
0.250
                                                  1.583
                                                          13.62
13.62
                                         28.01
                                                                             8.49
                                        162 35
162 35
                                                                             7 83
7 83
7 28
7 28
                                                  1.667
                                 1.000
                                                  1.750
                                                           11.70
                 0.333
                          8.89
                                 1.083
                                          34.38
                                                  1.833
                                                           11.70
                                 1 167
                        11 01
                                         34.38
                                                  1.917
                                 1.250
1.333
1.417
                                                 2.000
2.083
2.167
                        11.01
                                         21.68
                                                          10.34
                                                                             6.82
                0 583
0 667
                        15.06
15.06
                                         21.68
                                                           9.30
                                                                             6.82
                                          16.53
                 0.750
                        28 01 1 500
                                                            8.49
                                         16.53
                                                2.250
     Unit Hyd Qpeak (cms)= 0.575
    PEAK FLOW (cms)= 0.361 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 25.037
TOTAL RAINFALL (mm)= 64.542
RUNOFF COEFFICIENT = 0.388
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 CALIB
 NASHYD ( 0002) Area (ha)= 1.57 Curve Number (CN)= 71.0
```

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

		TR	ANSFORMEI	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2 33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82
0.667	15.06	1.417	16.53	2.167	9.30	2.92	6.42
0.750	28.01	1.500	16.53	2.250	8.49	3.00	6.42

Unit Hyd Qpeak (cms)= 0.171

PEAK FLOW (cms)= 0.065 (i)
TIME TO PEAK (hrs)= 1.417
RUNOFF VOLUME (mm)= 19.941
TOTAL RAINFALL (mm)= 64.542
RUNOFF COEFFICIENT = 0.309

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

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

		TR	ANSFORME	HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2 33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82
0.667	15.06	1.417	16.53	2.167	9.30	2.92	6.42
0.750	28.01	1.500	16.53	2.250	8.49	3.00	6.42

Unit Hyd Qpeak (cms)= 0.562

PEAK FLOW (cms)= 0.297 (i)
TIME TO PEAK (hrs)= 1.583
RUNOFF VOLUME (mm)= 23.761
TOTAL RAINFALL (mm)= 64.542
RUNOFF COEFFICIENT = 0.368

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

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

		TR	ANSFORME	D HYETOGR	APH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2 33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82
0.667	15.06	1.417	16.53	2.167	9.30	2.92	6.42
0.750	28.01	1.500	16.53	2.250	8.49	3.00	6.42

```
Unit Hyd Qpeak (cms)= 0.488
     PEAK FLOW
                       (cms)=
                                0.238 (i)
                      (hrs)= 1.500
     TIME TO PEAK
                        (mm) = 22.806
     RUNOFF VOLUME
     TOTAL RAINFALL
                        (mm) = 64.542
     RUNOFF COEFFICIENT =
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
| CALIB
| NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0
| ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.57
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                   ---- TRANSFORMED HYETOGRAPH ----
                  TIME
                          RAIN TIME
                                                               RAIN | TIME
                                                                                 RATN
                                            RAIN ' TIME
                   hrs
                          mm/hr
                                     hrs
                                           mm/hr
                                                         hrs
                                                               mm/hr i
                                                                          hrs
                                                                                 mm/hr
                 0.083
                                   0.833
                                            28.01
                                                              13.62
                                                                                 8.49
                                          162 35
                 0.250
                                   1 000 162 35
                                                     1.750
                                                              11.70
                 0.333
                           8.89
                                   1.083
                                            34.38
34.38
21.68
                                                     1.833
                                                              11.70
                                           34.38 | 1.833
34.38 | 1.917
21.68 | 2.000
21.68 | 2.083
16.53 | 2.167
16.53 | 2.250
                                   1.167
1.250
1.333
1.417
                          11 01
11 01
                                                              10.34
10.34
                                                                        2.67
2.75
                                                                                 7.28
6.82
                          15.06
                                                               9.30
                                                                                 6.82
                 0.583
                                                                        2.83
                          15.06
                                                               9.30
                                                                                 6.42
                 0.667
                 0.750
                          28.01 1.500
                                                               8.49
     Unit Hyd Qpeak (cms)= 0.972
                       (cms) = 0.561 (i)
     PEAK FLOW
     TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 24.730
TOTAL RAINFALL (mm)= 64.542
     RUNOFF COEFFICIENT =
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0009)|
1 + 2 = 3
                                ΔRFΔ
                                         OPEAK
                                                   TPFAK
                                                            R.V.
                                (ha)
                                                   (hrs)
                                         (cms)
                                                              (mm)
     ID1= 1 ( 0010):
+ ID2= 2 ( 0002):
                                                   1.67
                              14.50
                                       0.561
                                                            24.73
                                                            19.94
       ID = 3 (0009):
                              16.07 0.615
                                                   1.67
                                                            24.26
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
3 + 2 = 1
                                ARFA
                                        QPEAK
                                                   TPFAK
                                                             R.V.
                              (ha)
16.07
                                       (cms)
0.615
                                                   (hrs)
1.67
                                                              (mm)
     ID1= 3 ( 0009):
+ ID2= 2 ( 0003):
                                                            24.26
                               7.36
                                       0.297
                                                            23.76
       ID = 1 (0009):
                             23.43 0.909
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
  1 + 2 = 3
                                AREA
                                        QPEAK
                                                   TPEAK
(ha)
23.43
                                     (cms)
0.909
                                                   (hrs)
1.67
                                                              (mm)
     ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                                                            24.10
                                                           22 81
                               5.75 0.238
                                                   1.50
        ID = 3 (0009): 29.18 1.144
                                                         23.85
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

 CHICAGO STORM Ptotal= 70.94 mm

IDF curve parameters: A= 892.273 B= 0.000 C= 0.699

used in: INTENSITY = A /  $(t + B)^C$ 

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

CALTR NASHYD

ID= 1 DT= 5.0 min

U.H. Tp(hrs)= 0.70

( 0001) | Area (ha)= 10.54 Curve Number (CN)= 77.4 = 5.0 min | Ia (mm)= 7.15 # of Linear Res.(N)= 3.00

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

---- TRANSFORMED HYETOGRAPH ----RAIN | TIME TTMF RAIN TIME RAIN | TIME hrs mm/hr hrs mm/hr hrs mm/hr i mm/hr 8.30 0.833 1.583 0.167 8.30 0 917 178 44 1.667 14.97 2.42 2 50 2 58 2 67 1.000 178.44 1.083 37.79 1.167 37.79 0.250 9.77 9.77 1.750 12.86 0 333 0 417 1.833 1.917 8.00 12.86 11.36 12 10 12 10 1 250 16 55 1 333 16 55 1 417 2 000 2 083 2 167 23 83 11 36 2.75 7.50 7.50 0.500 0.583 23 83 18 17 10.23 18 17 | 2 250 30.79 | 1.500

Unit Hyd Qpeak (cms)= 0.575

PEAK FLOW (cms) = 0.429 (i)TIME TO PEAK (hrs)= 1.833 RUNOFF VOLUME (mm)= 29.496
TOTAL RAINFALL (mm)= 70.416 RUNOFF COEFFICIENT = 0.416

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

CALTR

U.H. Tp(hrs)= 0.35

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

		TR	ANSFORME	HYETOGR	APH		
TIME	RAIN	TIME	KAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2 33	9 33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00
0.417	12.10	1.167	37.79	1.917	11.36	2.67	8.00
0.500	12.10	1.250	23.83	2.000	11.36	2.75	7.50
0.583	16.55	1.333	23.83	2.083	10.23	2.83	7.50
0.667	16.55	1.417	18.17	2.167	10.23	2.92	7.06
0.750	30.79	1.500	18.17	2.250	9.33	3.00	7.06

Unit Hyd Qpeak (cms)= 0.171

0.079 (i) TIME TO PEAK (hrs)= 1.333 (mm)= 23.761 RUNOFF VOLUME (mm)= 70.941 TOTAL RAINFALL RUNOFF COEFFICIENT = 0.335

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

CALTR NASHYD ( 0003) ID= 1 DT= 5.0 min Area (ha) = 7.36 Curve Number (CN) = 75.9 Ia (mm) = 7.30 # of Linear Res.(N) = 3.00# of Linear Res (N) = 3.00U.H. Tp(hrs) = 0.50

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

		TR	ANSFORME	HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2 33	9.33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00
0.417	12.10	1.167	37.79	1.917	11.36	2.67	8.00
0.500	12.10	1.250	23.83	2.000	11.36	2.75	7.50
0.583	16.55	1.333	23.83	2.083	10.23	2.83	7.50
0.667	16.55	1.417	18.17	2.167	10.23	2.92	7.06
0.750	30.79	1.500	18.17	2.250	9.33	3.00	7.06

Unit Hyd Qpeak (cms)= 0.562

0.355 (i) TIME TO PEAK (hrs)= 1.583 (mm) = 28.068RUNOFF VOLUME (mm)= 70.941 TOTAL RAINFALL RUNOFF COEFFICIENT = 0.396

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

----- U.H. Tp(hrs)= 0.45

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 8.30   0.833 30.79   1.583 14.97   2.33	9.33
0.167 8.30 0.917 178.44 1.667 14.97 2.42	8.61
0.250 9.77   1.000 178.44   1.750 12.86   2.50	8.61
0.333 9.77   1.083 37.79   1.833 12.86   2.58	8.00
0.417 12.10 1.167 37.79 1.917 11.36 2.67	8.00
0.500 12.10   1.250 23.83   2.000 11.36   2.75	7.50
0.583 16.55   1.333 23.83   2.083 10.23   2.83	7.50
0.667 16.55   1.417 18.17   2.167 10.23   2.92	7.06
0.750 30.79 1.500 18.17 2.250 9.33 3.00	7.06

Unit Hyd Qpeak (cms)= 0.488

0.285 (i) PEAK FLOW (cms)= TIME TO PEAK (hrs) = 1.500 RUNOFF VOLUME (mm) = 26.962 TOTAL RAINFALL (mm) = 70.941 RUNOFF COEFFICIENT = 0.380

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

CALIB ( 0010) NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.57

		TR		) HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2.33	9.33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00

```
1.250
1.333
1.417
                                                      23 83 | 2 000
23 83 | 2 083
18 17 | 2 167
18 17 | 2 250
                                                                                          2.75
2.83
2.92
                                                                                                     7 50
7 50
7 06
                      0.500
                                 12.10
                                                                              11.36
                      0.583
                                16.55
16.55
                                                                             10.23
10.23
                      0.667
                      0.750
                                30.79 | 1.500
                                                                                                      7.06
      Unit Hyd Qpeak (cms)= 0.972
      \begin{array}{cccc} \text{PEAK FLOW} & (\text{cms}) = & 0.668 \\ \text{TIME TO PEAK} & (\text{hrs}) = & 1.667 \\ \text{RUNOFF VOLUME} & (\text{mm}) = & 29.150 \\ \text{TOTAL RAINFALL} & (\text{mm}) = & 70.941 \\ \text{RUNOFF COEFFICIENT} = & 0.411 \\ \end{array}
                                         0.668 (i)
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
 ADD HYD ( 0009) | 1 + 2 = 3
                                        AREA
                                                   QPEAK
                                                                TPEAK
                                      (ha)
14.50
                                                                (hrs)
                                                   (cms)
                                                                              (mm)
         ID1= 1 ( 0010):
                                                 0.668
                                                                           29 15
       + ID\bar{2} = \bar{2} (0002):
                                       1.57
                                                 0.079
                                                                1.33
                                                                           23.76
         ID = 3 (0009):
                                      16.07
                                                 0.733
                                                               1.67
                                                                           28.62
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009) | 3 + 2 = 1
                                        AREA
                                                   QPEAK
 _____
                                        (ha)
                                                   (cms)
                                                                (hrs)
1.67
         ID1= 3 ( 0009):
                                      16.07
                                                 0.733
                                                                           28.62
       + ID2= 2 ( 0003):
                                                                1.58
                                                                           28.07
                                       7.36
                                                 0.355
         ID = 1 (0009):
                                      23.43 1.085
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009) | 1 + 2 = 3
                                        AREA
                                                   QPEAK
                                                                TPEAK
                                                                             R.V.
                                        (ha)
                                                   (cms)
                                                                (hrs)
                                                                              (mm)
       ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                                      23 43
5 75
                                                 1.085
                                                                1.58
                                                                           28.45
                                                                1.50
                                                                           26.96
         ID = 3 (0009):
                                      29.18
                                                 1.366
                                                               1.58
                                                                           28.16
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
*******
** SIMULATION:G. 2yr 24hr 15min SCS Type II **
      READ STORM
                                 Filename: C:\Users\noconnor\AppD
                                               ata\Local\Temp\
                                               49753dce-993e-48a5-8960-fc674d25ac10\04a9bd10
  Ptotal= 60.13 mm |
                                 Comments: 2yr 24hr 15min SCS Type II
                        TIME
                                  RAIN
                                              TIME
                                                         RAIN
                                                                     TIME
                                                                                RAIN TIME
                                                                                                      RAIN
                                 mm/hr
                                               hrs
                                                       mm/hr
                                                                       hrs
                                                                               mm/hr
                                                                                                     mm/hr
                                             6.25
6.50
6.75
7.00
7.25
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                                                                  12.50
                                  0.00
                                                        1.08
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19.75
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                                                                                                     1.08
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                       1 25
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                                  0.66
                                                                  14.00
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                       1 75
2 00
2 25
                                             8 00
8 25
8 50
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9 00
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20.75
21.00
                                  0.66
                                                                  14.25
                                                                               1.80
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0.78
                                                                  14 50
14 75
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1.80
1.80
                       2.50
                                  0.78
                                                                  15 00
                                                                                         21.25
                                                        1.68 | 15.00

1.68 | 15.25

1.92 | 15.50

1.92 | 15.75

2.16 | 16.00

2.16 | 16.25

2.77 | 16.50

2.77 | 16.75

3.73 | 17.00
                                  0 78
0 78
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0 78
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0 78
                        2.75
                                                                               1.80
                                                                                         21.50
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22.00
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22.75
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23.25
                                            9.25
9.50
9.75
10.00
10.25
                                                                               1.80
1.80
                                                                               1.80
                       3.50
                       3.75
4.00
                                                                               \frac{1.08}{1.08}
                       4.25
                                  0.96
                                            10.50
                                                                               1.08
```

4.75     0.96     11.00     3.73       5.00     0.96     11.25     5.77       5.25     0.96     11.55     5.77       5.50     0.96     11.75     17.80       5.75     0.96     12.00     73.60       6.00     0.96     12.25     8.66	17.50	23.75 24.00	0.72 0.72 0.72
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CALIB NASHYD ( 0001) ID= 1 DT= 5.0 min

Area (ha)= 10.54 Curve Number (CN)= 77.4
Ia (mm)= 7.15 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.70

				D HYETOGR			
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	' TIME ' hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	0.96	12.250	73.60	18.33	1.08
0.167	0.00	6.250	0.96	12.333	8.67	18.42	1.08
0.250 0.333	0.00	6.333	1.08	12.417	8.66	18.50	1.08
0.333	0.66 0.66	6.417	$\frac{1.08}{1.08}$	12.500 12.583	8.66 8.66	18.58 18.67	$\frac{1.08}{1.08}$
0.500	0.66	6.583	1.08	12.667	8.66	18.75	1.08
0.583	0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.667 0.750	0.66 0.66	6.750	$\frac{1.08}{1.08}$	12.833	4.45 4.45	18.92 19.00	1.08
0.730	0.66	6.917	1.08	12.917 13.000	4.45	19.00	$\frac{1.08}{1.08}$
0.917	0.66	7.000	1.08	13.083	4.45	19.17	1.08
1.000	0.66	7.083	1.08	13.167 13.250	4.45 4.45	19.25 19.33	1.08
$1.083 \\ 1.167$	0.66 0.66	7.167 7.250	$\substack{1.08\\1.08}$	13.333	3.25	19.42	$\frac{1.08}{1.08}$
1.250	0.66	7.333	1.32	113.417	3 25 3 25 3 25 3 25	19.50	1.08
1.333	0.66	7.417	1.32	13.500 13.583	3.25	19.58	1.08
1.417 1.500	0.66 0.66	7.500 7.583	$\frac{1.32}{1.32}$	13.585	3.25	19.67 19.75	$\frac{1.08}{1.08}$
1.583	0.66	7.667	1.32	13.750	3 25	19.83	1.08
1.667	0.66	7.750	1 32	113.833	2.53	19.92	1.08
1.750 1.833	0.66 0.66	7 833 7 917	1.32	13.917 14.000	2.53	20.00 20.08	$\frac{1.08}{1.08}$
1.917	0.66	8.000	1.32 1.32	14.083	3 . 25 3 . 25 2 . 53 2 . 53 2 . 53 2 . 53 2 . 53	20.17	1.08
2.000	0.66	8.083	1.32	14.167	2.53	20.25	1.08
2.083 2.167	0.66 0.66	8.167 8.250	$\frac{1.32}{1.32}$	14.250 14.333	2.53 1.80	20.33 20.42	0.72 0.72
2.250	0.66	8.333	1.56	14.417	1.80	20.50	0.72
2.333	0.78	8.417	1.56	14.500	1.80	20.58	0.72
2.417 2.500	0.78 0.78	8.500 8.583	$\frac{1.56}{1.56}$	14.583 114.667	1.80 1.80	20.67 20.75	0.72 0.72
2.583	0.78	8.667	1.56 1.56	14.750	1.80	20.83	0.72
2.667	0.78	8.750	1.56	14.833	1.80	20.92	0.72
2.750 2.833	0.78	8.833 8.917	$\frac{1.68}{1.68}$	14.917 15.000	$\frac{1.80}{1.80}$	21.00 21.08	0.72 0.72
2.917	0.78 0.78	9.000	1.68	15.083	1.80	21.17	0.72
3.000	0.78	9.083	1.68	15.167	1.80	21.25	0.72
3.083 3.167	0.78 0.78	9 167 9 250	$\frac{1.68}{1.68}$	15.250 15.333	$\frac{1.80}{1.80}$	21.33 21.42	0.72 0.72
3.250 3.333	0.78	9.333	1.92	15.417 15.500	1.80	21.50	0.72
3.333	0.78	9.417	1.92	15.500	1.80	21.58	0.72
3.417 3.500	0.78 0.78	9 500 9 583	$\frac{1.92}{1.92}$	15.583 15.667	$\frac{1.80}{1.80}$	21.67 21.75	0.72 0.72
3.583	0.78	9.667	1.92	15.750	1.80	21.83	0.72
3.667	0.78 0.78	9.750	1.92	15 833	1.80	21.92	0.72
3.750 3.833	0.78 0.78	9 833 9 917	2.16 2.16	15.917 16.000	1.80 1.80	22.00 22.08	0.72 0.72
3.917	0.78	10 000	2 16 2 16	16.083	1.80	22.17	0.72
4.000	0.78	10.083	2.16 2.16	16.167	1.80	22.25	0.72
4.083 4.167	0.78 0.78	10.167 10.250	2.16	16.250 16.333	$\frac{1.80}{1.08}$	22.33 22.42	0.72 0.72
4.250	0.78	10.333	2 77 2 77	16.417	1 08	22.50	0.72
4.333	0.96	10.417	2.77	16.500	1.08	22.58	0.72
4.417 4.500	0.96 0.96	10.500 10.583	2.//	16.583 16.667	$\frac{1.08}{1.08}$	22.67 22.75	0.72 0.72
4.583	0.96	10.667	2.77	16.750	1.08	22.83	0.72
4.667	0.96	10.750	2.77	16.833	1.08	22.92	0.72
4.750 4.833	0.96 0.96	10.833 10.917	3./3 3.73	16.917	$\frac{1.08}{1.08}$	23.00 23.08	0.72 0.72
4.917	0.96	11 000	2.77 2.77 2.77 2.77 2.77 3.73 3.73	17.000 17.083	1.08	23.17	0.72
5.000	0.96	11.083	3./3	17.167	1.08	23.25	0.72
5.083 5.167	0.96 0.96	11.167 11.250	3.73 3.73	17.250 17.333	$\frac{1.08}{1.08}$	23.33 23.42	0.72 0.72
5.250	0.96	11.333	5.77	17.333 17.417	1.08	23.50	0.72

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5 .77
5 .77
5 .77
                                                                      0.72
0.72
0.72
0.72
5.417
5.500
          0.96
                 11.500
                                     17.583
                 11.583
                                     17.667
          0.96
                                                  1.08
                 11 667
5.583
          0.96
                                     17.750
                                                  1.08
                                                           23.83
                               5.77
                                                                      0.72
5.667
          0.96
                 11.750
                                      17.833
                                                  1.08
                                                           23.92
5.750
          0.96
                 11.833
                             17.80
                                      17.917
                                                  1.08
                                                                       0.72
                                                           24.08
24.17
          0.96
                 11.917
                             17.80
                                      18.000
                            17.80 | 18.083
73.59 | 18.167
73.60 | 18.250
5.917
          0 96 12 000
                                                  1.08
6.000
         0.96 12.083
0.96 12.167
                                                  1.08
                                                           24.25
                                                                      0.72
6.083
```

PEAK FLOW (cms)= 0.241 (i)
TIME TO PEAK (hrs)= 12.917
RUNOFF VOLUME (mm)= 22.076
TOTAL RAINFALL (mm)= 60.130
RUNOFF COEFFICIENT = 0.367

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

0.78

0.78 0.78

0.78

0.78

0.78 0.78

2.750

2.833

2.917

3 417

3.833

3.917

4.000 4.083

8.750

8 833 8 917

9.000

9.917

10.000 10.083

10.167

0 78 10 250

CAL TB | CALIB | NASHYD ( 0002) | Area (ha)= 1.57 | Curve Number (CN)= 71.0 | ID= 1 DT= 5.0 min | Ia (mm)= 8.00 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.35

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

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---- TRANSFORMED HYETOGRAPH ----TIME RAIN RAIN | TIME RAIN TIME RAIN ' TIME mm/hr hrs mm/hr hrs mm/hr mm/hr 12.250 0.083 0.00 6.167 0.96 73 60 | 18 33 1.08 0.96 1.08 12.333 12.417 0.167 6.250 18.42 18.50 1.08 0.00 8.66 0.00 1.08 1 08 0.333 0.66 6.417 12.500 8.66 18.58 1.08 0.66 6.500 1.08 12.583 18.67 0.66 6.583 1.08 1.08 1.08 0.583 0.66 6.667 12.750 8.66 18.83 1.08 18.92 0.667 0.66 6.750 12.833 4.45 1.08 1.08 12.917 4 45 0.7500.66 6.833 19.00 1.08 0.833 0.66 6.917 7.000 1.08 13.000 19.08 1.08 0.66 1.08 13 083 1.000 0.66 7.083 1.08 13.167 4.45 19.25

1.08 1.08 1.32 1.32 4.45 3.25 3.25 1.083 0.66 7.167 13.250 19.33 1.08 0.66 7.250 7.333 13.333 19.42 19.50 1.08 1 250 0.66 13 417 1 08 1.333 0.66 7 417 7 500 13 500 19.58 1.08 1.32 | 13.583 1.32 | 13.667 1.32 | 13.750 0.66 19.67 1.08 0.66 7.667 19.83 1.08 1.32 1.32 1.32 1.32 1.667 0.66 7.750 13.833 2.53 19.92 1.08 7.833 7.917 2.53 1.750 0.66 13.917 20.00 1.08 14.000 1.833 0.66 14 083 1.917 0.66 8.000 2.53 20.17 1.08 1.32 1.32 1.32 1.56 20.25 0.66 8.083 14.167 1.08 20.42 20.50 20.58 20.67 0 72 0 72 0 72 0 72 0 72 0 72 0.66 8.250 14.333 1.80 8 333 1.80 1.80 1.80 2.250 0.66 14.417 14 500 2.333 0.78 8.417  $\frac{1.56}{1.56}$ 0.78 8.500 14 583 2.417 2.500 0.78 8.583 1.56 14.667 8 667 1.56 14.750

1.56

1.68

1.68

1.68

0 72 0 72 3.000 0.78 9 083 1.68 15.167 1.80 21.25 0.78 9.250 1.68 15.333 1.80 21.42 0.72 3.250 0.78 9.333 1.92 15.417 1.80 21.50 21 58 21 67 1.92 1.92 15 500 15 583 0.72 0.72  $\frac{1.80}{1.80}$ 3.333 0.78 9.417 0.78 9.500 3 500 1.92 21.75 0.78 9.583 15.667 1.80 0.78 9 667 1.92 15.750 1.80 21.83 3.583 3 750 0.78 9.833

14.833

14.917

15.000

15 083

0.72 0.72 21 92 22 00 22 08 22 17 22 25 22 33 22 42 0 72 0 72 0 72 0 72 0 72 0 72 1 92 2 16 15.917 1.80 2.16 1.80 16.000 2 16 2 16 2 16 2 16 16.083 16.167  $\frac{1.80}{1.80}$ 16.250 1.80 0.72 2 16 16 333

1.80

1.80 1.80

1.80

21 00 21 08

21.17

0.72 0.72 0.72 0.72

0.72

2.77 | 16.417 2.77 | 16.500 2.77 | 16.583 0 72 0 72 0 72 0 72 0 72 0 72 0 72 22 58 22 67 22 75 10.417 4.333 0.96 1.08 4 417 0.96 10.500 1.08 2 77 4.500 0.96 10.583 16.667 1.08 2.77 | 16.750 2.77 | 16.833 22.83 4.583 1.08 0.96 110.667 4.667 10.750 1.08 4.833 0.96 10.917 3 73 17 000 1.08 23.08 0.72 3 .73 3 .73 3 .73 23 17 23 25 23 33 0.72 0.72 0.72 4.917 0.96 11.000 17.083 1.08 5 000 0.96 11.083 17.167 17.250 1 08 0.96 5.083 11.167 0.72 5.167 0.96 11.250 3.73 17.333 1.08 23.42 5 77 5 77 0.72 0.72 0.96 17.500 5.77 | 17.583 5.77 | 17.667 5.77 | 17.750 5.77 | 17.833 23 67 23 75 5.417 0.96 11.500 1.08 0.72 0.72 0.72 0.72 0.72 11.583 5.500 0.96 1.08 5.583 0.96 11.667 11.750 1.08 0.96 5.667 1.08 24 00 24 08 24 17 24 25 0 72 0 72 0 72 0 72 0 72 0.96 11.833 17 80 17 917 0.96 11.917 17.80 18.000 1.08 5.917 0.96 12.000 6.000 0.96 12.083 6.083 0.96 12.167 17 80 18 083 1.08 73.59 18.167 73.60 18.250 1.08

Unit Hyd Qpeak (cms)= 0.171

PEAK FLOW 0.046 (i) TIME TO PEAK (hrs)= 12.500 RUNOFF VOLUME TOTAL RAINFALL (mm)= 17.430 (mm)= 60.130 RUNOFF COEFFICIENT = 0.290

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

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

--- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN | TIME RAIN TIME mm/hr hrs hrs mm/hr hrs 0.96 12.250 0.96 12.333 1.08 12.417 18 33 6.167 0.083 0.00 73.60 8.67 0 167 0 00 6 250 18 42 1 08 0.250 0.00 6.333 8 66 18.50 1.08 0.333 1.08 12.500 6.417 8.66 1.08 0.500 0.66 6 583 1.08 12.667 8 66 18.75 1.08 12 .750 12 .833 12 .917 0.583 0.66 6.667 1.08 8.66 18.83 1.08 1.08 1.08 0.66 6.750 4.45 18.92 19.00 1.08 1.08 6.833 1.08 0.833 0.66 6.917 13.000 4.45 19.08 1.08 1.08 7.000 13.083 4.45 1.08 7.083 13.167 4.45 1.08 1.08 13.250 0.66 7.167 4.45 19.33 1.08 1.08 | 13.250 1.08 | 13.333 1.32 | 13.417 1.32 | 13.583 1.32 | 13.667 1.32 | 13.750 1.32 | 13.833 1.32 | 13.833 1.32 | 13.833 0.66 3.25 1.167 7.250 19.42 1.08 0.66 7.333 3.25 19.50 19.58 1.08 1.250 1 333 0.66 7.417 3 25 1.08 0.66 19.67 1.08 19.75 1.08 0.66 7.667 1.08 1.667 1.750 0 66 0 66 7.750 2.53 19.92 1.08 7.833 2.53 20.00 1.08 1.32 | 13.917 1.32 | 14.000 1.32 | 14.083 1.32 | 14.167 0.66 2.53 20.08 7.917 1.08 1.833 0.66 8.000 2.53 20.17 1.08 2.083 0.66 8.167 1.32 14.250 2.53 20.33 0.72 0.72 0.72 0.72 2.167 0.66 8.250 1.32 14.333 1.80 20.42 1.56 | 14.417 1.56 | 14.500 1.56 | 14.583 20 50 20 58 2.250 2.333 0.66 0.78 8.333 1.80 8.417 1.80 0.72 0.78 8.500 1.80 20.67 2.417 0.72 0.72 0.72 0.72 0.72 0.72 0.78 1.56 14.667 20.75 2.500 8.583 1.80 0.78 0.78 1.56 1.56 8.750 14 833 1.80 20.92 0.78 0.78 0.78 0.78 1 68 14 917 1 68 15 000 1 68 15 083 21.00 2.750 8.833 1.80 1.80 | 21.00 1.80 | 21.08 1.80 | 21.17 1.80 | 21.25 1.80 | 21.33 2.833 8.917 9.000 2 917 3.000 0.78 9.083 1.68 15.167 0 72 0 72

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0 72
0 72
0 72
0 72
0 72
0 72
0 72
                              1.92
1.92
1.92
3.250
           0.78
                    9.333
                                      15.417
                                                   1.80
3.333
           0.78
                    9.417
                                      15.500
                                                  1.80
1.80
                                                           21.58
21.67
3.417
           0.78
                    9.500
                                       15.583
                    9 583
                               1.92
                                       15.667
                                                  1.80
                                                           21.75
3.500
           0.78
3.583
           0.78
                    9 667
                               1.92
                                       15.750
                                                  1.80
                                                           21.83
                                                           21.92
22.00
                    9.750
3.750
           0.78
                   9.833
                               2 16
                                      15.917
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                              2.16
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22 17
22 25
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0.72
0.72
3.833
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                                                  1.80
                 10.000
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1 80
3.917
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4.000
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0 72
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                               2.16
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4.083
           0.78
                  10.167
                                      16.250
                                                  1.80
           0.78
                  10.250
                                       16.333
                                                           22.42
22.50
4.167
                              0.78
                  10.333
                                       16.417
4.333
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                                     16.500
                                                  1.08
                                                           22.58
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22.75
22.83
                                      16.583
16.667
4.417
                  10.500
           0.96
                                                  1.08
           0.96
                 10.583
                                                  1.08
           0.96
                                      16.750
                                                  1.08
4.583
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23 00
23 08
4.667
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                  10.750
                                      16.833
                                                   1 08
           0.96
                  10.833
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           0.96
                  10.917
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                                     17.083
                                                  1.08
5.000
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                  11.083
                                      17.167
                                                  1.08
5.083
                                                  1.08
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23 42
           0.96
                 11.167
                                      17.250
17.333
5.167
           0.96
                  11.250
                                                  1.08
                                                           23 50
23 58
                  11.333
5.333
           0.96
                  11.417
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5.417
          0.96
                 11.500
11.583
11.667
                                      17.583
                                                  1.08
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0.72
0.72
5.500
                                     17.667
17.750
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23 83
          0.96
0.96
                                                  1.08
1.08
5 583
                                                                      0.72
0.72
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0.72
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                                     17.833
17.917
                                                           23.92
5.667
          0.96
                  11.750
                                                  1.08
          0.96
                  11.833
                             17.80
                                                  1.08
                                                           24.00
5.750
           0.96
                  11.917
                             17.80
                                       18.000
                                                  1.08
                                                           24.08
                                                           24.17
5.917
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0 96 12 083
                             17 80 18 083
                                                  1.08
                                                                      0.72
                            73.59 | 18.167
73.60 | 18.250
6.000
                                                  1.08
                                                           24.25
                                                                      0.72
6.083
          0 96 | 12 167
                                                  1.08
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PEAK FLOW (cms)= 0.202 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 20.908
TOTAL RAINFALL (mm)= 60.130
RUNOFF COEFFICIENT = 0.348

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

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

---- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN | TIME RAIN TIME RAIN mm/hr 73.60 mm/hr mm/hr hrs mm/hr 12.250 0.083 0.167 0.250 0.00 6.167 0 96 0 96 1 08 18 33 1.08 18 42 18 50 1.08 0.00 6.250 8.67 0.00 12.417 8 66 1.08 0.333 0.66 6.417 1.08 12.500 8.66 1.08 0.417 0.66 6.500 1.08 12 583 1.08 1 08 1 08 1 08 8 66 8 66 0.500 0.66 6.583 12.667 1.08 6.667 6.750 12 750 12 833 18 83 18 92 0.583 0.66 1.08 0.667 0.66 4.45 1.08 0.66 1.08 12.917 4 45 19.00 1.08 0.7506.833 0.833 0.66 6.917 7.000 1.08 13.000 19.08 1.08 1.08 13.083 1.000 0.66 7 083 1.08 13.167 4.45 19.25 1.08 1 08 1 08 1 32 1 32 1.083 0.66 7.167 13.250 4.45 19.33 1.08 13.333 13.417 3 . 25 3 . 25 3 . 25 1.167 1.250 0.66 7.250 7.333 19.42 19.50  $\frac{1.08}{1.08}$ 13 500 1.333 0.66 7.417 19.58 1.08 1.32 | 13.500 1.32 | 13.687 1.32 | 13.750 1.32 | 13.833 1.32 | 13.917 1.32 | 14.000 1.32 | 14.083 1.32 | 14.167 0.66 7 500 3.25 19.67 1.08 1,417 3 25 3 25 2 53 2 53 2 53 19.75 19.83 19.92 20.00 20.08 0.66 7.583 1.583 0.66 7.667 1.08 7 750 7 833 7 917 1.667 0.66 1.08 1.750 0.66 0.66 1.08 1.08 1.833 1.917 0.66 8.000 2.53 20.17 1.08 20.25

5.833
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Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.163 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 20.058
TOTAL RAINFALL (mm)= 60.130
RUNOFF COEFFICIENT = 0.334

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

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

--- TRANSFORMED HYETOGRAPH ----TIME TIME RAIN | TIME RAIN TIME RAIN hrs mm/hr hrs mm/hr hrs mm/hr hrs mm/hr 0.00 6.167 6.250 0.96 0.96 1.08 12.250 18 33 18 42 0.083 73.60 | 8.67 | 1.08 1.08 0 00 12.417 8 66 1 08 0.250 6.333 18.50 0.333 0.66 6.417 1.08 12.500 8.66 18.58 1.08 1 08 1 08 1 08 1 08 1 08 12 583 12 667 12 750 12 833 12 917 0.66 6.500 6.583 8 66 1.08 0.500 0.66 8.66 18.75 1.08 0.66 18.83 0.583 6.667 8.66 1.08 6.750 6.833 6.917 7.000 0.667 0.66 4 45 4 45 18.92 19.00 1.08 1.08 0.750 0.833 0.66 1.08 13.000 4.45 19.08 1.08 1 08 13 083 4.45

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PEAK FLOW (cms)= 0.380 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 21.796
TOTAL RAINFALL (mm)= 60.130
RUNOFF COEFFICIENT = 0.362

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

ADD HYD ( 0009)| AREA QPEAK TPEAK \_ . \_ - 3 (ha) (cms) (hrs) 12.75 (mm) ID1= 1 ( 0010): 14.50 0.380 21.80 12.50 17.43 + ID2= 2 ( 0002): 1.57 0.046 ID = 3 (0009): 16.07 0.416 12.75 21.37

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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. ADD HYD ( 0009) | 3 + 2 = 1(cms) (ha) (hrs) (mm) ID1= 3 ( 0009): 16.07 0.416 12.75 21 37 + ID2= 2 ( 0003): 7.36 0.202 12.67 20.91 ID = 1 (0009): 23.43 0.619 12.67 21.22 NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. ADD HYD ( 0009) | 1 + 2 = 3 AREA OPEAK TPEAK R.V. (ha) (cms) (hrs) (mm) ID1= 1 ( 0009): + ID2= 2 ( 0004): 23.43 0.619 12.67 21 22 0.163 12.58 20.06 ID = 3 (0009): 29.18 0.779 12.67 20.99 NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. -----\*\* SIMULATION:H. 5yr 24hr 15min SCS Type II \*\* Filename: C:\Users\noconnor\AppD READ STORM ata\Local\Temp\ 49753dce-993e-48a5-8960-fc674d25ac10\e01076bb Ptotal= 79.65 mm Comments: 5yr 24hr 15min SCS Type II TIME RAIN I' TIME RAIN TIME RAIN mm/hr hrs mm/hr hrs mm/hr hrs hrs mm/hr 12.50 6.25 1.43 11.47 1.43 5.89 19.00 1.43 19.25 19.50 0.50 0.88 6.75 1.43 13.00 5.89 1.43 0.88 7.00 1.43 13.25 0.75 4.30 1.43 0.88 0.88 1.75 1.75 1.75 1.00 7.25 7.50 13 50 13 75 4.30 19.75 1.43 1.43 3 35 35 35 20.00 14.00 0.96 0.88 8.00 1.75 14.25 2.39 20.50 0.96 2 07 2 07 2 23 2 23 2 55 2 55 2 87 0.88 8.25 14.50 2.39 20.75 0.96 2.25 2.50 1.04 1.04 8 50 8 75 14.75 15.00 2.39 21.00 0.96 21.25 0.96 1 04 9 00 15.25 2.39 21.50 0.96 2.75 9.25 15.50 2.39 0.96 22 25 22 50 22 75 23 00 1.04 9.75 16.00 2.39 0.96 1.04 10.00 2.87 16.25 1.43 0.96 3 66 3 66 4 94 1.04 1.27 4.00 10.25 10.50 16.50 16.75  $\frac{1.43}{1.43}$ 0.96 23 25 23 50 23 75 24 00 1 27 17 00 4.50 10.75 1.43 0.96 4.94 7.65 7.65 4.75 1.27 11 00 17.25 1.43 0.96  $\bar{1}.\bar{27}$ 17.50 17.75 1.43 0.96 1.27 1.27 1.27 11.50 11.75 12.00 1.43 1.43 5.25 0.96 23 58 97 49 18 00 5.50 5.75 18.25 1.43 1.27 | 12.25 11.47 18.50 1.43 CALTR | NASHYD ( 0001) | Area |ID= 1 DT= 5.0 min | Ia (ha)= 10.54 Curve Number (CN)= 77.4 (mm)= 7.15 # of Linear Res (N)= 3.00 U.H. Tp(hrs) = 0.70NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP. -- TRANSFORMED HYETOGRAPH ----TIME TIME RAIN TIME RAIN RAIN | TIME RATN mm/hr 1.27 1.27 1.43 1.43 12.250 18 33 0.083 0.00 6.167 97.49 1.43 18 42 18 50 18 58 12.333 12.417 12.500 11 48 11 47 11 47 0.167 0.00 6.250 1.43 0.250 0.00 6.333 6.417 1.43 1.43 0.88 0.88 6.500 1.43 12.583 11.47 18.67 1.43 1 43 12 667

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                                                 9.250
                                                                                                  15.333
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3.167
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                                                 9.333
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 3.333
                           1.04
                                                 9.417
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10 250
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16.333
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                            1.04
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                                             10.417
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                                                                        97 48 18 167
97 49 18 250
6.000
                                                                                                                              1.43
                                                                                                                                                   24.25
                                                                                                                                                                                0.96
6.083
                                                                                                                              1.43
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PEAK FLOW 0.399 (i) (cms)= TIME TO PEAK (hrs) = 12.917RUNOFF VOLUME (mm) = 35.838TOTAL RAINFALL (mm)= 79.650 RUNOFF COEFFICIENT = 0.450

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

CALTB NASHYD ( 0002) Area (ha)= 1.57 Curve Number (CN)= 71.0
Ia (mm)= 8.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs) = 0.35

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

TIME	RAIN	TR	ANSFORME RAIN	D HYETOGR I' TIME	APH RAIN	l TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.27	12 250	97.49	18.33	1.43
0.167	0.00	6.250	1.27	112 333	11.48	18.42	1.43
0.250	0.00	6.250 6.333	1.43	12.417	11.47	18.50	1.43
0.333	0.88	6.417	1.43	12 417 12 500 12 583	11.47	18.58	1.43
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43
0.500 0.583	0.88	6.583	1.43	12.667	11.47	18.75	1.43
0.363	0.88 0.88	6.667 6.750	1.43 1.43	12.750 12.833	11.47 5.89	18.83 18.92	1.43 1.43
0.750	0.88	6.833	1.43	12.917	5 89	19.00	1.43
0.833	0.88	6.917	1.43	13.000	5.89	19.08	1.43
0.917	0.88	7.000	1.43	112 002	5.89	19.17 19.25	1.43
1.000	0.88	7.083	1.43	13.167	5.89	19.25	1.43
1.083	0.88 0.88	7.107	1.43 1.43	13.250	5.89 4.30	19.33	1.43 1.43
1.167 1.250	0.88	7.333	1.75	13.417	4.30	19.50	1.43
1.333	0.88	7.167 7.250 7.333 7.417	1 75	13.167 13.250 13.333 13.417 13.500	4.30	19 42 19 50 19 58	1.43
1 417	0.88		1.75	T2.303	4.30 4.30	19.67	1.43
1.500	0.88	7.583	1.75	13.667	4.30	19.75	1.43
1.583 1.667	0 88 0 88	7.667 7.750	1.75	13.750	4.30	19.83 19.92	1.43 1.43
1.750	0.88	7.833	1.75 1.75	13.833 13.917	3 35	20.00	1.43
1.833	0.88	7.917	1 /5	14.000	3.35	20 08	1.43
1.917	0.88	8.000	1.75	14.083 14.167	3.35	20.17	1.43
2.000	0.88	8.083	1.75 1.75 1.75 1.75	14.167	3.35	20 17 20 25 20 33 20 42	1.43
2.083 2.167	0.88 0.88	8.167	1.75	14.250 14.333	3.35	20.33	0.96 0.96
2.250	0.88	8.250 8.333	2.07	14.417	2.39	20.50	0.96
2.333	1.04	8 417	2.07	14.500	2.39	20.58	0.96
2 /17	1.04	8 500	2 07	14.583	2.39	20.67	0.96
2.500	1.04	8.583	2.07	14.66/	2.39	20.75	0.96
2.583 2.667	$\frac{1.04}{1.04}$	8.667 8.750	2.07	14.750 14.833	2.39	20 83 20 92 21 00	0.96 0.96
2.750	1.04	8.833	2.23	14 917	2.39	21.00	0.96
2.833	1.04	8.917	2.23	15.000	2.39	21.08	0.96
2.917	1.04	9.000	2.07 2.07 2.23 2.23 2.23 2.23 2.23	15.083 15.167	4 33555555555999999999999999999999999999	21.08 21.17 21.25 21.33 21.42	0.96
3.000	1.04	9.083	2.23	15.167	2.39	21.25	0.96
3.083 3.167	$\frac{1.04}{1.04}$	9.167 9.250	2.23	15.250 15.333	2.39	21.33	0.96 0.96
3.250	1.04	9.333	2 . 23 2 . 55 2 . 55 2 . 55 2 . 55 2 . 55 2 . 87 2 . 87	15 417	2 39		0.96
3.250 3.333	1.04	0 417	2.55	115 500	2.39	21 58	0.96
3.41/	1.04	9.500	2.55	15.583	2.39	21.0/	0.96
3.500	1.04	9.583	2.55	115.00/	2.39	21.75	0.96
3.583 3.667	1 04 1 04	9.667 9.750	2.55	15.750 15.833	2.39	21.83 21.92	0.96 0.96
3.750	1.04	9.833	2.87	15.917	2.39	22.00	0.96
3.750 3.833	1.04	9.917	2.87	16.000	2.39	22.08	0.96
3.917	1.04	10.000	2.87	16.083	2.39	22.17	0.96
4.000 4.083	$\frac{1.04}{1.04}$	10.083 10.167	2 87 2 87	16.167	2.39	22.25	0.96 0.96
4.167	1.04	10.250	2.87	16.250 16.333	1.43	22 42	0.96
4.250 4.333	1.04	10.250 10.333	3.66 3.66		1.43	22.50	0.96
4.333	1.27 1.27 1.27 1.27 1.27 1.27 1.27	110.417	3.66	116.500	1.43	22.00 22.08 22.07 22.25 22.33 22.50 22.58 22.67 22.75 22.83 22.92 23.00 23.08 23.17 23.33	0.96
4.417	1.27	10 500 10 583	3.66	16.583 16.667	1.43	22.67	0.96
4.500 4.583	1 27	10.565	3.66 3.66	16.750	1.43 1.43	22./3	0.96 0.96
4.667	1.27	10.750	3.66		1.43	22.92	0.96
4.750 4.833	1.27	10.750 10.833	4.94	16.917	1.43	23.00	0.96
	1.27	10.917	4.94	17.000	1.43	23.08	0.96
4.917	1.27	11.000	4.94 4.94	17.083	1.43	23.17	0.96
5.000 5.083	1.27	11.083 11.167	4.94	17.107	1.43 1.43	23.23	0.96 0.96
5.167	1.27	11 250	4.94	17.333	1.43	1 3 4 1	0.96
5.250	1 //	11.333	7.65	16.833 16.917 17.000 17.083 17.167 17.250 17.333 17.417 17.500	1.43	23.50	0.96
5.333	1.2/	111.41/	7.65	17.500	1.43	23.58	0.96
5.417	1.2/	11.500	7.65		1.43	23.67	0.96
5.500 5.583	1.27 1.27	11.583 11.667	7.65 7.65		1.43 1.43	23.75 23.83	0.96 0.96
5.667	1.27	11.750	7.65	17.750 17.833 17.917	1.43	23.92	0.96
5.750	1.27	11.833	23.57	17.917	1.43	24.00	0.96
5.833	1.27	11.917	23.58	18.000	1.43	24.08	0.96
5.917	1.27	12.000	23.58	18.083	1.43	24.17	0.96 0.96
6.000 6.083	1.27 1.27	12.083 12.167	97.48 97.49	18.167 18.250	1.43 1.43	24.25	0.90
0.003	1.4	12.107	31.73	120.230	1.73		

Unit Hyd Qpeak (cms)= 0.171 PEAK FLOW (cms) = 0.079 (i) TIME TO PEAK (hrs)= 12.500 RUNOFF VOLUME (mm)= 29.263 TOTAL RAINFALL (mm)= 79.650 RUNOFF COEFFICIENT = 0.367

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

CALIB | (ACCOUNTS) | Area (ha)= 7.36 Curve Number (CN)= 75.9 | (ID= 1 DT= 5.0 min | Ia (mm)= 7.30 # of Linear Res.(N)= 3.00 | (ID= 1 DT= 5.0 min | Ia (mm)= 7.30 # of Linear Res.(N)= 3.00 | (ID= 1 DT= 5.0 min | ID= 1 DT= 5.0 mi

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

---- TRANSFORMED HYETOGRAPH ----RAIN TIME mm/hr hrs 97.49 18.33 11.48 18.42 11.47 18.50 TIME RAIN TIME RAIN | TIME RAIN mm/hr 1.27 1.27 1.43 1.43 12.250 0.083 0.00 6.167 18.42 18.50 18.58 18.67 0.167 6.250 12.333 12.417 0.00 0.250 0.00 1.43 0.88 0.88 6.417 6.500 12.500 11.47 0.333 1.43 12.583 11.47 6.583 1.43 18.83 0.583 0.88 6 667 1.43 12.750 11.47 0.667 0.88 6.750 1.43 1.43 1.43 12.833 18.92 0.88 6.833 6.917 5.89 5.89 0.750 12.917 13.000 19.00 19.08 1.43 13.083 0.917 0.88 7.000 5.89 19.17 1.43 0.88 7 083 1 43 13.167 1.43 | 13.167 1.43 | 13.250 1.43 | 13.333 1.75 | 13.417 1.75 | 13.500 1.75 | 13.667 1.167 0.88 7.250 4.30 19.42 19.50 1.43 1.250 0.88 7.333 4.30 1.43 1 333 1 417 0.88 7.417 7.500 4.30 19.58 19.67 1.43 1.43 0.88 7 583 19 75 1.500 4 30 1.43 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.583 0.88 7.667 13.750 19.83 0.88 7.750 13.833 7 833 7 917 13.917 3.35 20.00 20.08 1.750 0.88 1.43 1.833 0.88 14.000 14.083 3.35 0.88 0.88 8 000 1.917 3.35 3.35 20.17 1.43 1.43 2.000 8 083 14 167 20.25 0.88 8.167 20.33 20.42 0.88 8.250 14.333 2.39 0.96 2 07 2 07 2 07 2 07 2 07 14 417 14 500 14 583 2 39 2 39 2 39 2 39 20.50 20.58 20.67 2.250 0.88 8.333 0.96 2.333  $\frac{1.04}{1.04}$ 8.417 8.500 0.96 0.96 2 417 2 500 1 04 8 583 14.667 2.39 20.75 0.96 2.583 1.04 2.07 14.750 20.83 8.667 0.96 21.00 21.08 21.17 21.25 2.750 1 04 8 833 2.23 14.917 2.39 0.96 2 23 2 23 2 23 2 23 2 23 2.833 1.04 8.917 15.000 2.39 0.96 1.04 1.04 9.000 15 083 15 167 2.39 2.917 0.96 3.000 21.33 21.42 21.50 21.58 21.67 21.75 21.83 1 04 2 39 3.083 9.167 15.250 0.96 9.250 15.333 3.167 1.04 15.500 2.39 3.333 1.04 9.417 0.96 1.04 1.04 1.04 9.500 15 583 15 667 2.39 3.417 0.96 3.500 9.583 2.39 0.96 3.583 9 667 15 750 0.96 21 92 22 00 22 08 22 17 22 25 3.667 9.750 15.833 1 04 9.833 15 917 2 87 2 87 2 87 2 87 1.04 9.917 16.000 0.96 1 04 10.000 3.917 16.083 2.39 0.96 1 04 4.000 10.083 16 167 2.39 0.96 2 .87 2 .87 22.33 4.083 1.04 16.250 2.39 0.96 10.167 22.42 22.50 4.167 1.04 10.250 16.333 0.96 4.333 1.27 10.417 3 66 16.500 1.43 22 58 22 67 22 75 22 83 0.96 10.500 10.583 10.667 4.417 1.27 3.66 16.583 1.43 0.96 1.27 1.27 3.66 3.66 3.66 16.667 16.750  $\frac{1.43}{1.43}$ 4.500 0.96 4.583 0.96 1 27 10.750 1 43 22 92 4.667 16.833 0.96 22 92 23 00 23 08 23 17 23 25 23 33 23 42 23 50 23 58 1.27 10.833 4 94 16.917 1.43 1.27 1.27 1.27 1.27 1.27 1.27 4 94 4 94 4 94 4 94 4 94 17.000 4.917 11.000 17.083 1.43 0.96 1 43 1 43 1 43 11 083 17.167 5.000 0.96 5.083 11.167 11.250 17.250 17.333 0.96 0.96 5 167 11.333 7.65 17.417 1.43 0.96

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                                                                         24 00
24 08
5.750
             1.27
                      11.833
                                              17.917
                                                               1.43
                                                                                        0.96
            1.27 | 11.833
1.27 | 11.917
1.27 | 12.000
1.27 | 12.083
                                              18.000
                                                               1.43
                                                                                        0.96
                                    23 58 18 083
97 48 18 167
                                                                         24.17
24.25
                                                                                        0.96
6.000
                                                               1.43
                                                                                        0.96
6.083
          1 27 | 12 167
                                   97 49 18 250
                                                               1.43
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Unit Hyd Qpeak (cms)= 0.562

PEAK FLOW (cms)= 0.338 (i TIME TO PEAK (hrs)= 12.667 RUNOFF VOLUME (mm)= 34.211 TOTAL RAINFALL (mm)= 79.650 RUNOFF COEFFICIENT = 0.430

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

		TD	NEFORME	D HYETOGR	A DI I		
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.27	12.250	97.49	18 33	1.43
0.167	0.00	6.250	1.27	12.333	11 48	18.42	1.43
0.250	0.00	6.333	1.43	12.417	11 47	18.50	1.43
0.333	0.88	6.417	1.43	12.500	11.47	18.58	1.43
0.417	0.88	6.500	1.43	12.583	11 47	18.67	1.43
0.500	0.88	6.583	1.43	12.667	11.47	18.75	1.43
0.583	0.88	6.667	1.43	12.750	11.47	18.83	1.43
0.667	0.88	6.750	1.43	12.833	5.89	18.92	1.43
0.750	0.88	6.833	1.43	12.917	5.89	19.00	1.43
0.833	0.88	6.917	1.43	13.000	5.89	19.08	1.43
0.917	0.88	7.000	1.43	13.083	5.89	19.17	1.43
1.000	0.88	7.083	1.43	13.167	5 89	19.25	1.43
1.083	0.88	7.167 7.250	1.43 1.43	13.250 13.333	5.89 4.30	19.33	1.43 1.43
1.167 1.250	0.88 0.88	7.230	1.75	13.417	4.30	19.42 19.50	1.43
1.333	0.88	7.417	1.75	13.500	4.30	19.58	1.43
1.417	0.88	7.500	1.75	13.583	4.30	19.67	1 43
1.500	0.88	7.583	1.75	13.667	4.30	19.75	1.43
1.583	0.88	7.667	1.75	13.750	4.30	19.83	1.43
1.667	0.88	7.750	1.75	13.833	3.35	19.92	1.43
1.750	0.88	7.833	1.75	13.917	3.35	20.00	1.43
1.833	0.88	7.917	1.75	14.000	3.35	20.08	1.43
1.917	0.88	8.000	1.75	14.083	3.35	20.17	1.43
2.000	0.88	8.083	1.75	14.167	3.35	20.25	1.43
2.083	0.88	8.167	1.75	14.250	3.35	20.33	0.96
2.167	0.88 0.88	8.250 8.333	1.75	14.333 14.417	2.39	20.42 20.50	0.96 0.96
2.250 2.333	1.04	8.417	2.07 2.07	14.500	2.39	20.58	0.96
2.417	1.04	8.500	2.07	14.583	2 39	20.567	0.96
2.500	1 04	8.583	2.07	14.667	2.39	20.75	0.96
2.583	1.04	8.667	2.07	14.750	2.39	20.83	0.96
2.667	1.04	8.750	2.07	14.833	2.39	20.92	0.96
2.750	1.04	8 833	2.23	14.917	2.39	21.00	0.96
2.833	1.04	8.917	2.23	15.000	2.39	21.08	0.96
2.917	1.04	9.000	2.23	15.083	2.39	21.17	0.96
3.000	1.04	9.083	2.23	15.167	2.39	21.25	0.96
3.083	1.04	9.167	2.23	15.250	2.39	21.33	0.96
3.167	1.04	9.250	2.23 2.55	15.333 115.417	2.39 2.39	21.42 21.50	0.96 0.96
3.250 3.333	$\frac{1.04}{1.04}$	9.333	2.55	15.500	2.39	21.50	0.96
3.417	1.04	9.500	2.55	15.583	2.39	21.67	0.96
3.500	1.04	9.583	2.55	15.667	2.39	21.75	0.96
3.583	1 04	9.667	2.55	15.750	2 39	21.83	0.96
3.667	1.04	9.750	2.55	15.833	2.39	21.92	0.96
3.750	1 04	9.833	2.87	15.917	2.39	22.00	0.96
3.833	1.04	9.917	2.87	16.000	2.39	22.08	0.96
3.917	1.04	10.000	2.87	16.083	2.39	22.17	0.96
4.000	1.04	10.083	2.87	16.167	2.39	22.25	0.96
4.083	1.04	10.167	2.87	16.250	2.39	22.33	0.96
4.167	1.04	10.250	2.87	16.333	1.43	22.42	0.96
4.250	1.04	10.333	3.66	16.417	1.43	22.50	0.96

```
3.66 | 16.500

3.66 | 16.583

3.66 | 16.750

3.66 | 16.750

3.66 | 16.833

4.94 | 17.000

4.94 | 17.083

4.94 | 17.167

4.94 | 17.333

7.65 | 17.417

7.65 | 17.583

7.65 | 17.583

7.65 | 17.583

7.65 | 17.833

23.57 | 17.917

23.58 | 18.000

23.58 | 18.008

23.58 | 18.000

23.58 | 18.000

23.58 | 18.000

23.58 | 18.000

24.94 | 18.250
                                                                                  1.27 | 10.417

1.27 | 10.500

1.27 | 10.500

1.27 | 10.667

1.27 | 10.667

1.27 | 10.750

1.27 | 10.917

1.27 | 11.083

1.27 | 11.167

1.27 | 11.1250

1.27 | 11.417

1.27 | 11.500

1.27 | 11.500

1.27 | 11.500

1.27 | 11.500

1.27 | 11.500

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1.27 | 11.500

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1.27 | 11.500

1.27 | 11.500

1.27 | 11.500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0.96
0.96
0.96
0.96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22.58
22.75
22.75
22.83
22.92
23.00
23.08
23.17
23.25
23.50
23.58
23.67
23.75
23.83
23.42
24.00
24.08
24.17
4.417
4.500
4.583
                                                                                                                                                                                                                                                                                                                                                                                                                0.96
0.96
0.96
0.96
0.96
0.96
  4.667
    4.750
    4 917
  5.000
5.083
5.167
                                                                           1.27 | 11.250

1.27 | 11.333

1.27 | 11.417

1.27 | 11.500

1.27 | 11.667

1.27 | 11.675

1.27 | 11.833

1.27 | 11.917

1.27 | 12.008

1.27 | 12.083

1.27 | 12.167
  5.250
5.333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0.96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0.96
0.96
0.96
0.96
0.96
0.96
  5 417
5 500
5 583
5 667
5 750
5.833
5.917
6.000
6.083
```

PEAK FLOW (cms)= 0.273 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 32.906
TOTAL RAINFALL (mm)= 79.650
RUNOFF COEFFICIENT = 0.413

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

\_\_\_\_\_\_

		TP/	NSEODME	D HYETOGR	лрн		
TIME	RAIN	I TIME	RAIN	l' TIME	RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.27	12.250	97.49	18 33	1.43
0.167	0.00	6.250	1.27	12.333	11.48	18.42	1.43
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43
0.333	0.88	6.417	1.43	12.500	11.47	18.58	1.43
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43
0.500 0.583	0.88 0.88	6.583	$\frac{1.43}{1.43}$	12.667 12.750	11.47 11.47	18.75 18.83	$\frac{1.43}{1.43}$
0.667	0.88	6.750	1.43	12.833	5.89	18.92	1.43
0.750	0.88	6.833	1.43	12.917	5.89	19.00	1.43
0.833	0.88	6.917	1.43	13.000	5.89	19.08	1.43
0.917	0.88	7.000	1.43	13.083	5.89	19.17	1.43
1.000	0.88	7.083	1.43	13.167	5.89	19.25	1.43
1.083	0.88	7.167	1.43	13.250	5.89	19.33	1.43
1.167	0.88	7.250	1.43	13.333	4.30	19.42	1.43
1.250	0.88 0.88	7.333	1.75	13.417	4.30 4.30	19.50 19.58	1.43
1.333 1.417	0.88	7.417 7.500	1.75 1.75	13.500 13.583	4.30	19.58	$\frac{1.43}{1.43}$
1.500	0.88	7.583	1.75	13.667	4.30	19.75	1.43
1.583	0.88	7.667	1.75	13.750	4.30	19.83	1.43
1.667	0.88	7.750	1.75	13.833	3.35	19.92	1.43
1.750	0.88	7.833	1.75	13.917	3.35	20.00	1.43
1.833	0.88	7.917	1.75	14.000	3.35	20.08	1.43
1.917	0.88	8.000	1.75	14.083	3.35	20.17	1.43
2.000	0.88	8.083	1.75	14.167	3.35	20.25	1.43
2.083 2.167	0.88 0.88	8.167 8.250	1.75 1.75	14.250 14.333	3.35	20.33 20.42	0.96 0.96
2.250	0.88	8.333	2.07	14.333	2.39	20.42	0.96
2 333	1.04	8.417	2.07	14.500	2.39	20.58	0.96
2.417	1.04	8.500	2.07	14.583	2.39	20.67	0.96
2.500	1.04	8.583	2.07 2.07	14.667	2.39	20.75	0.96
2.583	1.04	8.667	2.07	14.750	2.39	20.83	0.96
2.667	1.04	8.750	2.07	14.833	2.39	20.92	0.96
2.750	1.04	8.833	2.23	14.917	2.39	21.00	0.96
2.833 2.917	$\frac{1.04}{1.04}$	8.917 9.000	2.23	15.000 15.083	2.39 2.39	21.08 21.17	0.96 0.96
3.000	1.04	9.083	2.23	15.167	2.39	21.25	0.96
3.083	1.04	9.167	2.23	15.250	2.39	21.33	0.96
3.167	1.04	9.250	2.23	15.333	2.39	21.42	0.96
				•			

3.333 1. 3.417 1. 3.500 1. 3.583 1. 3.667 1. 3.750 1. 3.833 1. 4.000 1. 4.083 1. 4.167 1. 4.250 1. 4.333 1. 4.417 1. 4.500 1. 4.583 1. 4.417 1. 4.500 1. 4.583 1. 4.667 1. 5.083 1. 5.167 1. 5.083 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.167 1. 5.583 1. 5.175 1. 5.500 1. 5.583 1. 5.175 1. 5.500 1. 5.583 1. 5.500 1. 5.583 1. 5.500 1. 5.583 1. 5.667 1. 5.583 1. 5.917 1. 6.000 1.	04   9.33 04   9.41 04   9.50 04   9.56 04   9.66 04   9.65 04   0.08 04   0.08 04   10.08 04   10.08 04   10.16 04   10.53 27   10.50 27   10.50 27   10.50 27   10.52 27   10.52 27   10.52 27   10.52 27   10.53 27   10.50 27   10.53 27   10.50 27   11.00 27   11.00 27   11.50 27   12.00 27   12.00 27   12.00 27   12.00 27   12.00 27   12.00 27   12.00 27   12.00 27   12.00	2.555 2.5555 2.55555 2.55555 2.887 2.887 2.887 2.887 2.887 3.666 3.666 3.666 4.994 4.94 4.94 4.94 4.94 4.94 4.94	15.417 15.500 15.583 15.667 15.750 15.833 15.917 16.0083 16.167 16.083 16.167 16.250 16.333 16.417 16.500 16.583 16.417 17.6500 17.000 17.000 17.000 17.000 17.000 17.000 17.167 17.500 17.417 17.500 17.417 17.500 17.833 17.417 17.500 17.833 17.917 18.000 18.083 18.083 18.083 18.167 18.250	2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.39	21.50 21.58 21.67 21.75 21.83 21.20 22.00 22.00 22.17 22.25 22.45 22.45 22.45 22.45 22.58 22.45 23.00 23.58 23.17 23.23 23.42 23.50 23.58 23.75 23.58 23.75 23.75 23.75 23.75 23.75 24.00 24.00 24.17 24.25	0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96
Unit Hyd Qpeak (cms)=		<i>(</i> 1)				
PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	79.650 0.445		F ANY.			
ADD HYD ( 0009)   1 + 2 = 3   ID1= 1 ( 0010): + ID2= 2 ( 0002):	AREA (ha) 14.50 (	QPEAK (cms) 0.630 1	TPEAK (hrs) 2.75	R.V. (mm) 35.44		
+ ID2= 2 ( 0002): ====================================			======	29.26 ====== 34.84		
NOTE: PEAK FLOWS DO N						
$\begin{vmatrix} ADD & HYD & ( & 0009) \\ 3 & + & 2 & = & 1 \end{vmatrix}$	AREA	QPEAK	TPEAK	R.V. (mm)		
ID1= 3 ( 0009): + ID2= 2 ( 0003):	16.07 ( 7.36 (	QPEAK (cms) ).695 1 ).338 1	(nrs) 2.67 2.67	34.84 34.21		
ID = 1 ( 0009):		L.033 1				
NOTE: PEAK FLOWS DO N	OT INCLUDE	BASEFLOW	S IF ANY	′. 		
ADD HYD ( 0009)    1 + 2 = 3						
	AREA (ha) 23.43	QPEAK (cms) L.033 1 ).273 1	TPEAK (hrs) 2.67	R.V. (mm) 34.64		
ID1= 1 ( 0009): + ID2= 2 ( 0004):			======	=====		
<pre>ID = 3 ( 0009): NOTE: PEAK FLOWS DO N</pre>				34.30		
**********						

```
READ STORM
                          Filename: C:\Users\noconnor\AppD
                                     ata\Local\Temp\
                                      49753dce-993e-48a5-8960-fc674d25ac10\ac23d09e
 Ptotal=212.00 mm
                          Comments: Hazel
                                     TIME RAIN | '
hrs mm/hr | '
3.00 13.00 | 6
                  TTME
                           RATN
                                    TTME
                                                       TIME
                                                                RAIN | TIME
                                                     hrs mm/hr 6.00 23.00 7.00 13.00 1
                          mm/hr
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                                    3.00
                                                                        9.00 53.00
                  0.00
                            4.00
                                    4.00
                                            17.00
                  1.00
                           6.00
                                    5.00
                                            13.00 8.00
                                                             13.00 11.00
 CALIB
NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                   ---- TRANSFORMED HYETOGRAPH ----
                                                     TIME
                  TIME
                           RAIN
                                    TIME
                                             RAIN
                                                                RAIN TIME
                 hrs
0.083
                          mm/hr
                                   hrs
3.083
                                            mm/hr
13.00
                                                         hrs
                                                                mm/hr
                                                                        hrs
9.08
                           6 00
                                                     6.083
                                                              23.00 I
                                            13.00
                                                     6.167
                                                                         9.17
                  0.167
                            6.00
                                   3.167
                                                              23.00
                                                                                53.00
                  0.250
                                    3.250
                                            13.00
                                                     6.250
                            6.00
                                                               23.00
                            6.00
                                   3.333
3.417
                                                     6.333
                  0.417
                            6.00
                                            13.00
                                                     6.417
                                                              23.00
                                                                        9.42
9.50
                                                                                 53.00
                                            13.00
13.00
13.00
                                                     6 500
6 583
6 667
                  0.500
                            6.00
                                   3.500
                                                              23.00
                                                                                 53.00
                 0.583
0.667
                                   3 583
3 667
                                                              23 00
23 00
                                                                        9 58
9 67
                           6.00
                            6 00
                                    3 750
                                             13 00
                                                     6.750
                  0.750
                                                              23.00
                            6.00
                                    3.833
                                            13.00
                                                     6.833
                                            13 00
13 00
17 00
17 00
17 00
                            6.00
                                    3.917
                                                     6.917
                                   4 000
4 083
4 167
4 250
4 333
                                                     7.000
                                                              23.00
                                                                       10.00
10.08
10.17
10.25
                  1.000
                            6.00
                                                     7.083
7.167
7.250
                  1.083
                            4.00
                                                              13.00
13.00
                  1.167
                            4.00
                            4.00
                                                              13.00
                                                     7.333
                                   4.417
                            4.00
                                            17.00
                                                     7.417
                                                              13.00
                                                                       10.42
                                   4.500
4.583
4.667
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                                            17 00
17 00
17 00
17 00
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7 583
7 667
7 750
                                                                       10 50
10 58
10 67
10 75
10 83
                 1.500
1.583
                            4.00
                                                              13.00
                                                                                 38.00
                            4.00
                                                              13.00
13.00
                           4 00
                  1 667
                                            17.00
17.00
                  1.750
                            4 00
                                                              13 00
                  1.833
                                   4 833
                                                     7 833
                                                              13.00
                            4.00
                            4.00
                  2.000
                            4.00
                                   5.000
                                            17.00
                                                     8.000
                                                              13.00
                                                                       11.00
                                            13 00
13 00
13 00
                                                     8.083
8.167
8.250
                  2.083
                            6.00
                                    5.083
                                                              13.00
                                                                       11.08
                                                                                 13.00
                                   5.167
5.250
5.333
                                                              13.00
13.00
                                                                       11.17
11.25
                           6.00
                            6 00
                                             13 00
                                                     8 333
                                                              13 00
                  2.333
                                                                       11.33
                                            13 00
13 00
13 00
13 00
13 00
13 00
                            6.00
                                    5.417
                                                     8 417
                                                              13.00
                                                                       11.42
                                   5 500
5 583
5 667
                                                              13 00
13 00
13 00
13 00
13 00
                                                                       11.50
11.58
11.67
11.75
11.83
                            6.00
                                                     8.500
8.583
                  2.583
                            6.00
                           6.00
                                                     8 667
8 750
8 833
                                                                                13 00
13 00
                  2.667
                           6.00 | 5.750
6.00 | 5.833
6.00 | 5.917
6.00 | 6.000
                  2.750
                  2.833
                                                                                 13.00
                  2.917
                                            13.00
                                                     8.917
                                                              13.00
                                                                       11.92
                                            13 00 9 000
     Unit Hyd Qpeak (cms)= 0.575
     PEAK FLOW
                       (cms) = 1.094 (i)
     TIME TO PEAK
                       (hrs)= 10.667
     RUNOFF VOLUME
                        (mm)= 150.397
     TOTAL RAINFALL
                        (mm) = 212.000
     RUNOFF COEFFICIENT = 0.709
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 CALIB
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

				HYETOGR		-	
TIME	RAIN	TIME	RAIN	LIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	nrs	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 7.333	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 13.00	8.083	13.00 13.00	11.08	13.00
2.167	6.00 6.00	5.167 5.250	13.00	8.167 8.250	13.00	11.17 11.25	13.00 13.00
2.250 2.333	6.00	5.333	13.00	8.333	13.00	11.23	13.00
2.333	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
3.000	0.00	0.000	13.00	3.000	13.00	12.00	13.00

Unit Hyd Qpeak (cms)= 0.171

PEAK FLOW (cms)= 0.178 (i)
TIME TO PEAK (hrs)= 10.083
RUNOFF VOLUME (mm)= 135.200
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.638

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

			TRA	NSFORME	D HYETOGR.	ΔPH		
Т	IME	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
	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

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4.750
4.833
                          4.00
                                          17.00
                                                   7.750
                                                            13.00
                                                                             38.00
                 1.833
                                          17.00
17.00
                          4 00
                                                   7.833
                                                           13.00
                                                                    10.83
                                                                             38.00
                 1.917
                          4.00
                                  4.917
                                                   7.917
                                                           13.00
                                                                    10.92
                                                                             38.00
                                 5 000
                                          17.00
13.00
                                                   8.000
                                                           13.00
                                                                    11.00
                 2.000
                          4.00
                                                                             38.00
                 2.083
                          6.00
                                  5.083
                                                   8.083
                                                            13 00
                                                                    11.08
                                  5.167
5.250
                                                                    11.17
11.25
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                                                                    11.92
                 2.917
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                 3.000
                                                           13.00
                                                                    12.00
    Unit Hyd Qpeak (cms)= 0.562
                     (cms)= 0.819 (i)
(hrs)= 10.250
(mm)= 146.837
(mm)= 212.000
     PEAK FLOW
    TIME TO PEAK
RUNOFF VOLUME
    TOTAL RAINFALL
     RUNOFF COEFFICIENT = 0.693
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
 CALTR
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----TIME TIME RAIN TIME RAIN ' RAIN TIME RAIN mm/hr 13.00 13.00 13.00 mm/hr hrs hrs mm/hr mm/hr 9.08 9.17 9.25 6.00 3.083 6.083 23.00 | 23.00 | 53.00 0.083 53.00 0.167 0.250 6.00 3.167 6.00 3 250 6.250 23.00 53.00 0.333 6.00 3.333 13.00 6.333 9.33 0.417 6.00 3.417 13.00 6.417 23.00 9.42 13 00 13 00 13 00 6.500 6.583 6.667 6.750 23 00 23 00 23 00 9.50 9.58 9.67 9.75 0 500 0 583 3.500 3.583 6.00 53.00 6.00 53.00 53.00 6 00 0.667 3.667 13.00 0.750 6 00 3 750 23.00 53.00 0.833 3 833 13.00 6 833 23.00 9.83 6.00 6.00 4 000 4 083 4 167 4 250 4 333 1.000 6.00 13.00 7.000 23.00 10.00 17 00 17 00 17 00 7 083 7 167 7 250 7 333 1.083 4.00 13.00 10.08 38.00 10 17 10 25 1.167 1.250 4.00 13.00 13.00 4.00 4 00 17 00 10 33 1.333 13.00 17.00 17.00 17.00 17.00 17.00 17.00 4.417 4.500 7 417 13.00 10.42 1.417 4.00 10.50 10.58 10.67 10.75 10.83 4.00 7.500 4 583 4 667 4 750 4 833 7.583 13.00 1.583 4.00 38.00 7 667 7 750 13.00 13.00 1.667 4.00 38.00 1.750 38.00 4.00 1.833 4 00 7 833 13.00 4.917 5.000 17.00 17.00 10 92 11 00 4.00 7.917 13.00 2.000 4 00 8 000 13.00 2.083 6.00 5.083 13.00 8.083 13.00 11.08 13.00 13.00 13.00 13.00 11 17 11 25 13.00 13.00 2.167 6.00 5.167 8.167 2.250 6.00 5.250 8.250 5.333 5.417 5.500 5.583 13.00 13.00 6.00 8.333 13.00 11.33 2.333 13.00 6.00 8.417 13.00 11.42 8 500 8 583 6.00 2.583 6.00 13.00 13.00 11 58 11 67 13.00 13.00 13.00 2.667 6.00 5.667 8.667 13.00 13.00 6.00 | 5.750 6.00 | 5.833 6.00 | 5.917 8.750 8.833 8.917 13 00 13 00 11 75 11 83 13.00 13.00 2.750 2.833 13 00 2.917 13.00 11.92 13.00 6.00 | 6.000 13.00 | 9.000 12.00 3.000 13.00

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.644 (i)
TIME TO PEAK (hrs)= 10.250
RUNOFF VOLUME (mm)= 143.418
TOTAL RAINFALL (mm)= 212.000

RUNOFF COEFFICIENT = 0.676

PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB | NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.57

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

TIME hrs mm/hr 0.083 6.00 0.167 6.00 0.250 6.00 0.333 6.00 0.667 6.00 0.833 6.00 0.917 6.00 1.000 1.003 4.00 1.250 4.00 1.250 4.00 1.583 4.00 1.417 4.00 1.583 4.00 1.583 4.00 1.583 4.00 1.583 4.00 1.583 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 4.00 1.250 6.00 1	TR/ TIME hrs 3.083 3.167 3.250 3.3417 3.583 3.667 3.833 3.667 3.833 4.000 4.083 4.167 4.253 4.167 4.250 4.583 4.417 5.003 5.167 5.003 5.167 5.003 5.167 5.16	ANSFORMEI RAIN mm/hr 13:00 13:	D HYETOGR TIME hrs 6.083 6.167 6.250 6.337 6.417 6.583 6.667 6.750 6.833 6.917 7.000 7.083 7.167 7.253 7.417 7.500 7.583 7.417 8.083 8.157 8.083 8.157 8.250 8.333 8.157 8.250 8.333 8.333 8.333	APH RAIN mm/hr 23.00 23.00 23.00 23.00 23.00 23.00 23.00 23.00 23.00 23.00 23.00 13.00	9.08 9.17 9.25 9.39 9.42 9.50 9.58 9.67 9.83 9.67 9.83 10.00 10.05 10.58 10.58 10.67 10.58 10.67 10.58 11.58 11.58 11.58 11.18	RAIN mm/hr 53.00 50 50 50 50 50 50 50 50 50 50 50 50 5
						13.00 13.00 13.00

Unit Hyd Qpeak (cms)= 0.972

PEAK FLOW (cms)= 1.580 (i)
TIME TO PEAK (hrs)= 10.417
RUNOFF VOLUME (mm)= 149.499
TOTAL RAINFALL (mm)= 212.000
RUNOFF COEFFICIENT = 0.705

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

ADD HYD ( 0009)| 1 + 2 = 3 AREA OPFAK TPFAK R.V. (ha) (cms) (hrs) 10.42 (mm) ID1= 1 ( 0010): + ID2= 2 ( 0002): 149.50 1.57 0.178 10.08 135.20 ID = 3 (0009): 16.07 1.744 10.33 148.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD ( 0009) | AREA QPEAK TPEAK R.V. | TID1= 3 ( 0009): 16.07 1.744 10.33 148.10 | 10.25 146.84

```
ID = 1 (0009): 23.43 2.563 10.33 147.70
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
                                                             R.V.
(mm)
147.70
  1 + 2 = 3
                                  AREA
                                           QPEAK
                                                      TPEAK
_____
                                         (cms)
2.563
                                (ha)
23.43
                                                     (hrs)
10.33
       ID1= 1 ( 0009):
      + ID2= 2 ( 0004):
                                 5.75
                                          0.644
                                                     10.25 143.42
        ID = 3 (0009):
                                29.18 3.201
                                                     10.33 146.86
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
*********
** SIMULATION:I. 10yr 24hr 15min SCS Type II **
**********
   READ STORM
                           Filename: C:\Users\noconnor\AppD
                                       ata\Local\Temp\
49753dce-993e-48a5-8960-fc674d25ac10\714a6f50
 Ptotal= 92.66 mm
                            Comments: 10yr 24hr 15min SCS Type II
                             RAIN
                                       TIME
                                                RAIN
                            mm/hr
                                      hrs
6.25
                                               mm/hr
1.67
                                                        hrs 12.50
                                                                                      mm/hr
1.67
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                                                1.67
                   0.25
                             1.02
                                      6.50
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                                                                   6.86
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                                      7.25
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1.02
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8.00
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                                              13.34 18.50
                                                                   1.67
( 0001)
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                     ---- TRANSFORMED HYETOGRAPH ----
                                                       TIME
                                                                   RAIN TIME
                   TIME
                             RATN
                                     TIME
                                                RAIN
                                                                                       RATN
                                       hrs
                                               mm/hr
                            mm/hr
                                                            hrs
                                                                                      mm/hr
1.67
                     hrs
                   0.083
                             0.00
                                      6.167
                                                1.48
                                                        12.250 113.42
                                                                           18 33
                             0.00
                                      6.250
                                                 1.48
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                                                                  13.36
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PEAK (hrs	)= 12	2.833	,				

Unit Hyd Q

PEAK FLOW TIME TO P RUNOFF VOLUME (mm)= 45.792
TOTAL RAINFALL (mm)= 92.660
RUNOFF COEFFICIENT = 0.494

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

Area (ha)= 1.57 Curve Number (CN)= 71.0 Ia (mm)= 8.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.35 NASHYD ( 0002) ID= 1 DT= 5.0 min |

					RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113.42	18 33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
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0.00
                                          \substack{1.67\\1.67}
                                                     12.500
12.583
0.333
               1.02
                           6.417
                                                                     13.34
                                                                                  18.58
                                                                                                  1.67
0.417
               1.02
                           6.500
                                          1.67
1.67
                                                                    13.34
13.34
                                                                                  18.67
18.75
                                                                                                  1.67
               1 02
0.500
                           6.583
                                                      12.667
                                                                                                  1.67
               1 02
                           6.667
                                           1.67
                                                      12.750
                                                                    13.34
                                                                                  18.83
18.92
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0.583
0.667
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                                                       3.417
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                                                                                  22.58
4.333
               1 48 10 417
1 48 10 500
                                                     16 500
                                                                      1.67
                                                                                                  1.11
                                                                                  22.67
22.75
                                                      16.583
                                                                      1.67
                                                                                                  \bar{1}.\bar{1}\bar{1}
4.417
4.500
               1.48
                                                      16.667
                        10.667
10.750
10.833
10.917
                                                                                  22 83
22 92
23 00
23 08
                                      4.26 16.750

4.26 16.833

5.74 16.917

5.74 17.000

5.74 17.167

5.74 17.167

5.74 17.333

8.90 17.417

8.90 17.583

8.90 17.683

8.90 17.750

8.90 17.833

27.43 17.917

27.43 18.000

27.43 18.000

27.43 18.000

27.43 18.000

27.43 18.000

27.43 18.000
4.583
               1.48
                                                      16.750
                                                                      1.67
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               1 48
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4.667
                                                                      1.67
                                                                                                  1.11
                                                                      1.67
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4.750
                                                                                                 \frac{1.11}{1.11}
4.833
               1 48
                         11 000
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4.917
                                                                      1.67
                                                                                                  \bar{1}, \bar{1}\bar{1}
                                                                                  23 25
23 33
23 42
23 50
23 58
23 67
5 000
               1.48
                         11.083
                                                                      1.67
                                                                                                  1.11
               1.48
                          11.167
                                                                                                  1.11
                        11 .250
11 .333
11 .417
11 .500
                                                                                                  1.11
1.11
5.167
               1.48
               1 48
1 48
1 48
                                                                      1.67
5.250
5.333
                                                                      1.67
1.67
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5.417
                                                                                  23.75
23.83
5.500
               1.48
                         11.583
                                                                       1.67
5.583
               1 48
                         11.667
                                                                                                  1.11
                        11.750
11.833
11.917
                                                                                  23 92
24 00
24 08
5.667
               1.48
                                                                      1.67
                                                                                                  1.11
               1 48
1 48
                                                                     1 67
1 67
5.750
                                                                                                  1.11
5.833
                                                                                                  1.11
              1.48 | 12.000
1.48 | 12.083
1.48 | 12.167
5.917
                                                                                  24.17
                                                                      1.67
                                                                                                 1.11
6.000
                                                                      1.67
                                                                                  24.25
6.083
```

PEAK FLOW (cms)= 0.103 (i)
TIME TO PEAK (hrs)= 12.500
RUNOFF VOLUME (mm)= 38.033
TOTAL RAINFALL (mm)= 92.660
RUNOFF COEFFICIENT = 0.410

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

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		TR	ANSFORME	D HYETOGE	RAPH	_	
TIME	RAIN	LIME	KATIN	LIME	KATI	TIME	RAIN
hrs 0.083	mm/hr	hrs	mm/hr	nrs	mm/hr	hrs	mm/hr
0.167	0.00	6.167 6.250	$\frac{1.48}{1.48}$	12.250 12.333	113 42 13 36	18.33 18.42	1.67 1.67
0.250	0.00	6.333	1.67	112.417	13 34	18.50	1.67
0.333	1.02	0.41/	1.67	12.500	13.34	18.58	1.67
0.417 0.500	$\frac{1.02}{1.02}$	6.500 6.583	1.67	12.583	13.34 13.34	18.67 18.75	1.67
0.583	1.02	6.667	$\substack{1.67\\1.67}$	12.667 12.750	13 34	18.83	1.67 1.67
0.667	1.02	6.750	1.67	12.833 12.917	6.86	18.92	1.67
0.750 0.833	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	$\frac{1.02}{1.02}$	6.917 7.000	$\frac{1.67}{1.67}$	13.000	6.86 6.86	19.08 19.17	1.67 1.67
1.000	1.02	1 / 083	1.67	13.167	6.86	19.25	1.67
1.083	1.02	7.167	1.67	13 .083 13 .167 13 .250 13 .333	6.86	19.33 19.42	1.67
1.167 1.250	$\frac{1.02}{1.02}$	7 167 7 250 7 333 7 417	1.67 2.04	13.333	5.00	19.42	$\frac{1.67}{1.67}$
1.250 1.333	1.02	7.417	2.04 2.04 2.04	112 500	5 00 5 00	19.58	1.67
1.417	1.02		2.04 2.04	13.583	5.00 5.00	1967	1.67
1.500 1.583	1.02 1.02	7.583	2.04		5.00	19.75 19.83 19.92 20.00	1.67 1.67
1.667	1.02	7.750	2.04	13.750 13.833 13.917	3.89	19.92	1.67
1.750	1.02	7.833	2.04 2.04	13.917	3.89	20.00	1.67
1.833 1.917	$\frac{1.02}{1.02}$	7.917 8.000	2.04	14.000 14.083	3.89 3.89	20.08	1.67 1.67
2.000	1.02	8.083	2.04	14.167	3.89	20.25	1.67
2.083	1.02	8.167	2.04	14.167 14.250 14.333	3.89	20.33	1.11
2.167 2.250	$\substack{1.02\\1.02}$	8.250 8.333	2.04 2.41	14.333	2.78 2.78	20.42	$\frac{1.11}{1.11}$
2.333	1.20	8.417	2.41	14.500	2.78	20.17 20.25 20.33 20.42 20.50 20.58	1.11
2.417	1.20	8.500	2.41	14.583	2.78	20.07	1.11
2.500 2.583	1.20 1.20 1.20 1.20 1.20	8.583 8.667	2.41 2.41	14.667 14.750	2.78	20.75	$\frac{1.11}{1.11}$
2.667	1.20	8.750	2 41	14.833	2.78	20.92	1.11
2.750	1.20	8.833	2.41 2.41 2.59 2.59 2.59 2.59 2.59 2.97 2.97 2.97 2.97 2.97 3.34	14.91/	2.78 2.78 2.78 2.78 2.78 2.78 2.78 2.78	21.00	1.11
2.833 2.917	1.20 1.20	8.917 9.000	2.59	15.000 15.083	2.78	21.08 21.17	$\frac{1.11}{1.11}$
3.000	1.20 1.20 1.20 1.20 1.20	9.083	2.59	115 167	2.78	21.25 21.33 21.42	1.11
3.083	1.20	9 167	2.59	15.250 15.333 15.417 15.500 15.583 15.667	2.78	21.33	1.11
3.167 3.250 3.333	1.20	9.250 9.333 9.417	2.59	15.333	2.78	21.42	$\frac{1.11}{1.11}$
3.333	1.20	9.417	2.97	15.500	2.78	21.50 21.58 21.67	1.11
3.417	1.20	9.500 9.583	2.97	15.583	2.78	21.67	1.11
3.500 3.583	1.20	9.583	2.97	15.750	2.78	21.75 21.83	$\frac{1.11}{1.11}$
3.667	1.20 1.20 1.20 1.20 1.20 1.20	0 750	2.97	15.833	2.78	21.92	1.11
3.750	1.20	9.833	3.34	15.917	2.78	22.00	1.11
3.833 3.917	1.20	9.917	3.34	16.000 16.083	2.78	22.08	$\frac{1.11}{1.11}$
4.000	1.20	10.083	3.34	16.167	2.78 2.78	22.25	1.11
4.083	1.20	10.167	3.34	16.250 16.333	2.78	22.33	1.11
4.167 4.250	1.20 1.20	10.167 10.250 10.333	3.34 4.26	116.417	1.67 1.67	22.42	$\frac{1.11}{1.11}$
4 250 4 333 4 417	1.48	10.417	4.26	16.500 16.583	1.67	22.58	1.11
4.417	1.48	10.417 10.500 10.583	4.26	16.583	1.67	22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00	1.11
4.500 4.583	$\frac{1.48}{1.48}$	10.583	4.26 4.26	16.667 16.750	$\substack{1.67\\1.67}$	22.75	$\frac{1.11}{1.11}$
4.667	1.48	10.750	4 26	116.833	1.67	22 92	1.11
4.750 4.833	1.48	10 833	5 .74 5 .74 5 .74 5 .74 5 .74	16.91/	1.67	23.00	1.11
4.917	$\frac{1.48}{1.48}$	10.917 11.000	5.74	17.000 17.083	$\frac{1.67}{1.67}$	23.08 23.17	$\frac{1.11}{1.11}$
5.000	1.48	11.083	5.74	17.167	1.67	23.25	1.11
5.083	1.48	11.167	5.74	17.250	1.67	23.33	1.11
5.167 5.250	$\frac{1.48}{1.48}$	11.250 11.333	5.74 8.90	17 .333 17 .417	$\substack{1.67\\1.67}$	23.42 23.50	$\frac{1.11}{1.11}$
5.333	1.48	11.417	8.90	117.500	1.67	23.58	1.11
5.417	1.48	11.500	8.90	17.583 17.667	1.67	23 67	$\frac{1.11}{1.11}$
5.500 5.583	$\frac{1.48}{1.48}$	11.583 11.667	8.90 8.90	17.750	$\frac{1.67}{1.67}$	23.73	$\frac{1}{1}, \frac{11}{11}$
5.667	1.48	11.750	8.90	17.750 17.833 17.917	1.67	23 .75 23 .83 23 .92 24 .00	1.11
5.750 5.833	$\frac{1.48}{1.48}$	11.833 11.917	27 43 27 43	17.917 18.000	$\frac{1.67}{1.67}$	24.00	$\frac{1.11}{1.11}$
5.833	$\frac{1.48}{1.48}$	12.000	27.43	18.000	1.67	24.08 24.17	1.11
6.000	1.48	12.083	113.41	18.167	1.67	24.25	1.11
6.083	1.48	12.167	113.42	18.250	1.67		

PEAK FLOW (cms)= 0.437 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 43.888
TOTAL RAINFALL (mm)= 92.660
RUNOFF COEFFICIENT = 0.474

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

CALIB

| CALIB | NASHYD ( 0004) | Area (ha)= 5.75 | Curve Number (CN)= 74.2 | ID= 1 DT= 5.0 min | Ia (mm)= 6.83 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.45

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

TIME	RAIN	TRA	NSFORME RAIN	D HYETOGE   TIME	RAPH RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113.42	18.33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250 0.333	0.00 1.02	6.417	$\frac{1.67}{1.67}$	12.417 12.500	13.34 13.34	18.50 18.58	1.67 1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583 0.667	$\frac{1.02}{1.02}$	6.667	$\frac{1.67}{1.67}$	12.750 12.833	13.34 6.86	18.83 18.92	1.67 1.67
0.750	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
$0.917 \\ 1.000$	$\frac{1.02}{1.02}$	7.000 7.083	$\frac{1.67}{1.67}$	13.083 13.167	6.86 6.86	19.17 19.25	1.67 1.67
1.083	1.02	7.167	1.67	13.250	6.86	19.33	1.67
1.167	1.02	7.250 7.333	1.67	13.333	5.00	19.42	1.67
1.250 1.333	$\frac{1.02}{1.02}$	7.333	2.04 2.04	13.417 13.500	5.00 5.00	19.50 19.58	1.67 1.67
1.417	1.02	7.500	2.04	13.583	5.00	19.67	1.67
1.500	1.02	7.583	2.04 2.04	13.667	5.00	19.75	1.67
1.583 1.667	1.02 1.02	7.667 7.750	2.04 2.04	13.750 13.833	5.00 3.89	19.83 19.92	1.67 1.67
1.750	1.02	7.730	2.04	13.917	3.89	20.00	1.67
1.833	1.02	7.917	2.04	14.000	3.89	20.08	1.67
1.917 2.000	1.02 1.02	8.000 8.083	2.04 2.04	14.083 14.167	3.89	20.17 20.25	1.67 1.67
2.083	1.02	8.167	2.04	14.250	3.89 3.89	20.23	1.11
2 167 2 250	1.02	8 250 8 333	2.04	14.333	2.78	20.42	1.11
2.250 2.333	$\substack{1.02\\1.20}$	8.333 8.417	2.41 2.41	14.417 14.500	2.78	20.50	1.11
2.333	1.20	8.500	2.41	14.583	2.78 2.78 2.78 2.78 2.78 2.78	20.58 20.67	$\frac{1.11}{1.11}$
2.500	1.20	8.583	2.41	14.667	2.78	20.75	1.11
2.583	1.20	8.667 8.750	2.41	14.750 14.833	2.78 2.78 2.78 2.78	20.83	$\frac{1.11}{1.11}$
2.667 2.750	$\frac{1.20}{1.20}$	8.833	2.41 2.59	14.833	2.78	20.92 21.00	$\frac{1}{1}, \frac{11}{11}$
2 833 2 917	1.20 1.20	8.917	2.59 2.59	15.000	2.78 2.78	21.08	1.11
2.917	1.20	9.000	2.59	15.083	2.78	21.17	1.11
3.000 3.083	1.20 1.20	9.083 9.167	2.59	15.167 15.250	2.78 2.78 2.78	21.25 21.33	$\frac{1.11}{1.11}$
3.167	1.20	9.250	2.59	15.333	2.78	21.42	1.11
3.250 3.333	1.20	9.333	2.97 2.97	15.417	2.78 2.78	21.50	1.11
3.333	1.20 1.20	9.417 9.500	2.97	15.500 15.583	2.78	21.58 21.67	$\frac{1.11}{1.11}$
3 500 3 583	1.20 1.20	9.583	2.97 2.97	115.667	2.78 2.78 2.78 2.78	21.75	1.11
3.583 3.667	1.20 1.20	9.667	2.97 2.97	15.750 15.833	2.78	21.83 21.92	$\frac{1.11}{1.11}$
3.750	1.20	9.833	3.34	15.917	2.78 2.78	22.00	1.11
3.833	1.20	9.917	3.34	16.000	2.78 2.78	22.08	1.11
3.917 4.000	$\substack{1.20\\1.20}$	10.000 10.083	3.34 3.34	16.083 16.167	2.78 2.78	22.17 22.25	$\frac{1.11}{1.11}$
4.083	1.20	10.167	3.34	16.250	2.78	22.23	1.11
4.167	1.20 1.20	10.250	3.34	16.333	1.67	22.42	1.11
4.250	1.20 1.48	10.333 10.417	4.26 4.26	16.417	1.67 1.67	22.50	$\frac{1.11}{1.11}$
4.333 4.417	1.48	10.417	4.26	16.500 16.583	1.67	22.58 22.67	$\frac{1}{1}, \frac{1}{11}$
4.500	1.48	10.583	4.26	16.667	1.67	22.75	1.11
4.583 4.667	$\frac{1.48}{1.48}$	10.667 10.750	4.26 4.26	16.750 16.833	$\frac{1.67}{1.67}$	22.83 22.92	$\frac{1.11}{1.11}$
4.007	1.48	10.730	5.74	16.917	1.67	23.00	1.11
4.833	1.48	10.917	5.74	17.000	1.67	23.08	1.11
4.917 5.000	$\frac{1.48}{1.48}$	11 000 11 083	5.74 5.74	17.083 17.167	1.67 1.67	23.17 23.25	$\frac{1.11}{1.11}$
3.000	1.40	111.002	3.74	11/110/	1.07	23.23	T. TT

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        5.083
        1.48
        11.167
        5.74
        17.250
        1.67
        23.33
        1.11

        5.167
        1.48
        11.250
        5.74
        17.333
        1.67
        23.42
        1.11

        5.250
        1.48
        11.333
        8.90
        17.417
        1.67
        23.50
        1.11

        5.333
        1.48
        11.417
        8.90
        17.500
        1.67
        23.58
        1.11

        5.417
        1.48
        11.500
        8.90
        17.583
        1.67
        23.67
        1.11

        5.500
        1.48
        11.583
        8.90
        17.750
        1.67
        23.67
        1.11

        5.883
        1.48
        11.667
        8.90
        17.750
        1.67
        23.83
        1.11

        5.750
        1.48
        11.583
        8.90
        17.833
        1.67
        23.92
        1.11

        5.833
        1.48
        11.97
        27.43
        18.000
        1.67
        24.00
        1.11

        5.917
        1.48
        11.200
        27.43
        18.083
        1.67
        24.17
        1.11

        6.000
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Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.354 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 42.298
TOTAL RAINFALL (mm)= 92.660
RUNOFF COEFFICIENT = 0.456

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

		TRA	ANSFORME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs 0.083	mm/hr 0.00	hrs 6.167	mm/hr 1.48	' hrs	mm/hr 113.42	hrs   18.33	mm/hr 1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333 0.417	$\frac{1.02}{1.02}$	6 417	$\frac{1.67}{1.67}$	12.500 12.583	13 34 13 34	18.58 18.67	$\frac{1.67}{1.67}$
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667 0.750	$\frac{1.02}{1.02}$	6.750	$\frac{1.67}{1.67}$	12.833 12.917	6.86 6.86	18.92 19.00	$\frac{1.67}{1.67}$
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
0.917 1.000	1.02 1.02	7.000	$\frac{1.67}{1.67}$	13.083 13.167	6.86 6.86	19.17 19.25	$\frac{1.67}{1.67}$
1.083	1.02	7.167	1.67	13.250	6.86	19.33	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1.67
1.250 1.333	$\frac{1.02}{1.02}$	7.333	2.04 2.04	13.417 13.500	5.00 5.00	19.50 19.58	$\frac{1.67}{1.67}$
1.417	1.02	7.500	2.04	13.583	5.00	19.67	1.67
1.500	1.02	7.583	2.04	13.667	5.00	19.75	1.67
1.583 1.667	$\frac{1.02}{1.02}$	7.667 7.750	2.04 2.04	13.750 13.833	5.00 3.89	19.83 19.92	$\frac{1.67}{1.67}$
1.750	1.02	7.833	2.04	13.917	3.89	20.00	1.67
1.833 1.917	$\frac{1.02}{1.02}$	7.917 8.000	2.04 2.04	14.000 14.083	3.89 3.89	20.08 20.17	$\frac{1.67}{1.67}$
2.000	1.02	8.083	2.04	14.167	3.89	20.17	1.67
2.083	1.02	8.167	2.04	14.250	3.89	20.33	1.11
2.167 2.250	$\frac{1.02}{1.02}$	8.250 8.333	2.04 2.41	14.333 14.417	2.78 2.78	20.42 20.50	$\frac{1.11}{1.11}$
2.333	1.20	8.417	2.41	14.500	2.78	20.58	1.11
2.417	1.20	8.500	2.41	14.583	2.78	20.67	1.11
2.500 2.583	1.20 1.20	8.583 8.667	2.41 2.41	14.667 14.750	2.78 2.78	20.75 20.83	$\substack{1.11\\1.11}$
2.667	1.20	8.750	2.41	14.833	2.78	20.92	1.11
2.750 2.833	1.20 1.20	8.833 8.917	2.59 2.59	14.917 15.000	2.78 2.78	21.00 21.08	$\substack{1.11\\1.11}$
2.033	1.20	9.000	2.59	15.083	2.78	21.08	1.11
3.000	1.20	9.083	2.59	15.167	2.78	21.25	1.11
3.083 3.167	1.20 1.20	9.167 9.250	2.59 2.59	15.250 15.333	2.78 2.78	21.33 21.42	$\frac{1.11}{1.11}$
3.250	1.20	9.333	2.97	15.417	2.78	21.50	1.11
3.333	1.20	9.417	2.97	15.500	2.78	21.58	1.11
3.417 3.500	1.20 1.20	9.500	2.97 2.97	15.583 15.667	2.78 2.78	21.67 21.75	$\substack{1.11\\1.11}$
3.583	1.20	9.667	2.97	15.750	2.78	21.83	1.11
3.667 3.750	1.20 1.20	9.750 9.833	2.97 3.34	15.833 15.917	2.78 2.78	21.92 22.00	$\frac{1.11}{1.11}$
3.833	1.20	9.917	3.34	16.000	2.78	22.08	1.11
3.917	1.20	10.000		16.083	2.78	22.17	1.11

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                   5.833
                   5.917
                                     12.000
12.083
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                                                                      1.67
                    6.083
                              1 48 | 12 167
                                               113 42 18 250
     Unit Hyd Qpeak (cms)= 0.972
      PEAK FLOW
                         (cms)= 0.812
(hrs)= 12.750
                                    0.812 (i)
      TIME TO PEAK
      RUNOFF VOLUME
                           (mm) = 45.323
      TOTAL RAINFALL
                           (mm) = 92.660
      RUNOFF COEFFICIENT
                              = 0.489
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0009) 1 + 2 = 3
                                                                  R.V.
(mm)
45.32
                                   ARFA
                                             QPEAK
                                                        TPFAK
                                  (ha)
14.50
                                                       (hrs)
                                            (cms)
0.812
      ID1= 1 ( 0010):
+ ID2= 2 ( 0002):
                                   1.57
                                            0.103
                                                                  38 03
         ID = 3 (0009):
                                  16.07
                                            0.898
                                                       12.67
                                                                  44.61
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
                                           QPEAK
(cms)
0.898
                                                                  R.V.
(mm)
44.61
   3 + 2 = 1
                                   AREA
                                                        TPEAK
                                                       (hrs)
(ha)
16.07
      ID1= 3 ( 0009):
+ ID2= 2 ( 0003):
                                   7.36
                                            0.437
                                                       12.67
                                                                  43.89
        ID = 1 (0009):
                                 23.43 1.335
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
    1 + 2 = 3
                                   AREA
                                             QPEAK
                                                        TPEAK
                                  (ha)
23.43
                                           (cms)
                                                       (hrs)
                                                                     (mm)
        ID1= 1 ( 0009):
                                                                   44.38
      + ID2= 2 ( 0004):
                                            0.354
                                                       12.58
                                                                  42.30
                                   5.75
        ID = 3 (0009):
                                 29.18 1.682
                                                       12.67
                                                                  43.97
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
______
********
** SIMULATION: J. 25yr 24hr 15min SCS Type II **
                             Filename: C:\Users\noconnor\AppD
    READ STORM
                                         ata\Local\Temp\
49753dce-993e-48a5-8960-fc674d25ac10\7e11bead
 Ptotal=108.80 mm
                             Comments: 25yr 24hr 15min SCS Type II
```

TIME hrs 0.00 0.25 0.50 0.50 1.00 1.25 0.50 1.50 2.25 2.00 2.25 2.00 2.75 3.25 3.50 4.25 4.50 4.25 4.50 5.00	RAIN mm/hr 0.00 1.20 1.20 1.20 1.20 1.20 1.20 1.41 1.41 1.41 1.41 1.41 1.41 1.74 1.74	TIME hrs 6.25 6.50 7.00 7.25 7.50 7.75 8.00 8.25 9.00 9.25 9.50 9.70 10.25 10.25 11.00	RAIN mm/hr 1.96 1.96 1.96 1.96 2.39 2.39 2.39 2.39 2.83 3.05 3.05 3.48 3.92 5.00 6.75 10.44	12.75 12.50 12.75 13.00 13.25 13.50 13.75 14.00 14.25 14.50 14.55 15.50 16.25 16.55 16.75 16.00 17.75	RAIN mm/hr 15.67 8.05 5.88 4.57 3.26 3.26 3.26 3.26 3.26 1.96 1.96 1.96 1.96 1.96	TIME hrs 18.75 19.00 19.25 19.50 19.50 20.25 20.55 20.75 21.20 20.25 21.50 21.25 21.50 22.25 22.50 22.75 23.00 23.25 23.50 23.75 23.70 23.75	RAIN mm/hr 1.96 1.96 1.96 1.96 1.96 1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.3
4.75	1.74	11.00	6.75	17.25	1.96	23.50	1.31

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		TRA	ANSFORME	D HYETOGI	RAPH		
TIME hrs 0.083 0.167 0.250 0.333 0.417 0.500 0.583 0.667 0.750 0.833 0.917	RAIN mm/hr 0.00 0.00 1.20 1.20 1.20 1.20 1.20	TIME hrs 6.167 6.250 6.333 6.417 6.500 6.583 6.667 6.750 6.833 6.917 7.000	RAIN mm/hr 1.74 1.96 1.96 1.96 1.96 1.96 1.96 1.96	TIME hrs 12.250 12.333 12.417 12.500 12.583 12.667 12.750 12.833 12.917 13.000 13.083	RAIN mm/hr 133.17 15.68 15.67 15.67 15.67 15.67 8.05 8.05 8.05 8.05	TIME hrs 18.33 18.42 18.50 18.58 18.67 18.75 18.83 18.92 19.00 19.08	RAIN mm/hr 1.96 1.96 1.96 1.96 1.96 1.96 1.96
1.000 1.083 1.083 1.250 1.333 1.417 1.500 1.583 1.667 2.083 2.167 2.2083 2.167 2.250 2.583 2.450 2.583 2.500 2.583 2.750	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	7.083 7.167 7.250 7.333 7.667 7.580 7.583 7.667 7.750 8.000 8.083 8.167 8.250 8.333 8.667 8.583 8.667 8.583	1,96 1,96 2,39 2,39 2,39 2,39 2,39 2,39 2,39 2,39	13.167 13.250 13.333 13.417 13.500 13.583 13.667 13.750 13.833 13.917 14.000 14.333 14.167 14.250 14.333 14.417 14.500 14.583 14.457 14.500	8.05 8.05 8.88 5.88 5.88 5.88 5.88 4.57 4.57 4.57 4.57 4.57 4.57 3.26 3.26 3.26 3.26	19, 25 19, 34 19, 58 19, 67 19, 75 19, 75 19, 83 19, 67 19, 92 20, 10 20, 10 20, 10 20, 10 20, 25 20, 50 20, 58 20, 67 20, 67 20, 68 20, 67 20, 68 20, 10 20, 10 20	1.96 1.96 1.96 1.96 1.96 1.96 1.96 1.96
2.833 2.917 3.000 3.083 3.167 3.250 3.333 3.417 3.500	1.41 1.41 1.41 1.41 1.41 1.41 1.41	8.917 9.000 9.083 9.167 9.250 9.333 9.417 9.500 9.583	3 .05 3 .05 3 .05 3 .05 3 .48 3 .48 3 .48	15.000 15.083 15.167 15.250 15.333 15.417 15.500 15.583 15.667	3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26	21.08 21.17 21.25 21.33 21.42 21.50 21.58 21.67 21.75	1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.31

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                                                                     1.96
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6.000
            1.74 | 12.167 | 133.17 | 18.250
6.083
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PEAK FLOW (cms)= 0.664 (i)
TIME TO PEAK (hrs)= 12.833
RUNOFF VOLUME (mm)= 58.769
TOTAL RAINFALL (mm)= 108.800
RUNOFF COEFFICIENT = 0.540

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

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

---- TRANSFORMED HYETOGRAPH ----RAIN TIME |' TIME RAIN | TIME RAIN | ' hrs mm/hr | hrs mm/hr | 12.250 133.17 | 18.33 1.96 RAIN TIME mm/hr 1.74 1.74 hrs 6.167 mm/hr 0.083 0.00 12 333 1 96 0.167 0.00 6.250 15.68 18.42 6.333 15 67 0.00 1.20 6.417 12.500 1.20 1.20 6.500 6.583 15.67 18.67 18.75 1.96 0.417 12.583 0.500 0.583 12.667 12.750 15.67 1.96 18 83 18 92 6 667 6 750 1.20 1.20 15.67 1.96 1.96 0.667 12 833 1.20 1.20 6.833 12.917 6.917 7.000 13 000 1.20 13.083 1.96 7.083 7.167 19 25 19 33 1 96 1 96 1.000 1.20 13.167 1.083 1.20 13.250 7 250 7 333 7 417 1.96 2.39 2.39 1.20 13.333 5.88 19 42 19 50 1.96 1.167 1.250 1.20 13.417 5.88 1.96 1.417 1.20 7.500 2 39 13.583 5.88 19.67 1.96 5 88 5 88 4 57 2 39 2 39 2 39 2 39 2 39 1.500 1.20 7.583 13.667 19.75 1.96 1.583 1.667 13 750 13 833 19 83 19 92 1.20 1.20 7.667 7.750 1.96 1.96 7 833 13.917 4 57 20.00 1 96 1.750 1.20 1.20 7.917 2.39 14.000 4 57 20.08 1.96 2 39 2 39 2 39 2 39 2 39 2 83 2 83 20.17 20.25 20.33 20.42 20.50 8.000 14.083 14.167 1.96 1.96 4 57 4 57 3 26 3 26 2.000 1.20 8.083 1.20 1.20 1.20 1.20 14 . 250 14 . 333 14 . 417 1.31 2.083 8.167 2.167 2.250 8.250 8.333 1.31 1.31 2.333 1.41 8.417 14.500 3.26 20.58  $\bar{1}.\bar{3}\bar{1}$ 

2.500 1.41 2.583 1.41 2.667 1.41 2.833 1.41 3.000 1.41 3.083 1.41 3.167 1.41 3.250 1.41 3.250 1.41 3.333 1.41 3.417 1.41 3.500 1.41 3.500 1.41 3.500 1.41 3.500 1.41 3.500 1.41 3.500 1.41 3.500 1.41 3.667 1.41 3.750 1.41 3.750 1.41 3.750 1.41 3.750 1.41 3.750 1.41 3.833 1.41 3.750 1.41 4.083 1.41 4.083 1.41 4.083 1.74 4.250 1.41 4.350 1.41 4.250 1.41 4.350 1.41 4.500 1.41 4.500 1.41 4.500 1.74 5.583 1.74 4.510 1.74 5.500 1.74 5.500 1.74 5.500 1.74 5.500 1.74 5.583 1.74 5.583 1.74 6.770 1.74 5.583 1.74 5.583 1.74 5.583 1.74 5.583 1.74 5.583 1.74 5.583 1.74 5.667 1.74 5.750 1.74 5.750 1.74 5.833 1.74 5.833 1.74	8.583 8.667 8.750 9.000 9.083 9.167 9.500 9.333 9.417 9.500 9.833 9.667 9.750 9.833 10.167 10.250 10.083 10.167 11.333 11.167 11.250 11	2.83 2.83 3.05 3.05 3.05 3.05 3.05 3.05 3.48 3.48 3.48 3.92 3.92 3.92 3.92 3.92 5.00 5.00 5.00 6.75 6.75 6.75 6.75 6.75 6.75 6.75 6.75	14. 667 14. 750 14. 833 14. 917 15. 000 15. 083 15. 167 15. 550 15. 533 15. 417 15. 500 15. 583 15. 567 15. 750 15. 583 15. 917 16. 000 16. 333 16. 167 16. 250 16. 333 16. 917 17. 167 17. 1683 17. 1683 17. 167 17. 1683 17. 1683 17. 167 17. 1683 17. 167 17. 167 17. 167 17. 167 17. 1683 17. 167 17. 167 17. 167 17. 167 17. 1683 17. 167 17. 167 17. 167 17. 167 17. 167 17. 167 17. 1683 17. 167 17. 167 17. 167 17. 167 17. 167 17. 167 17. 167 17. 1683 17. 167 17. 167 17. 167 17. 167 17. 167 17. 167 17. 167 17. 1683 17. 167 17.	26626666666666666666666666666666666666	20. 75 20. 83 20. 92 21. 08 21. 108 21. 17 21. 25 21. 33 21. 42 21. 58 21. 67 21. 75 21. 83 22. 17 22. 200 22. 17 22. 23 22. 200 22. 58 22. 17 22. 28 22. 27 25. 28 22. 30 22. 58 22. 31 22. 40 22. 28 22. 31 22. 32 22. 33 22. 40 22. 33 23. 40 23. 35 23. 58 23. 58 24. 58 25. 58 26. 58 27. 58	1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.31
5.750 1.74	11 833	32.20	17.917	1.96	24.00	1.31

Unit Hyd Qpeak (cms)= 0.171

PEAK FLOW (cms)= 0.136 (i)
TIME TO PEAK (hrs)= 12.500
RUNOFF VOLUME (mm)= 49.663
TOTAL RAINFALL (mm)= 108.800
RUNOFF COEFFICIENT = 0.456

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

CALIB | NASHYD ( 0003) | Area (ha)= 7.36 Curve Number (CN)= 75.9 | ID= 1 DT= 5.0 min | Ia (mm)= 7.30 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.50

		TR/	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs		hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18 33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.333	1.96	12.417	15.67	18.50	1.96
0.333	1.20	6.417	1.96	12.500	15.67	18.58	1.96
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	1.96	12.917	8.05	19.00	1.96
0.833	1.20	6.917	1.96	13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33	1.96
1.167	1.20	7.250	1.96	13.333	5.88	19.42	1.96
1.250	1.20	7.333	2.39	13.417	5.88	19.50	1.96
1.333	1.20	7.417	2.39	13.500	5.88	19.58	1.96

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3 26
                                                                                                      1.31
               1.41
1.41
                            9.833
9.917
                                                      15.917
16.000
3.750
                                                                                                     1.31
1.31
3 833
               1.41
                                                                         3.26
3.26
                          10 000
                                             3 92
                                                       16.083
                                                                                     22.17
                                                                                                      1.31
3.917
                                           3.92 | 16.083
3.92 | 16.250
3.92 | 16.333
5.00 | 16.417
5.00 | 16.580
5.00 | 16.667
                         10.083
                                                                                                      1.31
4.000
                          10.167
                                                                         3.26
1.96
               1.41 | 10.167
1.41 | 10.250
1.41 | 10.333
1.74 | 10.417
1.74 | 10.500
                                                                                     22 42
22 50
22 58
22 67
4.167
                                                                                                      1.31
4.250
                                                                         1.96
                                                                                                      1.31
4 333
4 417
                                                                         1.96
1.96
                                                                                                     1.31
1.31
                                                                                     22.07
22.75
22.83
22.92
23.00
23.08
4 500
                1.74
                         10.583
                                                                         1 96
                                                                                                      1.31
4.583
                1.74
                         10.667
                                             5.00
                                                       16.750
                                                                                                      1.31
                                           5.00 16.750
5.00 16.833
6.75 16.917
6.75 17.000
6.75 17.083
6.75 17.167
6.75 17.250
6.75 17.333
                                                                         1.96
1.96
1.96
                1.74
                          10.750
                         10.833
10.917
11.000
11.083
               1.74
1.74
4.750
                                                                                                      1.31
                                                                                                      1.31
4.833
                                                                                     23 17
23 25
23 33
23 42
               1.74
1.74
4.917
                                                                         1.96
1.96
                                                                                                     1.31
5.000
                                                                                                      1.31
5.083
                          11.167
                1.74
                         11.250
                                                                                                      1.31
               1.74 | 11.333
1.74 | 11.417
1.74 | 11.500
1.74 | 11.583
                                          10.44
10.44
10.44
                                                      17 .417
17 .500
17 .583
17 .667
17 .750
                                                                        1 96
1 96
1 96
                                                                                     23.50
23.58
23.67
5.250
                                                                                                      1.31
5.333
                                                                                                     1.31
1.31
5 417
               1.74
1.74
                                          10 44
10 44
5 500
                                                                         1.96
                                                                                     23.75
                                                                                                     1.31
                                                                                     23.75
23.83
23.92
24.00
24.08
24.17
24.25
                          11.667
                                                                                                      1.31
5.583
                1.74
                          11.750
                                          10.44
              1.74 | 11.833
1.74 | 11.917
1.74 | 12.000
1.74 | 12.083
5.750
                                          32 20
                                                      17.917
                                                                         1.96
                                                                                                      1.31
             1.74 | 11.933 | 32.20 | 17.917 | 17.4 | 11.917 | 32.20 | 18.000 | 1.74 | 12.000 | 32.20 | 18.083 | 1.74 | 12.083 | 133.16 | 18.167 | 1.74 | 12.167 | 133.17 | 18.250
5 833
5 917
6 000
                                                                         1.96
                                                                                                     1.31
                                                                        1.96
1.96
                                                                                                     1.31
1.31
6.083
```

PEAK FLOW (cms)= 0.567 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 56.556
TOTAL RAINFALL (mm)= 108.800
RUNOFF COEFFICIENT = 0.520

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

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

0.333 0.417 0.508 0.667 0.758 0.667 0.758 0.677 0.1.000 1.083 1.1.67 1.250 1.833 1.667 1.250 2.083 2.417 2.250 2.083 2.417 2.250 2.333 2.417 3.083 2.417 3.083 3.167 3.258 3.2	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	6.417 6.500 6.583 6.667 6.750 6.853 6.917 7.000 7.333 7.167 7.500 7.783 7.500 7.783 8.083 8.167 7.750 8.083 8.167 7.850 8.083 8.167 8.500 8.833 8.417 8.500 9.083 8.917 9.500 9.083 9.187 9.250	1.96 1.96 1.96 1.96 1.96 1.96 1.96 1.96	12.500 12.583 12.667 12.750 12.833 12.917 13.000 13.083 13.167 13.250 13.333 13.447 13.500 13.583 13.670 14.083 14.417 14.000 14.167 14.253 14.417 14.500 14.883 14.417 14.500 14.883 15.167 15.000 15.883 15.167 15.500 15.833 15.417 15.000 15.883 16.667 16.750 16.083 16.167 16.583 16.667 16.753 16.697 16.753 16.750 16.753 16.750 16	15.67 15.67 15.67 18.05 8.05 8.05 8.05 8.05 8.05 8.05 8.05	18. 58 18. 67 18. 75 18. 83 18. 90 19. 08 19. 19. 25 19. 32 19. 58 19. 67 19. 75 19. 83 19. 92 20. 20. 25 20. 32 20. 42 20. 58 20. 67 20. 25 20. 32 20. 20 20. 20. 20 20.	1.96 1.96 1.96 1.96 1.96 1.96 1.96 1.96
4.500	1.41 1.74 1.74 1.74 1.74 1.74 1.74 1.74	10 417 10 500 10 583 10 667		16.500 16.583 16.667 16.750	1.96 1.96 1.96 1.96 1.96	22, 42 22, 58 22, 58 22, 75 22, 82 22, 92 23, 00 23, 17 23, 25 23, 25 23, 58 23, 75 23, 58 23, 75 23, 23 24, 00 24, 17 24, 25	1.31 1.31 1.31 1.31 1.31 1.31 1.31

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.461 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 54.638
TOTAL RAINFALL (mm)= 108.800
RUNOFF COEFFICIENT = 0.502

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

		TR	ANSFORME	D HYETOGE	RAPH		
TIME hrs	RAIN mm/hr	LITITE	RAIN mm/hr	' TIME ' hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	hrs 6.167	1.74	112 25N	133.17		1.96
0.167	0.00	6.250	1.74	12.333	15.68	18 33 18 42	1.96
0.250 0.333	0.00 1.20	6 417	$\frac{1.96}{1.96}$	12.417	15.67 15.67	18.50 18.58	$\frac{1.96}{1.96}$
0.417	1.20	6.417 6.500 6.583	1.96 1.96	12.583	15.67	18.67	1.96
0.500 0.583	1.20	6.583	$\frac{1.96}{1.96}$	112.667	15.67 15.67	18.75	1.96
0.667	1.20	6.750	1.96	12.750 12.833	15.67 8.05 8.05	18.83 18.92	$\frac{1.96}{1.96}$
0.750	1.20	6.667 6.750 6.833 6.917	1.96	112.917	8.05	19.00 19.08 19.17	1.96
0.833 0.917	1.20	7.000	1.96 1.96	13.000 13.083	8.05 8.05	19.08	1.96 1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25 19.33	1.96 1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33 19.42	$\frac{1.96}{1.96}$
1.250	1.20	7 333	2 39	13.417	5 88	19.50	1 96 1 96
1.083 1.167 1.250 1.333 1.417 1.500 1.583 1.667 1.750 1.833	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	7.167 7.250 7.333 7.417 7.500 7.583 7.667 7.750 7.833 7.917	2.39	13.167 13.250 13.333 13.417 13.500 13.583 13.667	5 88 5 88 5 88 5 88 5 88	19.58 19.67	$\frac{1.96}{1.96}$
1.500	1.20	7 583	2 39	13.667	5 88	19.75	1.96
1.583	1.20	7.667	2.39	13.750 13.833	5.88 4.57	19.83 19.92	$\frac{1.96}{1.96}$
1.750	1.20	7.833	2.39	113.917	4.57	20.00	1.96
$\frac{1.833}{1.917}$	1.20	7.917 8.000	2.39	14.000	4.57	20.08 20.17	$\frac{1.96}{1.96}$
	1.20	8.083	2.39	14.083 14.167	5 88 4 57 4 57 4 57 4 57 4 57	20.25	1.96
2.083	1.20	8.083	2.39	114 250	4.57	20.33 20.42	1.31
2.250	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	8.250 8.333	2.83	14.333 14.417	3.26	20.50	1.31
2.333	1.41	8.417 8.500 8.583	2.83	14.500	3.26	20.50 20.58 20.67	1.31
2.500	1.41	8.583	2 83	14.583 14.667	3.26	20.75	$\frac{1.31}{1.31}$
2.583	1.41 1.41 1.41 1.41	8.667	2.83	14.750 14.833	3.26	20.83 20.92	1.31
2.750	$\frac{1.41}{1.41}$	8.667 8.750 8.833	3.05	14.833	3.26	20.92	1.31
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.607 3.080 3.167 3.250 3.417 3.000 3.583 3.417 3.750 3.683 3.750 3.833 3.750	1 41 1 41 1 41 1 41 1 41 1 41	8.917	1.96 1.96 2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.39	15.000	4.57 3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26	21.08	1.31
3.000	$\frac{1.41}{1.41}$	9.000	3.05	15.083 15.167	3.26	21.17 21.25	$\substack{1.31\\1.31}$
3.083	1.41	9.083 9.167 9.250 9.333	3.05	15 .167 15 .250 15 .333	3.26	21.25	1.31
3.167	1.41	9.250	3.05 3.48	15.333	3.26	21.42 21.50	$\frac{1.31}{1.31}$
3.333		9.333 9.417 9.500 9.583 9.667 9.750 9.833 9.917	3 48	1 1 2 - 200	3.26	21.58	1.31
3.417 3.500	$\frac{1.41}{1.41}$	9.500	3.48 3.48	15.583 15.667	3.26	21.67 21.75	$\frac{1.31}{1.31}$
3.583	1.41	9.667	3 48	15.750 15.833	3 26	21.83	1.31
3.66/ 3.750	$\frac{1.41}{1.41}$	9.750	3.48	15.833	3.26	21.92	$\frac{1.31}{1.31}$
3.833	1.41	9.917	3 92	16.000	3.26	22.08	1.31
3.917 4.000	$\frac{1.41}{1.41}$	10.000 10.083	3.92	16.083 16.167	3.26	22.17	$\frac{1.31}{1.31}$
4 083	1.41	10.167	3 92	16.250 16.333	3.26	22.33	1.31
4.167 4.250 4.333 4.417	1.41	10.250 10.333	3.92 5.00	16.333 16.417	1.96 1.96	22.42	$\frac{1.31}{1.31}$
4.333	$\frac{1}{1}$ , $74$	110 417	5 00	116 500	1.96	22.58	1.31
4.417 4.500	1.74	10 500 10 583	3 .92 3 .92 3 .92 5 .00 5 .00 5 .00 5 .00 5 .00	16 583 16 667	1.96 1.96	21.92 22.00 22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75	$\frac{1.31}{1.31}$
4.583	1.74	10.667	5.00	16.750	1.96	22.83	1.31
4.667	1.74	10.750 10.833	5.00	16.833 16.917	$\frac{1.96}{1.96}$	22 .83 22 .92 23 .00 23 .08 23 .17 23 .25 23 .33 23 .42	$\frac{1.31}{1.31}$
4.750 4.833	1.74	10.917	6.75 6.75 6.75 6.75 6.75 10.44	17 000	1.96	23.08	1.31
4.917	1.74	11.000	6.75	17.083	1.96 1.96	23.17	1.31 1.31 1.31
5.000 5.083 5.167	1.74	11 .083 11 .167 11 .250 11 .333	6.75	17.250	1.96	23 25 23 33	1.31
5.167	1.74	11.250	6.75	17.333	1.96 1.96	23 42 23 50	$\frac{1.31}{1.31}$
5.333	1.74	111.41/	10.44	17.000 17.083 17.167 17.250 17.333 17.417 17.500	1.96	23.58	1.31
5.250 5.333 5.417 5.500	1.74	11.500	10 77	T/ . 303	$\frac{1.96}{1.96}$	23.67 23.75	$\frac{1.31}{1.31}$
5 583	1.74	11.583 11.667	10.44 10.44	17.667 17.750	1.96	23.83	1.31
5.667	1.41 1.74 1.74 1.74 1.74 1.74 1.74 1.74	11.750 11.833	10.44 32.20	17.833 17.917	1.96 1.96	23.92	1.31
5.750 5.833	1.74	11.917		18.000	1.96	24.00 24.08	$\substack{1.31\\1.31}$
5.917 6.000	$\frac{1.74}{1.74}$	12.000 12.083	32 .20 133 .16 133 .17	18.083 18.167	1.96 1.96	24.17 24.25	1.31 1.31
6.083	1.74	12.167	133.17	18.250	1.96	24.23	1.31

```
Unit Hyd Qpeak (cms)= 0.972
                            (cms)= 1.049 (i)
(hrs)= 12.750
(mm)= 58.220
       PEAK FLOW
      TIME TO PEAK
       RUNOFF VOLUME
      TOTAL RAINFALL (mm)= 108.800
RUNOFF COEFFICIENT = 0.535
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
  ADD HYD ( 0009)|
   1 + 2 = 3
                                        AREA
                                                   QPEAK
                                                              (hrs)
12.75
12.50
                                      (ha)
14.50
                                                   (cms)
                                                                             (mm)
                                                                          58.22
       ID1= 1 ( 0010):
+ ID2= 2 ( 0002):
                                                 1.049
                                                 0.136
                                                                          49.66
         ID = 3 (0009):
                                      16.07 1.163
                                                             12.67
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0009) | 3 + 2 = 1
                                        AREA
                                                   QPEAK
 ._____
                                      (ha)
16.07
7.36
                                                   (cms)
                                                             (hrs)
12.67
12.67
                                                                             (mm)
        ID1= 3 ( 0009):
+ ID2= 2 ( 0003):
                                                                          57.38
56.56
                                                 1.163
0.567
          ID = 1 ( 0009): 23.43 1.730 12.67 57.12
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0009) \begin{vmatrix} 1 + 2 = 3 \end{vmatrix}
                                      (ha)
23.43
                                                             (hrs)
12.67
  -----
                                                   (cms)
                                                                             (mm)
        ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                                                1 730
                                                                          57.12
                                                 0.461
                                                              12.58
                                                                          54 64
                                       5.75
          ID = 3 (0009):
                                      29.18 2.181
                                                             12.67
                                                                          56.63
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
************
** SIMULATION:K. 50yr 24hr 15min SCS Type II **
    READ STORM
                                Filename: C:\Users\noconnor\AppD
                                ata\local\Temp\
49753dce-993e-48a5-8960-fc674d25ac10\4ed811d1
Comments: 50yr 24hr 15min sCs Type II
  Ptotal=120.77 mm
                                             hrs
6.25
                                                       mm/hr
                                                                      hrs
                                                                               mm/hr
                                                        2 17
2 17
2 17
2 17
2 17
2 66
2 66
                                                                 12 50
12 75
13 00
13 25
                                                                                                    2.17
2.17
2.17
2.17
2.17
2.17
                                                                                       18 75
                       0.00
                                  0.00
                                                                             17.39
                       0.25
                                  1 33
1 33
1 33
1 33
1 33
                                             6.50
6.75
7.00
7.25
7.50
                                                                              8 94
8 94
6 52
6 52
5 07
                                                                                        19 00
19 25
19 50
                       0.50
                       0.75
                                                                 13.50
13.75
                       1.00
                                                                                        19.75
                                                                                        20.00
                                             7 .75
8 .00
8 .25
8 .50
8 .75
9 .00
                                                        2 66
2 66
3 14
3 14
3 38
3 38
3 86
                                                                                        20 .25
20 .50
20 .75
                                  1.33
1.33
1.57
1.57
1.57
1.57
1.57
1.57
1.57
                                                                  14.00
                                                                               5.07
                                                                                                     1.45
                       1.75
2.00
2.25
2.50
2.75
                                                                 14 25
14 50
14 75
                                                                              3 62
3 62
                                                                                                     1.45
1.45
                                                                                        21.00
21.25
                                                                               3.62
                                                                                                     1.45
                                                                              3 62
3 62
                                                                  15.00
                                                                                                     1.45
                                                                                                     1.45
                                                                                       21.50
21.75
22.00
22.25
22.50
22.75
23.00
23.25
23.50
23.75
24.00
                                             9.25
                                                                  15.50
                                                                               3.62
                                                                                                     1.45
                                                     3.86
3.86
3.86
4.35
5.56
5.56
7.49
7.49
11.59
35.75
147.82
                       3 . 25
3 . 50
3 . 75
                                                                               3.62
3.62
2.17
                                             9.50
                                                                  15.75
                                                                                                     1.45
                                            9.75
10.00
                                                                  16.00
16.25
                                                                                                     1.45
1.45
                       4 00
                                            10 25
                                                                  16 50
16 75
                                                                               2 17
                                                                                                     1.45
                       4 25
                                            10.50
                                                                               2.17
                                                                                                     1.45
                                  1 93
1 93
1 93
1 93
1 93
                                           10.75
11.00
11.25
11.50
11.75
12.00
                                                                 17 00
17 25
17 50
17 75
18 00
                                                                              2 17
2 17
2 17
2 17
2 17
2 17
                       4.50
4.75
                                                                                                     1.45
                                                                                                     1.45
                       5.00
                                                                                                     1.45
                       5.25
5.50
                                                                                                    1.45
                                   1.93
                                                                  18.25
```

CAL TB

TIME

4.000

4.083

4.333 4.417 4.500

4.583

4.750

4.833

4.917 5.000

5.083

5.167

5.333

5.417 5.500

5.583

5.667

10.167

10.250

10.333

10 667

10.833

10.917

11.000 11.083

11.167

11 250

11.333

11.417 11.500 11.583 11.667

11.750

1 93 11 833

1.93 | 10.417 1.93 | 10.500 1.93 | 10.583

1.93 1.93

1.93

1.93

1.93 1.93

1 93

1.93

1.93 1.93

1.93 1.93 1.93

1.93

RAIN

mm/hr

U.H. Tp(hrs)= 0.70

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

TIME

hrs

hrs mm/hr | 12.250 147.82 | 1 12.333 17.41 | 1 12.417 17.39 | 1 mm/hr 2.17 2.17 2.17 18 33 18 42 18 50 0.083 0.00 6.167 0.167 0.00 6.250 0.00 0.333 1.33 6.417 12 500 17 39 18 58 2.17 1.33 6.500 12.583 18.67 2.17 17 39 17 39 1.33 6.583 12.667 12.750 12.833 12.917 2 17 2 17 2 17 2 17 2 17 1.33 1.33 18 83 18 92 0.583 6.667 6.750 0.667 8.94 1.33 1.33 8 94 19 00 19 08 0.7506.833 6.917 7.000 0.833 13.000 2 17 2 17  $\bar{1}.33$ 13.083 7 083 7 167 1.000 1.33 13.167 8 94 19.25 2.17 2.17 2.17 2.66 8 .94 6 .52 6 .52 1.083 1.33 13.250 19.33 2.17 1.33 1.33 7.250 7.333 13.333 13.417 2.17 1.167 1.250 19.42 19.50 7 417 7 500 7 583 2.66 6.52 19.58 2.17 1.333 1.33 13.500 1.33 2 66 13.583 6.52 19.67 2.17 6.52 6.52 1.583 1.33 7.667 2.66 13.750 19.83 2.17 7.750 7.833 7.917 5 07 5 07 5 07 5 07 13 833 13 917 14 000 2 17 2 17 2 17 2 17 1.667 1.33 2.66 19.92 1.33 1.33 2 66 2 66 20.00 1.750 1.833 1 33 8 000 2 66 14 083 5 07 20.17 2.17 1.917 1.33 8.083 2 66 14.167 5.07 20 . 25 20 . 33 2.17 1.33 8.167 5.07 2.66 3.14 3.14 3.14 3.14 3 62 3 62 3 62 3 62 3 62 20.42 20.50 20.58 20.67 1.33 8 250 8 333 8 417 1.45 2.167 14.333 1.33 1.57 1.57 1.57 14 417 14 500 1.45 2.250 2.333 1.45 1.45 2.417 8 500 14 583 8.583 14 667 20.75 20.83 2.583 1.57 8.667 3.14 14.750 3.62 1 57 1 57 1 57 1 57 3 14 3 38 3 38 3 38 3 38 3 38 3 38 3 62 3 62 3 62 3 62 20.92 21.00 21.08 2.667 8.750 14.833 1.45 2.750 8.833 8.917 14.917 1.45 1.45 15 000 2 833 2.917 1.57 9.000 15 083 21.17 1.45 21.17 21.25 21.33 21.42 21.50 21.58 21.67 1.57 9.083 15.167 3 62 1.45 3.000 9.167 1.57 1.57 1.57 1.57 9.250 15.333 1.45 3 86 3 86 3 86 3 86 15 417 15 500 15 583 3 62 3 62 3 62 3 62 3.250 9.333 1.45 9.417 3.333 1.45 1.45 3.417 1.57 9 583 3 62 21.75 3.500 15.667 1.45 1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57 21.73 21.83 21.92 22.00 22.08 22.17 22.25 9.667 15.750 3.62 1.45 3.583 3 86 3 86 4 35 4 35 5 56 5 56 5 56 5 56 7 49 3 62 3 62 3 62 3 62 3 62 3 62 2 17 9.750 15.833 9.833 3.750 15.917 1.45 3.833 3.917 9.917 10.000 10.083 16 000 16 083 1.45

16.167

16.250

16.333

16.417 16.500 16.583

16.667

16.750

16.917

17.000

17.083 17.167

17.250

17.333

17.833

7.49 7.49 7.49 7.49 7.49 11.59 11.59 11.59

11.59

--- TRANSFORMED HYETOGRAPH ----RAIN |

TIME

RAIN | TIME

RAIN

1.45 1.45

1.45

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23.00 23.08 23.17 23.25 23.33 23.42 23.50 23.58 23.67 23.75 23.83 23.92 24.00

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5.833	1.93	11.917		18.000	2.17	24.08	1.45
5.917	1.93	12.000	35.75	18.083	2.17	24.17	1.45
6.000	1.93	12.083	147.81	18.167	2.17	24.25	1.45
6.083	1.93	12.167	147.82	18.250	2.17		

Unit Hyd Qpeak (cms)= 0.575

(cms)= 0.779 (i) (hrs)= 12.833 (mm)= 68.745 (mm)= 120.770 PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RATNEALL RUNOFF COEFFICIENT = 0.569

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

CALIB | CALIB | NASHYD ( 0002) | Area (ha)= 1.57 Curve Number (CN)= 71.0 | ID=1 DT= 5.0 min | Ia (mm)= 8.00 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.35

		TD	ANC FORME	D HYETOGI	2 A DU		
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.93	12.250	147.82	18 33	2.17
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.17
0.250	0.00	6.333	2.17	12.417	17.39	18.50	2.17
0.333	1.33	6.417	2.17	12.500	17.39 17.39	18.58	2.17
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.17
0.500	1.33	6.583	2.17	12.667	17.39	18.75	2.17
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17
0.750	1.33	6.833	2.17	12.917	8.94 8.94	19.00	2.17
0.833 0.917	1.33	6.917	2.17 2.17	13.000 13.083	8.94	19.08 19.17	2.17 2.17
1.000	1.33 1.33	7.083	2.17	13.167	8.94	19.25	2 17
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17
1.167	1 33	7 250	2.17	13.333	6.52	19 42	2 17
1.250	1.33	7.333	2.66	13.417	6.52	19.50	2.17
1.333	1.33	7.417	2.66	13.500	6.52	19.58	2.17
1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.17
1.500	1.33	7.583	2.66	13.667	6.52	19.75	2.17
1.583	1.33	7.667	2.66	13.750	6.52	19.83	2.17
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17
1.750	1.33 1.33	7 833 7 917	2.66	13.917	5.07 5.07	20.00	2.17 2.17
1.833 1.917	1.33	8.000	2.66 2.66	14.000 14.083	5.07	20.08 20.17	2.17
2.000	1.33	8.083	2.66	14.167	5.07	20.25	2.17
2.083	1.33	8.167	2.66	14.250	5.07	20.33	1.45
2.167	1.33	8.250	2.66	14.333	3.62	20.42	1.45
2.250	1.33	8.333	3.14	14.417	3.62	20.50	1.45
2.333	1.57	8.417	3.14	14.500	3.62	20.58	1.45
2.417	1.57	8.500	3.14	14.583	3.62	20.67	1.45
2.500	1.57	8.583	3.14	14.667	3.62	20.75	1.45
2.583	1.57	8.667	3.14	14.750	3.62	20.83	1.45
2.667 2.750	1.57 1.57	8.750 8.833	3.14 3.38	14.833 14.917	3.62 3.62	20.92 21.00	1.45 1.45
2.730	1.57	8.917	3.38	15.000	3.62	21.08	1.45
2.917	1.57	9.000	3.38	15.083	3.62	21.17	1.45
3.000	1.57	9.083	3.38	15.167	3.62	21.25	1.45
3.083	1.57	9.167	3.38	15.250	3.62	21.33	1.45
3.167	1.57	9.250	3.38	15.333	3.62	21.42	1.45
3.250	1.57	9.333	3.86	15.417	3.62	21.50	1.45
3.333	1.57	9.417	3.86	15.500	3.62	21.58	1.45
3.417	1.57 1.57	9.500	3.86	15.583	3.62	21.67	1.45
3.500 3.583	1.57	9 583 9 667	3.86 3.86	15.667 15.750	3.62 3.62	21.75 21.83	1.45 1.45
3.667	1.57	9.750	3.86	15.833	3.62	21.92	1.45
3.750	1.57	9.833	4.35	15.917	3.62	22.00	1.45
3 833	1.57	9.917	4.35	16.000	3.62	22 08	1 45
3.917	1.57	10.000	4.35	16.083	3.62	22.17	1.45
4.000	1.57	10.083	4.35	16.167	3.62	22.25	1.45
4.083	1.57	10.167	4.35	16.250	3.62	22.33	1.45
4.167	1.57	10.250	4.35	16.333	2.17	22.42	1.45
4.250	1.57	10.333	5.56	16.417	2.17	22.50	1.45
4.333 4.417	$\frac{1.93}{1.93}$	10.417 10.500	5.56 5.56	16.500	2.17 2.17	22.58 22.67	1.45 1.45
4.417	1.93	10.500	5.56	16.583 16.667	2.17	22.75	1.45
4.583	1.93	10.667	5.56	16.750	2.17	22.83	1.45
4 667	1 93	10.750		16.833	2.17	22.92	1.45

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                                     11.39 | 17.833
35.75 | 17.917
35.75 | 18.000
35.75 | 18.083
147.81 | 18.167
147.82 | 18.250
               1.93
                        11.833
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                        11.917
             1.93 | 12.000
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1.93 | 12.167
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                                                                                 24.17
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6.000
                                                                                 24.25
                                                                                                 1.45
6.083
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PEAK FLOW (cms)= 0.161 (i)
TIME TO PEAK (hrs)= 12.500
RUNOFF VOLUME (mm)= 58.722
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.486

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

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

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---- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN ' TIME RAIN TIME RAIN hrs mm/hr | 12.250 147.82 | 12.333 17.41 | 12.417 17.39 | 1 mm/hr 0.00 mm/hr 1.93 1.93 2.17 2.17 mm/hr 2.17 hrs 6.167 18 33 0.083 6.250 18 42 18 50 0.167 0.00 2.17 0.250 0.00 2.17 0.333 1 33 6.417 12.500 0.417 1.33 6.500 2.17 12.583 17.39 18.67 2.17 1 33 1 33 1 33 2 17 2 17 2 17 2 17 2 17 2 17 12 .667 12 .750 12 .833 0 500 0 583 17 39 17 39 6.583 18.75 2.17 6.667 6.750 18.83 18.92 2 17 2 17 0.667 0.750 1 33 1 33 6.833 12.917 8 94 19.00 2 17 6.917 7.000 0.833 13.000 19.08 2.17 2 17 2 17 2 17 2 17 2 17 2 66 1.33 13.083 1.000  $\bar{1}$  33 7.083 7.167 13.167 19.25 2.17 8.94 6.52 6.52 19.33 19.42 19.50 1.083 1.33 13.250 2.17 1.33 1.33 7.250 7.333 13.333 13.417 2.17 1.167 1.250 1 33 7 417 2 66 13 500 6.52 19 58 2 17 1.333 6 52 6 52 6 52 5 07 5 07 1.33 7.500 7.583 2 66 13.583 19.67 2.17 1.417 1.33 1.33 7 .667 7 .750 7 .833 7 .917 19 83 19 92 20 00 20 08 2.66 2 17 2 17 2 17 2 17 2 17 1.583 13.750 1.33 1.33 1.33 13 833 13 917 1.667 1.750 2 66 2 66 2 66 1.833 14 000 5 07 20 17 20 25 2 17 2 17 1.33 8.000 14 083 8 083 2.000 1.33 2 66 14 167 2.083 1.33 8.167 2 66 2 66 3 14 3 14 3 14 3 14 3 14 3 38 3 38 3 38 3 38 14.250 20.33 3 .62 3 .62 3 .62 20.42 20.50 20.58 20.67 1.33 1.33 8 250 8 333 14 333 14 417 1.45 1.45 2.167 2.250 1.57 1.57 1.57 8.417 14 500 1.45 2.333 8.500 14.583 3 62 1.45 14.667 2.583 1.57 8 667 14.750 20.83 3 62 3 62 3 62 3 62 2.667 1.57 8.750 14.833 20.92 1.45 1.57 1.57 8.833 8.917 14 917 15 000 21.00 21.08 1.45 1.45 2.750 2.833 1 57 15 083 21.17 2.917 9.000 1.45 21.1/ 21.25 21.33 21.42 21.50 21.58 21.67 21.75 21.83 1.57 9.083 3 38 15.167 3.62 1.45 3.000 1.57 1.57 1.57 1.57 1.57 1.57 3 38 3 38 3 86 3 86 3 86 3 86 9.167 15.250 15.333 3 .62 3 .62 1.45 1.45 9.250 9.333 9.417 9.500 3.167 3 62 3 62 3 62 3 62 15.417 15.500 15.583 1.45 3.250 3.333 3.417 1.45 1.45 3.500 9.583 15.667 3.62 1.45

4.083         1.57         10.167         4.35         16           4.167         1.57         10.250         4.35         16           4.250         1.57         10.333         5.56         16           4.333         1.93         10.417         5.56         16           4.417         1.93         10.500         5.56         16           4.583         1.93         10.667         5.56         16           4.667         1.93         10.750         5.56         16           4.750         1.93         10.750         5.56         16           4.750         1.93         10.750         5.56         16           4.750         1.93         10.750         5.56         16           4.750         1.93         10.750         5.56         16           4.750         1.93         11.0083         7.49         17           5.000         1.93         11.000         7.49         17           5.083         1.93         11.167         7.49         17           5.167         1.93         11.250         7.49         17           5.250         1.93         11.250         7.4	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
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Unit Hyd Qpeak (cms)= 0.562

PEAK FLOW (cms)= 0.667 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 66.323
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.549

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

		TD	NCEODME	D HIVETOCI	D A DU		
TIME	RAIN	TIME	RAIN	D HYETOGI I' TIME	RAPH RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.93	12.250	147.82	18 33	2.17
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.17
0.250	0.00	6.333	2.17	12.417	17.39	18.50	2.17
0.333	1.33	6.417	2.17	12.500	17.39	18.58	2.17
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.17
0.500 0.583	1.33 1.33	6.583 6.667	2.17 2.17	12.667 12.750	17.39 17.39	18.75 18.83	2.17 2.17
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17
0.750	1.33	6.833	2.17	12.917	8.94	19.00	2.17
0.833	1.33	6.917	2.17	13.000	8.94	19.08	2.17
0.917	1.33	7.000	2.17	13.083	8.94	19.17	2.17
1.000	1.33	7.083	2.17	13.167	8.94	19.25	2.17
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17
$1.167 \\ 1.250$	$\frac{1.33}{1.33}$	7.250 7.333	2.17 2.66	13.333 13.417	6.52 6.52	19.42 19.50	2.17 2.17
1.333	1.33	7.417	2.66	13.500	6.52	19.58	2.17
1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.17
1.500	1.33	7.583	2.66	13.667	6.52	19.75	2.17
1.583	1.33	7.667	2.66	13.750	6.52	19.83	2.17
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17
1.750	1.33	7.833	2.66	13.917	5.07	20.00	2.17
1.833	1.33	7.917	2.66	14.000	5.07	20.08	2.17
$\frac{1.917}{2.000}$	1.33 1.33	8.000 8.083	2.66 2.66	14.083 14.167	5.07 5.07	20.17 20.25	2.17 2.17
2.083	1.33	8 167	2.66	14.250	5.07	20.23	1.45
2.167	1.33	8.250	2.66	14.333	3.62	20.42	1.45
2.250	1.33	8.333	3.14	14.417	3.62	20.50	1.45
2.333	1.57	8.417	3.14	14.500	3.62	20.58	1.45
2.417	1.57	8.500	3.14	14.583	3.62	20.67	1.45
2.500	1.57	8.583	3.14	14.667	3.62	20.75	1.45

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                    11.750
                                                                                  1.45
5.667
         1.93 | 11.750 | 11.59 | 17.853 | 1.93 | 11.833 | 35.75 | 17.917 | 1.93 | 11.917 | 35.75 | 18.000 | 1.93 | 12.000 | 35.75 | 18.083 | 1.93 | 12.083 | 147.81 | 18.167 | 1.93 | 12.167 | 147.82 | 18.250
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5.917
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6.000
6.083
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PEAK FLOW (cms)= 0.544 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 64.182
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.531

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

CALIB | NASHYD ( 0010) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 | ......U.H. Tp(hrs)= 0.57

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

		TRA	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs		hrs	mm/hr
0.083	0.00	6.167	1.93	12.250	147.82	18.33	2.17
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.17
0.250	0.00	6.333	2.17	12.417	17.39	18.50	2.17
0.333	1.33	6.417	2.17	12.500	17.39	18.58	2.17
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.17
0.500	1.33	6.583	2.17	12.667	17.39	18.75	2.17
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17
0.750	1.33	6.833	2.17	12.917	8.94	19.00	2.17
0.833	1.33	6.917	2.17	13.000	8.94	19.08	2.17
0.917	1.33	7.000	2.17	13.083	8.94	19.17	2.17
1.000	1.33	7.083	2.17	13.167	8.94	19.25	2.17
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17
1.167	1.33	7.250	2.17	13.333	6.52	19.42	2.17
1.250	1.33	7.333	2.66	13.417	6.52	19.50	2.17
1.333	1.33	7.417	2.66	13.500	6.52	19.58	2.17
1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.17

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    17.037

    5.750
    1.93
    11.833
    35.75
    17.917

    5.833
    1.93
    11.917
    35.75
    18.080

    5.917
    1.93
    12.000
    35.75
    18.083

    6.000
    1.93
    12.083
    147.81
    18.167

    6.083
    1.93
    12.167
    147.82
    18.250

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24 25
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```

Unit Hyd Qpeak (cms)= 0.972

PEAK FLOW (cms)= 1.231 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 68.142
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.564

PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD ( 0009)| 1 + 2 = 3 AREA QPEAK TPEAK -----(ha) (cms) (hrs) (mm) ID1= 1 ( 0010): + ID2= 2 ( 0002): 1.231 12.75 12.50 68.14 58.72 14.50 1.57 ID = 3 ( 0009): 16.07 1.368 12.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 $\begin{vmatrix} ADD & HYD & ( & 0009) \\ 3 & + & 2 & = & 1 \end{vmatrix}$ 

AREA QPEAK TPEAK R.V.

```
(ha)
16.07
                                     (cms)
     ID1= 3 ( 0009):
+ ID2= 2 ( 0003):
                                                      67.22
66.32
                                   1.368
                                             12.67
                            7.36
                                   0.667
      ID = 1 (0009):
                           23.43 2.035
                                             12.67
                                                      66.94
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)|
 1 + 2 = 3
                             AREA
                                    OPEAK
                                              TPEAK
                                                        R.V.
                           (ha)
23.43
                                   (cms)
2.035
                                             (hrs)
12.67
                                                        (mm)
       ID1= 1 ( 0009):
                                                      66.94
      + ID2 = 2 (0004):
                                   0.544
       ID = 3 ( 0009): 29.18 2.565
                                          12.67
                                                      66.40
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
**************
** SIMULATION:L. 100yr 24hr 15min SCS Type II **
 READ STORM
                       Filename: C:\Users\noconnor\AppD
                                 ata\Local\Temp\
                                  49753dce-993e-48a5-8960-fc674d25ac10\91f91896
 Ptotal=132.74 mm
                       Comments: 100yr 24hr 15min SCS Type II
                TTMF
                        RATN
                                TTMF
                                        RATN I
                                                  TTMF
                                                          RAIN TIME
                                hrs
6.25
                                       mm/hr
2.39
                       mm/hr
                                                   hrs
                                                         mm/hr
                                                                         mm/hr
                         1 46
                                6.50
                                         2.39
                                                12.75
                                                                19.00
                                                                         2.39
                                         2 39
2 39
2 92
                0.50
                         1.46
                                6.75
                                                13.00
                                                         9.82
                                                                19.25
                                                                         2.39
                        1.46
                                7.00
                                                13.25
13.50
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19.75
                0.75
                                                                         2.39
                 1.00
                         1.46
                         1 46
                                7 50
7 75
                                         2 92
                                                13.75
                                                         5.58
                                                                20.00
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                                        2 92
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                         1.46
                                                14.00
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                         1.46
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                         1.46
                                                14.50
                                                                20.75
                                                                21.00
                         1.73
                                                14.75
                                                         3.98
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                                                15.00
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                                                                21.25
21.50
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11.75 39.29
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                        2.12
                                               18 00
18 25
                5.50
5.75
                                                         2.39
                        2 12 12 25
                                      19 11 18 50
                                                         2.39
 CAL TB
# of Linear Res (N)= 3.00
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TRA	NSFORME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAI
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/h
0.083	0.00	6.167	2.12	12.250	162.47	18 33	2.39
0.167	0.00	6.250	2.12	12.333	19.13	18.42	2.39
0.250	0.00	6.333	2.39	12.417	19.11	18.50	2.39
0.333	1.46	6.417	2.39	12.500	19.11	18.58	2.39
0.417	1.46	6.500	2.39	12.583	19.11	18.67	2.39
0.500	1.46	6.583	2.39	12.667	19.11	18.75	2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	1.46	6.750	2.39	12.833	9.82	18.92	2.39
0.750	1.46	6.833	2.39	12.917	9.82	19.00	2.39
0.833	1.46	6.917	2.39	13.000	9.82	19.08	2.39
0.917	1.46	7.000	2.39	13.083	9.82	19.17	2.39
1.000	1.46	7.083	2.39	13.167	9.82	19.25	2.39

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1.167
          1.46
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                                                        19.42
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19.58
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1.250
          1.46
                   7.333
                                    13.417
                                                 7.17
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1.333
                   7.417
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                   7.500
                                    13.583
                                                7.17
                                                        19.67
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1.417
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                                    13.667
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1.667
          1 46
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                                    13.833
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6.083 Unit Hyd Qpeak (cms)= 0.575

PEAK FLOW (cms) = 0.897 (i)(hrs)= 12.833 TIME TO PEAK (mm)= 78.960 (mm)= 132.740 RUNOFF VOLUMF TOTAL RAINFALL RUNOFF COEFFICIENT = 0.595

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

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

--- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN TIME RAIN TIME RAIN

162 47 18 250

2.39

3.667         1.73         9.750         4.25         15.833         3.98         21.92         1.55           3.750         1.73         9.833         4.78         15.917         3.98         22.00         1.55           3.833         1.73         9.917         4.78         16.003         3.98         22.08         1.55           3.917         1.73         10.000         4.78         16.003         3.98         22.17         1.55           4.000         1.73         10.083         4.78         16.167         3.98         22.25         1.55           4.083         1.73         10.167         4.78         16.250         3.98         22.33         1.55           4.250         1.73         10.250         4.78         16.500         2.39         22.50         1.55           4.333         2.12         10.417         6.11         16.500         2.39         22.50         1.55           4.417         2.12         10.500         6.11         16.500         2.39         22.57         1.55           4.583         2.12         10.583         6.11         16.667         2.39         22.75         1.55           4.584	0.083 0.00 6.167 2.12 12.250 162.47 18.33 2.36 0.167 0.00 6.250 2.39 12.417 19.11 18.50 2.36 0.333 1.46 6.417 2.39 12.500 19.11 18.50 2.36 0.313 1.46 6.517 2.39 12.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.57 2.30 0.500 19.11 18.50 2.30 0.667 1.46 6.6750 2.39 12.750 19.11 18.83 2.33 19.12 19.00 2.30 0.500 19.11 18.58 2.33 19.12 19.10 19.11 18.50 2.30 0.500 19.11 18.58 2.33 19.12 19.17 9.82 19.00 2.30 0.500 19.11 18.58 2.33 19.12 19.17 9.82 19.00 2.30 0.500 19.11 18.58 2.33 19.12 19.17 9.82 19.00 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.30 19.11 18.50 2.30 19.11 18.50 2.30 19.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.50 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2.30 19.11 19.11 18.50 2
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PEAK FLOW (cms)= 0.188 (i)
TIME TO PEAK (hrs)= 12.500
RUNOFF VOLUME (mm)= 68.086
TOTAL RAINFALL (mm)= 132.740
RUNOFF COEFFICIENT = 0.513

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

		TR	∆NSE∩RMEI	HYETOG	RΔPH		
TIME	RAIN	ITME	KAIN	ITME	KAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083 0.167	0.00	6.167	2.12	12.250	162.47 19.13	18.33	2.39
0.250	0.00	6.250	2.12	12.333 12.417	19.11	18.42 18.50	2.39 2.39
0.333	1.46	6.417	2.39	12.500	19.11	18.58	2 39
0.417	1.46	6.500	2.39	12.500 12.583	19.11	18.58 18.67	2.39
0.500 0.583	1.46	6.583	2.39	12.667	19.11	18.75	2.39
0.583	$\frac{1.46}{1.46}$	6.667 6.750	2.39	12./50	19.11 9.82	18.83	2.39 2.39
0.750	1.46	6.833	2.39	12.917	9.82	18. 75 18. 83 18. 92 19. 00 19. 08	2.39
0.833	1.46	6.917	2.39	13.000	9.82	19.08	2.39
0.917	1.46	7.000	2.39	13.083	9.82	19.17	2.39
$\frac{1.000}{1.083}$	$\frac{1.46}{1.46}$	7.083 7.167	2.39	13.16/	9.82 9.82	19.25	2.39
1.167	1.46	7.250	2 39 2 39 2 39 2 39 2 39 2 39 2 39 2 39	13.333	7.17	19.42	2.39
1.250 1.333	1.46	7.250 7.333	2.92	13.417	7.17	19.50	2.39
1.333	1.46	7.417	2.92	13.500	7.17	19.58	2.39
1.417 1.500	$\frac{1.46}{1.46}$	7.500 7.583	2.92 2.92	12.667 12.750 12.833 12.917 13.000 13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.667	7.17 7.17	19 17 19 25 19 33 19 42 19 50 19 58 19 67 19 75 19 83 19 92	2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.39
1.583	1.46	7.667	2.92	13 .750 13 .833 13 .917 14 .000	7.17	19.83	2 39
1 667	1.46	7.750	2.92	13.833	5.58	19.92	2.39
1.750	1.46	7.833	2.92 2.92	13.917	5.58	20.00 20.08	2.39
1.833 1.917	$\frac{1.46}{1.46}$	7 917 8 000	2.92	14.083	5.58 5.58	20.08	2.39
2.000	1.46	8.083	2.92	14 167	5.58	20.25	2.39
2.083	1.46	8.167	2.92	14.250 14.333	5.58	20.33	1.59
2.167	$\frac{1.46}{1.46}$	8 250 8 333	2.92 3.45	14.333	3.98 3.98	20.42	1.59 1.59
2.250 2.333	1 73	8.417	3.45	14.417 14.500	3.98	20.58	1.59
2.41/	1./3	8.500	3.45	114.583	3.98	20.67	1.59
2.500	1.73 1.73	8.583	3 45	14.667	3.98	20.75	1.59
2.583 2.667	1.73	8.667 8.750	3.45 3.45	14.750 14.833	3.98 3.98	20.83	1.59 1.59
2.750	1.73	8.833	3 72	114 417	3.98	20. 25 20. 33 20. 42 20. 50 20. 58 20. 67 20. 75 20. 87 20. 92 21. 08 21. 17 21. 25 21. 33 21. 42 21. 56 21. 56 21. 57 21. 58 21. 58 21	1.59
2.833	1.73 1.73	8.917	3.72	115.000	3.98	21.08	1.59
2.917	1 73	9.000	3.72	15.083 15.167	3.98 3.98	21.17	1.59
3.000 3.083	1 73 1 73	9.167	3.72	15 250	3.98	21.23	1.59 1.59
3 167	1 / 3	9.250	3.72	15.250 15.333	3.98	21.42	1.59
3.250 3.333		9.333	4.25	15.417 15.500 15.583	3.98	21.50	1.59
3.333 3.417	1.73 1.73	9.417 9.500	4.25	15.500	3.98 3.98	21.58	1.59 1.59
3.500	1 73	9.583	4.23	15.667	3.98	21.07	1.59
3.583	1.73	9.667	4.25	115./50	3.98	21.83	1.59
3.667	1.73	9.750	4.25	115 833	3.98	21.92	1.59
3.750 3.833	1.73	9.833 9.917	4.78	15.917 16.000	3.98 3.98	22.00	1.59 1.59
3.917	1.73	10 000	4.78	16.083	3.98	22.17	1.59
4.000	1.73	110.083	4.78	16.167	3.98	22.25	1.59
4.083	1.73	10.167	4.78	16.250 16.333	3.98	22.33	1.59 1.59
4.167 4.250	1 73	10.167 10.250 10.333	4.78 6.11	116 41/	2.39	22.00 22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00	1.59
4.250 4.333	2 12		6.11	116.500	2.39 2.39 2.39 2.39 2.39	22.58	1.59 1.59
	2.12	110 500	6.11	16.583	2.39	22.67	1 50
4.500 4.583	2.12	10.583 10.667	6.11	16.667 16.750	2.39	22.75	1.59
4.667	2.12	110.750	6.11	116 833		22.92	1 59
4.750	2.12	10.833	8.23	116.91/	2.39	23.00	1.59 1.59
4.833	2.12	10.917	8.23	17.000 17.083	2.39	23.08	1.59
4.917 5.000	1.73 1.73 1.73 1.73 1.73 1.73 1.73 1.73	11.000 11.083	3.72 3.72 3.72 4.25 4.25 4.25 4.25 4.78 4.78 4.78 4.78 6.11 6.11 6.11 6.11 8.23 8.23 8.23 8.23 12.74	17.083	2.39		1.59 1.59
5.083	2 12	11.167	8.23	17.250	2.39		1.59 1.59
5.167	2 12 2 12	11.167 11.250 11.333	8.23	17 250 17 333	2.39	23.42	1.59
5.250 5.333	2.12	11.333 11.417	12./4 12.74	17.417 17.500	2.39 2.39	23.50 23.58	1.59 1.59
5.417	2.12	11.500	12.74	17.583	2.39	23.67	1.59
5.500	2 12 2 12	11 500 11 583	12.74	17.583 17.667	2.39	23.75	1 59
5.583	2.12	TT.00/	12.74	11/ /50	2.39	23.83	1.59
5.667 5.750	2 12 2 12	11.750 11.833	12.74 39.29	117.833 117.917	2.39 2.39	23.92 24.00	1.59 1.59
5.833	2 12	11.917	39.29 39.29	17 833 17 917 18 000	2.39	24.08	1.59

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    12.000
    39.29
    18.083
    2.39
    24.17
    1.59

    6.000
    2.12
    12.083
    162.46
    18.167
    2.39
    24.25
    1.59

    6.083
    2.12
    112.167
    162.47
    118.250
    2.39
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PEAK FLOW (cms)= 0,770 (i)
TIME TO PEAK (hrs)= 12.667
RUNOFF VOLUME (mm)= 76.347
TOTAL RAINFALL (mm)= 132.740
RUNOFF COEFFICIENT = 0.575

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

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

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---- TRANSFORMED HYETOGRAPH ----RAIN TIME RAIN mm/hr hrs mm/hr TIME RAIN TIME RAIN | TIME mm/hr hrs 2 12 2 12 2 39 12.250 162.47 | 12.333 19.13 | 12.417 19.11 0.083 0.00 6.167 18 33 2.39 0.167 0.00 6.250 18.42 18.50 2.39 0.00 2.39 2 39 12.500 0.333 1.46 6.417 19.11 18.58 2.39 1.46 6.500 2.39 12.583 19.11 18.67 1.46 6.583 2.39 0.583 1.46 6.667 2 39 12 750 19.11 18.83 2.39 2 39 2 39 2 39 2 39 12.833 12.917 13.000 9 82 9 82 9 82 9 82 0.667 1.46 6.750 18.92 2.39 1.46 19 00 19 08 0.750 6.833 6.917 2.39 0.833 1.46 1 46 7 000 7 083 2 39 13 083 9 82 19.17 0.917 2.39 1.46 2.39 13.167 19.25 2.39 | 13.167 2.39 | 13.250 2.39 | 13.333 2.92 | 13.417 2.92 | 13.500 2.92 | 13.583 2.92 | 13.667 1.46 7.167 7.250 7.333 7.17 7.17 19 42 19 50 19 58 19 67 1.167 1.46 2.39 1 46 2.39 1.250 7 417 7 500 7 583 1.333 1.46 7.17 7.17 2.39 1 46 2.39 1 46 1.583 1.46 7.667 2.92 13.750 19.83 2.39 2 92 2 92 2 92 2 92 2 92 5 58 5 58 5 58 19.92 20.00 20.08 1.667 1.46 7.750 13.833 2.39 1.750 1.46 1.46 7.833 7.917 13.917 2.39 1 833 14 000 1.917 1 46 8 000 14.083 5 58 20.17 2.39 2 92 1.46 8 083 20.25 2.000 14.167 2.39 1.46 2 92 3 45 3 45 3 45 3 45 1.46 8.250 14.333 3 98 20.42 1.59 14.417 14.500 14.583 3 98 3 98 3 98 2.250 1.46 8.333 20.50 1.59 1.73 1.73 8.417 8.500 20 58 20 67 2.333 1.59 1.59 2.417 3 98 2.500 1.73 8.583 14.667 20.75 1.59 1.73 8.667 20.83 1.59 2.583 21.00 21.08 21.17 21.25 1.73 1.73 3.98 1.59 2.750 8.833 2.833 8 917 9 000 3 98 3 98 1.59 1.59 1.59 1.73 1.73 3.000 9 083 3 98 21 33 21 42 9.167 1.73 9 250 1.59 21.50 21.58 21.67 1.73 9.333 3.98 1.59 3 333 3 417 1.73 1.73 9.417 3 98 1 59 1 59 3.98 1.73 1.73 3 98 21.75 3.500 9.583 1.59 3.583 9.667 3.98 21.83 1.59 3.750 1.73 9 833 3.98 22.00 22.08 22.17 22.25 1.59 4.78 4.78 4.78 4.78 3.833 1.73 9.917 16.000 3.98 1.59 1.73 | 10.000 1.73 | 10.083 3.98 3.98 1.59 1.59 3.917 16.083 16.167 4 000 3 98 22.33 4.083 1.73 10.167 16.250 1.59 3.98 | 22.33 2.39 | 22.40 2.39 | 22.58 2.39 | 22.67 2.39 | 22.67 2.39 | 22.83 2.39 | 22.92 2.39 | 23.00 1.73 10.250 4.78 16.333 1.59 4.167 1 73 2 12 2 12 2 12 2 12 2 12 2 12 6.11 6.11 6.11 6.11 6.11 6.11 1.59 1.59 4.333 10.417 16.500 10.500 10.583 10.667 16.583 16.667 16.750 1.59 4.417 4.500 1.59 1.59 4.583 4.667 10.750 16.833 1.59 8 23 16 917

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2.12 12.167 162.47 18.250
6.000
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6.083
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Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.629 (i)
TIME TO PEAK (hrs)= 12.583
RUNOFF VOLUME (mm)= 73.997
TOTAL RAINFALL (mm)= 132.740
RUNOFF COEFFICIENT = 0.557

PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB | CALIB | NASHYD ( 0010) | Area (ha)= 14.50 | Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 | # of Linear Res.(N)= 3.00 | ... | U.H. Tp(hrs)= 0.57

		TRA	NSFORME	D HYETOGI	RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	2.12	12.250	162.47	18.33	2.39
0.167	0.00	6.250	2.12	12.333	19.13	18.42	2.39
0.250	0.00	6.333	2.39	12.417	19.11	18.50	2.39
0.333	1.46	6.417	2.39	12.500	19.11	18.58	2.39
0.417 0.500	$\frac{1.46}{1.46}$	6.500 6.583	2.39 2.39	12.583 12.667	19.11 19.11	18.67 18.75	2.39 2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	1.46	6.750	2.39	12.833	9.82	18.92	2.39
0.750	1.46	6 833	2.39	12 917	9.82	19.00	2.39
0.833	1.46	6.917	2.39	13 000	9.82	19.08	2.39
0.917	1.46	7.000	2.39	13.083	9.82	19.17	2.39
1.000	1.46	7.083	2.39	13.167	9.82	19.25	2.39
1.083	1.46	7.167	2.39	13.250	9.82	19.33	2.39
1.167	1.46	7.250	2.39	13.333	7.17	19.42	2.39
1.250 1.333	$\frac{1.46}{1.46}$	7.333 7.417	2.92 2.92	13.417 13.500	7.17 7.17	19.50 19.58	2.39
1.417	1.46	7.500	2.92	13.583	7.17	19.56	2.39
1.500	1.46	7.583	2.92	13.667	7.17	19.75	2.39
1.583	1.46	7 667	2.92	13.750	7 17	19.83	2.39
1.667	1.46	7.750	2.92	13.833	5.58	19.92	2.39
1.750	1.46	7.833	2.92	13.917	5.58	20.00	2.39
1.833	1.46	7.917	2.92	14.000	5.58	20.08	2.39
1.917	1.46	8.000	2.92	14.083	5.58	20.17	2.39
2.000	1.46	8.083	2.92	14.167	5.58	20.25	2.39
2.083 2.167	$\frac{1.46}{1.46}$	8.167 8.250	2.92	14.250 14.333	5.58 3.98	20.33 20.42	1.59 1.59
2.250	1.46	8.333	2 92 3 45	14.417	3.98	20.50	1.59
2.333	1.73	8.417	3.45	14.500	3.98	20.58	1.59
2.417	1.73	8.500	3 45	14.583	3.98	20.67	1.59
2.500	1.73	8 583	3.45	14.667	3.98	20.75	1.59
2.583	1.73	8 667	3.45	14.750	3.98	20.83	1.59
2.667	1.73	8.750	3.45	14.833	3.98	20.92	1.59
2.750	1.73	8.833	3.72 3.72	14.917	3.98	21.00	1.59
2.833 2.917	$\frac{1.73}{1.73}$	8.917 9.000	3.72	15.000 15.083	3.98 3.98	21.08 21.17	1.59 1.59
3.000	1.73	9.000	3.72	15.167	3.98	21.25	1.59
3.083	1.73	9.167	3.72	15.250	3.98	21.33	1.59
3 167	1 73	9 250	3 72	15.333	3 98	21.42	1.59
3.250	1.73	9.333	4.25	15.417	3.98	21.50	1.59
3.333	1.73	9.417	4.25	15.500	3.98	21.58	1.59
3.417	1.73	9.500	4.25	15.583	3.98	21.67	1.59
3.500	1.73	9.583	4.25	15.667	3.98	21.75	1.59
3.583 3.667	$\frac{1.73}{1.73}$	9.667 9.750	4.25 4.25	15.750 15.833	3.98 3.98	21.83 21.92	1.59 1.59
3.007	1./3	9./30	4.23	173.033	3.90	21.92	1.39

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22.83
                                        2.12
2.12
2.12
                                                                             16.583
16.667
16.750
                                                                                              2.39
2.39
2.39
                          4.417
4.500
                                                                                                                         1.59
                                                                                                                         1.59
1.59
                          4.583
                                                                                                         22.92
23.00
23.08
                                         2.12
                                                  10.750
                                                                   6.11
                                                                                              2.39
                          4.667
                                                                             16.833
                                                                                                                         1.59
                                        2 .12
2 .12
                                                  10.833
                                                                   8 23
8 23
                                                                               16.917
                                                  10.917
                                                                              17.000
                                                               8.23 | 17.000
8.23 | 17.083
8.23 | 17.167
8.23 | 17.250
8.23 | 17.333
12.74 | 17.417
12.74 | 17.583
12.74 | 17.750
12.74 | 17.750
12.74 | 17.833
39.29 | 18.000
39.29 | 18.003
39.29 | 18.004
162.47 | 18.250
                                        2 . 12
2 . 12
2 . 12
2 . 12
2 . 12
2 . 12
                          4.917
                                                 11.000
11.083
                                                                                              2.39
                                                                                                         23.17
23.25
23.33
23.42
23.50
23.58
23.67
23.75
23.83
23.92
24.00
24.08
24.17
                                                                                                                         1.59
                                                                                              2 39
2 39
2 39
2 39
                          5.000
5.083
                                                                                                                         1.59
                                                  11.167
11.250
                                                                                                                         1.59
1.59
                          5.167
                          5.250
                                                  11 333
                                                                                              2 39
                                                                                                                         1.59
                                       2.12 | 11.333
2.12 | 11.417
2.12 | 11.500
2.12 | 11.583
2.12 | 11.667
2.12 | 11.750
2.12 | 11.917
2.12 | 12.000
2.12 | 12.083
2.12 | 12.167
                                                                                              2 39
2 39
2 39
2 39
2 39
2 39
2 39
                          5.333
                                                                                                                         1.59
                          5 417
5 500
5 583
                                                                                                                        1.59
1.59
                                                                                                                         1.59
                          5.667
                          5.750
                                                                                                                         1.59
                          5 833
5 917
                                                                                              2.39
                                                                                                                         1.59
                          6.000
                                                                                              2.39
                                                                                                         24.25
                          6.083
       Unit Hyd Qpeak (cms)= 0.972
                                 (cms)= 1.417 (i)
(hrs)= 12.750
(mm)= 78.308
        PEAK FLOW
        TIME TO PEAK
       RUNOFF VOLUME
                                    (mm) = 132.740
       TOTAL RATNEALL
       RUNOFF COEFFICIENT = 0.590
       (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0009) |
1 + 2 = 3 |
                                               AREA
                                                            QPEAK
                                             (ha)
14.50
1.57
                                                                          (hrs)
12.75
                                                            (cms)
                                                                                            (mm)
        ID1= 1 ( 0010):
+ ID2= 2 ( 0002):
                                                          1.417
                                                                                         78.31
68.09
                                                                          12.50
          ID = 3 ( 0009):
                                             16.07
                                                          1.577
                                                                          12.67
                                                                                        77.31
       NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-----
| ADD HYD ( 0009)|
| 3 + 2 = 1
                                               AREA
                                                            QPEAK
                                                                           TPEAK
                                                                                            R.V.
                                             (ha)
16.07
                                                          (cms)
1.577
                                                                          (hrs)
12.67
                                                                                            (mm)
        ID1= 3 ( 0009):
+ ID2= 2 ( 0003):
                                               7.36
          ID = 1 (0009):
                                                                         12.67
                                            23.43 2.347
                                                                                        77.01
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0009)
                                                          QPEAK
(cms)
2.347
                                               AREA
   1 + 2 = 3
                                                                           TPFAK
                                                                                           R.V.
(mm)
                                             (ha)
23.43
                                                                          (hrs)
12.67
        ID1= 1 ( 0009):
+ ID2= 2 ( 0004):
                                               5.75
                                                          0.629
                                                                          12.58
         ID = 3 (0009):
                                            29.18 2.959
                                                                         12.67
                                                                                        76.41
       NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

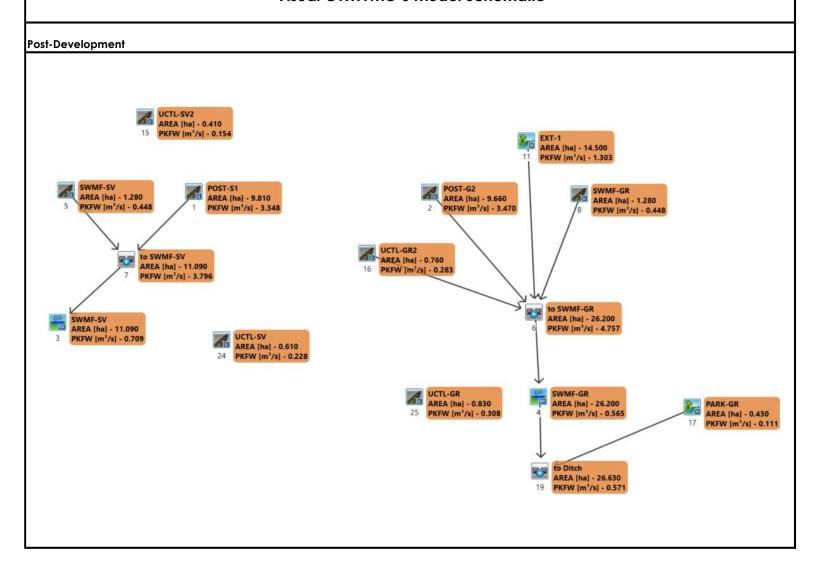


Project: Ida Street Project No.: 1060-5590

File: Model Schematic (Post-Development)

Design by: AM
Date: 5/15/2024

## Visual OTTHYMO 6 Model Schematic



\*\*\*\*\*\* 

READ STORM

Ptotal= 24.99 mm Comments: 25mm

Filename: C:\Users\jkerschbaumer\AppD
ata\Local\Temp\
0e53ce72-2c36-4efc-8a1e-c647e636da9d\4bff76f6

TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.00	1.36	1.00	6.91	2.00	4.18	3.00	1.86
0.08	1.45	1.08	11.02	2.08	3.77	3.08	1.78
0.17	1.55	1.17	26.16	2.17	3.43	3.17	1.71
0.25	1.67	1.25	76.07	2.25	3.16	3.25	1.64
0.33	1.81	1.33	33.71	2.33	2.92	3.33	1.58
0.42	1.99	1.42	18.64	2.42	2.72	3.42	1.52
0.50	2.20	1.50	12.61	2.50	2.55	3.50	1.47
0.58	2.47	1.58	9.46	2.58	2.39	3.58	1.43
0.67	2.82	1.67	7.55	2.67	2.26	3.67	1.38
0.75	3.29	1.75	6.28	2.75	2.14	3.75	1.34
0.83	3.97	1.83	5.38	2.83	2.04	3.83	1.30
0.92	5.03	1.92	4.70	2.92	1.94	3.92	1.26
				-			

CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	9.81 58.00	Dir. Conn	.(%)= 48.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 5.69 1.00 0.50 255.73 0.013		PERVIOUS (i 4.12 5.00 2.00 30.00 0.250	)
Storage Coeff Unit Hyd. Tpeak	(min) (min)= (min)=	76.07 5.00 6.16 5.00 0.19	(ii)	8.44 25.00 22.13 (ii 25.00 0.05	) *TOTALS*
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIE	(cms)= (hrs)= (mm)= (mm)=	0.66 1.33 23.99 24.99 0.96		0.05 1.75 4.91 24.99 0.20	0.665 (iii) 1.33 14.07 24.99 0.56

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

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

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

CALIB STANDHYD ( 0005) ID= 1 DT= 5.0 min	Area Total	(ha)= 1.28 Imp(%)= 50.00		50.00
Surface Area Dep. Storage Average Slope Length Mannings n Max.Eff.Inten.(	(ha) = (mm) = (%) = (m) = = mm/hr) =	IMPERVIOUS 0.64 2.00 0.50 92.38 0.013 76.07	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	
over Storage Coeff. Unit Hyd. Tpeak Unit Hyd. peak	(min)=	5.00 3.35 (ii) 5.00 0.26	25.00 0.05	TOTALS*
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICI	(cms)= (hrs)= (mm)= (mm)= ENT =	0.11 1.33 22.99 24.99 0.92	0.00 1.83 3.82 24.99 0.15	0.114 (iii) 1.33 13.39 24.99 0.54

(TT) TEAR TEOM BOL	S NOT THEE	DE DASEIL	OII 11 AII		
ADD HYD ( 0007)   1 + 2 = 3	9.81	(cms)	(hrs) 1.33	14.07	
============					=
ID = 3 (0007):	11.09	0.779	1.33	13.99	
NOTE: PEAK FLOWS D	O NOT INCL	UDE BASEFL	OWS IF A	NY.	
RESERVOIR( 0003)    IN= 2> OUT= 1	OVERFLOW	IS OFF			
DT= 5.0 min	0.0270	STORAGE (ha.m.) 0.0000 0.0900 0.1880 0.2950	(ci 0. 0. 1.		STORAGE (ha.m.) 0.4690 0.6570 0.8590 0.0000

AREA **OPEAK TPEAK** R.V. (hrs) 1.33 3.67 (ha) 11.090 (cms) 0.779 (mm) 13 99 INFLOW: ID= 2 ( 0007) OUTFLOW: ID= 1 ( 0003) 11.090 0.034

\_\_\_\_\_\_

CALIB STANDHYD ( 0015) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.41 50.00	Dir. C	onn.(%)=	15.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIC 0.20 1.00 1.00 52.28 0.013		PERVIOUS 0.20 1.50 2.00 40.00 0.250	(i)		
Storage Coeff Unit Hyd Tpeak	(min) (min)=	76.07 5.00 1.93 5.00 0.31	(ii)	43.00 15.00 11.82 15.00 0.09		OTALS*	
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIE	(cms)= (hrs)= (mm)= (mm)=	0.01 1.33 23.99 24.99 0.96		0.01 1.50 11.51 24.99 0.46		0.017 1.33 13.37 24.99 0.53	(iii)

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^*=85.0$  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   NASHYD ( 0011)  ID= 1 DT= 5.0 min	Area Ia U.H.	(ha)= 14.50 (mm)= 7.13 Tp(hrs)= 0.64	Curve Number (CN)= 77.0 # of Linear Res.(N)= 3.00
Unit Hyd Qpeak	(cms)=	0.865	
PEAK FLOW	(cms)=	0.065 (i)	

TIME TO PEAK (hrs)= 2.333 RUNOFF VOLUME (mm)= 3.403 TOTAL RAINFALL (mm)= 24.991 RUNOFF COEFFICIENT = 0.136

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

-----IMPERVIOUS PERVIOUS (i) 3 09 5 00 2 00 30 00 (ha)= (mm)= (%)= (m)= 6.57 2.00 0.50 253.77 Surface Area Dep. Storage Average Slope Length Mannings n 0 013 0 250 16.20 20.00 18.43 (ii) 20.00 Max.Eff.Inten.(mm/hr)= over (min) =
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)= 5.00 6.14 (ii) 5.00 0.06 0.19 PEAK FLOW (CMS)=
TIME TO PEAK (hrs)=
RUNOFF VOLUME (mm)=
TOTAL RAINFALL (mm)=
RUNOFF COEFFICIENT = 0.688 (iii) 1.33 14.62 24.99 0.68 0.07 1.33 22.99 24.99 1.67 6.25 24.99 0.92 0.58

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

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

(TIT) PEAK FLOW	DOES NOT	INCLUDE B	ASEFLOW	IF ANT	•		
CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total I	(ha)= [mp(%)= 5	1.28 0.00 i	Dir. Co	onn.(%)=	50.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIOU 0.64 2.00 0.50 92.38 0.013	:	RVIOUS 0.64 5.00 2.00 30.00 0.250	(i)		
	(min) (min)= (min)=		(ii) 2	5.07 25.00 22.93 ( 25.00 0.05		OTALS*	
	(CMS)= (hrs)= (mm)= (mm)= NT =	0.11 1.33 22.99 24.99 0.92	;	0.00 1.83 3.82 24.99 0.15		0.114 (iii) 1.33 13.39 24.99 0.54	
***** WARNING: STORAG	E COEFF.	IS SMALLE	R THAN	TIME ST	EP!		

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STOR SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICTENT.

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.76 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (1) 0.38 1.50 2.00 40.00 0.250	

Max.Eff.Inten.( over Storage Coeff. Unit Hyd. Tpeak Unit Hyd. peak	(min) (min)=	76.07 5.00 2.32 (ii) 5.00 0.30	43.00 15.00 12.22 (i 15.00 0.09		OTALS*
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICI		0.02 1.33 23.99 24.99 0.96	0.02 1.50 11.51 24.99 0.46		0.031 (iii) 1.50 13.38 24.99 0.54
***** WARNING: STORA ***** WARNING:FOR AR YOU SH	GE COEFF. IS EAS WITH IMP OULD CONSIDE	SMALLER THAPERVIOUS RATI R SPLITTING	N TIME STE OS BELOW 2 THE AREA.	P! 0%	
(i) CN PROCED  CN* =  (ii) TIME STEP  THAN THE  (iii) PEAK FLOW	85.0 Ia =	Dep. Storag	Je (Above)		
ADD HYD ( 0006)   1 + 2 = 3	ARE (ha 11): 14.5 16): 0.7	(cms) 0 0.065	TPEAK (hrs) 2.33 1.50		
ID = 3 ( 00 NOTE: PEAK FLO	06): 15.2	6 0.073	2.25	3.90	
ADD HYD ( 0006)     3 + 2 = 1     ID1= 3 ( 00   + ID2= 2 ( 00	ARE (ha 06): 15.2	(cms)	TPEAK (hrs) 2.25 1.33	R.V. (mm) 3.90 14.62	
ID = 1 ( 00					
NOTE: PEAK FLO	WS DO NOT IN	CLUDE BASEFL	OWS IF ANY	· 	
ADD HYD ( 0006)   1 + 2 = 3	ARE (ha 06): 24.9 08): 1.2	(cms) 2 0.720 8 0.114	TPEAK (hrs) 1.33 1.33	R.V. (mm) 8.06 13.39	
ID = 3 ( 00 NOTE: PEAK FLO	06): 26.2 WS DO NOT IN		1.33 OWS TE ANY	8.32	
RESERVOIR( 0004)   IN= 2> OUT= 1   DT= 5.0 min	OVERFLO  OUTFLOW (cms) 0.0000 0.0160 0.0250	W IS OFF  STORAGE (ha.m.) 0.0000 0.1150 0.2380	OUTFL (cms 0.14 0.30	OW S	TORAGE ha.m.) 0.6510 0.9550 1.1990
INFLOW : ID= 2 ( OUTFLOW: ID= 1 (	0006) 2	AREA QPE (ha) (cn 6 200 (	ıs) (hr ).834	AK (S) 1.33 4.50	1.4550 R.V. (mm) 8.32 8.25
P T M	EAK FLOW IME SHIFT OF AXIMUM STOR	REDUCTION [ PEAK FLOW AGE USED	Qout/Qin]( (mi (ha.m	(%)= 2. n)=190. n.)= 0.	60 00 1927
CALIB NASHYD ( 0017) ID= 1 DT= 5.0 min	Area ( Ia (	ha)= 0.43 mm)= 5.00	Curve Nu # of Lin	mber ear Res	(CN)= 75.0 ((N)= 3.00

```
----- U.H. Tp(hrs)= 0.13
     Unit Hyd Qpeak (cms)= 0.126
      PEAK FLOW
                         (cms)=
                                   0.006 (i)
                        (hrs)= 1.500
(mm)= 3.780
      TIME TO PEAK
      RUNOFF VOLUME
      TOTAL RAINFALL
                          (mm) = 24.991
      RUNOFF COEFFICIENT = 0.151
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0019) |
1 + 2 = 3 |
                                  AREA
                                            QPEAK
                                            (cms)
                                                                   (mm)
                                  (ha)
                                                       (hrs)
      ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                  0.43
                                          0.006
                                                       1.50
                                                                  3.78
                                 26.20
                                           0.022
                                                                  8.25
         ID = 3 ( 0019):
                                 26.63
                                          0.022
                                                       4 00
                                                                  8.17
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  CALIB
STANDHYD ( 0024)
ID= 1 DT= 5.0 min
                           Area (ha)= 0.61
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                                    PERVIOUS (i)
                                    IMPERVIOUS
      Surface Area
                                        0.31
                                                        0.31
                          (mm)=
                                         1.00
                                                        1.50
      Dep. Storage
      Average Slope
                           (%)=
(m)=
                                        1.00
                                                        2.00
      Length
                                       63.77
                                                       40.00
      Mannings n
                                       0.013
                                                       0.250
      Max.Eff.Inten.(mm/hr)=
                                        76.07
     over (min)

Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                        5.00
2.18 (ii)
                                                       15.00
                                                       12 07 (ii)
                                         5.00
                                                       15.00
                                        0.31
                                                        0.09
                                                                        *TOTALS*
      PEAK FLOW
                        (cms)=
(hrs)=
                                        0.02
                                                                         0.025 (iii)
      TIME TO PEAK
                                        1.33
                                                                          1.50
                          (mm)=
(mm)=
      RUNOFF VOLUME
                                       23.99
                                                       11.51
                                                                         13.37
      TOTAL RAINFALL
                                       24.99
                                                       24.99
      RUNOFF COEFFICIENT =
                                        0.96
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
                 YOU SHOULD CONSIDER SPLITTING THE AREA.
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
       CN^* = 85.0 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.
-----
  CAL TB
| STANDHYD ( 0025) | Area (ha)= 0.83 | ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                    IMPERVIOUS
                                                     PERVIOUS (i)
                          (ha)=
      Surface Area
                                        0.42
1.00
                                                       0.42
1.50
                          (mm) =
(%) =
(m) =
     Dep. Storage
                                                        2.00
     Average Slope
                                        1.00
      Length
                                        74.39
                                                       40 00
      Mannings n
                                       0.013
                                                       0.250
                                        76.07
      Max.Eff.Inten.(mm/hr)=
                                                       43.00
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                      15.00
12.28 (ii)
                                        5.00
2.39 (ii)
                                         5.00
                                                       15.00
                                         0.30
                                                        0.09
                                                                       *TOTALS*
                        (cms)=
(hrs)=
(mm)=
(mm)=
                                                                         0.034 (iii)
1.50
      PEAK FLOW
                                         0.02
                                                        0.03
                                       1 33
23 99
24 99
      TIME TO PEAK
                                                        1.50
      RUNOFF VOLUME
                                                       11.51
24.99
                                                                         13.38
24.99
      TOTAL RAINFALL
      RUNOFF COEFFICIENT
                                                        0.46
```

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^* = 85.0$  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.

\*\* SIMULATION:A. 2yr 3hr 10min Chicago \*\*

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\_\_\_\_\_\_

IDF curve parameters: A= 404.147 B= 0.000 C= 0.699CHTCAGO STORM Ptotal= 32.13 mm

used in: INTENSITY = A /  $(t + B)^C$ 

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	l hrs	mm/hr
0.00	3.76	0.83	80.82	1.67	5 83	2 50	3.63
0.17	4.42	1.00	17.11	1.83	5 15	2.67	3.39
0.33	5.48	1.17	10.79	2.00	4.63	2.83	3.20
0.50	7.50	1.33	8.23	2.17	4.23	ĺ	
0.67	13.95	1.50	6.78	2.33	3.90		

CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min	Area Total			Dir. Conr	n.(%)=	48.00
Surface Area	(ha)= (mm)=	IMPERVI 5.6 1.0	9	PERVIOUS (i 4.12 5.00	i)	

Surface Area	(ha)=	5.69	4.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	0.50	2.00
Length	(m)=	255.73	30.00
Mannings n	=	0.013	0.250
Maillings II	_	0.013	0.230

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

		TR/	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	3.76	0.833	13.95	1.583	6.78	2 33	4.23
0.167	3.76	0.917	80.82	1.667	6.78	2.42	3.90
0.250	4.42	1.000	80.82	1.750	5.83	2.50	3.90
0.333	4.42	1.083	17.11	1.833	5.83	2.58	3.63
0.417	5.48	1.167	17.11	1.917	5.15	2.67	3.63
0.500	5.48	1.250	10.79	2.000	5 15	2.75	3.39
0.583	7.50	1.333	10.79	2.083	4.63	2.83	3.39
0.667	7.50	1.417	8.23	2.167	4.63	2.92	3.20
0.750	13.95	1.500	8.23	2.250	4.23	3.00	3.20

Max.Eff.Inten.(mm/hr)=	80.82	16.02	
over (min)	5.00	20.00	
Storage Coeff. (min)=	6.02 (ii)	18.37 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.19	0.06	*TOTALS*
PEAK FLOW (CMS)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	0.89	0.10	0.916 (iii)
	1.00	1.25	1.00
	31.13	8.18	19.20
	32.13	32.13	32.13
	0.97	0.25	0.60

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 75.0 Ia = Dep. Storage (Above) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

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

```
STANDHYD ( 0005)
ID= 1 DT= 5.0 min
                           Area (ha)= 1.28
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00
                                   IMPERVIOUS
                                                    PERVIOUS (i)
     Surface Area
                          (ha)=
                                        0.64
                                                       0.64
     Dep. Storage
                          (mm)=
                                        2.00
                                                        5.00
                           (%)=
(m)=
                                        0.50
     Average Slope
                                       92 38
                                                      30.00
     Mannings n
                                       0.013
                                                      0.250
          NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                     ---- TRANSFORMED HYETOGRAPH ----
                             RAIN TIME
                                                RAIN ' TIME
                                                                    RAIN
                                                                              TIME
                                               mm/hr
13.95
80.82
80.82
17.11
                            mm/hr
3.76
                                      hrs
0.833
                                                                                       mm/hr
4.23
                                                            hrs
                                                                    mm/hr
                   0.083
                                      0.917
                                                         1 667
                                                                    6.78
                   0.167
                              3.76
                                      1 000
                                                         1.750
                                                                                       3 90
                                      1.083
                                                                                       3.63
                                              17.11 | 1.833
17.11 | 1.917
10.79 | 2.000
10.79 | 2.083
8.23 | 2.167
8.23 | 2.250
                             5 48
5 48
7 50
                                                                            2 67
2 75
2 83
2 92
                                      1.167
                   0.500
                                     1.250
1.333
                                                                   5 15
4 63
                                                                                       3.39
                   0.583
                                                                                       3.39
                             7.50
                                     1.417
                                                                                       3 20
                   0.667
                                                                    4.63
                            13 95
                                      1.500
     Max.Eff.Inten.(mm/hr)=
                                       80.82
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                        5.00
3.27 (ii)
5.00
                                                       20.00
                                                      19.06 (ii)
                                                       20.00
                                        0.27
                                                       0.06
     PEAK FLOW
                        (cms)=
(hrs)=
                                        0.14
                                                                        0.141 (iii)
     TIME TO PEAK
                                        1.00
                                                        1.25
                                                                          1.00
     RUNOFF VOLUME
                          (mm)=
(mm)=
                                       30.13
                                                        6.58
                                                                        18.35
                                                      32 13
     TOTAL RATNEALL
                                                                        32.13
0.57
     RUNOFF COEFFICIENT =
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN^*=75.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0007) | 1 + 2 = 3
                                           QPEAK
(cms)
                                                                  (mm)
                                  (ha)
                                                       (hrs)
      ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                                                19.20
                                  9.81
                                          0.916
                                                       1.00
                                 1.28
                                          0.141
                                                      1.00
                                                                18.35
        ID = 3 (0007):
                                11.09 1.057
                                                      1.00
                                                                19.10
     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
                                          (ha.m.)
0.0000
                                                                        (ha.m.)
                              (cms)
                                                           (cms)
                              0.0000
                                                           0.3480
                                                                          0.4690
                              0.0270
                                            0.0900
                                                          0.8590
                                                                         0.6570
                              0.0470
                                            0.1880
                                                           1.5140
                                                                          0.8590
                              0.0600
                                            0.2950
                                                                          0.0000
                                   (ha)
11.090
                                                            (hrs)
1.00
3.08
                                                (cms)
   INFLOW: ID= 2 ( 0007)
OUTFLOW: ID= 1 ( 0003)
                                                 1.057
                                   11.090
                                                  0.045
                                                               3.08
                                                                            19.02
                      PEAK FLOW REDUCTION [Qout/Qin](%)= 4.24 TIME SHIFT OF PEAK FLOW (min)=125.00
                      MAXIMUM STORAGE USED
                                                          (ha.m.) = 0.1772
```

		IMPERVIOUS	PERVIOUS	(i)
Surface Area	(ha)=	0.20	0.20	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	52.28	40.00	
Mannings n	=	0.013	0.250	

TIME RAIN hrs mm/hr 0.083 3.76 0.167 3.76 0.250 4.42 0.333 4.42 0.417 5.48 0.500 5.48 0.583 7.50 0.667 7.50 0.750 13.95	TIME RAIN MAIN NO. 833 13.95 0.917 80.82 1.000 80.82 1.083 17.11 1.167 17.11 1.250 10.79 1.333 10.79 1.417 8.23 1.500 8.23	1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.167		3 00 00 33 33 19
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)= PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)=	5.00 1.89 (ii) 5.00 0.32 0.01 1.00	69.37 15.00 10.05 (ii) 15.00 0.10 0.02 1.17 16.95	*TOTALS* 0.026 (iii) 1.00 19.06	
RUNOFF VOLUME (MM)= TOTAL RAINFALL (MM)= RUNOFF COEFFICIENT =  **** WARNING: STORAGE COEFF.	32.13 0.97	32.13 0.53	32.13 0.59	

\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  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.

CALTR | CALIB | NASHYD ( 0011) | Area (ha)= 14.50 | Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia | Imm= 7.13 | # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.64

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

		TRA	ANSFORME	D HYETOGRA	4PH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	3.76	0.833	13.95	1.583	6.78	2 33	4.23
0.167	3.76	0.917	80.82	1.667	6.78	2.42	3.90
0.250	4.42	1.000	80.82	1.750	5.83	2.50	3.90
0.333	4.42	1.083	17.11	1.833	5.83	2.58	3.63
0.417	5.48	1.167	17.11	1.917	5.15	2.67	3.63
0.500	5.48	1.250	10.79	2.000	5.15	2.75	3.39
0.583	7.50	1.333	10.79	2.083	4.63	2.83	3.39
0.667	7.50	1.417	8.23	2.167	4.63	2.92	3.20
0.750	13.95	1.500	8.23	2.250	4.23	3.00	3.20

Unit Hyd Qpeak (cms)= 0.865

0.120 (i) TIME TO PEAK (hrs)= 1.917 RUNOFF VOLUME (mm) = 6.197TOTAL RAINFALL (mm)= 32.132 RUNOFF COEFFICIENT = 0.193

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

CALTB | STANDHYD ( 0002) | Area (ha)= 9.66 | ID= 1 DT= 5.0 min | Total Imp(%)= 68.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS	(i)
Surface Area	(ha)=	6.57	3.09	,
Dep. Storage	(mm)=	2.00	5.00	
Average Slope	(%)=	0.50	2.00	
Length	(m)=	253.77	30.00	
Mannings n	=	0.013	0.250	

TIME RAIN hrs mm/hr 0.083 3.76 0.167 3.76 0.250 4.42 0.333 4.42 0.417 5.48 0.500 5.48 0.583 7.50 0.667 7.50 0.750 13.95	TIME RAIN   hrs mm/hr 0.833 13.95 0.917 80.82 1.000 80.82 1.083 17.11 1.167 17.11 1.250 10.79 1.333 10.79 1.417 8.23 1.500 8.23	HYETOGRAF TIME hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.167 2.250	PH RAIN   TIME mm/hr   hrs 6.78   2.33 6.78   2.42 5.83   2.58 5.15   2.67 5.15   2.67 4.63   2.92 4.23   3.00	RAIN mm/hr 4.23 3.90 3.63 3.63 3.39 3.39 3.20 3.20
Max.Eff.Inten.(mm/hr) = over (min) storage Coeff. (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	5.00 5.99 (ii) 1 5.00 0.19 0.91 1.00 30.13 32.13	33.50 20.00 15.19 (ii) 20.00 0.07 0.13 1.25 10.07 32.13 0.31	*TOTALS* 0.954 (iii) 1.00 20.10 32.13 0.63	

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STOR SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICTENT.

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

CALIB   STANDHYD ( 0008)  ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00 Dir.	Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.64 2.00 0.50 92.38 0.013	0.6 5.0 2.0 30.0	4 0 0 0	

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

		TRA	NSFORME	D HYETOGRA	PH		
TIME hrs		TIME hrs	RAIN mm/hr	' TIME ' hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.76	0.833	13 95	1.583	6.78	2 33	4.23
0.167 0.250		0.917	80.82 80.82	1.667 1.750	6.78 5.83	2.42 2.50	3.90 3.90
0.230		1.000	17.11	1.833	5.83	2.50	3.63
0.417	5.48	1.167	17 11	1.917	5 15	2.67	3.63
0.500 0.583		1.250	10.79 10.79	2.000 2.083	5.15 4.63	2.75 2.83	3.39 3.39
0.667		1.417	8.23	2.167	4.63	2.92	3.20
0.750	13.95	1.500	8.23	2.250	4.23	3.00	3.20
Max.Eff.Inten.(m		80.82		8.66			
over Storage Coeff.	(min) (min)=	5.00 3.27		20.00 19.06 (ii)			
Unit Hyd. Tpeak	(min)=	5.00		20.00 ` ´			
Unit Hyd. peak	(cms)=	0.27		0.06	****	44.C*	
PEAK FLOW	(cms)=	0.14		0.01	*TOT	ALS" 141 (iii)	
TIME TO PEAK	(hrs)=	1.00		1.25	1	.00 `	
RUNOFF VOLUME	(mm)=	30.13		6.58		.35 .13	
TOTAL RAINFALL RUNOFF COEFFICIE	(mm)= NT =	32.13 0.94		32.13 0.20		.57	
KONOLL COFFLICTE	.NI =	0.94		0.20	0	.5/	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

  (iii) PEAR ELOW DOES NOT TOULDE RASFELOW TE ANY

(iii) PEAK FLOW	DOES NOT :	INCLUDE	BASEFLOW	IF ANY.			
CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total I			Dir. Conn	.(%)= 1	.5.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.38 1.00 1.00 71.18 0.013		RVIOUS (i 0.38 1.50 2.00 40.00 0.250	)		
NOTE: RAINF	ALL WAS TI	RANSFORM	ED TO	5.0 MIN.	TIME STE	Р.	
		TR	ANSFORME	D HYETOGR.	ΔРН		
TIME	RAIN	TIME		I' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr		mm/hr	hrs	mm/hr
0.083		0.833		1.583	6.78		4.23
0.167 0.250		0.917 1.000	80.82 80.82		6.78 5.83	2.42 2.50	3.90 3.90
0.230		1.083	17.11		5.83		3.63
0.417	5.48	1.167	17.11	1.917	5.15	2.67	3.63
0.500		1.250	10.79		5.15		3.39
0.583 0.667		1.333	10.79 8.23		4.63 4.63	2.83 2.92	3.39 3.20

0.333 4.42 0.417 5.48 0.500 5.48 0.583 7.50 0.667 7.50 0.750 13.95	1.083 17.11 1.167 17.11 1.250 10.79 1.333 10.79 1.417 8.23 1.500 8.23	1.917 2.000 2.083 2.167	5.15 5.15 4.63 4.63	2.58 3.63 2.67 3.63 2.75 3.39 2.83 3.39 2.92 3.20 3.00 3.20
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	80.82 5.00 2.27 (ii) 5.00 0.30	69.37 15.00 10.44 (ii) 15.00 0.09	<b>МТОТА</b> ТА	
PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	0.03 1.00 31.13 32.13 0.97	0.04 1.17 16.95 32.13 0.53	*TOTAL 0.04 1.00 19.03 32.1 0.59	7 (iii) ) 7 3

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD ( 0006)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 ( 0011):	14.50	0.120	1.92	6.20
+ ID2= 2 ( 0016):	0.76	0.047	1.00	19.07
ID = 3 (0006):	15.26	0.131	1.83	 6.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0006)	AREA	QPEAK	TPEAK	R.V.	
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 ( 0006) :	15.26	0.131	1.83	6.84	
+ ID2= 2 ( 0002) :	9.66	0.954	1.00	20.10	
ID = 1 ( 0006):	24.92	1.009	1.00	11.98	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
ADD HYD ( 0006) | 1 + 2 = 3
                                   AREA
                                             QPEAK
                                                        TPEAK
                                                                    R.V.
(mm)
                                  (ha)
24.92
1.28
                                           (cms)
1.009
                                                         (hrs)
      ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                                                         1.00
                                                                  11 98
                                           0.141
                                                        1.00
                                                                  18.35
        ID = 3 (0006):
                                  26.20
                                           1.150
                                                        1.00
                                                                  12.29
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 RESERVOIR( 0004)
                              OVERFLOW IS OFF
 IN= 2---> OUT= 1
 DT= 5.0 min
                              OUTFLOW
                                            STORAGE
                                                            OUTFLOW
                                                                          STORAGE
                                            (ha.m.)
                                                             (cms)
0.1460
                               (cms)
                                                                          (ha.m.)
                               0.0000
                                                                            0.6510
                                                             0.3020
                                                                            0.9550
                               0.0160
                                             0.1150
                               0 0250
                                             0.2380
                                                             0.4430
                                                                            1.1990
                               0.0410
                                                  ΟΡΕΔΚ
                                                              TPEAK
                                       \Delta RF\Delta
                                     (ha)
26.200
26.200
                                                              (hrs)
1.00
3.92
                                                  (cms)
1,150
                                                                              (mm)
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                                    0.031
                      PEAK FLOW REDUCTION [Qout/Qin](%)= 2.73
TIME SHIFT OF PEAK FLOW (min)=175.00
MAXIMUM STORAGE USED (ha.m.)= 0.290
                                                            (ha.m.) = 0.2902
                         Area (ha)= 0.43 Curve Number (CN)= 75.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.13
          ( 0017)
 NASHYD
ID= 1 DT= 5.0 min
          NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                      ---- TRANSFORMED HYETOGRAPH ----
                                       TIME
                    TTMF
                              RATN
                                                  RAIN
                                                            TIME
                                                                       RAIN
                                                                                TTMF
                                                                                           RATN
                                         hrs
                     hrs
                             mm/hr
                                                 mm/hr
                                                               hrs
                                                                      mm/hr
                                                                                          mm/hr
4.23
                                                                                  hrs
                              3 76
                                                13.95
80.82
                   0.083
                                       0.833
                                                          1.583
                                                                      6.78
                                                                                2.33
                   0.167
                              3.76
                                       0.917
                                                          1 667
                   0.250
                                       1.000
                                                 80.82
                                                          1.750
                                                                                2.50
                                                                                          3.90
                             4 42
5 48
5 48
7 50
7 50
                                               17 11
17 11
10 79
10 79
                                                                               2 58
2 67
2 75
2 83
2 92
                   0.333
                                       1.083
                                                          1.833
                                                                      5.83
                                                                                          3.63
                                                          1.917
2.000
2.083
2.167
2.250
                   0.417
                                      1 167
1 250
1 333
1 417
                                                                      5.15
5.15
4.63
                                                                                          3.63
3.39
                   0.500
                   0.583
                                                                                          3.39
                                                  8 23
8 23
                   0.667
                                                                                          3.20
                                                                      4.63
                   0.750
                            13.95 1.500
     Unit Hyd Qpeak (cms)= 0.126
                        (cms)= 0.010
(hrs)= 1.083
(mm)= 6.519
(mm)= 32.132
                                   0.010 (i)
     PEAK FLOW
     TIME TO PEAK
     RUNOFF VOLUME
     TOTAL RAINFALL
     RUNOFF COEFFICIENT = 0.203
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0019) | 1 + 2 = 3
                                           QPEAK
(cms)
0.010
                                   ΔRFΔ
                                                        TPFAK
                                                                    R.V.
(mm)
                                   (ha)
0.43
                                                         (hrs)
      ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                                         1.08
                                                                    6.52
                                  26.20
                                                                  12.22
                                            0.031
        ID = 3 (0019):
                                 26.63
                                           0.031
                                                        3.92
                                                                  12.13
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 STANDHYD ( 0024)
                           Area (ha)= 0.61
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
ID= 1 DT= 5.0 min
                                                      PERVIOUS (i)
                                     IMPERVIOUS
     Surface Area
                           (ha)=
                                         0.31
                                                         0.31
     Dep. Storage
                          (mm)=
                                         1.00
```

Average Slope (%)= 1.00 2.00 Length (m)= 63.77 40.00 Mannings n = 0.013 0.250

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

TIME RA hrs mm/ 0.083 3. 0.167 3.	IN TIME RAIN nr hrs mm/hr 76 0.833 13.95	hrs mr 1.583 6 1.667 6	RAIN TIME n/hr hrs .78 2.33 .78 2.42	RAIN mm/hr 4.23 3.90
0.250 4. 0.333 4. 0.417 5. 0.500 5. 0.583 7. 0.667 7.	12   1.083   17.11 18   1.167   17.11 18   1.250   10.79 50   1.333   10.79	1.833 5 1.917 5 2.000 5 2.083 4	.83   2.50 .83   2.58 .15   2.67 .15   2.75 .63   2.83 .63   2.92	3.90 3.63 3.63 3.39 3.39 3.20
0.750 13.1  Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)=	80.82 5.00 2.12 (ii)	[ 2.250 4 69.37 15.00 10.29 (ii)	23   3.00	3.20
Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)= PEAK FLOW (cms)= TIME TO PEAK (hrs)=	0.31 0.02 1.00	15.00 0.09 0.03 1.17	*TOTALS* 0.038 (iii) 1.00	
RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =		16.95 32.13 0.53	19.06 32.13 0.59	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN\* = 85.0 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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=		Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.4 1.0 1.0 74.3 0.01	2 0 0 9	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

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

		D HYETOGRAP	H	
TIME RA		' TIME	RAIN TIME	RAIN
hrs mm/h		1115	mm/hr hrs	mm/hr
0.083 3.7 0.167 3.7			6.78   2.33 6.78   2.42	4.23 3.90
0.250 4.4			5.83   2.50	3.90
0.333 4.4			5 83 2 58	3.63
0.417 5.4			5.15 2.67	3 63
0.500 5.4	18 1 250 10 79	2.000	5 15 2 75	3.39
0.583 7.5			4.63 2.83	3.39
0.667 7.5			4.63   2.92	3.20
0.750 13.9	05   1.500 8.23	2.250	4.23   3.00	3.20
Max.Eff.Inten.(mm/hr)=	80.82	69.37		
over (min)	5.00	15.00		
Storage Coeff (min)=	2.33 (ii)	10.50 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.30	0.09	*TOTALS*	
PEAK FLOW (cms)=	0.03	0.04	0.052 (iii)	1
TIME TO PEAK (hrs)=	1.00	1.17	1.00	
RUNOFF VOLUME (mm)=	31.13	16.95	19.07	
TOTAL RAINFALL (mm)=	32.13	32.13	32.13	
RUNOFF COEFFICIENT =	0.97	0.53	0.59	
*** WARNING: STORAGE COEF	TE CMALLED THAN	TIME CTED!		

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

\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA. (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 85.0 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. \*\*\*\*\*\*\*\*\* \*\* SIMULATION:B. 5yr 3hr 10min Chicago \*\* CHTCAGO STORM IDF curve parameters: A= 535.364 B= 0.000 C= 0.699 Ptotal= 42.56 mm ----used in: INTENSITY = A /  $(t + B)^C$ Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33TTMF RATN TTMF RATN TTMF RATN TTMF RATN mm/hr hrs 0.83 mm/hr hrs mm/hr hrs mm/hr hrs 107.07 1.67 2.50 0.17 5 86 1.00 22.67 1.83 6.82 2.67 4.50 0.33 7.26 9.93 18.47 1.17 14.30 10.90 2 00 2 17 2 33 6.14 2.83 4.24 1.33 1.50 5.60 0.50 8 98 5.16 \_\_\_\_\_ CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min Area (ha)= 9.81 Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00 **IMPERVIOUS** PERVIOUS (i) Surface Area (ha)=5.69 1.00 4.12 (mm)= (%)= (m)= Dep. Storage 5.00 Average Slope 0.50 2.00 30.00 255.73 Length Mannings n 0.013 0.250 NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP. ---- TRANSFORMED HYETOGRAPH ----TIME TTMF RATN TTME RATN RAIN TTMF RATN mm/hr mm/hr mm/hr mm/hr 0.833 18.47 0.167 4 98 0.917 107.07 1.667 8.98 2.50 2.58 2.67 0.250 5.86 1.000 107.07 1.750 7.72 5.16 22 67 22 67 1 833 1 917 0.3335.86 7.26 1.083 7.72 6.82 4.80 0.417 1.167 7 26 14.30 2 000 6 82 2.75 4 50 0.500 1.250 14 30 10 90 10 90 9 93 1.333 1.417 2.083 2.167 2.83 4.50 0.583 6.14 9.93 4.24 18 47 1.500 Max.Eff.Inten.(mm/hr)= 107.07 36.96 over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)= 5.00 5.38 (ii) 15.00 14.22 (ii) 5.00 15 00 0.21 0.08 1.22 1.311 (iii) PEAK FLOW (cms)= (hrs)= 0.21 TIME TO PEAK 1.00 1.00 1.17 RUNOFF VOLUME (mm)= 41.56 13.88 27.17 TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN\* = 75.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT. (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB

STANDHYD ( 0005) Area (ha)= 1.28

|ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00TMPERVIOUS PERVIOUS (i) Surface Area (ha)=0.64 0.64 2.00 5 00 (mm)= Dep. Storage Average Slope (%)= (m)= 0.50 2.00 92.38 Length 0.013 0.250 Mannings n NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP. --- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN TIME TIME RAIN mm/hr hrs mm/hr hrs mm/hr 4 98 4 98 0.833 8 98 8 98 0.083 18.47 1.583 2.33 5.60 0.167 107.07 107.07 1.667 2.42 5.16 5.16 5 86 1.750 7.72 1.000 0.333 5 86 1 083 22.67 1.833 4 80 1.167 22.67 1.917 6.82 2.67 1.250 1.333 1.417 2 000 2 083 2 167 2 250 7.26 14.30 6.82 4.50 9 93 9 93 14.30 10.90 2 83 2 92 0.583 6.14 4.50 6.14 4.24 0.667 18.47 10.90 5.60 1.500 3.00 4.24 Max.Eff.Inten.(mm/hr)= 107.07 over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)= 5.00 2.92 (ii) 15.00 14.58 (ii) 5.00 15.00 0.28 \*TOTALS\* 0.194 (iii) TIME TO PEAK (hrs)=
RUNOFF VOLUME (mm)=
TOTAL RAINFALL (mm)= 1.00 40.56 11.54 26.05 42.56 42.56 42.56 RUNOFF COEFFICIENT = 0.95 0.61\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT. (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. ADD HYD ( 0007)| 1 + 2 = 3 AREA OPEAK TPFAK R.V. (ha) (cms) (hrs) (mm) ID1= 1 ( 0001): + ID2= 2 ( 0005): 1.28 0.194 26.05 \_\_\_\_\_ ID = 3 (0007): 11.09 1.5051.00 27.04 NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY. RESERVOIR( 0003) OVERFLOW IS OFF IN= 2---> OUT= 1 DT= 5.0 min OUTFL OW STORAGE OUTFL OW STORAGE (ha.m.) (ha.m.) (cms) (cms) 0.0000 0.0000 0.3480 0.0270 0.0900 0.8590 0.6570 0.0470 0.1880 1.5140 0.8590 0.0600 0.2950 0.0000 OPEAK ARFA TPFAK R.V. (ha) (cms) (hrs) (mm) 27.04 INFLOW: ID= 2 ( 0007) 11.090 1.505 OUTFLOW: ID= 1 ( 0003) 11.090 PEAK FLOW REDUCTION [Qout/Qin](%)= 3.67
TIME SHIFT OF PEAK FLOW (min)=125.00
MAXIMUM STORAGE USED (ha.m.)= 0.256 (ha.m.) = 0.2566CALTR STANDHYD ( 0015) ID= 1 DT= 5.0 min Area (ha)= 0.41 Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00 IMPERVIOUS PERVIOUS (i)

```
0.20
1.50
2.00
40.00
Surface Area
                        (mm)=
(%)=
(m)=
Dep. Storage
                                        1.00
Average Slope
Length
                                       1.00
52.28
                                       0.013
                                                         0.250
Mannings n
```

TIME RAIN hrs mm/hr 0.083 4.98 0.167 4.98 0.250 5.86 0.333 5.86 0.417 7.26 0.500 7.26 0.583 9.93 0.667 9.93	TRANSFORMED HYETOGRAI TIME RAIN TIME hrs mm/hr hrs 0.833 18.47 1.583 0.917 107.07 1.667 1.000 107.07 1.750 1.083 22.67 1.833 1.167 22.67 1.917 1.250 14.30 2.000 1.333 14.30 2.000 1.333 14.30 2.083	RAIN mm/hr         TIME hrs         RAIN mm/hr           8.98         2.33         5.60           8.98         2.42         5.16           7.72         2.50         5.16           7.72         2.58         4.80           6.82         2.67         4.80           6.14         2.83         4.50           6.14         2.92         4.24
0.750 18.47  Max.Eff.Inten.(mm/hr)=	1.500   10.90   2.250 107.07   107.48 5.00   10.00 1.68 (ii) 8.54 (ii) 5.00   0.12 0.02   0.04 1.00   1.08 41.56   25.53 42.56   42.56 0.98   0.60	*TOTALS* 0.052 (iii) 1.00 27.92 42.56 0.66

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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.

Area (ha)= 14.50 Curve Number (CN)= 77.0
Ia (mm)= 7.13 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.64 NASHYD ( 0011) ID= 1 DT= 5.0 min

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

		TR	ANSFORME	D HYETOGRA	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	4.98	0.833	18,47	1.583	8.98 I	2 33	5.60
0.167	4.98	0.917	107.07	1.667	8.98	2.42	5.16
0.250	5.86	1.000	107.07	1.750	7.72	2.50	5.16
0.333	5.86	1.083	22.67	1.833	7.72	2.58	4.80
0.417	7.26	1.167	22.67	1.917	6.82	2.67	4.80
0.500	7.26	1.250	14.30	2.000	6.82	2.75	4.50
0.583	9.93	1.333	14.30	2.083	6.14	2.83	4.50
0.667	9.93	1.417	10.90	2.167	6.14	2.92	4.24
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms)= 0.226 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 11.281
TOTAL RAINFALL (mm)= 42.565
RUNOFF COEFFICIENT = 0.265

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min Area (ha)= 9.66 Total Imp(%)= 68.00 Dir. Conn.(%)= 50.00 IMPERVIOUS PERVIOUS (i)

Surface Area Dep. Storage	(ha)= (mm)=	6.57 2.00	3.09 5.00
Average Slope	`(%)=	0.50	2.00
Length	(m)=	253.77	30.00
Mannings n		0.013	0.250

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

		TR	ANSFORME	D HYETOGRA	PH		
TIME		TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs 0.083		hrs 0.833	mm/hr 18.47	' hrs	mm/hr 8.98 l	hrs 2.33	mm/hr 5.60
0.167		0.833	107.07	1.667	8.98	2.42	5.16
0.250		1 000	107 07	1.750	7.72	2 50	5 16
0.333		1.083	22.67	1.833	7.72	2.58	4.80
0.417		1.167	22.67	1.917	6.82	2.67	4.80
0.500 0.583		1.250	14.30 14.30	2.083	6.82	2.75 2.83	4.50 4.50
0.667		1.417	10 90	2.167	6.14	2 92	4 24
0.750	18.47	1.500	10.90	2.250	5.60	3.00	4.24
Storage Coeff.	m/hr)= (min) (min)= (min)=	107.07 5.00 5.35 5.00	(ii)	58.09 15.00 10.19 (ii) 15.00			
Unit Hyd. peak	(cms)=	0.21		0.09			
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIE	(cms)= (hrs)= (mm)= (mm)= NT =	1.25 1.00 40.56 42.56 0.95		0.29 1.17 16.56 42.56 0.39	1 28 42	ALS* 391 (iii) .00 .56 .56	

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

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.6 2.0 0.5 92.3 0.01	4 0 0 8	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

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

TIME RAIN hrs mm/hr 0.083 4.98 0.167 4.98 0.250 5.86 0.333 5.86 0.417 7.26 0.500 7.26 0.583 9.93 0.667 9.93 0.750 18.47	TRANSFORMED HYETOGRAI TIME RAIN ' TIME hrs mm/hr ' hrs 0.833 18.47   1.583 0.917 107.07   1.667 1.000 107.07   1.750 1.083 22.67   1.917 1.250 14.30   2.000 1.333 14.30   2.083 1.417 10.90   2.167 1.500 10.90   2.250	RAIN TIME RAIN mm/hr   hrs mm/hr   hrs mm/hr   5.98   2.33   5.60   8.98   2.42   5.16   7.72   2.50   5.16   7.72   2.58   4.80   6.82   2.67   4.80   6.82   2.75   4.50   6.14   2.83   4.50   6.14   2.92   4.24   5.60   3.00   4.24
Max.Eff.Inten.(mm/hr) over (min) over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)= PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	107.07 18.53 5.00 15.00 2.92 (ii) 14.58 (ii) 5.00 0.28 0.08 0.19 0.02 1.00 1.17 40.56 11.54 42.56 42.56 0.95 0.27	*TOTALS* 0.194 (iii) 1.00 26.05 42.56 0.61

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

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.76 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

TIME		TIME	RAIN	D HYETOGRA	RAIN	TIME	RAIN
hrs 0.08	3 4 <b>.</b> 98	hrs 0.833	mm/hr 18.47	' hrs	mm/hr 8.98	hrs 2.33	mm/hr 5.60
0.167 0.250	5.86	0.917 1.000	107.07 107.07	1.667 1.750	8.98 7.72	2.42	5.16 5.16
0.333 0.417 0.500	7 7.26	1.083 1.167 1.250	22.67 22.67 14.30	1.833 1.917 2.000	7.72 6.82 6.82	2.58 2.67 2.75	4.80 4.80 4.50
0.583 0.667	9.93	1.333	14.30 14.30 10.90	2.083	6.14 6.14	2.73 2.83 2.92	4.50 4.50 4.24
0.750		1.500	10.90	2.250	5.60	3.00	4.24
Max.Eff.Inten.(n	nm/hr)= (min)	107.07 5.00		07.48 10.00			
Storage Coeff Unit Hyd Tpeak	(min)= (min)=	2.03 5.00		8.88 (ii) 10.00			
Unit Hyd. peak	(cms)=	0.31		0.12		ALS*	
PEAK FLOW TIME TO PEAK	(cms)= (hrs)=	0.03 1.00		0.07 1.08	1	095 (iii) 00	
RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIE	(mm)= (mm)=	41.56 42.56 0.98		25.53 42.56 0.60	42	. 93 . 56 . 66	
KUNUFF CUEFFICIE	ENT =	0.98		0.00	U	.00	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 85.0 Ia = Dep. Storage (Above)

(ha) 14.50	(cms) 0.226	(hrs) 1.83	(mm) 11.28
15.26	0.242	1.83	12.11
NOT INCLU	JDE BASEFL	OWS IF AN	NY. 
AREA	QPEAK	TPEAK	R.V.
15.26 9.66	QPEAK (cms) 0.242 1.391	$\frac{1.83}{1.00}$	12.11 28.56
	(ha) 14.50 0.76  15.26	(ha) (cms) 14.50 0.226 0.76 0.095 	AREA OPEAK TPEAK (ha) (cms) (14.50 0.226 1.83 0.76 0.095 1.00  15.26 0.242 1.83  NOT INCLUDE BASEFLOWS IF AN

```
ADD HYD ( 0006)|
                                AREA
                                          QPEAK
                                                    TPEAK
_____
                               (ha)
24.92
                                        (cms)
1.505
                                                    (hrs)
                                                                (mm)
       ID1= 1 ( 0006):
                                                             18.49
                                                    1.00
      + ID2= 2 ( 0008):
                                1.28
                                      0.194
                                                    1.00
                                                             26.05
        _____
        ID = 3 (0006):
                              26.20 1.699
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-----
 RESERVOIR( 0004)
                            OVERFLOW IS OFF
  IN= 2---> OUT= 1
 DT= 5.0 min
                            OUTFLOW
                                         STORAGE
                                                                    STORAGE
                                        (ha.m.)
0.0000
0.1150
0.2380
                             (cms)
                                                         (cms)
                                                                    (ha.m.)
                                                        0.1460
0.3020
                                                                      0.6510
0.9550
                             0.0000
                             0.0160
0.0250
                                                        0.4430
                                                                      1 1990
                             0 0410
                                          0.3690
                                                                      1.4550
                                    AREA
                                              QPEAK
                                                          (hrs)
1.00
3.75
                                  (ha)
26.200
                                              (cms)
1.699
                                                                        (mm)
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                                                        18.86
                                   26.200
                                                0.067
                     PEAK FLOW REDUCTION [Qout/Qin](%)= 3.93
                     TIME SHIFT OF PEAK FLOW
MAXIMUM STORAGE USED
                                                          (min)=165.00
                                                        (ha.m.) = 0.4383
| CALIB
| NASHYD ( 0017) | Area (ha)= 0.43 Curve Number (CN)= 75.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.13
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                   ---- TRANSFORMED HYETOGRAPH ----
                   TIME
                            RAIN
                                    TIME
                                              RAIN | TIME
                                                                 RAIN
                                                                          TIME
                                                                                   RAIN
                           mm/hr
4.98
4.98
                                    hrs
0.833
                                                                mm/hr
8.98 |
                                                                                   mm/hr
5.60
                    hrs
                                             mm/hr
                                                          hrs
                                                                            hrs
                                           18.47
107.07
                  0.083
                                                      1.583
                  0.167
                                    0.917
                                                      1.667
                                                                 8.98
                                                                                   5 16
                                    1 000
                                            107.07
                                                      1.750
                  0.333
                            5.86
                                    1.083
                                             22.67
                                                      1.833
                                                                          2.58
                            7 26
7 26
9 93
                                             22 67
14 30
14 30
10 90
                                                    1.917
2.000
2.083
2.167
2.250
                                                                         2.67
2.75
2.83
2.92
                  0.417
                                                                6 82
6 82
                                    1.167
                                                                                   4.80
                         7 26 | 1.250
9.93 | 1.333
9.93 | 1.417
18.47 | 1.500
                                                                                   4 50
4 50
                                                                6.14
6.14
                  0.583
                  0.667
                                                                                   4.24
                                             10.90
     Unit Hyd Qpeak (cms)= 0.126
     PEAK FLOW
TIME TO PEAK
                                 0.019 (i)
                        (cms)=
                       (hrs) = 1.083
                         (mm) = 11.429
     RUNOFF VOLUME
                         (mm) = 42.565
     TOTAL RAINFALL
     RUNOFF COEFFICIENT = 0.269
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0019) | 1 + 2 = 3
                                AREA
                                          QPEAK
                                                    TPEAK
                                                               R.V.
                                (ha)
                                          (cms)
                                                    (hrs)
                                                                (mm)
      ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                0.43
                                        0.019
                                                    1.08
                                                             11 43
                               26.20
                                        0.067
                                                    3.75
                                                             18.79
        ID = 3 (0019):
                               26.63
                                       0.067
                                                             18.67
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 CALIB
STANDHYD ( 0024)
                         Area (ha)= 0.61
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                                  PERVIOUS (i)
                                 IMPERVIOUS
                                      0.31
1.00
     Surface Area
                         (ha)=
                                                     0.31 \\ 1.50
     Dep. Storage
                         (mm)=
     Average Slope
                         (%)=
```

Length 0.013 0.250 Mannings n

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

TIME hrs mm/hr 0.083 4.98 0.167 4.98 0.250 5.86 0.333 5.86 0.417 7.26 0.500 7.26 0.583 9.93 0.667 9.93 0.750 18.47	TRANSFORME TIME RAIN hrs mm/hr 0.833 18.47 0.917 107.07 1.000 107.07 1.083 22.67 1.167 22.67 1.250 14.30 1.333 14.30 1.417 10.90 1.500 10.90	TIME hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083	PH RAIN   mm/hr   8.98   8.98   7.72   7.72   6.82   6.82   6.14   6.14   5.60	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.67 2.83 2.92 3.00	RAIN mm/hr 5.60 5.16 5.16 4.80 4.50 4.50 4.50 4.24 4.24
Max.Eff.Inten.(mm/hr) = over (min) storage Coeff. (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	5.00 1.90 (ii) 5.00 0.32 0.03 1.00 41.56	07.48 10.00 8.75 (ii) 10.00 0.12 0.06 1.08 25.53 42.56 0.60	*TOTAI	76 (iii) 00 93 56	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%

CALIB STANDHYD ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.83 50.00	Dir. Conn.(%)=	15.00
		IMPERVI	ous	PERVIOUS (i)	
Surface Area	(ha)=	0.4	2	0.42	
Dep. Storage	(mm)=	1.0		1.50	
Dep. Storage					
Average Slope	(%)=	1.0	0	2.00	
Length	(m)=	74.3	ġ.	40.00	
	(11) -				
Mannings n	=	0.01	3	0.250	

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

	TRANSFOR	MED HYETOGRA	PH	
TIME RAIN		N   TIME	RAIN   TIME	RAIN
hrs mm/hr	hrs mm/k	ir ' hrs	mm/hr hrs	mm/hr
0.083 4.98	0.833 18.4	7 1.583	8 98   2 33	5.60
0.167 4.98			8.98 2.42	5.16
0.250 5.86			7.72 2.50	5.16
0.333 5.86			7.72 2.58	4.80
0.417 7.26			6.82 2.67	4.80
0.500 7.26	1 250 14 3		6.82 2.75	4.50
0.583 9.93			6.14   2.83	4.50
	1.417 10.9 1.500 10.9		6.14   2.92 5.60   3.00	4.24 4.24
0.730 18.47	1 1.300 10.5	00   2.230	3.00   3.00	4.24
Max Eff Inten (mm/hr)=	107.07	107.48		
over (min)	5.00	10.00		
Storage Coeff. (min)=	2.08 (ii)	8.94 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd peak (cms)=	0.31	0.12		
			*TOTALS*	
PEAK FLOW (cms)=	0.04	0.08	0.103 (iii)	1
TIME TO PEAK (hrs)=	1.00	1.08	1.00	
RUNOFF_VOLUME (mm)=	41.56	25.53	27.93	
TOTAL RAINFALL (mm)=	42.56	42.56	42.56	
RUNOFF COEFFICIENT =	0.98	0.60	0.66	
***** WARNING: STORAGE COEFF.	IS SMALLER THA	N TIME STEP!	_	

YOU SHOULD CONSIDER SPLITTING THE AREA.

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

\*\*\*\*\*\*\*\*\* \*\* SIMULATION:C. 10yr 3hr 10min Chicago \*\*

CHICAGO STORM IDF curve parameters: A= 622.842 B= 0.000C= 0.699used in: INTENSITY = A / (t + B)^C Ptotal= 49.52 mm

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	l' hrs	mm/hr	hrs	mm/hr
0.00	5.79	0.83	124.56	1.67	8 98	2 50	5.59
0.17	6.82	1.00	26.38	1.83	7.93	2.67	5.23
0.33	8.45	1.17	16.63	2.00	7.14	2.83	4.93
0.50	11.56	1.33	12.68	2.17	6.51		
0.67	21.49	1.50	10.45	2.33	6.01		

CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min	Area Total	(ha)= 9.8 Imp(%)= 58.0	i1 0 Dir. Conn.(%)=	48.00
		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	5.69	4.12	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	0.50	2.00	
Length	(m)=	255.73	30.00	
Mannings n	=	0.013	0.250	

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

		TRA	NSFORME	D HYETOGRA	APH		
TIME	E RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	s mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.08		0.833	21.49	1.583	10.45 I	2 33	6.51
0.167		0.917	124.56	1.667	10.45	2.42	6 01
0.250		1 000	124 56	1.750	8.98	2.50	6.01
0.33		1.083	26 38	1.833	8.98	2.58	5.59
0.41		1.167	26 38	1.917	7.93	2.67	5.59
0.500		1.250	16 63	2.000	7.93	2.75	5.23
0.583		1.333	16 63	2.083	7.14	2.83	5.23
0.667		1.417	12.68	2.167	7.14	2.92	4.93
0.750		1.500	12 68	2.250	6.51	3.00	4.93
0.730	21.73	1.300	12.00	2.230	0.31	3.00	7.33
Max.Eff.Inten.(r	nm/hr)=	124.56		49.78			
over		5.00		15.00			
Storage Coeff.	(min)=	5.06		12.91 (ii)			
Unit Hyd Tpeak		5.00		15.00			
Unit Hyd peak	(cms)=	0.21		0.08			
onic nya. peak	(CIII3)-	0.21		0.00	*TOT/	AI C*	
PEAK FLOW	(cms)=	1.44		0.29		578 (iii)	
TIME TO PEAK	(hrs)=	1.00		1.17		.00	
RUNOFF VOLUME	(mm)=	48.52		18.17		.74	
TOTAL RAINFALL	(mm)=	49.52		49.52		.52	
RUNOFF COEFFICIE		0.98		0.37		.66	
KUNDEL COELLICIE	EINI =	0.90		0.37	U	.00	

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 75.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

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

STANDHYD ( 0005) Area (ha)= 1.28 ID= 1 DT= 5.0 min Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

```
PERVIOUS (i)
                                   IMPERVIOUS
     Surface Area
                         (ha) =
                                       0.64
                                                      0.64
                         (mm)=
(%)=
(m)=
                                       2 00
                                                      5 00
     Dep. Storage
                                       0.50
                                                      2.00
     Average Slope
     Lenath
                                      92 38
                                                      30 00
                                      0.013
      Mannings n
          NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                     --- TRANSFORMED HYETOGRAPH ----
                                                       ' TIME
                             RAIN
                                     TIME
                                               RAIN
                                                           hrs
                                                                   mm/hr
                  0.083
                             5.79
                                     0.833
                                              21.49
                                                        1.583
                                                                 10.45
                                                                            2.33
                                                                                     6.51
                             5.79
                                                                           2.42
2.50
2.58
                                     0.917
                                             124.56
                  0.167
                                                        1.667
                                                                 10.45
                                                                                     6.01
                                            124.56
26.38
                            6 82
6 82
                  0.250
                                                        1.750
                                                                                     6.01
5.59
                                                                  8.98
                  0.333
                                     1 083
                                                                  8 98
                                                        1.833
                  0.417
                             8 45
                                     1 167
                                              26 38
                                                        1.917
                                                                           2.67
                                                                                     5 59
                                     1 250
1 333
1 417
                  0.500
                             8.45
                                              16.63
                                                        2.000
                                                                           2.75
                                                                                     5.23
                  0.583
0.667
                           11.56
11.56
                                                       2 083
2 167
                                              16.63
                                              12 68
12 68
                                                                           2.92
                                                                                     4.93
                                                                  7.14
                           21.49
                                                       2.250
                                                                  6.51
                  0.750
                                     1.500
     Max.Eff.Inten.(mm/hr)=
                                     124.56
                                                      32.56
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                       5.00
2.75 (ii)
                                                     12.05 (ii)
                                       5.00
                                                     15.00
                                       0.28
                                                      0.09
                                                                     *TOTALS*
      PEAK FLOW
                        (cms) =
                                       0.22
                                                      0.03
                                                                       0.231 (iii)
     TIME TO PEAK
                        (hrs)=
                                      1.00
47.52
                                                                        1.00
                                                      1.17
      RUNOFF VOLUME
                         (mm)=
     TOTAL RAINFALL
                         (mm)=
                                      49.52
                                                      49.52
                                                                       49.52
     RUNOFF COEFFICIENT =
                                       0.96
                                                      0.31
                                                                        0.63
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
       \mathsf{CN}^* = 75.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
     THAN THE STORAGE COEFFICIENT.

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0007) | 1 + 2 = 3
                                 ΔRFΔ
                                           OPEAK
                                                     TPFAK
                                                                 R.V.
(mm)
                                 (ha)
                                           (cms)
                                                      (hrs)
      ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                 9.81
                                         1.578
                                                      1.00
                                                               32.74
                                 1.28
                                                               31.42
        ID = 3 (0007):
                                11.09
                                        1.809
                                                     1.00
                                                               32.58
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  RESERVOIR( 0003)
                             OVERFLOW IS OFF
  IN= 2---> OUT= 1
 DT= 5.0 min
                             OUTFLOW
                                                         OUTFLOW
                                                                      STORAGE
                                         STORAGE
                              (cms)
                                          (ha.m.)
0.0000
                                                          (cms)
0.3480
                                                                      (ha.m.)
0.4690
                              0.0270
                                           0.0900
                                                          0.8590
                                                                        0.6570
                              0.0470
                                           0.1880
                                                          1.5140
                                                                        0.8590
                              0.0600
                                           0.2950
                                                          0.0000
                                                                        0.0000
                                     \Delta RF\Delta
                                               OPEAK
                                                           TPFAK
                                                                         R.V.
                                                           (hrs)
1.00
3.08
                                  (ha)
11.090
                                               (cms)
                                                                         (mm)
   INFLOW: ID= 2 ( 0007)
OUTFLOW: ID= 1 ( 0003)
                                                 1.809
                                                                          32,58
                                   11.090
                                                 0.084
                      PEAK FLOW REDUCTION [Qout/Qin] (%) = 4.64 TIME SHIFT OF PEAK FLOW (min)=125.00
                                                         (ha.m.)= 0.3096
                      MAXIMUM STORAGE USED
  CALIB
  STANDHYD ( 0015)
                        Area (ha)= 0.41
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
ID= 1 DT= 5.0 min |
                                  IMPERVIOUS
                                                   PERVIOUS (i)
     Surface Area
                         (ha)=
                                      0.20
                                                      0.20
```

Dep. Storage	(mm) =	1.00	1.50
Average Slope	(%) =	1.00	2.00
Length	(m) =	52.28	40.00
Mannings n	=	0.013	0.250
NOTE - DATE	TALL WAS T	DANCEODMED T	O F O MT

TIME RAIN hrs mm/hr		RMED HYETOGR IN  ' TIME hr  ' hrs	APH RAIN   mm/hr	TIME hrs	RAIN mm/hr
0.083 5.79 0.167 5.79 0.250 6.82	0 833 21 0 917 124 1 000 124	49   1.583 56   1.667 56   1.750	10.45 10.45 8.98	2 33 2 42 2 50	6.51 6.01 6.01
0.333 6.82 0.417 8.45 0.500 8.45 0.583 11.56	1.083 26. 1.167 26. 1.250 16. 1.333 16.	63 2.000	8.98 7.93 7.93 7.14	2.58 2.67 2.75 2.83	5.59 5.59 5.23 5.23
0.667 11.56 0.750 21.49	1.417 12 1.500 12	68   2.167 68   2.250	7.14 6.51	2.92 3.00	4.93 4.93
Max.Eff.Inten.(mm/hr)= over (min)	124.56 5.00	134.54 10.00			
Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	1.59 (ii) 5.00 0.33	7.85 (ii 10.00 0.13	)		
PEAK FLOW (CMS)=	0.02	0.05		)66 (iii)	
TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)=	1.00 48.52 49.52	1.08 31.54 49.52	34 49	.52	
RUNOFF COEFFICIENT =  ** WARNING: STORAGE COEFF. 1	0.98 IS SMALLER TH	0.64 AN TIME STEP		. 69	
** WARNING:FOR AREAS WITH IM	MPERVIOUS RAT	IOS BELOW 20	%		

\*\*\* YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- CN\* = 85.0 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			
NASHYD ( 0011)			Curve Number (CN)= 77.0
ID= 1 DT= 5.0 min			# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.64	

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

		TR	ANSFORME	) HYETOGR	APH		
TIME	RAIN	TIME	KAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	5.79	0.833	21.49	1.583	10.45	2 33	6.51
0.167	5.79	0.917	124.56	1.667	10.45	2.42	6.01
0.250	6.82	1.000	124.56	1.750	8.98	2.50	6.01
0.333	6.82	1.083	26.38	1.833	8.98	2.58	5.59
0.417	8.45	1.167	26.38	1.917	7.93	2.67	5.59
0.500	8.45	1.250	16.63	2.000	7.93	2.75	5.23
0.583	11.56	1.333	16.63	2.083	7.14	2.83	5.23
0.667	11.56	1.417	12.68	2.167	7.14	2.92	4.93
0.750	21.49	1.500	12.68	2.250	6.51	3.00	4.93

Unit Hyd Qpeak (cms)= 0.865 0.311 (i) PEAK FLOW (cms)= (hrs)= 1.833 (mm)= 15.194 TIME TO PEAK (hrs)= RUNOFF VOLUME TOTAL RAINFALL (mm) = 49.520RUNOFF COEFFICIENT = 0.307

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min		(ha)= Imp(%)=	Dir. Conn.(%)=	50.00
Surface Area	(ha)=	IMPERVI 6.5	PERVIOUS (i) 3.09	

(mm) = (%) = (m) = 2.00 0.50 253.77 5.00 2.00 30.00 Dep. Storage Average Slope Length Mannings n 0.013

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

TIME hrs 0.083 0.167 0.250 0.333 0.417 0.500 0.583 0.667	RAIN mm/hr 5.79 5.79 6.82 6.82 8.45 11.56	TIME hrs 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417	RAIN mm/hr 21.49 124.56 124.56 26.38 26.38 16.63 12.68	D HYETOGRA TIME ' hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.167	RAIN mm/hr 10.45   10.45   8.98 8.98 7.93 7.93 7.14   7.14	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.75 2.83 2.92	RAIN mm/hr 6.51 6.01 5.59 5.59 5.23 4.93
Storage Coeff. ( Unit Hyd. Tpeak ( Unit Hyd. peak ( PEAK FLOW	21.49  n/hr) =  (min) =  (min) =  (min) =  (cms) =  (cms) =  (hrs) =  (mm) =  (mm) =	124.56 5.00 5.04 5.00 0.21 1.48 1.00 47.52 49.52 0.96	(ii)	76.71 10.00 9.59 (iii) 10.00 0.11 0.42 1.08 21.35 49.52 0.43	*TOT/ 1.8 1. 34. 49.	301 (iii) .00 .43	4.93

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB   STANDHYD ( 0008)   ID= 1 DT= 5.0 min	Area Total		28 00 Dir. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha) = (mm) = (%) = (m) =	IMPERVIOUS 0.64 2.00 0.50 92.38 0.013	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

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

TRANSFORMED HYETOGRAPH									
TIME hrs		TIME hrs	RAIN mm/hr	TIME   hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr		
0.083 0.167	5.79	0.833 0.917	21.49 124.56	1.583 1.667	10.45 10.45	2 33 2 42	6.51 6.01		
0.250	6.82	1.000	124.56	1.750	8 98	2.50	6.01		
0.333 0.417	8.45	1.083	26.38 26.38	1.833	8.98 7.93	2.58 2.67	5.59 5.59		
0.500 0.583	11.56	1.250 1.333	16.63 16.63	2.000	7.93 7.14	2.75 2.83	5.23 5.23		
0.667 0.750		1.417 1.500	12.68 12.68	2.167 2.250	7.14 6.51	2.92 3.00	4.93 4.93		
Max.Eff.Inten.(m		124.56		32.56					
Storage Coeff.	(min) (min)=	5.00 2.75	(ii)	15.00 12.05 (ii	)				
Unit Hyd. Tpeak Unit Hyd. peak	(min)= (cms)=	5.00 0.28		15.00 0.09					
PEAK FLOW	(cms)=	0.22		0.03		ALS* 231 (iii)			
TIME TO PEAK RUNOFF VOLUME	(hrs)= (mm)=	1.00 47.52		1.17 15.34	1	00			
TOTAL RAINFALL RUNOFF COEFFICIE	(mm)=	49.52 0.96		49 52 0 31	49	) 52 ) 63			
KONOTT COLFFICIL		0.30		0.01	U				

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN\* = 75.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT TRULIDE RASEFLOW IF ANY.

	(111) PEAK	C FLOW I	DOES NOT :	INCLUDE	BASEFLO	W IF ANY.			
S	ALIB FANDHYD ( C = 1 DT= 5.0		Area Total Ir		0.76 50.00	Dir. Conr	n.(%)=	15.00	
	Surface Ar Dep. Stora Average Sl Length Mannings n	ige lope	(ha) = (mm) = (%) = (m) = =	IMPERVIC 0.38 1.00 1.00 71.18 0.013	) ) )	ERVIOUS (i 0.38 1.50 2.00 40.00 0.250	)		
	NOTE:	RAINF	ALL WAS TE	RANSFORM	IED TO	5.0 MIN.	TIME ST	ĒΡ.	
				TR	RANSFORM	ED HYETOGR	RAPH	-	
		TIME	RAIN	TIME	RAIN		RAIN		RAIN
		hrs	mm/hr	hrs			mm/hr		mm/hr
		0.083	5.79	0.833	21.49		10.45	2.33	6.51
		0.167	5.79	0.917	124.56		10.45	2.42	6.01
		0.250	6.82		124.56 26.38		8.98 8.98	2.50 2.58	6.01 5.59
		0.333	8.45	1.167	26.38		7.93	2.67	5.59
		0 1 1 1 1	0	1.107					3.33

0.167 0.250 0.333 0.417 0.500 0.583 0.667	5 .79 6 .82 6 .82 8 .45 8 .45 11 .56 11 .56	0.917 1.000 1.083 1.167 1.250 1.333 1.417	124 . 56 124 . 56 26 . 38 26 . 38 16 . 63 16 . 63 12 . 68	1.917 2.000 2.083 2.167	10 .45 8 .98 8 .98 7 .93 7 .14 7 .14	2.67 2.75 2.83 2.92	6 01 6 01 5 59 5 59 5 23 5 23 4 93
Unit Hyd. Tpeak (m	nin) nin)=	1.500 124.56 5.00 1.91 5.00 0.32	(ii)	2.250 34.54 10.00 8.18 (ii 10.00 0.13	6.51	3.00	4.93
PEAK FLOW (C TIME TO PEAK (h RUNOFF VOLUME (	ms)= rs)= mm)= mm)=	0.04 1.00 48.52 49.52 0.98	:	0.09 1.08 31.54 49.52 0.64	0. 34 49	TALS* 120 (iiii 1.00 1.08 9.52 ).69	)

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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	.1): 14.50		(hrs)		
ID = 3 ( 000	(6): 15.26	0.329	1.83	16,13	
NOTE: PEAK FLOW	S DO NOT INCL	UDE BASEFL	OWS IF AN	IY.	
ADD HYD ( 0006)   3 + 2 = 1	AREA (ha) 16): 15.26	QPEAK (cms) 0.329	TPEAK (hrs) 1.83	R.V. (mm) 16.13	

ADD HYD ( 0006)    3 + 2 = 1	AREA (ha) 15.26 9.66	QPEAK (cms) 0.329 1.801	TPEAK (hrs) 1.83 1.00	R.V. (mm) 16.13 34.43
ID = 1 ( 0006):	24.92	1.950	1.00	23.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0006)

```
1 + 2 = 3
                              (ha)
                                       (cms)
                                                 (hrs)
                                                           (mm)
     ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                             24.92
                                                 1 00
                                                         23.23
                                     1 950
                              1.28
                                     0.231
                                                1.00
                                                         31.42
       ID = 3 (0006):
                            26.20
                                     2.181
                                                1.00
                                                         23.63
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 RESERVOIR( 0004)
                          OVERFLOW IS OFF
 IN= 2---> OUT= 1
 DT= 5.0 min
                          OUTFLOW
                                      STORAGE
                                                    OUTFLOW
                                      (ha.m.)
0.0000
                                                               (ha.m.)
0.6510
                           (cms)
                           0.0000
                                                     0.1460
                                                    0.3020
                           0.0160
                                      0.1150
                                                                 0.9550
                           0.0250
                                       0.2380
                                                                 1.1990
                                       0.3690
                           0.0410
                                                     0.6010
                                                                 1.4550
                               (ha)
26.200
                                                     (hrs)
                                           (cms)
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                             0.103
                                                        3.58
                                                                   23.56
                                26.200
                         FLOW REDUCTION [Qout/Qin](%)= 4.74
                    PEAK
                   TIME SHIFT OF PEAK FLOW
                                                      (min)=155.00
                    MAXIMUM STORAGE USED
______
 CAL TR
                      Area (ha)= 0.43 Curve Number (CN)= 75.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.13
          ( 0017)
 NASHYD
ID= 1 DT= 5.0 min
        NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  --- TRANSFORMED HYETOGRAPH ----
                                                  ' TIME
                          RAIN
                                 TIME
                                           RAIN
                                                             RAIN
                                                                     TIME
                                                                              RAIN
                         mm/hr
5.79
                                          mm/hr
21.49
                                                                             mm/hr
6.51
                                   hrs
                                                      hrs
                                                            mm/hr
                                 0.833
                                                  1.583
                                                                     2.33
                0.083
                                                           10.45
                0.167
                          5 79
                                        124 56
124 56
26 38
                                                                     2.42
                                 0.917
                                                  1.667
                                                           10.45
                                                                             6.01
                          6 82
6 82
                0.250
                                 1.000
                                                  1.750
                                                            8 98
                                                                             6.01
                0.333
                                 1.083
                          8.45
                                 1.167
                                          26.38
                                                  1.917
                                                                    2.67
                                                                             5.59
                        8.45 | 1.250
11.56 | 1.333
11.56 | 1.417
21.49 | 1.500
                                                  2 .000
2 .083
2 .167
2 .250
                                                                    2 .75
2 .83
2 .92
                                                                             5 23
5 23
4 93
                0.500
                                          16.63
                                                            7.93
                0.583
                                          16 63
12 68
                                                            7.14
7.14
                0.667
                0.750
                                          12.68
                                                            6.51
                                                                     3.00
                                                                             4.93
     Unit Hyd Qpeak (cms)=
                               0.126
                      (cms)= 0.026
(hrs)= 1.083
(mm)= 15.190
     PEAK FLOW
                               0.026 (i)
     TIME TO PEAK
RUNOFF VOLUME
    TOTAL RAINFALL (mm)= 49.520
RUNOFF COEFFICIENT = 0.307
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0019)|
   1 + 2 = 3
                              AREA
                                       QPEAK
                                                TPEAK
                              (ha)
0.43
                                       (cms)
                                                 (hrs)
                                                           (mm)
       ID1= 1 ( 0017):
                                     0.026
                                                1.08
                                                         15.19
     + ID2= 2 ( 0004):
                             26.20
                                                         23.56
                                     0.103
                                                3.58
       ID = 3 (0019):
                            26.63 0.103
                                                3.58
                                                         23.42
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
______
 CALIB
STANDHYD ( 0024)
ID= 1 DT= 5.0 min
                                (ha) = 0.61
                       Area
                       Total Imp(\%) = 50.00
                                               Dir. Conn (%)= 15.00
                               IMPERVIOUS
                                              PERVIOUS (i)
    Surface Area
                       (ha)=
                                   0.31
1.00
                                                 0.31
1.50
2.00
                       (mm) =
(%) =
(m) =
     Dep. Storage
     Average Slope
                                    1.00
     Length
                                  63.77
```

Mannings n 0.013 0.250

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

TIME RAIN hrs mm/hr	TRANSFORME TIME RAIN hrs mm/hr	D HYETOGRAF  ' TIME  ' hrs	PH RAIN   TIM mm/hr   hr	
0.083 5.79 0.167 5.79 0.250 6.82 0.333 6.82	0.833 21.49 0.917 124.56 1.000 124.56 1.083 26.38	1.583 1 1.667 1 1.750	0 45   2 33 0 45   2 42 8 98   2 50 8 98   2 58	6.51 6.01 6.01
0.417 8.45 0.500 8.45 0.583 11.56 0.667 11.56	1.167 26.38 1.250 16.63 1.333 16.63 1.417 12.68	1.917 2.000 2.083 2.167	7.93 2.67 7.93 2.75 7.14 2.83 7.14 2.92	5.59 5.23 5.23 4.93
0.750 21.49  Max.Eff.Inten.(mm/hr)= over (min)	5.00	2.250 34.54 10.00 8.05 (ii)	6.51   3.00	4.93
Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	1.79 (ii) 5.00 0.32	10.00	*TOTALS*	
PEAK FLOW (CMS)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =		0.08 1.08 31.54 49.52 0.64	0.097 (i 1.00 34.08 49.52 0.69	ii)
	TO CMALLED THAN		3.03	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^*=85.0$  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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.83 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.4: 1.00 1.00 74.39 0.01	2 ) ) )	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

\_\_\_\_\_\_

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

		TRA	NSFORMED	HYETOGRA	NPH		
TIME hrs 0.08 0.16 0.25 0.33 0.41 0.50 0.58 0.66 0.75	mm/hr 3 5.79 5.79 6.82 6.82 7 8.45 0 8.45 11.56	TIME hrs 0.833 0.917	RAIN mm/hr 21.49 124.56 124.56 26.38 26.38 16.63 12.68	TIME hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083	RAIN mm/hr 10.45 10.45 8.98 7.93 7.93 7.14 7.14 6.51	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.75 2.83 2.92 3.00	RAIN mm/hr 6.51 6.01 5.59 5.59 5.23 5.23 4.93
Max.Eff.Inten.(n	mm/hr) = (min) = (min) = (min) = (cms) = (cms) = (hrs) = (mm) = (mm) =	124.56 5.00 1.96 5.00 0.31 0.04 1.00 48.52 49.52 0.98	1 <u>.</u> (ii)	34.54 10.00 8.23 (iii) 0.13 0.10 1.08 31.54 49.52 0.64	*TOT 0. 1 34 49	ALS* 131 (iii) .00 .08 .52	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $\text{CN$^*$} = 85.0 \quad \text{Ia} = \text{Dep. Storage} \quad \text{(Above)}$  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
- THAN THE STORAGE COEFFICIENT.

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

\*\*\*\*\*\*\*\* \*\* SIMULATION:D. 25yr 3hr 10min Chicago \*\*

CHICAGO STORM Ptotal= 58.14 mm

IDF curve parameters: A= 731.314 B= 0.000 C= 0.699

used in: INTENSITY = A /  $(t + B)^C$ 

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

TIME hrs 0.00 0.17 0.33 0.50	RAIN mm/hr 6.80 8.01 9.92	TIME hrs 0.83 1.00 1.17	RAIN mm/hr 146.25 30.97 19.53	'   	TIME hrs 1.67 1.83 2.00	RAIN mm/hr 10.54 9.31 8.38 7.65	TIME hrs 2.50 2.67 2.83	RAIN mm/hr 6.56 6.14 5.79
0.50 0.67	13.57 25.24	1.33	14.89 12.27		2.17	7.65 7.05	2103	31.3

Area (ha)= 9.81 Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00 STANDHYD ( 0001) ID= 1 DT= 5.0 min

PERVIOUS (i) IMPERVIOUS (ha)= 4.12 Surface Area 5.69 (mm)= (%)= (m)= Dep. Storage 1.00 5.00 Average Slope 0.50 2.00 255.73 Length 30.00 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		hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr		
0.083		0.833	25.24	1.583	12.27	2.33	7.65		
0.167		0.917	146.25	1.667	12.27	2.42	7.05		
0.250		1.000	146.25	1.750	10.54	2.50	7.05		
0.33		1.083	30.97	1.833	10.54	2.58	6.56		
0.417		1.167	30.97	1.917	9.31	2.67	6.56		
0.500		1.250	19.53	2.000	9.31	2.75	6.14		
0.583		1.333	19.53	2.083	8.38	2.83	6.14		
0.667		1.417	14.89		8.38	2.92	5.79		
0.750	25.24	1.500	14.89	2.250	7.65	3.00	5.79		
Max Eff Inten (n	nm/hr)=	146.25		67.28					
	(min)	5.00		10.00					
Storage Coeff.	(min)=	4.75	(ii)	9.58 (ii	)				
Unit Hyd. Tpeak	(min)=	5.00		10.00					
Unit Hyd. peak	(cms)=	0.22		0.11					
						ALS*			
PEAK FLOW	(cms)=	1.72		0.49		093 (iii)			
TIME TO PEAK	(hrs)=	1.00		1.08		00			
RUNOFF VOLUME	(mm)=	57.14		23.90		.86			
TOTAL RAINFALL	(mm)=	58.14		58.14		.14			
RUNOFF COEFFICIE	ENT =	0.98		0.41	U	. 69			

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
- THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

STANDHYD ( 0005) Area (ha)= 1.28 ID= 1 DT= 5.0 min Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

Surface Area	(ha)=	IMPERVIOUS 0.64	PERVIOUS (i) 0.64
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	0.50	2.00
Length .	(m)=	92.38	30.00
Mannings n		0.013	0.250

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

	TRANSFORME	D HYETOGRAP	H	
TIME RAIN	TIME RAIN	' TIME	RAIN TIME	RAIN
hrs mm/hr	hrs mm/hr	111.5	mm/hr   hrs	mm/hr
0.083 6.80 0.167 6.80	0 833 25 24 0 917 146 25		2 27   2 33 2 27   2 42	7.65 7.05
0.250 8.01	1 000 146 25		0.54 2.50	7.05
0.333 8.01	1.083 30.97		0.54   2.58	6.56
0.417 9.92	1 167 30 97		9.31 2.67	6.56
0.500 9.92	1.250 19.53		9.31 2.75	6.14
0.583 13.57	1.333 19.53		8.38 2.83	6.14
0.667 13.57	1.417 14.89		8.38   2.92	5.79
0.750 25.24	1.500 14.89	2.250	7.65   3.00	5.79
Max.Eff.Inten.(mm/hr)=	146.25	44.92		
over (min)	5.00	15.00		
Storage Coeff (min)=	2.58 (ii)	10.76 (ii)		
Unit Hyd. Tpeak (min)=	5.00 0.29	15.00 0.09		
Unit Hyd. peak (cms)=	0.29	0.09	*TOTALS*	
PEAK FLOW (cms)=	0.26	0.05	0.277 (iii)	
TIME TO PEAK (hrs)=	1.00	1.17	1.00	
RUNOFF VOLUME (mm)=	56.14	20.49	38.31	
TOTAL RAINFALL (mm)=	58.14	58.14	58.14	
RUNOFF COEFFICIENT =	0.97	0.35	0.66	

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

ADD HYD ( 0007) | 1 + 2 = 3

ΔRFΔ QPEAK (cms) R.V. (mm) TPFAK (ha) (hrs) ID1= 1 ( 0001): + ID2= 2 ( 0005): 1.00 39.86 9.81 2 093 1.28 38.31 ID = 3 (0007): 11.09 2.370 1.00 39.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR( 0003)    IN= 2> OUT= 1	OVERFLOW	IS OFF		
DT= 5.0 min	OUTFLOW (cms) 0.0000 0.0270 0.0470 0.0600	STORAGE (ha.m.) 0.0000 0.0900 0.1880 0.2950	OUTFLOW (cms) 0.3480 0.8590 1.5140 0.0000	STORAGE (ha.m.) 0.4690 0.6570 0.8590 0.0000
	ΔR	ΕΔ ΟΡΕΔΚ	TPFAK	R V

(cms) 2.370 (hrs) 1.00 3.00 (mm) INFLOW: ID= 2 ( 0007) OUTFLOW: ID= 1 ( 0003) 11.090 39.68 11.090

> PEAK FLOW REDUCTION [Qout/Qin](%)= 6.42
> TIME SHIFT OF PEAK FLOW
> MAXIMUM STORAGE USED (ha.m.)= 0.350 (ha.m.) = 0.3507

CALIB STANDHYD ( 0015) Area (ha)= 0.41 Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00 ID= 1 DT= 5.0 min |

IMPERVIOUS PERVIOUS (i) Surface Area (ha)=0.20 0.20

(mm) = (%) = (m) = 1.50 2.00 40.00 0.250 Dep. Storage 1.00 52.28 0.013 Average Slope Length Mannings n

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

TIME RAIN hrs mm/hr 0.083 6.80 0.167 6.80 0.250 8.01 0.333 8.01 0.417 9.92 0.500 9.92 0.583 13.57 0.667 13.57 0.6750 25.24	TRANSFORME TIME RAIN hrs mm/hr 0.833 25.24 0.917 146.25 1.000 146.25 1.083 30.97 1.167 30.97 1.250 19.53 1.333 19.53 1.417 14.89 1.500 14.89	D HYETOGR   TIME   hrs   1.583   1.667   1.750   1.833   1.917   2.000   2.083   2.167   2.250	RAPH RAIN   mm/hr   12.27   12.27   10.54   10.54   9.31   9.31   8.38   8.38   7.65	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.75 2.83 2.92 3.00	RAIN mm/hr 7.65 7.05 7.05 6.56 6.14 6.14 5.79 5.79
Max.Eff.Inten.(mm/hr) = over (min) = over (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	5.00 1.49 (ii) 5.00 0.33 0.02 1.00 57.14	69.36 10.00 7.20 (ii 10.00 0.14 0.07 1.08 39.21 58.14 0.67	*T0TA	084 (iii) 00 89 14	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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				
NASHYD ( 0011)	Area	(ha)=	14.50	Curve Number (CN)= 77.0
ID= 1 DT= 5.0 min				# of Linear Res (N)= 3.00
ITD= T DI= 3.0 MIN				# OI Linear Res (N)= 3.00
	U.H.	Tp(hrs)=	0.64	

\_\_\_\_\_

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

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	l' hrs	mm/hr	hrs	mm/hr
0.083	6.80	0.833	25.24	1.583	12.27	2 33	7.65
0.167	6.80	0.917	146 25	1.667	12.27	2.42	7.05
0.250	8.01	1.000	146.25	1.750	10.54	2.50	7.05
0.333	8.01	1.083	30.97	1.833	10.54 I	2.58	6.56
0.417	9.92	1.167	30.97	1.917	9.31	2.67	6.56
0.500	9.92	1.250	19.53	2.000	9.31 i	2.75	6.14
0.583	13.57	1.333	19.53	2.083	8.38	2.83	6.14
0.667	13.57	1.417	14.89	2.167	8.38	2.92	5.79
0.750	25.24	1.500	14.89	2.250	7.65	3.00	5.79

Unit Hyd Qpeak (cms)= 0.865

(cms)= 0.426 (i) (hrs)= 1.833 (mm)= 20.510 (mm)= 58.144 PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIENT = 0.353

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

CALIB   STANDHYD ( 0002)  ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	9.66 68.00	Dir. Conn.(%)=	50.00
Surface Area	(ha)=	IMPERVI 6.5		PERVIOUS (i) 3.09	

2.00 0.50 253.77 0.013 (mm) = (%) = (m) = 5.00 2.00 30.00 Dep. Storage Average Slope Length Mannings n 0.250

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

TIME RAIN hrs mm/hr 0.083 6.86 0.167 6.86 0.250 8.01 0.333 8.01 0.417 92 0.500 9.92 0.583 13.57 0.667 13.57 0.750 25.24	hrs mm/hr ' hr ' 1.58	ME RAIN TIME RAIN mm/hr mm/hr mm/hr mm/hr 13 12.27 2.33 7.65 17 12.27 2.42 7.05 10.10 10.54 2.50 7.05 13 10.54 2.58 6.56 7.9 31 2.67 6.56 10 9.31 2.67 6.56 10 9.31 2.75 6.14 13 8.38 2.83 6.14 17 8.38 2.83 6.14
Max.Eff.Inten.(mm/hr)=	146.25 101.74 5.00 10.00 4.72 (ii) 8.99 5.00 10.00 0.22 0.12 1.76 0.57 1.00 1.08 56.14 27.66 58.14 58.14 0.97 0.48	*TOTALS* 2.214 (iii) 1.00 41.90 58.14 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
  THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir.	Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.6 2.0 0.5 92.3 0.01	4 0 0 8	PERVIOU 0.64 5.00 2.00 30.00 0.250	` `	

TIME RAIN hrs mm/hr 0.083 6.80 0.167 6.80 0.250 8.01 0.333 8.01 0.417 9.92 0.500 9.92 0.583 13.57 0.667 13.57 0.750 25.24	TIME hrs mm/hr 0.833 25.24 0.917 146.25 1.000 146.25 1.083 30.97 1.167 30.97 1.250 19.53 1.333 19.53 1.417 14.89	1.583 12 1.667 12 1.750 10 1.833 10 1.917 2 2.000 2 2.083 2 2.167 8	RAIN TIME	RAIN mm/hr 7.65 7.05 7.05 6.56 6.56 6.14 6.14 5.79 5.79
Max.Eff.Inten.(mm/hr) = over (min) = over (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	5.00 2.58 (ii) 5.00 0.29 0.26 1.00 56.14 58.14 0.97	44.92 15.00 10.76 (ii) 15.00 0.09 0.05 1.17 20.49 58.14 0.35	*TOTALS* 0.277 (iii) 1.00 38.31 58.14 0.66	

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=		Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

	TRANSFO	RMED HYETOGR	APH		
TIME RAIN	TIME RA	IN ' TIME	RAIN	TIME	RAIN
hrs mm/hr	hrs mm/		mm/hr	hrs	mm/hr
0.083 6.80	0.833 25		12.27	2.33	7.65
0.167 6.80	0.917 146.		12.27	2.42	7.05
0.250 8.01	1.000 146		10.54	2.50	7.05
0.333 8.01	1.083 30.		10.54	2.58	6.56
0.417 9.92	1.167 30		9.31	2.67	6.56
0.500 9.92	1.250 19.		9.31	2.75	6.14
0.583 13.57	1.333 19.		8.38	2.83	6.14
0.667 13.57	1.417 14.		8.38	2.92	5.79
0.750 25.24	1.500 14.	89   2.250	7.65	3.00	5.79
Max.Eff.Inten.(mm/hr)=	146.25	169.36			
over (min)	5.00	10.00			
Storage Coeff. (min)=	1.79 (ii)		)		
Unit Hyd Tpeak (min)=	5.00	10.00	,		
Unit Hvd peak (cms)=	0.32	0.13			
, , , , ,			*TOTA	LS*	
PEAK FLOW (cms)=	0.05	0.12		.53 (iii)	
TIME TO PEAK (hrs)=	1.00	1.08		00	
RUNOFF VOLUME (mm)=	57.14	39.21	41.		
TOTAL RAINFALL (mm)=	58.14	58.14	58.		
RUNOFF COEFFICIENT =	0.98	0.67	0.	72	
** WARNING: STORAGE COEEE	TC CMALLED TH	AN TIME CIEF	a.		
<pre>** WARNING: STORAGE COEFF. ** WARNING:FOR AREAS WITH I</pre>	IS SMALLER TH				
MAKINTING . I OK AKEAS WITH I	HELKATOOS KAI	TOO DELOW ZO	70		

\*\*\* YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

	NOT INCL	UDE BASEFL	OW IF AN	۲. 	
ADD HYD ( 0006)   1 + 2 = 3   	(ha) 14.50	QPEAK (cms) 0.426 0.153	(hrs) 1.83	(mm) 20.51	
ID = 3 ( 0006):	15.26	0.449	1.75	21.57	
NOTE: PEAK FLOWS DO	NOT INCL	UDE BASEFL	OWS IF A	NY. 	
ADD HYD ( 0006)	4054	OBEAK	TDEAK	D. 1/	
ADD HYD ( 0006)   3 + 2 = 1	AREA (ha) 15.26 9.66	QPEAK (cms) 0.449 2.214	TPEAK (hrs) 1.75 1.00	R.V. (mm) 21.57 41.90	

```
ADD HYD ( 0006)|
                                  AREA
                                           QPEAK
                                                      TPEAK
(ha)
24.92
                                                     (hrs)
                                           (cms)
                                                                  (mm)
        ID1= 1 ( 0006):
                                         2 411
                                                               29.45
      + ID\bar{2} = \bar{2} (0008):
                                 1.28 0.277
                                                               38 31
                                                      1.00
         _____
        ID = 3 (0006):
                               26.20 2.688
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-----
  RESERVOIR( 0004)
                             OVERFLOW IS OFF
  IN= 2---> OUT= 1
  DT= 5.0 min
                             OUTFLOW
                                          STORAGE
                                                                       STORAGE
                                          (ha.m.)
0.0000
0.1150
0.2380
                              (cms)
                                                           (cms)
                                                                       (ha.m.)
                                                          0.1460
0.3020
                                                                        0.6510
0.9550
                              0.0000
                              0.0160
0.0250
                                                          0.4430
                                                                         1 1990
                              0 0410
                                           0.3690
                                                                         1.4550
                                     AREA
                                                QPEAK
                                                (cms)
2.688
0.152
                                                           (hrs)
1.00
3.50
                                   (ha)
26.200
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                    26 200
                      PEAK FLOW REDUCTION [Qout/Qin](%)= 5.66
                      TIME SHIFT OF PEAK FLOW
                                                            (min)=150.00
                      MAXIMUM STORAGE USED
                                                          (ha.m.)= 0.6629
| CALIB
| NASHYD ( 0017) | Area (ha)= 0.43 Curve Number (CN)= 75.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.13
          NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                     ---- TRANSFORMED HYETOGRAPH ----
                   TIME
                            RAIN
                                     TIME
                                               RAIN TIME
                                                                   RAIN | TIME
                                                                                      RAIN
                                             mm/hr
25.24
146.25
146.25
                                                                 mm/hr
12.27
12.27
                            mm/hr
6.80
                                     hrs
0.833
                                                                                      mm/hr
7.65
                    hrs
                                                            hrs
                                                                              hrs
                   0.083
                                                        1.583
                   0.167
                             6.80
                                     0.917
                                                        1.667
                                                                                      7.05
                                     1.000
                   0.333
                                     1.083
                                               30.97
                                                        1.833
                           9 92
9 92
13 57
13 57
                                              30.97 | 1.833
30.97 | 1.917
19.53 | 2.000
19.53 | 2.083
14.89 | 2.167
14.89 | 2.250
                                                                  9 31
9 31
8 38
                                                                            2.67
2.75
2.83
2.92
                  0.417
                                     1.167
                                                                                      6.56
                          9.92 | 1.250
13.57 | 1.333
13.57 | 1.417
25.24 | 1.500
                                                                                      6 14
6 14
5 79
                  0.583
                                                                   8 38
                  0.667
     Unit Hyd Qpeak (cms)= 0.126
     PEAK FLOW
TIME TO PEAK
                       (cms)= 0.035 (i)
(hrs)= 1.083
                         (mm) = 20.290
     RUNOFF VOLUME
     TOTAL RAINFALL
                         (mm) = 58.144
     RUNOFF COEFFICIENT =
                                  0.349
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0019) |
1 + 2 = 3 |
                                  AREA
                                           OPEAK
                                                      TPEAK
                                                                 R.V.
                                  (ha)
                                           (cms)
                                                      (hrs)
                                                                  (mm)
      ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                  0.43
                                         0.035
                                                      1 08
                                                               20 29
                                26.20
                                         0.152
                                                      3.50
                                                               29.82
        ID = 3 (0019):
                                26.63
                                        0.152
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  CALIB
| STANDHYD ( 0024) |
| ID= 1 DT= 5.0 min |
                          Area (ha)= 0.61
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                   IMPERVIOUS
                                                   PERVIOUS (i)
                                       0.31
1.00
     Surface Area
                          (ha)=
                                                       0.31 \\ 1.50
     Dep. Storage
                          (mm)=
     Average Slope
                          (%)=
```

63.77 0.013 40.00 0.250 Length Mannings n

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

TIME hrs mm/hr 0.083 6.80 0.167 6.80 0.250 8.01 0.333 8.01 0.417 9.92 0.500 9.92 0.583 13.57 0.667 13.57	TIME RAIN HTS mm/hr mm/hr mm/hr mm/hr mm/hr 146.25 1.000 146.25 1.083 30.97 1.167 30.97 1.250 19.53 1.333 19.53 1.417 14.89 1.500 14.89	TIME hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083	APH RAIN mm/hr 12.27   12.27   10.54   10.54   9.31   9.31   8.38   8.38   7.65	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.75 2.83 2.92 3.00	RAIN mm/hr 7.65 7.05 6.56 6.56 6.14 5.79 5.79
Max.Eff.Inten.(mm/hr) = over (min) Storage Coeff. (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	146.25 5.00 1.68 (ii) 5.00 0.32 0.04 1.00 57.14 58.14 0.98	169.36 10.00 7.39 (ii 10.00 0.13 0.10 1.08 39.21 58.14 0.67	*ТОТ 0. 1 41 58	ALS* 124 (iii) .00 .89 .14	,

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%

CALIB STANDHYD ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.83 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.4 1.0 1.0 74.3 0.01	2 0 0 9	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

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

		TR/	ANSFORME	D HYETOGR	APH	-	
TIME		TIME		' TIME	RAIN	TIME	RAIN
hrs 0.083		hrs 0.833	mm/hr 25.24	' hrs	mm/hr 12.27	hrs   2.33	mm/hr 7.65
0.167		0.917	146 25	1.667	12.27	2 42	7.05
0.250		1.000	146.25	1.750	10.54	2.50	7.05
0.333 0.417		1.083 1.167	30.97 30.97	1.833 1.917	10.54 9.31	2.58 2.67	6.56 6.56
0.500		1.250	19.53	2.000	9.31	2.75	6.14
0.583		1.333	19.53	2.083	8.38	2.83	6.14
0.667 0.750		1.417 1.500	14.89 14.89	2.167	8 38 7 65	2.92 3.00	5.79 5.79
0.730	23.24	1.300	14.09	2.230	7.03	3.00	3.79
Max Eff Inten (m		146.25		69.36			
over Storage Coeff.	(min) (min)=	5.00 1.84		10.00 7.55 (ii	)		
Unit Hyd Tpeak		5.00		10.00	,		
Unit Hýd peak	(cms)=	0.32		0.13			
PEAK FLOW	(cms)=	0.05		0.13		「ALS* .167 (iii)	v
TIME TO PEAK	(hrs)=	1.00		1.08		100	
RUNOFF VOLUME	(mm)=	57.14		39.21		L.89	
TOTAL RAINFALL RUNOFF COEFFICIE	(mm)=	58.14 0.98		58.14 0.67		3.14 ).72	
KONOTT COLITICIE		0.00		0.07	,	,.,_	

YOU SHOULD CONSIDER SPLITTING THE AREA.

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

\*\*\*\*\*\*\* \*\* SIMULATION:E. 50yr 3hr 10min Chicago \*\*

CHICAGO STORM	IDF curve	parameters: A= 811.794	
Ptotal= 64.54 mm		B= 0.000	
		C= 0.699	
	used in:	INTENSITY = A / (t +	B)^C

Duration of storm = 3.00 hrsStorm time step = 10.00 minTime to peak ratio = 0.33

0.00 0.17 0.33 0.50	RAIN mm/hr 7.55 8.89 11.01 15.06 28.01	TIME hrs 0.83 1.00 1.17 1.33 1.50	RAIN   mm/hr   162 35 34 38 21 68 16 53 13 62	TIME hrs 1.67 1.83 2.00 2.17 2.33	RAIN   mm/hr   11.70   10.34   9.30   8.49   7.83	TIME hrs 2.50 2.67 2.83	RAIN mm/hr 7.28 6.82 6.42
------------------------------	--	---	---	---	---	-------------------------------------	---------------------------------------

CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min	Area (ha): Total Imp(%):		Dir. Conn.(%)=	48.00
	IMPER	/IOUS	PERVIOUS (i)	

Surface Area Dep. Storage Average Slope Length	(ha)= (mm)= (%)= (m)=	1MPERVIOUS 5.69 1.00 0.50 255.73	4.12 5.00 2.00 30.00
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	7.55	0.833	28.01	1.583	13.62	2 33	8.49		
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83		
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83		
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28		
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28		
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82		
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82		
0.667	15.06	1.417	16.53	2.167	9.30	2.92	6.42		
0.750	28.01	1.500	16.53	2.250	8.49	3.00	6.42		

Max Eff Inten (r	nm/hr)=	162.35	81.26	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	4.55 (ii)	9.19 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd peak	(cms)=	0.23	0.12	
				*TOTALS*
PEAK FLOW	(cms)=	1.93	0.60	2.394 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	63.54	28.40	45.27
TOTAL RAINFALL	(mm)=	64.54	64.54	64.54
RUNOFF COEFFICIE	ENT =	0.98	0.44	0.70

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

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

CALIB

STANDHYD ( 0005) Area (ha)= 1.28

```
|ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00
                                 TMPERVIOUS
                                                  PERVIOUS (i)
     Surface Area
                         (ha)=
                                      0.64
                                                     0.64
                                      2.00
                                                     5 00
     Dep. Storage
                         (mm)=
     Average Slope
                         (%)=
(m)=
                                      0.50
                                                     2.00
     Length
     Mannings n
                                     0.013
                                                    0.250
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                     --- TRANSFORMED HYETOGRAPH ----
                                                     TIME
                   TIME
                            RAIN
                                    TIME
                                              RAIN
                          mm/hr
7.55
7.55
8.89
                                      hrs
                                             mm/hr
                                                          hrs
                  0.083
0.167
0.250
                                    0.833
0.917
                                           28.01
162.35
162.35
                                                      1.583
1.667
                                                                          2 33
2 42
2 50
                                                                13.62
                                                                                   8.49
                                    1 000
                                                                11.70
                                                      1.750
                  0.333
                            8 89
                                    1 083
                                             34.38
                                                      1 833
                                                                11.70
                                             34 38
21 68
                          11.01
                                    1.167
                                                      1.917
                                                                          2.67
                                                                                   7.28
                                            21.68 | 2.000
21.68 | 2.083
16.53 | 2.167
16.53 | 2.250
                                    1.250
1.333
1.417
                           11.01
                                                                         2 83
2 92
                          15.06
15.06
                                                                9.30
9.30
                                                                                   6.82
                  0.583
                  0.667
                                    1.500
                          28 01
                                                                 8.49
     Max.Eff.Inten.(mm/hr)=
                                    162.35
    over (min)
Storage Coeff (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                      5.00
                                                    10.00
                                      2.47 (ii)
                                                    7 36 (ii)
                                      5 00
                                                    10.00
                                      0.29
                                                     0.13
                                                                    *TOTALS*
                                                                     0.339 (iii)
     TIME TO PEAK
     RUNOFF VOLUME
                        (mm)=
(mm)=
                                     62.54
                                                    24.58
                                                                      43.56
     TOTAL RAINFALL
                                     64.54
                                                    64.54
                                                                      64.54
     RUNOFF COEFFICIENT
                                      0.97
                                                     0.38
                                                                       0.67
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN^* = 75.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0007)|
  1 + 2 = 3
                                ARFA
                                          OPEAK
                                                    TPFAK
                                          (cms)
                                (ha)
                                                    (hrs)
                                                                (mm)
      ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                                    1.00
                                                             43.56
        _____
       ID = 3 (0007): 11.09 2.733
                                                   1.00
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 RESERVOIR( 0003)
                            OVERFLOW IS OFF
 IN= 2---> OUT= 1
 DT= 5.0 min
                            OUTFLOW
                                        STORAGE
                                                       OUTFL OW
                                                                    STORAGE
                                         (ha.m.)
                                                                     (ha.m.)
                                                         (cms)
-----
                             (cms)
                             0.0000
                                          0.0000
                                                        0.3480
                                                                       0.4690
                             0.0270
                                          0.0900
                                                        0.8590
                                                                       0.6570
                             0.0470
                                          0.1880
                                                         1.5140
                                                                       0.8590
                             0.0600
                                          0.2950
                                                        0.0000
                                                                       0.0000
                                              OPEAK
                                    ARFA
                                                          TPFAK
                                   (ha)
11.090
                                              (cms)
2.733
                                                          (hrs)
                                                                        (mm)
  INFLOW: ID= 2 ( 0007)
  OUTFLOW: ID= 1 ( 0003)
                                   11.090
                     PEAK FLOW REDUCTION [Qout/Qin](%)= 7.25
TIME SHIFT OF PEAK FLOW (min)= 95.00
MAXIMUM STORAGE USED (ha.m.)= 0.3784
STANDHYD ( 0015)
ID= 1 DT= 5.0 min
                         Area (ha)= 0.41
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                  IMPERVIOUS PERVIOUS (i)
```

Surface Area	(ha)=	0.20	0.20
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Lenath	(m)=	52.28	40.00
Mannings n	`´=	0.013	0.250

TIME RAIN hrs mm/hr 0.083 7.55 0.167 7.55 0.250 8.89 0.333 8.89 0.417 11.01 0.500 11.01 0.583 15.06 0.667 15.06	TIME hrs mm/hr 0.833 28.01 0.917 162.35 1.000 162.35 1.083 34.38 1.167 34.38 1.250 21.68 1.333 21.68 1.417 16.53	1.667 1.750 1.833 1.917 2.000 2.083 2.167	RAIN mm/hr 13.62   2   2   11.70   2   2   10.34   2   9.30   2   9.30   2	RAIN hrs mm/hr .33 8.49 .42 7.83 .50 7.83 .58 7.28 .67 7.28 .75 6.82 .75 6.82 .92 6.42
0.750 28.01	1.500 16.53	2.250	8.49   3	.00 6.42
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	5.00	.95.85 10.00 6.82 (ii) 10.00 0.14	**********	
PEAK FLOW (CMS)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	0.03 1.00 63.54 64.54 0.98	0.08 1.08 45.02 64.54 0.70	*TOTALS 0.098 1.00 47.79 64.54 0.74	(iii)
** WARNING: STORAGE COEFF.	IS SMALLER THAN	TIME STEP!		

\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  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 | NASHYD ( 0011) | Area (ha)= 14.50 Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.64

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

		TR	ANSFORME	HYETOGR	APH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2 33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82
0.667	15.06	1.417	16.53	2.167	9.30	2.92	6.42
0.750	28.01	1.500	16.53	2,250	8.49	3.00	6.42

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms)= 0.519 (i) TIME TO PEAK (hrs)= RUNOFF VOLUME (mm) = 24.730TOTAL RAINFALL (mm) = 64.542RUNOFF COEFFICIENT = 0.383

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min (ha)= 9.66 Area Total Imp(%) = 68.00 Dir. Conn.(%)= 50.00

IMPERVIOUS PERVIOUS (i)

Surface Area Dep. Storage	(ha)= (mm)=	6.57 2.00	3.09 5.00
Average Slope	`(%)=	0.50	2.00
Length	(m)=	253.77	30.00
Mannings n	=	0.013	0.250

TIME RAIN hrs mm/hr 0.083 7.55 0.167 7.55 0.250 8.89 0.333 8.89 0.417 11.01 0.500 11.01 0.583 15.06 0.667 15.06 0.750 28.01	TRANSFORME TIME RAIN hrs mm/hr 0.833 28.01 0.917 162.35 1.000 162.35 1.083 34.38 1.167 34.38 1.250 21.68 1.333 21.68 1.417 16.53	TIME hrs 1.583 1.667 1.750 1.833	RAIN mm/hr 13.62 2 13.62 2 11.70 2 11.70 2 10.34 2 9.30 2 9.30 2	TIME RAIN hrs 8.49 2.50 7.83 2.58 7.28 2.56 7.28 2.55 6.82 2.83 6.82 2.92 6.42 3.00 6.42
Max.Eff.Inten.(mm/hr) = over (min) storage Coeff. (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) = PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = RUNOFF COEFFICIENT =	5.00 4.53 (ii) 5.00 0.23 1.98 1.00 62.54	21.47 10.00 8.62 (ii 10.00 0.12 0.69 1.08 32.57 64.54 0.50	*TOTALS	2 (iii) ) 5 4

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

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

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total	(ha)= 1.28 Imp(%)= 50.00	Dir. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIOUS 0.64 2.00 0.50 92.38 0.013	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

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

		TR		D HYETOGR	APH		
TIME	RAIN	TIME	IVATI.	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr		mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2.33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38		10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68		9.30	2.83	6.82
0.667 0.750	15.06 28.01	1.417	16.53 16.53		9.30		6.42
0.730	20.01	1.300	10.33	2.230	8.49	3.00	6.42
Max.Eff.Inten.(mm.	/hr)=	162.35		54.90			
over (i		5.00		10.00			
Storage Coeff. (r			(ii)	7.36 (ii	)		
Unit Hyd. Tpeak (r		5.00		10.00 `	•		
Unit Hyd. peak (	cms)=	0.29		0.13			
, ,					*TOT	ALS*	
	cms)=	0.28		0.07		339 (iii)	1
	hrs)=	1.00		1.08		00	
	(mm)=	62.54		24.58		.56	
	(mm)=	64.54		64.54		.54	
RUNOFF COEFFICIENT	Т =	0.97		0.38	0	.67	

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

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total		0.76 50.00	Dir. Conr	1.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.38 1.00 1.00 71.18 0.013	3 ) ) 3	PERVIOUS (1 0.38 1.50 2.00 40.00 0.250	)	
NOTE: RAIN	ALL WAS	TRANSFORM	MED TO	5.0 MIN.	TIME S	STEP.

		TD	ANCEODME	LIVETOCE	A DIII		
TIME	RAIN	TIME		HYETOGR	RAIN	TIME	RAIN
hrs		hrs	mm/hr	' hrs	mm/hr		mm/hr
0.083		0.833	28.01	1.583	13.62 I	2.33	8.49
0.167		0.833	162 35	1.667	13.62	2.42	7.83
0.167		1.000	162 35	1.750	11.70	2.50	7.83
0.230		1.083	34.38			2.58	
				1.833	11.70		7.28
0.417		1.167	34.38	1.917	10.34	2.67	7.28
0.500		1.250	21.68	2.000	10.34	2.75	6.82
0.583		1.333	21.68	2.083	9.30	2.83	6.82
0.667		1.417	16.53	2.167	9.30	2.92	6.42
0.750	28.01	1.500	16.53	2.250	8.49	3.00	6.42
Max.Eff.Inten.(m	om /h n) _	162.35	10	95.85			
	(min)	5.00		LO .00			
Storage Coeff.	(min)=			7.11 (ii	`		
Unit Hyd Tpeak		5.00		10.00	,		
		0.32	-	0.14			
Unit Hyd. peak	(cms)=	0.32		0.14	*TOT	ALC*	
PEAK FLOW	(cms)=	0.05		0.14		179 (iii)	
	(hrs)=	1.00		1.08		.00	,
TIME TO PEAK				15.02			
RUNOFF VOLUME	(mm) =	63.54				.79	
TOTAL RAINFALL	(mm)=	64.54	,	54.54		. 54	

0.70

0.74

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

RUNOFF COEFFICIENT =

0.98

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 85.0 Ia = Dep. Storage (Above) 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 (cms) TPEAK R.V. (hrs) (ha) (mm) ID1= 1 ( 0011): + ID2= 2 ( 0016): 14.50 0.179 47.79 ID = 3 (0006): 15.26 0.546 25.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0006)     3 + 2 = 1	AREA (ha) 15.26 9.66	QPEAK (cms) 0.546 2.532	TPEAK (hrs) 1.75 1.00	R.V. (mm) 25.88 47.56
ID = 1 (0006):	24.92	2.768	1.00	34.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
ADD HYD ( 0006) | 1 + 2 = 3
                                AREA
                                        QPEAK
                                                   TPEAK
                                                              R.V.
                              (ha)
24.92
1.28
                                         (cms)
                                                   (hrs)
      ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                                       2.768
                                                   1.00
                                                            34 28
                                       0.339
                                                   1.00
                                                            43.56
       ID = 3 (0006):
                               26.20
                                       3.107
                                                   1.00
                                                            34.73
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 RESERVOIR( 0004)
                           OVERFLOW IS OFF
 IN= 2---> OUT= 1
 DT= 5.0 min
                           OUTFLOW
                                        STORAGE
                                                      OUTFLOW
                                                                   STORAGE
                                        (ha.m.)
                                                       (cms)
0.1460
                            (cms)
                                                                   (ha.m.)
                            0.0000
                                                                     0.6510
                                         0.1150
                                                       0.3020
                                                                     0.9550
                            0.0160
                            0 0250
                                        0.2380
                                                       0.4430
                                                                     1.1990
                            0.0410
                                             ΟΡΕΔΚ
                                                        TPEAK
                                   \Delta RF\Delta
                                 (ha)
26.200
26.200
                                                        (hrs)
1.00
3.42
                                              (cms)
                                                                       (mm)
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                               3.107
                                                                        34,73
                                               0.200
                    (ha.m.) = 0.7566
                       Area (ha)= 0.43 Curve Number (CN)= 75.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.13
         ( 0017)
 NASHYD
ID= 1 DT= 5.0 min
         NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  ---- TRANSFORMED HYETOGRAPH ----
                                                    TIME
                                   TIME
                  TTMF
                           RATN
                                             RAIN
                                                                RAIN
                                                                         TTMF
                                                                                  RATN
                                     hrs
                   hrs
                          mm/hr
                                            mm/hr
                                                         hrs
                                                               mm/hr
                                                                                  mm/hr
                           7.55
7.55
                 0.083
                                   0.833
                                            28.01
                                                     1.583
                                                               13.62
                                                                         2.33
                 0.167
                                   0.917
                                           162 35
                                                     1 667
                 0.250
                                   1.000
                                          162.35
                                                     1.750
                                                              11.70
                                                                         2.50
                                           34 38
34 38
21 68
21 68
                                                                        2 58
2 67
2 75
                 0.333
                           8.89
                                   1.083
                                                     1.833
                                                              11.70
                                                    1.917
2.000
2.083
2.167
                 0.417
                          11.01 \\ 11.01
                                   1 167
1 250
1 333
1 417
                                                              10.34
10.34
                                                                                  7 28
6 82
                 0.500
                                                                        2 83
2 92
                 0.583
                          15 06
                                                               9.30
                                                                                  6 82
                 0.667
                          15.06
                                            16.53
                                                                9.30
                                                                                  6.42
                 0.750
                          28.01 1.500
                                            16.53
                                                                8.49
    Unit Hyd Qpeak (cms)= 0.126
                      (cms)= 0.043 (i)
(hrs)= 1.083
(mm)= 24.340
(mm)= 64.542
     PEAK FLOW
     TIME TO PEAK
     RUNOFF VOLUME
     TOTAL RAINFALL
     RUNOFF COEFFICIENT
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
ADD HYD ( 0019) | 1 + 2 = 3
                                ΔRFΔ
                                        QPEAK
(cms)
                                                   TPFAK
                                                              R.V.
(mm)
                               (ha)
0.43
                                                   (hrs)
     ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                       0.043
                                                   1.08
                                                            24.34
                              26.20
                                                            34.67
                                        0.200
        ID = 3 (0019):
                              26.63
                                       0.200
                                                   3.42
                                                            34.50
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 STANDHYD ( 0024)
                        Area (ha)= 0.61
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
ID= 1 DT= 5.0 min
                                                 PERVIOUS (i)
                                 IMPERVIOUS
     Surface Area
                        (ha)=
                                     0.31
                                                    0.31
    Dep. Storage
                        (mm)=
                                     1.00
```

Average Slope (%)= 1.00 2.00 Length (m)= 63.77 40.00 Mannings n = 0.013 0.250

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

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	7.55	0.833	28.01	1.583	13.62	2.33	8.49
0.167	7.55	0.917	162.35	1.667	13.62	2.42	7.83
0.250	8.89	1.000	162.35	1.750	11.70	2.50	7.83
0.333	8.89	1.083	34.38		11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68	2.000	10.34	2.75	6.82
0.583	15.06	1.333	21.68	2.083	9.30	2.83	6.82
0.667 0.750	15.06 28.01	1.417	16.53 16.53	2.167	9.30 8.49	2.92 3.00	6.42
0.730	20.01	1.500	10.33	2.230	0.49	3.00	6.42
Max.Eff.Inten.(mr	n/hr)=	162.35	1	95.85			
	(min)	5.00		10.00			
Storage Coeff.	(min)=		(ii)	7.00 (ii	)		
Unit Hyd. Tpeak	(min)=	5.00		10.00			
Unit Hyd. peak	(cms)=	0.32		0.14			
						ALS*	
	(cms)=	0.04		0.12		145 (iii)	)
	(ḥrs)=	1.00		1.08		.00	
RUNOFF VOLUME	(mm)=	63.54		45.02		79	
TOTAL RAINFALL	(mm)=	64.54		64.54		- 54	
RUNOFF COEFFICIE	NT =	0.98		0.70	U	.74	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= 0.83 Imp(%)= 50.00		15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 0.42 1.00 1.00 74.39 0.013	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

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

		TRA	NSFORME	HYETOGRA	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	l hrs	mm/hr
0.083 0.167	7.55 7.55	0.833 0.917	28.01 162.35	1.583 1.667	13.62 13.62	2.33 2.42	8 49 7 83
0.107	8.89	1.000	162.35		11.70		7.83
0.333	8.89	1.083	34.38	1.833	11.70	2.58	7.28
0.417	11.01	1.167	34.38	1.917	10.34	2.67	7.28
0.500	11.01	1.250	21.68		10.34		6.82
0.583	15.06	1.333	21.68		9.30		6.82
0.667 0.750	15.06 28.01	1.417 1.500	16.53 16.53	2.167 2.250	9.30 8.49		6.42 6.42
0.750	20.01	1.300	10.33	2.230	0.75	3.00	0.72
Max.Eff.Inten.(mm/	/hr)=	162.35		95.85			
over (n		5.00		10.00			
	nin)=	1.76		7.16 (ii) 10.00	)		
Unit Hyd. Tpeak (n Unit Hyd. peak (d	ms)=	5.00 0.32		0.14			
onite nya: peak (	-1113/-	0.32		0.14	*TOT	ALS*	
PEAK FLOW (d	cms)=	0.06		0.16	0.	195 (iii)	
	irs)=	1.00		1.08		.00	
	(mm)=	63.54		45 02		79	
TOTAL RAINFALL ( RUNOFF COEFFICIENT	(mm)= F =	64 54 0 98	,	54.54 0.70		. 54 ). 74	
KUNDER COEFFICIENT		0.90		0.70	U	.,,	
**** WARNING . STORAGE	COEEE	C CMALLE	D THAN T	TTME CTED	ı		

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

\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^* = 85.0$  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.

\*\*\*\*\*\*\*\*\*

\*\* SIMULATION: F. 100yr 3hr 10min Chicago \*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

CHICAGO STORM Ptotal= 70.94 mm -----

IDF curve parameters: A= 892.273 B= 0.000C= 0.699used in: INTENSITY = A / (t + B)^C

TIME RAIN TIME RAIN hrs mm/hr hrs hrs hrs hrs hrs hrs hrs hrs hrs h	1.83	RAIN mm/hr 12.86 11.36 10.23 9.33 8.61	TIME hrs 2.50 2.67 2.83	RAIN mm/hr 8.00 7.50 7.06
---	------	--	-------------------------------------	---------------------------------------

CALIB STANDHYD ( 0001) | ID= 1 DT= 5.0 min Area (ha)= 9.81 Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00

**IMPERVIOUS** PERVIOUS (i) (ha)=5.69 1.00 4.12 5.00 Surface Area (mm)= (%)= (m)= Dep. Storage 0.50 255.73 2.00 Average Slope 30.00 Length 0.250 Mannings n 0.013

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

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2 33	9.33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00
0.417	12.10	1.167	37.79	1.917	11.36	2.67	8.00
0.500	12.10	1.250	23.83	2.000	11.36	2.75	7.50
0.583	16.55	1.333	23.83	2.083	10.23	2.83	7.50
0.667	16.55	1.417	18.17	2.167	10.23	2.92	7.06
0.750	30.79	1.500	18.17	2.250	9.33	3.00	7.06
Max Eff Inten (mm,		178.44		95.96			
auan (		F 00		10 00			

max cii tiiceii (ii	IIII/ III /=	1/0:44	JJ • JU	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	4.38 (ii)	8.85 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd peak	(cms)=	0.23	0.12	
, p	()			*TOTALS*
PEAK FLOW	(cms)=	2.13	0.72	2.704 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	69.94	33.08	50.78
TOTAL RAINFALL	(mm)=	70.94	70.94	70.94
RUNOFF COEFFICIE		0.99	0.47	0.72
KUNUFF CUEFFICIE	:N1 =	0.99	0.47	0.72

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

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB

STANDHYD ( 0005) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir Conn (%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.64 2.00 0.50 92.38 0.01	1 ) ) 3	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

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

		TR	ANSFORME	D HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2 33	9.33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00
0.417	12.10	1.167	37.79	1.917	11.36	2.67	8.00
0.500	12.10	1.250	23.83	2.000	11.36	2.75	7.50
0.583	16.55	1.333	23.83	2.083	10.23	2.83	7.50
0.667	16.55	1.417	18.17	2.167	10.23	2.92	7.06
0.750	30.79	1.500	18.17	2.250	9.33	3.00	7.06
Max.Eff.Inten.(mm/	/hr)=	178.44		65.50			
	nin)	5.00		10.00			
	nin)=		(ii)	7.09 (ii	)		
	าที่กว้=	5.00	,	10.00	•		

Storage Coeff.	(min)=	2.38 (ii)	7.09 (ii)	
Unit Hyd Tpeak		5.00	10.00	
Unit Hyd peak		0.30	0.14	
	·			*TOTALS*
PEAK FLOW	(cms)=	0.31	0.08	0.380 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	68.94	28.87	48.90
TOTAL RAINFALL	(mm)=	70.94	70.94	70.94
RUNOFF COEFFICIE	NT =	0.97	0.41	0.69

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

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

ADD HYD ( 0007)     1 + 2 = 3   	AREA (ha) 9.81 1.28	QPEAK (cms) 2.704 0.380	TPEAK (hrs) 1.00 1.00	R.V. (mm) 50.78 48.90	
TD = 3 (0007):	11.09	3.084	1.00	50.56	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR( 0003)    IN= 2> OUT= 1	OVERFLOW	IS OFF		
DT= 5.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms) 0.0000 0.0270 0.0470 0.0600	(ha.m.) 0.0000 0.0900 0.1880 0.2950	(cms) 0.3480 0.8590 1.5140 0.0000	(ha.m.) 0.4690 0.6570 0.8590 0.0000
	AR	EA QPEAK	TPEAK	R.V.

(ha) (cms) (hrs) INFLOW: ID= 2 ( 0007) OUTFLOW: ID= 1 ( 0003) 11.090 3.084 1.00 2.33 11.090 0.247 50.48

PEAK FLOW REDUCTION [Qout/Qin](%)= 8.01 TIME SHIFT OF PEAK FLOW (min)= 80.00 MAXIMUM STORAGE USED (ha.m.) = 0.4081

CALTB 

```
PERVIOUS (i)
                             IMPERVIOUS
                                                0.20
1.50
2.00
Surface Area
                    (ha)=
                                 0.20
                    (mm)=
(%)=
(m)=
                                 1 00
Dep. Storage
Average Slope
                                 1.00
                                                40.00
                                52.28
Length
Mannings n
                                0.013
                                                0.250
```

TIME RAIN hrs mm/hr		hrs mr   1.583   14   1.667   14   1.750   12   1.833   12   1.917   11   2.000   11   2.083   10	RAIN   TIME m/hr   hrs .97   2.33 .97   2.42 .86   2.50 .86   2.58 .36   2.67 .36   2.75 .23   2.83 .23   2.92	RAIN mm/hr 9.33 8.61 8.61 8.00 7.50 7.50 7.06
0.750 30.79	1.500 18.17		33 3.00	7.06
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	5.00 1.37 (ii)	22.76 10.00 6.50 (ii) 10.00 0.14	*TOTAL C*	
PEAK FLOW (CMS)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =		0.09 1.08 50.90 70.94 0.72	*TOTALS* 0.113 (iii) 1.00 53.75 70.94 0.76	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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				
	Ares	(ha)-	14 50	Curve Number (CN)= 77.0
	AI Ca	\\_	7 13	# of Linear Res (N)= 3.00
ID= 1 DT= 5.0 min				# or Linear Res.(N)= 3.00
	U.H.	Tp(hrs)=	0.64	

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

		TR	ANSFORME	HYETOGR	APH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	8.30	0.833	30.79	1.583	14.97	2 33	9.33
0.167	8.30	0.917	178.44	1.667	14.97	2.42	8.61
0.250	9.77	1.000	178.44	1.750	12.86	2.50	8.61
0.333	9.77	1.083	37.79	1.833	12.86	2.58	8.00
0.417	12.10	1.167	37.79	1.917	11.36	2.67	8.00
0.500	12.10	1.250	23.83	2.000	11.36	2.75	7.50
0.583	16.55	1.333	23.83	2.083	10.23	2.83	7.50
0.667	16.55	1.417	18.17	2.167	10.23	2.92	7.06
0.750	30.79	1.500	18.17	2.250	9.33	3.00	7.06

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms)= 0.618 (i)
TIME TO PEAK (hrs)= 1.750
RUNOFF VOLUME (mm)= 29.150
TOTAL RAINFALL (mm)= 70.941
RUNOFF COEFFICIENT = 0.411

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

		IMPERVIOUS	PERVIOUS	(i)
Surface Area	(ha)=	6.57	3.09	
Dep. Storage	(mm)=	2.00	5.00	
Average Slope	(%)=	0.50	2.00	
Length	(m)=	253.77	30.00	
Mannings n	' =	0.013	0.250	

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

TIME RAIN   hrs mm/hr   0.083 8.30   0.167 8.30	TRANSFORMED TIME RAIN   ' hrs mm/hr   ' 0.833 30.79 0.917 178.44	TIME RAII	
0.250 9.77 0.333 9.77 0.417 12.10 0.500 12.10 0.583 16.55 0.667 16.55 0.750 30.79	1.000 178.44 1.083 37.79 1.167 37.79 1.250 23.83 1.333 23.83 1.417 18.17 1.500 18.17	1.750	2.50 8.61 2.58 8.00 2.67 8.00 2.75 7.50 2.83 7.50 2.92 7.06 3.00 7.06
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	178.44 142 5.00 10 4.36 (ii) 8 5.00 10	2.02 0.00 3.30 (ii) 0.00 0.13	OTALS*
PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	1.00 1 68.94 37 70.94 70	0.81 1.08 7.64	2.858 (iii) 1.00 53.29 70.94 0.75

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

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
- \_\_\_\_\_\_

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total	(ha)= 1 Imp(%)= 50	L.28 ).00	Dir. Conn.(%	5)= 50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 0.64 2.00 0.50 92.38 0.013	5	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

NOTE: NAINTALE	MAS TRANSFORMED TO	STO MINE TIME S	
hrs m 0.083 0.167 0.250 0.333 0.417 1 0.500 1 0.583 1	RAIN TIME RA mm/hr hrs mm/ 8.30 0.833 30. 8.30 0.917 178. 9.77 1.000 178. 9.77 1.083 37. 2.10 1.167 37. 2.10 1.250 23. 6.55 1.333 23. 6.55 1.417 18.	hr   hrs mm/h 79   1.583   14.97 444   1.667   14.97 444   1.750   12.86 79   1.833   12.86 79   1.917   11.36 83   2.000   11.36 83   2.083   10.23	hrs mm/hr   2.33
Max.Eff.Inten.(mm/hr over (min Storage Coeff. (min Unit Hyd. Tpeak (min Unit Hyd. peak (cms PEAK FLOW (cms TIME TO PEAK (hrs RUNOFF VOLUME (mm TOTAL RAINFALL (mm	) 5.00 )= 2.38 (ii) )= 5.00 )= 0.30 )= 0.31 )= 1.00 )= 68.94	0.08 1.08 28.87	OTALS* 1.380 (iii) 1.00 88.90 70.94 0.69

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.76 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

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

	TRANSFORM				
TIME RAIN	TIME RAIN		RAIN	TIME	RAIN
hrs mm/hr	hrs mm/hr		mm/hr	hrs	mm/hr
0.083 8.30	0 833 30 79		14.97	2.33	9.33
0.167 8.30	0.917 178.44		14.97	2.42	8.61
0.250 9.77	1 000 178 44		12.86	2.50	8.61
0.333 9.77	1 083 37 79		12.86	2.58	8.00
0.417 12.10	1 167 37 79		11.36	2.67	8.00
0.500 12.10	1.250 23.83		11.36	2.75	7.50
0.583 16.55	1 333 23 83		10.23	2.83	7.50
0.667 16.55			10.23	2.92	7.06
0.750 30.79	1.500 18.17	2.250	9.33	3.00	7.06
Max.Eff.Inten.(mm/hr)=	178.44	222.76			
over (min)	5.00	10.00			
Storage Coeff. (min)=	1.65 (ii)	6 78 (ii)			
Unit Hyd Tpeak (min)=	5.00	10.00			
Unit Hyd peak (cms)=	0.32	0.14			
()			*TOTA	JS*	
PEAK FLOW (cms)=	0.06	0.16	0.2	06 (iii)	
TIME TO PEAK (hrs)=	1.00	1.08		00	
RUNOFF VOLUME (mm)=	69.94	50.90	53.	75	
TOTAL RAINFALL (Mm)=	70.94	70.94	70.	94	
RUNOFF COEFFICIENT =	0.99	0.72	0.	76	
** WARNING: STORAGE COEFE	TC CHALLED THAN	TTUE STEDI			
** WARNING: STORAGE COEFF.	IS SMALLER THAN	IIME SIEP!			

\*\*\*\*\* WARNING: STOKAGE COEFF. IS SMALLER HAN TIME STEP!

\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%

YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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) 14.50 0.76	QPEAK (cms) 0.618 0.206	TPEAK (hrs) 1.75 1.00	R.V. (mm) 29.15 53.75
ID = 3 (0006):	15.26	0.647	1.75	30.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

AREA	QPEAK	TPEAK	R.V.
(ha)	(cms)	(hrs)	(mm)
15.26	0.647	1.75	30.38
9.66	2.858	1.00	53.29
24.92	3.135	1.00	39.26
	(ha)	(ha) (cms)	(ha) (cms) (hrs)
	15.26	15.26 0.647	15.26 0.647 1.75
	9.66	9.66 2.858	9.66 2.858 1.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD ( 0006) 1 + 2 = 3 	AREA (ha) : 24.92 : 1.28	QPEAK (cms) 3.135 0.380	TPEAK (hrs) 1.00 1.00	R.V. (mm) 39.26 48.90		
ID = 3 ( 0006)	: 26.20	3.516	1.00	======		
NOTE: PEAK FLOWS	DO NOT INCLU	JDE BASEFL	OWS IF AN	Υ.		
RESERVOIR( 0004)	OVERFLOW I	rs off				
IN= 2> OUT= 1   DT= 5.0 min	OUTFLOW	STORAGE	I OUTF	LOW S	TORAGE	
<del>-</del>	(cms) 0.0000 0.0160	(ha.m.) 0.0000 0.1150	0.1	s) ( 460 020	ha.m.) 0.6510 0.9550	
	0.0250 0.0410	0.2380 0.3690	0.4	430 010	1 1990 1 4550	
	ARI			FAK	R.V.	
INFLOW: ID= 2 ( 00 OUTFLOW: ID= 1 ( 00	(ha 106) 26.2 104) 26.2	a) (cm 200 3	AK TP s) (h .516 .249	rs) 1.00 3.33	(mm) 39.73 39.66	
DEAR	ELOW PE	EDUCTION F	Oout/Oinl			
TIME	SHIFT OF PE	EAK FLOW	(m	in)=140 m )= 0	00	
CALIB NASHYD ( 0017) ID= 1 DT= 5.0 min	Area (ha) Ia (mm) U.H. Tp(hrs)	0 . 43 0 = 5 . 00 0 = 0 . 13	Curve N # of Li	umber near Res	(CN)= 75.0 .(N)= 3.00	
NOTE: RAINFAL			5.0 MIN	. TIME S	TEP.	
TIME	RAIN T	TRANSFOR	MED HYETO	GRAPH E RAI	N TIME	RAIN
hrs 0.083 0.167	mm/hr   H 8.30   0.8	333 30.7 317 178 4	9   1.583	14.97 14.97	r hrs 2.33 2.42	mm/hr 9.33 8.61
0.250 0.333	8.30   0.9 9.77   1.0 9.77   1.0	000 178 4 083 37 7	4   1.750 9   1.833	12.86 12.86	2.50 2.58	8 61 8 00
0.417 0.500	12 10   1 2 12 10   1 2	L67 37.7 250 23.8	$9 \mid 1.917 \\ 2.000$	11.36 11.36	2.67 2.75	8.00 7.50 7.50
0.583 0.667 0.750	16.55   1.3 16.55   1.4 30.79   1.5	TRANSFOR RAI INS mm/h 333 30.7 117 178.4 100 178.4 100 178.4 100 23.8 100 23.8 117 18.1 100 18.1	3   2.083 7   2.167	10.23	2.83 2.92 3.00	7.50 7.06 7.06
Unit Hyd Qpeak (c			7   2.230	9.33	3.00	7.00
PEAK FLOW (d	ms)= 0.051	L (i)				
	rs)= 1.083 mm)= 28.584	1				
TOTAL RAINFALL ( RUNOFF COEFFICIENT	mm)= 28.584 mm)= 70.941 = 0.403	L 3				
(i) PEAK FLOW DOES	NOT INCLUDE	BASEFLOW	IF ANY.			
ADD HYD ( 0019)						
ADD HYD ( 0019)   1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)		
ADD HYD ( 0019)   1 + 2 = 3	(ha)	QPEAK (cms) 0.051 0.249	TPEAK (hrs) 1.08 3.33	R.V. (mm) 28.58 39.66		
ADD HYD ( 0019) 1 + 2 = 3   ID1= 1 ( 0017) + ID2= 2 ( 0004) ID = 3 ( 0019)	(ha) : 0.43 : 26.20 : 26.63	0.249  0.249	(hrs) 1.08 3.33 	28.58 39.66 ====== 39.48		
ADD HYD ( 0019)   1 + 2 = 3   ID1= 1 ( 0017) + ID2= 2 ( 0004)	(ha) : 0.43 : 26.20 : 26.63	0.249  0.249	(hrs) 1.08 3.33 	28.58 39.66 ====== 39.48		
ADD HYD ( 0019) 1 + 2 = 3   ID1 = 1 ( 0017) + ID2= 2 ( 0004) ID = 3 ( 0019) NOTE: PEAK FLOWS	(ha) : 0.43 : 26.20 : 26.63	0.249 0.249 0.249 JDE BASEFL	(hrs) 1.08 3.33 	28.58 39.66 ====== 39.48		

Surface Area

(mm) = (%) = (m) = 1.50 2.00 40.00 0.250 Dep. Storage 1.00 63.77 0.013 Average Slope Length Mannings n

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

		TR/	ANSFORME	D HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs		hrs	mm/hr	' hrs	mm/hr		mm/hr
0.083		0.833	30,79	1.583	14.97	2 33	9.33
0.167		0.917	178.44	1.667	14.97	2.42	8.61
0.250			178.44		12.86	2.50	8.61
0.333		1.083	37.79		12.86	2.58	8.00
0.417		1.167	37.79	1.917	11.36	2.67	8.00
0.500		1.250	23.83	2.000	11.36	2.75	7.50
0.583			23.83		10.23	2.83	7.50
0.667		1.417	18.17	2.167	10.23	2.92	7.06
0.750		1.500	18.17		9.33	3.00	7.06
0.730	30.73	1.300	10.17	2.230	9.33	3.00	7.00
Max Eff Inten (m	m/hr)-	178.44	2.	22.76			
	(min)	5.00		10.00			
	(min)=	1.55		6.67 (ii	)		
Unit Hyd Tpeak		5.00		10.00	,		
	(cms)=	0.33		0.14			
onic nyu. peak	(Cili3)-	0.55		0.17	****	ΓALS*	
PEAK FLOW	(cms)=	0.05		0.13		.166 (iii)	١
	(hrs)=	1.00		1.08		1.00	,
RUNOFF VOLUME	(mm)=	69.94		50.90		3.75	
TOTAL RAINFALL	(mm)=	70.94		70.94		).94	
RUNOFF COEFFICIE		0.99		0.72		0.76	
KUNUFF CUEFFICIE	ivi =	0.99		0.72		7.70	
	E COFFE						

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= 0.8 Imp(%)= 50.0	3 0 Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha) = (mm) = (%) = (m) =	IMPERVIOUS 0.42 1.00 1.00 74.39 0.013	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

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

		TR/	ANSEORME	D HYETOGR	ΔPH		
TIME hrs 0.08 0.16 0.25( 0.33 0.41 0.50( 0.58 0.66 0.75	mm/hr 8 8 30 7 8 30 9 77 9 77 12 10 12 10 16 55 7 16 55	TIME hrs 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.500	RAIN mm/hr 30.79 178.44 178.44 37.79 37.79 23.83 23.83 18.17 18.17	TIME hrs 1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.167 2.250	RAIN mm/hr 14.97 14.97 12.86 12.86 11.36 11.36 10.23 10.23 9.33	TIME hrs 2.33 2.42 2.50 2.58 2.67 2.75 2.83 2.92 3.00	RAIN mm/hr 9.33 8.61 8.61 8.00 7.50 7.50 7.06 7.06
Max.Eff.Inten.(n	mm/hr) = (min) (min) = (min) = (Cms) = (cms) = (hrs) = (mm) = (mm) =	178.44 5.00 1.70 5.00 0.32 0.06 1.00 69.94 70.94 0.99	(ii)	22.76 10.00 6.82 (ii 10.00 0.14 0.18 1.08 50.90 70.94 0.72	*TOT 0. 1 53	ALS* 224 (iiii) .00 .75 .94	

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

\*\*\*\*\*\*\*\*\*\*\* \*\* SIMULATION:G. 2yr 24hr 15min SCS Type II \*\*

READ STORM  Ptotal= 60.13 mm		ata\I 0e53	Local\Ter ce72-2c36	rschbaume mp\ 5-4efc-8a in SCS Ty	1e-c647e	:636da9d\i	04a9bd10
TIME hrs 0.00 0.25 0.50 0.75 1.00 1.25 1.50 2.75 2.00 2.75 3.00 3.25 3.75 4.50 4.25 4.50 4.75 5.00 5.25 5.50 5.75	RAIN mm/hr 2000 0.00 0.00 0.66 0.66 0.66 0.66 0.66	TIME hrs 6.25 6.50 6.75 7.00 7.25 7.50 7.750 8.25 8.50 8.75 9.00 8.75 10.00 10.25 10.50 11.75 11.25 11.75 12.25	RAIN mm/hr 1.08 1.08 1.08 1.32 1.32 1.56 1.68 1.68 1.92 2.16 2.16 2.17 3.77 3.73 5.77 17.80 73.60	TIME 12.50 12.75 13.00 13.25 13.50 14.25 14.25 14.50 14.75 15.00 16.25 16.50 16.75 17.00 16.75 17.75 18.00 18.25	RAIN mm/h	TIME 18.75 19.00 19.25 19.50 19.75 20.50 20.75 21.50 21.25 21.50 22.75 22.00 21.25 22.50 22.75 23.00 23.25 23.75 24.00	RAIN mm/hr 1.08 1.08 1.08 1.08 1.08 0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72

Surface Area Dep. Storage Average Slope Length	(ha)= (mm)= (%)= (m)=	1MPERVIOUS 5.69 1.00 0.50 255.73	9ERVIOUS 4.12 5.00 2.00 30.00	(1)
Length Mannings n	(m)= =	255./3 0.013	30.00 0.250	
J				

			TRA	NSFORME	D HYETOGR	ΔΡΗ		
Т:	EME	RAIN	TIME	RAIN	l' TIME	RAIN	I TIME	RAIN
- 1	ırs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.0	083	0.00	6.167	0.96	12.250	73.60	18 33	1.08
0.3		0.00	6.250	0.96	12.333	8.67	18.42	1.08
0.7	250	0.00	6.333	1.08	12.417	8.66	18.50	1.08
0.3		0.66	6.417	1.08	12.500	8.66	18.58	1.08
0.4		0.66	6.500	1.08	12.583	8.66	18.67	1.08
	500	0.66	6.583	1.08	12.667	8.66	18.75	1.08
0.		0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.6		0.66	6.750	1.08	12.833	4.45	18.92	1.08
	750	0.66	6.833	1.08	12.917	4.45	19.00	1.08
0.8		0.66	6.917	1.08	13.000	4.45	19.08	1.08
0.9		0.66	7.000	1.08	13.083	4.45	19.17	1.08
	000	0.66	7.083	1.08	13.167	4.45	19.25	1.08
	083	0.66	7.167	1.08	13.250	4.45	19.33	1.08
1.		0.66	7.250	1.08	13.333	3.25	19.42	1.08
1.2	250	0.66	7.333	1.32	13.417	3.25	19.50	1.08

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                               0.96 10.917
0.96 11.000
                  4.833
                  4.917
                                                                   17.083
                                                                                 1.08
                                                                                            23 25
23 33
                  5.000
                                        11 083
                                                                  17.167
                  5.083
                                0.96
                                        11.167
                                                                  17.250
                                                                                 1.08
                                                      3.73
3.73
5.77
5.77
5.77
5.77
17.80
17.80
17.80
                                       11 .250
11 .333
11 .417
11 .500
11 .583
                                                                                            23 42
23 50
23 58
                  5.167
                                0.96
                                                                   17.333
                                                                                 1.08
                  5.250
                                0.96
                                                                  17.417
17.500
                                                                                 1.08
1.08
                                0.96
                  5.333
                                                                 17.583
17.667
                  5.417
                                0.96
                                                                                 1 08
                                                                                            23.67
                                                                                            23.75
23.83
23.92
24.00
24.08
24.17
                                0.96
                                                                                 1.08
                  5.500
                                0.96
                                         11.667
                  5.583
                  5.667
                                0.96
                                        11.750
                                                                  17.833
                                                                                 1.08
                                                                 17 917
18 000
18 083
                                                                                                          0.72
0.72
0.72
0.72
                  5.750
                               0.96
                                        11.833
                                                                                 1.08
                  5 833
                               0.96
0.96
                                        11.917
12.000
                                                                                 1 08
1 08
                  5.917
                               0.96
                                        12 083
                                                                 18.167
                                                                                 1 08
                                                                                            24.25
                  6.000
                                                       73 60 18 250
                  6.083
                               0.96 | 12.167
                                                                                 1.08
                                            73.60
 Max.Eff.Inten.(mm/hr)=
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                             5.00
6.25 (ii)
5.00
                                                               15 00
14 30 (ii)
15 00
                                             0.19
                                                                  0.08
                                                                                     *TOTALS*
                                             0.90
                                                                  0.30
                                                                                       1.145 (iii)
 PEAK FLOW
                          (cms)=
                         (hrs)=
(mm)=
(mm)=
TIME TO PEAK
RUNOFF VOLUME
                                            12 25
59 13
                                                                12 33
25 28
                                                                                        12 25
41 53
TOTAL RAINFALL
                                            60.13
                                                                                        60.13
                                                                 60.13
 RUNOFF COEFFICIENT =
   (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
  CN^* = 75.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

**IMPERVIOUS** PERVIOUS (i) (ha) =0.64 2.00 0.64 Surface Area (mm) = (%) = (m) = Dep. Storage Average Slope 0.50 2.00 92 38 30.00 Lenath 0.250 Mannings n

		TR	ANSFORME	D HYETOGR	ΔPH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs 0.083	mm/hr	hrs	mm/hr	12 250	mm/hr	hrs	mm/hr
0.167	0.00	6.167	0.96 0.96	12.250	73.60 8.67	18.33 18.42	$\frac{1.08}{1.08}$
0.250	0.00	6.250 6.333	1.08	12 417	8.66	18.50	1.08
0.250 0.333	0.66	6.417	1.08	12.500	8 66	18.58	1.08
0 417	0.66	6.500	1.08	12.583	8.66	18.67	1.08
0.500	0.66	6.500 6.583	1.08	12.667	8.66	18.75	1.08
0.500 0.583 0.667	0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.667	0.66 0.66	6 667 6 750 6 833	1.08	112.833	4.45	18.92 19.00	$\frac{1.08}{1.08}$
0.750 0.833	0.66	6.917	$\substack{1.08\\1.08}$	13 000	4.45	19.00	1.08
0.833 0.917	0.66		1.08	13.083	4.45	19.08 19.17	1.08
1.000	0.66	7 083	1.08	12, 333 12, 417 12, 500 12, 583 12, 667 12, 750 12, 833 12, 917 13, 000 13, 083 13, 167 13, 250 13, 333 13, 417 13, 583 13, 13, 583 13, 667 13, 583 13, 67 13, 583 13, 13, 13, 13, 13, 13, 13, 13, 13, 13,	4.45 4.45 4.45 4.45 4.45 3.22 2.25 3.22 2.55 3.22 2.53 2.53 2.5	19.25	1.08
1.083	0.66	7 167 7 250 7 333	1.08	13.250	4.45	19.33	1.08
1.167	0.66	7.250	1.08	13.333	3.25	19.42	1.08
1.250 1.333	0.66 0.66	7.333	1.32	13 500	3.25	19.50 19.58	$\frac{1.08}{1.08}$
1.417	0.66	7.500	1.32	13.583	3.25	19.67	1.08
1.500	0.66	7.583	1.32	13.667	3.25	19.75	1.08
1.583	0.66	7.417 7.500 7.583 7.667 7.750 7.833 7.917	1.32	13.750	3.25	19.83	1.08
1.667	0.66	7.750 7.833	1.32	13.833	2.53	19.92 20.00	1.08
1.750 1.833	0.66 0.66	7.833	1.32	14.000	2.53	20.00	$\frac{1.08}{1.08}$
1.917	0.66	8 000	1 32	14.083	2.53 2.53 2.53 2.53	20.08	1.08
2.000	0.66	8.083	1.32	14 167	2.53	20.25	1.08
2.083	0.66	8.167	1.32	14.250	2.53	20.25 20.33	0.72
2.167	0.66	8 250 8 333	1.32	14 250 14 333 14 417	1.80	20 42	0.72
2.250	0.66	8.333	1.56	114.417	1.80	20.50 20.58 20.67	0.72
2.333 2.417	0.78	8.417 8.500	1.56	14.500 14.583	$\frac{1.80}{1.80}$	20.58	0.72 0.72
2.500	0.78 0.78	8.583	1.08 1.32 1.32 1.32 1.32 1.32 1.32 1.32 1.32	114.667	1.80	20.75	0.72
2.583	0.78 0.78	8.667	1.56	14.750 14.833	1.80	20.83	0.72
2.667	0.78	8.750	1.56	14.833	1.80	20.92	0.72
2.750 2.833	0.78 0.78 0.78 0.78 0.78 0.78	8 833 8 917	1.68	14.917	1.80 1.80	21.00	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
2.917	0.78	9.000	1.68 1.68 1.68 1.68	15.000 15.083	1.80	21.08 21.17	0.72 0.72
3.000	0.78	9.083	1.68	15.083 15.167	1.80	21.25 21.33 21.42	0.72
3.083	0.78	9.083 9.167	1.68	15.167 15.250 15.333 15.417 15.500 15.583 15.667 15.750 15.833 15.917 16.000	1.80	21.33	0.72
3.167	0.78	9.250 9.333 9.417	1.68	15.333	1.80	21.42	0.72
3.250 3.333	0.78	9.333	1.92 1.92	115.417	$\frac{1.80}{1.80}$	21.50 21.58	0.72 0.72
3.333 3.417	0.78 0.78	9.500	1.92	15 583	1.80	21.67	0.72
3.500	0.78	9 583 9 667	1.92	15.667	1.80	21./5	0.72
3.583	0.78 0.78 0.78 0.78 0.78	9.667	1.92	15.750	1.80	21.83	0.72
3.667	0.78	9.750	1.92	15.833	1.80	21.92	0.72
3.750 3.833	0.78 0.78 0.78	9.833 9.917	2.16 2.16	16 000	$\frac{1.80}{1.80}$	22.00	0.72 0.72
3.917	0.78	10.000	2.16	16.083	1.80	22.17	0.72
4.000	0.78	10.083	2.16	16.167	1.80	22.25	0.72
4.083	0.78	110.167	2.16	16.250	1.80	22.33	0.72
4.167 4.250	0.78 0.78	10.250 10.333	2.16	116.333	$\frac{1.08}{1.08}$	22.42	0.72 0.72
4.250 4.333	0.78	10.333	2.77	16.083 16.167 16.250 16.333 16.417 16.500 16.583 16.667	1.08	21.92 22.00 22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75	0.72
4.417	0.96	10 500	2.//	16.583	1.08	22.67	0.72
4.500	0.96	10.583	2.77	16.667	1.08	22.75	0.72
4.583	0.96	10.667	2.77	10.730	1.08	22.83	0.72
4.667 4.750	0.96 0.96	10.750 10.833	2.//	16.833 16.917	$\frac{1.08}{1.08}$	22.92 23.00	0.72 0.72
4.833	0.96	10.833	3.73	17.000	1.08	23 08	0.72
4.917	0.96	111 000	3.73	17.083	1.08	23.17	0.72
5.000	0.96	11.083	3.73	17.167	1.08	23 17 23 25 23 33	0.72
5.083	0.96	11.083 11.167 11.250 11.333 11.417	2 . 77 2 . 77 2 . 77 3 . 73 3 . 73 3 . 73 3 . 73 3 . 73 5 . 77 5 . 77	17.000 17.083 17.167 17.250 17.333 17.417 17.500	1.08	23.17 23.25 23.33 23.42 23.50 23.58 23.67 23.75	0.72
5.167 5.250	0.96 0.96	11 222	3./3 5.77	17 417	$\frac{1.08}{1.08}$	23.42	0.72 0.72
5.250 5.333	0.96	11.417	5.77	17.500	1.08	23 50 23 58	0.72
5 417	0.96	11 500	5 77	17.583	1.08	23.67	0.72
5.500	0.96	11.500 11.583	5.77	17.667	1.08	23.75	0.72
5.583	0.96	11.667	5.77	17.750	1.08	23.83	0.72
5.667	0.96	11.750 11.833	5 .77 5 .77 5 .77 5 .77 17 .80	17.750 17.833 17.917	1.08	23.92 24.00	0.72 0.72
5.750 5.833	0.96 0.96	11.833	17.80	118 000	1.08 $1.08$	24.00	0.72 0.72
5.833 5.917	0.96	12 000	17.80 17.80	18.000 18.083	1.08	24.08 24.17	0.72 0.72

<sup>|</sup> CALIB | STANDHYD ( 0005) | Area (ha)= 1.28 | ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 | Dir. Conn.(%)= 50.00

```
0.96 | 12.083 | 73.59 | 18.167
0.96 | 12.167 | 73.60 | 18.250
                                                                     1.08 | 24.25 0.72
1.08 |
                   6.083
                                        73.60
      Max.Eff.Inten.(mm/hr)=
                                                        32.45
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                        5.00
3.39 (ii)
                                                       15.00
12.71 (ii)
15.00
                                         5.00
                                                         0.08
                                                                          0.158 (iii)
12.25
     PEAK FLOW
TIME TO PEAK
                                        0.13
12.25
                         (cms) =
                         (hrs)=
                                                        12.33
      RUNOFF VOLUME
                                        58.13
                                                        21.74
                                                                          39.93
                          (mm)=
      TOTAL RAINFALL
                          (mm)=
                                        60.13
      RUNOFF COEFFICIENT =
                                         0.97
                                                         0.36
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 75.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0007) 1 + 2 = 3
                                             QPEAK
                                                        TPEAK
                                   (ha)
9.81
                                           (cms)
1.145
                                                      (hrs)
                                                                 (mm)
41.53
 _____
      ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                   1.28
                                           0.158
                                                      12.25
                                                                  39.93
         ID = 3 (0007):
                                 11.09
                                           1.303
                                                      12.25
                                                                 41.34
     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
                                            (ha.m.)
0.0000
                                                            (cms)
0.3480
                                                                         (ha.m.)
0.4690
 -----
                               (cms)
                               0.0000
                                             0.0900
                                                            0.8590
                                                                           0.6570
                               0.0270
                               0.0470
                                             0.1880
                                                             1.5140
                                                                           0.8590
                               0.0600
                                             0.2950
                                                             0.0000
                                                                           0.0000
                                       AREA
                                                  QPEAK
                                                              TPEAK
                                     (ha)
11.090
                                                  (cms)
1.303
                                                              (hrs)
12.25
                                                                             (mm)
  INFLOW: ID= 2 ( 0007)
OUTFLOW: ID= 1 ( 0003)
                                                                              41 34
                                     11 090
                                                    0.059
                                                                14.33
                                                                              41.26
                       PEAK FLOW REDUCTION [Qout/Qin](%)= 4.53 TIME SHIFT OF PEAK FLOW (min)=125.00
                       MAXIMUM STORAGE USED
                                                            (ha.m.) = 0.2866
  CALIB
| STANDHYD ( 0015)
| ID= 1 DT= 5.0 min
                           Area (ha)= 0.41
Total Imp(%)= 50.00
                                                       Dir Conn (%)= 15.00
                                    IMPERVIOUS
                                                      PERVIOUS (i)
      Surface Area
                           (ha)=
                                                        0.20
                                         0.20
      Dep. Storage
                           (mm)=
                                         1.00
      Average Slope
                           (%)=
(m)=
                                         1.00
                                                         2.00
      Length
                                        52.28
                                                        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
                                                mm/hr
0.96
                   hrs
0.083
                                       hrs
6.167
                                                                              hrs
18.33
                                                                                         mm/hr
1.08
                             mm/hr
                                                              hrs
                                                                     mm/hr
                              0.00
                                                         12.250
                                                                    73.60
                   0.167
                                                  0 96
                                                         12 333
                                                                     8 67
                                                                              18.42
                                                                                         1 08
                              0.00
                                       6.250
                   0.250
                              0.00
                                       6.333
                                                  1.08
                                                          12.417
                                                                      8.66
                                                                              18.50
                                                                                         1.08
                                                 1 08
1 08
1 08
1 08
1 08
1 08
                                                                              18.58
18.67
18.75
18.83
18.92
                              0.66
                                       6.417
                                                          12.500
                                                                     8 66
8 66
                                      6 500
6 583
                   0.417
                              0.66
                                                          12.583
                                                                                         1.08
                                                                     8 66
8 66
4 45
                   0.500
0.583
0.667
                                                         12 667
12 750
12 833
                                                                                         1.08
                              0.66
                              0.66
0.66
                                      6 667
6 750
6 833
                                                                                         1.08
1.08
                   0.750
                              0.66
                                                          12.917
                                                                      4.45
                                                                              19.00
                                                                                         1.08
```

0.66

19.08

0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.500 1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.167 2.250 2.583 2.417 2.500 2.583 2.917 3.000 3.083 3.167 3.750 3.833 3.417 3.500 4.083 4.167 4.250 4.333 4.417 4.500 4.583 4.667 4.750 4.833 4.417 4.500 4.583 4.750 4.583 4.667 5.750 5.833 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.417 5.500 5.583 5.667 5.750 5.833 5.667 5.750 5.833 5.917 6.000		7.000 7.083 7.167 7.250 7.333 7.417 7.500 7.833 7.667 7.7583 7.650 7.833 7.67 7.750 8.083 8.417 8.000 8.083 8.417 8.500 9.167 9.000 9.167 9.250 9.833 9.417 9.000 9.583 9.417 9.000 9.583 10.167 9.750 9.750 9.833 9.417 10.083 10.167 10.083 10.167 10.750 10.333 10.917 11.083 11.167 11.7500 11.333 10.917 11.1500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500 11.333 11.917 11.500		13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.917 14.083 14.167 14.750 14.333 14.417 14.500 14.4583 14.4667 14.750 15.583 15.417 15.500 15.333 15.417 15.500 15.333 15.417 15.500 15.333 15.417 15.500 15.333 15.417 17.500 16.687 16.750 16.833 16.417 16.583 16.667 16.750 17.833 17.417 17.000 17.250 17.353 17.417 17.000 17.250 17.353 17.417 17.000 17.250 17.353 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.583 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 18.000 17.833 18.167 18.0083	4. 45 4. 45 3. 225 3. 2	19.17 19.23 19.33 19.42 19.58 19.67 19.83 19.62 20.00 20.17 20.23 20.45 20.67 20.75 20.83 20.45 20.75 21.08 21.15 21.58 21.15 21.58 21.15 21.58 21.15 21.58 21.17 21.25 22.30 22.58 22.31 22.25 22.33 22.25 22.35 22.35 22.35 23.37 22.25 23.33 23.25 23.35 23.40 24.08 24.07 24.25	1.08 1.08 1.08 1.08 1.08 1.08 1.08 1.08
Storage Coeff (m Unit Hyd Tpeak (m	nr)= in) in)= in)= ms)=	73.60 5.00 1.96 5.00 0.31	(ii)	00.04 10.00 9.01 (ii) 10.00 0.12	*тот	-ALS*	
TIME TO PEAK (h RUNOFF VOLUME (	ms)= rs)= mm)= mm)= =	0.01 12.25 59.13 60.13 0.98		0.04 12.25 41.00 60.13 0.68	0. 12 43 60	055 (iii) 2.25 3.70 3.13 3.73	)
* WARNING: STORAGE * WARNING: FOR AREAS YOU SHOUL	COEFF. : WITH IN D CONSI	IS SMALLE MPERVIOUS DER SPLIT	R THAN RATIOS TING TH	TIME STEP! BELOW 20% E AREA.			
(i) CN PROCEDURE	SELECTI	ED FOR PE	RVIOUS	LOSSES:			

\*\*\*\*\* WARNING \*\*\*\*\* WARNING

<sup>(</sup>i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN\* = 85.0 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.

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

TIME	RAIN	TIME	ANSFORME RAIN	D HYETOGR I' TIME	APH RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	0 96	12.250	73.60	18 33	1.08
0.167	0.00	6.250	0.96	12.250 12.333	8.67	18.42	1.08
0.250	0.00	6.250	1.08	12.417	8.66	18.50	1.08
0.333	0.66	6.417	1.08	12.500	8.66	18.58	1.08
0.417	0.66	6.500	1.08	12.583	8.66	18.67	1.08
0.500 0.583	0.66	6.583	$\substack{1.08\\1.08}$	12.667	8.66	18.75 18.83	1.08
0.667	0.66 0.66	6.750	1.08	12.750 12.833	8.66 4.45	18.92	$\frac{1.08}{1.08}$
0.750	0 66	6.833	1.08	12.917	4.45	19.00	1.08
0.833	0.66	6.917	1.08	13.000	4.45	19.08	1.08
0.917	0.66	7.000	1.08	13.083	4.45	19.17	1.08
1.000	0.66	7 083	1.08	13.167	4.45	19.25 19.33	1.08
$\frac{1.083}{1.167}$	0.66 0.66	7.167	$\frac{1.08}{1.08}$	13.250 13.333	4.45	19.33 19.42	$\frac{1.08}{1.08}$
1.250	0.66	7.250	1.32	13.417	3 25	19.50	1.08
1.333	0.66	1 / 41/	1.32 1.32 1.32	13.500	3.25	19.58	1.08
1.417	0.66	7.500	1.32	13.500 13.583	3.25	19.67	1.08
1.500	0.66	7.583	1.32	113.66/	3.25	19.75	1.08
1.583	0.66	7 667	1.32 1.32	13.750	3.25	19.83	1.08
1.667 1.750	0.66	7.750	1.32	13.833	2.53	19.92	1.08
1.833	0.66 0.66	7 833 7 917	1.32 1.32 1.32	13.917 14.000	2 53	20.00 20.08	$\frac{1.08}{1.08}$
1.917	0.66	8 000	1.32	14.083	2.53	20.17	1.08
2.000	0.66	8.083	1.32		2.53	20.25	1.08
2.083	0.66	1 8-167	1.32	14.250	4.45 4.45 3.225 3.	20.25	0.72
2.167	0.66	8.250 8.333 8.417	1.32	14 167 14 250 14 333 14 417 14 500 14 583 14 667 14 750	1.80	20.42	0.72
2.250	0.66	8.333	1.56 1.56	114.417	1.80	20.50 20.58	0.72
2.333	0.78	8.417 8.500	$\frac{1.56}{1.56}$	14.500	1.80	20.58	0.72 0.72
2.500	0.78	8.583	1.56	14.667	1.80	20.75	0.72
2.583	0.78	8 583 8 667	1.56	14.750	1.80	20.83	0.72
2.667	0.78	8.750	1.56	14.833 14.917	1.80	20.92	0.72
2.000 2.083 2.167 2.2533 2.417 2.500 2.583 2.407 2.750 2.583 2.667 2.750 3.083 3.1250 3.3250 3.333 3.667 3.750 3.833 3.917	0.78	8.750 8.833 8.917	1.68		1.80 1.80 1.80 1.80 1.80 1.80 1.80 1.80	21.00	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
2.033	0.78	9.000	1.68 1.68	15.000	1.80	21.08 21.17	0.72 0.72
3.000	0.78	9.083	1.68	15.000 15.083 15.167 15.250 15.333 15.417 15.500 15.583 15.667	1.80	21.25	0.72
3.083	0.78	9.083 9.167	1.68	15.250	1.80	21.33	0.72
3.167	0.78	9 250 9 333	1.68	15.333	1.80	21.42	0.72
3.250	0.78	9.333	1.92	15.417	1.80	21.50	0.72
3.333	0.78	9.417	1.92	115.500	1.80 1.80	21.58 21.67	0.72
3 500	0.78	9.417 9.500 9.583	1.92 1.92 1.92	15 667	1.80	21.75	0.72 0.72
3 583	0.78	9 667	1.92	15.750	1.80	21.83	0.72
3.667	0.78	9.750 9.833 9.917 10.000	1.92	15.750 15.833	1.80	21.92	0.72
3.750	0.78	9.833	2.16	115.917	1.80	22.00	0.72
3.833	0.78	9.917	2.16 2.16	16.000	1.80 1.80	22.08	0.72 0.72
4 000	0.78		2.10	16.083 16.167	1.80	22.17	0.72 0.72
4.083	0.78	10 167	2 16	16.250	1.80	22.33	0.72
4 167	0.66 0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.78	10.083 10.167 10.250 10.333 10.417 10.500 10.583 10.667	2 16	16.250 16.333	1.08	22.42	0.72
4.250 4.333 4.417	0.78	10.333	2.77	116.417	1.08	22.50	0.72
4.333	0.96	10.417	2.77	16.500 16.583	1.08	22.58	0.72
4.417 4.500	0.96 0.96	10.500	2.//	16.583	1.08	22.07	0.72 0.72
4.500 4.583	0.96	10.363	2 77	116.750	1.08 1.08	22.73	0.72 0.72 0.72
4.667	0.96	10.750	2 77	16.750 16.833	1.08	22.92	0.72
4.750	0.96	10.750 10.833	3.73		1.08	23.00	0.72
4.833	0.96	10.917	3.73	17.000	1.08	23.08	0.72
4.917	0.96	11.000	3.73	17.083	1.08	23.17	0.72
5.000	0.96 0.96	11 167	3./3	17 250	$\frac{1.08}{1.08}$	23.23	0.72 0.72
5.167	0.96	11.250	3.73	17.333	1.08	23.42	0.72
5.250	0.96	11.083 11.167 11.250 11.333	5.77	17.417	1.08	23.50	0.72 0.72 0.72
5.333	0.96		5.77	17.500	1.08	23.58	
5.417	0.96	11 500 11 583	5.77	16.917 17.000 17.083 17.167 17.250 17.333 17.417 17.500 17.583	1.08	23.67	0.72
5.500	0.96 0.96	11 583	1,92 1,92 2,16 2,16 2,16 2,16 2,17 2,77 2,77 2,77 2,77 2,77 3,73 3,73 3,7	17.667 17.750	1.08	22.00 22.08 22.17 22.233 22.42 22.58 22.58 22.67 22.75 22.283 23.00 23.17 23.25 23.30 23.47 23.75 23.75 23.75 23.75	0.72 0.72
5.565 5.667	0.96 0.96	11.667 11.750	5.77 5.77	117 833	$\frac{1.08}{1.08}$	23.83	0.72 0.72
5.000 5.083 5.167 5.250 5.333 5.417 5.500 5.583 5.667 5.750	0.96	11.833	5.77 17.80	17.750 17.833 17.917	1.08	24.00	0.72

5.833 5.917	11.917 12.000	18.000 18.083		24.08 24.17	0.72 0.72
6.000 6.083	12.083 12.167	18.167 18.250	$\frac{1.08}{1.08}$	24.25	0.72

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms)= 0.349 (i)
TIME TO PEAK (hrs)= 12.833
RUNOFF VOLUME (mm)= 21.797
TOTAL RAINFALL (mm)= 60.130
RUNOFF COEFFICIENT = 0.362

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	9.66 68.00	Dir.	Conn.(%)=	50.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 6.5 2.0 0.5 253.7 0.01	7 0 0 7	PERVIOU 3.09 5.00 2.00 30.00 0.250	9		

			NEFORME	D INVETOCO	A DU		
TIME	RAIN	TIME	RAIN	D HYETOGR  ' TIME	APH RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	0.96	12.250	73.60	18 33	1.08
0.167	0.00	6.250	0.96	12.333	8.67	18.42	1.08
0.250	0.00	6.333	1.08	12.417	8.66	18.50	1.08
0.333	0.66	6.417	1.08	12.500	8.66	18.58	1.08
0.417 0.500	0.66 0.66	6.500 6.583	$\frac{1.08}{1.08}$	12.583 12.667	8.66 8.66	18.67 18.75	$\frac{1.08}{1.08}$
0.583	0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.667	0.66	6.750	1.08	12.833	4.45	18.92	1.08
0.750	0.66	6.833	1.08	12.917	4.45	19.00	1.08
0.833	0.66	6.917	1.08	13.000	4.45	19.08	1.08
0.917 1.000	0.66 0.66	7 000 7 083	$\frac{1.08}{1.08}$	13.083 13.167	4.45 4.45	19.17 19.25	$\frac{1.08}{1.08}$
1.083	0.66	7.167	1.08	13.250	4.45	19.33	1.08
1.167	0.66	7.250	1.08	13.333	3 25	19.42	1.08
1.250	0.66	7.333	1.32	13.417	3.25	19.50	1.08
1.333	0.66	7.417	1.32	13 500	3.25	19.58	1.08
1.417 1.500	0.66 0.66	7 500 7 583	1.32 1.32	13.583 13.667	3 .25 3 .25	19.67 19.75	$\frac{1.08}{1.08}$
1.583	0.66	7.667	1.32	13.750	3.25	19.73	1.08
1.667	0.66	7.750	1.32	13.833	2.53	19.92	1.08
1.750	0.66	7.833	1.32	13.917	2.53	20.00	1.08
1.833	0.66	7.917	1.32	14.000	2.53	20.08	1.08
1.917	0.66	8.000	1.32 1.32	14.083	2.53	20.17	$\frac{1.08}{1.08}$
2.000 2.083	0.66 0.66	8.083 8.167	1.32	14.167 14.250	2.53 2.53	20.25	0.72
2.167	0.66	8.250	1.32	14.333	1.80	20.42	0.72
2.250	0.66	8.333	1.56	14.417	1.80	20.50	0.72
2.333	0.78	8.417	1.56	14.500	1.80	20.58	0.72
2.417 2.500	0.78	8.500 8.583	$\frac{1.56}{1.56}$	14.583	1.80	20.67	0.72
2.583	0.78 0.78	8.667	1.56	14.667 14.750	$\frac{1.80}{1.80}$	20.75 20.83	0.72 0.72
2.667	0.78	8.750	1.56	14.833	1.80	20.92	0.72
2.750	0.78	8 833	1.68	14.917	1.80	21.00	0.72
2.833	0.78	8.917	1.68	15.000	1.80	21.08	0.72
2.917	0.78	9.000	1.68	15.083 15.167	1.80	21.17 21.25	0.72 0.72
3.000 3.083	0.78 0.78	9.167	$\frac{1.68}{1.68}$	15.250	$\frac{1.80}{1.80}$	21.23	0.72
3.167	0.78	9.250	1.68	15.333	1.80	21.42	0.72
3.250	0.78	9.333	1.92	15.417	1.80	21.50	0.72
3.333	0.78	9.417	1.92	15.500	1.80	21.58	0.72
3.417	0.78	9.500	$\frac{1.92}{1.92}$	15.583	1.80	21.67	0.72
3.500 3.583	0.78 0.78	9.583	1.92	15.667 15.750	$\frac{1.80}{1.80}$	21.75 21.83	0.72 0.72
3.667	0.78	9.750	1.92	15.833	1.80	21.92	0.72
3.750	0.78	9.833	2.16	15.917	1.80	22.00	0.72
3.833	0.78	9.917	2.16	16.000	1.80	22.08	0.72
3.917	0.78	10.000	2.16	16.083	1.80	22.17	0.72
4.000 4.083	0.78 0.78	10.083 10.167	2.16 2.16	16.167 16.250	$\frac{1.80}{1.80}$	22.25 22.33	0.72 0.72
4.167	0.78	10.250		16.333	1.08	22.42	0.72

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1 08
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                                                                 6.083
  Max.Eff.Inten.(mm/hr)=
                                                                                                                                                                73.60
over (min) =

Storage Coeff. (min) =

Unit Hyd. Tpeak (min) =

Unit Hyd. peak (cms) =
                                                                                                                                                                    5.00
6.22 (ii)
                                                                                                                                                                                                                                      15.00
13.16 (ii)
                                                                                                                                                                     5.00
                                                                                                                                                                                                                                         15.00
                                                                                                                                                                    0.19
                                                                                                                                                                                                                                              0.08
                                                                                                                                                                                                                                                                                                                    *TOTALS*
                                                                                         (cms)=
(hrs)=
(mm)=
(mm)=
                                                                                                                                                                                                                                                                                                                           1.210 (iii)
12.25
                                                                                                                                                                    0.92
                                                                                                                                                                                                                                              0.34
    PEAK FLOW
  TIME TO PEAK
                                                                                                                                                               12 25
58 13
                                                                                                                                                                                                                                         12 33
29 17
   RUNOFF VOLUME
   TOTAL RAINFALL
                                                                                                                                                                60.13
                                                                                                                                                                                                                                           60 13
                                                                                                                                                                                                                                                                                                                               60.13
   RUNOFF COEFFICIENT =
                                                                                                                                                                    0.97
                                                                                                                                                                                                                                              0.49
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- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

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

CALIB   STANDHYD ( 0008)  ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir.	Conn.(%)=	50.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.6 2.0 0.5 92.3 0.01	4 0 0 8	PERVIOU 0.64 5.00 2.00 30.00 0.250	1 ) ) )		
				- 0 -			

	TRANSFORMED HYETOGRAPH										
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN				
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr				
0.083	0.00	6.167	0.96	12.250	73.60	18.33	1.08				
0.167	0.00	6.250	0.96	12.333	8.67	18.42	1.08				
0.250	0.00	6.333	1.08	12.417	8.66	18.50	1.08				
0.333	0.66	6.417	1.08	12.500	8.66	18.58	1.08				
0.417	0.66	6.500	1.08	12.583	8.66	18.67	1.08				
0.500	0.66	6.583	1.08	12.667	8.66	18.75	1.08				
0.583	0.66	6.667	1.08	12.750	8.66	18.83	1.08				
0.667	0.66	6.750	1.08	12.833	4.45	18.92	1.08				
0.750	0.66	6.833	1.08	12.917	4.45	19.00	1.08				
0.833	0.66	6.917	1.08	13.000	4.45	19.08	1.08				
0.917	0.66	7.000	1.08	13.083	4.45	19.17	1.08				
1.000	0.66	7.083	1.08	13.167	4.45	19.25	1.08				
1.083	0.66	7.167	1.08	13.250	4.45	19.33	1.08				
1.167	0.66	7.250	1.08	13.333	3.25	19.42	1.08				
1.250	0.66	7.333	1.32	13.417	3.25	19.50	1.08				
1.333	0.66	7.417	1.32	13.500	3.25	19.58	1.08				
1.417	0.66	7.500	1.32	13.583	3.25	19.67	1.08				
1.500	0.66	7.583	1.32	13.667	3.25	19.75	1.08				
1.583	0.66	7.667	1.32	13.750	3.25	19.83	1.08				
1.667	0.66	7.750	1.32	13.833	2.53	19.92	1.08				
1.750	0.66	7.833	1.32	13.917	2.53	20.00	1.08				
1.833	0.66	7.917	1.32	14.000	2.53	20.08	1.08				

	1.917 2.0083 2.1650 2.333 2.147 2.5503 3.000 2.5833 3.167 3.250 3.083 3.167 3.250 3.083 3.167 4.083 4.167 4.250 4.500 4.500 4.500 4.500 5.500 5.500 5.500 5.500 5.500 6.0000 6.0000 6.0000 6.0000 6.000 6.000 6.000 6.000 6.000 6.0000 6.0000 6.0000 6.0000 6.0000		8.000 8.083 8.167 8.250 8.333 8.417 8.500 8.883 8.667 9.000 9.383 9.167 9.500 9.383 9.917 10.000 10.083 10.167 10.500 10.317 11.500 11.583 11.417 11.500 11.583 11.417 11.500 11.583 11.417 11.500 11.583 11.417 11.500 11.583 11.417	1.32 1.32 1.32 1.56 1.56 1.56 1.56 1.56 1.68 1.68 1.68 1.68 2.16 2.16 2.16 2.16 2.16 2.16 2.16 2.16	14.083 14.167 14.250 14.333 14.417 14.500 14.583 14.667 14.750 14.833 14.917 15.000 15.083 15.167 15.250 15.333 15.417 16.000 15.383 15.667 16.750 16.833 16.667 16.750 16.833 16.167 17.250 16.383 17.167 17.750 18.833 17.1687 17.750 18.833 17.750 18.833 18.167 18.250	2.53 2.53 1.80 1.80 1.80 1.80 1.80 1.80 1.80 1.80	20.17 20.33 20.42 20.50 20.50 20.50 20.50 20.67 20.75 20.92 21.08 21.108 21.17 21.25 21.33 21.42 21.58 21.67 21.58 21.67 21.25 22.00 22.08 22.08 22.08 22.08 22.25 22.38 22.42 22.58 22.58 22.67 22.75 22.83 22.83 22.98 22.38 23.38 23.42 23.58 23.58 23.58 23.58 23.58 23.58 23.58 23.58 23.58 23.58 23.58 23.75 23.88 23.92 24.08 24.12 24.25	1.08 1.08 0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
Max.Eff.In Storage Co Unit Hyd. Unit Hyd.	over (n eff. (n Tpeak (n	nin) nin)=	73.60 5.00 3.39 5.00 0.26	(ii)	32.45 15.00 12.71 (ii) 15.00 0.08	****	-11.6%	
PEAK FLOW TIME TO PE RUNOFF VOL TOTAL RAIN RUNOFF COE	AK (ˈh UME ( FALL (	cms)= irs)= (mm)= (mm)= =	0.13 12.25 58.13 60.13 0.97		0.03 12.33 21.74 60.13 0.36	0. 12 39 60	TALS* 158 (iii) 1.25 1.93 1.13 1.66	
*** WARNING:	STORAGE	COEFF.	IS SMALLE	R THAN	TIME STEP!			
(i) (N P	ROCEDURE	SELECT	FD FOR PE	RVTOUS	LOSSES:			

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
  THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.76 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

		TP	ANSFORME	D HYETOGR	ADU	_	
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6 167	0.96	12 250	73.60	18 33	1.08
0.167	0.00	6.250	0.96 0.96	12.333	73.60 8.67	18.42	1.08
0.250	0.00	6.250 6.333 6.417	1.08	12.417	8.66	18.50 18.58	1.08
0.167 0.250 0.333 0.417	0.66	6.417	1.08	12.333 12.417 12.500 12.583 12.667 12.750	8.66	18.58	1.08
0.417	0.66	6.500	1.08	12.583	8.66	18.67	1.08
0.500	0.66	6.500 6.583 6.667	$\frac{1.08}{1.08}$	12.667	8.66 8.66	18.75 18.83	1.08
0.363	0.66 0.66	6.750	1.08	12.750 12.833	4 45	18.92	$\frac{1.08}{1.08}$
0.500 0.583 0.667 0.750 0.833	0.66	6.750 6.833 6.917 7.000	1.08	12.833 12.917 13.000 13.083	4.45	19.00	1.08
0.833	0.66	6.917	1.08	13.000	4 45	10 02	1.08
0.91/	0.66	7.000	1.08	13.083	4.45	19.17	1.08
1.000	0.66	1 / 1/03	1.08	13.000 13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.667 13.750 13.833	4 45 4 45 4 45 4 45 4 45	19 17 19 25 19 33 19 42	1.08
1.083 1.167 1.250 1.333 1.417 1.500 1.583 1.667 1.750 1.833 1.917	0.66	7.167 7.250 7.333 7.417 7.500 7.583 7.667 7.750 7.833 7.917 8.000	1.08	13.250	4.45	19.33	1.08
1.107	0.66 0.66	7.230	1.08	13.333	3 25	19.42	$\frac{1.08}{1.08}$
1 333	0.66	7.417	1.32	13.500	3.25	19.58	1.08
1.417	0.66	7.500	1.32	13.583	3.25	19.67	1 08 1 08 1 08 1 08
1.500	0.66	7.583	1.32	13.667	3.25	19.75	1.08
1.583	0.66	7.667	1.32	13.750	3.25	19.83	1.08
1.667	0.66	7.750	1.32	13.833	2.53	19.92	T.08
1.750	0.66	7.833	1.32	14 000	2.53	20.00	1.08
1.917	0.66 0.66	8.000	1.32	14.000	2.53	20.08	$\frac{1.08}{1.08}$
	0.66	8.083	1.32	14.167	2.53	20.17	1.08
2.083	0.66		1.32	14.250	2.53	20.33	0.72
2.167	0.66	8 . 167 8 . 250 8 . 333 8 . 417 8 . 500 8 . 583 8 . 667 8 . 750 8 . 833 8 . 917	1,32 1,32 1,32 1,32 1,32 1,32 1,32 1,32	14.000 14.083 14.167 14.250 14.333 14.417 14.500 14.583 14.667	4.45 4.45 4.22 2.22 2.25 5.55 5.55 5.55	20.23 20.33 20.42 20.50 20.58 20.67	0.72
2.250	0.66	8.333	1.56	14.417	1.80	20.50	0.72
2.333	0.78	8.417	1.56	14.500	1.80	20.58	0.72
2.417	0.78	8 583	1.56	14.363	$\frac{1.80}{1.80}$	20.07	0.72
2.583	0.78	8.667	1.56	14.750	1.80	20.75 20.83	0.72
2.667	0.78	8.750	1.56	14.750 14.833	1.80	20.92 21.00	0.72
2.750	0.78	8.833	1.68	114.917	1.80	21.00	0.72
2.833	0.78		1.68	15.000	1.80	21.08	0.72
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.833 2.917 3.000	0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.78	9 000	1.68 1.68 1.68	15.000 15.083 15.167	1.80 1.80 1.80 1.80 1.80	21 17 21 25 21 33	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
3.083	0.78	9.083 9.167	1.68	15.250	1.80	21.33	0.72
	0.78	9.250 9.333	1.68	15.250 15.333 15.417	1.80	21.33	0.72
3.167 3.250 3.333 3.417 3.500 3.583 3.667 3.750 3.833 3.917 4.000	0.78	9.333	1.92	15.417	1.80	21.50 21.58 21.67	0.72
3.333	0.78	9.417	1.92	15.500 15.583 15.667 15.750 15.833 15.917	1.80	21.58	0.72
3.41/	0.78	9.500 9.583	1.92	15.583	1.80	21.67	0.72
3.500	0.78	9.667	1.92	15 750	1.80 1.80	21.73	0.72
3.667	0.78	9.750	1.92	15.833	1 00	21.75 21.83 21.92	0.72
3.750	0.78	9.750 9.833	2.16	15.917	1.80	22.00	0.72
3.833	0.78	9.917	2.16	10.000	1.80	22.08	0.72
3.917 4.000	0.78	10.000	2.16	16.083	1.80	22.1/	0.72
4 000	0.78	10.063	2.10	16 250	1 80 1 80 1 80 1 80 1 80	22.23	0.72
4.167	0.78	10.250	2.16	16.333	1.08	22.42	0.72
4.250	0.78	10.333	2.77	16.417	1.08	22.50	0.72
4.333	0.96	10.417	2.77	16.500	1.08	22.58	0.72
4.083 4.167 4.250 4.333 4.417 4.500 4.583	0.96	10.000 10.083 10.167 10.250 10.333 10.417 10.500 10.583 10.667 10.750	2.//	16.083 16.167 16.250 16.333 16.417 16.500 16.583 16.667	1.08	22.00 22.08 22.08 22.17 22.25 22.33 22.50 22.58 22.67 22.75 22.83 22.92 23.00 23.08 23.17 23.25 23.33	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
4.500	N 96	10.565	2.77	16.007	$\frac{1.08}{1.08}$	22.73	0.72
	0.96 0.96 0.96	10.750	2.77	16.750 16.833	1.08	22.92	0.72
4.750 4.833	0.96		3.73	16.917	1.08	23.00	0.72
4.833	0.96	10.917	3.73		1.08	23.08	0.72
4.917	0.96	11.000	3.73	17.083	1.08	23.17	0.72
5.000 5.083	0.96 0.96	11 .083 11 .167	3./3	17 250	$\substack{1.08\\1.08}$	23.25	0.72
5 167	0.96	11 250	3.73	17 333	1.08	23.42	0.72 0.72
5.250	0.96	11.250 11.333	1.68 1.68 1.92 1.92 1.92 1.92 2.16 2.16 2.16 2.16 2.77 2.77 2.77 2.77 2.77 2.77 2.77 2.7	17.417	1.08	23.50	0.72
5. 167 5. 250 5. 333	0.96	111.41/	5.77	17.500	1.08	23 58	0.72
5.417	0.96	11.500	5.77 5.77	17.583	1.08	23.67	0.72
5.417 5.500 5.583	0.96 0.96	11.583	5./7	17.66/	1.08	23 67 23 75 23 83	0.72
5.667	0.96	11 583 11 667 11 750	5.77	11/1/3U 11/ 833	$\frac{1.08}{1.08}$	23.83	0.72
5.750	0.96	111.833	17.80	17.000 17.083 17.167 17.250 17.333 17.417 17.500 17.583 17.667 17.750 17.833 17.917	1.08	24.00	0.72
5.750 5.833	0.96	11.917	17.80		1.08	24.08	0.72
5.917	0.96	12.000	5.77 5.77 17.80 17.80 17.80 73.59 73.60	18.083	1.08	24.17 24.25	0 .72 0 .72 0 .72 0 .72 0 .72 0 .72 0 .72
6.000 6.083	0.96 0.96	12.083 12.167	/3.59 73.60	18.167 18.250	$\frac{1.08}{1.08}$	24.25	0.72
0.003	0.50	112.107	73.00	10.230	1.00	l	

Max.Eff.Inten.(mm/hr)= 73.60 100.04 over (min) 5.00 10.00 Storage Coeff. (min)= 2.36 (ii) 9.41 (ii)

Unit Hyd. Tpeak (min Unit Hyd. peak (cms	)= 5.00 )= 0.30	10.00 0.12	
PEAK FLOW (CMS TIME TO PEAK (hrs RUNOFF VOLUME (mm TOTAL RAINFALL (mm) RUNOFF COEFFICIENT	)= 12.25	0.08 12.25 41.00 60.13 0.68	*TOTALS* 0.101 (iii) 12.25 43.71 60.13 0.73
***** WARNING: STORAGE COI ***** WARNING: FOR AREAS W. YOU SHOULD (	EFF. IS SMALLER T ITH IMPERVIOUS RA CONSIDER SPLITTIN	HAN TIME STEP TIOS BELOW 209 G THE AREA.	! %
$CN^* = 85.0$	SHOULD BE SMALLE GE COEFFICIENT.	age (Above) R OR EQUAL	
		(hrs) 12.83 2 12.25 4	====
<pre>ID = 3 ( 0006): NOTE: PEAK FLOWS DO</pre>		12.75 2	2.09
ADD HYD ( 0006)     3 + 2 = 1	AREA QPEAK (ha) (cms) 15.26 0.366 9.66 1.210	TPEAK (hrs) 12.75 2 12.25 4	R.V. (mm) 2.89
ID = 1 ( 0006):	24.92 1.439		==== 0.94
NOTE: PEAK FLOWS DO	NOT INCLUDE BASE	FLOWS IF ANY.	
ADD HYD ( 0006)   1 + 2 = 3	AREA QPEAK (ha) (cms)	(hrs)	R.V. (mm)
ID1= 1 ( 0006): + ID2= 2 ( 0008): ===========			0.94 9.93 ====
ID = 3 ( 0006):  NOTE: PEAK FLOWS DO			1.37
IN= 2> OUT= 1	OVERFLOW IS OFF  OUTFLOW STORAG (cms) (ha.m. 0.0000 0.000 0.0160 0.115 0.0250 0.238 0.0410 0.369	) (cms)	(ha.m.) 0 0.6510 0 0.9550 0 1.1990
INFLOW: ID= 2 ( 0006 OUTFLOW: ID= 1 ( 0004)	(ha) ( ) 26.200 ) 26.200	0.101 15	) (mm) .25 31.37 .50 31.31
PEAK TIME SI MAXIMUI	FLOW REDUCTION HIFT OF PEAK FLOW M STORAGE USED	[Qout/Qin](% (min (ha.m.	)= 6.34 )=195.00 )= 0.5309
CALIB   NASHYD ( 0017)   Arr   ID= 1 DT= 5.0 min		0 # of Line	per (CN)= 75.0 ar Res.(N)= 3.00
NOTE: RAINFALL N	WAS TRANSFORMED T	o 5.0 MIN.	TIME STEP.

		TR	ANSFORME	D HYETOGR	APH		
TIME	RAIN	I TIME	KATIN	LINE	KAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	i nrs	_mm/hr	l hrs	mm/hr
0.083	0.00	6.167	0.96 0.96	12.250 12.333	73.60	18.33	1.08
0.167	0.00	6.230	1.08	12.333	8.67 8.66	18.42 18.50	$\substack{1.08\\1.08}$
0.250 0.333	0.66	6.250 6.333 6.417	1.08	12.500	8.66	18.58	1.08
0.41/	0.66	6.500	1.08	12.583	8.66	18.6/	1.08
0.500	0.66	6.583	1.08	12.66/	8.66	18.75	1.08
0.583	0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.667	0.66 0.66	6.750	$\frac{1.08}{1.08}$	12.833 12.917	4.45 4.45	18.92 19.00	$\frac{1.08}{1.08}$
0.750 0.833	0.66	6 833 6 917	1.08	13.000	4.45	19.08	1 0.8
0.917	0.66	7.000	1.08	13.083	4.45	19.17	1.08
1.000	0.66	7.083	1.08	13.167	4.45	19.25	1.08
1.083	0.66	7.167	$\frac{1.08}{1.08}$	13.250	4.45	19.33	1.08
1.167 1.250 1.333	0.66 0.66	7.000 7.083 7.167 7.250 7.333 7.417	1 32	13.333	4 45 4 45 4 45 4 4222225 5555 5555 5553	19.42 19.50	1.08 1.08 1.08 1.08 1.08
1.333	0.66	7 417	1.32	13.500	3.25	19.58	1.08
1.417	0.66	7 500 7 583	1.32	13.583	3.25	19.67	1.08
1.417 1.500 1.583	0.66	7.583	1.32	13.667	3.25	19.75	1.08
1.583	0.66 0.66	7.667 7.750	1.32	113./50	3.25	19.83 19.92	$\frac{1.08}{1.08}$
1.750	0.66	7.833	1.32	13.917	2.53	20.00	1.08
1.667 1.750 1.833	0.66	7.917	1.32	14.000	2.53	20.08	1.08
1.91/	0.66	8.000	1.32	14.083	3.25 3.25 3.225 3.225 3.225 3.225 2.53 2.53	20.17	1.08
2.000	0.66	8.083	1.32	14.167	2.53	20.25	1.08
2.065	0.66 0.66	8 250	1 32	14.230	1 80	20.33	0.72
2.250	0.66	8.167 8.250 8.333	1.32 1.32 1.32 1.32 1.32 1.32 1.32 1.32	13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.667 13.750 13.833 13.917 14.000 14.083 14.167 14.250 14.333 14.417	1.80	20.50	0.72
2.333	0.78		1.56	14.500 14.583 14.667	1.80	20.50 20.58	0.72
2.417	0.78	8.500 8.583 8.667	1.56	14.583	1.80	20.67	0.72
2.500	0.78	8 667	1.56		1.80	20.75 20.83	0.72
2.667	0.78	8.750	1.56	14.833	1.80	20.92	0.72
2.750	0.78	8.750 8.833 8.917	1.68	14.91/	1.80 1.80 1.80 1.80	21.00	0.72
2.833	0.78	8.917	1.68	15.000	1.80	21.08	0.72
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.833 2.667 2.917 3.000 3.083 3.167 3.250 3.333 3.417	0.66 0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.78	9.000	$\substack{1.68\\1.68}$	15.083 15.167	1.80 1.80	21.17 21.25	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
3.083	0.78	9.167	1 60	115 250	1.80	21.33 21.42 21.50	0.72
3.167	0.78	9.250	1.68	15.250 15.333	1.80	21.42	0.72
3.250	0.78	9.083 9.167 9.250 9.333	1.68 1.92 1.92 1.92 1.92 1.92	15.230 15.333 15.417 15.500 15.583 15.667	1.80	21.50	0.72
3.333	0.78	9.417 9.500	1.92	15.500	1.80 1.80	21.58 21.67	0.72
3.500	0.78	9.583	1.92	15.667	1.80	21.75	0.72
3.583	0.78	9.667	1.92	15.750 15.833	1.80	21.83	0.72
3.667	0.78	9.750	1.92	15.833	1.80	21.92	0.72
3 . 417 3 . 500 3 . 583 3 . 667 3 . 750 3 . 833 3 . 917	0.78	9.833 9.917	2.16 2.16	15.917 16.000	1.80 1.80	22 00 22 08 22 17 22 25	0.72
3.917	0.78	10 000	2.16	16.083	1.80	22.17	0.72
4.000	0.78	10.083	2.16	16.167	1.80	22.25	0.72
4.083	0.78	10.167	2.16	116 250	1.80	22.33	0.72
4.16/	0.78 0.78	10.250 10.333	2.16	16.333 16.417	$\frac{1.08}{1.08}$	22.42	0.72 0.72
4.333	0.76	110 417	2.77	16.500	1.08	22.58	0.72
4.167 4.250 4.333 4.417 4.500 4.583	0.96 0.96	10 500 10 583 10 667	2.77	16.500 16.583 16.667 16.750 16.833	1.08	22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00 23.08 23.17 23.25 23.33 23.42	0.72 0.72 0.72 0.72 0.72 0.72 0.72 0.72
4.500	0.96	10.583	2.77	16.667	1.08	22.75	0.72
4.583 4.667	0.96 0.96	10.667	2.//	16.750	$\frac{1.08}{1.08}$	22.83	0.72
4.750	0.96	10.750 10.833	3.73	16 917	1.08	23.00	0.72
4.750 4.833	0.96	10.917	3.73	17.000	1.08	23.08	0.72
4 917	0.96	11.000	3.73	17.083	1.08	23.17	0.72
5 000 5 083 5 167	0.96 0.96	11 .083	3./3	17.167	1.08	23.25	0.72
5 167	0.96	11 167 11 250	3.73	17.167 17.250 17.333	$\frac{1.08}{1.08}$	23.33	0.72 0.72
5-250	0.96	11.333	2.16 2.16 2.16 2.16 2.16 2.77 2.77 2.77 2.77 2.77 2.77 2.77 2.7		1.08	23.50	0.72
5.333 5.417	0.96	11.417	5.77	17.500	1.08	23.58	0.72
5 417	0.96	11.500	5.77	17.583	1.08	23.67	0.72 0.72
5.500	0.96 0.96	11.583 11.667	5.77 5.77	17.667	$\frac{1.08}{1.08}$	23.75 23.83	0.72
5.500 5.583 5.667	0.96	11.750	5.77	17.750 17.833 17.917	1.08	23.92	0.72 0.72
5.750	0.96	11.833	17.80	17.917	1.08	24.00	0.72
5.833	0.96	11.917	17.80	18.000	1.08	24.08	0.72
5.917 6.000	0.96 0.96	12.000 12.083	17.80 73.50	18.083 18.167	$\frac{1.08}{1.08}$	24.17 24.25	0.72 0.72 0.72 0.72 0.72 0.72
6.083	0.96	12.167	5 .77 17 .80 17 .80 17 .80 73 .59 73 .60	18.250	1.08	24.23	0.72
555							

Unit Hyd Qpeak (cms)= 0.126

PEAK FLOW (cms)= 0.031 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 21.525
TOTAL RAINFALL (mm)= 60.130

RUNOFF COEFFICIENT = 0.358

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

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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Surface Area (ha)= 0.31 0.31 0.31 pep. Storage (mm)= 1.00 1.50 Average Slope (%)= 1.00 2.00 Length (m)= 63.77 40.00 Mannings n = 0.013 0.250

		TR	ANSFORME	D HYETOGR	APH		
TIME 0.087 0.167 0.250 0.333 0.417 0.5083 0.667 0.750 0.833 0.910 1.083 1.1250 1.250 1.250 1.353 1.410 2.083 1.450 2.083 2.253 2.417 2.583 2.750 2.750 2.750 3.331 3.331 3.331 3.331 3.3333 3.33	RAIN mm/hr 0.000 0.666 0.668 0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.7	TR. TIME hrs 6.167 6.250 6.333 6.417 6.500 6.583 6.917 7.000 7.083 7.167 7.700 7.583 7.167 7.7500 7.583 7.917 8.000 8.083 8.167 7.7833 7.917 8.000 8.083 8.167 8.250 8.833 8.917 9.083 8.917 9.583 9.083 9.083 9.083 9.083	ANSFORME RAIN	D HYETOGR TIME hrss 12.250 12.333 12.417 12.583 12.667 12.583 12.677 13.000 13.167 13.253 13.417 13.303 13.417 13.353 13.417 13.353 13.417 13.353 13.417 13.353 13.417 13.450 13.583 14.417 14.500 14.583 14.417 14.500 14.583 14.477 14.750 14.883 15.167 15.583 15.167 15.583 15.167 15.583 15.167 15.550 15.583 15.667 15.550 15.583 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667 15.550 15.667	APH RING 73.667 666 666 666 666 666 666 666 666 666	TIME 18. 33 18. 42 18. 50 18. 58 18. 67 18. 75 19. 00 19. 08 19. 19. 19 19. 25 19. 33 19. 92 20. 50 20. 08 20. 19. 67 19. 75 20. 33 20. 20 20. 20 20. 58 20. 67 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 34 20. 25 20. 35 20. 47 20. 25 20. 38 20. 27 20. 58 20. 67 20. 75 20. 83 20. 20 21. 08 21. 18 21. 58 21. 67 21. 25 21. 58 21. 67 21. 58 21. 67 21. 75 21. 83 21. 92 22. 00 22. 08 22. 17 22. 23 23	RAIN mm/hr 1.08 1.08 1.08 1.08 1.08 1.08 1.08 1.08

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22 . 42
22 . 50
22 . 58
22 . 67
22 . 75
22 . 83
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0.78
                                                                   0 .72
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0 .72
0 .72
0 .72
0 .72
0 .72
                     4 250
4 333
                                                10.333
                                                                               16.417
                                                                                                  1.08
                                     0.96 | 10.417
0.96 | 10.500
0.96 | 10.583
0.96 | 10.667
                                                                              16.500
16.583
                                                                                                 1.08
1.08
                      4.417
                      4.500
                                                                                16.667
                                                                                                  1.08
                      4.583
                                                                                16.750
                                                                                                  1.08
                                                                                                              22 92
23 00
                      4.667
                                      0.96
                      4.750
                                      0.96
                                                10.833
                                                                                16.917
                                                                                                  1.08
                                                                                                              23.08
23.17
23.25
                                                10.917
11.000
11.083
                                                                                17.000
17.083
17.167
                     4.833
4.917
                                      0.96
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1 08
                      5 000
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3.73 17.250
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5.77 17.500
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5.77 17.883
17.80 17.917
17.80 18.000
17.80 18.167
73.60 18.250
                                      0.96
                                                                                                  1.08
                                                                                                              23.33
23.42
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23.67
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24.00
24.08
24.17
24.25
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                      5.083
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                                      0.96
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                                                11 417
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                      5.333
                                      0.96
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1 08
                     5 417
5 500
                                     0.96
0.96
                                      0.96
                      5.583
                      5.667
                                      0 96
                                                 11.750
                                                                                                  1 08
                                      0.96
                                                 11.833
                                    0.96 | 11.917
0.96 | 12.000
0.96 | 12.083
                                                                                                  1.08
                     5.917
                                                                                                 1.08
                     6.000
                                                                                                 1 08
                     6.083
                                     0.96 12.167
                                                                                                 1.08
Max.Eff.Inten.(mm/hr)=
                                                     73.60
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                      5.00
                                                                             10.00
                                                      2.20 (ii)
                                                                             9 26 (ii)
                                                       5.00
                                                                             10.00
                                                      0.30
                                                                              0.12
                                                                                                      *TOTALS*
                                                                                                         0.082 (iii)
 TIME TO PEAK
                              (hrs)=
                                                                                                          12.25
 RUNOFF VOLUME
                                (mm)=
(mm)=
                                                     59.13
                                                                              41.00
                                                                                                         43.71
 TOTAL RAINFALL
                                                     60.13
                                                                              60.13
                                                                                                         60.13
 RUNOFF COEFFICIENT
                                                      0.98
                                                                              0.68
                                                                                                           0.73
```

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  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 ( 0025)	Area	(ha)=	0.83	<b>.</b>	Carra (0/2)	15.00	
ID= 1 DT= 5.0 min	Total	Imp(%)=	50.00	Dir.	Conn.(%)=	15.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.4 1.0 1.0 74.3 0.01	2 0 0 9	PERVIOL 0.42 1.50 2.00 40.00 0.250	2 ) ) )		

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

		TR/	NSFORME	D HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	'hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	0.96	12.250	73.60	18 33	1.08
0.167	0.00	6.250	0.96	12.333	8.67	18.42	1.08
0.250	0.00	6.333	1.08	12.417	8.66	18.50	1.08
0.333	0.66	6.417	1.08	12.500	8.66	18.58	1.08
0.417	0.66	6.500	1.08	12.583	8.66	18.67	1.08
0.500	0.66	6.583	1.08	12.667	8.66	18.75	1.08
0.583	0.66	6.667	1.08	12.750	8.66	18.83	1.08
0.667	0.66	6.750	1.08	12.833	4.45	18.92	1.08
0.750	0.66	6.833	1.08	12.917	4.45	19.00	1.08
0.833	0.66	6.917	1.08	13.000	4.45	19.08	1.08
0.917	0.66	7.000	1.08	13.083	4.45	19.17	1.08
1.000	0.66	7.083	1.08	13.167	4.45	19.25	1.08
1.083	0.66	7.167	1.08	13.250	4.45	19.33	1.08
1.167	0.66	7.250	1.08	13.333	3.25	19.42	1.08
1.250	0.66	7.333	1.32	13.417	3.25	19.50	1.08
1.333	0.66	7.417	1.32	13.500	3.25	19.58	1.08
1.417	0.66	7.500	1.32	13.583	3.25	19.67	1.08
1.500	0.66	7.583	1.32	13.667	3.25	19.75	1.08

over Storage Coeff Unit Hyd Tpeak		5.00 2.42 (ii) 5.00	10.00 9.47 (ii) 10.00	
Unit Hyd. peak	(cms)=	0.30	0.12	
, ,				*TOTALS*
PEAK FLOW	(cms)=	0.03	0.08	0.110 (iii)
TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	59.13	41.00	43.71
TOTAL RAINFALL	(mm)=	60.13	60.13	60.13
RUNOFF COEFFICIE	ENT =	0.98	0.68	0.73

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
- $CN^* = 85.0$  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.

\*\*\*\*\*\*\*\*\*\*\* \*\* SIMULATION:H. 5yr 24hr 15min SCS Type II \*\*

READ STORM

Filename: C:\Users\jkerschbaumer\AppD
ata\Local\Tremp\
0e53ce72-2c36-4efc-8ale-c647e636da9d\e01076bb
Comments: 5yr 24hr 15min SCS Type II

Ptotal= 79.65 mm

	Commen		- 1111 - 13111	505 19	pc II		
TIME hrs 0.00 0.25 0.75 1.00 1.25 1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.75 4.75 5.00 4.25 5.55 5.75 6.00	RAIN mmm/hr	TIME hrs. 6.25 6.50 6.75 7.00 7.25 7.500 7.750 9.00 8.25 9.75 10.00 10.25 10.50 11.50 11.75 11.75 12.00 12.25	RAIN mm/hr 1,43 1,43 1,43 1,75 1,75 2,07 2,23 2,255 2,255 2,255 2,87 2,87 2,87 2,87 2,87 2,87 2,87 2,87	12.50 12.75 13.00 13.25 13.50 13.75 14.05 14.25 14.55 14.55 14.55 15.50 15.50 16.75 17.00 16.25 17.75 18.05	RAIN mm/hr 11.477 15.89 4.300 4.305 5.89 2.339 2.339 2.339 2.339 2.339 2.339 1.433 1	TIME 18.75 19.00 19.25 19.50 20.50 20.50 20.75 21.70 21.25 21.75 22.05 22.25 22.25 22.25 22.35 22.35 23.75 23.00 23.25 24.00	RAIN mm/h3 1.43 1.43 1.43 1.43 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96

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| CALIB | STANDHYD ( 0001) | Area (ha)= 9.81 | ID= 1 DT= 5.0 min | Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00

PERVIOUS (i)
4.12
5.00
2.00
30.00
0.250 IMPERVIOUS 5.69 1.00 0.50 255.73 0.013 Surface Area Dep. Storage Average Slope Length Mannings n (ha)= (mm)= (%)= (m)=

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

		TRA	ANSFORME	D HYETOGR	APH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.27	12.250	97.49	18 33	1.43
0.167	0.00	6.250	1.27	12.333	11.48	18.42	1.43
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43
0.333	0.88	6.417	1.43	12.500	11.47	18.58	1.43
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43
0.500	0.88	6.583	1.43	12.667	11.47	18.75	1.43
0.583	0.88	6.667	1.43	12.750	11.47	18.83	1.43
0.667	0.88	6.750	1.43	12.833	5.89	18.92	1.43
0.750	0.88	6.833	1.43	12.917	5.89	19.00	1.43
0.833	0.88	6.917	1.43	13.000	5.89	19.08	1.43
0.917	0.88	7.000	1.43	13.083	5.89	19.17	1.43
1.000	0.88	7.083	1.43	13.167	5.89	19.25	1.43
1.083	0.88	7.167	1.43	13.250	5.89	19.33	1.43
1.167	0.88	7.250	1.43	13.333	4.30	19.42	1.43
1.250	0.88	7.333	1.75	13.417	4.30	19.50	1.43
1.333	0.88	7.417	1.75	13.500	4.30	19.58	1.43
1.417	0.88	7.500	1.75	13.583	4.30	19.67	1.43
1.500	0.88	7.583	1.75	13.667	4.30	19.75	1.43
1.583	0.88	7.667	1.75	13.750	4.30	19.83	1.43
1.667	0.88	7.750	1.75	13.833	3.35	19.92	1.43
1.750	0.88	7.833	1.75	13.917	3.35	20.00	1.43
1.833	0.88	7.917	1.75	14.000	3.35	20.08	1.43
1.917	0.88	8.000	1.75	14.083	3.35	20.17	1.43
2.000	0.88	8.083	1.75	14.167	3.35	20.25	1.43
2.083	0.88	8.167	1.75	14.250	3.35 2.39	20.33	0.96
2.167 2.250	0.88 0.88	8.250	1.75	14.333 14.417	2.39	20.42	0.96 0.96
2.333	1.04	8.333 8.417	2.07 2.07	14.417	2.39	20.50	0.96
2.417	1.04	8.500	2.07	14.583	2.39	20.36	0.96
2.500	1.04	8 583	2.07	14.667	2.39	20.75	0.96
2.583	1.04	8 667		14.750	2.39	20.73	0.96
2.303	1.04	0.007	2.07	1 1 7 1 7 3 0	4.33	20.03	0.90

PEAK FLOW (CMS): TIME TO PEAK (hrs): RUNOFF VOLUME (mm): TOTAL RAINFALL (mm): RUNOFF COEFFICIENT :	Max.Eff.Inten.(mm/hr): over (min) Storage Coeff. (min): Unit Hyd. Tpeak (min): Unit Hyd. peak (cms):	2.750 1 2.833 1 3.000 1 3.083 1 3.167 1 3.550 1 3.353 1 3.417 1 3.583 1 3.667 1 3.750 1 3.833 1 4.000 1 4.083 1 4.167 1 4.000 1 4.083 1 4.167 1 4.550 1 4.333 1 4.417 1 5.500 1 5.833 1 5.167 1 5.583 1 5.667 1 5.583 1 5.667 1 5.583 1 5.667 1 5.583 1 5.667 1 5.833 1 5.917 1
12.25 78.65 79.65	5.00 5.58 (ii) 5.00	04   8.750   2.00 04   8.833   2.20 04   8.917   2.20 04   9.083   2.20 04   9.083   2.20 04   9.083   2.20 04   9.167   2.20 04   9.250   2.20 04   9.350   2.20 04   9.350   2.50 04   9.350   2.50 04   9.350   2.50 04   9.667   2.50 04   9.667   2.50 04   9.667   2.50 04   9.833   2.80 04   10.000   2.80 04   10.000   2.80 04   10.083   2.80 04   10.083   2.80 04   10.350   2.80 04   10.350   3.60 04   10.350   3.60 07   10.50
0.51 12.33 39.70 79.65 0.50	72.95 15.00 12.32 (ii) 15.00 0.09	3 14.917 3 15.000 3 15.008 3 15.083 3 15.167 3 15.167 3 15.250 3 15.417 5 15.500 5 15.417 6 15.500 6 15.750 7 16.083 7 15.917 7 16.083 7 16.167 7 16.333 1 16.167 7 16.500 6 16.500 6 16.583 6 16.500 6 16.500 6 16.750 6 17.750 6 17.7
12 58 79	****	222222222222222222221111111111111111111
ALS* 643 (iii) .25 .40 .65 .73	AL CÈ	20.92 21.00 21.08 21.17 21.25 21.42 21.58 21.67 21.58 21.67 21.83 22.20 22.00 22.08 22.21 22.25 22.37 22.42 22.25 22.33 22.42 22.25 22.33 22.42 22.35 22.47 22.25 23.00 23.17 23.25 23.36 23.17 23.25 23.37 23.42 23.58 23.17 23.25 23.37 23.42 23.58 23.17 23.25 23.37 23.42 23.58 23.17 23.25 23.37 23.42 23.58 23.17 23.25 23.37 23.42 23.58 23.17 23.25 23.37 23.42 23.58 23.47 23.27 24.00
		0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
  THAN THE STORAGE COEFFICTENT.

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

STANDHYD ( 0005)   Area (ha)= 1.28   Total Imp(%)= 50.00   Dir. Conn.(%)= 50.0	0
Surface Area (ha)= Dep. Storage (mm)= Average Slope (m)= 2.38 (m)= 2.	

		TRA		) HYETOGR			
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.27	12.250	97.49	18 33	1.43
0.167	0.00	6.250	1.27	12.333	11.48	18.42	1.43
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43

```
0 417
0 500
                               0.88
                                         6.500
                                                    1.43
                                                            12.583
                                                                        11.47
                                                                                 18.67
                                         6.583
                                                    1.43
1.43
                                                                                 18.75
                               0.88
                                                            12.667
                                                                       11.47
                                                                                              1.43
                                                                                 18 83
                    0.583
                               0.88
                                         6.667
                                                             12.750
                                                                       11.47
                                                                                              1.43
                                                    \bar{1}.43
                    0.667
                               0.88
                                         6.750
                                                             12.833
                                                                         5.89
                                                                                 18.92
                                                                                              1.43
                    0.750
                                         6 833
                                                    1.43
                                                             12.917
                                                                                  19.00
                                                     1.43
                                                             L3.000
                    0.917
                               0.88
                                         7.000
                                                    1 43
                                                             13 083
                                                                         5.89
                                                                                 19.17
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1.43
1.43
                    1.000
                               0.88
                                         7.083
                                                             13.167
                                                                         5.89
5.89
                                                                                 19.25
                                                                                              1.43
                    1 083
                                                             13.250
                                                                                 19 33
19 42
                               0.88
                                        7.167
7.250
                               0.88
                                                             13.333
                    1.167
                                                    1.75
                    1.250
                               0.88
                                         7.333
                                                             13.417
                                                                         4.30
                                                                                  19.50
                                                                                              1.43
                                         7.417
                                                    19.58
                                         7.500
                                                             13.583
                    1.500
                               0.88
                                         7.583
                                                             13.667
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                                                                                              1.43
                    1.667
                               0.88
                                        7.750
7.833
                                                                                 19.92
20.00
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                               0.88
                    1.750
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                                                                                 20.08
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                                         8.000
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                               0.88
                                         8.083
                                                             14.167
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                    2.083
                               0.88
                                         8.167
                                                             14.250
                                                                                             0.96
                                                                                 20. 42
20. 50
20. 58
                    2.167
                               0.88
                                                             14.333
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                                         8.250
                               0.88
1.04
                                                             14.417
                    2.250
                                         8.333
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                    2.333
                                         8.417
                                                    2.07
                                                             14 500
                                                                                              0.96
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                    2.500
                               1.04
                                         8.583
                                                    2 07
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                                                                         2 39
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                                         8.667
                                                    2.07
2.07
2.23
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1.04
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                                         8.750
                                                             14.833
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                    2.750
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                    2.833
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                                         9.333
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                                                                                             0.96
                                1.04
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21.75
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21.92
22.00
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                                         9.500
                                                            15 583
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2 87
                    3.500
                                        9.583
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                                         9.667
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                    3.667
                                1.04
                                         9.750
                                                           15.833
                                                                                             0.96
                               1.04
                                                            15.917
16.000
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                    3.750
                                        9.833
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                                                                                 22 .00
22 .08
22 .17
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                               1.04
                                        9.917
                    3.833
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                                1 04
                                       10.000
                                                             16 083
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                                                                                              0.96
                                       10 083
                                                            16.167
                    4.083
                               1.04
                                       10.167
                                                    2.87
                                                            16.250
                                                                         2.39
                                                                                             0.96
                                                    2 87
3 66
3 66
                                                                                 22 42
22 50
22 58
                    4.167
                               1.04
                                       10.250
                                                             16.333
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                                      10 .333
10 .417
10 .500
10 .583
                    4.250
                               1.04
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16.500
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                    4 333
                    4.417
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                                                    3 66
                                                            16.583
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                                                                                 22.67
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                               1.27
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                                                             16.667
                    4.500
                                                                                             0.96
                                                                                 22 92
23 00
                                1.27
                                       10.750
                                                    3 66
                                                            16.833
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4 94
                    4.750
                               1.27
                                       10.833
                                                            16.917
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                                      10.917
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                    5.000
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17.500
17.583
                                       11.333
                    5.250
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                                       11.417
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                    5.333
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                                                                                 23.67
                    5.417
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11.583
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                                                            17 667
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                    5.500
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1 27
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23 92
                    5.583
                                       11.667
                                                            17.750
                                                  7.65 17.750
7.65 17.833
23.57 17.917
23.58 18.000
23.58 18.083
97.48 18.167
                                       11.750
                                                                                             0.96
                               1.27
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24.08
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                                       11.833
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                                      11.917
12.000
                    5.833
                                                                         1.43
                                                                                             0.96
                    5.917
                                                                         1.43
                                                                                             0.96
                               1.27
                                       12.083
                                                                                 24.25
                    6.000
                                                                         1.43
                                                                                             0.96
                                                  97 49 18 250
                    6.083
                               1 27 | 12 167
      Max.Eff.Inten.(mm/hr)=
                                          97.49
                                                           52.10
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                           5.00
                                                           15.00
                                           3.03 (ii)
5.00
                                                          10.74 (ii)
                                                           15.00
                                           0.27
                                                            0.09
                                                                              0.223 (iii)
12.25
56.31
      PEAK FLOW
                          (cms)=
      TIME TO PEAK
                          (hrs)=
                                         12 25
77 65
                                                           12.33
      RUNOFF VOLUME
                            (mm)=
                                                           34.98
                            (mm)=
      TOTAL RATNEALL
                                                           79.65
      RUNOFF COEFFICIENT =
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
```

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 75.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT. (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY. | ADD HYD ( 0007)| 1 + 2 = 3 AREA OPEAK TPEAK R.V. (hrs) (ha) (cms) (mm) ID1= 1 ( 0001): 9.81 1.643 58.40 + ID2 = 2 (0005): 1.28 56.31 \_\_\_\_\_ ID = 3 ( 0007): 11.09 1.865 12.25 58.16 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 0.3480 0.0270 0.0900 0.8590 0.6570 0.0470 0.1880 0.2950 1.5140 0.8590 0.0600 0.0000 AREA **OPEAK** TPEAK (ha) 11.090 (cms) 1.865 (hrs) 12.25 13.17 (mm) INFLOW: ID= 2 ( 0007) 0.182 OUTFLOW: ID= 1 ( 0003) 11.090 PEAK FLOW REDUCTION [Qout/Qin](%)= 9.78
TIME SHIFT OF PEAK FLOW (min)= 55.00
MAXIMUM STORAGE USED (ha.m.)= 0.3691 -----CALTR STANDHYD ( 0015) ID= 1 DT= 5.0 min Area (ha)= 0.41 Total Imp(%) = 50.00 Dir Conn (%) = 15.00 PERVIOUS (i) IMPERVIOUS (ha)= Surface Area 0.20 0.20 (mm) = (%) = (m) = Dep. Storage 1.00 1.50 Average Slope 1.00 2 00 52 28 40 00 Lenath Mannings n 0.250 NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP. --- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN ' TIME RAIN TIME RAIN mm/hr mm/hr hrs mm/hr 1 27 1 27 1 43 1 43 1 43 0.083 6.167 97.49 0.167 0.00 6.250 12.333 11.48 1.43 12.417 12.500 11.47 18.50 18.58 0.250 0.00 6.333 1.43 11.470.333 0.88 6.417 1.43 1.43 0 88 6.500 12 583 11 47 18.67 0.500 0.88 6.583 1.43 1.43 6.667 1 43 11.47 0.88 6.750 1.43 12.833 5.89 1.43 0.88 1 43 1 43 1.43 1.43 6.833 12.917 5.89 19.00 6.917 113.000 5.89 19.08 1 43 1 43 0.88 7.000 13.083 5 89 19.17 0.917 1.43 0.88 7.083 13.167 5.89 19.25 1.43 1.43 0.88 7.250 1.43 13 333 4 30 19.42 1.43 1.250 0.88 7.333 1.75 13.417 4.30 19.50 1.43 1.333 1.417 0.88 1.75 1.75 1.75 13.500 13.583 19.58 19.67 1.43 1.43 7.417 4.30 7.500 4 30 0 88 1.500 7.583 13.667 4.30 19.75 1.43 1.75 | 13.667 1.75 | 13.833 1.75 | 13.917 1.75 | 14.000 1.75 | 14.083 1.75 | 14.167 1.75 | 14.250 1.75 | 14.333 1.583 0.88 7.667 19.83 4.30 1.43 0.88 0.88 3 35 3 35 1.750 7.833 20.00 1.43 0 88 0 88 0 88 14 000 14 083 14 167 7 917 8 000 8 083 3.35 20.08 1.833 1.43

3.35 3.35

3.35

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0.96

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0.88

8.167

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                                                                     8.750
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                                                                     9.333
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                                                                     9.417
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21.75
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                                   3.500
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21 92
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                                   3.667
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                                                      1.04
                                  4 000
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22.67
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                                                                  10.583
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3 66
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                                                                 10.667
10.750
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1.43
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                                                                                                      16 833
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                                  4.667
                                                                                         4.94
                                                                                                                                         23.00
                                  4.750
                                                      1.27
                                                                  10.833
                                                                                                     16.917
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                                                                                                                                                             0.96
                                                      1.27
                                                                  10.917
                                                                                         4.94
                                                                                                      17.000
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23.17
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                                                                  11.000
                                                                                        4 94
                                                                                                       17.083
                                                                                       4 94 17 167
4 94 17 250
4 94 17 333
7 65 17 417
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23 33
                                   5.000
                                                      1 27
                                                                  11.083
                                                                                                                           1.43
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                                   5.083
                                                      1.27
                                                                  11.167
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                                                                                                                                         23.42
                                                     1.27
1.27
                                                                 11.250
11.333
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1.43
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                                   5.250
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23.75
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                                                                                         7 65
                                   5.333
                                                                  11.417
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                                                                                    7.65 17.583
7.65 17.667
7.65 17.750
7.65 17.750
7.65 17.791
23.58 18.000
23.58 18.083
                                                      1.27
                                                                  11.500
                                                      1.27
                                                                   11.583
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1 27
                                                                  11 .667
11 .750
11 .833
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23 92
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                                   5.667
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                                                                                                                                         24.00
                                  5.750
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1.43
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                                                     1 27
1 27
                                                                  11.917
                                                                                                                                         24.08
                                                                                                                                                             0.96
                                  5.833
                                                                  12 000
                                                                                                                                         24.17
                                                                                                                                         24.25
                                  6.000
                                                    1.27
                                                                 12.083
                                                                                     97.48 18.167
                                                                                                                           1.43
                                  6.083
                                                    1 27 | 12 167
                                                                                    97 49 18 250
                                                                                                                           1.43
          Max.Eff.Inten.(mm/hr)=
                                                                                                142.02
                                                                       5.00 10.00
1.75 (ii) 7.88 (ii)
         over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                                        0.32
                                                                                                     0.13
                                                                                                                                *TOTALS*
                                                                      0.02
12.25
                                                                                                                                  0.081 (iii)
12.25
                                             (cms)=
          PEAK FLOW
          TIME TO PEAK (hrs)=
                                                                                                   12 25
          RUNOFF VOLUME
TOTAL RAINFALL
                                               (mm)=
                                                                       78.65
                                                                                                   59 01
                                                                                                                                    61.95
                                               (mm)=
                                                                       79.65
                                                                                                   79.65
           RUNOFF COEFFICIENT =
                                                                        0.99
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIDUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.
              (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         (ii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
_____
_____
| NASHYD ( 0011) | Area (ha)= 14.50 | Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 | # of Linear Res.(N)= 3.00 | ... | U.H. Tp(hrs)= 0.64
                  NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                                  ---- TRANSFORMED HYETOGRAPH ----
RAIN | TIME RAIN | TI
                                   TIME
                                      hrs
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```
0.250
           0.00
                     6.333
                                 1.43
                                                    11.47
                                                              18.50
                                        12.500
0.333
           0.88
                     6.417
                                1.43
                                                    11.47
                                                              18.58
                                                                          1.43
                                       12.583
0.417
           0.88
                     6.500
                                1.43
                                                    11.47
                                                              18.67
                                                                          1.43
                                1 43
1 43
                                                              18.75
0.500
           0.88
                                       112.667
                                                    11.47
                                                                          1.43
                     6.583
0.583
                     6.667
                                       12.750
                                                    11.47
                                                              18.83
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                                 1.43
                                                                           1.43
0.750
           0.88
                     6.833
                                1 43 12 917
                                                     5.89
                                                              19.00
                                                                          1.43
                                1.43 | 13.000
1.43 | 13.083
1.43 | 13.167
0.833
           0.88
                     6.917
                                                     5.89
                                                              19.08
                                                                          1.43
           0.88
                                                     5.89
                                                                          1.43
1.43
                     7 000
                                                              19.17
19.25
                     7.083
                                                      5.89
1.000
                                1.43 13.250
1.083
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                     7.167
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                                        13.417
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1.75 13.500
1.75 13.583
1.75 13.667
1.75 13.750
1.75 13.833
1.75 13.917
1.75 14.000
1.75 14.083
1.75 14.167
1.75 14.250
1.75 14.333
1.333
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                                                              19.58
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1.500
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                     7.583
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1.917
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                     8.000
                                                              20.17
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2.000
                     8.083
                                                     3.35
2.083
           0.88
                     8.167
                                                     3.35
                                                              20.33
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2 167
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                     8.250
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2.333
            1.04
                    8.417
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                     8.500
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                     8.583
                                       14.667
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2.583
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                                       14.750
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                     8.667
2.667
           1.04
                     8.750
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2 .55 | 15 .417
3.000
           1.04
                    9.083
                                                     2.39
                                                                          0.96
                                                              21 33
21 42
3.083
           1.04
                    9.167
9.250
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3.167
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21 58
21 67
3.250
            1.04
                     9 333
                                                      2.39
                                                                          0.96
                                2.55 | 15.500
2.55 | 15.583
2.55 | 15.667
2.55 | 15.750
3.333
                    9.417
                                                     2.39
                                                                          0.96
            1.04
                     9.500
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                                                                          0.96
                                                              21.75
21.83
3.500
            1.04
                    9.583
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3.583
           1.04
                    9.667
                                                     2.39
                                                                          0.96
                                                             21.83
21.92
22.00
22.08
22.17
                                2.55
2.87
2.87
                                       15.833
3.667
           1.04
                    9.750
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3.750
                     9 833
                                       15.917
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2 .87
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22 33
22 42
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                   10 083
                                        16.167
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4 083
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16.333
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4.250
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                   10.333
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                                                              22.58
22.67
            1.27
                   10.417
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4.500
           1.27
                   10.583
                                3 66
                                       16.667
                                                     1.43
                                                                          0.96
                                       16.750
16.833
16.917
4.583
           1.27
                   10.667
                                3.66
                                                     1.43
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                                       17 000
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4.833
            1.27
                   10.917
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                   11.000
                              4.94 | 17.083
4.94 | 17.167
4.94 | 17.250
4.94 | 17.333
7.65 | 17.417
7.65 | 17.500
7.65 | 17.583
7.65 | 17.750
7.65 | 17.833
23.57 | 17.917
23.58 | 18.000
                                       17.083
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5.833
          1.27 | 12.000
1.27 | 12.083
5.917
                                                     1.43
                                                              24.17
                                                                          0.96
6.000
                               97 48 18 167
                                                              24.25
6.083
          1.27 | 12.167
                               97 49 18 250
```

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms) = 0.579 (i)(hrs) = 12.833TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL (mm)= 35.441 (mm)= 79.650 RUNOFF COEFFICIENT = 0.445

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min Area (ha)= 9.66 Total Imp(%)= 68.00 Dir. Conn.(%)= 50.00 IMPERVIOUS 6.57 2.00 0.50 253.77 0.013 PERVIOUS (i)
3.09
5.00
2.00
30.00
0.250 (ha)= (mm)= (%)= (m)= Surface Area Dep. Storage Average Slope Length Mannings n

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

TRANSFORMED HYETOGRAPH							
TIME hrs 0.083 0.167 0.250 0.333 0.417 0.500 0.750 0.833 0.667 1.000 1.083 1.417 1.000 1.1.083 1.417 1.200 1.583 1.417 1.200 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1.583 1.417 1.500 1	RAIN mm/hr 0.00 0.00 0.88 0.88 0.88 0.88 0.88 0.8	his 6.167 6.250 6.333 6.417 6.500 6.583 6.647 6.750 6.833 6.917 7.000 7.083 7.167 7.250 7.353 7.417 7.500 7.833 7.467 7.750 8.883 7.667 7.750 8.883 8.667 8.250 8.883 8.417 8.500 8.883 8.417 8.900 9.983 9.167 9.250 9.883 9.167 9.250 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.167 9.750 9.883 9.917 10.0083 10.167 10.083	mm/Arr 1.27 1.43 1.43 1.43 1.43 1.43 1.43 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75	hrst 12.250 12.333 12.417 12.500 12.583 12.500 12.833 12.12.750 12.833 13.167 13.083 13.167 13.250 13.333 13.157 14.250 14.333 14.167 13.500 14.083 14.167 14.250 14.333 14.167 15.167 15.167 15.503 15.167 15.503 15.503 15.503 15.503 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.003 16.167 16.233 16.470	7/hr 97.48 111.47 111.4	TIME 18.33 18.42 18.50 18.67 18.70 18.89 19.00 19.08 19.08 19.91 19.35 19.42 19.50 19.83 19.67 19.83 19.67 19.75 20.00 20.00 20.01 20.25 20.33 20.40 20.20 20.58 20.40 20.20 20.58 20.40 20.20 20.58 20.40 20.21 20.20 20.58 20.40 20.21 20.50 20.58 20.40 20.21 20.50 20.58 20.40 20.21 20.50 20.58 20.40 20.21 20.50 20.58 20.40 20.21 20.50 20.58 20.40 20.20 20.80 21.17 22.25 21.33 21.42 21.50 22.183 21.47 22.150 22.25 22.35 22.25 22.35	RAINT 1.43 1.43 1.43 1.43 1.43 1.43 1.43 1.43
3.500 3.583 3.667 3.750 3.833 3.917 4.000	1.04 1.04 1.04 1.04 1.04 1.04 1.04 1.04	9.583 9.667 9.750 9.833 9.917 10.000 10.083 10.167 10.250 10.333	2 87 2 87 2 87 2 87 2 87 2 87 3 66	15.667 15.750 15.833 15.917 16.000 16.083 16.167 16.250 16.333	2.39 2.39 2.39 2.39 2.39 2.39 1.43	21.75 21.83 21.92 22.00 22.08	0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96

5.583 1.27 5.667 1.27 5.750 1.27 5.833 1.27 5.917 1.27 6.000 1.27 6.083 1.27	11.667   7.65   17.750   11.750   7.65   17.833   11.833   23.57   17.917   11.917   23.58   18.000   12.000   23.58   18.083   12.083   97.48   18.167   12.167   97.49   18.250	1.43     23.83     0.96       1.43     23.92     0.96       1.43     24.00     0.96       1.43     24.08     0.96       1.43     24.17     0.96       1.43     24.25     0.96       1.43     1.43     0.96       1.43     1.43     0.96
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	97.49 103.11 5.00 15.00 5.56 (ii) 11.42 (ii) 5.00 0.20 0.09	*TOTALS*
PEAK FLOW (CMS)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	1.24 0.56 12.25 12.33 77.65 44.74 79.65 79.65 0.97 0.56	1.728 (iii) 12.25 61.19 79.65 0.77

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.

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

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir. Conn.(9	%)= 50 <b>.</b> 00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.6 2.0 0.5 92.3 0.01	4 0 0 8	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

TRANSFORMED HYETOGRAPH								
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN	
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr	
0.083	0.00	6.167	1.27	12.250	97.49	18.33	1.43	
0.167	0.00	6.250	1.27	12.333	11.48	18.42	1.43	
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43	
0.333	0.88	6.417	1.43	12.500	11.47	18.58	1.43	
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43	
0.500 0.583	0.88 0.88	6.583 6.667	$\frac{1.43}{1.43}$	12.667 12.750	11.47 11.47	18.75 18.83	1.43	
0.565	0.88	6.750	1.43	12.730	5.89	18.92	$\frac{1.43}{1.43}$	
0.750	0.88	6.833	1.43	12.917	5.89	19.00	1.43	
0.833	0.88	6.917	1.43	13.000	5.89	19.08	1.43	
0.917	0.88	7.000	1.43	13.083	5.89	19.17	1.43	
1.000	0.88	7.083	1.43	13.167	5 89	19.25	1.43	
1.083	0.88	7 167	1.43	13.250	5.89	19.33	1 43	
1.167	0.88	7.250	1.43	13.333	4.30	19.42	1.43	
1.250	0.88	7.333	1.75	13.417	4.30	19.50	1.43	
1.333	0.88	7.417	1.75	13.500	4.30	19.58	1.43	
1.417	0.88	7.500	1.75	13.583	4.30	19.67	1.43	
1.500	0.88	7.583	1.75	13.667	4.30	19.75	1.43	
1.583	0.88	7.667	1.75	13.750	4.30	19.83	1.43	
1.667 1.750	0.88 0.88	7.750 7.833	1.75 1.75	13.833 13.917	3.35 3.35	19.92 20.00	1.43 1.43	
1.833	0.88	7.917	1.75	14.000	3.35	20.00	1.43	
1.917	0.88	8.000	1.75	14.083	3.35	20.03	1.43	
2.000	0.88	8 083	1.75	14.167	3.35	20.25	1.43	
2.083	0.88	8.167	1.75	14.250	3.35	20.33	0.96	
2.167	0.88	8 250	1.75	14.333	2.39	20.42	0.96	
2.250	0.88	8.333	2.07	14.417	2.39	20.50	0.96	
2.333	1.04	8.417	2.07	14.500	2.39	20.58	0.96	
2.417	1.04	8.500	2.07	14.583	2.39	20.67	0.96	
2.500	1.04	8.583	2.07	14.667	2.39	20.75	0.96	
2.583	1.04	8.667	2.07	14.750	2.39	20.83	0.96	
2.667 2.750	$\frac{1.04}{1.04}$	8.750 8.833	2.07	14.833 14.917	2.39 2.39	20.92 21.00	0.96 0.96	
2.730	1.04	8 917	2.23	15.000	2.39	21.00	0.96	
2.917	1.04	9.000	2.23	15.083	2.39	21.08	0.96	
3.000	1.04	9.083	2.23	15.167	2.39	21.25	0.96	
3 083	1.04	9 167	2.23	15.250	2 39	21.33	0 96	
3 167	1.04	9.250	2.23	15.333	2.39	21.42	0.96	

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                                      1.27
                                                12.167
                                                              97.49 18.250
                                                                                         1.43
       Max.Eff.Inten.(mm/hr)=
                                                    97.49
                                                                        52.10
       over (min)
Storage Coeff (min)=
Unit Hyd Tpeak (min)=
                                                     5 00
                                                                        15.00
10.74 (ii)
                                                     3.03 (ii)
                                                     5.00
                                                                        15.00
       Unit Hyd. peak (cms)=
                                                     0.27
                                                                         0.09
                                                                                             *TOTALS*
                                                                                              0.223 (iii)
12.25
56.31
                                                     0.17
                                                                         0.06
       PEAK FLOW
                                 (cms) =
                                                   12.25
77.65
                                                                        12.33
       TIME TO PEAK
                                (hrs)=
       RUNOFF VOLUME
                                  (mm)=
                                                                        34.98
       TOTAL RAINFALL
                                  (mm)=
                                                    79.65
                                                                        79.65
                                                                                                79.65
        RUNOFF COEFFICIENT
                                                     0.97
                                                                         0.44
                                                                                                 0.71
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
```

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total		0.76 50.00	Dir. Con	n.(%)=	15.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (** 0.38 1.50 2.00 40.00 0.250	i)		
		TDANCEOR	VED TO	E O MEN	TTME C	TED	

NOTE: RATNEAU WAS TRANSFORMED TO 5.0 MTN. TIME STEP.

TRANSFORMED HYETOGRAPH								
TIME	RAIN	TIME	RAIN		RAIN	TIME	RAIN	
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr	
0.083	0.00	6.167	1.27	12.250	97.49	18 33	1.43	
0.167	0.00	6.250	1.27	12.333	11.48	18.42	1.43	
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43	
0.333	0.88	6.417	1.43	12.500	11.47	18.58	1.43	
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43	
0.500	0.88	6.583	1.43	12.667	11.47	18.75	1.43	
0.583	0.88	6.667	1.43	12.750	11.47	18.83	1.43	
0.667	0.88	6.750	1.43	12.833	5.89	18.92	1.43	
0.750	0.88	6.833	1.43	12.917	5.89	19.00	1.43	
0.167 0.250 0.333 0.417 0.500 0.583 0.667	0 00 0 00 0 88 0 88 0 88 0 88	6.250 6.333 6.417 6.500 6.583 6.667 6.750	1 27 1 43 1 43 1 43 1 43 1 43 1 43	12 333 12 417 12 500 12 583 12 667 12 750 12 833	11 48 11 47 11 47 11 47 11 47 11 47 11 47 5 89	18 42 18 50 18 58 18 67 18 75 18 83 18 92	1.43 1.43 1.43 1.43 1.43 1.43	

0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.500 1.583 1.917 2.000 2.083 2.167 2.250 2.383 2.417 2.500 2.583 2.417 2.500 3.083 3.167 3.250 3.383 3.417 3.500 3.583 3.417 3.500 3.583 3.917 4.000 4.083 4.167 4.250 4.333 4.417 4.500 4.583	0.88 0.888 0.888 0.888 0.888 0.888 0.888 0.888 0.888 0.888 0.888 1.044 1.0	6.917 7.000 7.083 7.167 7.250 7.333 7.417 7.500 7.583 7.467 7.750 7.833 8.167 8.003 8.083 8.167 8.500 8.383 8.917 9.000 9.083 8.917 9.000 9.083 9.167 9.250 9.333 9.667 9.750 9.833 9.667 9.750 9.833 9.617 10.000 10.083 10.417 10.000 10.583 10.417	1.43 1.43 1.43 1.43 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75	13.000 13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.667 13.750 13.833 13.917 14.003 14.167 14.250 14.167 14.250 14.333 14.417 15.000 14.583 14.417 15.000 15.583 15.167 15.750 15.583 15.167 15.750 15.333 15.417 15.500 16.333 16.167 16.750 16.333 16.167	55555444333333333333333333333333333333	19.08 19.17 19.25 19.33 19.42 19.58 19.57 19.75 19.92 20.08 20.17 20.08 20.17 20.25 20.33 20.42 20.50 20.67 20.75 20.83 20.67 21.08 21.17 21.25 21.33 21.42 21.58 21.67 21.83 21.67 21.83 21.67 21.83 21.67 21.83 21.67 21.75 21.83 21.67 22.75 21.83 22.75 22.88 22.75 22.83 22.75 22.83 22.75 22.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.75 23.83 23.90 23.75 23.83 23.90 23.75 23.83 23.90 23.75 23.83 23.90 23.75 23.83 23.90 23.75 23.83 23.90 23.75 23.83 23.90 23	1 43 1 43 1 43 1 43 1 43 1 1 43
4.333 4.417 4.500 4.583 4.667 4.750 4.833 4.917 5.000 5.083 5.167 5.250 5.333 5.417 5.500 5.583 5.667 5.750 5.883 5.917 6.000 6.083	1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27		3.66 3.66 3.66 4.94 4.94 4.94 4.94 7.65 7.65 7.65 7.65 7.65 7.65 7.45 23.58 23.58	146.500 16.583 16.667 16.750 16.833 16.917 17.000 17.083 17.167 17.250 17.333 17.417 17.500 17.447 17.500 17.750 17.750 17.750 17.750 17.750 17.833 17.917 18.083 18.167 18.083 18.167	1.43 1.43 1.43 1.43 1.43 1.43 1.43 1.43	22 . 58 22 . 67 22 . 75 22 . 83 22 . 92 23 . 00 23 . 08 23 . 17 23 . 25 23 . 33 23 . 42 23 . 50 23 . 58 23 . 67 23 . 75 23 . 83 23 . 42 24 . 00 24 . 08 24 . 17 24 . 25	0.96
d. Tpeak (mi d. peak (cm	n)= n) n)= n)= ns)=	97.49 5.00 2.10 5.00 0.31		42.02 10.00 8.24 (ii) 10.00 0.13		「ALS*	
OW (cm	ıs)=	0.03		0.12	0.	148 (iii)	

Max.Eff. Storage Unit Hvd Unit Hyd PEAK FLOW (cms)= (hrs)= 0.148 (iii) 12 25 78 65 79 65 12 25 61 95 79 65 TIME TO PEAK 12.25 RUNOFF VOLUME 59 01 79 65 (mm)= (mm)= ΤΟΤΔΙ ΚΔΤΝΕΔΙΙ 0.99 RUNOFF COEFFICIENT

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 85.0 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
                                        QPEAK
                                                 (hrs)
12.83
12.25
 _____
                             (ha)
14.50
                                        (cms)
                                                             (mm)
     ID1= 1 ( 0011):
+ ID2= 2 ( 0016):
                                      0 579
                                                           61 95
                               0.76
                                       0.148
       ID = 3 (0006):
                             15.26 0.603
                                                 12.75
                                                          36.76
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
ADD HYD ( 0006) | 3 + 2 = 1
                                        QPEAK
(cms)
                                                             R.V.
(mm)
                             (ha)
15.26
                                                 (hrs)
12.75
<u>------</u>
       ID1= 3 ( 0006):
                                      0 603
                                                          36`76
     + ID2 = 2 (0002):
                                                 12.25
                               9.66
                                       1.728
                                                           61.19
       ID = 1 (0006):
                              24.92
                                      2.103
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
 ADD HYD ( 0006)|
  1 + 2 = 3
                                        QPEAK
                               (ha)
                                        (cms)
                                                  (hrs)
     ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                              24.92
                                       2.103
                                                 12.25
                                                           46.23
                              1.28
                                      0.223
                                                 12.25
                                                           56.31
       ID = 3 (0006):
                             26.20 2.326
                                                 12.25
                                                          46.72
    NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-----
 RESERVOIR( 0004)
                          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
                                                      0.1460
                            0.0160
                                       0.1150
                                                     0.3020
                                                                   0.9550
                                                                    1.1990
                            0.0250
                                        0.2380
                                                      0.4430
                                        0.3690
                            0.0410
                                                      0.6010
                                                                    1.4550
                                                       TPEAK
                               (ha)
26.200
                                            (cms)
                                                       (hrs)
12.25
  INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                             2.326
                                26.200
                                             0.200
                                                         14.67
                                                                     46.65
                    PEAK FLOW REDUCTION [Qout/Qin](%)= 8.58
TIME SHIFT OF PEAK FLOW (min)=145.00
                    MAXIMUM STORAGE USED
                                                     (ha.m.) = 0.7554
 CAL TB
U.H. Tp(hrs) = 0.13
        NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                  --- TRANSFORMED HYETOGRAPH ----
                                                   , TIME
                          RAIN
                                  TIME
                                            RAIN
                                                              RAIN TIME
                                           mm/hr
1.27
1.27
1.43
1.43
                          mm/hr
                                                       hrs
                                                              mm/hr
                                                   12.250
                 0.083
                          0.00
                                  6.167
                                                             97.49
                                                                                1.43
                 0.167
0.250
                                  6 250
6 333
6 417
                                                   12.333
12.417
                                                             11 48
11 47
                                                                     18 42
18 50
                           0.00
                                                                                1.43
                           0.00
                          0.88
                                                   12 500
                                                             11 47
                                                                      18 58
                 0.333
                                                                                1.43
                                            1.43 | 12.500

1.43 | 12.583

1.43 | 12.667

1.43 | 12.750

1.43 | 12.833

1.43 | 12.917

1.43 | 13.000
                 0.417
                           0.88
                                  6.500
                                                             11 47
                                                                     18.67
                                                                                1.43
                           0.88
                                  6 583
6 667
                                                             11.47
                                                                     18 75
18 83
                 0.583
                           0.88
                                                             11.47
                          0 88
0 88
0 88
                                  6 .750
6 .833
6 .917
7 .000
7 .083
                                                                     18.92
19.00
19.08
                                                              5 89
5 89
5 89
                 0.667
                                                                                1.43
                 0.750
                                                                               1.43
1.43
                 0 833
                 0.917
                           0.88
                                            1.43
                                                   13 083
                                                              5.89
                                                                      19.17
                                                                                1.43
                                            1 43 13 167
                                                              5.89
                                                                     19.25
```

Unit Hyd Qpeak (cms)= 0.126

PEAK FLOW (cms)= 0.050 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 34.631
TOTAL RAINFALL (mm)= 79.650
RUNOFF COEFFICIENT = 0.435

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

ADD HYD ( 0019)     1 + 2 = 3   	AREA (ha) 0.43 26.20	QPEAK (cms) 0.050 0.200	TPEAK (hrs) 12.25 14.67	R.V. (mm) 34.63 46.65
ID = 3 (0019):	26.63	0.201	14.58	46.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
CALIB
| CALIB
| STANDHYD ( 0024) | Area (ha)= 0.61
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
```

		IMPERATORS	PERVIOUS (
Surface Area	(ha)=	0.31	0.31
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	63.77	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 0.083	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.167	0.00	6.167 6.250	$\frac{1.27}{1.27}$	12.250 12.333	97.49 11.48	18.33 18.42	$\frac{1.43}{1.43}$
0.250	0.00	6.333	1.43	12.417	11.47	18.50	1.43
0.333	0.88	6 417	1.43	12.533 12.417 12.500 12.583	11.47 11.47	18.58	1.43
0.417	0.88	6.500	1.43	12.583	11.47	18.67	1.43
0.500	0.88	6.583	1.43	12.007	11.47	18.75	1.43
0.583	0.88	6.667	1.43 1.43	12.750 12.833	11.4/	18.83 18.92	1.43 1.43
0.667 0.750	0.88 0.88	6.833	1.43	12.833 12.917	5 89	19.00	1.43
0.833	0.88	6.917	1.43	13.000	11 . 47 11 . 47 5 . 89 5 . 89 5 . 89	19.08	1.43
0.917	0.88	7.000	1.43	13.083	5.89	19.17	1.43
1.000	0.88	7.083	1.43	13.167	5.89	19.25	1.43
1.083 1.167	0.88 0.88	7.167 7.250	1.43	13.250 13.333	5.89 4.30	19.33 19.42	$\frac{1.43}{1.43}$
1.250	0.88	7.333	1.43 1.75 1.75 1.75	113 /17	4.30	19.50	1.43
1.250 1.333	0.88	7.417	1.75	13.500	4.30	19.58	1.43
1.417 1.500 1.583	0.88	7.500	1.75	13.583	4.30	19.67	1.43
1.500	0.88 0.88	7.583 7.667	1.75	13.667	4.30	19.75	1.43
1.667	0.88	7.750	1.75 1.75 1.75	13 750 13 833	4.30 3.35	19.83 19.92	$\frac{1.43}{1.43}$
1.750	0.88	7.833	1.75	13.917	3.35	20.00	1.43
1.833	0.88	7.917	1.75 1.75	14.000	3.35 3.35 3.35	20.08	1.43
1.917	0.88	8.000	1.75	14.083	3.35	20.17	1.43
2.000	0.88 0.88	8.083 8.167	$\frac{1.75}{1.75}$	14.167 14.250	3.35 3.35	20.25 20.33	1.43 0.96
2.167	0.88	8.250	1.75	14.333	2.39	20.33	0.96 0.96
2.250	0.88	8.333	2 07	114.417	2 39	20 50	0.96
2.333	1.04	8.417	2.07 2.07 2.07	14.500 14.583	2.39 2.39 2.39	20.58	0.96
2.417	1.04	8.500	2.07	14.583	2.39	20.67	0.96
2.500	1.04	8.583 8.667	2.07	14.667 14.750	2.39 2.39	20.75 20.83	0.96 0.96
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667	1.04 1.04	8.750	2 07 2 07 2 07 2 07 2 23 2 23 2 23	114.833	2.39	20.92	0.96
2.750 2.833 2.917	1.04	8.833	2.23 2.23 2.23	14.917	2.39	21 00	0.96
2.833	1.04	8.917	2.23	15.000	2.39	21.08	0.96
3.000	$\frac{1.04}{1.04}$	9.000 9.083	2.23	15.083 15.167	2.39 2.39	21.17 21.25	0.96 0.96
3.083	1.04	9.167	2.23	15.250	2.39	21.33	0.96
3.167	1.04	9.250	2.23	115.333	2.39	21.42	0.96
3.250	1.04	9.333	2.55	15.417	2 39	21.50 21.58	0.96
3 250 3 333 3 417	1.04	9.417 9.500	2 23 2 23 2 55 2 55 2 55 2 55 2 55 2 87 2 87	15.500 15.583	2.39	21.58	0.96
3.500	$\frac{1.04}{1.04}$	9.500 9.583	2.55	15.667	2.39 2.39	21.67 21.75	0.96 0.96
3.583	1.04	9 667	2.55	15.750	2.39	21.83	0.96
3.667	1.04	9.750	2.55	15.833	2.39	21.92	0.96
3.750	$\frac{1.04}{1.04}$	9.833	2.87	15.917	2.39 2.39	22.00	0.96 0.96
3.833 3.917	1.04	9.917 10.000	2.87	16.000 16.083	2.39 2.39	22.08 22.17	0.96
4 000	1.04	10.083	2.87	16.167	2.39	22.25	0.96
4.083	1.04	10.167	2.87	16.250	2.39	22.33	0.96
4.167	1.04	10.250	2.87	16.333	1.43	22.42	0.96
4.250 4.333	1.04 1.27	10.333 10.417	3.66	16.417 16.500	1.43 1.43	22 50 22 58 22 67 22 75	0.96 0.96
4.417	1 27	10.500	3.66 3.66	16.583	1.43	22.67	0.96
4.500	1.27 1.27 1.27	10.583	3.66	16.667	1.43	22.75	0.96
4.583	1.27	10.667	3.66	16.750	1.43	22.83	0.96
4.667 4.750	1.27	10.750 10.833	3.66 4.94	16.833 16.917	1.43 1.43	22.92 23.00	0.96 0.96
4.730	1.27	10.833	4.94	17.000	1.43	23.00	0.96
4.917	1.27	11.000	4.94	17.083	1.43	23.17	0.96
5.000	1.27	11.083	4.94	17.167	1.43	23.25	0.96
5.083	$\frac{1.27}{1.27}$	11.167	4.94 4.94	17.250	1.43	23.33	0.96
5.167 5.250	1.27 1.27	11.250 11.333	7.65	17.333	1.43 1.43	23.42 23.50	0.96 0.96
5.333	1.27	11.417	7.65	17.417 17.500 17.583	1.43	23.50 23.58	0.96
5 417	1.27 1.27	11.500	7.65	17.583	1.43	23.58 23.67	0.96

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1.27 | 11.583
1.27 | 11.667
1.27 | 11.750
1.27 | 11.833
1.27 | 11.917
1.27 | 12.000
1.27 | 12.083
1.27 | 12.167
                                                                                                                                7.65 | 17.667
7.65 | 17.750
7.65 | 17.833
23.57 | 17.917
23.58 | 18.000
23.58 | 18.083
97.48 | 18.167
97.49 | 18.250
                                                                                                                                                                                                                            23.75
23.83
23.92
24.00
24.08
24.17
24.25
                                                                                                                                                                                                                                                             0.96
0.96
0.96
0.96
                                                                                                                                                                                                  1 43
1 43
1 43
1 43
1 43
1 43
1 43
1 43
                                          5.583
5.667
5.750
                                          5.833
5.917
6.000
                                                                                                                                                                                                                                                             0.96
0.96
0.96
                                           6.083
Max.Eff.Inten.(mm/hr)=
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                                                                        97.49
5.00
1.97 (ii)
                                                                                                                                                     142.02
10.00
8.10 (ii)
                                                                                                             5.00
                                                                                                            0.31
                                                                                                                                                                                                           *TOTALS*
0.120 (iii)
12.25
61.95
PEAK FLOW (CMS) =
TIME TO PEAK (hrs) =
RUNOFF VOLUME (mm) =
TOTAL RAINFALL (mm) =
RUNOFF COEFFICIENT =
                                                                                                        0.02
12.25
78.65
79.65
                                                                                                                                                         0.09
12.25
59.01
                                                                                                                                                         79.65
```

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= 0.83 Imp(%)= 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIOUS 0.42 1.00 1.00 74.39 0.013	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

	TRA	ANSFORME	D HYETOGR	APH		
TIME RAIN	TIME	RAIN	I' TIME	RAIN	I TIME	RAIN
hrs mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083 0.00	6.167	1.27	12.250	97.49	18 33	1.43
0.167 0.00	6.250	1.27	12.333	11 48	18.42	1.43
0.250 0.00	6.333	1.43	12.417	11 47	18.50	1.43
0.333 0.88	6.417	1.43	12.500	11.47	18.58	1.43
0.417 0.88	6.500	1.43	12.583	11 47	18.67	1.43
0.500 0.88	6.583	1.43	12.667	11 47	18.75	1.43
0.583 0.88	6.667	1.43	12.750	11 47	18 83	1.43
0.667 0.88	6.750	1.43	12.833	5 89	18.92	1.43
0.750 0.88	6.833	1.43	12.917	5 89	19.00	1.43
0.833 0.88	6.917	1.43	13.000	5 89	19.08	1.43
0.917 0.88	7.000	1.43	13.083	5.89	19.17	1.43
1 000 0 88	7.083	1.43	13.167	5 89	19.25	1.43
1.083 0.88	7.167	1.43	13.250	5.89	19.33	1.43
1 167 0 88	7.250	1.43	13.333	4.30	19.42	1.43
1 250 0 88	7.333	1.75	13.417	4.30	19.50	1 43
1.333 0.88	7.417	1.75	13.500	4.30	19.58	1.43
1.417 0.88	7.500	1.75	13.583	4.30	19.67	1.43
1.500 0.88	7.583	1.75	13.667	4.30	19.75	1.43
1.583 0.88	7.667	1.75	13.750	4.30	19.83	1.43
1.667 0.88	7.750	1.75	13.833	3.35	19.92	1.43
1.750 0.88	7.833	1.75	13.917	3.35	20.00	1.43
1.833 0.88	7.917	1.75	14.000	3.35	20.08	1.43
1.917 0.88	8.000	1.75	14.083	3.35	20.17	1.43
2.000 0.88	8.083	1.75	14.167	3.35	20.25	1.43
2.083 0.88	8.167	1.75	14.250	3.35	20.33	0.96
2.167 0.88	8.250	1.75	14.333	2.39	20.42	0.96
2.250 0.88	8.333	2.07	14.417	2.39	20.50	0.96
2.333 1.04	8.417	2.07	14.500	2.39	20.58	0.96
2.417 1.04	8.500	2.07	14.583	2.39	20.67	0.96
2.500 1.04	8.583	2.07	14.667	2.39	20.75	0.96
2.583 1.04	8.667	2.07	14.750	2.39	20.83	0.96
2.667 1.04	8.750	2.07	14.833	2.39	20.92	0.96
2.750 1.04	8.833	2.23	14.917	2.39	21.00	0.96
2.833 1.04	8.917	2.23	15.000	2.39	21.08	0.96

```
21.17
21.25
21.33
21.42
21.50
21.58
21.67
21.75
                                                                                                                   0.96
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                                       1.04
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                                        1.04
                                                   9.500
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                                        1.04
                                                   9.583
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                         3.583
3.667
3.750
                                       1.04
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                                                                           15.750
15.833
15.917
                                                                                                                   0.96
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0.96
                                                   9.667
                                                                                                     9.750
9.833
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                                                 10 000
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                          4.000
                                        1.04
                                                 10.083
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10 417
                         4.083
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                                                                           16.250
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                                                                           16 333
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                         4.167
                         4.250
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                         4.333
                         4.417
                                                 10 500
                                                                           16.583
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                                                10.583
                                                               3.66
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4.94
7.65
7.65
7.65
7.65
23.58
23.58
23.48
                                                                            16.667
                                                                                                                    0.96
                                                10.583
10.667
10.750
10.833
10.917
11.000
                                                                           16.750
16.833
16.917
17.000
                                                                                                                   0.96
0.96
                                                                                          1.43
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1.43
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1.43
                         4.667
                         4.750
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                         4.833
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                                                11.833
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                                                                                          1 43
                                                                                                     24 25
                         6.000
                         6.083
                                       1.27
                                                12.167
                                                               97 49 18 250
                                                   97.49
5.00
2.16 (ii)
5.00
                                                                       142.02
10.00
8.29 (ii)
        Max.Eff.Inten.(mm/hr)=
       over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                                         10.00
                                                      0.31
                                                                          0.13
                                 (cms)=
(hrs)=
(mm)=
(mm)=
                                                    0.03
12.25
78.65
79.65
                                                                                                0.162 (iii)
12.25
61.95
                                                                          0.13
        PEAK FLOW
       TIME TO PEAK
RUNOFF VOLUME
                                                                        12.25
59.01
        TOTAL RAINFALL
                                                                         79 65
                                                                                                 79.65
        RUNOFF COEFFICIENT =
                                                     0.99
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.
          (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN* = 85.0 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.
************
** SIMULATION:I. 10yr 24hr 15min SCS Type II **
    READ STORM
                                     Filename: C:\Users\jkerschbaumer\AppD
                                                     ata\Local\Temp\
0e53ce72-2c36-4efc-8a1e-c647e636da9d\714a6f50
  Ptotal= 92.66 mm
                                      Comments: 10yr 24hr 15min SCS Type II
                                       RATN
                                                                 RAIN
                                                     TTME
                                                                                                                    RAIN
                                                               mm/hr
1.67
                                                                                                                   mm/hr
1.67
                            hrs
                                      mm/hr
                                                     hrs
                                                                                hrs
                                                                                          mm/hr
                                                                                                          hrs
                          0.00
                                                    6.25
                                                                            12.50
                                                                                         13.34
                                                                                                     18 75
                                       0.00
                                                                 1 67
1 67
1 67
2 04
2 04
2 04
2 04
                                       1.02
                                                    6.50
                                                                            12.75
                                                                                          6.86
                                                                                                     19.00
                                                                                                                    1.67
                          0.25
                                       1 02
1 02
1 02
1 02
1 02
1 02
1 02
                                                   6 .75
7 .00
7 .25
7 .50
7 .75
                                                                                          6 86
5 00
5 00
3 89
3 89
                                                                                                    19 25
19 50
19 75
20 00
20 25
                          0.50
0.75
                                                                            13 00
13 25
                                                                                                                    1.67
1.67
```

13 50 13 75 14 00

14.25

2.78

20.50

20.75

1.00

1.25 1.50

1.75

8.00

1.67

1.67 1.11

	2.25 2.50 3.00 3.25 3.50 4.25 4.70 4.75 5.00 5.25 5.50 6.00	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.48 1.48 1.48 1.48 1.48	9.00 9.25 9.50 9.75 10.00 10.25 10.50 11.75 11.00 11.25 11.50	2 .59 2 .97 2 .97 3 .34 4 .26 4 .26 5 .74 8 .90	14.75 15.00 15.25 15.50 15.75 16.00 16.25 16.50 16.75 17.00 17.25 17.50 17.50 18.00 18.25	2.78 2.78 2.78 2.78 2.78 2.78 1.67 1.67 1.67 1.67 1.67 1.67	21.00 21.25 21.50 21.75 22.00 22.25 22.50 22.75 23.00 23.25 23.50 23.75 24.00	1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.1
CALIB   STANDHYD ( OC   ID= 1 DT= 5.0 n  Surface Are Dep. Storac Average S1c Length Mannings n  NOTE:	ea je ppe	-	IMPERVIO 5.69 1.00 0.50 255.73 0.013	US PE	RVIOUS (- 4.12 5.00 2.00 30.00 0.250	i)		
	TIME 0.083 0.167 0.250 0.333 0.167 0.750 0.5837 0.417 0.83 1.167 1.250 0.5837 0.917 1.083 1.167 1.250 0.837 1.250 0.850	RAIN mm/hm 0.00 0.00 1.02 1.02 1.02 1.02 1.02 1.02	TIME hrs 6.167 6.250 6.383 6.417 6.500 6.583 6.667 6.750 6.833 7.417 7.000 7.083 7.417 7.500 7.583 7.417 7.500 8.083 8.417 8.000 8.883 8.417 8.900 8.883 8.417 8.900 8.883 8.917 9.000 9.383 9.167 9.250 9.333 9.167	1.48 1.48 1.67 1.67 1.67 1.67 1.67 1.67 1.67 1.67	D HYETOGI ' TIME hrs 12.250 12.333 12.417 12.500 12.753 12.667 12.753 12.917 13.000 13.083 13.167 13.250 13.333 13.313 13.350 13.350 13.350 13.350 13.350 14.000 14.083 14.167 14.250 14.183 14.417 14.500 14.833 14.417 14.500 14.833 14.417 15.000 15.083 16.67 17.50 17.50 18.33 17.50 18.33 17.50 18.33 18.35 19.50 1	KATIN	18. 42 18. 50 18. 42 18. 50 18. 75 18. 75 18. 75 18. 75 19. 08 19. 08 19. 19 19. 17 19. 25 19. 25 19. 42 19. 50 19. 67 19. 83 19. 67 19. 83 19. 67 20. 20 20. 00 20. 00 20. 01 20. 25 20. 20 20. 21 20. 21 21. 25 21. 20 21. 20	RAIN mm/hr 1.67 1.67 1.67 1.67 1.67 1.67 1.67 1.67

3.583 3.667 3.750

3.833

1.20 1.20 1.20 1.20 1.20

1.20

9.750 9.833

9.917

10.000

16.000

1.11 1.11 1.11 1.11 1.11 1.11

21.42 21.50 21.58 21.67 21.75 21.83 21.92 22.00 22.08 22.17

2 .78 2 .78 2 .78 2 .78 2 .78 2 .78

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1.20 | 10.083
                                                3 34
3 34
4 26
               4.083
                           1.20
                                  10.167
                                                         16.250
                                                                       2.78
                                                                               22 42
22 50
               4.167
                           1.20
                                  10.250
                                                         16.333
                                                                                            1.11
               4.250
                           1.20
                                  10.333
                                                         16.417
                                                                      1.67
                                                                                            1.11
                                  10.417
                                                 4.26
                                                         16.500
                                                                               22.58
                                                                                            1.11
               4.333
                           1.48
                                                                      1.67
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                                  10.500
                                                 4.26
                                                          16 583
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22 83
               4.500
                           1.48
                                                 4.26
                                                         16.667
               4.583
                           1 48
                                  10.667
                                                 4.26
                                                         16.750
                                                                      1.67
                                                                                            1.11
                                                4.26
5.74
5.74
                                                                               22.92
23.00
23.08
               4.667
                           1.48
1.48
                                  10.750
10.833
                                                         16.833
                                                                      1.67
                                                                                            1.11
               4 750
                                                         16.917
                                                                                            \frac{1.11}{1.11}
                                   10.917
               4.833
                           1.48
                                                         17.000
                                                                      1.67
                                                 5 74
                                                                               23.17
               4.917
                           1.48
                                  11.000
                                                         17.083
                                                                      1.67
                                                                                            1.11
                                                5 74
5 74
5 74
                           1.48
                                                                                            \bar{1}. \bar{1}\bar{1}
               5.000
                                  11.083
                                                          17.167
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               5.083
                           1.48
                                   11.167
                                                                               23 42
23 50
23 58
23 67
               5.167
                           1.48
                                  11.250
11.333
                                                         17.333
                                                                      1.67
                                                                                            1.11
                                                8 90
8 90
8 90
                           1.48
1.48
                                                        17 .417
17 .500
17 .583
               5.250
                                                                      1.67
                                                                                            1.11
                                  11.417
11.500
               5.333
                                                                      1.67
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                           1.48
                                                                      1.67
               5.417
                                                                               23.75
23.83
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24.00
24.08
               5.500
                           1 48
                                   11.583
                                                 8 90
                                                         17.667
                                                                       1.67
                                             8.90 | 17.667

8.90 | 17.750

8.90 | 17.833

27.43 | 17.917

27.43 | 18.000

27.43 | 18.083

113.41 | 18.167
               5.583
                           1.48
                                  11.667
                                                                                            1.11
                                  11.750
11.833
11.917
                           1.48
                           1.48
1.48
               5.750
                                                                      1.67
                                                                                            1.11
                                                                      1.67
                                                                                            1.11
               5.833
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                           1.48
                                  12 000
                                                                               24.17
                                                                      1.67
                                                                                            1.11
               6.000
                           1.48
                                  12.083
                                                                      1.67
                                                                               24.25
                                                                                            \bar{1}.\bar{1}\bar{1}
               6.083
                           1.48 12.167 113.42 18.250
Max.Eff.Inten.(mm/hr)=
                                     113.42
                                      5.00
5.25 (ii)
                                                       15.00
11.41 (ii)
over (min)
Storage Coeff. (min)=
Unit Hyd Tpeak (min)=
Unit Hyd peak (cms)=
                                       5.00
                                                       15.00
                                       0.21
                                                        0.09
                                                                          *TOTALS*
                                                                            1.991 (iii)
PEAK FLOW
                     (cms)=
(hrs)=
                                       1.42
                                                        0.66
                                     12 25
91 66
92 66
                                                                            12.25
TIME TO PEAK
                                                       12.33
                       (mm)=
(mm)=
RUNOFF VOLUME
                                                        50.02
                                                                            70.01
                                                        92.66
TOTAL RAINFALL
RUNOFF COEFFICIENT
                                       0.99
                                                         0.54
                                                                             0.76
```

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

CALIB					
STANDHYD ( 0005)	Area Total	(ha)= Imp(%)=		Dir. Conn.(%)=	50.00
110-1-01-310 11111 1	Total	IIIb (70) =	30100	D111 C01111 (10)=	30100
		IMPERVI	ous	PERVIOUS (i)	
Surface Area	(ha)=	0.6	4	0.64	
Dep. Storage	(mm)=	2.0	0	5.00	
Average Slope	`(%)=	0.5	0	2.00	
Length	(m)=	92.3	8	30.00	
Mannings n	- =	0.01	3	0.250	
NOTE: DATHE	AII WAC	TRANSFOR	MED TO	5 O MIN TIME C	TED

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

		TRA	NSFORME	D HYETOGE	RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113.42	18.33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333	1.02	6.417	1.67	12.500	13.34	18.58	1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667	1.02	6.750	1.67	12.833	6.86	18.92	1.67
0.750	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
0.917	1.02	7.000	1.67	13.083	6.86	19.17	1.67
1.000	1.02	7.083	1.67	13.167	6.86	19.25	1.67
1.083	1.02	7.167	1.67	13.250	6.86	19.33	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1.67
1.250	1.02	7.333	2.04	13.417	5.00	19.50	1.67
1.333	1.02	7.417	2.04	13.500	5.00	19.58	1.67
1.417	1.02	7.500	2.04	13.583	5.00	19.67	1.67
1.500	1.02	7.583	2.04	13.667	5.00	19.75	1.67
1.583	1.02	7.667	2.04	13.750	5.00	19.83	1.67

```
2.04
                      1.750
                                  1.02
                                            7.833
                                                                 13.917
                                                                               3.89
                                                                                        20.00
                                                                                                     1.67
                                                         2.04
                                                                                        20.08
                      1.833
                                            7.917
                                                                 14.000
                                                                               3.89
                                                                                                     1.67
                                                         2 04
                      1.917
                                  1.02
                                            8.000
                                                                 14.083
                                                                               3.89
                                                                                        20.17
                                                                                                     1.67
                                  1.02
                                                         2.04
                                                                14.167
                                                                               3.89
                                                                                        20.25
                      2.000
                                            8.083
                                                                                                     1.67
                      2.083
                                            8.167
                                                         2 04
                                                                 14.250
                                                                               3.89
                                                                                                     1.11
                                                         2.04
                                                                 14.333
                                                                                        20.42
                      2.250
                                  1.02
                                            8 333
                                                         2 41
                                                                14.417
                                                                               2.78
                                                                                        20.50
                                                                                                     1.11
                                                        2.41
2.41
2.41
                                                                14.500
14.583
14.667
                                                                                        20 58
20 67
20 75
                      2.333
                                  1.20
                                            8.417
                                                                               2.78
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                                  1 20
1 20
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2.78
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                                                                                                     1.11 \\ 1.11
                                            8 583
                      2.500
                                                                                        20.83
                      2.583
                                  1.20
                                            8.667
                                                         2.41
                                                                14.750
                                                                               2.78
                                                                                                     1.11
                                  1.20
                                                        2 41 2 59
                                                                14.833
                                                                               2.78
                                                                                        20.92
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                      2.667
                                            8.750
                                  1.20
                                                                 14.917
                                                                               2.78
                                                                                        21.00
                                                                                                     1.11
                                                                                        21.08
21.17
21.25
21.33
                      2.833
                                  1.20
                                            8.917
                                                         2.59
                                                                115.000
                                                                               2.78
                                                                                                     1.11
                                                                15.083
15.167
15.250
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2.78
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                      2.917
                                  1.20
                                            9.000
                                                         2.59
                      3.000
                                  1.20
                                            9.083
                                                        2.59
2.59
2.59
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                                            9.167
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                      3.083
                                  1.20
                                                                                        21.42
21.50
21.58
21.67
21.75
                      3.167
                                  1.20
                                            9.250
                                                                15.333
                                                                               2.78
                                                                                                     1.11
                                                        2 97
2 97
                      3.250
                                            9.333
                                                                15.417
                                                                               2.78
                                                                                                     1.11
                                  1.20
                                            9.417
                                                                15.500
                                                                               2.78
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2 97
                                                                15.583
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                      3.417
                                  1.20
                                            9.500
                                                                               2.78
                      3.500
                                  1.20
                                            9.583
                                                                15.667
                                                                               2.78
                                                        2 97 2 97
                                                                                        21 83
21 92
                                                                15.750
                                                                              2.78
2.78
                      3.583
                                  1.20
                                            9.667
                                                                                                    \frac{1.11}{1.11}
                      3.667
                                  1.20
                                            9.750
                                                                15.833
                                                                                        22 00
22 08
                      3.833
                                  1.20
                                            9.917
                                                         3 34 16 000
                                                                               2.78
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                                                                                        22.17
22.25
22.33
                      3.917
                                  1.20
                                          10.000
                                                        3 34
3 34
3 34
                                                                16.083
                                                                               2.78
                                                                                                     1.11
                      4 000
                                  1.20
1.20
                                          10.083
                                                                16.167
                                                                              2.78
2.78
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                      4.083
                                          10.167
                                                                116.250
                                                                                        22.42
                                                         3 34
                      4.167
                                  1.20
                                          10.250
                                                                16.333
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                                  1.20
                                          10.333
                                                         4.26
                                                                16.417
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22 58
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                                                         4.26
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22 75
22 83
22 92
                      4.417
                                  1.48
                                          10.500
                                                         4.26
                                                                16.583
                                                                               1.67
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                      4.500
                                  1.48
                                          10.583
                                                         4.26
                                                                16.667
                                                                               1.67
                                                                                                     1.11
                                  \bar{1} 48
                                                        4 26 | 16 750
4 26 | 16 833
5 74 | 16 917
5 74 | 17 000
                      4.583
                                          10.667
10.750
                                                                16.750
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1.11
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                                                                               1.67
                      4.667
                                  1.48
                                                                                        22.92
23.00
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23.17
23.25
23.33
23.42
23.50
23.58
23.67
                                                                                                     \bar{1}.\bar{1}\bar{1}
                      4.750
                                  1.48
                                          10.833
                                                                               1.67
                                  1.48
                                          10.917
                                                                               1.67
                                                                                                     1.11
                                                        5.74 | 17.000
5.74 | 17.083
5.74 | 17.167
5.74 | 17.250
5.74 | 17.333
8.90 | 17.417
8.90 | 17.500
                      4.917
                                  1.48
                                           11.000
                                                                               1.67
                                                                                                     1.11
                                                                                                    1.11
1.11
                      5.000
                                  1.48
                                          11.083
                                                                               1.67
                                  1.48
                                          11.167
                                                                               1.67
                      5.083
                      5.167
                                  1.48
                                          11.250
11.333
                                                                               1.67
                                                                                                    \frac{1}{1}, \frac{11}{11}
                      5.250
                                  1 48
                                                                               1.67
                                                                17.500
17.583
                      5.333
                                  1.48
                                          11.417
                                                                               1.67
                      5.417
                                  1.48
                                          11.500
                                                         8.90
                                                                               1.67
                                                                                                     1.11
                                                        8.90
8.90
8.90
                                                               17.667
17.750
17.833
                                                                                        23.75
23.83
23.92
                                  1 48
1 48
                      5.500
                                          11.583
                                                                               1.67
                                                                                                     1.11
                      5.583
                                         11 667
11 750
                                                                               1.67
                                                                                                    \frac{1.11}{1.11}
                                  1.48
                      5 667
                                                                               1 67
                                                      27 43
27 43
                      5.750
                                  1 48
                                          11.833
                                                                17.917
                                                                               1 67
                                                                                        24.00
                                                                                                    \overline{1} \overline{1}\overline{1}
                                                                                        24.08
24.17
                                  1.48
                                          11.917
                                                                               1.67
                                                                                                     \bar{1}.\bar{1}\bar{1}
                      5.833
                                                                18.000
                                  1.48
                                          12.000
                                                       27.43
                                                                18.083
                                          12 083 113 41 18 167
                      6.000
                                  1.48
                                                                               \bar{1} 67
                                                                                        24.25
                      6.083
                                 1 48 12 167 113 42 18 250
                                                                              1.67
      Max.Eff.Inten.(mm/hr)=
                                            113.42
                                                                66.26
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                              5.00
2.85 (ii)
                                                               10.00
                                                                9.85 (ii)
                                               5.00
                                                                10.00
                                              0.28
                                                                 0.11
                                                                                  *TOTALS*
0.283 (iii)
12.25
                             (cms)=
                                              0.20
                                                                 0.08
      PEAK FLOW
      TIME TO PEAK
                            (hrs)=
                                             12 25
90 66
                                                               12 25
      RUNOFF VOLUME
                              (mm)=
                                                                44.59
                                                                                     67.62
      TOTAL RAINFALL
                              (mm)=
                                             92.66
      RUNOFF COEFFICIENT =
                                              0.98
                                                                 0.48
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 75.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
              THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

ADD HYD ( 0007)|

1 + 2 = 3

-----ID1= 1 ( 0001): + ID2= 2 ( 0005): AREA

(ha) 9.81

1.28

QPEAK

(cms) 1.991

0.283

TPEAK

(hrs) 12.25

12.25

R.V.

(mm)

70.01

67.62

ID = 3 ( 0007): 11.09 2.274 12.25 69.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR( 0003)	OVERFLOW	IS OFF		
DT= 5.0 min	OUTFLOW (cms) 0.0000 0.0270 0.0470 0.0600	STORAGE (ha.m.) 0.0000 0.0900 0.1880 0.2950	OUTFLOW (cms) 0.3480 0.8590 1.5140 0.0000	STORAGE (ha.m.) 0.4690 0.6570 0.8590 0.0000
	(h 0007) 11.	REA QPEAK na) (cms) .090 2.27 .090 0.27		R.V. (mm) 69.73 69.66

PEAK FLOW REDUCTION [Qout/Qin](%)= 12.23
TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 0.4268

CALIB STANDHYD ( 0015) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.41 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIO 0.20 1.00 1.00 52.20 0.01	0 0 0 8	PERVIOUS (i) 0.20 1.50 2.00 40.00 0.250	

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

		TRA	NSFORME	D HYETOGE	RAPH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113.42	18.33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333	1.02	6.417	1.67	12.500	13.34	18.58	1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667 0.750	1.02 1.02	6.750 6.833	$\frac{1.67}{1.67}$	12.833 12.917	6.86 6.86	18.92 19.00	1.67 1.67
0.730	1.02	6.917	1.67	13.000	6.86	19.08	1.67
0.917	1.02	7.000	1.67	13.083	6.86	19.17	1.67
1.000	1.02	7.083	1.67	13.167	6.86	19.25	1.67
1.083	1.02	7 167	1.67	13 250	6.86	19.33	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1 67
1.250	1.02	7.333	2.04	13.417	5.00	19.50	1.67
1.333	1.02	7.417	2.04	13.500	5.00	19.58	1.67
1.417	1.02	7.500	2.04	13.583	5.00	19.67	1.67
1.500	1.02	7.583	2.04	13.667	5.00	19.75	1.67
1.583	1.02	7.667	2.04	13.750	5.00	19.83	1.67
1.667	1.02	7.750	2.04	13.833	3.89	19.92	1.67
1.750	1.02	7.833	2.04	13.917	3.89	20.00	1.67
1.833 1.917	1.02 1.02	7.917 8.000	2.04 2.04	14.000 14.083	3.89 3.89	20.08 20.17	$\frac{1.67}{1.67}$
2.000	1.02	8.083	2.04	14.063	3.89	20.17	1.67
2.083	1.02	8 167	2.04	14.250	3.89	20.23	1.11
2 167	1.02	8 250	2.04	14.333	2.78	20.42	1.11
2.250	1.02	8.333	2.41	14 417	2.78	20.50	1.11
2.333	1.20	8.417	2.41	14 500	2.78	20.58	$\bar{1}.\bar{1}\bar{1}$
2.417	1.20	8.500	2.41	14.583	2.78	20.67	1.11
2.500	1.20	8.583	2.41	14.667	2.78	20.75	1.11
2.583	1.20	8 667	2.41	14.750	2.78	20.83	1.11
2.667	1.20	8.750	2.41	14.833	2.78	20.92	1.11
2.750	1.20	8.833	2.59	14.917	2.78	21.00	1.11
2.833	1.20	8.917	2.59	15.000	2.78	21.08	1.11
2.917	1.20 1.20	9.000 9.083	2.59 2.59	15.083 15.167	2.78 2.78	21.17 21.25	$\frac{1.11}{1.11}$
3.000 3.083	1.20	9.063	2.59	15.250	2.78	21.23	1.11
3.167	1.20	9.250	2.59	15.333	2.78	21.33	1.11
3.250	1.20	9.333	2.97	15.417	2.78	21.50	1.11
3.333	1.20	9.417	2.97	15 500	2.78	21.58	1.11
3 417	1.20	9 500	2.97	15.583	2.78	21.67	1 11
3.500	1.20	9.583	2.97	15 667	2.78	21.75	$\overline{1}$ $\overline{1}\overline{1}$
				•		•	

	3.33.33.33.33.33.33.33.33.33.33.33.33.3	583 667 750 833 917 917 167 250 000 083 417 5583 417 000 083 167 750 833 417 000 083 167 750 333 417 000 833 917 000 833 917 000 833 917 000 833 917 917 917 917 917 917 917 917 917 917	1 20 1 20 1 20 1 20 1 48 1 48 1 48 1 48 1 48 1 48 1 48 1 48	9.667 9.750 9.833 9.917 10.0083 10.167 10.250 10.333 10.647 10.417 10.500 10.417 10.500 11.083 11.000 11.083 11.100 11.10	2 .97 3 .34 3 .34 3 .34 4 .26 4 .26 4 .26 4 .26 4 .26 5 .74 5 .74	15.750   15.833   16.000   16.083   16.167   16.250   16.333   16.417   16.500   16.583   16.6750   16.833   16.917   17.000   17.083   17.167   17.250   17.333   17.47   17.500   17.583   17.583   17.667   17.750   17.833   1	2.78 2.78 2.78 2.78 2.78 2.78 1.67 1.67 1.67 1.67 1.67 1.67 1.67 1.67	21.83 21.92 22.00 22.08 22.187 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.90 23.08 23.17 23.25 23.30 23.25 23.35 23.42 23.56 23.57 23.58 23.67 23.58 23.67 23.75 23.83 23.75 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.83 23.75 23.75 23.83 23.75 23.83 23.75 23.75 23.83 23.75 23.75 23.83 23.75 23.83 23.75 23.75 23.83 23.75	1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.1
	Max.Eff.Inter ov Storage Coeff Unit Hyd. Tpe Unit Hyd. pea	ver (mir F. (mir eak (mir	i) i)= i)=	113.42 5.00 1.65 5.00 0.32	(ii)	70.13 10.00 7.35 (ii) 10.00 0.13	*****	ALS*	
	PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFAL RUNOFF COEFFI	E `(mm _L (mm	i)= i)= i)=	0.02 12.25 91.66 92.66 0.99		0.08 12.25 71.29 92.66 0.77	0 12 74 92	099 (iii) 1.25 1.34 1.66 1.80	
****	* WARNING: STO * WARNING:FOR YOU	AREAS W	/ITH IN	IS SMALLE MPERVIOUS DER SPLIT	S RATIOS	BELOW 20%			
	(i) ON DROC	CEDUIDE C	CLECTE	-D FOR DI	DVTOUC	LOCCEC			

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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.

\_\_\_\_\_

	Curve Number (CN)= 77.0  # of Linear Res.(N)= 3.00
--	--

		TR/	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113 42	18 33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333	1.02	6.417	1.67	12.500	13.34	18.58	1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667	1.02	6.750	1.67	12.833	6.86	18.92	1.67
0.750	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
0.917	1.02	7.000	1.67	13.083	6.86	19.17	1.67
1.000	1.02	7.083	1.67	13.167	6.86	19.25	1.67
1.083	1.02	7.167	1.67	13.250	6.86	19.33	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1.67
1.250	1.02	7.333	2.04	13.417	5.00	19.50	1.67
1.333	1.02	7.417	2.04	13.500	5.00	19.58	1.67
1.417	1.02	7.500	2.04	13.583	5.00	19.67	1.67

```
2 04
2 04
2 04
2 04
                     1.583
                                 1.02
                                          7.667
                                                               13.750
                                                                            5.00
                                                                                     19.83
                                                                            3 89
3 89
                     1.667
                                          7.750
                                                               13.833
                                                                                     19.92
                     1.750
                                 1.02
                                          7.833
                                                               13.917
                                                                                     20.00
                                                                                                 1.67
                                 1.02
                                          7.917
                                                      2.04
                                                               14.000
                                                                            3.89
                                                                                     20.08
                     1.833
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                                          8.000
                                                      2.04
                                                               14.083
                                                                            3.89
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                                                                                                 1.67
                                          8.083
                                                      2.04
                                                               14.167
                     2.083
                                 1.02
                                          8.167
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                                                               14 250
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                                 1 02
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                                                               14.417
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                     2.667
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                                          8.750
                                                      2.41
                                                              14.833
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21.08
21.17
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                                 1.20
                                          8.833
                                                               14.917
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                                          8 917
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1.20
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                                                                                                 1.11 \\ 1.11
                     2.833
                                          9.000
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                                          9.083
                                                              15.167
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                                          9.167
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                                          9.250
                                                               15.333
                                                               15.417
15.500
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2.78
                     3.250
                                 1.20
                                          9.333
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                                 1.20
                                          9.417
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                     3.500
                                 1.20
                                          9.583
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21 92
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                                        10.083
                                                              16.167
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                                 1.20
                                        10.167
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22 42
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22 75
                                                                           \frac{1.67}{1.67}
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                     4.417
                     4.500
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                                 1 48
                                                      4 26
                     4.583
                                        10.667
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                                                                            1.67
                     4.667
                                 1.48
                                        10.750
                                                      4.26
                                                              16.833
                                                                            1.67
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                                 1.48
                                        10.833
                                                               16.917
                                                                                    23.08
23.17
                     4.833
                                 1.48
                                        10.917
                                                             17.000
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                                                                                                 1.11
                                 1 48
                                        11.000
                                                              17.083
                                                                            1.67
                                                                                                 1.11
                     4.917
                                                             17.167
                                                                                     23 25
23 33
                     5.000
                                 1.48
                                        11.083
                                                                            1.67
                                                                                                 \frac{1.11}{1.11}
                                 1 48
                                        11.167
                                                               17 250
                                                                            1.67
                     5.083
                                                                                     23 42
23 50
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                                                              17.333
                     5.250
                                 1.48
                                        11.333
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                                                             17.417
                                                                           1.67
                                                                                                 1.11
                                                      8.90
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                                                             17.500
17.583
                     5.333
                                 1.48
                                        11.417
                                                                            1.67
                                                                                                 1.11
                     5.417
                                 1.48
                                        11.500
11.583
                                                                           \frac{1.67}{1.67}
                                                                                                 1.11
                                 1.48
                     5 500
                                                              17.667
                                                                                                 1 11
                     5.583
                                 1.48
                                        11.667
                                                              17 750
                                                                            1.67
                                                                                     23.83
                                                                                                 1.11
                                 1 48
                                        11.750
                                                      8 90
                                                              17.833
                                                                            1.67
                                                                                     23.92
                                                                                                 \bar{1}.\bar{1}\bar{1}
                     5.667
                                 1.48
                                                     27.43
                                1.48 | 11.917 | 27.43 | 18.000 | 1.48 | 12.000 | 27.43 | 18.083 | 1.48 | 12.083 | 113.41 | 18.167 | 1.48 | 12.167 | 113.42 | 18.250
                     5.833
                                                                           1.67
                                                                                     24.08
                                                                                                 \bar{1}.\bar{1}\bar{1}
                     5.917
                                                                           1.67
                                                                                     24.17
                                                                                                 1.11
                     6.000
                                                                           1.67
                                                                                     24.25
                     6.083
      Unit Hyd Qpeak (cms)= 0.865
     PEAK FLOW (cms)= 0.747 (i)
TIME TO PEAK (hrs)= 12.833
RUNOFF VOLUME (mm)= 45.324
TOTAL RAINFALL (mm)= 92.660
RUNOFF COEFFICIENT = 0.489
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
IMPERVIOUS
                                                          PERVIOUS (i)
                             (ha)=
      Surface Area
                                            6.57
                                                              3.09
5.00
                            (mm)=
(%)=
(m)=
      Dep. Storage
      Average Slope
                                            0.50
                                                              2.00
                                          253.77
                                                             30.00
      Length
                                           0.013
          NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

CALIB

```
RAIN
                 TIME
                           RAIN
                                                             TIME
                                                                        RAIN
                                                                                   TIME
                          mm/hr
                                       hrs
                                                mm/hr
                                                               hrs
                                                                       mm/hr
                                                                                    hrs
                                                         12 250 113 42
               0.083
                                     6.167
                                                 1.48
                                                                                1.8 33
                           0.00
                                                          12 333
               0.167
                           0.00
                                     6.250
                                                 1.48
                                                                     13.36
                                                                                18.42
                                                                                             1.67
                                                          12.417
                                                                      13.34
                                                                                18.50
               0.250
                           0.00
                                     6.333
                                                 1.67
                                                                                             1.67
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               6.000
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               6.083
Max.Eff.Inten.(mm/hr)=
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
                                       5.00
5.23 (ii)
5.00
                                                        10 00
                                                        9.95 (ii)
                                                        10.00
Unit Hyd peak (cms)=
                                       0.21
                                                         0.11
                                                                          *TOTALS*
PEAK FLOW (cms)=
TIME TO PEAK (hrs)=
                                       1.46
                                                         0.78
                                                                            2.234 (iii)
12.25
                                      12.25
                                                        12.25
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RUNOFF VOLUME 92 66 0 79 TOTAL RAINFALL (mm)= 92.66 92.66 RUNOFF COEFFICIENT =

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN\* = 75.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.

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

-----IMPERVIOUS PERVIOUS (i) Surface Area (ha)= 0.64 0.64

(mm) = (%) = (m) = Dep. Storage 2.00 5.00 Average Slope 0.50 2.00 92.38 30.00 Length Mannings n 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----TIME hrs TIME RAIN RAIN | TIME RAIN TIME RAIN mm/hr mm/hr mm/hr mm/hr hrs 12.250 113.42 | 12.333 13.36 | 6.167 1 48 1.67 0.083 0.00 18 33 1 48 1 67 1 67 6.250 1.67 0.167 0.00 0.00 6.333 18.50 18.58 1.02 1.02 1.02 1.02 0.333 6.417 12.500 13.34 1.67 1.67 1.67 1.67 13 34 13 34 13 34 18.67 18.75 18.83 6 500 6 583 6 667 12.583 12.667 12.750 0.417 1.67 0.500 0.583 1.67 1.67 1 02 6.750 1 67 12 833 18.92 1.67 0.667 6.86 1 67 1 67 1 67 1 67 1 67 1 67 2 04 1.02 6.833 12.917 1.67 6 86 6 86 6 86 6 86 5 00 19 08 19 17 19 25 19 33 19 42 1.02 6.917 13.000 1 02 1 02 1 02 1 02 1 02 1 02 7.000 7.083 0.917 13.083 13.167 1.67 1.000 7 167 7 250 7 333 7 417 1.083 13.250 1.67 1.67 1.167 13.333 19.50 19.58 1.333 1.02 2.04 13.500 5.00 1.02 1.02 1.02 7 500 7 583 7 667 7 750 7 833 7 917 19.67 19.75 19.83 19.92 20.00 1 417 1 500 13.583 13.667 13.750 1.67 1.67 1.583 1.667 1 02 13 833 1.67 1.02 13.917 1.67 1 02 1 02 14.000 20.17 20.25 20.33 20.42 1.917 8.000 14 083 2.000 1.02 8.083 14.167 1.67 2.083 2.167 1.02 1.02 8.167 8.250 14 250 14 333  $\frac{1.11}{1.11}$ 20.42 20.50 20.58 20.67 20.75 20.83 20.92 21.00 1 02 8 333 14 417 2.250 2.333 1.20 8.417 14 500 2 41 2 41 2 41 2 59 2 59 2 59 2 59 2 97 2 97 2 97 2 97 2 34 3 34 1.20 8.500 14.583 8 583 1.20 1.20  $\frac{1.11}{1.11}$ 2.500 14.667 2.583 2.667 8.667 8.750 14.750 14.833 1.20 1.20  $1.11 \\ 1.11$ 2.750 8 833 14 917 1.20 1.20 21.08 21.17 8.917 15.000 9.000 15 083 2.78 2.78 2.78 2.78 2.78 2.78 21 25 21 33 21 42 21 50 21 58 3.000 1.20 9.083 15.167 9.167 9.250 15.250 15.333 3.083 1.20 1.113.167 1.20 1.11 1.20 9.333 15.417 1 11 1 11 3.250 3.333 1.20 9.417 15 500 2 78 2 78 2 78 2 78 2 78 2 78 2 78 3.500 1.20 9.583 15.667 21.75 21.83 21.92 22.00 22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 15 .750 15 .833 15 .917 3.583 1.20 9.667 1.11 9.750 3.667 1.20 1.20  $\frac{1}{1}$ ,  $\frac{11}{11}$ 9 917 16 000 3.833 1.20  $\bar{1}$ ,  $\bar{1}\bar{1}$ 3 34 3 34 3 34 4 26 4 26 4 26 1.20 10 000 16.083 1.20 10.083 16.167 2.78 2.78 4.083 1.20 10.167 16.250 1.11 1.20 1.20 1.48 10 .250 10 .333 10 .417 16 333 16 417 16 500 1 67 1 67 1 67 1 11 1 11 1 11 4.167 4.250 4 333 4.417 1.48 10.500 16.583 1.67 1 48 10 583 4.26 16.667

4.583 1.48 4.667 1.48	10.750 4.26 10.833 5.74	16.917	1.67 1.67 1.67		1.11 1.11 1.11
4,750 1,48 4,833 1,48 4,917 1,48 5,000 1,48 5,083 1,48 5,167 1,48 5,250 1,48 5,313 1,48 5,417 1,48 5,583 1,48 5,667 1,48 5,667 1,48 5,750 1,48 5,833 1,48 5,833 1,48 5,917 1,48 6,000 1,48 6,083 1,48	11.000 5.74 11.083 5.74 11.167 5.74 11.250 5.74 11.333 8.90 11.417 8.90 11.583 8.90 11.667 8.90 11.750 8.90 11.750 8.90 11.833 27.43 11.917 27.43 12.000 27.43 12.008 113.41	17.083 17.167 17.250 17.333 17.417 17.500 17.583 17.667 17.750 17.833 17.917 18.000 18.083 18.167	1.67 1.67 1.67 1.67 1.67 1.67 1.67 1.67	23.75 23.83 23.92 24.00 24.08 24.17 24.25	1.11 1.11 1.11 1.11 1.11 1.11 1.11 1.1
Max.Eff.Inten.(mm/hr) = over (min) Storage Coeff. (min) = Unit Hyd. Tpeak (min) = Unit Hyd. peak (cms) =  PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	113.42 5.00 2.85 (ii) 5.00 0.28 0.20 12.25 90.66 92.66 0.98	66.26 10.00 9.85 (ii) 10.00 0.11 0.08 12.25 44.59 92.66 0.48	0. 12 67 92	TALS* 283 (iiii) 25 62 66 173	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^*=75.0$  Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
- THAN THE STORAGE COEFFICIENT.

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=		Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVI 0.3 1.0 1.0 71.1 0.01	8 0 0 8	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

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

\_\_\_\_\_\_

		TR/	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113 42	18 33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333	1.02	6.417	1.67	12.500	13.34	18.58	1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667	1.02	6.750	1.67	12.833	6.86	18.92	1.67
0.750	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
0.917	1.02	7.000	1.67	13.083	6.86	19.17	1.67
1.000	1.02	7.083	1.67	13.167	6.86	19.25	1.67
1.083	1.02	7.167	1.67	13.250	6.86	19.33	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1.67
1.250	1.02	7.333	2.04	13.417	5.00	19.50	1.67
1.333	1.02	7.417	2.04 2.04	13.500	5.00 5.00	19.58	1.67
1.417 1.500	$\frac{1.02}{1.02}$	7.500 7.583	2.04	13.583 13.667	5.00	19.67 19.75	1.67 1.67
1.583	1.02	7.667	2.04	13.750	5.00	19.73	1.67
1.667	1.02	7.750	2.04	13.730	3.89	19.92	1.67
1.750	1.02	7.833	2.04	13.917	3.89	20.00	1.67
1.833	1.02	7.917	2.04	14.000	3.89	20.08	1.67
1.917	1.02	8.000	2.04	14.083	3.89	20.17	1 67
2.000	1.02	8 083	2.04	14.167	3.89	20.25	1.67
2.083	1.02	8.167	2.04	14.250	3.89	20.33	1 11
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                                                1.48
                                                          10.417
                                                                                                              1.67
                                                          10.500
10.583
10.667
                                                                                                                          22.67
22.75
22.83
22.92
                               4.417
                                               1.48
1.48
1.48
                                                                                                             1.67
1.67
1.67
                                                                                                                                             1.11
                                                                                                                                            \frac{1.11}{1.11}
                               4.583
                                                1.48
                                                           10.750
                                                                                                                                            1 11
1 11
                               4.667
                                                                                                              1.67
                               4.750
                                                1 48
                                                           10.833
                                                                                                              1.67
                                                                                                                          23.00
23.08
23.17
23.25
23.33
23.42
23.50
23.58
23.67
23.75
23.83
23.92
24.00
24.08
24.17
                                                1.48
                                                           10.917
                               4.917
                                                1.48
                                                           11.000
                                                                                                              1.67
                                                                                                                                             \bar{1}.\bar{1}\bar{1}
                                               1 48
1 48
1 48
                               5.000
                                                           11.083
                                                                                                              1.67
                                                                                                                                            1.11
                               5 083
5 167
                                                          11.167
11.250
                                                                                                             1.67
1.67
                                                                                                                                            \frac{1.11}{1.11}
                                                1 48
                                                           11 333
                                                                                                              1 67
                                                                                                                                             \bar{1}.\bar{1}\bar{1}
                               5.250
                               5.333
                                                1.48
                                                           11 417
                                                                                                              1.67
                                                                                                                                             1.11
                                                           11 500
11 583
                                                1.48
                                               1 48
1 48
1 48
1 48
                                                                                                             1.67
1.67
1.67
1.67
                                                                                                                                            1.11
1.11
                               5.500
                                                           11 .667
11 .750
11 .833
                               5.583
                               5.667
                                                                                                                                            \frac{1}{1}, \frac{11}{11}
                               5.750
                               5.833
                                                1.48
                                                           11.917
                                                                                                              1.67
                               5.917
                                                1.48
                                                           12.000
                                                                                                             1.67
                                                                                                                                            1.11
                                               1 48 | 12 083
1 48 | 12 167
                                                                                                             1.67
1.67
                               6.000
                                                                                                                          24.25
                                                                                                                                            1.11
                               6.083
         Max.Eff.Inten.(mm/hr)=
                                                              113.42
                                                                                      170.13
         over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
                                                                                       10.00
7.69 (ii)
                                                                5.00
1.98 (ii)
                                                                 5.00
                                                                                        10.00
         Unit Hyd. peak (cms)=
                                                                 0.31
                                                                                         0.13
                                                                                                                  *TOTALS*
                                                                 0.04
                                                                                                                    0.181 (iii)
12.25
          PEAK FLOW
                                                                                          0.14
                                        (cms)=
         TIME TO PEAK
                                        (hrs)=
                                                               12 25
                                                                                        12.25
         RUNOFF VOLUME
                                         (mm)=
(mm)=
                                                               91.66
                                                                                        71.30
                                                                                                                      74.35
          TOTAL RAINFALL
                                                               92.66
          RUNOFF COEFFICIENT
                                                                 0.99
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.
           (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN^* = 85.0 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
                                                                    QPEAK
(cms)
0.747
                                                       AREA
                                                                                        TPEAK
                                                                                                           R.V.
                                                     (ha)
14.50
0.76
                                                                                      (hrs)
12.83
12.25
                                                                                                       (mm)
45.32
74.35
           ID1= 1 ( 0011):
+ ID2= 2 ( 0016):
                                                                     0.181
              ID = 3 (0006):
                                                     15.26
                                                                    0.774
                                                                                      12.75
                                                                                                       46.77
         NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

ID = 1	( 0006): ( 0002): ( 0006):	9.66 24.92	QPEAK (cms) 0.774 2.234 ====================================	12.25	73.19 ====== 57.01		
ID = 3	( 0006): ( 0008): ( 0006):	26.20	QPEAK (cms) 2.716 0.283 ======== 2.998	12.25	57.53		
RESERVOIR( ( IN= 2> OUT   DT= 5.0 min  INFLOW : ID= OUTFLOW: ID=	= 2 ( 0000 = 1 ( 0000	AR (h 6) 26. 4) 26.	STORAGE (ha.m.) 0.0000 0.1150 0.2380 0.3690	AK TP s) (h .998 .278	EAK rs) 12.25 14.42	R.V. (mm) 57.53 57.46	
	TIME hrs 0.083 0.167 0.250 0.333 0.417 0.500 0.583 0.667 0.750 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.167 1.500 1.583 1.667 1.750 1.583 1.667 1.750 1.833 1.750 1.835 1.850 1.835 1.850 1.8	RAIN   T   T   T   T   T   T   T   T   T	)= 0.43 )= 5.00 )= 0.13 FORMED TO - TRANSFORI 167 1.4 1333 1.6 167 1.6 167 1.6 167 1.6 168 1.6 169 1.6 169 1.6 160 1	5.0 MIN  MED HYETON  N   TIM  T   H   TIM  S 12.250  S 12.333  T 12.417  T 12.500  T 12.833  T 12.833  T 12.833  T 12.71  T 13.000  T 13.167  T 13.050  T 13.367  T 13.363  T 13.667  T 13.500	TIME STI GRAPH S mm/hr 113.342 13.34 13.3	EP.	RAIN mm/hr 1.67 1.67 1.67 1.67 1.67 1.67 1.67 1.67

```
2 41
2 41
2 41
                      2 500
2 583
                                                                 14.667
14.750
                                                                                         20.75
                                   1.20
                                             8.583
                                                                                2 78
2 78
                                                                                         20.83
20.92
                                                                                                      \frac{1}{1}, \frac{11}{11}
                                   1.20
                                            8.667
                      2.667
                                   1.20
                                            8.750
                                                                  14.833
                                                         2 59
2 59
2 59
2 59
2 59
2 59
2 59
2 59
                                                                                2.78
2.78
                                                                                         21 00
21 08
                      2.750
                                            8.833
                                                                  14.917
                                                                                                      1.20
                      2.833
                                   1.20
                                             8.917
                                                                   15 000
                                                                                2.78
2.78
2.78
2.78
2.78
2.78
                                                                                         21.17
21.25
                                             9.000
                                                                   15.083
                      3.000
                                   1.20
                                            9 083
                                                                  15.167
                                                                                                       1.11
                                                                  15.250
15.333
15.417
                                                                                         21.33
21.42
21.50
                      3.083
                                   1.20
                                             9.167
                                                                                                       1.11
                      3 167
3 250
                                  1.20
1.20
                                            9.250
                                                                                                      \frac{1.11}{1.11}
                                                                                         21.58
21.67
21.75
                                                         2 97
                                                                  15.500
                                                                                2.78
                      3.333
                                   1.20
                                            9.417
                                                         2 97
2 97
2 97
2 97
2 97
3 34
3 34
3 34
                                   1.20
                                            9.500
                                                                   15.583
                                   1.20
                                             9.583
                                                                                2.78
2.78
2.78
2.78
2.78
                                                                                         21.83
21.92
22.00
22.08
                       3.583
                                   1.20
                                            9.667
                                                                 15.750
                                                                  15 833
15 917
                                            9.750
                                                                                                      1.11
                      3.667
                                   1.20
                       3.750
                                  1.20
1.20
                                            9.833
                                                                                                      1.11
1.11
                                                                  16.000
                      3.833
                                                                                         22 . 17
22 . 25
22 . 33
22 . 42
22 . 50
22 . 58
22 . 67
                                   1 20
                                           10 000
                                                                 16.083
                                                         3 34
3 34
3 34
4 26
4 26
4 26
4 26
                                   1.20
                                          10.083
                                                                  16.167
                      4.083
                                   1.20
                                           10.167
                                  1.20 | 10.250
1.20 | 10.333
1.48 | 10.417
1.48 | 10.500
                                                                                1.67
1.67
1.67
1.67
                                                                 16.333
                                                                                                      1.11
1.11
                      4.167
                      4.250
                                                                  16.417
                                                                  16 500
16 583
                      4.333
                                                                                                      \frac{1.11}{1.11}
                                                                                         22 75
22 83
                                                                  16.667
                      4.583
                                   1 48
                                          10.667
                                                                  16.750
                                                                                                      \overline{1} \overline{1}\overline{1}
                                                                                         22 92
23 00
23 08
                      4.667
                                   1.48
                                          10.750
10.833
10.917
                                                                  16.833
                                                                                                       1.11
                                                         4 . 26
5 . 74
5 . 74
5 . 74
5 . 74
5 . 74
5 . 74
8 . 90
8 . 90
8 . 90
                                  1 48
1 48
                                                                  16.917
17.000
                                                                                1.67
1.67
                      4.750
                      4 833
                                   1.48
                                                                 17.083
                                                                                         23.17
                      4.917
                                           11.000
                                                                                1.67
                                                                                                       1.11
                      5.000
                                   1 48
                                           11.083
                                                                  17.167
                                                                                1.67
                                   1.48
                                                                                         23 42
23 50
23 58
23 67
                       5.167
                                   1.48
                                          11.250
11.333
                                                                 17.333
                                                                                                      1.11
                                  1 48
1 48
1 48
                                                                 17 417
17 500
17 583
                      5.250
                                                                                1.67
                                                                                                      1.11
                      5 333
5 417
                                          11.417
11.500
                                                                                \frac{1.67}{1.67}
                                                                                                      1.11
1.11
                                                                                         23.75
23.83
23.92
24.00
24.08
24.17
                                   1 48
                                           11 583
                                                                 17.667
17.750
                                                                                1 67
                      5.500
                                                     8.90 | 17.66/
8.90 | 17.750
8.90 | 17.833
27.43 | 17.917
27.43 | 18.000
27.43 | 18.083
113.41 | 18.167
                      5.583
                                   1.48
                                           11.667
                                                                                1.67
                                 1.48 | 11.007

1.48 | 11.750

1.48 | 11.833

1.48 | 11.917

1.48 | 12.000

1.48 | 12.083
                                                                               1.67
1.67
                                                                                                      1.11
1.11
                       5.750
                      5.833
                      5.917
                                                                                1.67
                                                                                                      \frac{1}{1}, \frac{11}{11}
                      6.000
                                                                                1.67
                                                                                         24.25
                      6.083
                                  1 48 12 167
                                                     113 42 18 250
      Unit Hyd Qpeak (cms)= 0.126
                            (cms) = 0.064 (i)
(hrs) = 12.250
      PEAK FLOW
      TIME TO PEAK
                              (mm)= 44.149
(mm)= 92.660
      RUNOFF VOLUME
      TOTAL RAINFALL
      RUNOFF COEFFICIENT = 0.476
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
ADD HYD ( 0019)
1 + 2 = 3
                                        ARFA
                                                   QPEAK
                                                               TPFAK
                                                                           R.V.
(mm)
                                                               (hrs)
12.25
                                        (ha)
0.43
                                                 (cms)
0.064
     ID1= 1 ( 0017):
+ ID2= 2 ( 0004):
                                                                            44.15
                                      26.20
                                                  0.278
                                                               14.42
       ID = 3 ( 0019):
                                     26.63 0.281
                                                            14.33 57.24
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
______
  CALIB
IMPERVIOUS
                                                              PERVIOUS (i)
                                                                 0.31
      Surface Area
                               (ha)=
                                              0.31
                              (mm)=
(%)=
(m)=
                                               1.00
                                                                 1.50
      Dep. Storage
      Average Slope
                                               1.00
      Length
                                              63.77
                                                                 40.00
      Mannings n
                                              0.013
                                                                0.250
           NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
```

	TRANSFOR	MED HYETOGRA N   TIME	NPH		
TIME RAI hrs mm/l	N TIME RAI	N ' TIME r ' hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083 0.0	0 6 167 1 4	8 12.250 1	.13.42	18.33	1.67
0.167 0.0	0   6.250 1.4		T3.30	18.42	1.67
0.250 0.0 0.333 1.0	0   6.333   1.6	/ 12.41/	13.34	18.50	1.67 1.67
0.333 1.0	2 6 417 1 6 2 6 500 1 6	7 12.583	13.34 13.34	18.58 18.67	1.67
0.500 1.0	2 6 583 1 6	/ II/ hh/	13.34 I	18 75	1.67
0.583 1.0	2   6.667 1.6	/ [12./50	13.34	18.83	1.67
0.667 1.0 0.750 1.0		7   12.833 7   12.917	6.86 6.86	18.92 19.00	1.67 1.67
0.833 1.0	2 6.917 1.6	7 13.000	6.86 I	19.08	1.67
0.917 1.0	2 7.000 1.6	7   13.083	6.86	19.17	1.67
$ \begin{array}{cccc} 1.000 & 1.0 \\ 1.083 & 1.0 \end{array} $	$\begin{bmatrix} 2 & 7.083 & 1.6 \\ 2 & 7.167 & 1.6 \end{bmatrix}$	7 13.167	6.86 6.86	19.25	1.67 1.67
1 167 1 (	2 7 167 1 6 2 7 250 1 6	7 13.250 7 13.333	5.00	19.33 19.42	1.67
1.250 1.0	2   7.333 2.0	4 I13 417	5.00 l	19.50 19.58	1.67
1.333 1.0 1.417 1.0	2 7 417 2 0	4 13 500 4 13 583 4 13 667	5.00 5.00	19.58	1.67 1.67
1.500 1.0	2 7 500 2 0 2 7 583 2 0	4 13.667	5.00	19.67 19.75	1.67
1.583 1.0	2 7 667 2 0	4 113 /50	5.00	19.83	1.67
1.667 1.0 1.750 1.0	2   /./50 2.0	4 13 833 4 13 917	3.89 3.89	19.92 20.00	1.67 1.67
1.750 1.0 1.833 1.0	2 7.917 2.0	4 14.000	3.89	20.08	1.67
1.917 1.0	2 8 000 2 0	4 114 083	3.89	20.17	1.67
2.000 1.0 2.083 1.0	2 8.000 2.0 2 8.083 2.0 2 8.167 2.0	4   14.16/ 4   14.250	3.89 3.89	20.25 20.33	$\frac{1.67}{1.11}$
2.167 1.0	2   8.250 2.0	4 114 333	2.78	20.42	1.11
2.250 1.0	2   8.333 2.4	T 114.41/	2.78	20.50	1.11
2.333 1.7 2.417 1.7	0   8.417   2.4 0   8.500   2.4	1 14.500 1 14.583	2.78	20.58 20.67	$\frac{1.11}{1.11}$
2.500 1.7	0 8.583 2.4	1 14.667	2.78 2.78	20.75	1.11
		1   11/ 750	2./8	20.83	1.11
2.565 1. 2.667 1. 2.750 1.	0 8.750 2.4 0 8.833 2.5	1 14.833 9 14.917	2.78 2.78	20.92 21.00	$\frac{1.11}{1.11}$
	0 8 917 2 5	9 15.000	2.78	21.08	1.11
2.917 1.7	0   8.750   2.4 0   8.833   2.5 0   8.917   2.5 0   9.000   2.5 0   9.083   2.5	9 15.083	2.78 I	21.17 21.25	1.11
3.000 1.7 3.083 1.7	0 9.083 2.5 0 9.167 2.5	9 15 167 9 15 250	2.78 2.78	21.25	$\frac{1.11}{1.11}$
3.167 1.7	0   9.250 2.5	9   15.333	2.78 I	21.42	1.11
3.250 1.3	0   9.333 2.9	7 115.417	2.78 2.78	21.50 21.58	1.11
3.333 1.3 3.417 1	0 9 417 2 9 0 9 500 2 9	7 15 500 7 15 583	2.78	21.58	$\frac{1.11}{1.11}$
3 500 1 3	0 1 9 583 2 0	7 115.667	2 78 1	21.75	1.11
3.583 1.7	0 9.667 2.9	7 115.750	2.78	21.83	1.11
3.667 1.7 3.750 1.7	0 9 750 2 9 0 9 833 3 3	7 15.833	2.78	21.92 22.00	$\frac{1.11}{1.11}$
3,833 1.7	0   9.917 3.3	4 116 OOO	2.78	22.08	1.11
3.917 1.7	0 10.000 3.3	4 116.083	2.78	22.08 22.17	1.11
4.000 1.7 4.083 1.7	0   10 083 3 3 0   10 167 3 3	4   16.167 4   16.250	2.78 2.78	22.25 22.33	$\begin{smallmatrix}1.11\\1.11\end{smallmatrix}$
4.167 1.3	0 10 250 3.3	4   116.333	1.67	22.42	1.11
4.250 1.2	0 10.333 4.2	6 16.417	1.67	22 42 22 50 22 58	1.11
4.333 1.4 4.417 1.4	8 10 417 4 2 8 10 500 4 2	6 16 500 6 16 583	1.67 1.67	// h/	$\frac{1.11}{1.11}$
4.500 1.4	8   10 . 583 4 . 2	6 16.667	1.67	22.75 22.83	1.11
4 583 1 4	8 10.667 4.2	6 16.750	1.67	22.83	1.11
4.667 1.4 4.750 1.4	X 110 X33 5 7	6 16.833	1.67 1.67	22.92	$\begin{smallmatrix}1.11\\1.11\end{smallmatrix}$
4.833 1.4	8   10 917 5 7	4   17.000	1.67	23.00 23.08	1.11
4.917 1.4	8 111 000 5 7	4 117 083	1.67	23 17	1.11
5.000 1.4 5.083 1.4	8 11 083 5.7 8 11 167 5.7	4 17 167 4 17 250 4 17 333	1.67 1.67	23 25 23 33 23 42	$\frac{1.11}{1.11}$
5.167 1.4	.8   11 250 - 5 7	4 17.333	1.67	23.42	1.11
5.250 1.4	8 11 333 8 9	0  1/.41/	1.67	23.50 23.58	1.11
5.333 1.4 5.417 1.4	8 11 417 8 9 8 11 500 8 9	0 117.500	1.67 1.67	23.67	$\frac{1.11}{1.11}$
5 500 1 4	X 111 5X3 X C	0 17.667	1.67	23.75	1.11
5.583 1.4	8   11   667   8   9	0 11/1/30	1.67	23.83	1.11
5.667 1.4 5.750 1.4	8 111.750 8.5	U   17.833 3   17.917	1.67 1.67	23.92 24.00	$\frac{1.11}{1.11}$
5.833 1.4	.8   11   917   27 4	3 TTX 000	1.67	24.08	1.11
5.917 1.4 6.000 1.4	8 12 000 27 4	3   18.083	1.67	24.17	1.11
6.000 1.4 6.083 1.4	8   12 000   27 4 8   12 083   113 4 8   12 167   113 4	3   18.083 1   18.167 2   18.250	1.67 1.67	24.25	1.11
			1.0,		
Max Eff Inten (mm/hr)=	113.42	170.13 10.00			
over (min) Storage Coeff. (min)=	5.00 1.85 (ii)	7.56 (ii)			
Unit Hyd. Tpeak (min)=	5.00	10.00			
Unit Hyd. peak (cms)=	0.32	0.13	*TOT	ALS*	
PEAK FLOW (cms)=	0.03	0.12		146 (iii)	

TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	91.66	71.30	74.34
TOTAL RAINFALL	(mm)=	92.66	92.66	92.66
RUNOFF COEFFICE	ENT =	0.99	0.77	0.80

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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 ( 0025) ID= 1 DT= 5.0 min	Area Total		0.83 0.00 Dir.	Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 0.42 1.00 1.00 74.39 0.013	S PERVIOU 0.42 1.50 2.00 40.00 0.250	2 0 0 0	

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

		TP	NNS EODME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.48	12.250	113 42	18 33	1.67
0.167	0.00	6.250	1.48	12.333	13.36	18.42	1.67
0.250	0.00	6.333	1.67	12.417	13.34	18.50	1.67
0.333	1.02	6.417	1.67	12.500	13.34	18.58	1.67
0.417	1.02	6.500	1.67	12.583	13.34	18.67	1.67
0.500	1.02	6.583	1.67	12.667	13.34	18.75	1.67
0.583	1.02	6.667	1.67	12.750	13.34	18.83	1.67
0.667	1.02	6.750	1.67	12.833	6.86	18.92	1.67
0.750	1.02	6.833	1.67	12.917	6.86	19.00	1.67
0.833	1.02	6.917	1.67	13.000	6.86	19.08	1.67
$0.917 \\ 1.000$	$\frac{1.02}{1.02}$	7.000 7.083	$\frac{1.67}{1.67}$	13.083	6.86 6.86	19.17 19.25	$\frac{1.67}{1.67}$
1.083	1.02	7.167	1.67	13.167 13.250	6.86	19.23	1.67
1.167	1.02	7.250	1.67	13.333	5.00	19.42	1 67
1.250	1.02	7.333	2.04	13.417	5.00	19.50	1.67
1.333	1.02	7 417	2.04	13.500	5.00	19.58	1.67
1.417	1.02	7.500	2.04	13 583	5.00	19.67	1 67
1.500	1.02	7.583	2.04	13.667	5.00	19.75	1.67
1.583	1.02	7.667	2.04	13.750	5.00	19.83	1.67
1.667	1.02	7.750	2.04	13.833	3.89	19.92	1.67
1.750	1.02	7.833	2.04	13.917	3.89	20.00	1.67
1.833	1.02	7.917	2.04	14.000	3.89	20.08	1.67
1.917	1.02	8.000	2.04	14.083	3.89	20.17	1.67
2.000 2.083	1.02	8.083 8.167	2.04 2.04	14.167	3.89	20.25	1.67
2.167	$\frac{1.02}{1.02}$	8.250	2.04	14.250 14.333	3.89 2.78	20.33	$\frac{1.11}{1.11}$
2.250	1.02	8.333	2.04 2.41	14.333	2.78	20.42	1 11
2.333	1.20	8.417	2.41	14.500	2.78	20.58	1 11
2.417	1.20	8.500	2.41	14.583	2.78	20.67	1 11
2.500	1.20	8.583	2.41	14.667	2.78	20.75	1.11
2.583	1.20	8.667	2.41	14.750	2.78	20.83	1.11
2.667	1.20	8.750	2.41	14.833	2.78	20.92	1.11
2.750	1.20	8.833	2.59	14.917	2.78	21.00	1.11
2.833	1.20	8.917	2.59	15.000	2.78	21.08	1.11
2.917	1.20	9.000	2.59	15.083	2.78	21.17	1.11
3.000	1.20	9.083	2.59	15.167	2.78	21.25	1.11
3.083	1.20	9.167	2.59	15.250	2.78	21.33	1.11
3.167 3.250	1.20	9.250	2.59 2.97	15.333 15.417	2.78	21.42 21.50	1.11
3.333	1.20 1.20	9.333	2.97	15.500	2.78 2.78	21.58	$\frac{1.11}{1.11}$
3.417	1.20	9.500	2.97	15.583	2.78	21.67	1.11
3.500	1.20	9.583	2.97	15.667	2.78	21.75	1 11
3.583	1.20	9.667	2.97	15.750	2.78	21.83	1 11
3 667	1.20	9.750	2.97	15 833	2.78	21.92	$\bar{1}.\bar{1}\bar{1}$
3.750	1.20	9.833	3.34	15.917	2.78	22.00	1.11
3.833	1.20	9.917	3.34	16.000	2.78	22.08	1.11
3.917	1.20	10.000	3.34	16.083	2.78	22.17	1.11
4.000	1.20	10.083	3.34	16.167	2.78	22.25	1.11
4.083	1.20	10.167	3.34	16.250	2.78	22.33	1.11
4.167	1.20	10.250	3.34	16.333	1.67	22.42	1.11

	10.333	16. 500 16. 583 16. 667 16. 750 16. 833 16. 917 17. 000 17. 083 17. 167 17. 250 17. 333 17. 417 17. 500 17. 500 17. 833 17. 667 17. 833 17. 834 18. 1667	1.67   22.50   1.1 1.67   22.58   1.1 1.67   22.67   1.1 1.67   22.75   1.1 1.67   22.83   1.1 1.67   22.92   1.1 1.67   23.00   1.1 1.67   23.17   1.1 1.67   23.25   1.1 1.67   23.25   1.1 1.67   23.42   1.1 1.67   23.42   1.1 1.67   23.50   1.1 1.67   24.00   1.1 1.67   24.08   1.1 1.67   24.08   1.1 1.67   24.08   1.1 1.67   24.17   1.1 1.67   24.25   1.1	111111111111111111111111111111111111
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)= PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNDFF VOLUME (mm)=	113.42 5.00 2.03 (ii) 5.00 0.31 0.04 12.25 91.66	170.13 10.00 7.74 (ii) 10.00 0.13 0.16 12.25 71.30	*TOTALS* 0.197 (iii) 12.25 74.35	
TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =  ***** WARNING: STORAGE COEFF.  ***** WARNING: FOR AREAS WITH I	92.66 0.99 IS SMALLER THAN	92.66 0.77 TIME STEP!	92.66 0.80	

YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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.

\*\*\*\*\*\*\*\*\*

\*\* SIMULATION:J. 25yr 24hr 15min SCS Type II \*\*

READ STORM	Filenan	ata\ı	∟ocal∖⊤er			636 L 0 D	
Ptotal=108.80 mm	Comment			6-4efc-8a min SCS T		:636da9d\	/ellbeac
TIME	RAIN	TIME	RAIN	l' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.25	1.96	12.50	15.67	18.75	1.96
0.25	1.20	6.50	1.96	12.75	8.05	19.00	1.96
0.50	1.20	6.75	1.96	13.00	8.05	19.25	1.96
0.75	1.20	7.00	1.96	13.25	5.88	19.50	1.96
1.00	1.20	7.25	2.39	13.50	5.88	19.75	1.96
1.25	1.20	7.50	2.39	13.75	4.57	20.00	1.96
1 50	1 20	7 75	2 39	i 14 00	4 57 İ	20 25	1 31

6.50 6.75 7.00 7.25 7.50 7.75 8.00 8.25 8.50 9.75 10.00 9.75 10.00 10.25 10.75 11.00 11.25 11.50 11.25	1.96 1.96 2.39 2.39 2.39 2.83 2.83 3.05 3.05 3.05 3.05 3.04 3.48 3.48 3.48 3.49 2.500 6.75 10.44 10.44 10.44 10.44 10.44 10.44 10.45	12. 75 13. 00 13. 25 13. 75 14. 00 14. 25 14. 50 15. 25 15. 75 16. 75 16. 75 17. 25 17. 75 18. 00 18. 25	8.05 8.05 8.88 5.88 5.88 4.57 4.57 3.26 3.26 3.26 3.26 1.96 1.96 1.96 1.96	19, 00 19, 25 19, 75 20, 00 20, 25 20, 50 21, 20 21, 25 21, 25 21, 25 21, 25 22, 25 25 25 25 25 25 25 25 25 25 25 25 25 2	1.96 1.96 1.96 1.96 1.96 1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.3
1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.41 1.41 1.41 1.41 1.41 1.74 1.74 1.74	1.20 6.50 1.20 7.70 1.20 7.25 1.20 7.50 1.20 7.50 1.20 8.00 1.20 8.00 1.20 8.25 1.41 8.50 1.41 9.00 1.41 9.50 1.41 9.50 1.41 9.51 1.41 10.25 1.41 10.25 1.41 10.25 1.41 10.25 1.41 10.25 1.41 10.50 1.41 10.50	1.20   6.50   1.96 1.20   6.75   1.96 1.20   7.25   2.39 1.20   7.75   2.39 1.20   7.75   2.39 1.20   8.00   2.39 1.20   8.25   2.83 1.41   8.50   2.83 1.41   8.75   3.05 1.41   9.00   3.05 1.41   9.50   3.48 1.41   9.75   3.92 1.41   10.25   5.00 1.74   10.50   5.00 1.74   10.50   5.00 1.74   10.75   6.75 1.74   11.25   10.44 1.74   11.75   32.20 1.74   11.75   32.20 1.74   11.75   32.20 1.74   11.75   32.20 1.74   11.75   32.20 1.74   11.75   32.20	1.20         6.50         1.96         12.75           1.20         6.75         1.96         13.00           1.20         7.00         1.96         13.25           1.20         7.25         2.39         13.55           1.20         7.75         2.39         14.37           1.20         8.00         2.39         14.25           1.41         8.50         2.83         14.55           1.41         8.75         3.05         15.00           1.41         8.75         3.05         15.00           1.41         9.20         3.48         15.50           1.41         9.50         3.48         15.50           1.41         9.50         3.48         15.50           1.41         9.50         3.92         16.00           1.41         10.25         5.00         16.50           1.41         10.50         5.00         16.50           1.74         10.50         5.00         16.50           1.74         10.75         6.75         17.00           1.74         11.00         6.75         17.25           1.74         11.00         6.75         17.25 </td <td>1.20         6.50         1.96         12.75         8.05           1.20         6.75         1.96         13.20         8.05           1.20         7.00         1.96         13.25         5.88           1.20         7.25         2.39         13.50         5.88           1.20         7.50         2.39         13.75         4.57           1.20         8.00         2.39         14.00         4.57           1.20         8.25         2.83         14.50         3.26           1.41         8.50         2.83         14.75         3.26           1.41         9.00         3.05         15.00         3.26           1.41         9.50         3.48         15.50         3.26           1.41         9.50         3.48         15.75         3.26           1.41         9.50         3.48         15.75         3.26           1.41         9.50         3.92         16.25         1.96           1.41         10.55         5.00         16.50         1.96           1.41         10.00         3.92         16.25         1.96           1.41         10.55         6.75         17.0</td> <td><math display="block"> \begin{array}{cccccccccccccccccccccccccccccccccccc</math></td>	1.20         6.50         1.96         12.75         8.05           1.20         6.75         1.96         13.20         8.05           1.20         7.00         1.96         13.25         5.88           1.20         7.25         2.39         13.50         5.88           1.20         7.50         2.39         13.75         4.57           1.20         8.00         2.39         14.00         4.57           1.20         8.25         2.83         14.50         3.26           1.41         8.50         2.83         14.75         3.26           1.41         9.00         3.05         15.00         3.26           1.41         9.50         3.48         15.50         3.26           1.41         9.50         3.48         15.75         3.26           1.41         9.50         3.48         15.75         3.26           1.41         9.50         3.92         16.25         1.96           1.41         10.55         5.00         16.50         1.96           1.41         10.00         3.92         16.25         1.96           1.41         10.55         6.75         17.0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
	6.50 6.75 7.00 7.25 7.50 7.75 8.00 8.25 8.75 9.00 9.25 10.00 10.25 10.00 10.25 11.50 11.25	6.50 1.96 6.75 1.96 7.00 1.96 7.25 2.39 7.75 2.39 8.00 2.39 8.25 2.83 8.75 3.05 9.00 3.05 9.25 3.48 9.75 3.48 9.75 3.92 10.00 3.92 10.00 3.92 10.50 5.00 10.50 5.00 10.75 6.75 11.00 6.75 11.15 10.44 11.75 32.20 12.00 133.17	6.50 1.96 12.75 6.75 1.96 13.00 7.00 1.96 13.25 7.25 2.39 13.50 7.50 2.39 13.75 7.75 2.39 14.00 8.00 2.39 14.25 8.25 2.83 14.50 8.50 2.83 14.50 9.03 3.05 15.25 9.25 3.48 15.75 9.75 3.92 16.00 10.00 3.92 16.25 10.25 5.00 16.50 10.50 5.00 16.50 10.50 5.00 16.75 10.75 6.75 17.25 11.25 10.44 17.75 11.75 32.20 18.00	6.50	6.50

## | CALIB | STANDHYD ( 0001) | Area (ha)= 9.81 |ID= 1 DT= 5.0 min | Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00 PERVIOUS (i) 4.12 5.00 2.00 30.00 0.250 IMPERVIOUS 5.69 1.00 (ha)= (mm)= (%)= (m)= Surface Area Dep. Storage Average Slope Length 0.50 255.73 0.013 Mannings n NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

		TR	ANSFORME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133 17	18.33	1.96
0.167 0.250	0.00	6.250	1.74 1.96	12.333 12.417	15.68 15.67	18.42 18.50	$\frac{1.96}{1.96}$
0.230	1.20	6.417	1.96	12.500	15.67	18.58	1.96
0.417	1.20	6.500	1.96	12.583	15 67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667 0.750	1.20	6.750	$\frac{1.96}{1.96}$	12.750 12.833 12.917	8.05	18.92	$\frac{1.96}{1.96}$
0.730	1.20 1.20	6.917	1.96	13.000	8.05 8.05	19.00 19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20 1.20	7.083	1.96	13.167	8.05	19.25	1.96
$\frac{1.083}{1.167}$	1.20 1.20	7.167	$\frac{1.96}{1.96}$	13.250 13.333	8.05 5.88	19.33 19.42	$\frac{1.96}{1.96}$
1.250	1.20	7.250 7.333	2.39	13.417	5.88	19.50	1.96
1.333	1.20	7.417	2.39	13 500 13 583	5.88	19.58	1.96 1.96
1.417	1.20	7.500	2.39	13.583	5.88	19.67	1.96
1.500 1.583	1.20	7.583	2.39	13.667 13.750	5.88	19.75	1.96
1.667	1 20	7.750	2.39	113./30	5.88 4.57	19.83 19.92	$\frac{1.96}{1.96}$
1.750	1.20 1.20 1.20 1.20	7.833	2 39 2 39 2 39 2 39 2 39	13.833 13.917	4.57	20.00	1.96
1.833	1.20	7.917	2.39	14.000	4.57	20.08	1.96
1.917	1.20	8.000	2.39 2.39 2.39	14.083 14.167	4.57 4.57	20.17	1.96
2.000	1.20	8.083 8.167	2 39	14.167	4.57	20.25	$\frac{1.96}{1.31}$
2.167	1.20 1.20	8.250	2.39	14.333	3.26	20.42	1.31
2.250	1.20 1.41	8 250 8 333	2.83	14.417	3.26	20.50 20.58	1.31
2 083 2 167 2 250 2 333 2 417	1.41	8.417	2 39 2 39 2 83 2 83 2 83	14.500	3.26	20.58	1.31
2.417	$\frac{1.41}{1.41}$	8.500 8.583	2.83	14.583 14.667	3.26 3.26	20.67 20.75	$\frac{1.31}{1.31}$
2 562	1.41	8 667	2.83	14.750	3.26	20.83	1.31
2 667 2 750 2 833 2 917 3 000	1.41	8.750	2.83 3.05	14.833	3.26	20.92	1.31
2.750	1.41	8.833	3.05	14.917	3.26	21.00	1.31
2.833	$\frac{1.41}{1.41}$	8.917 9.000	3.05 3.05	15.000	3.26	21.08 21.17	$\frac{1.31}{1.31}$
3.000	1.41	9.083	3.05	15 .083 15 .167 15 .250	3 26 3 26	21.25	1.31
3.083	1.41	9.167	3.05	15.250	3.26	21.25 21.33	1.31
3.167	1.41	9.250	3.05	II5.333	3.26	21.42	1.31
3.250 3.333	$\frac{1.41}{1.41}$	9.333 9.417	3.48 3.48	15.417 15.500	3.26 3.26	21.50 21.58	1.31 1.31
3.417	1.41	9.500	3.48	15.583	3.26	21.67	1.31
3.500	1.41	9.583	3.48	15.667	3.26	21.75	1.31
3.583 3.667	1.41	9.667	3.48	15.750	3.26 3.26	21.83	1.31
3.750	$\frac{1.41}{1.41}$	9.750 9.833	3 48 3 92	15.750 15.833 15.917	3.26	21.92 22.00	$\frac{1.31}{1.31}$
3.833	1.41	9.917	3.92	16.000	3.26	22.08	1.31
3.917	1.41	10.000	3.92	16.083	3.26	22.17	1.31
4.000	1.41	10.083	3.92 3.92	16.167	3.26	22.25 22.33	1.31
4.083 4.167	$\frac{1.41}{1.41}$	10.167 10.250	3.92	16.250	3 26 1 96	22.42	$\frac{1.31}{1.31}$
4.250	1.41	10 333	5.00	16.333 16.417	1.96	22.50	1.31
4.250 4.333	1.74	10.417	5.00	16.500	1.96	22.58	1.31
4.417 4.500	1.74 1.74	10.500	5.00 5.00	16.583	1.96	22.67	1.31
4.583	$\frac{1.74}{1.74}$	10.583 10.667	5.00	16.667 16.750	$\frac{1.96}{1.96}$	22.75 22.83	$\frac{1.31}{1.31}$
4.667	1.74	10.750	5.00	16.833	1.96	22.92	1.31
4.750	1.74	10.833	6.75	16.917	1.96	23.00	1.31
4.833 4.917	$\frac{1.74}{1.74}$	10.917 11.000	6.75 6.75	17.000 17.083	$^{1.96}_{1.96}$	23.08 23.17	$\frac{1.31}{1.31}$
5.000	1.74	11.083	6.75	17.167	1.96	23.25	1.31
5.083	1.74	11.167	6.75	17.250	1.96	23.33	1.31
5.167	1.74	11.250	6.75	17 333 17 417	1.96	23.42	1.31
5.250	1.74	11.333	10.44	11/.417	1.96	23.50	1.31

	11.417 10.44 17.500 11.500 10.44 17.583 11.583 10.44 17.657 11.667 10.44 17.750 11.750 10.44 17.750 11.333 32.20 17.917 11.917 32.20 18.000 12.000 32.20 18.083 12.083 133.16 18.167 12.167 133.17 18.250	1.96   23.58   1.31 1.96   23.67   1.31 1.96   23.75   1.31 1.96   23.83   1.31 1.96   23.92   1.31 1.96   24.00   1.31 1.96   24.04   1.31 1.96   24.17   1.31 1.96   24.25   1.31 1.96   24.25   1.31
Max.Eff.Inten.(mm/hr) = over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)= PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	133.17	*TOTALS* 2.439 (iii) 12.25 84.70 108.80 0.78

CALIB STANDHYD ( 0005) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	1.28 50.00	Dir.	Conn • (%)=	50.00	
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVI 0.6 2.0 0.5 92.3 0.01	4 0 0 8	PERVIOL 0.64 5.00 2.00 30.00 0.250	) ) )		

		TRA	NSFORMFI	D HYETOGI	RAPH		
TIME	RAIN	TIME	RAIN	I' TIME	RAIN	I TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18 33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.333	1.96	12.417	15.67	18.50	1.96
0.333	1.20	6.417	1.96	12.500	15.67	18.58	1.96
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	1.96	12.917	8.05	19.00	1.96
0.833	1.20	6.917	1.96	13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33	1.96
1.167	1.20	7.250	1.96	13.333	5.88	19.42	1.96
1.250	1.20	7.333	2.39	13.417	5.88	19.50	1.96
1.333 1.417	1.20 1.20	7.417	2.39 2.39	13.500 13.583	5.88 5.88	19.58 19.67	1.96
1.500	1.20	7.500 7.583	2.39	13.667	5.88	19.75	1.96 1.96
1.583	1.20	7.667	2.39	13.750	5.88	19.73	1.96
1.667	1.20	7.750	2.39	13.730	4.57	19.92	1.96
1.750	1.20	7.833	2.39	13.917	4.57	20.00	1.96
1.833	1.20	7 917	2.39	14 000	4.57	20.08	1.96
1.917	1.20	8.000	2.39	14 083	4 57	20.17	1.96
2 000	1.20	8 083	2.39	14 167	4.57	20.25	1 96
2.083	1.20	8.167	2.39	14.250	4.57	20.33	1.31
2.167	1.20	8.250	2.39	14.333	3.26	20.42	1.31
2.250	1.20	8.333	2.83	14.417	3.26	20.50	1.31
2.333	1.41	8.417	2.83	14.500	3.26	20.58	1.31
2.417	1.41	8.500	2.83	14.583	3.26	20.67	1.31
2.500	1.41	8.583	2.83	14.667	3.26	20.75	1.31
2.583	1.41	8.667	2.83	14.750	3.26	20.83	1.31
2.667	1.41	8.750	2.83	14.833	3.26	20.92	1.31
2.750	1.41	8.833	3.05	14.917	3.26	21.00	1.31
2.833	1.41	8.917	3.05	15.000	3.26	21.08	1.31

```
3.05
3.05
3.05
3.05
                                                                                         21.25
21.33
21.42
                      3.000
                                             9.083
                                                                  15.167
                                                                                                      1.31
                      3.083
                                  1.41
1.41
                                                                                                     1 31
1 31
                                             9.167
                                                                  15.250
                                                                                3.26
                      3.167
                                             9.250
                                                                  15.333
                                                                                3.26
                                                         3 48
3 48
                                                                               3 .26
3 .26
                                                                                         21 50
21 58
                                   \bar{1}.4\bar{1}
                                             9.333
                                                                  15.417
                                                                                                      1.31
                      3.250
                      3.333
                                             9.417
                                                                  15 500
                                                                                                      1.31
                                                                                         21.67
21.75
                                             9.500
                                                         3.48
                      3.500
                                   1.41
                                             9.583
                                                         3 48
                                                                  15.667
                                                                                                      1.31
                                                         3 48
3 48
3 92
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3 .26
                      3.583
3.667
3.750
                                                                                         21.83
21.92
22.00
                                   1.41
                                             9.667
                                                                  15.750
15.833
                                                                                                      1.31
                                   1.4\bar{1}
                                            9.750
9.833
                                                                                                      1.31
1.31
                                   1.41
                                                                  15.917
                                                                                         22 08
22 17
22 25
                                                         3 92
                                                                               3.26
                      3.833
                                   1.41
                                             9.917
                                                                  16.000
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                                          10.000
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                      4.000
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                                  1.41
1.41
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1.74
                      4.083
                                          10.167
                                                                 16.250
                                                                                                      1.31
                                          10.250
10.333
10.417
                                                                               1 96
1 96
1 96
                                                                  16.333
16.417
                      4.167
                                                                                                      1.31
                      4.250
                                                                                                      1.31
1.31
                      4.333
                                                                  16.500
                                                                                         22.67
22.75
22.83
22.92
23.00
                      4.417
                                   1 74
                                          10 500
                                                                  16.583
                                                                                                      1.31
                                          10.583
                                                         5.00
                                                                  16.667
                                                         5 00
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6 75
                                   1.74
                                          10.667
                                                                  16.750
                                  1.74
1.74
                                          10.750
10.833
                                                                  16 833
                                                                               1 96
1 96
                      4.667
                                                                                                      1.31
                      4.750
                                                                  16.917
                                                                                                      1.31
                                   1.74
                                          10.917
                                                                  17.000
                                                                                         23 08
23 17
                      4.833
                                                                               1.96
                                                                                                      1.31
                                   1.74
                                          11.000
                                                                  17 083
                                                                                                      1.31
                                                                                         23 25
23 33
                                                                  17.167
                      5 083
                                   1.74
                                          11.167
                                                                  17.250
                                                                                                      1.31
                                                                                         23 42
23 50
23 58
                      5.167
                                   1.74
                                          11.250
                                                       6.75
10.44
10.44
                                                                  17.333
                                                                               1.96
                                                                                                      1.31
                                  1.74
1.74
                                          11.333
11.417
                                                                               1.96
1.96
                      5.250
                                                                  17.417
17.500
                                                                                                     1.31
1.31
                                          11.500
                                                        10.44
                                                                  17.583
                                                                                         23.67
                                                                                                      1.31
                      5.417
                                   1.74
                                                                               1.96
                                                                                         23.75
23.83
23.92
24.00
                                                        10 44
                                                                  17.667
                                                                                                      1.31
                      5.500
                                                        10.44
                                          11.750
11.833
11.917
12.000
                      5.667
                                   1.74
                                                        10.44
                                                                 17.833
                                                                               1.96
                                                                                                      1.31
                                  1 74
1 74
1 74
1 74
                                                       32.20
32.20
32.20
                                                                17.917
18.000
18.083
                      5.750
                                                                               1.96
                                                                                                      1.31
                                                                                         24 08
24 17
                      5 833
5 917
                                                                               1.96
1.96
                                                                                                     1.31
1.31
                                   1 74
                                          12 083
                                                      133 16
                                                                 18 167
                                                                                         24 25
                      6.000
                                                                               1.96
                      6.083
                                  1.74 | 12.167 | 133.17 | 18.250
                                                               84.65
10.00
9.02 (ii)
      Max.Eff.Inten.(mm/hr)=
                                             133.17
      over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                              5.00
2.67 (ii)
                                               5.00
                                                                10.00
                            (cms)=
(hrs)=
(mm)=
(mm)=
                                                                                    0.346 (iii)
12.25
81.98
                                               0.24
                                                                 0.11
       PEAK FLOW
      TIME TO PEAK
RUNOFF VOLUME
                                            12 25
106 80
                                                               12.25
57.17
       TOTAL RAINFALL
                                             108 80
                                                              108.80
       RUNOFF COEFFICIENT =
                                               0.98
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN^* = 75.0 Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
               THAN THE STORAGE COEFFICIENT.
       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
  ADD HYD ( 0007)|
                                                   QPEAK
                                                              (hrs)
12.25
·-----
                                        (ha)
                                                   (cms)
                                                                              (mm)
       ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                                                           84 70
                                        9.81
                                                  2.439
                                        1.28
                                                  0.346
                                                              12.25
                                                                           81.98
         ID = 3 (0007):
                                      11.09 2.785
                                                              12.25
      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
                                                                                    (ha.m.)
0.4690
0.6570
                                    (cms)
                                                  (ha.m.)
0.0000
                                                                     (cms)
0.3480
                                                                     0.8590
                                    0.0270
                                                   0.0900
                                                   0.1880
0.2950
                                                                     1.5140
0.0000
                                                                                      0.8590
                                    0.0470
                                    0.0600
                                             AREA
                                                         QPEAK
                                                                       TPEAK
                                                                                        R.V.
```

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.41
TIME SHIFT OF PEAK FLOW (min)= 35.00
MAXIMUM STORAGE USED (ha.m.)= 0.4993

CALTR | STANDHYD ( 0015) | ID= 1 DT= 5.0 min Area (ha)= 0.41 Total Imp(%) = 50.00 Dir Conn (%) = 15.00 IMPERVIOUS PERVIOUS (i) (ha)= Surface Area 0.20 0.20 Dep. Storage (mm)= 1.00 1.50 (%)= (m)= 2.00 1.00 Average Slope Length 52.28 40 00 Mannings n 0.250

		TR/	NSEORMEI	HYETOGE	2ΔPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18.33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250 0.333	0.00 1.20	6.417	$\frac{1.96}{1.96}$	12.417 12.500	15.67 15.67	18.50 18.58	$\frac{1.96}{1.96}$
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750 0.833	$\frac{1.20}{1.20}$	6.833 6.917	$\frac{1.96}{1.96}$	12.917 13.000	8.05 8.05	19.00 19.08	$\frac{1.96}{1.96}$
0.833	1.20	7.000	1.96	13 083	8.05	19.17	1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33	1.96
1.167	1.20	7.250	1.96	13.333	5.88	19.42	1.96
1.250 1.333	1.20 1.20	7.333	2.39	13.417 13.500	5.88 5.88	19.50 19.58	$\frac{1.96}{1.96}$
1.417	1.20	7.500	2 39	13.583	5.88	19.67	1.96
1 500	1.20	7.583	2 39 2 39 2 39	13 667	5 88	19.75	1.96
1.583	1.20 1.20	7.667	2 39	13.750	5.88	19.83	1.96
1.667	1.20	7.750	2.39	13.833	4.57	19.92	1.96
1.750 1.833	$\frac{1.20}{1.20}$	7.833 7.917	2.39	13.917 14.000	4.57 4.57	20.00 20.08	$\frac{1.96}{1.96}$
1.917	1.20	8.000	2 39 2 39	14.083	4.57	20.08	1.96
2.000	1.20	8.083	2.39	14.167	4.57	20.25	1.96
2.083	1.20	8.167	2 39 2 39 2 39	14.250	4.57	20.33	1.31
2.167	1.20	8.250 8.333	2.39	14.333 14.417	3.26 3.26	20.42 20.50	$\frac{1.31}{1.31}$
2.250 2.333	$\frac{1.20}{1.41}$	8.417	2.83	14.500	3.26	20.58	$\frac{1.31}{1.31}$
2 417	1 41	8.500	2.83	14 583	3.26	20.67	1.31
2.500	1.41	8.583	2.83	14.667	3.26	20.75	1.31
2.583	1.41	8.667	2 83	14.750	3.26	20.83	1.31
2.667 2.750	$\frac{1.41}{1.41}$	8.750 8.833	3.05	14.833 14.917	3.26 3.26	20.92 21.00	$\frac{1.31}{1.31}$
2.833	1 41	8.917	3.05	15 000	3.26	21.08	1.31
2.917	1.41	9.000	3 05 3 05	15 083	3.26	21.17	1.31
3.000	1.41	9.083	3.05	15.167	3.26	21.25	1.31
3.083	1.41	9.167	3.05	15.250	3.26	21.33 21.42	1.31
3.167 3.250	$\frac{1.41}{1.41}$	9.250 9.333	3 05 3 48	15.333 15.417	3.26 3.26	21.42	$\frac{1.31}{1.31}$
3.333	1 41	9.417	3.48	15 500	3.26	21.58	1.31
3.417	1.41	9.500	3.48	15.583	3.26	21.67	1.31
3.500	1.41	9.583	3.48	15.667	3.26	21.75	1.31
3.583	$\frac{1.41}{1.41}$	9.667	3 48 3 48	15.750 15.833	3.26 3.26	21.83 21.92	$\frac{1.31}{1.31}$
3.667 3.750	1.41	9.750 9.833	3.46	15.917	3.26	22.00	1.31
3 833	1 41	9.917	3 92 3 92	16 000	3.26	22.08	1.31
3.917	1.41	10.000	3.92	16.083	3.26	22.08 22.17	1.31
4.000	1.41	10.083	3 92 3 92	16.167	3.26	22.25	1.31
4.083 4.167	$\frac{1.41}{1.41}$	10.167 10.250	3.92	16.250 16.333	3.26 1.96	22.33 22.42	$\frac{1.31}{1.31}$
4.250	1.41	10.333	5.00	16.417	1.96	22.50	1.31
4.333	1.74	10.417	5.00	16.500	1.96	22.58	1.31
4.417	1.74	10.500	5.00	16.583	1.96	22.67	1.31
4.500	1.74	10.583	5.00	16.667	$\frac{1.96}{1.96}$	22.75 22.83	1.31
4.583 4.667	$\frac{1.74}{1.74}$	10.667 10.750	5.00 5.00	16.750 16.833	1.96	22.83	$\substack{1.31\\1.31}$
4.750	1.74	10.833	6.75	16 917	1.96	23.00	1.31
					•		

```
6.75 | 17.000
6.75 | 17.083
6.75 | 17.167
6.75 | 17.250
6.75 | 17.333
10.44 | 17.417
                                               1.74 | 10.917
1.74 | 11.000
                                                                                                                                         23.08
23.17
23.25
23.33
                                               1.74
1.74
1.74
                           4.917
5.000
                                                            11.083
11.167
                                                                                                                                                               1 31
1 31
                           5.083
                                                                                                                                         23.33
23.42
23.50
23.58
23.67
23.75
23.83
23.92
24.00
24.08
24.17
24.25
                                               1.74
1.74
                                                            11 250
11 333
                                                                                                                          1.96
1.96
                           5 167
                                                                                                                                                               1.31
1.31
                           5.250
                                                           11 .417
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                                                                                                                         1 96
1 96
1 96
1 96
1 96
                           5 333
5 417
                                                                                                   17 500
17 583
                                                                                   10.44
                                               1.74
1.74
1.74
1.74
                                                                                 10 44
10 44
10 44
10 44
                                                                                                                                                               1.31
                           5 500
5 583
5 667
                                                                                                   17.667
17.750
17.833
                                                                                                                                                               1.31
                                                                                                                                                               1 31
1 31
                                              1.74 | 11.750 | 10.44 | 17.833 | 17.917 | 1.7917 | 1.74 | 11.917 | 32.20 | 18.000 | 1.74 | 12.000 | 32.20 | 18.083 | 1.74 | 12.083 | 133.16 | 18.167 | 1.74 | 12.167 | 133.17 | 18.250
                                                                                                                          1.96
                                                                                                                                                              1.31
1.31
1.31
                           5.750
                                                                                                                         1 96
                           6.000
                                                                                                                          1.96
                           6.083
 Max.Eff.Inten.(mm/hr)=
                                                                133.17
over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                                   5.00 10.00
1.54 (ii) 6.84 (ii)
                                                                     5.00
                                                                                                10.00
                                                                    0.33
                                                                                                  0.14
                                                                                                                               *TOTALS*
PEAK FLOW (CMS)=
TIME TO PEAK (hrs)=
RUNOFF VOLUME (mm)=
TOTAL RAINFALL (mm)=
                                                                                                                                  0.121 (iii)
12.25
                                                                    0.02
                                                                                                  0.10
                                                                12 25
107 80
                                                                                                12.25
86.73
                                                                108.80
                                                                                              108 80
                                                                                                                                 108.80
 RUNOFF COEFFICIENT =
                                                                    0.99
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\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
  CN\* = 85.0 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.

-----CALTR NASHYD ( 0011) ID= 1 DT= 5.0 min Area (ha)= 14.50 Curve Number (CN)= 77.0 Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.64

\_\_\_\_\_\_

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

		TRA	NSFORME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18.33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.333	1.96	12.417	15.67	18.50	1.96
0.333	1.20	6.417	1.96	12.500	15 67	18.58	1.96
0.417 0.500	1.20 1.20	6.500 6.583	$\frac{1.96}{1.96}$	12.583 12.667	15.67 15.67	18.67 18.75	$\frac{1.96}{1.96}$
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	1.96	12.917	8 05	19.00	1.96
0.833	1.20	6.917	1.96	13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33	1.96
$\frac{1.167}{1.250}$	1.20 1.20	7.250 7.333	1.96 2.39	13.333 13.417	5 .88 5 .88	19.42 19.50	1.96 1.96
1.333	1.20	7.417	2.39	13.417	5.88	19.58	1.96
1.417	1.20	7.500	2.39	13.583	5.88	19.67	1.96
1.500	1.20	7 583	2.39	13.667	5 88	19.75	1.96
1.583	1.20	7.667	2.39	13.750	5.88	19.83	1.96
1.667	1.20	7.750	2.39	13.833	4.57	19.92	1.96
1.750	1.20	7.833	2.39	13.917	4.57	20.00	1.96
1.833	1.20	7.917	2.39	14.000	4.57	20.08	1.96
1.917 2.000	1.20 1.20	8.000	2.39 2.39	14 .083 14 .167	4 57 4 57	20.17 20.25	$\frac{1.96}{1.96}$
2.000	1.20	8.083 8.167	2.39	14.167	4.57	20.23	1.31
2.167	1.20	8 250	2.39	14.333	3.26	20.42	1.31
2.250	1 20	8 333	2.83	14 417	3 26	20.50	1.31
2.333	1.41	8.417	2.83	14.500	3.26	20.58	1.31
2.417	1.41	8.500	2.83	14.583	3.26	20.67	1.31
2.500	1.41	8.583	2.83	14.667	3.26	20.75	1.31
2.583	1.41	8.667	2.83	14.750	3.26	20.83	1.31
2.667	1.41	8.750	2.83	14.833	3.26	20.92	1.31

2.750 1.41 2.833 1.41 2.917 1.41 3.000 1.41 3.167 1.41 3.250 1.41 3.333 1.41 3.417 1.41 3.500 1.41 3.500 1.41 3.567 1.41	8.833 8.917 9.000 9.083 9.167 9.250 9.333 9.417 9.500 9.583 9.667 9.750	3.05 3.05 3.05 3.05 3.05 3.05 3.48 3.48 3.48 3.48	14.917 15.000 15.083 15.167 15.250 15.333 15.417 15.500 15.583 15.667 15.750 15.833	3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26	21.00 21.08 21.17 21.25 21.33 21.42 21.50 21.58 21.67 21.75 21.83 21.92	1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.31
3. 750	9.833 9.917 10.000 10.083 10.167 10.253 10.500 10.583 10.667 10.750 11.083 11.167 11.083 11.167 11.2500 11.333 11.417 11.500 11.333 11.417 11.500 11.333 11.417 11.500 11.833 11.917 12.500	3.92 3.92 3.92 3.92 3.92 5.00 5.00 5.00 5.00 6.75 6.75 6.75 10.44 10.44 10.44 10.44 10.44 10.44 10.44 2.20 32.20	15.917 16.000 16.083 16.167 16.250 16.333 16.16.417 16.500 16.583 16.667 16.750 16.833 17.407 17.250 17.383 17.417 17.500 17.583 17.477 17.500 17.583	3.26 3.26 3.26 3.26 1.96 1.96 1.96 1.96 1.96 1.96 1.96 1.9	22.08 22.18 22.25 22.25 22.59 22.58 22.58 22.67 22.75 22.83 22.92 23.08 23.17 23.38 23.27 23.38 23.47 23.58 23.47 23.58 23.47 23.58	1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.31

Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms) = 0.964 (i)TIME TO PEAK (hrs) = 12.833
RUNOFF VOLUME (mm) = 58.221
TOTAL RAINFALL (mm) = 108.800
RUNOFF COEFFICIENT = 0.535

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min	Area Total	(ha)= 9.66 Imp(%)= 68.00	Dir. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIOUS 6.57 2.00 0.50 253.77 0.013	PERVIOUS (i) 3.09 5.00 2.00 30.00 0.250	

		TR/	ANSFORME	D HYETOGI	RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18 33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.333	1.96	12.417	15.67	18.50	1.96
0.333	1.20	6.417	1.96	12.500	15.67	18.58	1.96
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	1.96	12.917	8.05	19.00	1.96
0.833	1.20	6.917	1.96	13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20	7.083	1.96	13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13.250	8.05	19.33	1.96

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                                            12.000 32.20 18.083
12.083 133.16 18.167
12.167 133.17 18.250
                       5 917
                                    1.74
1.74
                                                                                    1.96
                                                                                              24 17
24 25
                                                                                                           1.31
                       6.000
                       6.083
       Max.Eff.Inten.(mm/hr)=
                                               133.17
      over (min)
Storage Coeff (min)=
Unit Hyd Tpeak (min)=
Unit Hyd peak (cms)=
                                                 5.00
4.90 (ii)
                                                                   10.00
9.33 (ii)
                                                  5.00
                                                                    10.00
                                                 0.22
                                                                     0.12
                                                                                       *TOTALS*
2.725 (iii)
12.25
                                                 1.72
                                                                     1.00
       PEAK FLOW
                              (cms)=
(hrs)=
       TIME TO PEAK
                                                12.25
                                                                   12.25
       RUNOFF VOLUME
                                (mm)=
                                               106.80
                                                                    69.79
       TOTAL RAINFALL
                                (mm)=
                                               108.80
                                                                  108 80
       RUNOFF COEFFICIENT =
                                                  0.98
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
         (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
       CN* = 75.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
                THAN THE STORAGE COEFFICIENT.
       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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CALIB

STANDHYD ( 0008) Area (ha)= 1.28 Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00 IMPERVIOUS PERVIOUS (i) Surface Area (ha)=0.64 0.64 Dep. Storage (mm)= 5 00 (%)= (m)= 0.50 Average Slope Length 92 38 30.00 Mannings n 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ----

			ANSFORMEI				
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18 33	1.96
0.167	0.00	6 250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.250 6.333	1.96	12 . 333	15.67	18.50	1.96
0.230	0.00	0.333	1.90	12.417		10.30	
0.333	1.20 1.20 1.20	6.417	1.96	12.500	15.67	18.58 18.67	1.96
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	112.66/	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12 750	15.67	18.83	1.96
0.667	1 20	6.750	1.96	12 833	8.05	18.92	1.96
0.750	1.20 1.20	6.833	1.96	12 .833 12 .917 13 .000	8.05	19.00	1.96
0.750 0.833	1.20	0.033		17 911	0.05	19.00	
0.833	1.20	6.917		13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96
1.000	1.20	7 083	1.96	13.083 13.167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	113 250	8.05	19.33	1.96
1.167	1.20	7 250	1 96	13.333	5.88	19.42	1.96
1.250	1.20 1.20 1.20	7.333	2.39		5.88	19.50	1.96
1.333	1.20	7.417	2.39	13.500	5.88	19.58	1.96
1 417	1.20	7.417	2.33	13.500	5.00	10.50	1.00
1.417	1.20 1.20	7 500 7 583 7 667	2.39	13.583 13.667	5.88 5.88	19.67	1.96
1.500	1.20	7.583	2.39	13.667	5.88	19.75	1.96
1.583	1.20	7.667	2.39	13.750	5.88	19.83	1.96
1.667	1.20 1.20	7.750	2.39	13.833	4.57	19.92	1.96
1.750 1.833	1.20	7 750 7 833	2.39	13.750 13.833 13.917 14.000	4.57	20.00	1.96
1 833	1 20	7 917	2 39	14 000	4 57	20.08	1 96
1.917	1.20	7.917 8.000	2.30	114 000	4.57 4.57 4.57 4.57 4.57	20.00	1.96
	1.20	0.000	2.33	14.083 14.167	7.27	20.17	1.00
2.000	1.20	8.083	2 39 2 39 2 39 2 39 2 39 2 39 2 39	14.167	4.5/	20.25	1.96
2.083	1.20	8.167	2.39	14.250 14.333	4.57	20.33 20.42	1.31
2.167	1.20	8.250	2.39	14.333	3.26	20.42	1.31
2.083 2.167 2.250 2.333	1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.41	8.333	2 39 2 39 2 83 2 83 2 83	114 417	3 26 3 26 3 26	20.50	1.31
2.333	1.41	8.417	2.83	14.500	3.26	20.58	1.31
2.417	1.41	8.500	2 83	14.583	3 26 1	20.67	1.31
2.500	1.41	8.583	2 .83 2 .83 2 .83	14.667	3 26 3 26 3 26	20.75	1.31
2.300	1.41	0.303	2.03	114.007	3.20	20.73	1.31
2.583 2.667		8.667	2.63	14.750	3.20		
2.66/	1.41	8.750	2.83	14.833 14.917	3.26	20.92	1.31
2.750	1.41	8.833	3.05	14.917	3 .26 3 .26 3 .26	21.00	1.31
2.833	1.41	8.917	3.05	15.000	3.26	21.08	1.31
2.917	1.41	9.000	3.05	15.083	3.26	21.17	1.31
3.000	1.41	9.083	3.05	15.083 15.167	3.26	21.25	1.31
3.083	1.41	9.167	3.05	15.250	3.26	21.33	1.31
3.003		0.107		15.230	3.20	21.33	1.31
3.107	1.41	9.250	3.05	15.333	3.26	21.42	
3.250	1.41	9.333	3.48	15.417	3.26 3.26	21.50	1.31
3.333	1.41	9.417	3.48	15.500	3.26	21.58	1.31
3 167 3 250 3 333 3 417	1.41	9.500	3.48	15.417 15.500 15.583 15.667 15.750 15.833 15.917 16.000		21.67	1.31
3.500 3.583	1.41	9.583	3.48	15.667	3.26 3.26 3.26 3.26 3.26	21.75	1.31
3.583	1.41	9.667	3 48	15.750	3.26	21.83	1.31
3.667 3.750	$\bar{1}$ 4 $\bar{1}$	9 750	3 48 3 92 3 92	15 833	3 26	21.92 22.00 22.08	1.31
2 750	1.41	9.750 9.833	2 02	15 017	2.26	22.00	1.31
3./30	1 41	0.033	3.92	17.31/	3.20	22.00	1 21
3.833	1.41	9.917	3.92	10.000	3.20	22.00	1.31
3.917	1.41	10.000	3.92	TO 003	3.26	22.1/	1.31
4.000	1.41	10.083	3.92	16.167	3.26	22.25	1.31
4.083	1.41	10.167	3.92 3.92	16.250	3.26	22.33	1.31
4.167	1.41	10.250	3.92	16.250 16.333	1.96	22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00	1.31
4.250 4.333	1 41 1 74	10.333	5.00	116.417	1.96	22.50	1.31
4.333	1.74	10.417	5.00 5.00	16.500 16.583	1.96	22.58	1.31
4.417	1.74 1.74 1.74 1.74 1.74	10.500	5.00	16 583	1.96	22 67	1.31
4.500	1 74	10.583	5.00	16.667	1.96	22.07	1.31
4.300	1.74		3.00			22.73	
4.583	1.74	10.667	5.00	16.750	1.96	22.83	1.31
4.667	1.74	10.750	5.00	16.833	1.96	22.92	1.31
4.750	1.74	10.833	6.75	16.917	1.96	23.00	1.31
4.833	1.74	10.917	6.75	17.000	1.96	23.08	1.31
4.917	1.74	11.000	6 75	17.083	1.96	23.17	1.31
5.000	1 74	11 083	6.75 6.75	17.167	1.96	23.25	1.31
5.083	$\frac{1}{1}$ , 74	11.167	6 75	17 250	1.96	23.33	1.31
2.003	1 74	11.10/	6.75 6.75	17.250	1.90	23.33	
5.10\	1 74 1 74	11.250	0./5	17.333	1.96	23 33 23 42 23 50	1.31
5.250	1./4	11.333	10.44	17.333 17.417	1.96	23.50	1.31
5.167 5.250 5.333	1.74	11.417	10.44		1.96	23.58	1.31
5.417	1.74	11.500	10.44	17.583	1.96	23.67	1.31
5.417 5.500	1.74	11.500 11.583	10.44	17.667	1.96	23.75	1.31
5.583	1 74 1 74	11.667	10.44	17.750	1.96	23.83	1.31
5.667	1.74	11 750	10.44	17 .583 17 .667 17 .750 17 .833	1.96	23 58 23 67 23 75 23 83 23 92	1.31
5.007					_130		

5.750 1.7 5.833 1.7 5.917 1.7 6.000 1.7 6.083 1.7	1 11 917 32 20 1 12 000 32 20 1 12 083 133 16	18.000 1. 18.083 1. 18.167 1.	96   24.00
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	5.00 2.67 (ii)	84.65 10.00 9.02 (ii) 10.00 0.12	*TOTALS*
PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	12.25 106.80	0.11 12.25 57.17 08.80 0.53	0.346 (iii) 12.25 81.98 108.80 0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
  THAN THE STORAGE COEFFICTENT.

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total	(ha)= 0.76 Imp(%)= 50.00		15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 0.38 1.00 1.00 71.18 0.013	PERVIOUS (i) 0.38 1.50 2.00 40.00 0.250	

TRANSFORMED HYETOGRAPH	
TIME RAIN TIME RAIN TIME RAI	
hrs mm/hr hrs mm/hr 'hrs mm/h	
0.083 0.00   6.167 1.74   12.250 133.17	
0.167  0.00  6.250  1.74  12.333  15.68	18.42 1.96
0.250 0.00   6.333 1.96   12.417 15.67	18.50 1.96
0.333 1.20 6.417 1.96 12.500 15.67	18.58 1.96
0.417 1.20 6.500 1.96 12.583 15.67	18.67 1.96
0.500 1.20 6.583 1.96 12.667 15.67	18.75 1.96
0.583 1.20 6.667 1.96 12.750 15.67	18.83 1.96
0.667 1.20 6.750 1.96 12.833 8.05	18.92 1.96
0.750 1.20 6.833 1.96 12.917 8.05	19.00 1.96
0.833 1.20 6.917 1.96 13.000 8.05	19.08 1.96
0.917 1.20   7.000 1.96   13.083 8.05	19.17 1.96
1.000 1.20 7.083 1.96 13.167 8.05 1.083 1.20 7.167 1.96 13.250 8.05	19.25 1.96
1.083	19.33 1.96 19.42 1.96
1.250 1.20 7.230 1.96 13.333 3.86	19.42 1.96
1.333 1.20 7.417 2.39 13.500 5.88	19.58 1.96
1.417 1.20 7.500 2.39 13.583 5.88	19.67 1.96
1.500 1.20 7.583 2.39 13.667 5.88	19.75 1.96
1.583 1.20 7.667 2.39 13.750 5.88	19.83 1.96
1.667 1.20 7.750 2.39 13.833 4.57	19.92 1.96
1.750 1.20 7.833 2.39 13.917 4.57	20.00 1.96
1.833 1.20 7.917 2.39 14.000 4.57	20.08 1.96
1.917 1.20 8.000 2.39 14.083 4.57	20.17 1.96
2.000 1.20 8.083 2.39 14.167 4.57	20.25 1.96
2.083 1.20 8.167 2.39 14.250 4.57	20.33 1.31
2.167 1.20 8.250 2.39 14.333 3.26	20.42 1.31
2.250 1.20 8.333 2.83 14.417 3.26	20.50 1.31
2.333 1.41 8.417 2.83 14.500 3.26	20.58 1.31
2.417 1.41 8.500 2.83 14.583 3.26	20.67 1.31
2.500 1.41 8.583 2.83 14.667 3.26	20.75 1.31
2.583 1.41 8.667 2.83 14.750 3.26	20.83 1.31
2.667 1.41 8.750 2.83 14.833 3.26	20.92 1.31
2.750	21.00 1.31 21.08 1.31
2.833 1.41 8.917 3.03 13.000 3.26 2.917 1.41 9.000 3.05 15.083 3.26	21.08 1.31 21.17 1.31
3.000 1.41   9.000 3.03   13.083 3.26	21.25 1.31
3.083 1.41 9.167 3.05 15.250 3.26	21.33 1.31
3.167 1.41 9.250 3.05 15.333 3.26	21.42 1.31
3.250 1.41 9.333 3.48 15.417 3.26	21.50 1.31

3.33 3.41 3.55 3.66 3.73 3.83 3.99 4.00 4.08 4.18 4.25 4.37 4.47 4.58 4.67 4.77 4.83 4.97 5.00 5.16 5.26 5.37 5.37 5.37 5.37 5.37 5.38	7. 1.41 10. 1.41 13. 1.41 10. 1.41 17. 1.74 17. 1.74	9.417 9.500 9.583 9.667 9.750 9.833 9.917 10.250 10.333 10.167 10.580 10.417 10.580 10.417 11.583 11.417 11.1583 11.417 11.583 11.670 11.833 11.670 11.833 11.670 11.833 11.177 11.2000 11.083 11.177 11.2000 1	3.48 3.48 3.48 3.92 3.92 3.92 3.92 5.00 5.00 6.75 6.75 6.75 6.75 6.75 10.44 10.44 10.44 10.44 10.44 10.44	15.500 15.583 15.667 15.833 15.677 15.833 16.917 16.083 16.167 16.2583 16.417 16.500 16.583 16.477 17.083 17.167 17.083 17.167 17.250 17.333 17.167 17.250 17.333 17.17.583 17.17.583 17.17.583 17.18.000 18.083 18.003	3.26 3.26 3.26 3.26 3.26 3.26 3.26 3.26	21.58 21.67 21.72 21.83 21.92 22.00 22.08 22.17 22.25 22.33 22.42 22.58 22.67 22.75 22.83 22.67 22.75 22.83 22.67 22.75 22.83 22.92 23.00 23.08 23.17 23.33 23.42 23.58 23.58 23.67 23.75 23.83 23.83 23.75 23.83	1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.31
Max.Eff.Inten.( over Storage Coeff. Unit Hyd. Tpeak Unit Hyd. peak PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICI	(min) (min)= (min)= (cms)= (cms)= (hrs)= (mm)= (mm)=	133.17 5.00 1.86 5.00 0.32 0.04 12.25 107.80 108.80 0.99	(11)	05.01 10.00 7.15 (ii 10.00 0.14 0.18 12.25 86.73 08.80 0.80	*TOT 0. 12 89 108	FALS* .221 (iii) 2.25 3.88 3.80 3.83	
(i) CN PROCEC	OULD CONSIDURE SELECTE 85.0 Ia (DT) SHOUL STORAGE COE	DER SPLIT  ED FOR PE  = Dep. S  D BE SMA  EFFICIENT	TTING THE ERVIOUS Storage ALLER OR	E AREA. LOSSES: (Above) EQUAL	! %		
+ ID2= 2 ( 00	(t) (11): 14 (16): 0 (16): 15	na) (6 .50 0.9 .76 0.2 .26 0.9	998 1	2.83 5 2.25 8 ======= 2.75 5	R.V. (mm) 8.22 9.88 =====		
	(h 106): 15 102): 9	.66 2.7	cms) 998 1 725 1	TPEAK (hrs) 2.75 5 2.25 8	R.V. (mm) 9.80 8.29 ===== 0.84		
	WS DO NOT 3						

```
ADD HYD ( 0006)|
1 + 2 = 3
                       AREA
                             QPEAK
                                     TPEAK
                      (ha)
24.92
                                    (hrs)
12.25
                              (cms)
                                             (mm)
    ID1= 1 ( 0006):
                             3 346
                                            70.84
    + ID2= 2 ( 0008):
                      1.28
                             0.346
                                    12.25
                                            81.98
     _____
                                    -----
     ID = 3 (0006): 26.20 3.692
                                    12.25 71.39
   NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
_____
 RESERVOIR( 0004)
                    OVERFLOW IS OFF
 IN= 2---> OUT= 1
 DT= 5.0 min
                    OUTFLOW
                             STORAGE
                                       OUTFLOW
                                                 STORAGE
                             (ha.m.)
0.0000
0.1150
                                       (cms)
0.1460
0.3020
                     (cms)
                                                 (ha.m.)
                                                  0.6510
0.9550
                    0.0000
                     0.0160
                     0.0250
                             0.2380
                                        0.4430
                                                  1 1990
                     0.0410
                             0.3690
                                        0 6010
                                                  1.4550
                          AREA
                                 QPEAK
                                         TPEAK
                                         (hrs)
12.25
14.33
                                                   (mm)
71 39
                       (ha)
26.200
                                 (cms)
3.692
 INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                        26.200
                                  0.388
               PEAK FLOW REDUCTION [Qout/Qin](%)= 10.51
               TIME SHIFT OF PEAK FLOW
                                         (min)=125.00
               MAXIMUM STORAGE USED
                                        (ha.m.)= 1.1038
 CALIB
```

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

	TRA	ANSFORME	D HYETOG	RAPH		
TIME hrs mm/hr 0.083 0.00 0.167 0.00 0.250 0.00 0.333 1.20 0.417 1.20 0.583 1.20 0.583 1.20 0.750 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.083 1.20 1.167 1.20 1.333 1.20 1.167 1.20 1.383 1.20 1.167 1.20 1.383 1.20 1.167 1.20 1.383 1.20 1.1667 1.20 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.200 1.500 1.2	TIME fo. 167 6.250 6.333 6.417 6.500 6.583 6.667 6.750 6.833 7.167 7.250 7.383 7.417 7.500 7.583 7.457 7.450 8.083 8.167 8.333 8.167 8.333 8.167 8.333 8.417 9.000 8.883 8.917 9.003 8.917 9.003	RAIN mm/hr 1.74 1.74 1.74 1.96 1.96 1.96 1.96 1.96 1.96 1.96 1.96	TIME hrs 12.250 12.333 12.417 12.500 12.583 12.667 12.750 13.000 13.083 13.167 13.500 13.383 13.167 13.250 13.33 14.17 13.500 13.833 13.417 13.500 13.833 13.447 14.500 14.833 14.417 14.500 14.833 14.417 14.500 14.833 14.417 15.000 15.083	RAIN mm/hr 133.17	TIME hrss 18.33 18.42 18.58 18.58 18.67 18.75 18.89 19.08 19.17 19.08 19.17 19.50 20.20 20	RM/96611111966666666666666666666666666666
2.917 1.41 3.000 1.41 3.083 1.41	9.000 9.083 9.167	3 05 3 05 3 05 3 05 3 48 3 48 3 48	15.083 15.167 15.250	3.26 3.26 3.26	21.17 21.25 21.33	1.31 1.31 1.31

```
21.83
21.92
22.00
22.08
                                     3.48 | 15.750
3.48 | 15.833
3.667
                        9.750
                                                              3.26
                                                                                      1.31
3.750
             1 41
1 41
                        9.833
                                     3 92
3 92
                                                                                     1 31
1 31
                                             115.917
                                                              3.26
3.833
                        9.917
                                              16.000
                                                              3.26
                                     3 92
3 92
                                                                        22.17
22.25
             \bar{1}.4\bar{1}
                      10 000
                                              16.083
                                                              3.26
                                                                                      1.31
3.917
4.000
             1.41
                      10.083
                                              16.167
                                                              3.26
                                                                                      1.31
                                     3 92
3 92
                                                                       22 33
22 42
                      10.167
4.167
             1 41
                      10.250
                                              16.333
                                                              1.96
                                                                                      1.31
                                     5.00
5.00
5.00
                                              16.417
16.500
16.583
                                                                        22.50
22.58
22.67
4.250
             \frac{1.41}{1.74}
                      10.333
                                                              1.96
                                                                                      1.31
                     10.417
                                                              1.96
                                                                                     1.31
1.31
             1 74
                                                              1.96
             1.74
                                      5.00
                                                                        22.75
4.500
                      10.583
                                              16.667
                                                              1.96
                                                                                      1.31
                      10.667
                                      5.00
                                                              1.96
                                                                                      1.31
                                    5.00 16.750
5.00 16.833
6.75 16.917
6.75 17.000
6.75 17.083
6.75 17.250
6.75 17.333
             1.74
1.74
1.74
                                                                       23 00
23 08
23 17
23 25
4.750
                      10.833
                                                              1.96
                                                                                      1.31
4.833
                      10.917
                                                              1.96
                                                                                      1.31
                      11.000
11.083
                                                              1.96
                                                                                     1.31
1.31
             1 74
                                                              1.96
5.000
                                                                        23 . 23
23 . 42
23 . 50
23 . 58
23 . 67
23 . 75
23 . 83
5.083
                      11.167
                                                              1 96
                                                                                      1.31
                      11.250
                                                                                      1.31
             1.74
1.74
1.74
                                             17 417
17 500
17 583
                      11.333
                                    10.44
                                                              1.96
                     11 417
11 500
11 583
                                    10.44
5.333
                                                              1.96
                                                                                      1.31
                                    10 44
10 44
10 44
5.417
                                                              1.96
                                                                                      1.31
             1 74
1 74
5.500
                                              17.667
                                                              1.96
                                                                                     1.31
5.583
                      11 667
                                              17.750
                                                              1.96
                                                                                      1.31
5.667
                                    10.44
                     11.833
11.917
5.750
                                    32 20
                                             17.917
                                                             1.96
                                                                                      1.31
            1.74 | 11.917 | 32.20 | 18.000 | 1.74 | 12.000 | 32.20 | 18.083 | 1.74 | 12.083 | 133.16 | 18.167
                                                                        24.08
24.17
24.25
5.833
                                                             1.96
                                                                                      1.31
5.917
                                                             1.96
1.96
                                                                                     1.31
1.31
6 000
6.083 1.74 12.167 133.17 18.250
      (cms)= 0.082 (i)
(hrs)= 12.250
(mm)= 56.602
         (mm) = 108.800
```

Unit Hyd Qpeak (cms)= 0.126

PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIENT = 0.520

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

ADD HYD ( 0019)| 1 + 2 = 3 AREA QPEAK TPEAK (ha) 0.43 (cms) 0.082 (hrs) 12.25 (mm) ID1= 1 ( 0017): 56.60 + ID2= 2 ( 0004): 26 20 0 388 14.33 71.32 =========== ID = 3 (0019): 26.63 0.392 71.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD ( 0024) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.61 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIO 0.31 1.00 1.00 63.77 0.013	) )	PERVIOUS (i) 0.31 1.50 2.00 40.00 0.250	

		TR	ANSFORME	D HYETOGI	RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.74	12.250	133.17	18 33	1.96
0.167	0.00	6.250	1.74	12.333	15.68	18.42	1.96
0.250	0.00	6.333	1.96	12.417	15.67	18.50	1.96
0.333	1.20	6.417	1.96	12.500	15.67	18 58	1.96
0.417	1.20	6.500	1.96	12.583	15.67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	1.96	12.917	8.05	19.00	1.96
0.833	1.20	6.917	1.96	13.000	8.05	19.08	1.96
0.917	1.20	7.000	1.96	13.083	8.05	19.17	1.96

1.000 1.20 1.083 1.20 1.167 1.20 1.250 1.20 1.333 1.20 1.500 1.20 1.583 1.20 1.583 1.20 1.667 1.20 2.000 1.20 2.003 1.20 2.000 1.20 2.083 1.20 2.167 1.20 2.250 1.20 2.333 1.41 2.417 1.41 2.500 1.41 2.583 1.41 2.417 1.41 3.000 1.41 3.833 1.41 2.417 1.41 3.500 1.41 3.833 1.41 3.667 1.41 3.833 1.41 3.167 1.41 3.083 1.41 3.167 1.41 3.583 1.41 3.167 1.41 3.583 1.41 3.167 1.41 3.583 1.41 3.167 1.41 3.583 1.41 3.167 1.41 3.583 1.41 3.167 1.41 3.583 1.41 3.17 1.41 3.583 1.41 3.17 1.41 3.583 1.41 3.187 1.41 3.583 1.41 3.191 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.583 1.41 3.667 1.41 3.750 1.41 3.883 1.41 3.917 1.41 4.083 1.41 4.083 1.41 4.167 1.41 4.083 1.41 4.167 1.41 4.083 1.41 4.167 1.41 4.583 1.74 4.583 1.74 4.583 1.74 4.583 1.74 4.583 1.74 4.583 1.74 4.583 1.74 5.583 1.74 6.000 1.74	7.083 1.2 7.167 1.9 7.250 1.9 7.333 2.3 7.417 2.3 7.583 2.3 7.500 2.3 7.667 2.3 8.083 2.8 8.167 2.3 8.250 2.3 8.333 2.8 8.250 2.8 8.353 2.8 8.250 2.3 8.333 2.8 8.417 2.3 8.580 2.8 8.580 2.8 8.580 2.8 8.580 2.8 8.7 3.0 9.083 3.2 9.000 3.2 9.000 3.2 9.000 3.3 9.000 3.3 9.167 3.3 9.000 3.4 9.500 3.4 9.500 3.4 9.500 3.4 9.500 3.4 9.500 3.4 9.500 3.4 9.500 3.5 9.667 3.5 9.833 3.5 9.750 3.6 9.833 3.6 9.833 3.6 9.167 3.6 9.168 3.6 9.167 3.6 9.17 3	6   13.250 9   13.417 13.500 9   13.583 13.667 9   13.837 9   13.837 9   14.083 9   14.083 14.167 14.167 14.250 14.4583 14.4583 14.4583 14.4583 14.4583 14.583 14.583 14.583 14.583 15.500 16.667 15.167 16.1683 17.167 16.1691 17.167 16.1691 17.250 16.683 17.167 16.750 16.683 17.167 16.750 16.683 17.167 16.750 16.683 17.167 17.250 16.683 17.167 17.250 16.683 17.167 17.250 16.750 16.833 17.167 17.250 16.750 16.833 17.167 17.250 16.833 17.167 17.250 16.750 16.833 17.167 17.250 16.833 17.167 17.250 16.833 17.167 17.250 16.833 17.167 17.250 16.833 17.167 17.250 16.833 17.167 17.250 16.833 17.250 18.808	88558888888888888888888888888888888888	19. 25 19. 33 19. 42 19. 58 19. 58 19. 67 19. 75 19. 83 19. 92 20. 00 20. 17 20. 50 20. 20. 33 20. 20. 50 20. 50 20. 67 20. 83 20. 67 21. 08 21. 108 21. 108 21. 17 21. 25 21. 83 21. 42 21. 58 21. 67 21. 83 21. 67 22. 75 22. 88 22. 67 22. 75 22. 83 22. 92 23. 50 23. 67 22. 75 22. 75 22. 83 22. 92 23. 50 23. 67 22. 75 22. 83 22. 92 23. 50 23. 67 22. 75 22. 83 22. 92 23. 50 23. 67 22. 75 22. 83 22. 92 23. 83 23. 67 23. 58 23. 67 23. 75 23. 83 23. 92 24. 08 24. 08 24. 08 24. 08 24. 08	999999999999999333333333333333333333333
6.083 1.74  Max.Eff.Inten.(mm/hr)= over (min)  Storage Coeff. (min)= Unit Hyd. rpeak (min)= Unit Hyd. peak (cms)=	133.17 5.00 1.74 (ii) 5.00 0.32	7   18.250 205.01 10.00 7.04 (ii) 10.00 0.14	1.96		
PEAK FLOW (cms) = TIME TO PEAK (hrs) = RUNOFF VOLUME (mm) = TOTAL RAINFALL (mm) = RUNOFF COEFFICIENT =	0.03 12.25 107.80 108.80 0.99	0.14 12.25 86.73 108.80 0.80	0. 12 89 108	ALS* 178 (iii) .25 .88 .80	
** WARNING: STORAGE COEFF.: ** WARNING:FOR AREAS WITH II	IS SMALLER THA MPERVIOUS RATI	N TIME STEP! OS BELOW 20%			

\*\*\*\*\* WARNING: YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICTENT.

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

CALIB STANDHYD ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.83	Dir. Conn.(%)=	15.00
·					
		IMPERVIC	US	PERVIOUS (i)	
Surface Area	(ha)=	0.42		0.42	
Dep. Storage	(mm)=	1.00	)	1.50	
Average Slope	`(%)=	1.00	)	2.00	
Length	(m)=	74.39	)	40.00	
Mannings n	` ' =	0.013	1	0.250	

		TR/	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083 0.167	0.00	6.167	1.74	12.250	133.17	18.33	1.96
0.250	0.00	6.250	$\frac{1.74}{1.96}$	12.333 12.417	15.68 15.67	18.42 18.50	$\frac{1.96}{1.96}$
0.333	1.20	6.417	1.96	12.500	15.67	18.58	1.96
0.417	1.20	6.500	1.96	12.583	15 67	18.67	1.96
0.500	1.20	6.583	1.96	12.667	15.67	18.75	1.96
0.583	1.20	6.667	1.96	12.750	15.67	18.83	1.96
0.667	1.20	6.750	1.96	12.833	8.05	18.92	1.96
0.750	1.20	6.833	$\frac{1.96}{1.96}$	12.917	8.05	19.00	$\frac{1.96}{1.96}$
0.833 0.917	1.20 1.20	6.917 7.000	1.96	13.000 13.083	8.05 8.05	19.08 19.17	1.96
1.000	1.20	7.083	1.96	13 167	8.05	19.25	1.96
1.083	1.20	7.167	1.96	13 250	8.05	19.33	1.96
1.167	1.20	7.250 7.333	1.96	13.333	5.88	19 42	1.96
1.250	1.20	7.333	2.39	13.41/	5.88	19.50	1.96
$1.333 \\ 1.417$	$\frac{1.20}{1.20}$	7.417 7.500	2.39	13.500 13.583	5.88 5.88	19.58 19.67	$\frac{1.96}{1.96}$
1.500	1.20	7.583	2.39 2.39	13.667	5.88	19.75	1.96
1.583	1.20	7.667	2.39	13.750	5.88	19.83	1.96
1.667	1.20	7.750	2.39	13.833	4.57	19.92	1.96
1.750	1.20	7.833	2 39 2 39 2 39 2 39 2 39 2 39	13.917	4.57	20.00	1.96
1.833	1.20	7.917	2.39	14.000	4.57	20.08	1.96
$\frac{1.917}{2.000}$	1.20 1.20	8 000 8 083	2.39	14.083 14.167	4.57 4.57	20.17 20.25	$\frac{1.96}{1.96}$
2.083	1.20	8.167	2.39	14.250	4.57	20.23	1.31
2.167	1.20	8 250	2.39	14 333	3.26	20.42	1.31
2.250	1.20	8.333	2.39	14.417	3.26 3.26	20 50	1.31
2.333	1.41	8.41/	2.83	14.500	3.26	20.58	1.31
2.417 2.500	1.41	8.500	2.83 2.83	14.583	3.26 3.26	20.67	1.31
2.583	$\frac{1.41}{1.41}$	8 583 8 667	2.83	14.667 14.750	3.26	20.75 20.83	$\frac{1.31}{1.31}$
2.667	1.41	8.750	2.83	14 833	3.26	20.92	1.31
2.750	1.41	8.833	2.83 3.05	14 917	3.26	21.00	1.31
2.833	1.41	8.917	3.05 3.05	15.000	3.26	21.08	1.31
2.917	1.41	9.000	3.05	15.083	3.26	21.17	1.31
3.000 3.083	$\frac{1.41}{1.41}$	9.083 9.167	3.05 3.05	15.167 15.250	3.26 3.26	21.25 21.33	$\frac{1.31}{1.31}$
3.167	1.41	9 250	3.05	15.333	3.26	21.42	1.31
3.250	$\bar{1}$ 4 $\bar{1}$	9.333	3.05 3.48	15.417	3 26	21.50	1.31
3.333	1.41	9.417	3.48	15.500	3.26	21.58	1.31
3.417	1.41	9.500	3.48	15 583	3.26	21.67	1.31
3.500 3.583	$\frac{1.41}{1.41}$	9 583 9 667	3 48 3 48	15.667 15.750	3.26 3.26	21.75 21.83	$\frac{1.31}{1.31}$
3.667	1.41	9.750	3.48	15.833	3.26	21.92	1.31
3.750	1.41	9.833	3 48 3 92	15.917	3.26	22.00	1.31
3.833	1.41	9.917	3 92	16.000	3.26	22.08 22.17	1.31
3.917	1.41	10.000	3 . 92 3 . 92	16.083	3.26	22.17	1.31
4.000	1.41	10.083	3.92 3.92	16.167	3.26	22.25	1.31
4.083 4.167	$\frac{1.41}{1.41}$	10.167 10.250	3.92	16.250 16.333	3.26 1.96	22.33 22.42	$\frac{1.31}{1.31}$
4.250	1 41	10.333	5.00	16.417	1.96	22.50	1.31
4.333	1.74	10.417	5.00 5.00	16.500	1.96	22.50 22.58	1.31
4.417	1.74	10.500	5.00	16.583	1.96	22.67	1.31
4.500	1.74	10.583	5.00	16.667	1.96	22.75	1.31
4.583 4.667	$\frac{1.74}{1.74}$	10 667 10 750	5.00 5.00	16.750 16.833	$\frac{1.96}{1.96}$	22.83 22.92	$\frac{1.31}{1.31}$
4.007	$\frac{1.74}{1.74}$	10.730	6.75	16.833	1.96	23.00	1.31
4.833	1.74	10.917	6.75	17.000	1.96	23.08	1.31
4.917	1.74	11.000	6.75	17.083	1.96	23.17	1.31
5.000	1.74	11.083	6.75	17.167	1.96	23.25	1.31
5.083 5.167	$\frac{1.74}{1.74}$	11.167	6.75	17.250	$\frac{1.96}{1.96}$	23.33	1.31 1.31
5.250	$\frac{1.74}{1.74}$	11 .250 11 .333	6.75 10.44	17.333 17.417	1.96	23.42 23.50	1.31
5.333	$\frac{1}{1}.74$	11.417	10 44	17.417 17.500	1.96	23.58	1.31
						•	

```
23 67
23 75
23 83
23 92
                                         1 74
1 74
1 74
1 74
                                                                  10 44
10 44
10 44
                          5 500
5 583
                                                  11.583
                                                                              17.667
                                                                                              1.96
                                                                                                                         1.31
                                                  11.667
11.750
                                                                              17.750
                                                                                              1.96
1.96
                                                                                                                        1 31
1 31
                          5.667
                                                                              17.833
                                                                  32 .20
32 .20
32 .20
                                                                                                         24 00
24 08
24 17
24 25
                                                                                                                        1.31
1.31
1.31
                          5.750
                                         1.74
                                                  11 833
                                                                              17.917
                                                                                              1.96
1.96
                          5.833
                                         1.74
                                                  11.917
                                                                               18 000
                                         \bar{1}.74
                                                  12 000
                                                                              18.083
                          6.000
                                         1.74
                                                  12 083
                                                               133 16
                                                                              18.167
                                                                                              1.96
                                                                                                                         1.31
                          6.083
                                         1.74
                                                  12 167
                                                               133 17 18 250
                                                                                              1.96
       Max.Eff.Inten.(mm/hr)=
                                                     133.17
                                                                          205.01
                                                                           10.00
7.20 (ii)
10.00
      over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                       5.00
1.91 (ii)
                                                        5.00
                                                        0.32
                                                                             0.14
                                                                                                  *TOTALS*
0.241 (iii)
12.25
       PEAK FLOW
TIME TO PEAK
                                 (cms)=
(hrs)=
                                                        0.05
                                                                             0.20
                                                      12 25
                                                                            12 25
        RUNOFF VOLUME
                                    (mm)=
                                                     107.80
                                                                            86.73
        TOTAL RAINFALL
                                    (mm)=
                                                     108.80
        RUNOFF COEFFICIENT
                                                        0.99
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.
         (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
************
** SIMULATION:K. 50yr 24hr 15min SCS Type II **
      READ STORM
                                       Filename: C:\Users\jkerschbaumer\AppD
                                                        ata\Local\Temp\
0e53ce72-2c36-4efc-8a1e-c647e636da9d\4ed811d1
 Ptotal=120.77 mm
                                       Comments: 50yr 24hr 15min SCS Type II
                                         RAIN
                                                                                  TIME
                                                                                                RAIN | TIME
                                                                                                                          RAIN
                                                                  mm/hr
2.17
                                       mm/hr
                                                                                    hrs
                                                                                              mm/hr
                                                                                                                        mm/hr
2.17
                                                      6.25
                                                                               12.50
                                         0.00
                                                                                            17.39
                                                                                                         18 75
                           0.25
0.50
0.75
1.00
                                         1.33
1.33
1.33
                                                     6 50
6 75
7 00
7 25
7 50
7 75
8 00
                                                                               12.75
13.00
13.25
                                                                                              8 94
8 94
6 52
6 52
                                                                                                         19.00
19.25
19.50
                                                                                                                         2 17
2 17
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2 17
                                                                   2 . 17
2 . 17
2 . 66
2 . 66
2 . 66
2 . 66
3 . 14
3 . 14
3 . 38
3 . 38
                                                                                                                         2 17
2 17
                                         1 33
1 33
                                                                               13 50
                                                                                                         19.75
                                                                                              5.07
5.07
                            1.25
                                                                               13.75
                                                                                                         20.00
                                                                                                         20.00
20.25
20.50
20.75
21.00
21.25
                                         1.33
                                                                                              3 62
3 62
3 62
3 62
3 62
3 62
                                         \bar{1}.33
                                                                               14.25
                                                                                                                         1.45
                           2 00
2 25
2 50
                                                     8 25
8 50
8 75
9 00
                                                                               14 50
14 75
15 00
                                                                                                                         1.45
                                         1 .33
1 .57
1 .57
1 .57
1 .57
1 .57
1 .57
1 .57
                                                                                                                         1.45
1.45
                                                                                                         21.50
21.75
22.00
22.25
22.50
22.75
23.00
                            2.75
                                                                               15.25
                                                                                                                         1.45
                                                               3.38
3.86
3.86
4.35
5.56
5.56
7.49
11.59
11.59
35.75
147.82
                                                                               15.25
15.50
15.75
16.00
16.25
16.50
16.75
17.00
                                                                                              3 62
3 62
3 62
2 17
2 17
2 17
2 17
2 17
                                                    9.25
9.50
9.75
10.00
10.25
10.50
                                                                                                                         1.45
                           3 .25
3 .50
3 .75
4 .00
4 .25
                                                                                                                         1.45
                                                                                                                         1.45
                                                                                                                         1.45
1.45
                           4 50
4 75
                                         1 93
1 93
                                                                                                         23.25
23.50
                                                                                                                         1.45
1.45
                                                     10.75
```

-----CALTR STANDHYD ( 0001) (ha) = 9.81Area ID= 1 DT= 5.0 min Total Imp(%) = 58.00Dir. Conn.(%)= 48.00

11.00

11.25

11 50 11 75

12.00

1.93 | 12.25

1.93

1.93 1.93

1.93

5 25 5 50

5 75

17 50 17 75 18 00

18.25

17.39 | 18.50

2.17

23 .75 24 .00

1.45

1.45

IMPERVIOUS PERVIOUS (i) 4.12 5.00 2.00 (ha)= 5.69 1.00 Surface Area (mm) = (%) = (m) = Dep. Storage 0.50 Average Slope Length 255.73 30.00 Mannings n 0.013 0.250

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

TIME	RAIN	TR	ANSFORME RAIN	D HYETOGI I' TIME	RAPH RAIN	l TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.93	12 250	147.82	18 33	2.17
0.167	0.00	6.250	1.93	112 222	17.41	18.42	2.17
0.250	0.00	6.333	2.17	12.417	17.39 17.39	18.50	2.17
0.333 0.417	1.33	6.417 6.500	2.17 2.17	12.533 12.417 12.500 12.583	17.39	18.58 18.67	2.17 2.17
0.500	1.33 1.33 1.33 1.33 1.33	6.583	2.17		17 39	18.75	2 17
0.583	1.33	6.667	2.17	12 750	17.39 17.39	18.83	2.17 2.17
0.667	1.33	6.750	2.17 2.17	12.833	8.94	18.92	2 17
0.750	1.33	6.833	2.17	12.730 12.833 12.917	8.94	19.00	2.17
0.833 0.917	$\frac{1.33}{1.33}$	6.917 7.000	2.17 2.17		8.94 8.94	19.08	2.17 2.17
1.000	1 22	7.083	2 17	13.083 13.167	8 94	19 17 19 25 19 33	2 17
1.083	1.33 1.33 1.33 1.33	7.167	2.17	13 .250 13 .333 13 .417 13 .500 13 .583 13 .667	8.94	19.33	2 17 2 17 2 17 2 17 2 17
1.167 1.250 1.333	1.33	7.250	2.17	13.333	6.52	19.42 19.50	2.17
1.250	1.33	7.333	2.66	13.417	6.52	19.50 19.58	2.17
1.417	1 33	7.500	2.66 2.66	113 583	6.52	19.67	2 17
1.500	1.33	7.583	2 66	13 667	6.52 6.52	19.75	2.17
1.583	1.33	7.667	2.66	13./30	6.52	19.83	2.17
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17
$1.750 \\ 1.833$	1.33 1.33 1.33 1.33 1.33 1.33	7 833 7 917	2.66 2.66	13.917 14.000	5 07	20 00	2 . 17 2 . 17 2 . 17 2 . 17 2 . 17 2 . 17 2 . 17
1.917	1.33	8.000	2.66	14.083	5.07 5.07	20.08	2.17
2.000	1.33	8.083	2.66	114.167	5.07	20.25	2.17
2.083	1.33	8.167	2.66	14.250 14.333	5 07	20 .08 20 .17 20 .25 20 .33	1.45
2.167	1.33 1.33 1.33 1.33 1.33	8.250 8.333	2.66 3.14	14.333   14.417	3 62 3 62		1.45 1.45
2.250 2.333	$\frac{1.55}{1.57}$	8.417	3.14	14.417	3.62	20.50 20.58	1.45
2.417	$\frac{1.57}{1.57}$	8.500	3.14	14.500 14.583	3 62	20.67	1.45
2.500	1 57	8.583	3.14 3.14	14.667	3.62	20.67 20.75	1.45
2.583	1.57 1.57 1.57	8.667	3.14	14.750	3.62	20.83	1.45 1.45
2.667 2.750	1.57	8.750 8.833	3 14 3 38 3 38	14.833 14.917	3 .62 3 .62	20.92 21.00	1.45
2.833	1 5/	8.917		15 000	3.62	21.08	1.45
2.917	1.57 1.57 1.57	9.000	3.38	15.083	3.62	21.17	1.45
3.000	1.57	9.083	3.38	15.167	3.62	21.25 21.33	1.45
3.083 3.167	1.57	9.167	3.38	15 .250 15 .333 15 .417 15 .500 15 .583	3.62 3.62	21.33	1.45 1.45
3.167 3.250 3.333	1.57 1.57 1.57	9.250 9.333 9.417	3 38 3 86 3 86	15 417	3 62	21.42 21.50 21.58	1.45
3.333	1.57	9.417	3.86	15.500	3.62	21.58	1.45
3.417	T.3/	9.500	3.86 3.86	15.583 15.667	3.62	21.6/	1.45
3.500 3.583	$\frac{1.57}{1.57}$	9.583 9.667	3.86	15.750	3.62 3.62	21.75 21.83	1.45 1.45
3.667	1.57	9.750	3 86	15 833	3.62	21.92	1.45
3.750	1.57	9.833	4 35	15.917	3.62 3.62	22.00 22.08	1.45
3 833 3 917	1.57	9.917 10.000	4.35	16.000	3.62	22.08	1.45 1.45
4.000	1.57	10.000	4.35 4.35	16.083 16.167	3.62 3.62	22.17	1.45
4.083	1.57 1.57	10.167	4 35	16.250	3.62	22.33	1.45
4.167	1.57	10 250	4.35	16.333	2.17	22.42	1.45
4.250	$\frac{1.57}{1.93}$	10.333 10.417	5.56 5.56	16.417 16.500	2.17	22.50	1.45 1.45
4.250 4.333 4.417	1 93	10.417	5.56	16.583	2 17	22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.75 22.75	1.45
4.500	1.93	10 500 10 583	5.56 5.56	16.667	2.17 2.17 2.17 2.17 2.17	22.75	1.45
4.583	1.93	10.667	5.56	16.750	2.17	22.83	1.45
4.667 4.750	1.93 1.93	10.750 10.833	5.56 7.49	16.833	2.17	22.92 23.00	1.45 1.45
4.833	1.93	110.91/	7 49	16.917 17.000	2.17	23.08	1.45
4.917	1.93	11.000	7.49	LL7_083	2.17	23.17	1.45
5.000	1.93	TT 083	7.49		2.17	23.25 23.33	1.45
5.083	1.93	11.167	7.49	17.250	2.17	23.33	1.45
5.167 5.250 5.333	1.93 1.93	11.250 11.333 11.417	7.49 11.59	17.250 17.333 17.417 17.500 17.583 17.667	2.17 2.17	23.42 23.50	1.45 1.45
5.333	1.93	11 417	11.59	17 500	2.1/	23.50	1.45
5.417	1.93	11.500	TT. 39	17 583	2.17	23.67	1.45
5.500	1.93	111.583	11 59	17.667	2.17	23.75	1.45
5.583 5.667	1.93 1.93	11.667 11.750	11.59	17.750 17.833	2.17 2.17	23.83 23.92	1.45 1.45
5.750	1.93	11.833	11.59 35.75	17.917	2.17	24.00	1.45
5.833	1.93	111.917	33./3	18.000	2.17	24.08	1.45
5.917 6.000	1.93 1.93	12.000	35./5	18.083	2.17	24.17 24.25	1.45 1.45
6.083	1.93	12 .083 12 .167	147.81 147.82	18.167 18.250	2.17 2.17	24.23	1.40
3.005		,	· o _				

147.82 133.54 5.00 10.00 4.73 (ii) 9.54 (ii)

Unit Hyd. Tpeak Unit Hyd. peak	(min)= (cms)=	5.00 0.22	10.00 0.12	
onite nyar peak	(61113)	0122	0112	*TOTALS*
PEAK FLOW	(cms)=	1.87	1.11	2.978 (iii)
TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	119.77	73.61	95.77
TOTAL RAINFALL	(mm)=	120.77	120.77	120.77
RUNOFF COEFFICIE	ENT =	0.99	0.61	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 75.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICZENT.

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

CALIB			
STANDHYD ( 0005)	Area (ha)=	1.28	
		50.00 Dir Conn (%)=	50 00
15 1 5 3 0 11 11	10 ca : 1 mp (10)	30100 5111 001111 (70)	30.00
	TMDEDVT	OUE DEDVIOUS (i)	

Surface Area Dep. Storage Average Slope Length	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 0.64 2.00 0.50 92.38	PERVIOUS ( 0.64 5.00 2.00 30.00
Mannings n	=	0.013	0.250

		TRA	ANSFORME	D HYETOGI	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAI
hrs	mm/hr	hrs	mm/hr	l' hrs	mm/hr	hrs	mm/h
0.083 0.167	0.00	6.167 6.250	$\frac{1.93}{1.93}$	12.250 12.333	147.82 17.41	18.33 18.42	2.17 2.17
0.250	0.00	6.333	2.17	12.417	17.39	18.50	2.17
0.333	1.33	6.417	2.17	12.500	17.39	18.58	2 17
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.17
0.500	1.33	6.583	2.17	12.667	17.39	18.75	2 17
0.583	1.33	6.667	2 17	12.750	17 39	18.83	2.17
0.667	1.33	6.750	2.17	12.833	8 94	18.92	2.17
0.750	1.33	6.833	2.17	12.917	8.94	19.00	2.17
0.833	1.33	6.917	2.17	13.000	8.94	19.08	2.17
0.917	$\frac{1.33}{1.33}$	7.000	2.17	13.083	8.94	19.17	2.17
1.000	1.33	7.083	2.17	13.167	8.94	19.25	2.17
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17
1.167	1.33 1.33	7.250 7.333	2.17	13 333	6.52	19.42	2 17
1.250 1.333	1.33	7.333	2.66 2.66	13.417 13.500	6.52	19.50	2.17 2.17
1.417	1.33	7.500	2.66	13.583	6.52 6.52	19.58 19.67	2.17
1.500	1.33	7.583	2.66	13.667	6.52	19.75	2.17
1.583	1 33	7.667	2.66	13.750	6.52	19.83	2 17
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17
1.750	1.33	7.833	2.66	13.917	5.07	20.00	2.17
1.833	1.33	7.917	2.66	14.000	5.07	20.08	2.17
1.917	1.33	8.000	2.66	14.083	5.07	20.17	2.17
2.000	1.33	8.083	2.66	14.167	5.07	20.25	2.17
2.083	1.33	8.167	2.66	14.250	5.07	20.33	1.45
2.167 2.250	$\frac{1.33}{1.33}$	8.250 8.333	2.66 3.14	14.333 14.417	3.62 3.62	20.42 20.50	1.45 1.45
2.333	1.57	8.417	3.14	14.500	3.62	20.58	1.45
2.417	1 57	8.500	3.14	14.583	3.62	20.67	1 45
2.500	1.57	8.583	3.14	14.667	3 62	20.75	1.45
2.583	1.57	8.667	3.14	14.750	3 62	20.83	1.45
2.667	1.57	8.750	3.14	14.833	3.62	20.92	1.45
2.750	1.57	8.833	3.38	14.917	3.62	21.00	1.45
2.833	1.57	8.917	3.38	15.000	3.62	21.08	1.45
2.917	1.57	9.000	3.38	15.083	3.62	21.17	1.45
3.000	1.57	9.083	3.38	15.167	3.62	21.25	1.45
3.083	1.57	9.167	3.38	15.250	3.62	21.33	1.45
3.167 3.250	$\frac{1.57}{1.57}$	9.250	3.38 3.86	15.333 15.417	3.62 3.62	21.42 21.50	1.45 1.45
3.333	1.57	9.333	3.86	15.500	3.62	21.58	1.45
3.417	1.57	9.500	3.86	15.583	3.62	21.67	1.45
3.500	1.57	9.583	3.86	15.667	3.62	21.75	1 45
3.583	1.57	9.667	3.86	15.750	3 62	21.83	1.45
3.667	1.57	9.750	3.86	15 833	3 62	21.92	1.45
3.750	1.57	9.833	4.35	15.917	3.62	22.00	1.45
3.833	1.57	9.917	4.35	16.000	3.62	22.08	1.45
3.917	1.57	10.000	4.35	16.083	3.62	22.17	1.45
4.000	1.57	10.083	4.35	16.167	3.62	22.25	1.45

4.083 4.167 4.250 4.333 4.417 4.500 4.583 4.667 4.750 4.833 4.917 5.000 5.083 5.167 5.250 5.333 5.417 5.500 5.583 5.667 5.750 5.883 5.917 6.000 6.083		10.167 10.250 10.333 10.417 10.500 10.583 10.667 10.750 10.833 10.917 11.000 11.083 11.417 11.500 11.583 11.417 11.501 11.503 11.417 11.750 11.833 11.417 11.750 11.833 11.417 11.750 11.833 11.417 11.750 11.833 11.417 11.750 11.833 11.417 11.750	5.56 5.56 5.56 5.56 7.49 7.49 7.49 11.59 11.59 11.59 11.59 11.59 11.59 11.59	16.250 16.333 16.417 16.500 16.583 16.667 16.750 16.833 16.917 17.000 17.083 17.17.500 17.333 17.417 17.500 17.417 17.500 17.417 17.500 17.833 17.917 18.833 17.917 18.803 18.083 18.083	3.62 2.17 2.17 2.17 2.17 2.17 2.17 2.17 2.1	22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00 23.17 23.25 23.33 23.42 23.58 23.58 23.58 23.67 23.58 23.92 24.00 24.08 24.08 24.17 24.25	1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45
Max.Eff.Inten.(mm/ over (m Storage Coeff. (m Unit Hyd. Tpeak (m Unit Hyd. peak (c	hr)= in) in)= in)= ms)=	147.82 5.00 2.57 5.00 0.29	(ii)	98.72 10.00 8.53 (ii 10.00 0.12		-11 c*	
PEAK FLOW (C TIME TO PEAK (H RUNOFF VOLUME ( TOTAL RAINFALL RUNOFF COEFFICIENT	ms)= rs)= mm)= mm)=	0.26 12.25 118.77 120.77 0.98	1	0.13 12.25 66.87 20.77 0.55	0 17 97 120	ΓALS* .394 (iii) 2.25 2.81 ).77 ).77	1
**** WARNING: STORAGE				TIME STEP	1		
(i) CN PROCEDURE CN* = 75. (ii) TIME STEP (C THAN THE STC (iii) PEAK FLOW DC THAN THE STEP THAN THE STEP THAN THE STEP THAN THE STC (iii) PEAK FLOW DC THAN THE STC (iiii) PEAK FLOW DC THAN THE STC (iiiii) PEAK FLOW DC THAN THE STC (iiiiii) PEAK FLOW DC THAN THE STC (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii					R.V. (mm) 5.77		
===========	======	======			=====		
ID = 3 (0007)		.09 3.			5.43		
NOTE: PEAK FLOWS				S IF ANY.			
RESERVOIR( 0003) IN= 2> QUT= 1 DT= 5.0 min	OVERF OUTFL (cms 0.00 0.02 0.04 0.06	OW IS O  OW ST(  ) (h.  00 0  70 0  70 0  00 0	DRAGE a.m.) .0000 .0900 .1880 .2950	0.859 1.514 0.000	(ha 0 ( 0 ( 0 ( 0 (	DRAGE a.m.) 0.4690 0.6570 0.8590	
	.07)	AREA (ha) 11.090 11.090	QPEAK (cms) 3.3 0.5	TPEA (hrs 72 12 68 12	K ) .25 .75	R.V. (mm) 95.43 95.35	
INFLOW: ID= 2 ( 00 OUTFLOW: ID= 1 ( 00							
				ut/Qin](% (min (ha.m.	)= 16.83 )= 30.00 )= 0.59	3 ) 501	

PERVIOUS (i) 0.20 1.50 2.00 40.00 0.250 IMPERVIOUS 0.20 1.00 1.00 52.28 (ha)= (mm)= (%)= (m)= Surface Area Dep. Storage Average Slope Length Mannings n

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

		TR/	ANSFORME	D HYETOGI	RAPH	_	
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	' TIME  ' hrs	mm /h n	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.93 1.93	12 250	147 82 17 41 17 39 17 39 17 39	18 33	2.17
0.167 0.250	0.00	6 250 6 333	1.93 2.17	12.333	17.41	18.42 18.50	2.17
0.333	1.33	6.417	2.17	12 500	17.39	18.58	2.17
0.417 0.500	1.33 1.33	6.500 6.583	2.17	12.583	17.39 17.39	18.67 18.75	2.17
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17
0.667 0.750	1.33	6.750 6.833	2.17	12.250 12.333 12.417 12.500 12.583 12.667 12.750 12.833 12.917	8.94 8.94	18.92 19.00	2.17
0.833	1.33	6.917	2.17		8.94	19 08	2.17
$0.917 \\ 1.000$	1.33	7.000 7.083	2.17	13.083 13.167	8.94 8.94	19.17	2 . 17 2 . 17
1 083	1.33	7.167	2.17	13.250	8.94	19.17 19.25 19.33 19.42	2.17
1.167 1.250 1.333	1.33	7.250 7.333	2 17 2 17 2 17 2 17 2 17 2 17 2 17 2 17	13.167 13.250 13.333 13.417 13.500	6.52	19.50	2.17 2.17
1.333	1.33	7.417 7.500	2.66	13.500	6.52	19.58 19.67	2.17
1.417 1.500	1.33	7.583	2.66 2.66	13.583 13.667	6.52	19.75	2.17
1.583 1.667	1.33	7.667 7.750	2.66	13.750 13.833 13.917	6.52 5.07	19.83 19.92	2.17 2.17
1.667 1.750 1.833	1.33	7.833	2.66	13.917	5.07	20.00	2.17
1.91/	1.33	7.917 8.000	2.66	14.000	5.07	20.08 20.17	2.17
2.000	1.33	8.083	2.66	14.000 14.083 14.167 14.250 14.333 14.417 14.500	5.07	20.25 20.33 20.42	2.17
2.167	1.33	8.167 8.250 8.333 8.417	2.66	14.333	3.62	20.33	1.45
2.250	1.33	8.333	3.14 3.14	14.417 114.500	3.62 3.62	20.50 20.58	1.45 1.45
2 417	1.57	8 500 8 583	3 14	14 583	3 62	20.67	1.45
2.583	1.57	8.667	3.14	14.667	3.62	20.83	1.45
2.667	1.33 1.33 1.33 1.33 1.33 1.33 1.33 1.33	8.750 8.833	3.14	14.500 14.583 14.667 14.750 14.833 14.917	3.62	20.92 21.00	1.45
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.833 2.917 3.000 3.083 3.167 3.250 3.333	1.57	8.917	3.38	14	3.62	21.00 21.08 21.17	17777777777777777777777777777777777777
2.917 3.000	1.57	9.000	3.38	15.083   15.167	3.62 3.62	21.17 21.25	1.45 1.45
3 083	1.57	9 167 9 250 9 333	3 38	15 250	3 62	21.25 21.33 21.42	1.45
3.167	1.57	9.250	3.38	15.333	3.62	21.42	1.45
3.333	1.57	9 417	3.86	15.500	3.62	21.50 21.58 21.67	1.45
3.417 3.500 3.583 3.667 3.750 3.833 3.917	1.57	9 500 9 583 9 667	3.86	15.667	3.62	21.75	1.45
3.583 3.667	1.57 1.57	9.667	3.86 3.86	15.750 15.833 15.917 16.000	3.62 3.62	21.83 21.92	1.45 1.45
3.750	1.57	9.750 9.833	4.35	15.917	3.62	22.00	1.45
3.833	1.57	9.917 10.000	4.35	16.000	3.62	22.08	1.45
4.000 4.083	1.57	110 083	4.35	16.167	3.62	22.25	1.45
4 167	1.57	10.250	4.35	16.250 16.333	2.17	22.42	1.45
4 250 4 333	1.57	10.167 10.250 10.333 10.417	5.56 5.56	16.417	2.17 2.17	22.50 22.58	1.45 1.45
	1.93	10.500 10.583 10.667	5.56	116.583	2.17	22.00 22.08 22.17 22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00 23.00 23.17 23.25 23.33 23.42	1.45
4.500 4.583 4.667	1.93	10.583	5.56	16.667 16.750	2.17	22.75	1.45
4.667	1.93	10 750 10 833 10 917	5.56	16.833 16.917	2.17	22.92	1.45
4.750 4.833	1.93	10.333	7.49	117.000	2.17	23.08	1.45
4.917 5.000	1.93	11.000 11.083	7.49	17.083	2.17	23.17	1.45
5.083	1.93	11.167	7.49	17.250	2.17	23.33	1.45
5.167 5.250 5.333	$\frac{1.93}{1.93}$	11 167 11 250 11 333	11.59	17 417	2.17	1 23.50	1.45
5.000 5.083 5.167 5.250 5.333 5.417	1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57	11.417 11.500	$\frac{11.59}{11.59}$	17.500	8.94 8.94 8.94 8.94 6.52 6.52 6.52 6.52 6.50 5.07	23.58 23.67	1.45
5.500	1.93	11.583	11.59	17 667	2.17	23.75	1.45
5.667	1.93 1.93	11.667 11.750	2.666 22.666 22.666 3.144 33.144 33.388 33.388 33.388 33.388 33.388 33.388 33.388 33.388 33.388 33.388 33.388 44.335 55.566 55.566 57.77,499 111.599 111.599 111.599 111.599	1/./50  17.833	2.17 2.17	23.83 23.92	1 45 1 45 1 45 1 45 1 45 1 45 1 45 1 45
5.750	1.93 1.93	11 833 11 917	35 .75 35 .75 35 .75	17.083 17.167 17.250 17.333 17.417 17.500 17.583 17.667 17.750 17.833 17.917 18.000 18.083	2.17	24.00	1.45
5.833 5.917	1.93	12.000	35.75	18 083	2.17 2.17	24.08 24.17	1.45 1.45

6.000 6.083		12.083 12.167		2.17   24.25 2.17	1.45			
Storage Coeff Unit Hyd. Tpeak	(min) (min)=	147.82 5.00 1.48 5.00 0.33	230.84 10.00 (ii) 6.53 10.00 0.14	*TOTALS*				
PEAK FLOW TIME TO PEAK RUNOFF VOLUME TOTAL RAINFALL RUNOFF COEFFICIE	(cms)= (hrs)= (mm)= (mm)= NT =	0.03 12.25 119.77 120.77 0.99	0.11 12.25 98.27 120.77 0.81	0.137 (iii) 12.25 101.49 120.77 0.84				
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP! ***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.								

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 Ia = Dep. Storage (Above)

  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
  THAN THE STORAGE COEFFICTENT.

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

Area Ia U.H.	7.13	Curve Number (CN)= 77.0 # of Linear Res.(N)= 3.00

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TRANSFORMED HYETOGRAPH								
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN	
hrs	mm/hr	hrs	mm/hr	l' hrs	mm/hr	l hrs	mm/hr	
0.083	0.00	6.167 6.250	$\frac{1.93}{1.93}$	12.250 12.333	147.82	18.33	2.17 2.17	
0.167 0.250	0.00	6.333	2.17	12.333	17.41 17.39	18.42 18.50	2.17	
0.230	1.33	6.417	2.17	12 500	17.39	18.58	2.17	
0.417	1.33	6 500	2.17	12.583	17.39	18.67	2.17	
0.500	1.33	6.583	2.17	12.667	17.39	18.75	2.17	
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17	
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17	
0.750 0.833	1.33 1.33	6.833 6.917	2.17 2.17	12.917 13.000	8.94 8.94	19.00 19.08	2.17 2.17	
0.833	1 33	7.000	2.17	13.083	8.94	19.17	2.17	
1.000	1.33 1.33	7.083	2.17	13.167	8.94	19.25	2.17	
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17	
1.167	1.33	7.250	2.17	13.333	6.52	19.42	2.17	
1.250	$\frac{1.33}{1.33}$	7.333	2.66	13.417	6.52	19.50	2.17	
1.333 1.417	1.33	7.417 7.500	2.66 2.66	13.500 13.583	6.52 6.52	19.58 19.67	2.17 2.17	
1.500	1.33	7.583	2.66	13 667	6.52	19.75	2.17	
1.583	1.33	7.667	2.66	13.750	6.52	19.83	2.17	
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17	
1.750	1.33	7.833	2.66	13.917	5.07	20.00	2.17	
$\frac{1.833}{1.917}$	$\frac{1.33}{1.33}$	7.917 8.000	2.66 2.66	14.000 14.083	5.07 5.07	20.08 20.17	2.17 2.17	
2.000	1.33	8.083	2.66	14.167	5.07	20.17	2.17	
2.083	1.33	8 167	2.66	14.250	5.07	20.33	1.45	
2.167	1.33	8.250	2.66	14.333	3.62	20.42	1.45	
2.250	1.33	8.333	3.14	14.417	3.62	20.50	1.45	
2.333	1.57	8.417	3.14 3.14	14.500	3.62	20.58	1.45	
2.417 2.500	$\frac{1.57}{1.57}$	8.500 8.583	3.14	14.583 14.667	3.62 3.62	20.67 20.75	1.45 1.45	
2.583	1.57	8 667	3 14	14.750	3.62	20.83	1.45	
2.667	1.57	8.750	3.14	14.833	3.62	20.92	1.45	
2.750	1.57	8.833	3.38	14.917	3.62	21.00	1.45	
2.833 2.917	$\frac{1.57}{1.57}$	8.917 9.000	3.38 3.38	15.000 15.083	3.62 3.62	21.08	1.45 1.45	
3.000	1.57	9.000	3.38	15.167	3.62	21.17 21.25	1.45	
3.083	1.57	9.167	3.38	15.250	3.62	21.33	1.45	
3.167	1.57	9.250	3.38	15.333	3.62	21.42	1.45	
3.250	1.57	9.333	3.86	15.417	3.62	21.50	1.45	
3.333	1.57	9.417	3.86	15.500	3.62	21.58	1.45	
3.417 3.500	$\frac{1.57}{1.57}$	9.500 9.583	3.86 3.86	15.583 15.667	3.62 3.62	21.67 21.75	1.45 1.45	
3.583	1.57	9.667	3.86	15.750	3.62	21.83	1.45	
3.667	1.57	9.750	3.86	15.833	3.62	21.92	1.45	
3.750	1.57	9.833	4.35	15.917	3.62	22.00	1.45	
3.833	1.57	9.917	4.35	16.000	3.62	22.08	1.45	

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5.667
5.750
5.833
6.000
6.083
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Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms) = 1.132 (i)TIME TO PEAK (hrs) = 12.833RUNOFF VOLUME (mm) = 68.143TOTAL RAINFALL (mm) = 120.770RUNOFF COEFFICIENT = 0.564

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

CALIB STANDHYD ( 0002) Area (ha)= 9.66 Total Imp(%)= 68.00 Dir. Conn.(%)= 50.00ID= 1 DT= 5 0 min | **IMPERVIOUS** PERVIOUS (i) Surface Area 6.57 3.09 (mm) = (%) = (m) = Dep. Storage 2.00 5.00 Average Slope 0.50 253.77 2.00 Lenath 0 013 0.250 Mannings n

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

--- TRANSFORMED HYETOGRAPH ----TIME RAIN TIME RAIN RAIN TIME RAIN TIME mm/hr hrs mm/hr hrs mm/hr hrs mm/hr 12 250 147 82 12 333 17 41 12 417 17 39 0.083 0 00 6.167 18 33 17 .41 17 .39 17 .39 17 .39 17 .39 18 42 18 50 18 58 18 67 18 75 0.00 6.250 2 17 2 17 2 17 2 17 2 17 6.333 0.250 0.00 0.333 1 33 1 33 1 33 1 33 1 33 6 417 6 500 6 583 12.500 12.583 0.500 12 667 6.667 6.750 18.83 18.92 2 17 2 17 0.583 12.750 17.39 0.667 12.833 8 94 8 94 8 94 1.33 6.833 12.917 19.00 2.17 0 833 0 917 1.33 1.33 6.917 13.000 19.08 19.17 2 17 2 17 13.083 8 94 8 94 2.17 2.17 1.000 1.33 7.083 13.167 19 25 19 33 7.167 7.250 1.083 13.250 1 33 1 33 19 42 19 50 13.333 1.250 7 333 7 417 2 66 13.417 2.17 6 52 6 52 6 52 6 52 2 .66 2 .66 2 .66 2 .66 13 500 13 583 13 667 1.333 1.33 19.58 2.17 1.33 1.33 7.500 7.583 19.67 19.75 2.17 2.17 1.417 1.500 1 33 7 667 13 750 19.83 19.92 2 17 2 17 1.583 2 66 2 66 2 66 2 66 2 66 2 66 2 66 1.33 7.750 13.833 5.07 1.667 5 07 5 07 5 07 5 07 5 07 5 07 20.00 20.08 20.17 20.25 20.33 2 17 2 17 2 17 2 17 2 17 1 45 1 45 1.33 1.33 7 833 7 917 1.833 14.000 1 33 1 33 1 33 1 33 8 000 8 083 8 167 14.083 14.167 14.250 1.917 2,000 2.083 2.167 8.250 14.333 3.62 20.42 20.50

Max.Eff.In	2.333 2.417 2.508 2.667 2.758 3.000 3.083 3.167 3.250 3.333 3.167 3.583 3.6750 3.833 3.417 4.000 4.083 4.167 4.250 4.167 4.250 4.167 4.250 4.167 5.083 4.167 5.167 5.268 5.167 5.268 5.167 5.268 5.268 6.083 5.167 6.083 5.167 6.083 5.167 6.083 5.167 6.083	1.577 1.5577 1	8.417 8.500 8.583 8.667 8.750 8.833 9.167 9.083 9.183 9.167 9.250 9.333 9.417 9.500 9.533 9.917 10.000 10.083 10.167 10.750 10.333 10.167 10.750 10.417 10.583 10.167 11.500 11.083 11.1667 11.500 11.833 11.1667 11.500 11.833 11.1667 11.500 11.833 11.167 11.500 11.833 11.167 11.500 11.833 11.167 11.250 11.350 1		14.500 14.583 14.667 14.750 14.833 14.917 15.083 15.167 15.250 15.333 15.417 15.583 15.583 15.667 15.750 16.000 16.250 16.333 16.417 16.583 16.417 16.583 16.417 16.583 16.417 17.500 16.750 16.750 16.750 17.333 17.417 17.750 17.833 17.917 18.083 18.167 18.083 18.167 18.083 18.167 18.083	3.62 3.62 3.62 3.62 3.62 3.62 3.62 3.62	20.58 20.67 20.75 20.83 20.92 21.08 21.108 21.133 21.42 21.58 21.58 21.67 21.75 21.83 21.92 22.08 22.25 22.33 22.42 22.50 22.25 22.33 22.45 22.55 22.33 22.45 22.35 22.35 22.35 23.42 23.58 23.58 23.67 23.58 23.67 23.75 23.83 23.67 23.83 23.83 23.67 23.83 23.67 23.83 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.67 23.83 23.83 23.67 23.83 23.8	111145 445 455 456 457 457 457 457 457 457 457 457 457 457
Storage Co Unit Hyd. Unit Hyd.	over (mi oeff. (mi Tpeak (mi	in) in)=	5.00 4.70 5.00 0.22	(ii)	10.00 8.95 (ii) 10.00 0.12	****	·41.6*	
PEAK FLOW TIME TO PE RUNOFF VOL TOTAL RAIN RUNOFF COE	EAK (hr LUME (n IFALL (n	ns)= rs)= nm)= nm)= =	1.92 12.25 118.77 120.77 0.98		1.17 12.25 80.48 20.77 0.67	3. 12 99 120	ALS* 096 (iii) .25 .62 .77	
**** WARNING:								
(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  CN* = 75.0 Ta = Den. Storage (Above)								

- Ia = Dep. Storage (Above)
- CN\* = 75.0 Ia = Dep. Storage (Above (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
- THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD ( 0008) ID= 1 DT= 5.0 min	Area (ha): Total Imp(%):	= 1.28 = 50.00 Dir	. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(mm) = 2. (%) = 0.	.64 0.0 .00 5.0 .50 2.0 .38 30.0	00 00 00	
NOTE: RAINFA	ALL WAS TRANSFO	DRMED TO 5.0	MIN. TIME ST	ГЕР.

---- TRANSFORMED HYETOGRAPH ----

RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT = 118.77 120.77 0.98 66.87 120.77 0.55 92.81 120.77 0.77

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

CALIB STANDHYD ( 0016) ID= 1 DT= 5.0 min	Area Total		0.76 50.00	Dir.	Conn.(%)=	15.00	
		IMPERVI	ous	PERVIO	JS (i)		
Surface Area	(ha)=	0.3	8	0.3	8		
Dep. Storage	(mm) =	1.0	ñ	1.5	ń		
Average Slope	(%)=	1.0		2.0			
Length	(m)=	71.1		40.0			
Mannings n	=	0.01	3	0.25	)		

		TR/	ANSFORME	D HYETOG	RAPH	-	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	I TIME	RA:
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/l
0.083	0.00	6.167	1.93	12.250	147.82	18 33	2.1
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.1
0.250	0.00	6.333	2 17	12 417	17.39	18.50	2.1
0.333	1.33		2.17	12.500	17.39	18.58	2.1
	1.33	6.417	2.17	12.500	17.39		
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.1
0.500	1.33 1.33	6.583	2.17	12.667	17.39	18.75	2.1
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.1
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.1
0.750	1.33	6.833	2.17	12.917	8.94	19.00	2.1
0.833	1.33	6.917	2.17	13.000	8.94	19.08	2.1
0.917	1.33 1.33	7.000	2.17	13.083	8.94	19.17	2.1
1.000	1.33	7.083	2.17	13.167	8.94	19.25	2.1
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.1
1.167	1 33	7.250	2.17	13.333	6.52	19 42	2.1
1 250	1.33 1.33	7 333	2 66	13 417	6.52	19.50	2.1
1.333	1.33	7.417	2.66	13.500	6.52	19.58	2.1
1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.1
1.500	1.33	7.583	2.00	13.565	6.52		
	1.33 1.33	7.583	2.66	13.00/	6.52	19.75	2.1
1.583	1.33	7.667	2.66	13.750	6.52	19.83	2.1
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.1
1.750	1.33	7.833	2.66	13.917	5.07	20.00	2.1
1.833	1.33 1.33	7.917	2.66	14.000	5.07	20.08	2.1
1.917	1.33	8.000	2.66	14.083	5.07	20.17	2.1
2.000	1.33	8.083	2.66	14.167	5.07	20.25	2.1
2.083	1.33	8.167	2.66	14.250	5.07	20.33	1.4
2.167	1.33 1.33	8.250	2.66	14.333	3.62	20.42	1.4
2.250	1 33	8.333	3 14	14.417	3.62	20.50	1.4
2.333	1.57	8.417	3.14	14 500	3.62	20.58	1.4
2 417	1.57	8.500	3.14	14.583	3.62	20 67	1.4
2.500	1.57	8.583	3 14	14.667	3.62	20.75	1.4
2.583	1.57	8 667	3.14	14.750	3.62	20.73	1.4
2.667	1.57	8.750	3.14	14.730	3.62		
	1.37					20.92	1.4
2.750	1.57	8.833	3.38	14.917	3.62	21.00	1.4
2.833	1.57	8.917	3.38	15.000	3.62	21.08	1.4
2.917	1.57 1.57	9.000	3.38	15.083	3.62	21.17	1.4
3.000	1.57	9.083	3.38	15.167	3.62	21.25	1.4
3.083	1.57	9.167	3.38	15.250	3.62	21.33	1.4
3.167	1.57	9.250	3.38	15.333	3.62	21.42	1.4
3.250	1.57 1.57	9.333	3.86	15.417	3.62	21.50	1.4
3.333	1.57	9.417	3.86	15.500	3.62	21.58	1.4
3.417	1.57	9.500	3.86	15.583	3.62	21.67	1.4
3.500	1.57	9.583	3.86	15 667	3.62	21.75	1.4
3 583	1.57	9.667	3 86	15 750	3 62	21 83	1.4
3.667	1.57	9.750	3.86	15.833	3.62	21.92	1.4
3.750	1.57	9.833	4.35	15.917		22.00	
	1.57				3.62		1.4
3.833	1.57	9.917	4.35	16.000	3.62	22.08	1.4
3.917	1.57	10.000	4.35	16.083	3.62	22.17	1.4
4.000	1.57	10.083	4.35	16.167	3.62	22.25	1.4
4.083	1.57	10.167	4.35	16.250	3.62	22.33	1.4
4.167	1.57	10.250	4.35	16.333	2.17	22.42	1.4
4.250	1.57	10.333	5.56	16.417	2.17	22.50	1.4
4.333	1.93	10.417	5.56	16.500	2.17	22.58	1.4
	1.93	10.500	5 56	16.583	2.17	22.67	1.4
4.417							

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5 56
5 56
7 49
7 49
7 49
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22 92
23 00
                                          10.667
                                   1.93
                                                                 16.750
                                          10.750
10.833
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                      4.750
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                                                                  16.917
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                                          11.167
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                                                     11.59 | 17.583
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11.59 | 17.833
35.75 | 17.917
35.75 | 18.000
35.75 | 18.083
147.81 | 18.167
                      5.500
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                                                                                                      1.45
                                   1.93
                                           11.667
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                      5.667
                                   1.93
                                                                                                      1.45
                                  1.93
1.93
1.93
                                                                                                     1.45
                      5.750
                      5.833
                                                                                                     1.45
1.45
                      5.917
                      6.000
                                   1 93
                                          12 083
                                                                               2.17
                                                                                         24.25
                                          12.167
                                                     147 82 18 250
       Max.Eff.Inten.(mm/hr)=
                                            147.82
                                                              230.84
10.00
      over (min)
Storage Coeff (min)=
Unit Hyd Tpeak (min)=
                                              5.00
1.78 (ii)
5.00
                                                                 6.83 (ii)
                                                                10.00
       Unit Hyd. peak (cms)=
                                               0.32
                                                                 0.14
                                                                                   0.252 (iii)
12.25
101.49
                            (cms)=
(hrs)=
(mm)=
(mm)=
       PEAK FLOW
                                               0.05
                                                                 0.21
      TIME TO PEAK
RUNOFF VOLUME
                                            12.25
119.77
                                                               12.25
98.28
       TOTAL RAINFALL
                                            120.77
                                                              120.77
                                                                                    120.77
       RUNOFF COEFFICIENT =
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN^* = 85.0 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) \begin{vmatrix} 1 + 2 = 3 \end{vmatrix}
                                      AREA
(ha)
14.50
                                                 QPEAK
(cms)
1.132
                                                                TPEAK
                                                                             R.V.
(mm)
                                                              (hrs)
        ID1= 1 ( 0011):
+ ID2= 2 ( 0016):
                                                                           68 14
                                                              12.25
                                                                          101.49
                                        0.76
                                                  0.252
          ID = 3 (0006):
                                      15.26
                                                 1.170
                                                              12.75
                                                                           69.80
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0006) | 3 + 2 = 1 
                                        AREA
                                                   QPEAK
                                                                TPEAK
                                      (ha)
15.26
9.66
                                                              (hrs)
12.75
                                                   (cms)
                                                                              (mm)
       ID1= 3 ( 0006):
+ ID2= 2 ( 0002):
                                                  1.170
                                                                           69 80
                                                              12.25
                                                                           99.62
                                                  3.096
         ID = 1 (0006):
                                      24.92 3.824
                                                              12.25
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0006)|
   1 + 2 = 3
                                        AREA
                                                   QPEAK
                                                                TPEAK
                                      (ha)
24.92
1.28
                                                              (hrs)
12.25
12.25
                                                   (cms)
                                                                              (mm)
        ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                                                                           81.36
                                                  3.824
                                                                           92.81
                                                  0.394
         ID = 3 (0006):
                                      26.20 4.218
                                                              12.25
      NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
______
  RESERVOIR( 0004)
                                  OVERFLOW IS OFF
  IN= 2---> OUT= 1
DT= 5.0 min
                                  OUTFLOW STORAGE OUTFLOW STORAGE
```

	(cms) 0.000 0.016 0.025 0.041			(cms) 0.146 0.302 0.443 0.601			
INFLOW : ID= 2 ( 000 OUTFLOW: ID= 1 ( 000 PEAK				TPEA (hrs 18 12 74 14 ut/Qin](% (min (ha.m.			
MAXIN	MUM STO	RAGE U	SED	(ha.m.	)= 1.25	501 	
CALIB	Area [a J.H. Tp(	(ha)= (mm)= hrs)=	0.43 5.00 0.13	Curve Num # of Line	ber (0	CN)= 75.0 (N)= 3.00	
NOTE: RAINFALL	. WAS TR	ANSFORME	D TO	5.0 MIN.	TIME STE	ĒP.	
TIME hrs 0.083 0.167 0.250 0.333 0.417 0.500 0.583 0.667 0.750 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.583 1.417 1.583 1.667 1.750 1.833 1.667 2.250 2.333 2.417 2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.883 2.917 3.000 3.083 3.167 2.750 2.883	RAIN mm/hr m0.00 0.00 0.00 1.33 1.33 1.33 1.33 1.33	TIME hrs 6.167 6.250 6.417 6.250 6.417 6.583 6.417 6.583 6.417 7.083 7.167 7.250 8.083 8.167 7.583 7.910 8.083 8.167 8.250 8.833 8.667 8.250 8.833 8.417 9.000 9.167 9.250 9.2333	NS FORME RAIN mm./h-1933 11.937 12.117 17.11	D HYETOGR 1 TIME	APH RAIN 147.47, 17.39 17	TIME hrs 18.33 18.42 18.50 18.58 18.67 18.75 18.83 19.00 19.08 19.17 19.25 19.33 19.42 19.50 19.58 20.00 21.08 20.17 20.25 20.33 20.42 20.50 20.58 20.67 20.75 20.83 20.90 21.08 21.17 21.25 21.33 21.92 21.58 21.75 21.38 21.92	RAIN mm/hr 2.17 2.17 2.17 2.17 2.17 2.17 2.17 2.17
3.417 3.500 3.583 3.667	1.57 1.57 1.57 1.57	9.500 9.583 9.667 9.750	3 86 3 86 3 86 3 86	15.583   15.667   15.750   15.833	3 62 3 62 3 62 3 62	21.67 21.75 21.83 21.92	1 45 1 45 1 45 1 45

1.57

1.57 1.57

1.93

1.93 1.93

1.93

9.833

9.917

10.083

10.167

10.250 10.333

10.417

10.500 10.583

10.667

1 93 10 750

15.917

16.000

16 083

16.167

16.250

16.333

16.417 16.500 16.583 16.667

16.750

5 56 16 833

3.62 3.62 3.62

3 62

3.62

2.17 2.17 2.17 2.17 2.17 2.17

2.17

22. 17 22. 25 22. 33 22. 42 22. 50 22. 58 22. 67 22. 75 22. 83 22. 92

1.45

1.45 1.45

1.45

1.45

1.45

1.45

1.45

1.45 1.45

1.45

3.750

3 833 3 917

4.000

4.083

4.250

4 333 4 417

4 500

4.583

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7 49
7 49
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                                                                                                    16.917
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11.083
                                  5.000
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17 333
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11.250
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1.45
                                  5.167
                                                                                      11 59
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17 500
                                                                  11.333
                                                                 11 417
11 500
11 583
11 667
                                  5.333
                                                      1.93
                                                                                                       17 583
17 667
17 750
                                  5 417
5 500
5 583
                                                     1.93
1.93
1.93
                                                   1.93 | 11.667

1.93 | 11.750

1.93 | 11.833

1.93 | 11.917

1.93 | 12.000

1.93 | 12.083

1.93 | 12.167
                                                                                   11.59 | 17.750

11.59 | 17.833

35.75 | 17.917

35.75 | 18.000

35.75 | 18.083

147.81 | 18.167

147.82 | 18.250
                                                                                                                            2 . 17
2 . 17
2 . 17
2 . 17
                                  5.667
                                                                                                                                                                1.45
                                                                                                                           2 17
2 17
2 17
2 17
                                  5.917
                                                                                                                                                               1.45
                                 6.000
6.083
                                                                                                                                                               1.45
         Unit Hyd Qpeak (cms)= 0.126
         PEAK FLOW (cms)= 0.096 (i)
TIME TO PEAK (hrs)= 12.250
RUNOFF VOLUME (mm)= 66.204
TOTAL RAINFALL (mm)= 120.770
RUNOFF COEFFICIENT = 0.548
          (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
 ADD HYD ( 0019)
1 + 2 = 3
                                                              AREA
                                                                                QPEAK
                                                                                                    TPEAK
```

(ha) 0.43 26.20 (cms) (hrs) 12.25 ID1= 1 ( 0017): + ID2= 2 ( 0004): 0.096 66 20 0.474 14.25 81.85 ID = 3 (0019): 26.63 0.479 14.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB | STANDHYD ( 0024) | ID= 1 DT= 5.0 min Area (ha)= 0.61 Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00 IMPERVIOUS PERVIOUS (i) (ha)= (mm)= (%)= (m)= Surface Area  $0.31 \\ 1.00$ 0.31 1.50 2.00 Dep. Storage Average Slope 1.00 63.77 40 00 Length Mannings n 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	0.00	6.167	1.93	12.250	147.82	18.33	2.17			
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.17			
0.250	0.00	6.333	2.17	12.417	17.39	18.50	2.17			
0.333	1.33	6.417	2.17	12.500	17.39	18.58	2.17			
0.417	1.33	6.500	2.17	12.583	17.39	18.67	2.17			
0.500	1.33	6.583	2.17	12.667	17.39	18.75	2.17			
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17			
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17			
0.750	1.33	6.833	2.17	12.917	8.94	19.00	2.17			
0.833 0.917	$\frac{1.33}{1.33}$	6.917 7.000	2.17 2.17	13.000 13.083	8.94 8.94	19.08 19.17	2.17 2.17			
1.000	1.33	7.000	2.17	13.167	8.94	19.17	2.17			
1.083	1.33	7.167	2.17	13.250	8.94	19.33	2.17			
1.167	1.33	7.250	2.17	13.333	6.52	19.42	2.17			
1.250	1.33	7.333	2.66	13.417	6.52	19.50	2.17			
1.333	1.33	7 417	2.66	13.500	6.52	19.58	2.17			
1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.17			
1.500	1.33	7.583	2.66	13.667	6.52	19.75	2 17			
1.583	1.33	7 667	2.66	13.750	6.52	19 83	2.17			
1.667	1.33	7.750	2.66	13.833	5.07	19.92	2.17			
1.750	1.33	7.833	2.66	13.917	5.07	20.00	2.17			
1.833	1.33	7.917	2.66	14.000	5.07	20.08	2.17			
1.917	1.33	8.000	2.66	14.083	5.07	20.17	2.17			
2.000	1.33	8.083	2.66	14.167	5.07	20.25	2.17			
2.083	1.33	8.167	2.66	14.250	5.07	20.33	1.45			

2.167 2.250 2.333 2.417 2.500 2.833 2.667 2.750 2.833 2.917 3.000 3.083 3.417 3.500 3.583 3.417 4.000 4.167 4.250 4.333 4.417 4.500 4.583 4.167 4.750 4.833 4.917 5.003 5.333 5.167 5.750 5.333 5.167 5.5083 5.667 5.750 5.583 5.917 6.000 6.083	1.33 1.33 1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57	8.250 8.333 8.417 8.500 8.583 8.667 8.750 8.833 8.917 9.000 9.083 9.167 9.333 9.417 9.583 9.417 10.000 10.083 10.0167 10.250 10.333 10.417 10.503 10.417 11.250 10.417 11.250 11.353 11.417 11.250 11.353 11.417 11.500 11.583 11.667 11.750 11.500 11.	3.38 3.38 3.38 3.38 3.38 3.86 3.86 3.86	14.333 14.417 14.583 14.667 14.750 14.833 14.917 15.000 15.083 15.167 15.250 15.583 15.417 15.583 15.417 15.583 16.67 15.750 16.083 16.167 16.083 16.167 16.083 16.167 16.250 16.333 16.417 17.083 16.167 16.833 16.167 16.833 16.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 17.833 17.167 17.750 18.083 18.167 18.250	3.62 3.62 3.62 3.62 3.62 3.62 3.62 3.62	20. 42 20. 50 20. 50 20. 67 20. 78 20. 83 20. 92 21. 08 21. 10 21. 12 21. 55 21. 32 21. 25 21. 32 21. 25 21. 32 21. 25 21. 32 21. 25 21. 32 21. 25 21. 32 21. 25 21. 32 21. 27 22. 58 21. 67 22. 17 22. 25 22. 17 22. 25 22. 33 22. 42 22. 58 22. 67 23. 33 22. 42 22. 58 23. 33 22. 42 22. 58 23. 33 23. 42 24. 08 24. 17 24. 25	1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45
Max.Eff.Inten.(mm/hi	n)	147.82 5.00		30.84 10.00			
Storage Coeff. (min		1.67	(ii)	6.72 (ii)			

over	(min)	5.00	10.00	
Storage Coeff.	(min)=	1.67 (ii	i) 6.72 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.32	0.14	
,				*TOTALS*
PEAK FLOW	(cms)=	0.04	0.17	0.203 (iii)
TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	119.77	98.27	101.49
TOTAL RAINFALL	(mm)=	120.77	120.77	120.77
RUNOFF COEFFICIE	ENT =	0.99	0.81	0.84

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^* = 85.0$  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 ( 0025) ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)=	0.83 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIO 0.4 1.0 1.0 74.3 0.01	2 ) ) )	PERVIOUS (i) 0.42 1.50 2.00 40.00 0.250	

\_\_\_\_\_\_

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

		TO	ANCEODME	D HVETOCI	DA DII		
TIME	RAIN	TIME	ANSFORME RAIN	D HYETOGE	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	1.93		147 00 1	18 33	2.17
0.167	0.00	6.250	1.93	12.333	17.41	18.42	2.17
0.250	0.00	6.250	2.17	12.417	17.39	18.50	2.17
0.250 0.333 0.417	1.33		2.17	12.500	147.82 17.41 17.39 17.39 17.39 17.39 17.39 8.94 8.94	18.50 18.58	2.17
0.417	1.33	6.417 6.500 6.583 6.667 6.750 6.833	2.17	12.583	17.39	18.67	2.17
0.500 0.583	1.33	6.583	2.17	12.667	17.39	18.75 18.83	2.17
0.583	1.33	6.667	2.17	12.750	17.39	18.83	2.17
0.667	1.33	6.750	2.17	12.833	8.94	18.92	2.17
0.750 0.833	1.33	6.833	2.17	12.917	8.94	19.00	2.17
0.833	1.33	0.91/	2.17	13.000		19.08	2.17
$0.917 \\ 1.000$	1.33	7.000	2.17	13.083	8.94 8.94	19.17	2.17
1.083	1.33	7.083 7.167	2.17	12 . 250 12 . 333 12 . 417 12 . 500 12 . 583 12 . 667 12 . 750 12 . 833 12 . 917 13 . 000 13 . 083 13 . 167 13 . 250		19.08 19.17 19.25 19.33 19.42 19.50 19.58 19.67 19.75	2.17
1.167	1 33	7 250	5 17	13 .250 13 .333 13 .417	6.52	19.33	2.17
1.250	1 33	7.333	2 66	13.417	6.52	19.50	2.17
1.333	1.33	7.417	2.66	13.500	6.52	19.58	2.17
1.250 1.333 1.417	1.33	7.500	2.66	13.583	6.52	19.67	2.17
1.500 1.583 1.667	1.33	7.167 7.250 7.333 7.417 7.500 7.583 7.667 7.750 7.833 7.917 8.000	2.66	13.500 13.583 13.667 13.750 13.833 13.917	6.52 6.52 6.52 6.52 6.52 6.52	19.75	2.17
1.583	1.33	7.667	2.66	13.750	6.52	19.83	2.17
1.667	1.33	7.750	2.66	13.833	5.07 5.07	19.92	2.17
1.750 1.833 1.917	1.33	7.833	2.66	13.917	5.07	20.00	2.17
1.833	1.33	7.917	2.66	14.000	5.07	20.08	2.17
1.91/	1.33		2.66	14.083	5.07 5.07 5.07	20.17	2.1/
2.000	1.33	8 083 8 167	2.00	14.107	5.07	20.23	2.17 2.17 2.17 2.17 2.17 2.17 2.17 2.17
2.063	1 23	8 250	2.00	14.230	5.07 3.62	20.33	1.45
2 250	1 33	8 333	3 14	14 417	3.62	20.42	1.45
2 333	1.57	8.417	3.14	14.500	3.62	20.58	1.45
2.417	1.57	8.500	2.17 2.17 2.17 2.17 2.17 2.17 2.17 2.17	14.583	3 62 3 62 3 62 3 62 3 62	20.08 20.17 20.25 20.33 20.42 20.50 20.58 20.67 20.75 20.83 20.92	1.45
2.500	1.57	8 583	3.14	14.667	3.62	20.75	1.45
2.583	1.57	8.667	3.14	14.750	3.62	20.83	1.45
2.667	1.57	8.750	3.14	14.833			1 45
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.833 2.917 3.000 3.083	1.57	8.167 8.250 8.333 8.417 8.500 8.583 8.667 8.750 8.833 8.917	3 .14 3 .38 3 .38 3 .38 3 .38 3 .38 3 .86 3 .86 4 .35 4 .35 4 .35 4 .35	14.083 14.167 14.250 14.333 14.417 14.500 14.583 14.667 14.750 14.833 14.917 15.000	3 62 3 62 3 62 3 62 3 62	21.00	1.45 1.45 1.45
2.833	1.5/	8.917	3.38	15.000 15.083 15.167 15.250 15.333 15.417 15.500 15.583 15.667 15.750 15.833 15.917 16.000	3.62	21.08 21.17 21.25 21.33	1.45 1.45
2.917	1.2/	9.000 9.083 9.167 9.250 9.333 9.417 9.500 9.583 9.667 9.750 9.833 9.917	3.38	15.083	3.62	21.1/	1.45
3.000	1.57	9.063	3.30	15 250	3.02	21.23	1.45
	1.57	9.107	3 38	15 333	3 62	21.33	1 45
3.167 3.250 3.333 3.417 3.500 3.583 3.667 3.750 3.833 3.917 4.000	1.57	9.333	3 86	15.417	3.62 3.62 3.62 3.62 3.62 3.62	21 42 21 50 21 58	1.45
3.333	1.57	9.417	3 86	15.500	3.62	21.58	
3.417	1.57	9.500	3.86	15.583	3.62	/ I - h/	1.45 1.45 1.45
3.500	1.57	9.583	3.86	15.667	3.62	21.75	1.45
3.583	1.57	9.667	3.86	15.750	3.62	21.83	1.45
3.667	1.57	9.750	3.86	15.833	3.62 3.62 3.62 3.62 3.62 3.62	21.92	
3.750	1.57	9.833	4.35	15.917	3.62	22.00	1.45 1.45 1.45 1.45
3.833	1.57	10.000	4.33	16.000	3.62	22.08	1 45
4.000	1.57	10.000	4.33	16 167	3 62	22.17	1 45
	1 57		4 35	16 250	3 62	22 33	1.45
4.167	1.57	10.250	4.35	16.333		22.42	1.45
4.250	1.57	10.333	5.56	16.417	2.17	22.50	1.45
4.333	1.93	10.417	5.56	16.500	2.1/	22.58	1.45
4 083 4 167 4 250 4 333 4 417 4 500 4 583 4 667 4 750 4 833 4 917	1.93	10.167 10.250 10.333 10.417 10.500 10.583 10.667 10.750	5.56 5.56 5.56 5.56 5.56 5.56	16.083 16.167 16.250 16.333 16.417 16.500 16.583 16.667 16.750 16.833	2.17 2.17 2.17 2.17 2.17 2.17 2.17 2.17	22.67	1.45
4.500	1.93	10.583	5.56	16.667	2.17	22.75	1.45
4.583	1.93	10.667	5.56	16.750	2.17	22.83	1.45
4.667	1.93	10.750	5 56	16.833	2.17	22.92	1.45
4.750	1.93		7.49	16.917	2.1/	23.00	1.45
4.033	1.93	10.917 11.000	7 49	17 000	2.17	23.00	1.45
5 000	1 93	11.083	7 49 7 49 7 49	17 167	2 17	23.17	1.45 1.45 1.45
5 083	1 93	11 167	/ 49	17 250	2 17	23.23	1 45
5.167	1.93	111 250	7 / 10	17.333	2.17	23.42	1.45
5.250	1.93	11 333	11 59	16.917 17.000 17.083 17.167 17.250 17.333 17.417	2.1/	23.50	1.45
5.333	1.93	11.417	11.59	17.500	Z.1/	23.58	1.45
5.000 5.083 5.167 5.250 5.333 5.417 5.500 5.583 5.667	1.93	11.500	11.59 11.59	17.583	2 17	21.75 21.89 22.08 22.17 22.25 22.37 22.25 22.36 22.56 22.75 22.38 22.92 23.30 23.30 23.30 23.37	1.45
5.500	1.93	11 583 11 667	11.59	17.667	2.17 2.17 2.17 2.17	23.75	1.45
5 583	1.93	11.667	11.59	17.750	2.17	23.83	1.45 1.45
5.667 5.750	1.93	111./50	11.59	117.833	2.1/ 2.17	23.92	1.45
5 750 5 833	1.93	11.833 11.917	11.59 11.59 11.59 35.75 35.75	17.417 17.500 17.583 17.667 17.750 17.833 17.917 18.000	2 17 2 17	24.00	$\frac{1.45}{1.45}$
5.917	1 93	12.000	35.75	18.083	2.17	24.17	1 45
6 000	1.33 1.33 1.33 1.33 1.33 1.33 1.33 1.33	12 000 12 083 12 167	35 75 35 75 147 81 147 82	18 167	2.17 2.17 2.17	24.17 24.25	1.45 1.45
6.083	1.93	12.167	147 82	18.250	2.17		
	_		_	•			

Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= 147.82 5.00 1.83 (ii) 5.00 230.84 10.00 6.88 (ii) 10.00

Unit Hyd. peak	(cms)=	0.32	0.14	*TOTALS*
PEAK FLOW	(cms)=	0.05	0.22	0.275 (iii)
TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	119.77	98.27	101.49
TOTAL RAINFALL	(mm)=	120.77	120.77	120.77
RUNOFF COEFFICI	FNT =	0.99	0.81	0.84

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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.

\*

\*\* SIMULATION:L. 100yr 24hr 15min SCS Type II \*\*

READ STORM	Filenan	ata\L	.oca1\Ter	rschbaume mp\ 6-4efc-8a		:636da9d\	91f91896
Ptotal=132.74 mm	Comment	:s: 100yr	24hr 1	5min SCS	Type II	,	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.25	2.39	12.50	19.11 I	18 75	2.39
0.25	1.46	6.50	2.39	12.75	9.82	19.00	2.39
0.50	1.46	6.75	2.39	13.00	9.82	19.25	2.39
0.75	1.46	7.00	2.39	13.25	7.17	19.50	2.39
1.00	1.46	7.25	2.92	13.50	7.17	19.75	2.39
1.00	1 40	7 50	2.02	13.75	F F0	20.00	2.20

2.92 | 13.50 2.92 | 14.00 2.92 | 14.25 3.45 | 14.50 3.45 | 14.50 3.72 | 15.00 4.25 | 15.50 4.25 | 15.75 4.78 | 16.00 4.78 | 16.25 6.11 | 16.50 6.11 | 16.70 8.23 | 17.25 12.74 | 17.50 12.74 | 17.50 12.74 | 17.75 39.29 | 18.00 162.47 | 18.55 1.25 1.50 2.00 2.25 2.50 3.25 3.50 3.50 4.50 4.50 4.50 5.50 5.50 6.00 20.00 20.25 20.75 21.00 21.50 21.75 22.00 22.25 22.50 22.75 23.50 23.50 23.50 23.50 1.59 1.59 1.59 1.59 1.59 1.59

CALIB STANDHYD ( 0001) ID= 1 DT= 5.0 min Area (ha)= 9.81Total Imp(%)= 58.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
(ha)=	5.69	4.12
(mm)=	1.00	5.00
`(%)=	0.50	2.00
(m)=	255.73	30.00
` =	0.013	0.250
	(mm)= (%)= (m)=	(ha)= 5.69 (mm)= 1.00 (%)= 0.50 (m)= 255.73

		TR/	ANSFORME	D HYETOGE	RAPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	2.12	12.250	162.47	18 33	2.39
0.167	0.00	6.250	2.12	12.333	19.13	18.42	2.39
0.250	0.00	6.333	2.39	12.417	19.11	18.50	2.39
0.333	1.46	6.417	2.39	12.500	19.11	18.58	2.39
0.417	1.46	6.500	2.39	12.583	19.11	18.67	2.39
0.500	1.46	6.583	2.39	12.667	19.11	18.75	2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39

	0.667 0.750 0.750 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.500 1.833 1.917 2.000 2.083 2.167 2.250 2.333 2.417 2.500 3.083 2.417 3.500 3.083 3.167 3.250 3.383 3.167 3.250 3.383 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.250 3.833 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583 3.167 3.500 3.583	1.46 1.46 1.46 1.46 1.46 1.46 1.46 1.46	6.750 6.833 6.917 7.000 7.083 7.167 7.250 7.883 7.417 7.500 7.883 7.667 7.750 8.083 8.167 8.803 8.850 8.333 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.167 8.750 8.083 8.11 8.10 9.083 9.167 9.250 9.333 9.167 9.250 9.333 9.17 9.500 9.833 9.17 9.750 9.	2.39 2.39 2.39 2.39 2.39 2.39 2.92 2.92	12.833 12.917 13.000 13.083 13.167 13.250 13.333 13.417 13.500 13.833 13.667 13.750 13.833 13.917 14.003 14.167 14.250 14.833 14.417 15.000 14.583 15.167 15.583 15.167 15.583 15.167 15.583 15.167 15.583 15.167 15.583 15.167 15.750 16.000 17.083 17.167 17.750 17.333 17.167 17.7500 17.333 17.417 17.500 17.333 17.417 17.500 17.383 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 18.083 17.417 17.500 17.833 17.417 17.500 17.833 17.417 17.500 18.083 18.167 18.250	99.9822 822.8822 822.8822 823.8822 824.777777777777777777777777777777777777	18. 92 19. 00 19. 08 19. 17 19. 33 19. 42 19. 50 19. 58 19. 57 19. 75 19. 92 20. 08 20. 17 20. 20. 20 20. 50 20. 67 20. 75 20. 33 20. 92 20. 50 21. 08 20. 17 21. 25 21. 33 20. 92 21. 00 21. 08 21. 17 21. 25 21. 33 22. 42 22. 58 21. 67 22. 25 22. 83 22. 25 22. 83 22. 42 22. 58 22. 67 23. 75 22. 83 22. 42 22. 58 22. 67 23. 75 23. 33 22. 42 23. 58 23. 67 23. 75 23. 33 23. 42 24. 08 23. 17 23. 33 23. 42 24. 08 24. 17 24. 25	2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.39
	Storage Coeff ( Unit Hyd Tpeak (	/hr)= min) min)= min)= cms)=	162.47 5.00 4.55 5.00 0.23	(ii)	51.87 10.00 9.19 (ii) 10.00 0.12	*T0T	-ALS*	
	TIME TO PEAK ( RUNOFF VOLUME	CMS)= hrs)= (mm)= (mm)= T =	2.07 12.25 131.74 132.74 0.99		1.28 12.25 84.04 32.74 0.63	3. 12 106 132	348 (iii) 2.25 5.94 2.74 3.81	
*	* WARNING: STORAGE	COEFF.	IS SMALLE	ER THAN	TIME STEP!			

\*\*\*\* WARNING:

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:  $CN^*=75.0$  Ia = Dep. Storage (Above) (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.

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

CALIB STANDHYD ( 0005) Area (ha)= 1.28 Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00 IMPERVIOUS 0.64 2.00 0.50 92.38 0.013 PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250 Surface Area Dep. Storage Average Slope Length Mannings n (ha)= (mm)= (%)= (m)= =

		TRA	ANSFORME	D HYETOG	RAPH	_	
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs 0.083	mm/hr 0.00	hrs 6.167	mm/hr 2.12	' hrs  12.250	mm/hr 162.47	hrs   18.33	mm/hr 2.39
0.167	0.00	6.250	2.12	12.333	19.13	18.42	2 39
0.250	0.00	6.333	2.39	12.417	19.11	18.50	2.39
0.333	1.46	6.417	2.39 2.39	12.500	19.11	18.58	2.39
0.417 0.500	$\frac{1.46}{1.46}$	6.500	2.39	12.583 12.667	$19.11 \\ 19.11$	18.67 18.75	2.39 2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	1.46	6.750	2.39	12.833 12.917	9.82	18.92	2.39
0.750 0.833	$\frac{1.46}{1.46}$	6.833 6.917	2.39	13.000	9.82 9.82	19.00 19.08	2.39
0.917	1.46	7.000	2.39	13.083	9.82	19.17	2.39
1.000	1.46	7.083	2 39 2 39 2 39	13.167	9.82	19.25	2.39
$1.083 \\ 1.167$	$\frac{1.46}{1.46}$	7.167	2.39	13.250 13.333	9.82 7.17	19.33 19.42	2.39
1.250 1.333	1.46	7.333	2.92	113.417	7.17	19.50	2.39
1.333	1.46	7.417	2 92 2 92	13.500 13.583	7.17	19.58 19.67	2.39
$1.417 \\ 1.500$	$\frac{1.46}{1.46}$	7.500 7.583	2.92	13.565	7.17 7.17	19.67	2.39
1.583	1.46	7.667	2 92 2 92	13.750	7.17	19.83	2.39
1.667	1.46	7.750	2.92	13.833 13.917	5 58 5 58	19.92	2.39
1.750 1.833	$\frac{1.46}{1.46}$	7.833 7.917	2.92 2.92	14 000	5.58	20.00 20.08	2.39 2.39
1.917	1.46	8.000	2.92	14.083	5.58	20.17	2.39
2.000	1.46	8.083	2.92	14.167	5.58	20.25	2.39
2.083 2.167	$\frac{1.46}{1.46}$	8.167 8.250	2.92 2.92	14.250 14.333	5 58 3 98	20 33 20 42	1.59 1.59
2.250 2.333	1.46	8.333	3.45	14.417	3.98	20.50	1.59
2.333 2.417	1.73	8.417 8.500	3.45 3.45	14.500 14.583	3 98 3 98	20.58 20.67	1.59 1.59
2.500	1.46 1.73 1.73 1.73	8.583	3.45	14.667	3.98	20.75	1.59
2.583	$\frac{1.73}{1.73}$	8.667	3.45	14.750	3.98	20.83	1.59
2.667	1.73	8.750 8.833	3.45 3.72	14.833 14.917	3.98 3.98	20.92 21.00	1.59 1.59
2.750 2.833	1.73 1.73 1.73 1.73 1.73 1.73	8.917	3.72	15.000	3.98	21.08	1.59
2.917	1.73	9.000	3.72	15.083	3.98	21.17	1.59
3.000 3.083	1./3 1.73	9 083 9 167	3.72 3.72	15.167	3.98 3.98	21.25 21.33	1.59 1.59
3.167	1.73	9.250	3.72	15.250 15.333	3.98	21.42	1.59
3.250 3.333	1.73	9.333	4 . 25 4 . 25	15.417	3.98	21.50	1.59
3.333	1.73	9 417 9 500	4.25	15.500	3 98 3 98	21.58 21.67	1.59 1.59
3.500	1.73	9.583	4.25	15.583 15.667	3.98	l 21.75	1.59
3.583	1.73	9.667	4.25	15.750	3.98	21.83	1.59
3.667 3.750	1.73	9.750	4.23	15.833 15.917	3.98 3.98	21.92 22.00	1.59 1.59
3.833	1.73 1.73 1.73 1.73 1.73 1.73 1.73 1.73	9.917	4 25 4 25 4 25 4 25 4 25 4 78 4 78	16.000	3 98 3 98	22.08	1.59
3.917	1.73	10.000	4./8	16.083	3.98	22.17 22.25	1.59
4.000 4.083	1.73 1.73 1.73 1.73	10.083 10.167	4.78 4.78	16.167 16.250	3.98 3.98	22.23	1.59 1.59
4.167	1.73	10.250	4.78	16.333	2.39	22 .33 22 .42 22 .50 22 .58	1.59
4.250 4.333	1.73 2.12	10.333 10.417	6.11	16.417	2.39	22.50	1.59 1.59
4.417	2.12	10.417	$6.11 \\ 6.11$	16.500 16.583	2.39 2.39	22.36	1.59
4.500	2.12	10.583	6.11	16.667	2.39	22.67 22.75	1.59
4.583 4.667	2.12 2.12	10.667 10.750	$6.11 \\ 6.11$	16.750 16.833	2.39	22.83 22.92	1.59 1.59
4.750	2.12	10.730	8.23	16.917	2.39	23.00	1.59
4.833	2.12	10.917	8.23	17.000	2.39	23.08	1.59
4.917 5.000	2.12 2.12	11 000 11 083	8.23	17.083 17.167	2.39 2.39	23.17 23.25	1.59 1.59
5.083	2.12	11.167	8 23 8 23	17.250 17.333	2.39	23.33	1.59
5.167	2.12	11.250	8.23	17.333	2.39	23.42	1.59

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12.74
12.74
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2 12
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11.583
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                                                                17.667
                                                                                       23 75
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23 92
24 00
24 08
24 17
24 25
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                                         11.667
11.750
                                                                17.750
                                                                                                    1.59
                      5.583
                      5.667
                                  2.12
                                                                 17 833
                                                                                                    1.59
                                                       39.29
                                                    39.29 | 17.917
39.29 | 18.000
39.29 | 18.083
162.46 | 18.167
162.47 | 18.250
                      5.833
                                  2 12
                                          11.917
                                                                              2.39
                                                                                                    1.59
                                 2 12 12 000
2 12 12 083
2 12 12 167
                                                                              2 39
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2 39
                     5.917
6.000
                                                                                                    1.59
                      6.083
      Max.Eff.Inten.(mm/hr)=
                                            162.47
     over (min)

Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                              5.00
2.47 (ii)
                                                               10.00
                                                                7.36 (ii)
                                              5.00
                                                               10.00
                                              0.29
                                                                0.13
                                                                                 *TOTALS*
       PEAK FLOW
                             (cms)=
                                              0.29
                                                                0.16
                                                                                   0.448 (111)
      TIME TO PEAK
                            (hrs)=
                                             12.25
                                                               12.25
                                                                                   12.25
      RUNOFF VOLUME
                              (mm)=
                                                               76.82
                                                                                   103.78
                                           132.74
                                                             132.74
      TOTAL RAINFALL
                              (mm)=
                                                                                  132.74
      RUNOFF COEFFICIENT =
                                              0.98
                                                                0.58
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 75.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.
       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
 ADD HYD ( 0007) | 1 + 2 = 3
                                                  QPEAK
(cms)
                                       AREA
                                                               TPEAK
                                                             (hrs)
12.25
                                                                            (mm)
                                       (ha)
       ID1= 1 ( 0001):
+ ID2= 2 ( 0005):
                                       9.81
                                                 3 348
                                                                        106 94
                                       1.28
                                                 0.448
                                                             12.25
                                                                        103.78
         ID = 3 (0007):
                                     11.09
                                                3.796
                                                             12.25
                                                                       106.57
      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.)
0.0000
                                                                    (cms)
                                                                                   (ha.m.)
                                   0.0000
                                                                    0.3480
                                                                                     0.4690
                                   0.0270
                                                  0.0900
                                                                    0.8590
                                   0.0470
                                                  0.1880
                                                                    1.5140
                                                                                     0.8590
                                   0.0600
                                                  0.2950
                                                                    0.0000
                                                                                     0.0000
                                            AREA
                                                        OPEAK
                                                                      TPEAK
                                                                                      R.V.
                                                                     (hrs)
12.25
12.67
                                        (ha)
11.090
                                                        (cms)
                                                                                       (mm)
   INFLOW: ID= 2 ( 0007)
OUTFLOW: ID= 1 ( 0003)
                                                          3.796
0.709
                                         11.090
                                                                                      106.50
                         PEAK FLOW REDUCTION [Qout/Qin] (%) = 18.68 TIME SHIFT OF PEAK FLOW (min) = 25.00 MAXIMUM STORAGE USED (ha.m.) = 0.6026
  CALIB
STANDHYD ( 0015)
ID= 1 DT= 5.0 min
                              Area (ha)= 0.41
Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00
                                         IMPERVIOUS
                                                            PERVIOUS (i)
       Surface Area
                              (ha)=
                                              0.20
                                                                0.20
                              (mm) =
(%) =
(m) =
      Dep. Storage
                                              1.00
                                                                1.50
                                                               2 00
                                             1.00
52.28
      Average Slope
      Lenath
                                             0 013
      Mannings n
                                                               0.250
            NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                 ---- TRANSFORMED HYETOGRAPH ----
RAIN | TIME RAIN | TIME RAIN | TIME
mm/hr | hrs mm/hr | hrs mm/hr | hrs
                      TIME
                                                                                                    RAIN
                        hrs
                                                                                                    mm/hr
                                                       2 12 12 250 162 47 | 18 33
                                 0.00 6.167
```

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 Ia = Dep. Storage (Above)

  (ii) TIME STEPP (DT) SHOULD BE SMALLER OR EQUAL

  THAN THE STORAGE COEFFICIENT.

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

| CALIB | NASHYD ( 0011) | Area (ha)= 14.50 | Curve Number (CN)= 77.0 | ID= 1 DT= 5.0 min | Ia (mm)= 7.13 # of Linear Res.(N)= 3.00 | U.H. Tp(hrs)= 0.64

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

		TRA	ANSFORME	D HYETOGI	RAPH	_	
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	nrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167	2.12	12.250	162.47	18.33	2.39
0.167 0.250	0.00	6.250	2.12 2.39	12.333 12.417	19.13 19.11	18.42 18.50	2.39 2.39
0.333	1.46	6.417	2.39	112.500	19.11	18.58	2.39
0.417	1.46	6.500	2.39	12.583	19.11	18.67	2.39
0.500	1.46	6.583	2.39	12.667	19.11	18.75	2.39
0.583	1.46	6.667	2.39	12.750 12.833	19.11	18.83	2.39
0.667 0.750	1.46 1.46	6.750	2.39	12.833	9.82 9.82	18.92 19.00	2.39
0.833	1.46	6.833 6.917	2.39	13.000	9.82	19.08	2.39
0.917	1.46	7.000	2.39	13.083	9.82	19.17	2.39
1.000	1.46	7.083	2 39 2 39 2 39 2 39 2 39	13.167	9.82	19.25	2.39
$\frac{1.083}{1.167}$	$\frac{1.46}{1.46}$	7.167 7.250	2.39 2.39	13.250 13.333	9.82 7.17	19.33 19.42	2.39 2.39
1.250	1.46	7.333	2.92	13.417	7.17	19.50	2.39
1.250 1.333	1.46	7.417	2.92 2.92	13.500	7.17	19.58	2.39
1,417	1.46	7.500	2 92	13.583 13.667	7.17	19.67	2.39
1.500	$\frac{1.46}{1.46}$	7.583 7.667	2.92	13.667	7.17 7.17	19.75 19.83	2.39
1.583 1.667	1.46	7.750	2 92 2 92 2 92	13.833	5.58	19.92	2.39 2.39
1.750	1.46	7.833 7.917	2.92	13.917	5.58	20.00	2.39
1.833	1.46	7.917	2 92 2 92 2 92	14.000	5.58	20.08	2.39
1.917 2.000	$\frac{1.46}{1.46}$	8 000 8 083	2.92	14.083 14.167	5.58 5.58	20.17 20.25	2.39 2.39
2.083	1.46	8 167	2 92 2 92 2 92	114 250		20.23	1.59
2.083 2.167	1.46	8.250 8.333	2.92	14.333 14.417	3.98	20.42	1.59
2 250 2 333 2 417	1.46	8.333	3.45	14.417	3.98	20.50	1.59
2.333	1.73 1.73	8.417 8.500	3.45 3.45	14.500 14.583	3.98 3.98	20.58 20.67	1.59 1.59
2 500	1 73	8.583	3.45	14.667	3.98	20.75	1.59
2.500 2.583 2.667	1.73 1.73 1.73	8.667	3.45	14.750	3.98	20.83	1.59
2.667	1.73	8.750	3.45	14.833	3.98	20.92	1.59
2.750 2.833 2.917	1.73	8.833 8.917	3.72 3.72	14.917 15.000	3.98 3.98	21.00 21.08	1.59 1.59
2.033	$\frac{1.73}{1.73}$	9.000	3.72	15.083	3.98 3.98	21.17	1.59
3.000	1.73 1.73 1.73	9.083	3.72	15.167	3.98	21.25	1 59
3.083 3.167	1.73	9.167	3 72 3 72	15.250 15.333	3.98 3.98	21.33	1.59 1.59
3.167	$\frac{1.73}{1.73}$	9.250 9.333	4.25	15.333	3.98	21.42 21.50	1.59
3.333	1.73	9.417	4.25	15.500		21.58	1.59
3.333 3.417	1.73 1.73	9.500	4.25 4.25	15.500 15.583	3.98	21.67	1.59
3.500	1.73	9.583	4.25 4.25	15.667	3.98	21.75	1.59
3.583 3.667	1.73 1.73 1.73	9.667 9.750	4.25	15.750 15.833	3.98 3.98	21.83 21.92	1.59 1.59
3.750	1.73	9.833	4.78	15.917	3.98	22.00	1.59
3.833	1.73 1.73	9.917	4.78	16.000	3.98	22.08 22.17	1.59
3.917	1.73	10.000	4.78	16.083	3.98	22.17	1.59
4.000 4.083	1.73 1.73 1.73	10.083 10.167	4.78 4.78	16.167 16.250	3.98 3.98	22.25	1.59 1.59
4.167	1.73	10.250	4.78	16.333	3.98 2.39	22.33 22.42	1.59
4.250	1.73	10.333	6.11	16.417	2.39	22.50	1.59
4.333	2.12	10.417	6.11	16.500	2.39	22.58	1.59
4.417 4.500	2.12 2.12	10 500 10 583	6.11 6.11	16.583 16.667	2.39 2.39	22.67 22.75	1.59 1.59
4.583	2.12	10.667	6.11	16.750	2.39	22.83	1.59
4.667	2.12	10.750	6.11	16.833	2.39	22.92	1.59
4.750	2.12	10.833	8.23	16.917	2.39 2.39	23.00	1.59
4.833 4.917	2.12 2.12	10.917 11.000	8.23 8.23	17.000 17.083	2.39 2.39	23.08 23.17	1.59 1.59
5.000	2.12	11.083	8.23	17.083 17.167	2.39	23.25	1.59

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2.12 | 11.167 | 8.23 | 17.250
2.12 | 11.250 | 8.23 | 17.333
2.12 | 11.333 | 12.74 | 17.417
2.12 | 11.417 | 12.74 | 17.500
2.12 | 11.500 | 12.74 | 17.583
2.12 | 11.583 | 12.74 | 17.583
2.12 | 11.583 | 12.74 | 17.750
2.12 | 11.667 | 12.74 | 17.833
2.12 | 11.833 | 39.29 | 17.917
2.12 | 11.833 | 39.29 | 17.917
2.12 | 11.917 | 39.29 | 18.003
2.12 | 12.003 | 39.29 | 18.003
2.12 | 12.003 | 39.29 | 18.003
2.12 | 12.003 | 162.46 | 18.167
2.12 | 12.167 | 162.47 | 18.250
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Unit Hyd Qpeak (cms)= 0.865

PEAK FLOW (cms)= 1.303 (i)
TIME TO PEAK (hrs)= 12.750
RUNOFF VOLUME (mm)= 78.309
TOTAL RAINFALL (mm)= 132.740
RUNOFF COEFFICIENT = 0.590

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

CALIB STANDHYD ( 0002) ID= 1 DT= 5.0 min	Area Total	(ha)= 9.66 Imp(%)= 68.00	Dir. Conn.(%)=	50.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)=	IMPERVIOUS 6.57 2.00 0.50 253.77 0.013	PERVIOUS (i) 3.09 5.00 2.00 30.00 0.250	

		TRA	NSFORME	D HYETOGI	RAPH	_	
TIME hrs 0.083 0.167 0.250 0.417 0.500 0.758 0.657 0.758 0.667 0.758 1.167 1.250 1.2	RAIN mm/hr 0.00 0.00 1.46 1.46 1.46 1.46 1.46 1.46 1.46 1.46	TIME hrs 6.167 6.250 6.333 6.417 6.500 6.583 6.667 7.000 7.083 7.167 7.500 7.753 7.417 7.500 7.7583 7.917 8.800	RAIN mm/hr 2.12 2.12 2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.3	TIME hrs. 12.250 12.333 12.417 12.500 12.583 12.667 12.750 12.833 12.917 13.000 13.083 13.417 13.250 13.333 13.417 13.500 13.883 13.417 13.500 13.883 13.417 13.500 13.883 13.417 14.000	RAIN mm/hr 162 47 19 13 19 11 19 11 19 11 19 11 19 11 19 11 19 11 19 11 19 11 19 11 17 17 17 17 17 17 17 17 17 17 17 17	TIME hrss 18. 33 18. 42 18. 50 18. 58 18. 58 18. 67 18. 75 18. 90 19. 08 19. 17 19. 33 19. 42 19. 50 19. 67 19. 75 19. 83 19. 92 20. 00 20. 08	RAInr 2.339
1.583 1.667 1.750 1.833	1.46 1.46 1.46 1.46	7.667 7.750 7.833 7.917	2.92 2.92 2.92	13.750 13.833 13.917 14.000	7 17 5 58 5 58 5 58	19.83 19.92 20.00 20.08	2 39 2 39 2 39 2 39
3.167 3.250 3.333 3.417	1.73 1.73 1.73 1.73	9 250 9 333 9 417 9 500	3.72 4.25 4.25	15 . 333 15 . 417 15 . 500 15 . 583	3 98 3 98 3 98 3 98	21.33 21.42 21.50 21.58 21.67	1.59 1.59 1.59 1.59

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                                                                        6.000
                                                                                                                                                                                                                                                                                                                                           1.59
                                                                        6.083
                     Max.Eff.Inten.(mm/hr)=
                                                                                                                                                  162.47
                                                                                                                                                                                                            205.94
                   over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                                                                                                                                                                                              10.00
8.62 (ii)
10.00
                                                                                                                                                       5.00
4.53 (ii)
5.00
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12.25
111.04
                                                                                              (cms)=
(hrs)=
                      PEAK FLOW
                                                                                                                                                                                                               12.25
91.33
                      TIME TO PEAK
                      RUNOEE VOLUME
                                                                                                   (mm)=
(mm)=
                      TOTAL RAINFALL
                                                                                                                                                                                                            132.74
                       RUNOFF COEFFICIENT =
                                                                                                                                                         0.98
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
```

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

CALIB   STANDHYD ( 0008)  ID= 1 DT= 5.0 min	Area Total	(ha)= Imp(%)= !		)= 50 <b>.</b> 00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha)= (mm)= (%)= (m)= =	IMPERVIOU 0.64 2.00 0.50 92.38 0.013	PERVIOUS (i) 0.64 5.00 2.00 30.00 0.250	

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

E RAIN
s mm∕hr
2.39
2.39
2.39
2.39
2.39
2.39
2.39
2.39
2.39
2.39
2.39
2.39

1.083	7.167 2.39 7.250 2.39 7.333 2.92 7.500 2.92 7.583 2.92 7.667 2.92 7.7550 2.92 7.833 2.92 7.667 2.92 8.000 2.92 8.083 2.92 8.167 2.92 8.250 2.92 8.333 3.45 8.417 3.45 8.583 3.45 8.583 3.45 8.583 3.45 8.4917 3.72 9.000 3.72 9.083 3.72 9.167 3.72 9.083 3.72 9.167 3.72 9.083 3.72 9.167 3.72 9.083 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.167 3.72 9.168 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.169 3.72 9.17 9.180 3.72 9.18	13. 541/ 13. 5500 13. 583 13. 667 13. 750 13. 833 13. 917 14. 000 14. 083 14. 167 14. 250 14. 333 14. 417 14. 550 14. 333 14. 417 15. 500 15. 333 15. 167 15. 500 15. 333 15. 167 15. 500 15. 833 15. 167 16. 500 16. 833 16. 417 16. 500 16. 833 16. 417 16. 500 16. 833 16. 417 16. 500 17. 083 17. 167 17. 250 17. 883 17. 167 17. 583 17. 167 17. 188 18. 883	9.82 9.7.17 7.7.7.17 7.7.7.17 7.7.7.17 7.7.7.17 7.7.7.55 5.5.58 9.98	19. 33 19. 42 19. 50 19. 58 19. 67 19. 83 20. 17 20. 08 20. 17 20. 33 20. 42 20. 50 20. 50 20. 58 20. 67 20. 78 20. 83 20. 92 21. 08 21. 16 21. 25 21. 25 21. 25 21. 26 22. 28 22. 28 22. 29 22. 29 22. 29 23. 30 23. 28 23. 29 24. 00 23. 25 23. 26 24. 20 23. 28 23. 28 23. 29 24. 29 23. 28 23. 28 23. 29 24. 29 25. 29 26. 29 27. 29 28. 29 29. 29	22222222222222222222222222222222222222
Max.Eff.Inten.(mm/hr)= over (min) Storage Coeff. (min)= Unit Hyd. Tpeak (min)= Unit Hyd. peak (cms)=	162.47 5.00 2.47 (ii) 5.00 0.29	113.07 10.00 7.36 (ii) 10.00 0.13			
PEAK FLOW (cms)= TIME TO PEAK (hrs)= RUNOFF VOLUME (mm)= TOTAL RAINFALL (mm)= RUNOFF COEFFICIENT =	0.29 12.25 130.74 132.74 0.98	0.16 12.25 76.82 132.74 0.58	*TOT/ 0.4 12 103 132 0	448 (iii) .25 .78	

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

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

## STANDHYD ( 0016) ID= 1 DT= 5.0 min Area (ha)= 0.76 Total Imp(%)= 50.00 Dir. Conn.(%)= 15.00 IMPERVIOUS PERVIOUS (i) Surface Area 0.38 0.38 1.50 (mm)= (%)= (m)= Dep. Storage 1.00 Average Slope 1.00 2.00 40 00 Length 71.18 Mannings n 0.013 0.250

		TR/	ANSFORME	HYETOGE	RAPH		
TIME	RAIN mm/hr	LIMIL	RAIN mm/hr	' TIME ' hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
hrs 0.083	0.00	hrs 6.167	2 12	12 250	162.47	18.33	2.39
0.167	0.00	6.250	2.12 2.12	12.333	19.13	18.42	2.39
0.250	0.00	6.333	2.39	12.417	19.11	18.50	2.39
0.333 0.417	$\frac{1.46}{1.46}$	6.417	2.39 2.39	12.500 12.583	$19.11 \\ 19.11$	18 58 18 67	2.39 2.39
0.500	1.46	6.583	2 39 2 39 2 39 2 39 2 39	12.667	19.11	18.75	2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	1.46	6.750	2.39	12.833	9.82	18.92	2.39
0.750 0.833	$\frac{1.46}{1.46}$	6.833 6.917	2.39	12.917 13.000 13.083	9.82 9.82	19.00 19.08	2.39 2.39
0.917	1.46	7.000	2.39	13 083	9.82	19.17	2.39
1.000	1.46	7.083	2.39	13.167	9.82	19.25	2.39
1.083	$\frac{1.46}{1.46}$	7.167	2.39	13 167 13 250 13 333 13 417	9.82 7.17	19.33 19.42	2.39 2.39
1.167 1.250 1.333 1.417	1 46	7.250	2.92	13.417	7.17	19.50	2.39
1.333	1.46 1.46	7.417	2.92	13.500 13.583	7.17	19.58	2.39
1.417	1 16	7.500	2.92	13.583	7.17	19.67 19.75	2.39 2.39
1.500 1.583	1.46	7 583 7 667	2.92	13.750	7.17	19.83	2 30
1.667	1.46 1.46 1.46 1.46	1 / - / 50	2.92	13 750 13 833	5.58	19.92	2.39
1.750 1.833	1.46	7.833	2.92	T) . J T /	5.58	20.00	4.33
1.833	1.46	7.917 8.000	2 .39 2 .39 2 .39 2 .39 2 .39 2 .92 2 .92 2 .92 2 .92 2 .92 2 .92 2 .92 2 .92	14.000 14.083	5.58 5.58	20.08 20.17	2.39 2.39
2.000	1 46	8.083	2.92	14.167	5.58	20.25	2.39
2.083	1 46	8.167	2.92	14.250 14.333	5.58	20.33	1.59
2.16/	1.46	8.250 8.333	3.45	14.333	3.98	20.42 20.50	1.59 1.59
2.333	1.73	8.417	3.45	14 500	3.98	20.58	1.59
2.417	1.73	8.500	3.45	14.583	3.98	20.67	1 50
2.500	1.73	8 583 8 667	2 92 2 92 2 92 3 45 3 45 3 45 3 45 3 45	14.667 14.750	3.98	20.75 20.83	1.59
2.667	1.73	8.750	3.45	14.750 14.833	3.98	20.83	1.59
2.000 2.083 2.167 2.250 2.333 2.417 2.500 2.583 2.667 2.750 2.833 2.917 3.000 3.083 3.167	1.46 1.73 1.73 1.73 1.73 1.73 1.73 1.73 1.73	8 833 8 917	3 72 3 72 3 72 3 72 3 72 3 72	14.917	3.98	21.00	1.59 1.59 1.59 1.59
2.833	1.73	8.917 9.000	3.72	15.000	3.98	21.08 21.17	1.00
3.000	1.73	9.000	3.72	15.083 15.167	3.98	21.25	1.59 1.59
3.083	1.73	9.167	3.72	15.167 15.250 15.333	3.98	21.33	1.59 1.59
3.167	1.73	9.250 9.333	3.72	15.333	3.98	21.42	1.59
3.230	1.73	9.333	4.25 4.25	15.417 15.500	3.98	21.50 21.58	1.59 1.59
3.250 3.333 3.417	1.73	9.500	4 . 25 4 . 25 4 . 25 4 . 25 4 . 25 4 . 25 4 . 78	15 500 15 583 15 667	3.98	21.67	1.59
3.500	1.73	9.583	4.25		3.98	21.75	1.59
3.583 3.667	1./3 1.73	9.667 9.750	4.25	15.750 15.833	3.98	21.83 21.92	1.59 1.59
3.750	1.73	9.833 9.917	4.78	15.917	3.98	22.00	1.59
3 750 3 833 3 917	1.73	9.917	4./0	16.000	3.98	22.08	1 50
3.917 4.000	1.73	10.000 10.083	4.78 4.78	16.083 16.167	3.98	22.08 22.17 22.25	1.59 1.59
4.083	1.73	10.167	4.78	16.250	3.98	22.33	1.59
4.167 4.250 4.333	1 73 1 73 1 73 1 73 1 73 1 73 1 73 1 73	10.250 10.333	4.78 4.78 6.11	16.250 16.333	2.39	22.25 22.33 22.42 22.50 22.58 22.67 22.75 22.83 22.92 23.00	1.59 1.59 1.59
4.250	1./3 2.12	10.333	6.11 6.11 6.11	16.417	2.39	22.50	1.59 1.59
4.417	2.12	10.500	6.11	16.500 16.583	2.39	22.67	1.59 1.59 1.59
4 500	2 . 12 2 . 12 2 . 12 2 . 12 2 . 12	10.583	6.11 6.11 6.11 8.23 8.23 8.23	16.66/	2.39	22.75	1.59
4.583 4.667	2.12	10.667	6.11	16.750 16.833	2.39	22.83	1.59 1.59
4.750	2.12	10.750 10.833	8.23	16.917	2.39	23.00	1.59
4.750 4.833	2.12	10.917	8.23	17.000	2.39	23.00	1.59
4.917 5.000	2.12	11.000 11.083	8.23	17.083 17.167	\$227777717888888888888888888888888888888	23.17 23.25	1.59 1.59
	2.12 2.12	11.167	8 23 8 23 8 23	17.250	2.39	23.25	1.59
5 167	2.12	11.250	8.23	17 250 17 333 17 417	2.39 2.39 2.39 2.39 2.39 2.39 2.39	23.42	1.59
5 250 5 333	2.12	11.333 11.417	12.74	17.417	2 20	23.50	1.59 1.59
5.417	2.12 2.12	11.417 11.500	12.74 12.74	17.500 17.583	2.39	23.58 23.67	1 59
5.500 5.583	2.12	11.583	12.74	17.667	2.39 2.39 2.39 2.39 2.39	23 67 23 75 23 83	1.59 1.59
5.583	2.12	11.667	12.74	17.750	2.39	23.83	1.59

```
11.750
11.833
11.917
                                               12.74 | 17.833
39.29 | 17.917
39.29 | 18.000
39.29 | 18.083
                                                                            23 92
24 00
24 08
24 17
24 25
                              2.12
                                                                    2.39
                   5.750
                                                                                        1.59
                   5.833
                             2 12
2 12
                                                                    2.39
                                                                                       1.59
1.59
                                    12 000
                   5.917
                             2 12 12 083 162 46 18 167
2 12 12 167 162 47 18 250
                   6.000
                                                                    2.39
                                                                                       1.59
     Max.Eff.Inten.(mm/hr)=
                                      162.47
                                                      256.62
     over (min)
Storage Coeff. (min)=
Unit Hyd. Tpeak (min)=
Unit Hyd. peak (cms)=
                                        5.00
1.72 (ii)
5.00
                                                       10.00
                                                      6.56 (ii)
10.00
                                        0.32
                                                        0.14
                                                                       *TOTALS*
0.283 (iii)
      PEAK FLOW
                                     12.25
131.74
132.74
0.99
      TIME TO PEAK
                        (hrs)=
                                                      12.25
109.88
                                                                         12.25
     RUNOFF VOLUME
                          (mm)=
(mm)=
                                                                        113.16
                                                      132.74
                                                                        132.74
      RUNOFF COEFFICIENT =
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN^* = 85.0 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
                                                      (hrs)
12.75
12.25
______
                                  (ha)
                                            (cms)
                                                                   (mm)
      ID1= 1 ( 0011):
+ ID2= 2 ( 0016):
                                                               78.31
113.16
                                 14.50
                                          1.303
                                  0.76
                                           0.283
         ID = 3 (0006):
                                 15.26 1.346
                                                      12.75
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0006)|
  3 + 2 = 1
                                  AREA
                                            QPEAK
                                 (ha)
15.26
                                                      (hrs)
12.75
                                            (cms)
                                                                   (mm)
      ID1= 3 ( 0006):
+ ID2= 2 ( 0002):
                                                                 80 04
                                          1.346
                                  9.66
                                          3 470
                                                      12 25
                                                              111 04
        ID = 1 (0006): 24.92 4.310 12.25
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  ADD HYD ( 0006)|
  1 + 2 = 3
                                  AREA
                                            QPEAK
                                                                  R.V.
 ID1= 1 ( 0006):
+ ID2= 2 ( 0008):
                                   (ha)
                                            (cms)
                                                     (hrs)
12.25
                                                                92 06
                                 24.92
                                          4 310
                                                     12.25
                                                               103.78
                                  1.28
                                          0.448
         ID = 3 (0006):
                                 26.20 4.757
                                                     12.25
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  RESERVOIR( 0004)|
                             OVERFLOW IS OFF
  IN= 2---> OUT= 1
  DT= 5.0 min
                              OUTFLOW
                                           STORAGE
                                                           OUTFLOW
                                                                        STORAGE
                                           (ha.m.)
                               (cms)
                                                            (cms)
                                                                        (ha.m.)
                               0.0000
                                            0 0000
                                                           0.1460
                                                                          0.6510
                               0.0160
                                            0.1150
                                                           0.3020
                                                                          0.9550
                                            0.2380
0.3690
                                                           0 4430
                               0.0250
                                                                          1.1990
                               0.0410
                                                           0.6010
                                                                          1.4550
                                    (ha)
26.200
                                                 (cms)
4.757
                                                             (hrs)
12.25
   INFLOW: ID= 2 ( 0006)
OUTFLOW: ID= 1 ( 0004)
                                                               14 17
                                     26.200
                                                   0.565
                                                                             92.56
                       PEAK FLOW REDUCTION [Qout/Qin](%)= 11.88
                       TIME SHIFT OF PEAK FLOW
                                                             (min)=115.00
                       MAXIMUM STORAGE USED
                                                           (ha.m.) = 1.3974
```

CALTR NASHYD ( 0017) ID= 1 DT= 5.0 min

Area (ha)= 0.43 Curve Number (CN)= 75.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.13

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

		TR4	NSFORME	D HYETOGE	RΔPH		
TIME	RAIN	TIME	RAIN	' TIME	RAIN	TIME	RAIN
hrs 0.083	mm/hr 0.00	hrs 6.167	mm/hr 2 12	' hrs	mm/hr 162.47	hrs   18.33	mm/hr 2.39
0.167	0.00	6.250	2.12 2.12	12.333	19.13	18.42	2.39 2.39 2.39
0.250	0.00	6.333	2.39	112 417	19.11	18.50	
0.333	$\frac{1.46}{1.46}$	6.417	2.39 2.39	12.500	$19.11 \\ 19.11$	18.58 18.67	2.39 2.39
0.500	1.46	6.500 6.583 6.667	2.39	12.583 12.667	19.11	18.67 18.75	2.39 2.39 2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	$\frac{1.46}{1.46}$	6.750 6.833	2.39 2.39	12.833	9.82 9.82	18.92 19.00	2 39 2 39 2 39 2 39 2 39 2 39
0.750 0.833 0.917	1.46	6.917	2.39	13.000	9.82	19.08	2.39
0.917	1.46	7.000	2.39	12 .007 12 .750 12 .833 12 .917 13 .000 13 .083	9.82	19.17	2.39
1.000 1.083	$\frac{1.46}{1.46}$	7.083 7.167	2 39 2 39	13.167	9.82 9.82	19.25	2.39
1.167	1.46	7.167 7.250 7.333 7.417	2.39	13.083 13.167 13.250 13.333 13.417 13.500 13.583 13.667 13.750 13.833 13.917 14.000	7.17	19.00 19.08 19.17 19.25 19.33 19.42	2.39
1.250 1.333	$\frac{1.46}{1.46}$	7.333	2.92 2.92	113.417	7.17	19.50	2.39
1.417	1.46	7.300	2.92	13.583	7.17	19.42 19.50 19.58 19.67 19.75 19.83 19.92 20.00 20.08	2.39
1.500	1.46	7.583	2.92	13.667	7.17	19.75	2.39
1 583 1 667	$\frac{1.46}{1.46}$	7.667 7.750	2.92	13.730	5.58	19.65	2.39
1.750 1.833	1.46	7.750 7.833 7.917	2.92	13.917	5.58	20.00	2.39
1.833 1.917	$\frac{1.46}{1.46}$	7.917 8.000	2.92	14.000	5.58	20.08	2.39
2 000	1.46	8.083	2.92	14.167	5.58	20.25	2.39
2.083	1.46	8.167	2 92 2 92 2 92 2 92 2 92 2 92 2 92 2 92	14 .083 14 .167 14 .250 14 .333	5.58	20 17 20 25 20 33 20 42	2.39 2.39 2.39 2.39 2.39 2.39 2.39 2.39
2.167	1.46 1.46	8 167 8 250 8 333	3.45		3.98	20.42	1.59
2 250 2 333	1.73	8.417 8.500	3.45	14 500 14 583	3.98	20.58	1.59
2.417 2.500	1.73	8.500	3 45 3 45	14.583 14.667	3.98	20.67	1.59
2.583	1.73 1.73	8.667	3.45	114 750	3.98	20.83	1.59 1.59 1.59 1.59 1.59 1.59
2.667 2.750	1.73	8.750	3 45 3 72	14.833 14.917	3.98	20.92	1.59
2.833	1.73 1.73	8.833 8.917	3.72	15.000	3.98	20.42 20.50 20.58 20.67 20.75 20.83 20.92 21.00 21.08	1.59 1.59
2.917	1 73	1 0 000	3 72	15.083	3.98	21.17 21.25 21.33 21.42 21.50 21.58 21.67	1.59
3 000 3 083	1.73 1.73	9 083 9 167 9 250 9 333 9 417	3 .72 3 .72 3 .72 4 .25 4 .25 4 .25 4 .25 4 .25 4 .78 4 .78 4 .78 4 .78	15.083 15.167 15.250 15.333 15.417 15.500 15.583 15.667 15.750 15.833 15.917	3.98	21.25	1.59 1.59
	1 73	9.250	3.72	15.333	3.98	21.42	1.59
3 250 3 333 3 417 3 500 3 583 3 667 7 750	1.73	9.333	4.25	15.417	3.98	21.50	1.59
3.417	1.73	9.500	4.25	15.583	3.98	21.56	1.59
3.500	1.73	9.500 9.583 9.667	4.25	15.667	3.98	21.13	1.59
3 583	1.73	9.667	4.25	15.750	3.98	21.83	1.59
3.750	1.73	9.750 9.833	4.78	15 917	3.98	22.00	1.59 1.59
3 833 3 917	1.73	9.917 10.000	4.78		3.98	22.08	1.59
4 000	1.73	10.083	4.78	16.083 16.167	3.98	22.25	1.59 1.59 1.59 1.59 1.59 1.59
4.083	1.73	10.167	4.78	16.250	3.98	22.33	1.59
4.167	1.73	10 250 10 333	4.78 6.11	16 250 16 333 16 417	2.39	22.42	1.59 1.59
4 250 4 333	2.12	10.417	6.11	16.500 16.583	2.39	22.58	1.59
4.417 4.500	2.12	10.500 10.583	$6.11 \\ 6.11$	16.583 16.667	2.39	22.67	1.59 1.59
4.583 4.667	2.12	10.667	6.11	16.750	2.39	22.83	1.59
4.667	2.12	10.750	6.11	16.750 16.833 16.917	2.39	22.92	1.59 1.59
4.750 4.833 4.917	2.12	10.833 10.917	8.23	17.000	2.39	23.00	1.59
4.917	2.12	11.000	8.23	17.083 17.167	2.39	23.17	1.59 1.59
5 000 5 083	2.12	11.083 11.167	8 23	17.16/	2.39	23.25	1.59 1.59
5.167	1.73 1.73 1.73 1.73 1.73 1.73 1.73 1.73	11.250	6.11 6.11 8.23 8.23 8.23 8.23 8.23 8.23 12.74	17.250 17.333	17777755555555555555555555555555555555	21 92 22 008 22 17 22 25 22 32 22 42 22 58 22 56 22 57 22 78 22 58 22 25 23 08 23 17 23 30 23 17 23 32 23 32 23 35 23 35	1.59
5.250 5.333	2.12 2.12	11.333 11.417	12.74	11/.41/	2.39	23.50	1.59 1.59
5.417	2.12	11.500	12.74	17.500 17.583	2.39	23.67	1.59
5.500	2.12	11.583	12.74	17.667	2.39	73 75	1.59
5.583 5.667	2.12 2.12	11.667 11.750	12.74 12.74	17.750 17.833	2.39	23 83 23 92 24 00 24 08	$\frac{1.59}{1.59}$
5.750	2.12	11.833	12 74 39 29 39 29	17 833 17 917 18 000	2.39	24.00	1.59
5 833	2.12	11.917	39.29	18.000	2.39	24.08	1.59

```
    5.917
    2.12
    |12.000
    39.29
    |18.083

    6.000
    2.12
    |12.083
    |162.46
    |18.167

    6.083
    2.12
    |12.167
    |162.47
    |18.250

                                                                            2.39
2.39
2.39
                                                                                     24.17
24.25
      Unit Hyd Qpeak (cms)= 0.126
      PEAK FLOW
                            (cms) = 0.111 (i)
      TIME TO PEAK
                           (hrs) = 12.250
      RUNOFF VOLUME
                            (mm)= 76.061
(mm)= 132.740
      TOTAL RAINFALL
      RUNOFF COEFFICIENT = 0.573
      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
______
  ADD HYD ( 0019)|
 1 + 2 = 3
                                      AREA
                                                 QPEAK
                                                             TPEAK
                                                                          R.V.
                                      (ha)
0.43
                                                           (hrs)
12.25
                                                 (cms)
      ID1= 1 ( 0017): 0.43 0.111
+ ID2= 2 ( 0004): 26.20 0.565
                                                                        76.06
                                                            14.17
                                                                        92.56
        ID = 3 (0019): 26.63 0.571
                                                         14.17
                                                                        92.29
     NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
  CALIB
STANDHYD ( 0024)
                            Area (ha)= 0.61
                             Total Imp(\%) = 50.00 Dir Conn (%) = 15.00
                                       IMPERVIOUS
                                                           PERVIOUS (i)
      Surface Area
                             (ha)=
                                             0.31
                                                               0.31
                             (mm) =
(%) =
(m) =
      Dep. Storage
                                             1.00
                                                              1.50
                                           1.00
63.77
                                                               2.00
      Average Slope
                                                              40.00
      Lenath
                                           0 013
      Mannings n
                                                             0.250
           NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.
                                          --- TRANSFORMED HYETOGRAPH ----
                      TIME
                                        TIME
                                                      RAIN ' TIME
                                                                            RAIN TIME
mm/hr hrs
                                                                                                  RAIN
                        hrs
                               mm/hr
                                                     mm/hr
                                                                                                 mm/hr
                                                      2 12 12 250 162 47 | 18 33
2 12 12 333 19 13 | 18 42
                                                                                                 2 39
                     0.083
                                 0.00
                                           6.167
                                                      2.12 12.250
2.12 12.333
2.39 12.417
2.39 12.580
2.39 12.667
2.39 12.750
2.39 12.833
                                                                                     18 42
18 50
18 58
                     0.167
                                 0.00
                                          6.250
                                                                                                  2.39
                                0.00
1.46
1.46
1.46
                                          6.333
                                                                           19.11
                                                                                                 2.39
                                          6.417
                     0 333
                                                                           19 11
                     0.417
                                          6 500
                                                                           19.11
                                                                                     18.67
18.75
                                                                                                  2.39
                                           6.583
                                                                           19.11
                                                                                                  2.39
                                           6.667
                                 1.46
                                           6.750
                                                                                                  2.39
                                 1.46
1.46
1.46
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2 39 13 167
                                                                            9 .82
9 .82
9 .82
                     0.750
                                          6.833
                                                                                     19.00
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                                          6.917
                                                                                     19.08
19.17
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                                 1 46
                                           7 083
                                                                            9 82
                                                                                                  2 39
                     1.000
                                                      2.39 13.167
2.39 13.250
2.39 13.333
2.92 13.500
2.92 13.583
2.92 13.583
2.92 13.667
2.92 13.750
2.92 13.833
2.92 13.4000
2.92 14.000
2.92 14.000
2.92 14.167
2.92 14.167
2.92 14.163
                                                                                     19.25
                                           7.167
                                                                            9.82
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                                 1.46
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                                 1.46
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                                                                                     19 50
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                                           7.333
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                                           7.417
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                                                                                                  2 39
                     1.583
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                     2.083
                                 1.46
                                           8.167
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8.417

8.500 8.583

8.667

8.750

8.917

9.000

9.083 9.167

9.250

3.45

14.417

14.500

14.583

14.750

3.45 | 14.750 3.45 | 14.917 3.72 | 15.000 3.72 | 15.083 3.72 | 15.167 3.72 | 15.250 3.72 | 15.333 4.25 | 15.417

3.98

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3 98 3 98

3 98

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3 98

3.98

20.50

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20 67 20 75

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21.00 21.08 21.17 21.25 21.33 21.42 21.50

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4.25 | 15.500

4.25 | 15.667

4.25 | 15.667

4.25 | 15.667

4.25 | 15.833

4.78 | 16.917

4.78 | 16.083

4.78 | 16.167

4.78 | 16.500

4.78 | 16.500

6.11 | 16.500

6.11 | 16.667

6.11 | 16.687

6.11 | 16.833

8.23 | 17.050

8.23 | 17.050

8.23 | 17.050

8.23 | 17.050

8.23 | 17.050

8.23 | 17.050

8.23 | 17.550

8.23 | 17.550

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8.23 | 17.550

8.23 | 17.550

8.23 | 17.550

8.23 | 17.550

8.23 | 17.550

8.24 | 17.417

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.500

12.74 | 17.833

33.29 | 17.917

39.29 | 18.000

39.29 | 18.000

39.29 | 18.000

39.29 | 18.000

162.46 | 18.250
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                                                   4.250
                                                                                           1 .73
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2 .12
                                                                                                                      10.333
                                                                                                                    10.333
10.417
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                                                   4.333
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                                                   5.333
                                                                                                                    11 500
11 583
11 667
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                                                   5 500
                                                  5.583
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5.750
                                                                                           2 12
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2.12 | 11.917
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                                                                                                                                                                                                                                                                                                                          1.59
1.59
1.59
                                                   5.833
                                                   5 917
                                                   6.000
                                                   6.083
Many FEE THEM (MM /hm)
                                                                                                                             162 47
```

max.ETT.Inten (r	nm/nr)=	162.47	256.62	
over	(min)	5.00	10.00	
Storage Coeff.	(min)=	1.61 (	ii) 6.45 (ii	)
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd peak	(cms)=	0.32	0.14	
				*TOTALS*
PEAK FLOW	(cms)=	0.04	0.19	0.228 (iii)
TIME TO PEAK	(hrs)=	12.25	12.25	12.25
RUNOFF VOLUME	(mm)=	131.74	109.89	113.16
TOTAL RAINFALL	(mm) =	132.74	132.74	132.74
RUNOFF COEFFICIE	ENT =	0.99	0.83	0.85

\*\*\*\*\* WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
\*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

  CN\* = 85.0 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 ( 0025) ID= 1 DT= 5.0 min		a)= 0.83 %)= 50.00	Dir. Conn.(%)=	15.00
Surface Area Dep. Storage Average Slope Length Mannings n	(ha) = (mm) = (%) = (m) =	ERVIOUS 0.42 1.00 1.00 74.39 0.013	PERVIOUS (1) 0.42 1.50 2.00 40.00 0.250	
NOTE - DATHEA	LI MAG TRAN	CEORMED TO	F 0	TED

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

		TR			RAPH		
TIME	RAIN	TIME	RAIN		RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	' hrs	mm/hr	hrs	mm/hr
0.083	0.00	6.167		12.250	162.47	18.33	2.39
0.167	0.00	6.250		12.333	19.13	18.42	2.39
0.250	0.00	6.333		12.417	19.11	18.50	2.39
0.333	1.46	6.417	2.39	12.500	19.11	18.58	2.39
0.417	1.46	6.500	2.39	12.583	19.11	18.67	2.39
0.500	1.46	6.583	2.39	12.667	19.11	18.75	2.39
0.583	1.46	6.667	2.39	12.750	19.11	18.83	2.39
0.667	1.46	6.750	2.39	12.833	9.82	18.92	2.39

Max.Eff.Inten.(mm/hr)= 162.47 256.62 ver (min) 5.00 10.00 Storage Coeff. (min)= 1.76 (ii) 6.60 (ii) Unit Hyd. Tpeak (min)= 5.00 10.00 Unit Hyd. peak (cms)= 0.32 0.14 *TOTALS*  PEAK FLOW (cms)= 0.06 0.25 0.308 (iii) TIME TO PEAK (hrs)= 12.25 12.25 12.25	0.750 0.833 0.917 1.000 1.083 1.167 1.250 1.333 1.417 1.500 1.583 1.667 1.750 1.833 1.917 2.000 2.083 2.417 2.500 2.333 2.417 2.500 2.583 2.417 2.500 3.083 3.167 3.250 3.333 3.417 3.000 3.083 3.167 3.250 3.333 3.417 3.917 4.000 4.083 4.167 4.250 4.333 4.417 5.500 4.583 4.667 4.750 4.083 4.167 4.583 4.667 4.750 4.383 4.417 5.500 5.383 5.167 5.500 5.383 5.167 5.500 5.383 5.167 5.500 5.383 5.167 5.500 6.083	1.46   6.833 1.46   6.917 1.46   7.000 1.46   7.083 1.46   7.167 1.46   7.333 1.46   7.500 1.46   7.500 1.46   7.501 1.46   7.501 1.46   7.501 1.46   7.501 1.46   7.501 1.46   7.501 1.46   8.083 1.46   8.083 1.46   8.167 1.46   8.333 1.46   8.167 1.47   8.500 1.48   8.500 1.49   8.500 1.40   8.167 1.73   8.500 1.73   8.500 1.73   8.503 1.73   8.667 1.73   9.250 1.73   9.250 1.73   9.333 1.73   9.250 1.73   9.333 1.73   9.250 1.73   9.333 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.500 1.73   9.667 1.73   9.667 1.73   9.500 1.73   9.667 1.73   9.667 1.73   9.500 1.73   9.667 1.73   9.667 1.73   9.667 1.73   9.667 1.73   9.667 1.73   9.667 1.73   9.500 1.73   10.083 1.73   10.167 1.73   10.167 1.74   10.500 1.75   10.417 2.12   10.503 2.12   10.417 2.12   11.650 2.12   11.1500 2.12   11.1500 2.12	2.39   12.91 2.39   13.00 2.39   13.16 2.39   13.13 2.39   13.41 2.92   13.58 2.92   13.58 2.92   14.00 2.92   14.00 2.92   14.00 2.92   14.00 2.92   14.00 2.92   14.50 3.45   14.50 3.72   15.50 4.25   15.50 4.25	0.82 9.82 9.82 9.82 9.82 9.77 7.71 1.75 5.55	19.00 19.08 19.17 19.25 19.33 19.42 19.50 19.58 19.75 19.83 19.92 20.00 20.08 20.17 20.25 20.33 20.92 20.50 21.08 20.67 20.75 21.83 20.92 21.08 21.17 21.25 21.33 22.42 22.58 21.67 22.75 21.83 22.96 22.68 22.67 23.75 21.83 22.25 22.83 22.25 22.30 22.38 22.42 22.58 22.67 23.75 22.83 22.42 22.58 22.67 23.75 23.33 23.42 22.58 23.67 23.75 23.83 23.42 24.08 23.75 23.83 23.42 24.08 24.17 24.25	2.39 2.239 2.239 2.239 2.239 2.239 2.239 2.239 2.239 2.399 2
PEAK FLOW $(cms) = 0.06   0.25   0.308   (iii)$	over (mir Storage Coeff. (mir Unit Hyd. Tpeak (mir	n) 5.00 n)= 1.76 n)= 5.00	(ii) 10.00 6.60 10.00		FALC*	
RUNOFF VOLUME (mm)= 131.74 109.89 113.16 TOTAL RAINFALL (mm)= 132.74 132.74 132.74 RUNOFF COEFFICIENT = 0.99 0.83 0.85	RUNOFF VOLUME (mr TOTAL RAINFALL (mr	m)= 131.74 m)= 132.74	12.25 109.89 132.74	0. 12 113 132	.308 (iii) 2.25 3.16 2.74	

\*\*\*\* \*\*\*\*\* WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

<sup>(</sup>i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN\* = 85.0 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.

## APPENDIX F

**SWM** Facility Calculations



Date: 5/15/2024

### Water Quality Requirements for SWMF-SV

Areas Contributing	Area (ha)	% Imp	25mm RV (mm)	25mm RV (m <sup>3</sup> )	
POST-S1	9.81	58.0	14.07	1380	
SWMF-SV	1.28	50.0	13.39	171	
WEIGHTED IMP	11.09	<b>57.1</b>		1552	
MOE Total WQ Volume (m³/ha)				195	
MOE ED Volume (m³/ha)				40	
MOE ED Volume (m³)				444	
MOE PP Volume (m³/ha)				155	
MOE PP Volume (m³)				1717	
Pond Required ED Volume (m³)				1552	
Pond Required PP Volume (m <sup>3</sup> )				1717	
Available ED Volume (m³)				2946	
Provided PP Volume (m <sup>3</sup> )				4338	



Project: Ida Street Project No.: 1060-5590

Design by: AM

Date: May 15, 2024

### **EXTENDED DETENTION SPECIFICATIONS - SWMF-SV (PER MECP)**

Extended Detention Volume (Area x runoff from 25 mm storm event) 1552

t (drawdown time - seconds, hours in italics) 24.0 86400

Ao (cross section area of orifice - sqm) 0.0299

h (maximum water elevation above orifice for extended detention-m) 0.60

C (discharge coefficient) 0.64

Ap (average surface area for extended detention - sqm) 4917

 $t = 2*Ap*(h^0.5)/(C*Ao*(g*2)^0.5)$ 

Ao = 0.03110016 sqm d = 199 mm

Extended Detention Orifice Diameter (as designed) d = 195 mm



Date: May 15, 2024

### **SWMF-SV Pond Stage Storage Outflow Calculations**

### **Outlet Structure Dimensions**

E.D. Orifice Diameter: 0.195 m E.D. Orifice Invert Elevation: 513.2 m

**GRCA Outlet Dimensions** 

Orifice Diameter: E.D. Orifice Invert Elevation:

Rectangular Weir width 0.90 m Rectanular Weir Invert 513.80 m Spillway Elev. Spillway Bot. Width 514.70 m 10 m Trap Side Slopes 3:1

	Pond Di	imensions				Outlet	Structure Disc	harge		To Wetland Dis	charge	
					V-Notch			<u> </u>		Wetland		
Elev.	Depth	Area	Storage	ED Orifice	Weir	Rectangular Weir	Spillway	Spillway	Total	Orifice	Storage	Total
	Above PP		Volume	Discharge	Discharge	Discharge	Width	Discharge	Discharge	Discharge		Discharge
(m)	(m)	(sqm)	(cu.m)	(cu.m/s)	(cu.m/s)	(m)	(m)	(cu.m/s)	(cu.m/s)	(cu.m/s)	(ha-m)	(cu.m/s)
513.20	0.00	4291.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.000
513.30	0.10	4499.67	439.53	0.004	0.00	0.00	0.00	0.00	0.004	0.00	0.044	0.004
513.40	0.20	4708.33	899.93	0.027	0.00	0.00	0.00	0.00	0.027	0.00	0.090	0.027
513.50	0.30	4917.00	1381.20	0.038	0.00	0.00	0.00	0.00	0.038	0.00	0.138	0.038
513.60	0.40	5125.67	1883.33	0.047	0.00	0.00	0.00	0.00	0.047	0.00	0.188	0.047
513.70	0.50	5334.33	2406.33	0.054	0.00	0.00	0.00	0.00	0.054	0.00	0.241	0.054
513.80	0.60	5543.00	2950.20	0.060	0.00	0.00	0.00	0.00	0.060	0.00	0.295	0.060
513.90	0.70	5703.78	3512.54	0.066	0.00	0.05	0.00	0.00	0.118	0.00	0.351	0.118
514.00	0.80	5864.56	4090.96	0.071	0.00	0.15	0.00	0.00	0.219	0.00	0.409	0.219
514.10	0.90	6025.33	4685.45	0.076	0.00	0.27	0.00	0.00	0.348	0.00	0.469	0.348
514.20	1.00	6186.11	5296.02	0.080	0.00	0.42	0.00	0.00	0.499	0.00	0.530	0.499
514.30	1.10	6346.89	5922.67	0.085	0.00	0.59	0.00	0.00	0.670	0.00	0.592	0.670
514.40	1.20	6507.67	6565.40	0.089	0.00	0.77	0.00	0.00	0.859	0.00	0.657	0.859
514.50	1.30	6668.44	7224.21	0.093	0.00	0.97	0.00	0.00	1.063	0.00	0.722	1.063
514.60	1.40	6829.22	7899.09	0.097	0.00	1.18	0.00	0.00	1.282	0.00	0.790	1.282
514.70	1.50	6990.00	8590.05	0.100	0.00	1.41	10.00	0.00	1.514	0.00	0.859	1.514
514.80	1.60	7152.67	9297.18	0.104	0.00	1.66	10.03	0.58	2.343	0.00	0.930	2.343
514.90	1.70	7315.33	10020.58	0.107	0.00	1.91	10.05	1.65	3.672	0.00	1.002	3.672
515.00	1.80	7478.00	10760.25	0.110	0.00	2.18	10.08	3.05	5.334	0.00	1.076	5.334



Date: 5/15/2024

### Water Quality Requirements for SWMF-GR

Areas Contributing	Area (ha)	% Imp	25mm RV (mm)	25mm RV (m <sup>3</sup> )
POST-G2	9.66	67.0	14.62	1412
SWMF-GR	1.28	50.0	13.39	171
EXT-1	14.50	0.7	3.40	493
WEIGHTED IMP	25.44	28.4		2077
MOE Total WQ Volume (m³/ha)				123
MOE ED Volume (m³/ha) MOE ED Volume (m³)				40 1018
MOE PP Volume (m³/ha)				83
MOE PP Volume (m <sup>3</sup> )				2121
Pond Required ED Volume (m <sup>3</sup> )				2077
Pond Required PP Volume (m <sup>3</sup> )				2121
Available ED Volume (m³)				2743
Provided PP Volume (m <sup>3</sup> )				7589



Date: May 15, 2024

### **EXTENDED DETENTION SPECIFICATIONS - SWMF-GR (PER MECP)**

Extended Detention Volume (Area x runoff from 25 mm storm event)	2077
--	------

t (drawdown time - seconds, hours in italics) 48.0 172800

Ao (cross section area of orifice - sqm) 0.0154

h (maximum water elevation above orifice for extended detention-m) 0.50

C (discharge coefficient) 0.64

Ap (average surface area for extended detention - sqm) 6056

 $t = 2*Ap*(h^0.5)/(C*Ao*(g*2)^0.5)$ 

Ao = 0.01748222 sqm d = 149 mm

Extended Detention Orifice Diameter (as designed) d = 140 mm



Date: May 15, 2024

### **SWMF-GR Pond Stage Storage Outflow Calculations**

### **Outlet Structure Dimensions**

E.D. Orifice Diameter: 0.14 m E.D. Orifice Invert Elevation: 511.8 m Rectangular Weir width 0.16 m Rectanular Weir Invert 512.30 m Spillway Elev. 513.80 m 10 m

Spillway Bot. Width Trap Side Slopes 3:1

	Pond D	imensions				Outlet S	tructure Discl	narae		
	101142				V-Notch			90		
Elev.	Depth	Area	Storage	ED Orifice	Weir	Rectangular Weir	Spillway	Spillway	Storage	Total
	Above PP		Volume	Discharge	Discharge	Discharge	Width	Discharge	G	Discharge
(m)	(m)	(sqm)	(cu.m)	(cu.m/s)	(cu.m/s)	(m)	(m)	(cu.m/s)	(ha-m)	(cu.m/s)
511.80	0.00	5534.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.000
511.90	0.10	5750.00	564.20	0.008	0.00	0.00	0.00	0.00	0.056	0.008
512.00	0.20	5941.42	1148.77	0.016	0.00	0.00	0.00	0.00	0.115	0.016
512.10	0.30	6145.13	1753.10	0.021	0.00	0.00	0.00	0.00	0.175	0.021
512.20	0.40	6348.84	2377.80	0.025	0.00	0.00	0.00	0.00	0.238	0.025
512.30	0.50	6614.00	3025.94	0.029	0.00	0.00	0.00	0.00	0.303	0.029
512.40	0.60	6756.27	3694.45	0.032	0.00	0.01	0.00	0.00	0.369	0.041
512.50	0.70	6898.53	4377.19	0.035	0.00	0.03	0.00	0.00	0.438	0.061
512.60	0.80	7040.80	5074.16	0.037	0.00	0.05	0.00	0.00	0.507	0.086
512.70	0.90	7183.07	5785.35	0.040	0.00	0.07	0.00	0.00	0.579	0.114
512.80	1.00	7325.33	6510.77	0.042	0.00	0.10	0.00	0.00	0.651	0.146
512.90	1.10	7467.60	7250.42	0.044	0.00	0.14	0.00	0.00	0.725	0.181
513.00	1.20	7609.87	8004.29	0.046	0.00	0.17	0.00	0.00	0.800	0.219
513.10	1.30	7752.13	8772.39	0.048	0.00	0.21	0.00	0.00	0.877	0.259
513.20	1.40	7894.40	9554.72	0.050	0.00	0.25	0.00	0.00	0.955	0.302
513.30	1.50	8036.67	10351.27	0.052	0.00	0.29	0.00	0.00	1.035	0.347
513.40	1.60	8178.93	11162.05	0.054	0.00	0.34	0.00	0.00	1.116	0.394
513.50	1.70	8321.20	11987.06	0.056	0.00	0.39	0.00	0.00	1.199	0.443
513.60	1.80	8463.47	12826.29	0.057	0.00	0.44	0.00	0.00	1.283	0.494
513.70	1.90	8605.73	13679.75	0.059	0.00	0.49	0.00	0.00	1.368	0.547
513.80	2.00	8748.00	14547.44	0.061	0.00	0.54	10.00	0.00	1.455	0.601
513.90	2.10	8924.33	15431.06	0.062	0.00	0.60	10.03	0.58	1.543	1.241
514.00	2.20	9100.67	16332.31	0.064	0.00	0.65	10.05	1.65	1.633	2.370
514.10	2.30	9277.00	17251.19	0.065	0.00	0.71	10.08	3.05	1.725	3.822

# APPENDIX G

Water Balance Calculations



### **Water Balance Parameters**

Thornthwaite & Mather Method

Project Name: Ida Street Project Number: 1060-5590 Created By: HR Checked By: NCO Date: 5/15/2024

Project Name: Location:

**Ida Street** Dundalk

LATITUDE

DEGREES 44

Climate Station: EGBERT STATION 79°47'00.000" W 44°14'00.000" N

Latitude: 251 m

Elevation: 6110 Station ID:

Longitude:

Month	Mean Temperature (C°) <sup>1</sup>	Heat Index [i =(t/5) <sup>1.514</sup> ]	α	Potential Evapotranspiration (PET) (mm)	Correction Factor <sup>2</sup>	Adjusted Potential Evapotranspiration (APET) (mm)	Total Precipitation (P) (mm) <sup>1</sup>	P - APET (mm)	APET- P (mm)
January	-7.2	0.0	0.4924	0.0	0.81	0	54.7	54.7	0.0
February	-6.4	0.0	0.4924	0.0	0.82	0	44.7	44.7	0.0
March	-1.3	0.0	0.4924	0.0	1.02	0	47.9	47.9	0.0
April	5.6	1.2	0.5136	25.7	1.13	29	61.6	32.5	0.0
May	12.3	3.9	0.5613	59.6	1.27	76	73.9	0.0	1.8
June	17.5	6.7	0.6086	86.8	1.29	112	83	0.0	29.0
July	20.1	8.2	0.6348	100.7	1.3	131	77.9	0.0	53.0
August	19.2	7.7	0.6256	95.9	1.2	115	82.6	0.0	32.4
September	15.3	5.4	0.5877	75.2	1.04	78	72.3	0.0	5.9
October	8.9	2.4	0.5349	42.2	0.95	40	65.4	25.3	0.0
November	2.7	0.4	0.4994	11.8	0.8	9	71.8	62.3	0.0
December	-3.2	0.0	0.4924	0.0	0.76	0	57.6	57.6	0.0
TOTAL		35.9	1.07			590.4	793.4	325.08	122.10

TOTAL WATER DEFICIT = 122.10 mm

TOTAL WATER SURPLUS (SURPLUS - DEFICIT) = 202.98 mm

NOTES: 1. Precipitation and Temperature data from the EGBERT STATION (Station No.6110) Environment Canada Station Data 2. Latitude adjustment factors determined based on site latitude assuming 12 hours of sunlight per day for 30 days



## Pre-Development Water Balance - Wetland 1 Thornthwaite & Mather Method

Project Name: Ida Street Project Number: 1060-5590 Created By: HR Checked By: NCO Date: 5/15/2024

Project Name: Ida Street

		Location:	Dundalk					
			Catchment Su	mmary				
TOTAL SITE AREA (m²)	121,100							
Land Description Factors	Pre-S1	Pre-G2						
Parcels Description (Landuse, Soil Type)	Fields	Meadow						
Topography - flat/rolling/hilly	0.2	0.2						
Topography - forested	0.0	0.0						
Soils	0.4	0.4						
Cover - cultivated/woodland	0.1	0.1						
Sum (Infiltration Factor)	0.7	0.7						
Soil Moisture Capacity (mm)	175	200						
Catchment Area (m²)	105,400	15,700						
Impervious Coefficent	0	0						
Land Use	Pre-\$1	Pre-G2						
Total Impervious Area (m²)	0	0						
Percentage of Impervious Area (%)	0%	0%						
Total Pervious Area (m²)	105,400	15,700						
Percentage of Pervious Area (%)	100%	100%						

Catchment ID	Pre-S1												
	•	•		Evapotransp	iration/Evapor	ation Analysis							
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation (P)	55	45	48	62	74	83	78	83	72	65	72	58	793
Adjusted Potential Evapotranspiration (APET)	0	0	0	29	76	112	131	115	78	40	9	0	590
P-APET	55	45	48	33	-2	-29	-53	-32	-6	25	62	58	203
Change in Storage	0	0	0	0	-2	-29	-53	-32	-6	25	62	34	122
Storage (S) (mm)	175	175	175	175	173	144	91	59	53	78	141	175	
				Pervious Are	a Infiltration/Ru	noff Analysis							
Water Surplus (mm)	55	45	48	33	0	0	0	0	0	0	0	23	203
Potential Infiltration (I) (mm)	38	31	34	23	0	0	0	0	0	0	0	16	142
Potential Direct Surface Water Runoff (R) (mm)	16	13	14	10	0	0	0	0	0	0	0	7	61
			Imperviou	ıs Area Evapotr	anspiration/Evo	aporation/Runc	off Analysis						
Impervious Evapotranspiration/Evaporation (mm)	0	0	0	9	11	12	12	12	11	10	11	0	88
Impervious Runoff (mm)	55	45	48	52	63	71	66	70	61	56	61	58	705
				Comb	oined Water Bo	lance						•	
Pervious ET (m <sup>3</sup> )	0	0	0	3065	7978	11805	13792	12123	8246	4225	996	0	62230
Impervious ET (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0
Pervious Runoff (m³)	1730	1413	1515	1028	0	0	0	0	0	0	0	732	6418
Impervious Runoff (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0
Pervious Infiltration (m³)	4036	3298	3534	2399	0	0	0	0	0	0	0	1709	14976
Impervious Infiltration (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0

Catchment ID	Pre-G2												
				Evapotransp	iration/Evaporo	ation Analysis							
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation (P)	55	45	48	62	74	83	78	83	72	65	72	58	793
Adjusted Potential Evapotranspiration (APET)	0	0	0	29	76	112	131	115	78	40	9	0	590
P-APET	55	45	48	33	-2	-29	-53	-32	-6	25	62	58	203
Change in Storage	0	0	0	0	-2	-29	-53	-32	-6	25	62	34	122
Storage (S) (mm)	175	175	175	175	173	144	91	59	53	78	141	175	
	-			Pervious Are	a Infiltration/Ru	noff Analysis							
Water Surplus (mm)	55	45	48	33	0	0	0	0	0	0	0	23	203
Potential Infiltration (I) (mm)	38	31	34	23	0	0	0	0	0	0	0	16	142
Potential Direct Surface Water Runoff (R) (mm)	16	13	14	10	0	0	0	0	0	0	0	7	61
			Imperviou	s Area Evapotr	anspiration/Evo	aporation/Runc	off Analysis						
Impervious Evapotranspiration/Evaporation (mm)	0	0	0	9	11	12	12	12	11	10	11	0	88
Impervious Runoff (mm)	55	45	48	52	63	71	66	70	61	56	61	58	705
				Comb	oined Water Ba	lance							
Pervious ET (m <sup>3</sup> )	0	0	0	457	1188	1758	2054	1806	1228	629	148	0	9270
Impervious ET (m <sup>3</sup> )	0	0	0	0	0	0	0	0	0	0	0	0	0
Pervious Runoff (m³)	258	211	226	153	0	0	0	0	0	0	0	109	956
Impervious Runoff (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0
Pervious Infiltration (m³)	601	491	526	357	0	0	0	0	0	0	0	255	2231
Impervious Infiltration (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0

		Pre-Developme	ent Water Balance Summary			
Pre-Development Evapotranspiration	71500	m³/yr	590.4	mm/yr		
Pre-Development Infiltration	17206	m³/yr	142.1	mm/yr		
Pre-Development Runoff	7374	m³/yr	60.9	mm/yr		

NOTES:



### Post-Development Water Balance - Wetland 1

Thornthwaite & Mather Method

Project Name: Ida Street Project Number: 1060-5590 Created By: HR Checked By: NCO Date: 5/15/2024

Ida Street Project Name: Dundalk Location: TOTAL SITE AREA (m²) 115,000 Land Description Factors UCTL-SV2 POST-S1 SWMF-SV Single Family homes, park Rear Lots Parcels Description (Landuse, Soil Type) Topography - flat/rolling/hilly Topography - forested block 0.2 0.2 0.2 0 0.4 0.4 0.4 Cover - cultivated/woodland 0.6 0.6 0.6 Sum (Infiltration Factor) Soil Moisture Capacity (mm) 100 100 100 Catchment Area (m²) Impervious Coefficent 4,100 98,100 12,800 50% 58% 50% Land Use SWMF-SV UCTL-SV2 POST-S1 Total Impervious Area (m²) 2050 50% 56898 6400 50% Percentage of Impervious Area (%) Total Pervious Area (m²) 2,050 41,202 6,400 Percentage of Pervious Area (%) 42% 50%

Catchment ID	UCTL-SV2												
		•	Е	vapotranspiration/Ev	/aporation	Analysis							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation (P)	55	45	48	62	74	83	78	83	72	65	72	58	793
Adjusted Potential Evapotranspiration (APET)	0	0	0	29	76	112	131	115	78	40	9	0	590
P-APET	55	45	48	33	-2	-29	-53	-32	-6	25	62	58	203
Change in Storage	0	0	0	0	-2	-29	-53	-32	-6	25	62	34	122
Storage (S) (mm)	100	100	100	100	98	69	16	-16	-22	3	66	100	
			F	Pervious Area Infiltrati	ion/Runoff	Analysis							
Water Surplus (mm)	55	45	48	33	0	0	0	0	0	0	0	23	203
Potential Infiltration (I) (mm)	33	27	29	20	0	0	0	0	0	0	0	14	122
Potential Direct Surface Water Runoff (R) (mm)	22	18	19	13	0	0	0	0	0	0	0	9	81
			Impervious A	rea Evapotranspiratio	on/Evapord	ition/Runoff An	nalysis						
Impervious Evapotranspiration/Evaporation (mm)	0	0	0	9	11	12	12	12	11	10	11	0	88
Impervious Runoff (mm)	55	45	48	52	63	71	66	70	61	56	61	58	705
				Combined Wa	ter Balance	9							
Pervious ET (m <sup>3</sup> )	0	0	0	60	155	230	268	236	160	82	19	0	1210
Impervious ET (m³)	0	0	0	19	23	26	24	25	22	20	22	0	181
Pervious Runoff (m <sup>3</sup> )	45	37	39	27	0	0	0	0	0	0	0	19	166
Impervious Runoff (m³)	112	92	98	107	129	145	136	144	126	114	125	118	1446
Pervious Infiltration (m <sup>3</sup> )	67	55	59	40	0	0	0	0	0	0	0	28	250
Impervious Infiltration (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0

Catchment ID	POST-S1												
	•	•		Evapotranspiration/E	vaporation	Analysis							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation (P)	55	45	48	62	74	83	78	83	72	65	72	58	793
Adjusted Potential Evapotranspiration (APET)	0	0	0	29	76	112	131	115	78	40	9	0	590
P-APET	55	45	48	33	-2	-29	-53	-32	-6	25	62	58	203
Change in Storage	0	0	0	0	-2	-29	-53	-32	-6	25	62	34	122
Storage (S) (mm)	100	100	100	100	98	69	16	-16	-22	3	66	100	
				Pervious Area Infiltrat	ion/Runoff .	Analysis							
Water Surplus (mm)	55	45	48	33	0	0	0	0	0	0	0	23	203
Potential Infiltration (I) (mm)	33	27	29	20	0	0	0	0	0	0	0	14	122
Potential Direct Surface Water Runoff (R) (mm)	22	18	19	13	0	0	0	0	0	0	0	9	81
	-		Impervious A	rea Evapotranspirati	on/Evapora	ition/Runoff A	nalysis						
Impervious Evapotranspiration/Evaporation (mm)	0	0	0	9	11	12	12	12	11	10	11	0	88
Impervious Runoff (mm)	55	45	48	52	63	71	66	70	61	56	61	58	705
				Combined Wo	ter Balance	9							
Pervious ET (m <sup>3</sup> )	0	0	0	1198	3118	4615	5391	4739	3223	1652	389	0	24327
Impervious ET (m³)	0	0	0	526	631	708	665	705	617	558	613	0	5023
Pervious Runoff (m <sup>3</sup> )	901	737	789	536	0	0	0	0	0	0	0	382	3345
Impervious Runoff (m³)	3112	2543	2725	2979	3574	4014	3768	3995	3497	3163	3472	3277	40120
Pervious Infiltration (m³)	1352	1105	1184	804	0	0	0	0	0	0	0	573	5018
Impervious Infiltration (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0

Catchment ID	SWMF-SV												
			I	Evapotranspiration/Ev	aporation.	Analysis							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation (P)	55	45	48	62	74	83	78	83	72	65	72	58	793
Adjusted Potential Evapotranspiration (APET)	0	0	0	29	76	112	131	115	78	40	9	0	590
P-APET	55	45	48	33	-2	-29	-53	-32	-6	25	62	58	203
Change in Storage	0	0	0	0	-2	-29	-53	-32	-6	25	62	34	122
Storage (S) (mm)	100	100	100	100	98	69	16	-16	-22	3	66	100	
	-		ı	Pervious Area Infiltrati	on/Runoff ,	Analysis							
Water Surplus (mm)	55	45	48	33	0	0	0	0	0	0	0	23	203
Potential Infiltration (I) (mm)	33	27	29	20	0	0	0	0	0	0	0	14	122
Potential Direct Surface Water Runoff (R) (mm)	22	18	19	13	0	0	0	0	0	0	0	9	81
			Impervious A	rea Evapotranspiratio	n/Evapora	tion/Runoff An	alysis						
Impervious Evapotranspiration/Evaporation (mm)	0	0	0	9	11	12	12	12	11	10	11	0	88
Impervious Runoff (mm)	55	45	48	52	63	71	66	70	61	56	61	58	705
	•	•		Combined Wa	ter Balance	;							
Pervious ET (m <sup>3</sup> )	0	0	0	186	484	717	837	736	501	257	60	0	3779
Impervious ET (m <sup>3</sup> )	0	0	0	59	71	80	75	79	69	63	69	0	565
Pervious Runoff (m <sup>3</sup> )	140	114	123	83	0	0	0	0	0	0	0	59	520
Impervious Runoff (m³)	350	286	307	335	402	452	424	449	393	356	391	369	4513
Pervious Infiltration (m³)	210	172	184	125	0	0	0	0	0	0	0	89	779
Impervious Infiltration (m³)	0	0	0	0	0	0	0	0	0	0	0	0	0

Post-Development Water Balance Summary						
Post-Development Evapotranspiration	35084	m³/yr	305.1	mm/yr	0.0097	L/s
Post-Development Infiltration	6047	m³/yr	52.6	mm/yr	0.0017	L/s
Post-Development Runoff	1612	m³/vr	140	mm/vr	0.0004	1/s

NOTES:

According to the Proposed Wetland Drainage Plan.
 The infiltration factor is determined using the MECP Methodology outlined in SWM 2003 Manual.

> Surplus water is unavailable for runoff and recharge in months where water losses from AET exceed precipitation inputs. > Soil Moisture Capacity is at a maximum in April.



### Water Balance Summary - Wetland 1

Thornthwaite & Mather Method

Project Name: Ida Street Project Number: 1060-5590 Created By: HR

Checked By: NCO Date: 5/15/2024

Project Name: Ida Street
Location: Dundalk

Characteristic	Pre-Development	Post-Development	% Change (Pre to Post)
Precipitation (mm/yr)	793.40	793.40	0%
Water Surplus (mm/yr)	202.98	202.98	0%
Evapotranspiration (mm/yr)	590.42	305.08	-48%
Natural Infiltration (mm/yr)	142.08	52.58	-63%
Total Infiltration (mm/yr)	142.08	52.58	-63%
Total Runoff (mm/yr)	60.89	14.02	-77%



Project Name: Ida Street

% Change

(Pre to Post)

-5%

-51%

-65%

-78%

-69%

Water Balance Summary - Wetland 1 Project Number: 1060-5590

Thornthwaite & Mather Method Created By: HR Checked By: NCO

11160

5762

16922

Date: 5/15/2024

Project Name: Location:

Precipitation (m³/yr)

Total Runoff (m³/yr)

Evapotranspiration (m³/yr) Total Infiltration (m³/yr)

Total Runoff + Infiltration (m³/yr)

**Ida Street** Dundalk

91241

35084

6047

1612

7659

LOCATION.		Donadik		
Characteristic	Pre-Development	Post-Development	Change (Pre to Post)	

96081

71500

17206

7374

24581



Project: Ida Street **Project No:** 1060-5590 Modelled By: HR/NCO **Date Created: 2024.05.10** 

### **Design Storm Determination Project Name: Ida Street** Water Balance/Water Budget Assessment

Internal Area 11.09 ha Internal Infiltration Deficit 16,922 m<sup>3</sup>/yr Internal Infiltration Target 153 mm/yr

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	12.5	13.5	12.4	12.8	12.9	13.3	14.8	92
>= 5 mm	8.8	9.1	8.7	8.8	8.4	9.2	9.8	63
>= 10 mm	3.7	5.1	4.5	4.5	4.5	4.8	4.2	31
>= 25 mm	1.8	2.3	3	2.7	2.9	2.3	1.8	17

### **Available Precipitation**

Storm Event (mm)	Total Days Per Year	Incremental Precipitation (mm/yr)	Cumulative Precipitation (mm/yr)
0.2	92	18.4	18.4
5	63	314.0	332.4
10	31	313.0	645.4
25	17	420.0	1065.4
Total	203	1065.4	

#### Annual Mitigation Provided by SWM Pond Outlet to Wetland

Area of Contributing to SWMFSV Depth of Rainfall Directed to Wetland Equivalent Annual Cumulative Precipitation:

2.20 mm/event Approx. runoff from 3mm event

149 mm/yr 16,554 m<sup>3</sup>/yr

Total Proposed Volume Directed to Wetland from SWMF-SV Total Proposed Volume Directed to Wetland (SWMF-SV + POST-S1 + UCTL-SV2)

110900 m²

24,213 m<sup>3</sup>/yr (16,554 +7,659 m<sup>3</sup>/yr)

Characteristic	Pre-	Post-	Post-Development with	% Change
	Development	Development	Mitigation Measures	(Pre to Post) with Mitigation
Total Runoff + Infiltration (m³/yr)	24581	7659	24213	-1%

# LIST OF FIGURES

Figure 1: Site Location Plan

Figure 2: Draft Plan

Figure 3: Preliminary Grading Plan
Figure 4: General Site Servicing Plan

Figure 4A: Sanitary Sewer Plan Layout & Inverts

Figure 4B: Storm Sewer Plan Layout & Inverts

Figure 5: Pre-Development Drainage Conditions
Figure 6: Post-Development Drainage Conditions

Figure 7: Preliminary SWMF-GR (North Pond)
Figure 8: Preliminary SWMF-SV (South Pond)



 $= \frac{\text{SUBJECT}}{\text{LANDS}}$ 

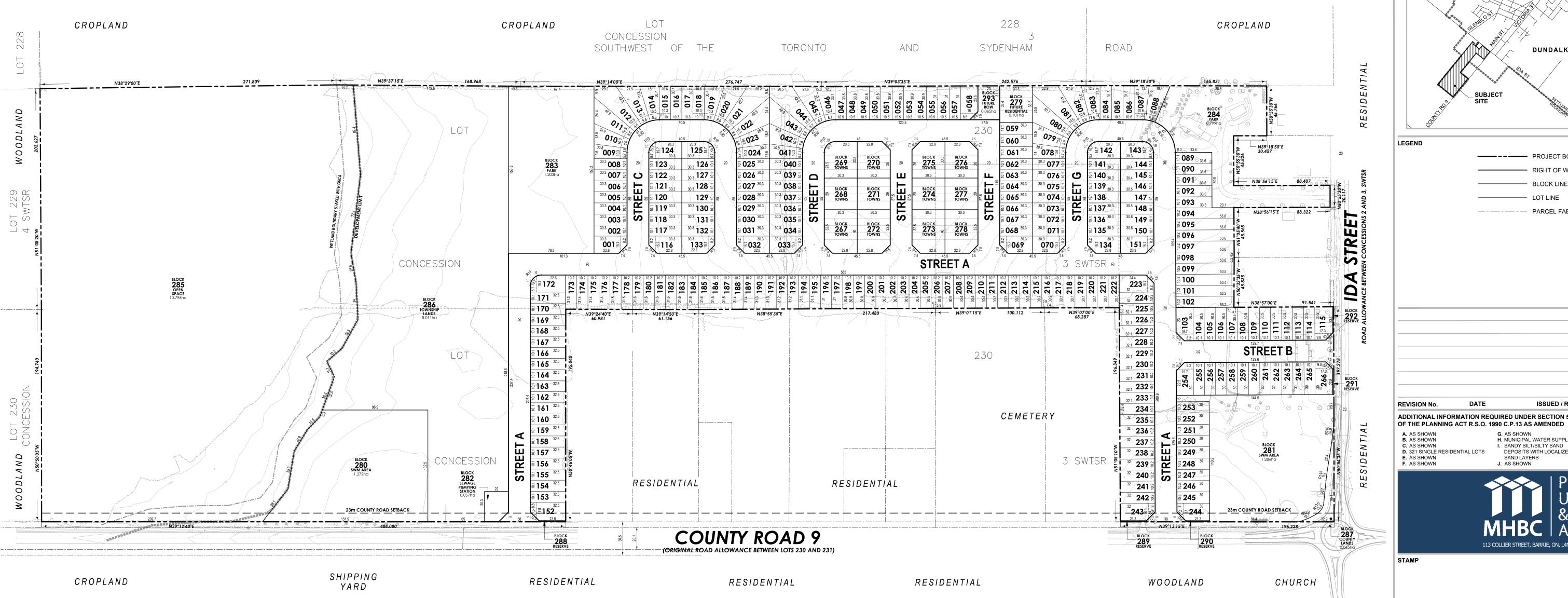
Drawing

IDA STREET DEVELOPMENT TOWN OF DUNDALK

SITE LOCATION PLAN

70 HURON STREET, SUITE 100 COLLINGWOOD, ON, L9Y 4L4 705-446-3510 www.cfcrozier.ca

J.L.A/A.M. 1060-5590 Date 2024/05/10 FIG. 1



## LAND USE SUMMARY

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS	001-266	266	9.454ha
TOWNHOUSE - 6.5m UNITS	267-278	52	1.218ha
FUTURE RESIDENTIAL	279	3	0.101ha
STORMWATER MANAGEMENT AREA	280, 281		2.558ha
SEWAGE PUMPING STATION	282		0.057ha
PARK	283, 284		2.002ha
OPEN SPACE	285		10.796ha
TOWNSHIP LANDS	286		5.011ha
COUNTY LANDS	287		0.065ha
0.3m RESERVE	288-292		0.003ha
FUTURE RIGHT OF WAY	293		0.065ha
RIGHT OF WAY	A, B, C, D, E, F, G		4.610ha
TOTALS		321	35.940ha

# LEGAL DESCRIPTION PART OF LOTS 229 AND 230 CONCESSION 3, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD GEOGRAPHIC TOWNSHIP OF PROTON TOWNSHIP OF SOUTHGATE COUNTY OF GREY **OWNER'S CERTIFICATE** I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL. SURVEYOR'S CERTIFICATE I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY KEY PLAN SUBJECT SITE DUNDALK SUBJECT 0 0.4 0.8 1.2 1.6 **LEGEND** PROJECT BOUNDARY LINE RIGHT OF WAY LINE BLOCK LINE ——— LOT LINE —-—-- PARCEL FABRIC



ISSUED / REVISION

BY

DATE	APR. 30, 2024
FILE No.	15184AC
SCALE	1:1,800 (ARCH D)
DRAWN BY	M.M.
CHECKED BY	K.C.
OTHER	

PROJECT

**REVISION No.** 

DATE

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17)

**FLATO IDA** FLATO IDA DUNDALK INC. 3621 HIGHWAY 7 EAST, SUITE 503 MARKHAM, ON L3R 0G6 P:(905) 479-9292 F:(905) 429-9165 WWW.FLATOGROUP.COM

DWG No.

FILE NAME DRAFT PLAN OF SUBDIVISION

1 of 1

CONVERTED TO FEET BY DIVIDING BY 0.3048 N:\Southgate\752212 Ida Street, Dundalk — 15184AC\Drawings\Draft Plan\CAD\15184AC — Draft Plan — 2024—04—30.dwg

