EXECUTIVE SUMMARY

The Town of Markham through OPA #71 has amended its Official Plan to change the designation of the Langstaff Planning Area to an Urban Growth Centre. A Master Planning Study has been prepared that has developed a Land Use / Built Form for the Langstaff Area which will form the basis for a Secondary Plan. This Master Servicing Plan provides an analysis of the existing infrastructure and its ability to service the Master Plan and also develops a servicing concept to support the Master Plan.

The Langstaff Planning area within Langstaff Gateway comprises approximately 47 ha located between Yonge Street, Hwy. 407, Bayview Ave. and Holy Cross Cemetery. Significant natural features include Pomona Mills Creek which crosses from north to south and a woodlot at the eastern limit of the site.

The existing land uses vary from small scale and low density industrial with outside storage to commercial to residential. A CN rail line crosses the site in a north south direction which supports a GO station, also located within the site.

The Master Plan proposes a very urban mixed use community which incorporates residential, office, retail, civic and open space uses. The proposed density of the Master Plan exceeds 1000 persons and jobs/ha.

The existing infrastructure within the site is for the most part not adequate to service the Master Plan. The exceptions are a regional trunk watermain and regional trunk sanitary sewer which need to remain in service, however, some re-alignment will be required. The regional watermain has adequate capacity to service the proposed development, however, the trunk sanitary sewer does not. Additional analysis will need to be undertaken to determine how much of the site could be serviced by this trunk sewer sanitary.

Conceptual servicing schemes to support the Master Plan have been developed and are summarized below.

Water Distribution System

The existing pressure district 6 (PD6) trunk main through the site and the existing pressure district 5 (PD5) main on Yonge Street have capacity to service the site. An interface between PD5 and PD6 will be created west of the tracks. Interconnections between two pressure districts will be controlled using pressure reducing valves.

Wastewater Collection System

The existing regional trunk has limited to no excess capacity according to the Region of York. A detailed analysis to be completed by the Region will be required to determine what portion, if any, of the site can be serviced by this trunk sewer. To service the remaining portions of the site, a pumping station and forcemain to convey wastewater to the existing trunk sewer east of Bayview in the vicinity of German Mills Creek is proposed. The Region has advised that this trunk sewer has capacity or that capacity can be found through upstream diversion.

Storm Drainage Scheme

The proposed storm drainage scheme consists of local storm sewers, continuous road grades and a major system sewer under the CN railway to direct flows from the entire site to Pomona Mills Creek.

Stormwater Management will be practiced to reduce peak flows below the current rates, provide TRCA Enhanced level water quality control which will be an improvement in water quality and provide extended duration storage to mitigate downstream erosion. Storage to achieve these objectives will be provided in the form of underground storage tanks located on each development block and also under parks to provide an end of pipe solution. Other source controls or Low Impact Development methods such as green roofs will also be considered as the detailed site plans are developed.

Pomona Mills Creek which has been partially enclosed and constricted through the site will be enhanced using natural channel design principles. This will result in an environmental benefit for the site.

The Master Plan also outlines a phasing scheme for the development of the site. This report provides a description on a phase by phase basis of how each phase can be serviced and concludes that the servicing schemes developed can adapt to a phased implementation.

Water conservation techniques, which go beyond those specified in the current plumbing code, should be reviewed and where appropriate, incorporated into the design of the various buildings on this site. Water reuse strategies such as using captured rainwater for irrigation, and toilet flushing can be examined but will likely required changes to the applicable regulations before they would be accepted. The use of captured runoff in cooling towers of a district energy system would both improve the site water balance and reduce the use of potable water.

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APPENDIX B – Sanitary Sewer Design

APPENDIX C – Storm Sewer Design

APPENDIX D – Storm Water Modelling

1.0 INTRODUCTION

The Town of Markham through OPA #71 has amended its Official Plan to change the designation of the Langstaff Planning Area to an Urban Growth Centre, in keeping with the Provincial Growth Plan for the Greater Golden Horseshoe.

A Master Planning Study has been prepared that has developed a land use / built form for the Langstaff Planning area. This Land Use & Built Form Master Plan, (Calthorpe Associates and Ferris + Associates Inc., June 2009) will form the basis for the Secondary Plan for the Langstaff Gateway. This Master Servicing Plan provides an analysis of the ability of the existing infrastructure to support the land use / built form developed in the Master Plan and also outlines a servicing concept for the land use / built form scenario recommended by the Master Plan in support of the Secondary Plan.

It is intended that the servicing concepts developed in this report would be developed in additional detail through the draft plan or block plan process after the approval of the Secondary Plan.

2.0 SITE DESCRIPTION

2.1 Location

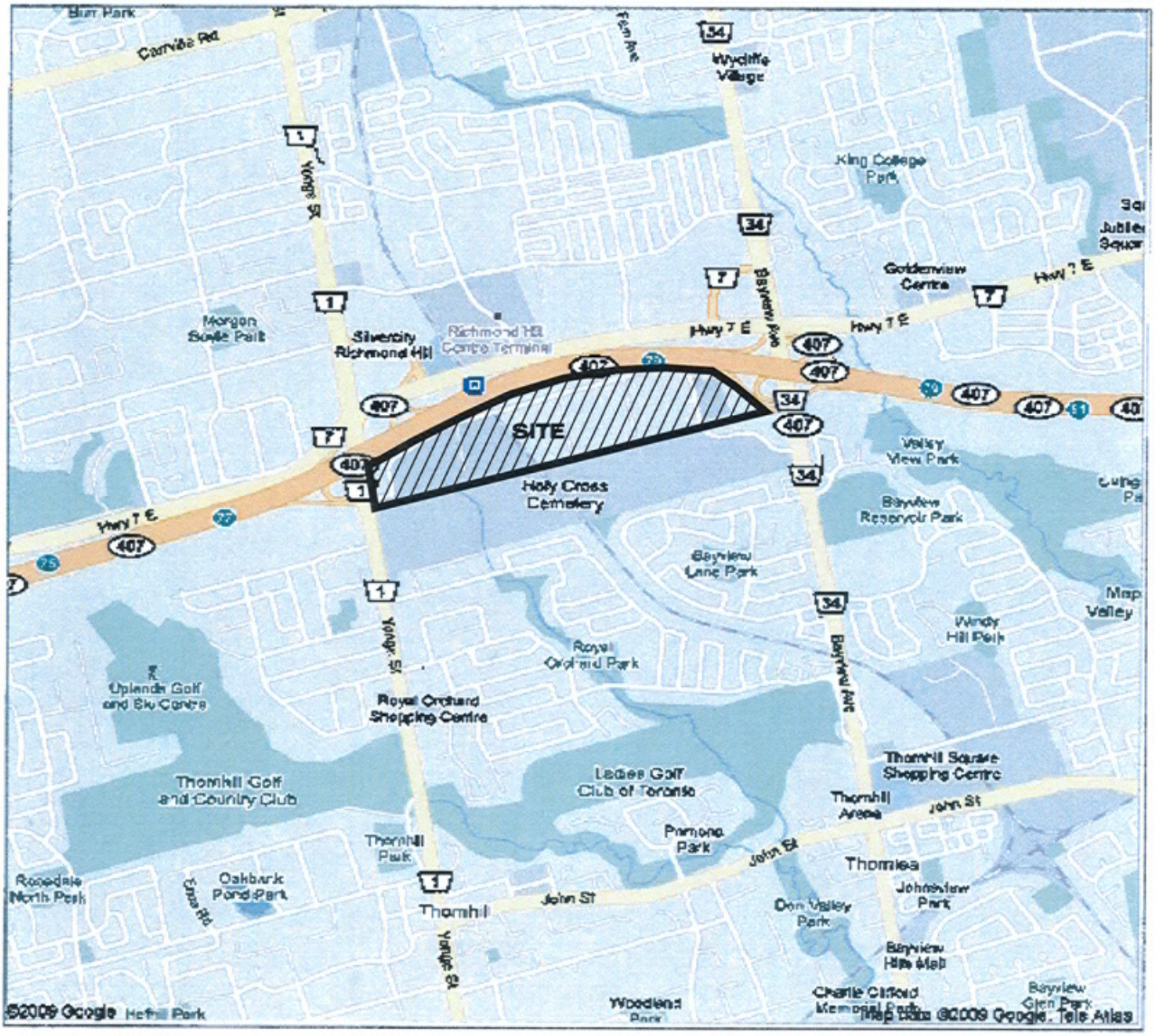
The site is bounded by Highway 407 to the north, the Holy Cross Cemetery to the south, Bayview Avenue to the east and Yonge Street to the west. It has an area of approximately 47 ha. It is located in the Town of Markham except for the small portion of the site located north of Langstaff Road which is within the Town of Richmond Hill. From a servicing perspective this report has not considered any impacts that may result from a municipal boundary that crosses the site. Refer to Figure 1 for the location plan.

2.2 Existing Land Use

The Langstaff Planning Area of the Town of Markham is an older, existing "Brownfield" area, consisting mostly of small scale industrial with open storage, some residential uses and the Langstaff Go Station. Langstaff Rd., which runs east west through the site, provides access to Yonge St. and Bayview Ave. Three dead end local streets Ruggles Ave., Cedar Ave., and Essex Ave. run south from Langstaff Rd. to provide access to various lots and blocks. The site is divided by an active north south CN railway. Approximately one third of the site is located west of these tracks.

2.3 Topography

The site generally drains north to south with gentle to moderate slopes. Pomona Mills Creek is the main topographic feature of the site. It runs north to south through the western portion of the site. The lands



TITLE	LANGSTAFF GATEWAY LOCATION PLAN		
	MMM GROUP 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca		
CHECKED JCK	DATE NOV. 23, 2009	PROJ. No.	10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No.	1

have a secondary slope towards Pomona Mills Creek and all eventually drain to this creek at some point downstream. Lands west of the CN railway generally drain directly to the creek before it leaves the site however lands east of the tracks sheet drain south into Holy Cross Cemetery.

3.0 LAND USE AND BUILT FORM MASTER PLAN

3.1 Proposed Land Use

The Land Use / Built Form Master Plan proposes a very urban, mixed use community which incorporates residential, office, retail, civic and open space uses. These land uses are contained within a varying built form that incorporates point towers, mid rise and low rise components within each development block. The Land Use & Built Form Master Plan is shown in Figure 2.

Table 1 outlines the land use summary and unit count has been taken from the Master Plan and used in the analysis of the existing infrastructure and the development of proposed servicing concepts.

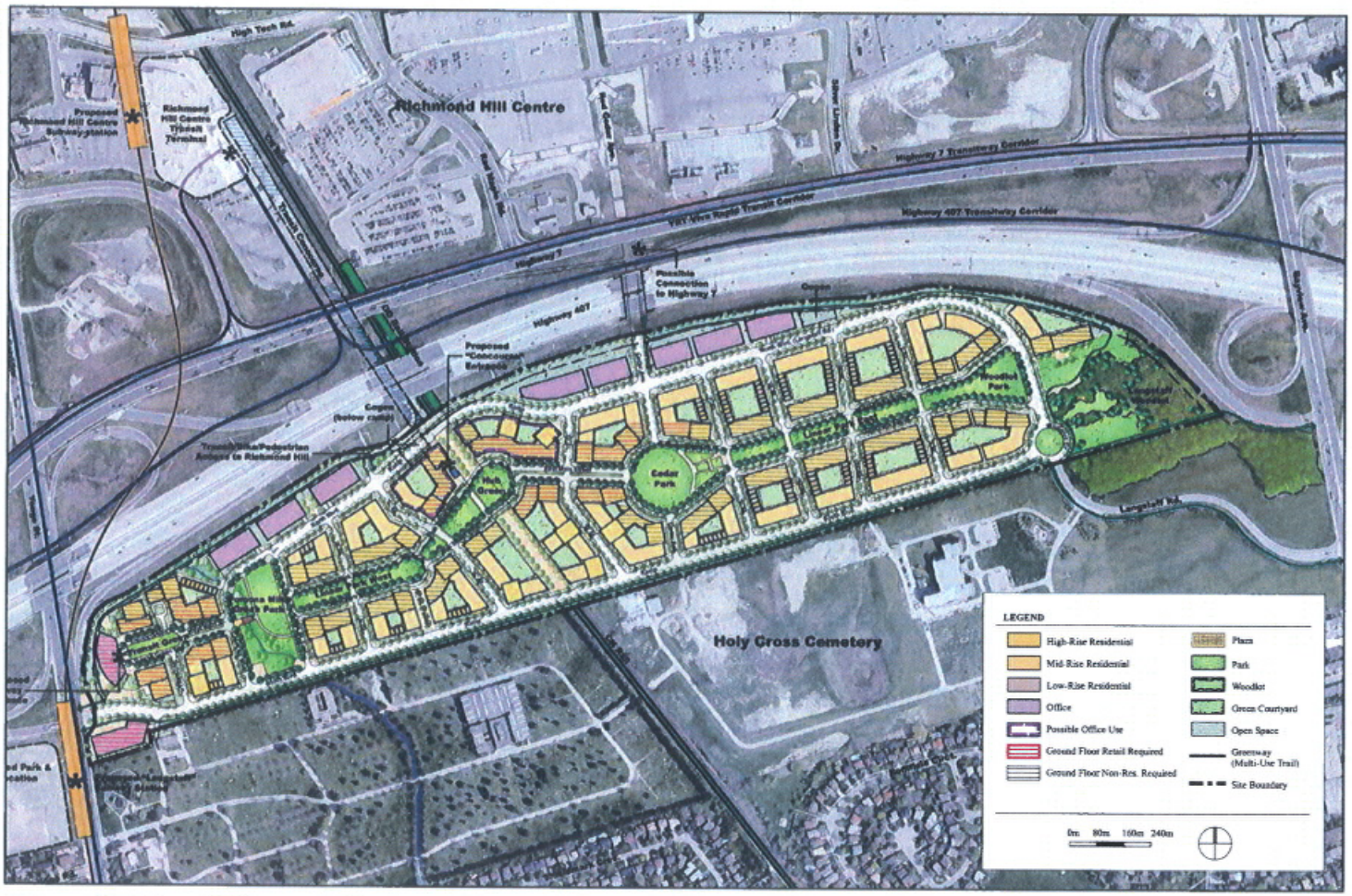
Table 1 Land Use Summary and Unit Cost

Land Use Summary	
Residential Floor Space	1,467,520 m^2
Retail Floor Space	35,670 m^2
Civic Floor Space	13,275 m^2
Parks & Open Space	12.19 ha
Total Land Area	47.02 ha
Employment	
Office Floor Space	217,850 m^2
Jobs Created	16,470
Employment Density	350 jobs/ha
Residential	
Total Residential Units	15,140
Population	31,790
Residential Density	676 p/ha
Combined Density	1026 p/ha

3.2 Development Timing

The Master Plan does not prescribe or suggest a schedule or rate of growth for the development of this community. It is however, important to recognize that the development of this community is a very long

LAND USE & BUILT FORM MASTER PLAN



The Langstaff Land Use and Built Form Master Plan (above) is a true mixed-use plan that focuses density, office and retail at the two transit nodes that access the subway and rail stations.

FIG. 2

term project with a duration of at least 25 years. This has an impact on the proposed servicing concepts in that criteria, standards, policies and codes will likely be revised several times through out the duration of this project. In this report current criteria, standards and polices have been addressed. When the detailed servicing reports to support each block or precinct plan are completed, the current requirements can be incorporated.

4.0 EXISTING INFRASTRUCTURE

4.1 Water Distribution System

The site is located within the Region of York's Pressure District 5 and 6. Pressure District 6 is currently serviced by a 1050 mm regional watermain that crosses Highway 407 between Yonge Street and the CN rail tracks, and runs east across the north side of the site on Langstaff Rd. then diverts south along Essex Ave. and then runs east along the north edge of Holy Cross Cemetery and continues to Bayview Avenue where it terminates at the Bayview reservoir. An existing 300 mm watermain within Pressure District 5, on Yonge Street, also feeds the site. There are existing local watermains on each existing street that service the local businesses within the study area. Figure 3 illustrates the existing water infrastructure.

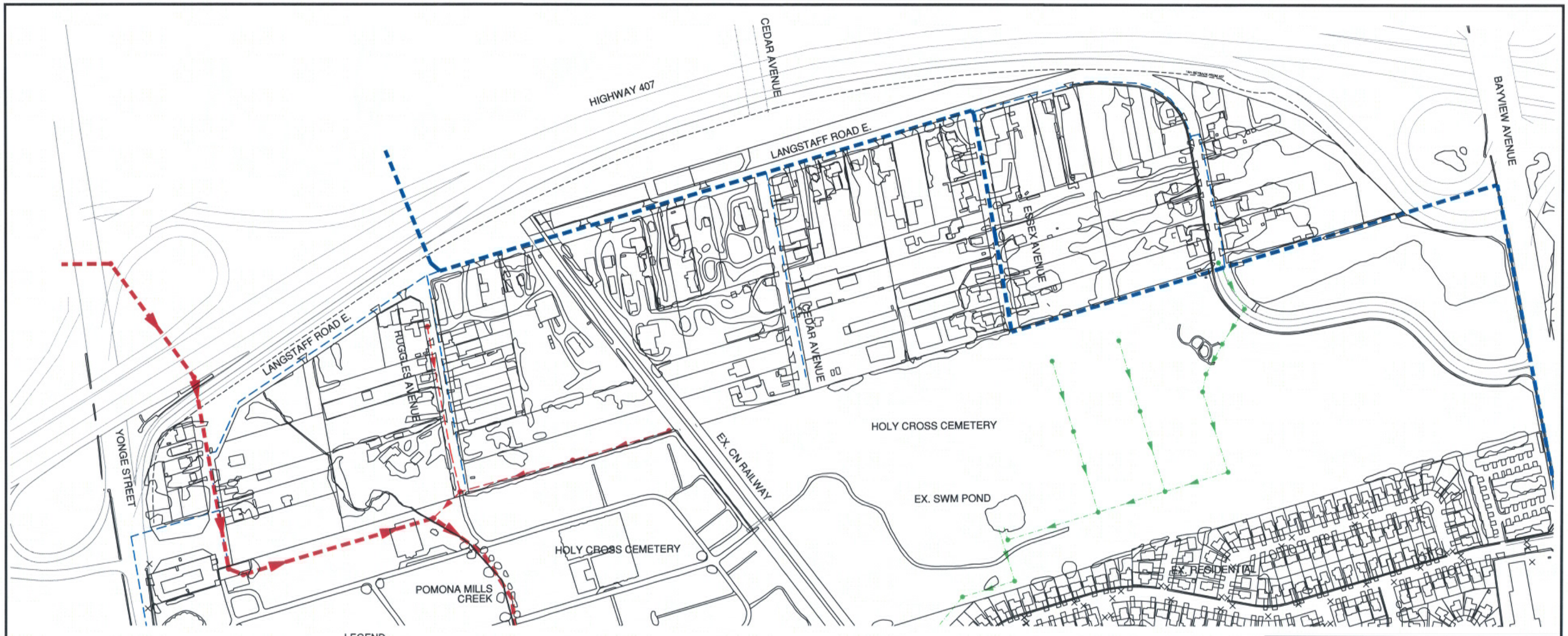
Based on Region of York estimations, the existing 1050 mm trunk watermain has adequate supply to service the proposed development. The remainder of the onsite Town of Markham watermains are not adequate to service the proposed development and will be abandoned and removed.

4.2 Wastewater Collection System

A 600 mm regional sanitary trunk sewer located just east of Yonge Street flows north south, through the western part of the site and continues south through Holy Cross Cemetery. The Region has advised that this sewer has limited capacity and that they will need to complete additional modelling to determine the extent if any of available capacity. An alternative sanitary outlet is therefore required.

Internal to the site, there are no local sanitary sewers east of the CN Rail tracks. The businesses and residences in that area are serviced by septic tanks and weeping tile beds. Local sanitary sewers exist west of the CN Rail tracks which service a portion of that area and convey flows to the existing 600 mm sanitary trunk sewer. The remaining areas west of the tracks are serviced by septic tanks and tile beds. These existing local sewers and private systems will not support the proposed development and will need to be abandoned and removed. Figure 3 illustrates the existing sanitary sewer system.

Looking at the areas adjacent to the site, a 1050 mm regional sanitary trunk sewer runs south across Highway 407 in the vicinity of German Mills Creek east of Bayview Avenue and continues to the east. This trunk sewer is the only other significant sanitary sewer within a reasonable distance of the site.



LEGEND

- EX. SANITARY SEWER
- EX. TRUNK SANITARY SEWER
- EXISTING LOCAL WATERMAIN
- EXISTING 1050Ø WATERMAIN
- EX. STORM SEWER

TITLE: LANGSTAFF GATEWAY

EXISTING INFRASTRUCTURE

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DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	3

4.3 Storm Drainage Scheme

The storm drainage system within the site consists of municipally owned roads side ditches and culverts and privately owned swales. These systems convey drainage to various outlets such as Pomona Mills Creek for lands west of the tracks and Holy Cross Cemetery at the south ends of Cedar Ave. and Essex Ave. Along the north limit of the site a storm sewer conveys runoff from 407 to Pomona Mills Creek. The existing storm drainage system will not support the proposed development and will be abandoned and replaced with a piped storm sewer system to convey runoff from the minor storm. Overland flow to convey runoff from more intense storms will be accommodated with continuous roads grades to approved outlets.

The alignment of Pomona Mills Creek within the site has been significantly altered over time. Portions of it have been enclosed and other sections severely constricted. The condition of this creek can be improved with the development of this site.

4.4 Stormwater Management

Stormwater management is not practised internal to the site. Runoff is simply conveyed via ditches, swales or as sheet flow to Pomona Mills Creek at the south limit of the site. The eastern portion of the site drains to an interim stormwater pond located within Holy Cross Cemetery. The Town of Markham has been granted an easement over portions of this stormwater pond and over the conveyance route to the pond. We understand from discussions with representatives from Holy Cross Cemetery that the use of the stormwater management pond on the cemetery land is an interim use until the tributary lands within the Langstaff Gateway area are re-developed. Regardless of the above, the stormwater management pond that currently exists within the cemetery would need to be retrofitted to provide current controls to service the developed site.

The developed site will need to incorporate a stormwater management system to control peak flows, address water quality concerns and mitigate the potential for downstream erosion.

5.0 PROPOSED SERVICING SCHEME

5.1 Water Distribution System

5.1.1 Existing Distribution System

The proposed Langstaff Gateway development currently has a 1050 mm diameter transmission water main running through the site. There is also a 300 mm diameter watermain on Yonge Street to the west of the site. The 1050 mm diameter transmission main is fed from the Richmond Hill reservoir (Pressure District 6 – PD6), which has a top water level of 263.65 m. The Yonge Street main is fed from the Dufferin reservoir (Pressure District 5 – PD5), which has a top water level of 230.12 m. Refer to Table 2 for the

recommended service elevation for each pressure district, which will supply water to the proposed development.

Table 2 – Reservoir Operating Ranges

Reservoir	Top Water Level (Operating HGL)	Recommended Service Elevation Range of Pressure Zones
Richmond Hill – PD6	263.65 m	193.5 m -228.5 m
Dufferin – PD5	230.12 m	160.0 m-195.0 m

5.1.2 Proposed Water Distribution System

Due to the proposed ground elevations for the Langstaff Gateway Development, it will be necessary to supply water to the site from Pressure District 5 and 6. The 1050 mm diameter transmission main will feed the east portion of the development to approximately 120 m west of the CN Railway with ground elevations ranging from 195 m to 210 m. The Yonge Street main will feed the west portion of the development from Pressure District 5 as the ground elevations range from 185 m to 195 m.

The proposed local PD6 watermains will be looped to ensure adequate flow and pressure during peak hour and maximum day plus fire demands. To provide security to the PD6 pressure zone, it is recommended that two connections be made to the existing 1050 mm watermain that crosses through the site.

For the PD5 portion of the site, it is proposed to have a primary connection from the 300 mm watermain on Yonge Street which will service the local distribution area under standard operating conditions. To provide a redundant supply in case of a watermain break or very high fire flow requirement, it is proposed to install a pressure reducing valve (PRV) from pressure zone 6. It is recommended that the PRV be set at a pressure elevation slightly below that of the typical operating pressure of the Yonge Street watermain. By setting the PRV set point below the normal operating pressure on the Yonge Street watermain, it would reduce the amount of water being supplied from the higher pressure zone and thus reduce the amount of wasted energy pumping water into the higher pressure zone.

Please see Figure 4 for the proposed watermain sizing for the site as well as the proposed location of the pressure reducing valve.

NOTE:
EX. 1050Ø WATERMAIN
TO BE RE-CONSTRUCTED
ALONG PROPOSED RIGHT-OF-WAY

HIGHWAY 407
CEDAR AVENUE
BAYVIEW AVENUE
NORTH BLVD. (LANGSTAFF ROAD)
SOUTH BLVD.
LANGSTAFF ROAD
YONGE STREET
EX. CN RAILWAY
1050Ø WM
PROP 300Ø WM
PROP 400Ø WM
PARK
PD5
PD6
HOLY CROSS CEMETERY
EX. SWM POND
EX. RESIDENTIAL
EX. POMONA MILLS CREEK
EX. 300Ø WM

LEGEND

- PROPOSED WATERMAIN
- PROPOSED PRESSURE REDUCING VALVE
- PRESSURE ZONE DIVIDE
- EXISTING WATERMAIN (TO BE REMOVED INTERNAL TO SITE)
- EXISTING 1050Ø WATERMAIN
- REALIGNED 1050Ø WATERMAIN

NOTE: WHERE WATERMAIN SIZES HAVE NOT BEEN LABELLED, WATERMAINS ARE 200mmØ.

TITLE: LANGSTAFF GATEWAY
PROPOSED WATER DISTRIBUTION SYSTEM

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DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	4

5.1.3 Water Distribution Modelling

Average Water Demands

The average water demands for the site have been calculated based on the Langstaff Gateway Site Development Summary dated June, 2009. The development summary indicates the expected residential populations, office area, and retail area divided into two areas (east of the CN Railway and west of the CN Railway). Table 3 indicates the populations and areas used to determine the average water demands. The Town of Markham standards for water distribution systems indicate an equivalent population of 150 people/ha for office and retail land uses.

Table 3 – Development Summary

	Residential Population (Persons)	Retail Employment Area (Ha)	Eq. Retail Population (Persons)	Office Employment Area (Ha)	Eq. Office Population (Persons)
West Side	11,230	2.6	260	10.9	1635
East Side	21,160	3.5	350	12.2	1830

Using the Town of Markham average daily water consumption demand rate of 386 L/capita/day, average day demands were calculated. For the side east if the CN Railway, the total average expected residential and commercial demands are 89.4 l/s and 9.2 l/s respectively. For the side west of the CN Rail ROW, the total average expected residential and commercial demands are 47.5 l/s and 8.1 l/s respectively

Modelling Criteria

The modelling criteria used to determine the capabilities of the proposed system were based on the Town of Markham's design criteria. The following criteria were used in our modelling:

- Peak Hour = 4.5 times average day for residential and 0.8 times average day for commercial/retail
- Maximum Day = 2.0 times average day for residential and 2.5 times average day for commercial/retail
- Minimum Hour = 0.7 times average day for both residential and commercial/retail
- Minimum pressure during a peak hour of 300 kPa (43.5 psi)
- Maximum pressure during a minimum hour of 700 kPa (100 psi)
- Minimum pressure during a maximum day plus fire demand of 140 kPa (20 psi)
- Fire Demand for residential = 7,000 l/min
- Fire Demand for commercial = 15,900 l/min

Roughness Coefficient ("C" Value)

As per Town of Markham Design Criteria, "C" values noted in Table 4 are supplied as the Hazen-Williams roughness coefficient for the various pipe sizes:

Table 4 – Hazen-Williams Roughness Coefficient	
Pipe Size	**"C" Value**
150 mm	100
200 & 250 mm	110
300 & 600 mm	120
over 600 mm	130

Modelling Results

The computer model used to analyze the proposed water distribution system was WATERWORKS, which is an iterative node balancing type program designed to simulate distribution networks. It has been assumed that the top water level in each of the reservoirs feeding this site will be available under normal operating conditions. To confirm this assumption and to determine the actual pressures under fire conditions, it is recommended that fire hydrant flow testing be completed prior to detailed design of the water distribution system.

The results of the peak hour distribution modelling are outlined in Table 5 below.

Table 5 – Peak Hour Modelling Summary

	Minimum Pressure		Maximum Pressure	
	Model	Node	Model	Node
Feed From 1050 Transmission Main – PD6	453 kPa (66 psi)	106	552 kPa (80 psi)	102
Feed from Yonge Street – PD5	328 kPa (48 psi)	215	421 kPa (61 psi)	203/212

As shown in the table above, the pressures as calculated in the model will meet the Town of Markham's requirements for the Peak Hour condition.

The minimum hour demand was modeled to determine if any areas within the proposed Langstaff Gateway development would have pressures that exceed 700 kPa. The results of the minimum hour distribution modelling are outlined in Table 6 below.

Table 6 – Minimum Hour Modelling Summary

	Minimum Pressure		Maximum Pressure	
	Model	Node	Model	Node
Feed From 1050□ Transmission Main – PD6	530 kPa (77 psi)	106	653 kPa (95 psi)	208
Feed from Yonge Street – PD5	346 kPa (50 psi)	210/215	436 kPa (63 psi)	212

For all fire flow conditions modeled, the proposed water distribution system will provide fire flows that exceed the Town of Markham's requirements for non-residential development of 265 l/s (15,900 l/min).

Copies of the water distribution modelling are provided in Appendix A.

5.1.4 Existing 1050 mm Regional Trunk Watermain

Based on the master plan, approximately 250 m of the existing 1050 mm watermain will need to be removed and approximately 330 m of 1050 mm watermain will need to be constructed to align the trunk watermain with the proposed road pattern. The existing 1050 mm watermain feeds a large area including Richmond Hill, as a result, the relocation of this watermain will require coordination with the Region of York so that water service is not disrupted. This would involve constructing the new section of the 1050 mm watermain, connecting to the existing watermain at off peak periods, and removing the old sections after completion.

5.2 Sanitary Sewer System

5.2.1 Sanitary Sewer Design Criteria

The sizing of the proposed local sanitary sewers has been based on the Town of Markham design criteria as outlined below.

- Average residential daily flow rate 365 l/capita/day
- Harman Peaking Formula
- Infiltration 0.26 l/s/ha
- Equivalent Population for non residential areas of 150 pp/ha

The sizing of the realigned trunk sewer has been based on the Region of York design criteria, as outlined below,

- Average daily flow rate 265 l/capita/day

- Harman Peaking Factor
- Infiltration 0.234 l/s/ha

5.2.2 Existing 600 mm Regional Trunk Sewer

This existing 600 mm regional sanitary trunk sewer will need to be re-aligned through the proposed development to match the current road pattern shown in the Master Plan. The 600 mm sewer will need to be re-directed at the northwest corner of the site, through the northern park block, and south along the internal street along the western side of Pomona Mills Creek Park. It would re-connect to the existing trunk at the south limit of the site.

5.2.3 Proposed Sanitary Sewer Distribution

The available capacity within the existing 600 mm sanitary trunk sewer according to the Region of York is not able to service the entire development. It is probable, but not confirmed, that only a small area of the west end of the site could be serviced by this existing trunk sewer. Although the entire area west of the CN Railway currently drains to the existing 600 mm sanitary trunk sewer, this trunk sewer was not designed to service the large increase in flow that is projected for this development.

The remaining area of the site that cannot be serviced by the existing 600 mm sanitary trunk sewer, will need to be serviced by the existing 1050 mm sanitary trunk sewer located approximately 400 m east of Bayview Avenue. To accomplish this, a sanitary pumping station at the low point in the site adjacent to Pomona Mills Creek, and a 750 mm forcemain will be required to convey the proposed flows to the existing 1050 mm sanitary trunk sewer. The pumping station is required since the proposed low point within the development can not be serviced by a gravity sewer to the existing 1050 mm trunk sewer. The Region of York have confirmed that capacity exists or can be created in the 1050 mm trunk sewer using upstream diversion that have now been built into the YDSS.

Local sanitary sewers will be constructed on all roads, as necessary, to service all proposed buildings and properties. The local sanitary sewer and forcemain will cross under the existing CN Rail along the South Blvd.

Refer to Figure 5 which illustrates the proposed layout and preliminary sizing for the sanitary servicing scheme. Figures 6 & 7 provide additional detail of the crossing at the CN tracks.

Appendix B contains a preliminary sanitary sewer design sheet and drainage plan.

5.3 Storm Drainage Scheme

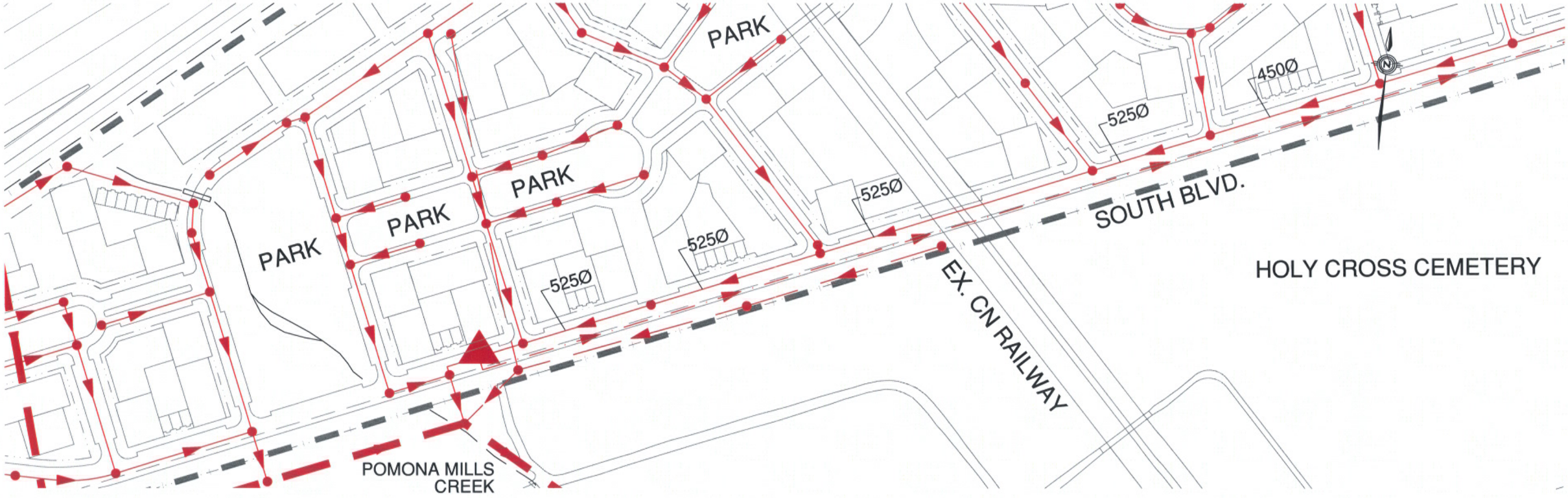
5.3.1 Pomona Creek Subwatershed

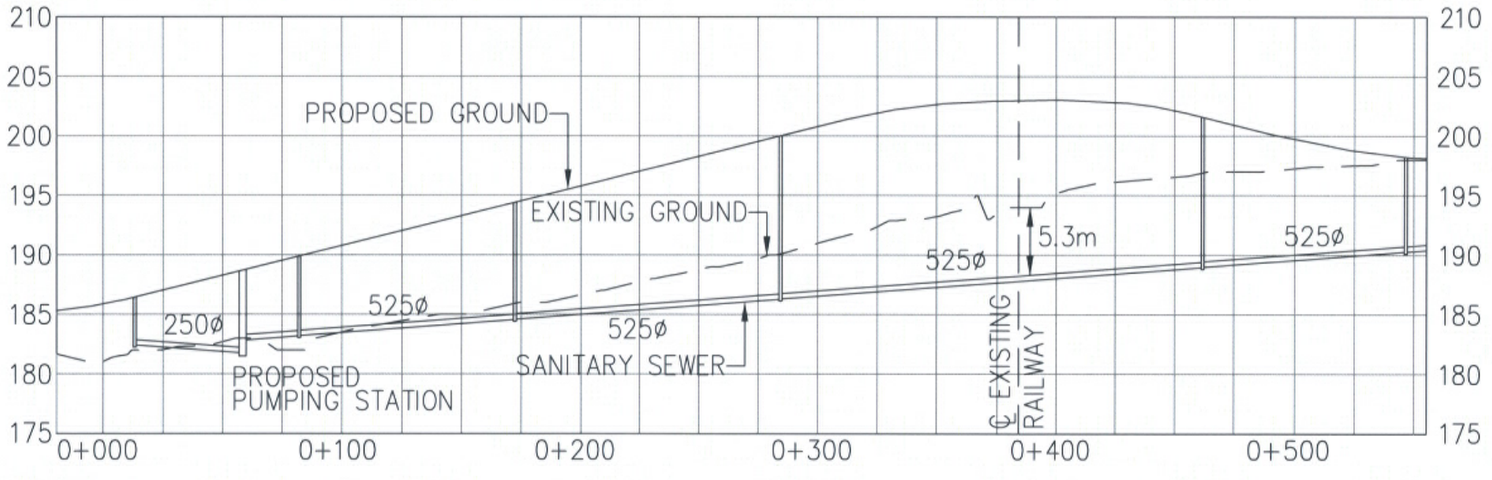
The Langstaff Gateway site is located within the Pomona Mills Creek subwatershed. At 47 ha, the total site comprises just under 7% of the total Pomona Mills Creek subwatershed area.

LEGEND

- SANITARY SEWER
- EX. SANITARY SEWER
- EX. TRUNK SANITARY SEWER
- SANITARY FORCEMAIN
- PUMPING STATION TO DIRECT FLOWS TO SANITARY TRUNK EAST OF BAYVIEW ONCE CAPACITY OF TRUNK IN POMONA MILLS CREEK VALLEY HAS REACHED CAPACITY.
- REALIGNED 600Ø TRUNK SEWER
- EX. TRUNK SANITARY SEWER TO BE ABANDONED

TITLE	LANGSTAFF GATEWAY PROPOSED SANITARY SERVICING SCHEME				
MMM GROUP 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca					
CHECKED	JCK	DATE	NOV. 23, 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	5





SCALE HOR. 1:2500
VER. 1:500

LEGEND

- SANITARY SEWER
- EX. SANITARY SEWER
- EX. TRUNK SANITARY SEWER
- SANITARY FORCEMAIN
- ▲ PUMPING STATION TO DIRECT FLOWS TO SANITARY TRUNK EAST OF BAYVIEW ONCE CAPACITY OF TRUNK IN POMONA MILLS CREEK VALLEY HAS REACHED CAPACITY.

TITLE: LANGSTAFF GATEWAY
SANITARY SEWER PROFILE AT CN CROSSING

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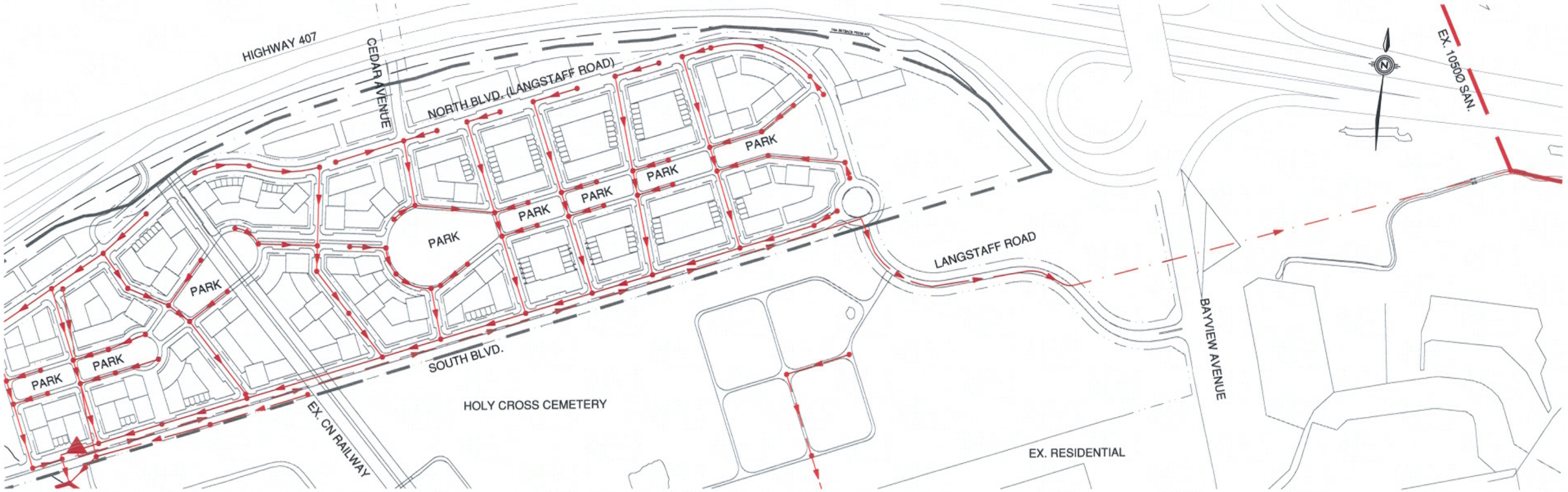
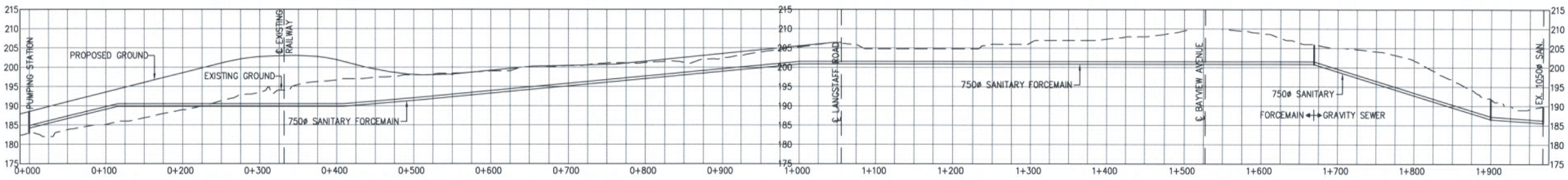
DRAWN	MSK	SCALE	1 : 5000	FIGURE No.	6





SCALE HOR. 1:5000
VER. 1:1000

LEGEND

- SANITARY SEWER
- EX. SANITARY SEWER
- EX. TRUNK SANITARY SEWER
- SANITARY FORCEMAIN
- PUMPING STATION TO DIRECT FLOWS TO SANITARY TRUNK EAST OF BAYVIEW ONCE CAPACITY OF TRUNK IN POMONA MILLS CREEK VALLEY HAS REACHED CAPACITY

TITLE: LANGSTAFF GATEWAY
PROFILE OF SANITARY FORCEMAIN

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DRAWN	MSK	SCALE	1 : 5000	FIGURE No.	7

The Pomona Mills Creek subwatershed merges with the adjacent but much larger East Don River subwatershed upstream of John Street between Bayview Avenue and Yonge Street. At that point the combined area of the two subwatersheds is approximately 4900 ha. The Langstaff site is less than 1% of the combined watercourses. Refer to Figure 8.

5.3.2 Site Level

Within the Langstaff site, drainage is generally in a north to south direction, with the secondary direction east or west toward Pomona Mills Creek. This creek flows north to south through the site dissecting the western third into east and west portions. The presence of the CN railway tracks has modified the natural drainage pattern from the east section of the site by blocking the original direction of sheet flow to Pomona Mills Creek. Runoff from the site now crosses the CN tracks in three locations as outlined below.

Referring to Figure 9 the portion of the site west of the CN tracks (areas 100 & 200) drains directly to Pomona Mills Creek via a system of both municipally owned road side ditches and drainage swales located on private property. Runoff from Area 300, west of the tracks, crosses under the tracks in a small diameter culvert within the site. During major storm events runoff from Area 300 would exceed the capacity of this culvert and spill to the south onto the cemetery lands.

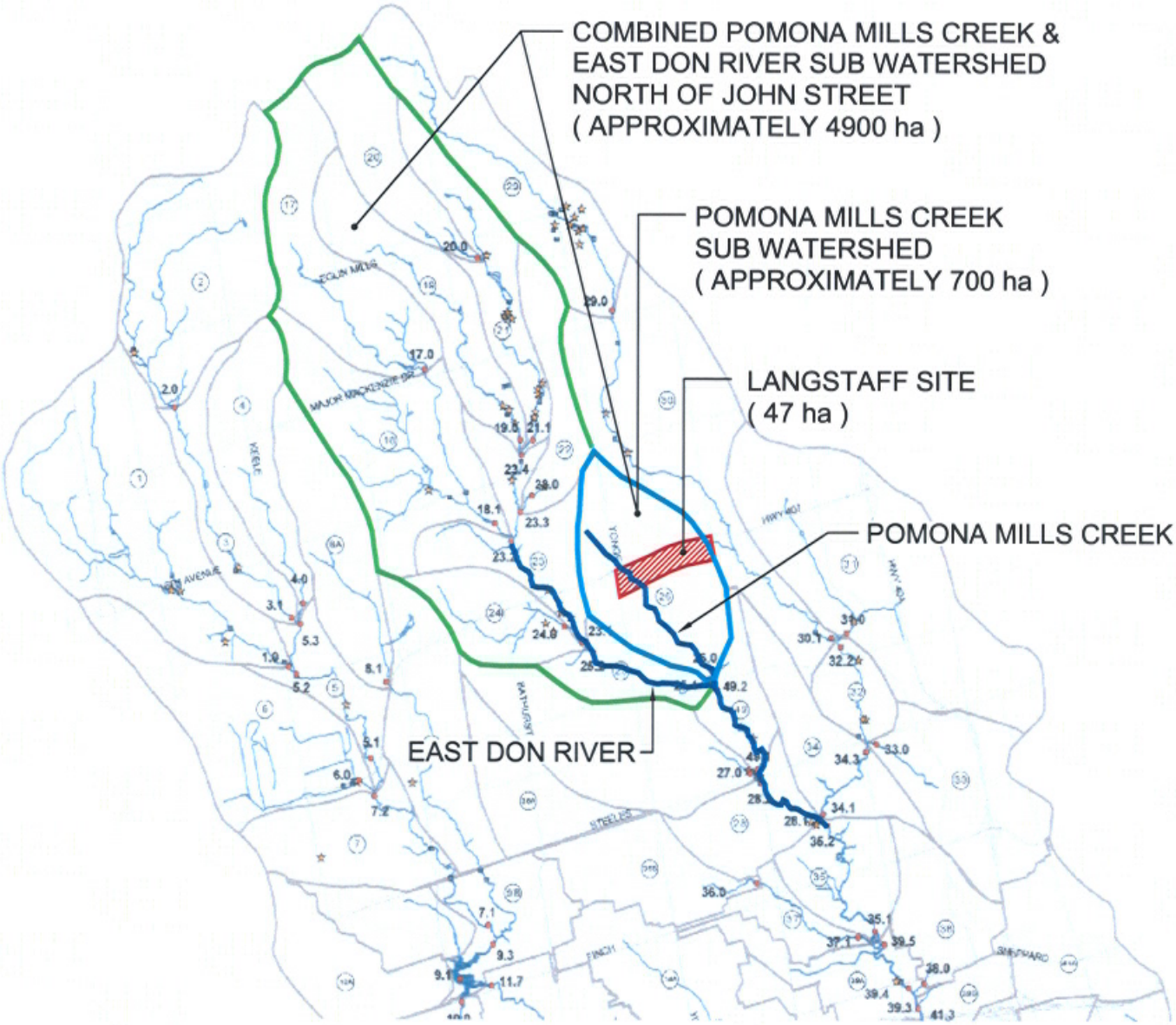
Further to the east, flow from Area 310 crosses the site in a north to south direction into the Holy Cross Cemetery following natural drainage patterns. This runoff crosses under the CN tracks at a vehicle underpass within the Holy Cross Cemetery and is conveyed east via shallow ditches along the internal cemetery roads to Pomona Mills Creek.

The eastern areas of the site, Areas 400, 500 & 510, drain via road side ditches and private swales to the Holy Cross Cemetery eventually draining to an interim stormwater pond within the cemetery. These flows are routed through the cemetery pond and the controlled flows are captured by a Town storm sewer system within a small park to the south of the cemetery. Flows are then conveyed west under the CN tracks in a Town of Markham storm sewer system to an outfall into Pomona Mills Creek downstream of Kirk Ave.

An easement in favour of the Town of Markham exists over a portion of the cemetery pond that is used in the interim to control flows from the eastern portion of the Langstaff site. We understand that this easement is to remain in place until such time that the Langstaff site develops and alternative storm drainage scheme can be put in place.

Other than the quantity control provided by the interim pond on the cemetery to match remaining capacity in the Town storm sewers, no stormwater management is practiced on the Langstaff site.

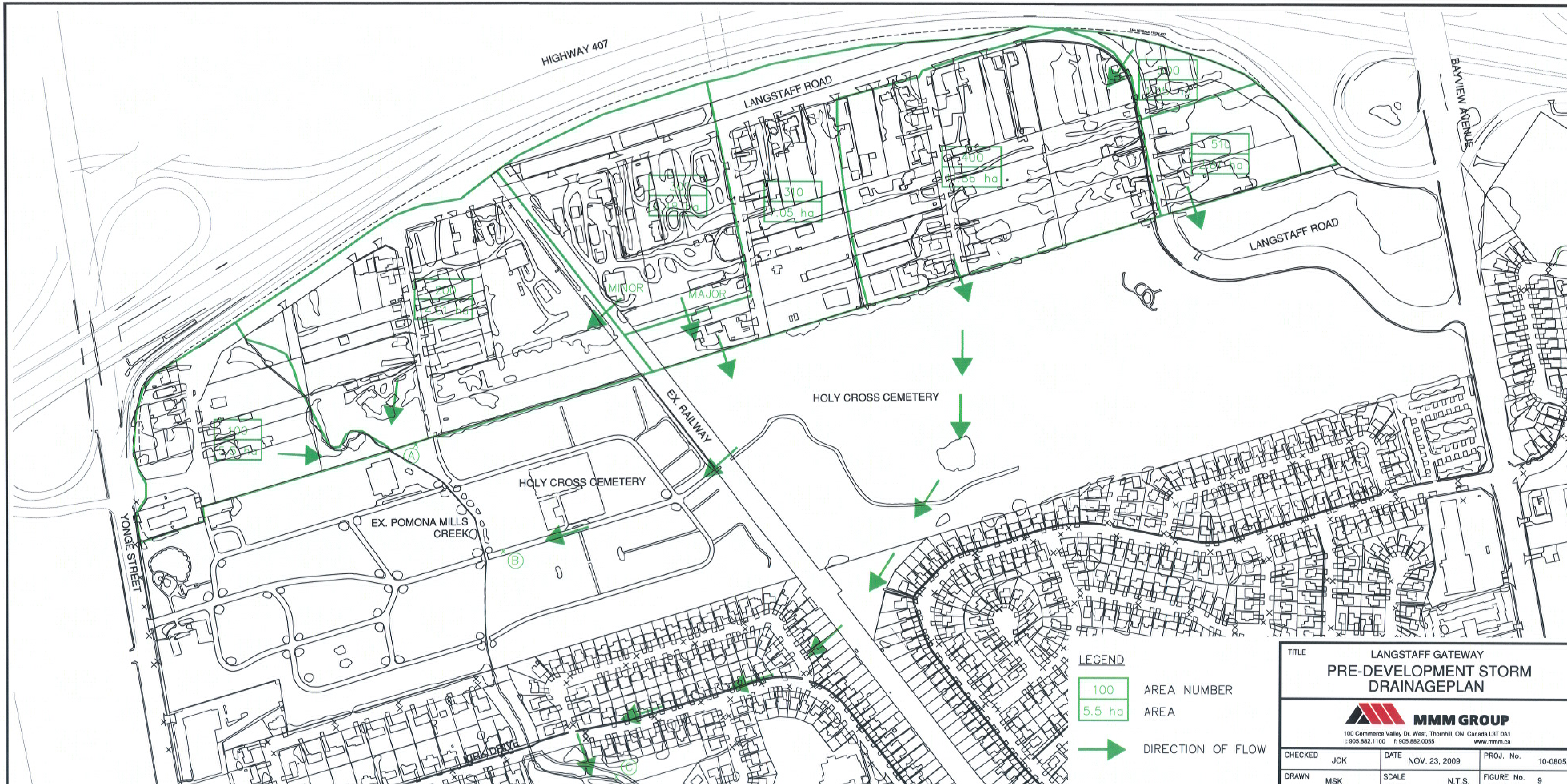
The existing development on the site consisting of a number of structures for various nonresidential uses and outside storage associated with the businesses operating result in an area that is more impervious than the typical greenfield site. An analysis of the ratio of impervious area to total area yields an average runoff coefficient used in the rational method of calculating runoff of approximately 0.45.



< 7% LANGSTAFF SITE AS A PERCENTAGE BY AREA OF POMONA MILLS CREEK SUB-WATERSHED.

< 1% LANGSTAFF SITE AS A PERCENTAGE BY AREA OF COMBINED POMONA MILLS CREEK AND EAST DON RIVER SUB-WATERSHED.

TITLE	LANGSTAFF GATEWAY SUB - WATERSHED DRAINAGE AREAS		
	MMM GROUP 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca		
CHECKED JCK	DATE NOV. 23, 2009	PROJ. No. 10-08053	
DRAWN MSK	SCALE N.T.S.	FIGURE No. 8	


HIGHWAY 407
LANGSTAFF ROAD
BAYVIEW AVENUE
LANGSTAFF ROAD
400
510
310
1.05 ha
200
100
MINOR
MAJOR
HOLY CROSS CEMETERY
EX. RAILWAY
HOLY CROSS CEMETERY
EX. POMONA MILLS CREEK
YONGE STREET
KIRK DRIVE
LEGEND
100
5.5 ha
AREA NUMBER
AREA
DIRECTION OF FLOW
TITLE
LANGSTAFF GATEWAY
PRE-DEVELOPMENT STORM DRAINAGEPLAN
MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055
www.mmm.ca
CHECKED JCK
DATE NOV. 23, 2009
PROJ. No. 10-08053
DRAWN MSK
SCALE N.T.S.
FIGURE No. 9

External drainage areas to the site are limited to the flow crossing the site within Pomona Mills Creek and the runoff from the south embankment of Hwy. 407 along portions of the north limit of the site. Other than the above and minor runoff that may result at the ultimate intersection with Yonge Street no provisions to service external storm drainage areas are required.

To develop a storm drainage scheme for the redeveloped Langstaff site a number of constraints exist which will need to be taken into consideration. These constraints include:

- History of downstream flooding and erosion.
- Future recommendations from Pomona Mills Creek Environmental Assessment currently being conducted by the Town of Markham.
- Existing and pre-existing riparian flow regimes.
- Future recommendations from the West Thornhill Stormwater Flood Remediation Class EA Study, currently underway by the Town of Markham.
- Very urban nature of the development prescribed by the Master Plan.
- Town of Markham and TRCA policies regarding urban runoff.

5.3.3 Storm Drainage Options

Considering the site in its redeveloped state as prescribed by the Land Use / Built Form Master Plan with grade separations at both crossings of the CN tracks, two obvious drainage areas result. Lands west of the track would naturally drain to Pomona Mills Creek. Municipal storm sewers would convey minor system flows to Pomona Mills Creek while site and road grading would ensure that overland flow would also be conveyed to this outlet.

East of the CN tracks a new low point, in the vicinity of the southerly extension of Cedar Ave, would be created at the eastern limit of the grade separation along the South Blvd. Municipal storm sewers would convey minor system flows to this point and site and road grading would ensure that overland flow would also be conveyed to this point. From this point two possible routes exist for an outlet from this point. Option 1 consists of piping flows from this point west within the site to Pomona Mills Creek. The second route, Option 2 involves piping flows south and west through the Holy Cross Cemetery, which would allow drainage to follow natural patterns, before reaching Pomona Mills Creek.

Stormwater controls to meet quantity, extended detention and erosion guidelines would be required. These controls would take on a very different look on either side of the CN tracks. To the west, to comply with the very urban nature of the redeveloped site storage tanks, both privately and publicly owned and maintained are proposed to meet the various objectives. The privately owned tanks would be incorporated into each development block and as a result represent a very scalable solution for a phased development. The municipally owned tanks would be end of pipe solutions to capture runoff from the roads. It is proposed to locate these tanks under what the Master Plan indicates as Park. We understand that the

Town has some concern related to the possible restriction in park use over these tanks. Refer to Section 5.4 for more detail on the sizing of these storage tanks.

On the east side, two different approaches to storm drainage as outlined below as Option 1 and Option 2 are available.

Option 1 for the east portion of the site, which does not require the use of lands beyond the Langstaff area, involves draining the entire site to Pomona Mills Creek before it exits the site. This alternative is illustrated in Figure 10. To accomplish this flow from east of the tracks would need to be piped under the CN tracks to Pomona Mills Creek. This configuration is possible from a grading and drainage perspective. Refer to Figure 11. Since space to provide for storage is limited west of the track it would be proposed to provide controls on the east side of the track and pipe only controlled flow west to be discharged directly to the Pomona Mills Creek. As noted previously this control could be in the form of storage tanks both privately and publically owned.

In Option 2, flows from the storm sewer system east of the tracks could be conveyed to a traditional suburban stormwater management pond located on the cemetery which would also provide for the cemetery's ultimate needs. A new outlet to Pomona Mills Creek from this pond would also be required. This alternative is illustrated in Figure 12. A variation to this scheme would replace the traditional stormwater pond with onsite storage tanks similar to those noted above for lands on the west side of the tracks. The extent and details for the control will be covered in the following section on stormwater management.

Although this storm drainage scheme for the east section of the site maintains similar drainage patterns to those which currently exist, a number of drawbacks exist. Holy Cross Cemetery, through their representatives has advised that this solution is not acceptable since the use of their land for a storm drainage scheme was an interim solution until the Langstaff Site was developed. On a more practical basis, adequate space to construct an outfall within the cemetery from the CN tracks to Pomona Mills Creek may not exist.

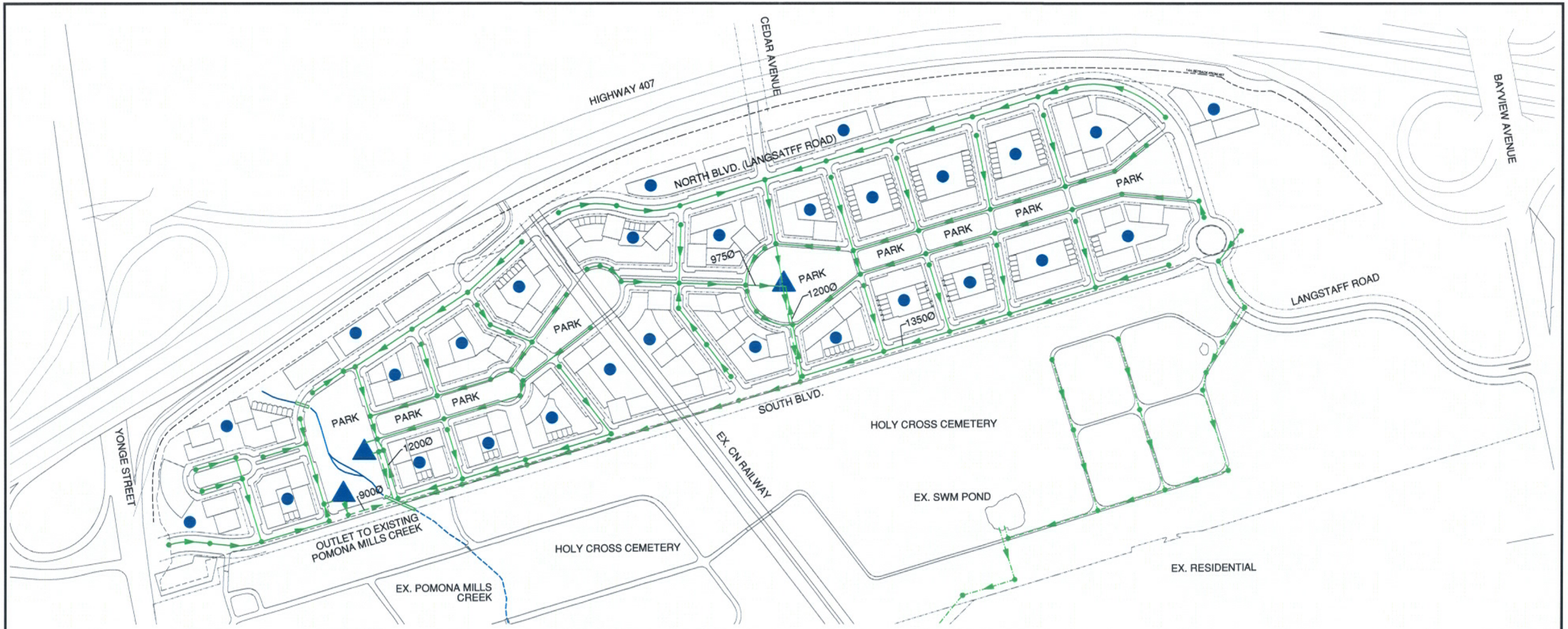
Option 1 is favoured as it does not require the cooperation of adjacent landowners and also maintains a somewhat independent servicing solution for the lands on either side of the CN tracks.

In all servicing solutions noted above Area 510 which is the wooded area in the southwest corner of the site will continue to drain through the cemetery. As the Master Plan leaves this area in its current state, the impact on the cemetery does not change from the present.

5.3.4 Storm Sewer Design Criteria

Storm sewers to service the Langstaff site will be designed to meet the Town of Markham criteria as outlined below.

- Rational Method



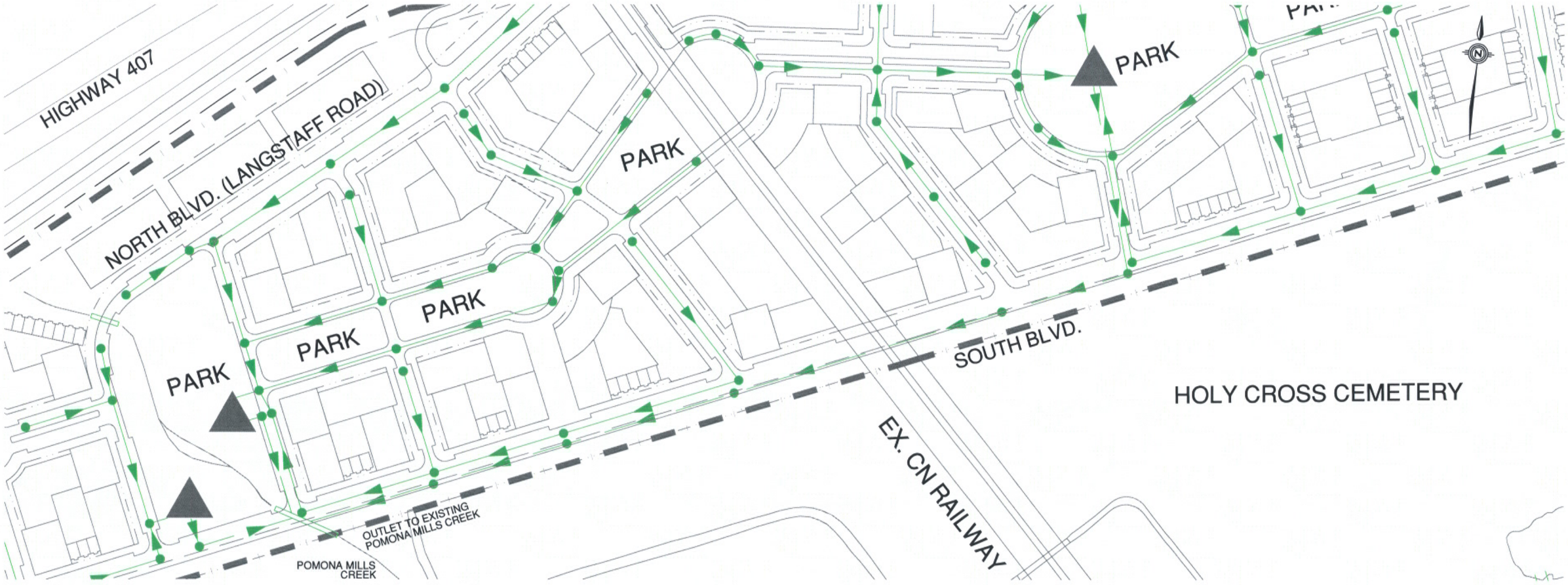
LEGEND

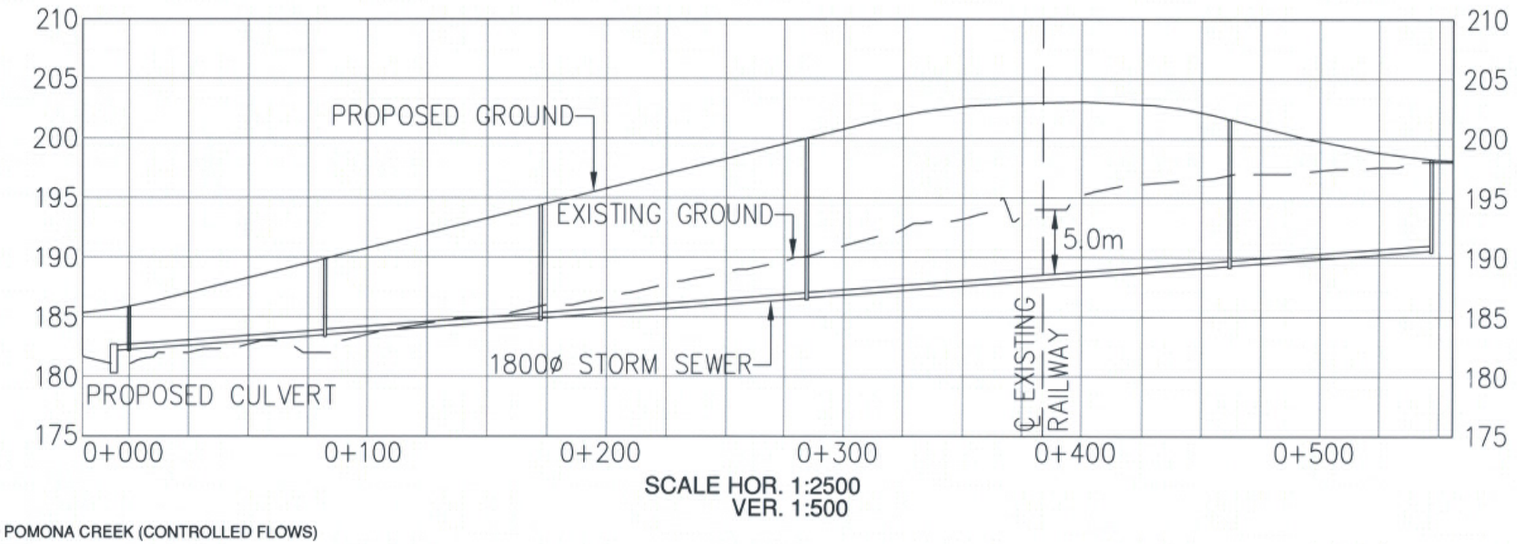
- MUNICIPALLY OWNED END OF PIPE STORAGE (UNDERGROUND STORAGE TANKS)
- PRIVATELY OWNED ON-SITE STORAGE (UNDERGROUND TANKS AND ROOF-TOP)
- STORM SEWER
- STORM SEWER OUTLETTING TO POMONA CREEK (CONTROLLED FLOWS)
- EX. STORM SEWER

TITLE: LANGSTAFF GATEWAY
PROPOSED STORM DRAINAGE SCHEME - OPTION 1

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOV. 23, 2009	PROJ. No. 10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No. 10





SCALE HOR. 1:2500
VER. 1:500

LEGEND

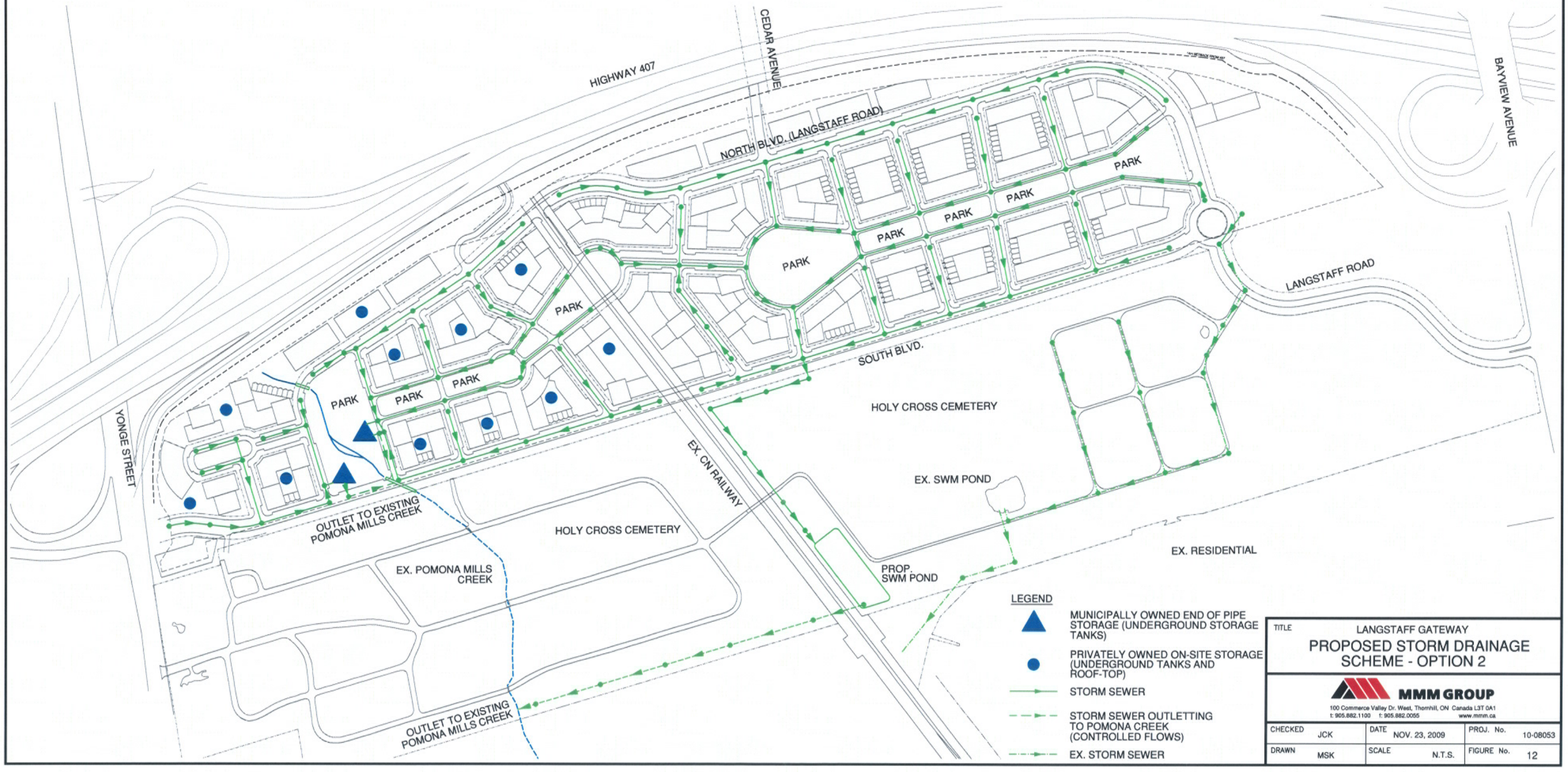
- STORM SEWER
- STORM SEWER OUTLETTING TO POMONA CREEK (CONTROLLED FLOWS)
- EX. STORM SEWER
- STORM STORAGE FACILITY

NOTE: BASED ON STORM DRAINAGE OPTION 1.

TITLE: LANGSTAFF GATEWAY
STORM SEWER PROFILE AT CN CROSSING

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOV. 23, 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	1 : 2500	FIGURE No.	11



TITLE: LANGSTAFF GATEWAY

PROPOSED STORM DRAINAGE SCHEME - OPTION 2

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOV. 23, 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	12

- 5 Year Storm
- Runoff coefficient of 0.9 for roads and development blocks and 0.25 for parks and open space
- Design to 85 % of pipe capacity

Please refer to Appendix C for the preliminary storm drainage plan and storm sewer design sheet.

5.4 Stormwater Management

The objectives of a stormwater management scheme for the Langstaff Gateway site can be summarized as follows:

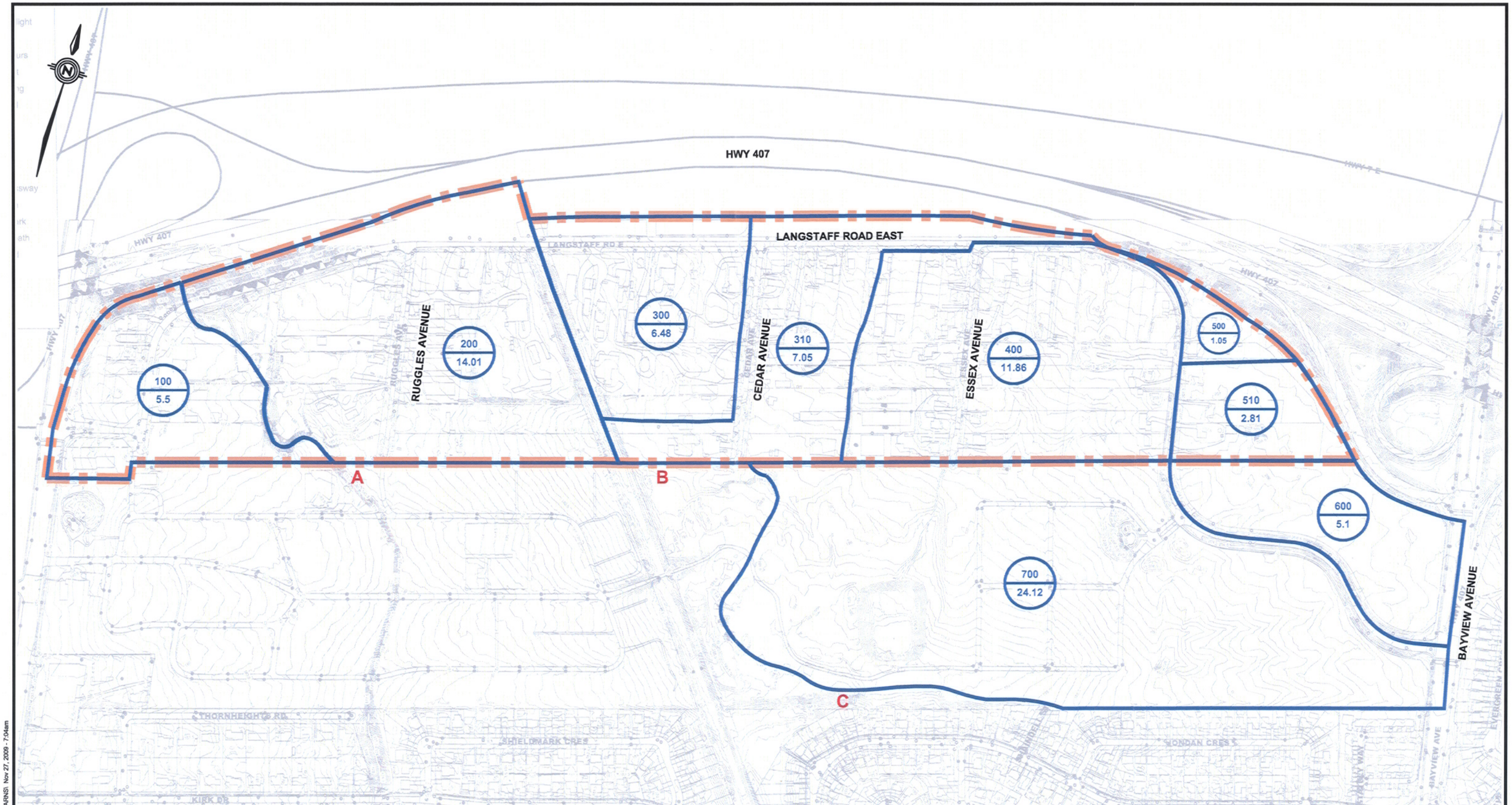
- Provide onsite control of peak flows to mitigate downstream impacts.
- Provide extended detention storage to match TRCA Enhanced (Level 1) requirements to improve downstream water quality.
- Provide for extended detention storage to mitigate downstream erosion.

5.4.1 Analysis of SWM Requirements

In order to establish the storage volumes required to meet the stormwater management objectives, computer models were developed for the existing and post-development conditions for the area. Visual OTTHYMO v2.0 (VOH) was used to create those models. Figures 13 and 14 show the pre and post-development sub-catchment delineations respectfully. Figure 15 shows a more detailed sub-catchment delineation used to determine storages required on a development block basis. Figures 16, 17 and 18 show the model schematics for the existing conditions model, the overall post-development conditions model and the detailed development Block model respectively. Existing condition land use was obtained from recent digital air photos. Future land use data was obtained from the Master Plan for the development. Sub-catchment areas, slopes, lengths, etc. were extracted from available topographic data. Soils data was obtained from a digital version of the County of York Soil Survey map. (Soil Survey of Ontario, 1955). Tables 7 and 8 show the parameters used for each sub-catchment and the VOH commands used in each case.

Table 7: Sub-catchment Parameters under Existing Conditions

Sub-catchment No.	VOH Commands	Drainage Area (ha)	Imperviousness (%)	
100	STANDHYD	5.50	36	
200	STANDHYD	14.01	36	
300	STANDHYD	6.48	36	
310	STANDHYD	7.05	36	
400	STANDHYD	11.86	36	



LEGEND

- PROPERTY BOUNDARY
- SUB-CATCHMENT BOUNDARY
- 100 / 5.5 — SUB-CATCHMENT No. / DRAINAGE AREA (ha)

0 50 100 150 200 250m

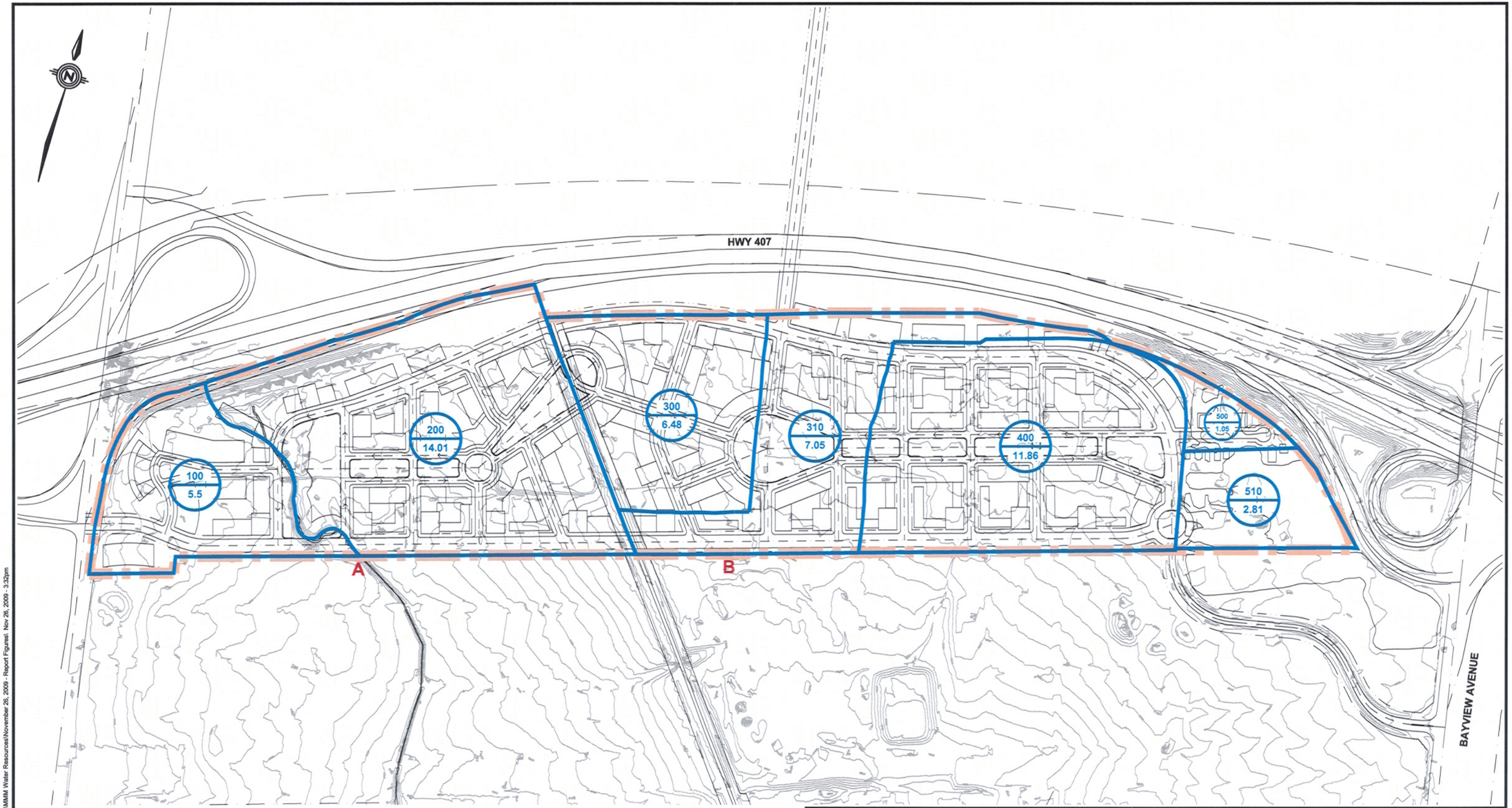
CLIENT: TOWN OF MARKHAM

TITLE: LANGSTAFF EAST PLANNING AREA

EXISTING CONDITIONS

MMM GROUP
100 Commerce Valley Dr. W.
Thornhill, ON L3T 0A1
t. 905.882.1100
f. 905.882.1857
mmm@mmm.ca

Checked	Drawn	
J.Z.	AutoCAD/B.K.B.	
Date: NOVEMBER 2009	Proj. No.: 10-08053-002-WR1	
Scale: AS SHOWN	Figure No.: 13	Gr.No. 002



LEGEND

- PROPERTY BOUNDARY
- SUB-CATCHMENT BOUNDARY
- 100 / 5.5 — SUB-CATCHMENT No. / DRAINAGE AREA (ha)

0 50 100 150 200 250m

CLIENT
TOWN OF MARKHAM

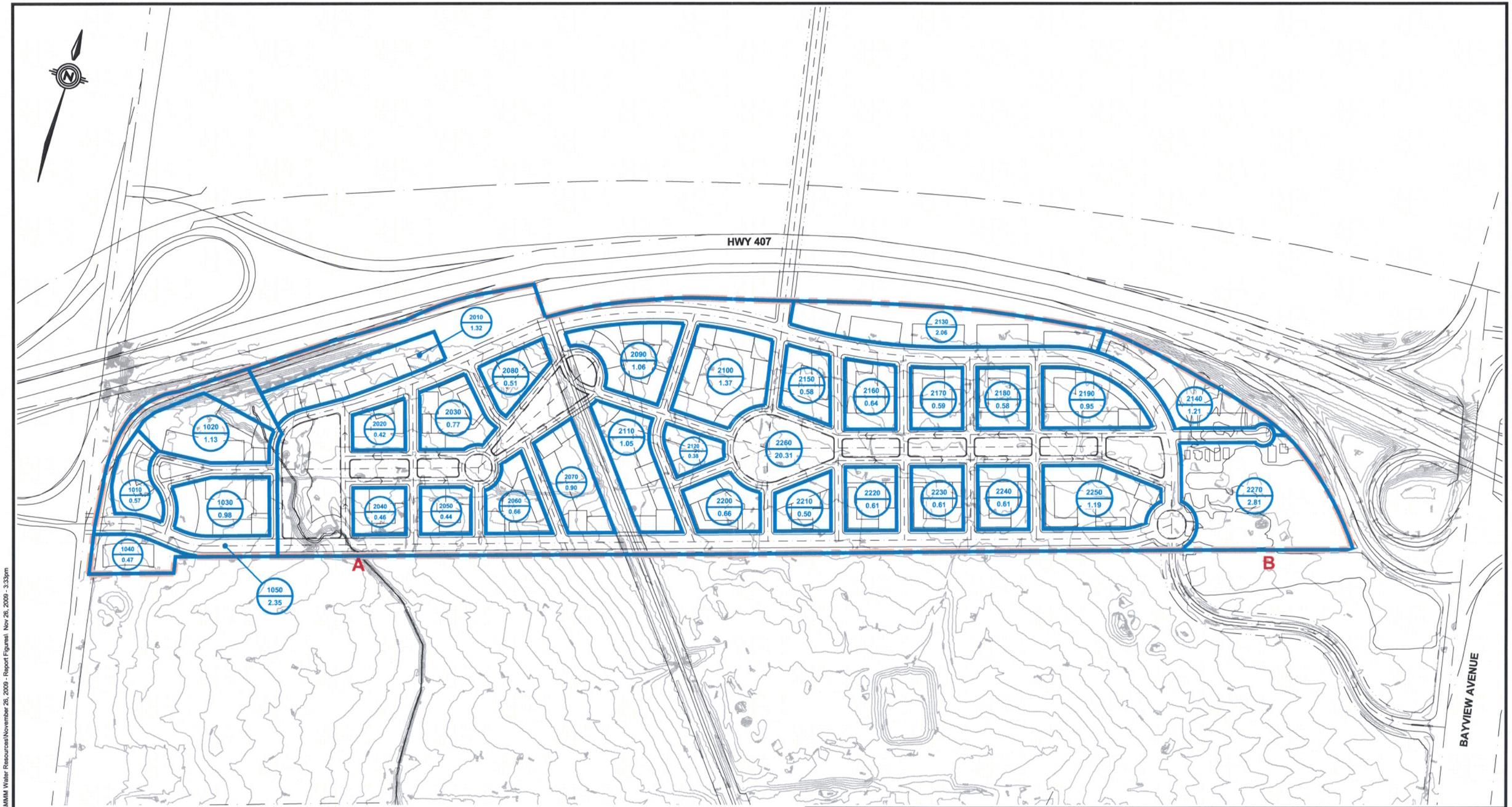
TITLE
LANGSTAFF EAST PLANNING AREA

PROPOSED CONDITIONS (UNCONTROLLED)

MMM GROUP
100 Commerce Valley Dr. W.
Thornhill, ON L3T 0A1
t. 905.882.1100
f. 905.882.1857
mmm@mmm.ca

Checked J.Z.	Drawn AutoCAD/B.K.B.	
Date NOVEMBER 2009	Proj. No. 10-08053-002-WR1	
Scale AS SHOWN	Figure No. 14	Gr.No. 002

FIG V-2.dwg Layout1 X:\DIV\10\10-08053\Dwgs By Others\MMM Water Resources\November 26, 2009 - Report Figures\ Nov 26, 2009 - 3:32pm



LEGEND

- PROPERTY BOUNDARY
- SUB-CATCHMENT BOUNDARY
- 1010 / 0.57 — SUB-CATCHMENT No. / DRAINAGE AREA (ha)

0 50 100 150 200 250m

CLIENT: TOWN OF MARKHAM

TITLE: LANGSTAFF EAST PLANNING AREA

PROPOSED CONDITIONS (CONTROLLED)

MMM GROUP
100 Commerce Valley Dr. W.
Thornhill, ON L3T 0A1
t. 905.882.1100
f. 905.882.1857
mmm@mmm.ca

Checked J.Z.	Drawn AutoCAD/B.K.B.
Date NOVEMBER 2009	Proj. No. 10-08053-002-WR1
Scale AS SHOWN	Figure No. 15 — Gr.No. 002

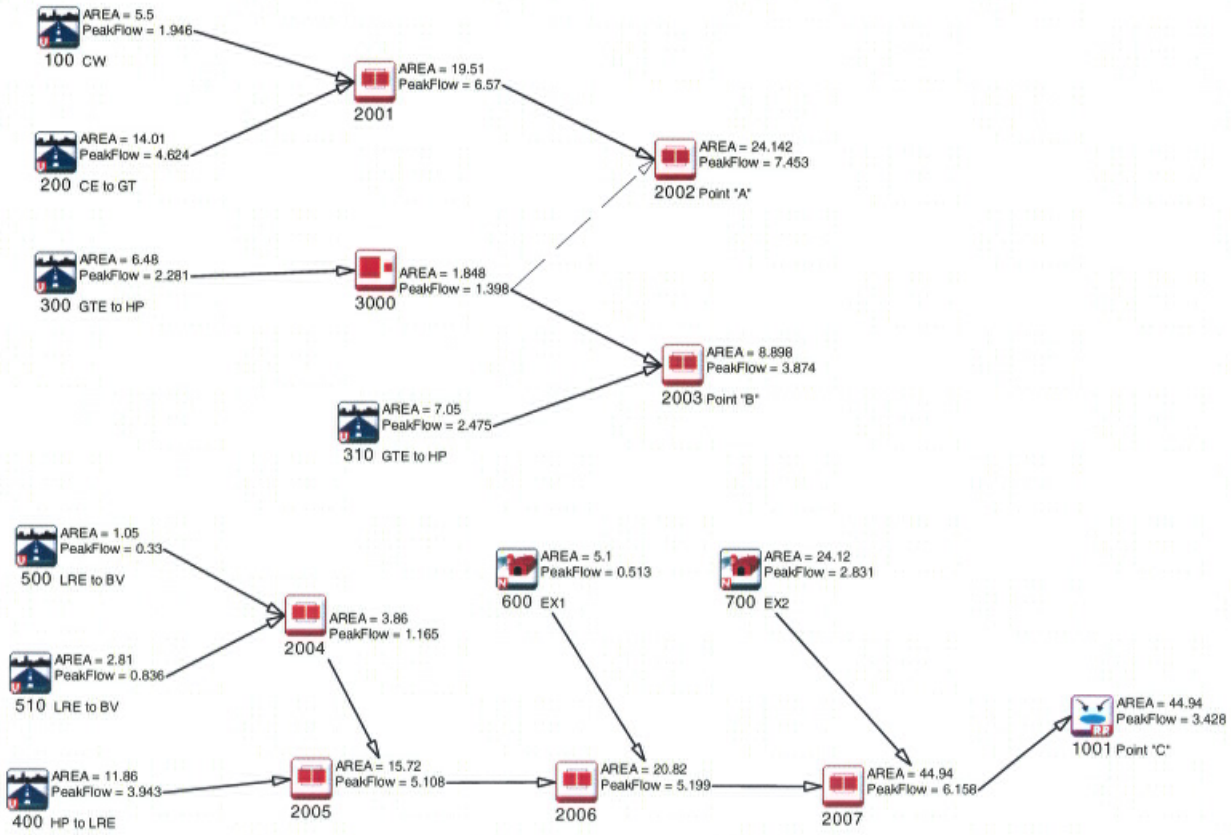


Figure 16 Visual OTTHYMO Schematic (Existing Conditions)

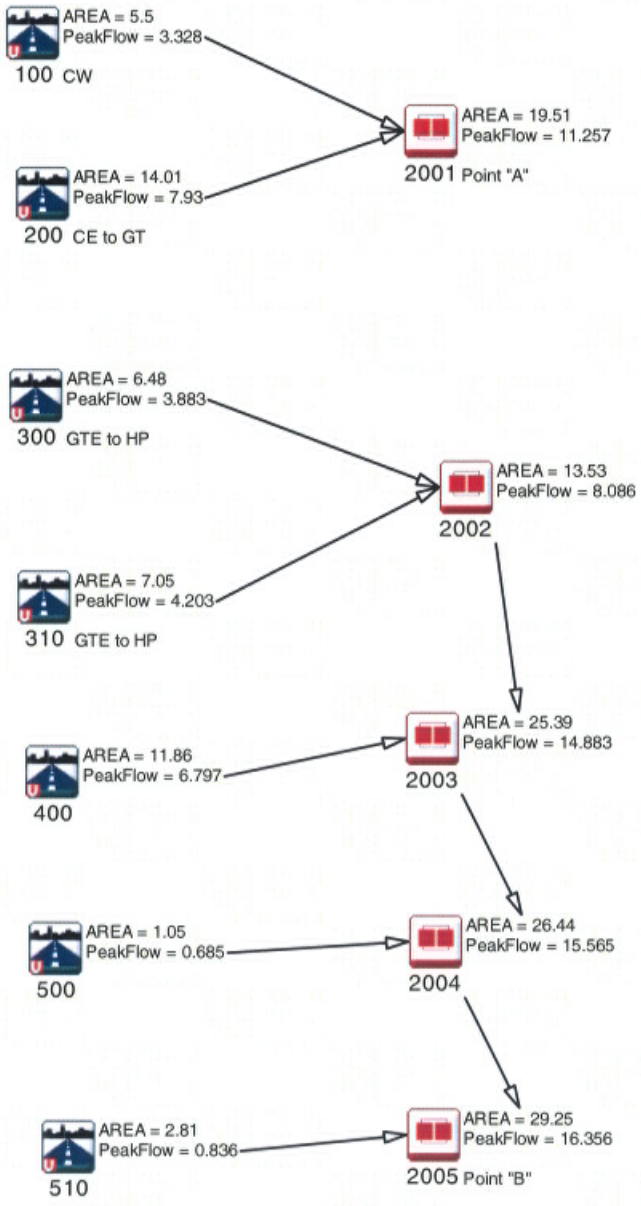


Figure 17 Visual OTTHYMO Schematic (Proposed Conditions, Uncontrolled)

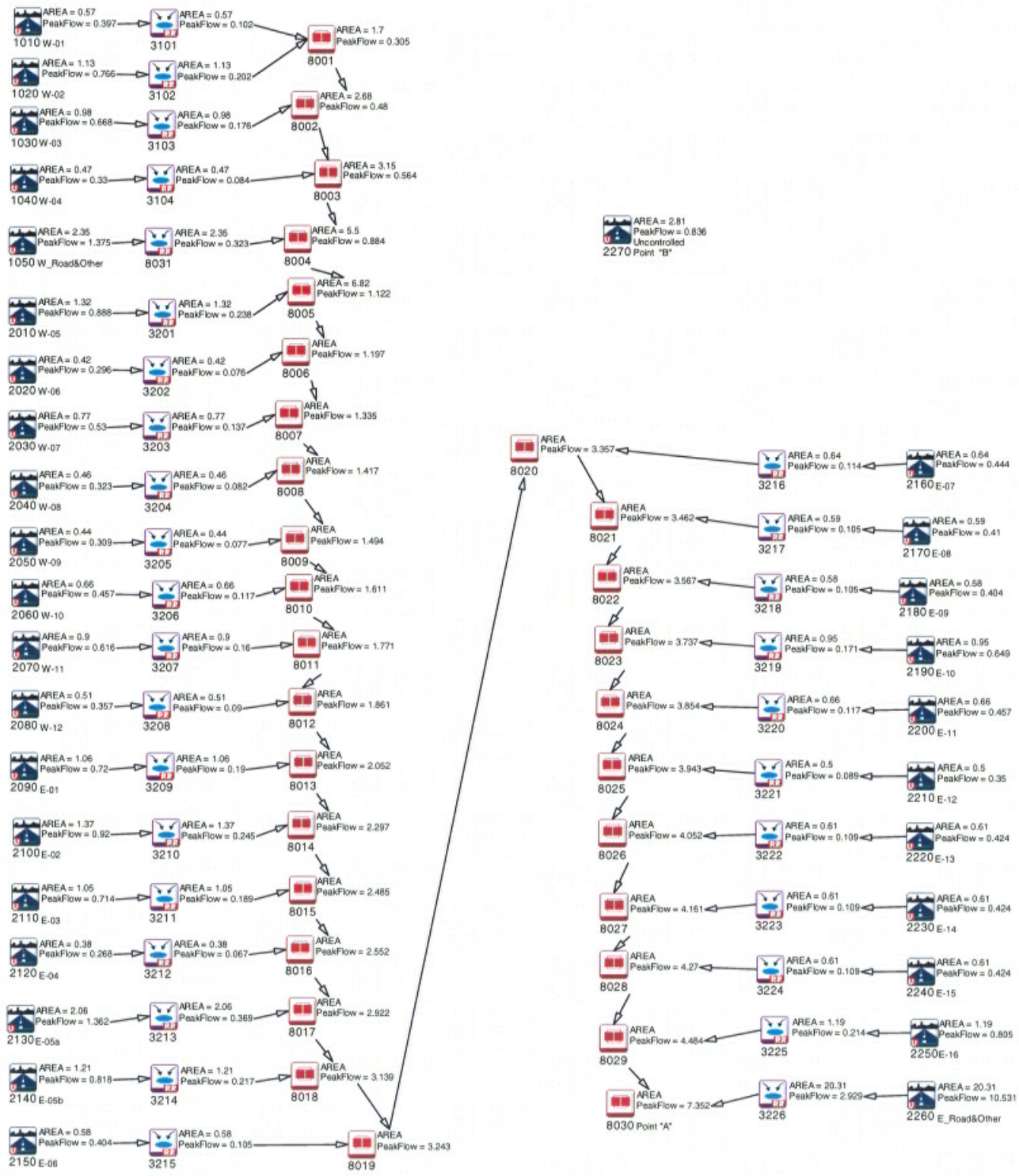


Figure 18 Visual OTTHYMO Schematic (Proposed Conditions, Controlled by Block)

Sub-catchment No.	VOH Commands	Drainage Area (ha)	Imperviousness (%)	
500	STANDHYD	1.05	26	
510	STANDHYD	2.81	26	
Sub-catchment No.	**VOH Commands**	**Drainage Area (ha)**	**CN**	**Tp (hr)**
600	NASHYD	5.10	86	0.59
700	NASHYD	24.12	86	0.49

Table 8 Sub-catchment Parameters under Proposed Conditions

Sub-catchment No.	VOH Commands	Drainage Area (ha)	Imperviousness (%)
100	STANDHYD	5.50	90
200	STANDHYD	14.01	90
300	STANDHYD	6.48	90
310	STANDHYD	7.05	90
400	STANDHYD	11.86	90
500	STANDHYD	1.05	90
510	STANDHYD	2.81	26

Flows were simulated for the 1 in 2, 1 in 5, 1 in 10, 1 in 25, and 1 in 100 year return period storms and 25 mm storms. All events used a 3 hour AES storm distribution for the Town of Markham (which is based upon the long term Toronto Centre intensity-duration-frequency curve). Tables 9 and 10 show the resulting peak flows at required flow points within the study area for existing and post-development conditions.

Table 9 Peak Flow Rates under Existing Conditions

Return Period (Years)	Peak Flow Rates (m3/s)		
	Point "A"	Point "B"	Point "C"
2	2.10	0.58	0.68
5	3.49	0.96	1.29
10	4.13	1.46	1.94
25	5.30	2.31	2.64
100	7.45	3.87	3.43

Table 10 Peak Flow Rates under Proposed Conditions (Uncontrolled)

Return Period (Years)	Peak Flow Rates (m3/s)	
	Point "A"	Point "B"
2	3.57	5.13
5	5.42	7.81
10	6.53	9.41
25	8.28	11.97
100	11.26	16.36

Details of the development of the VOH model are included in Appendix D. Complete input data sets and outputs for the simulations are also included in Appendix D.

5.4.2 Quantity Control

Based upon the proposed drainage scheme described in the previous section, all storm runoff from the development area will be directed to Pomona Mills Creek upstream of the Holy Cross Cemetery. As Tables 9 and 10 indicate, in combination with the increased level of imperviousness, this could potentially increase the flows to the creek significantly. Since there are existing flooding and erosion concerns downstream it is clear that post-development flows will have to be controlled. The target used in the preliminary sizing of quantity controls was that the discharge rates from the entire property under post-development conditions should not exceed the existing discharge rates from the area of the property which currently discharges directly to Pomona Mills Creek upstream of the cemetery. This will ensure that both local (i.e. immediately downstream) and more distant areas of concern will not be impacted by higher peak flows.

As noted earlier, the proposed SWM strategy is to utilize local distributed storage (i.e. underground tanks on individual development blocks) together with other source controls (e.g. green roofs) where feasible. On that basis, a series of VOH simulations was completed to size the required storage to control the outlet flow from the whole development area to the appropriate pre-development level. Point "A" in Table 9 and 10 show the "target" discharge rates and the potential uncontrolled rates, respectively. Table 11 shows the parameters of the detailed Block model used to estimate storages required to meet those targets. Table 12 shows the estimated storages by development block to meet these targets for the 1 in 2 year to 1 in 100 year storms. Table 13 illustrates that the targets will be met by implementing the estimated Block level storage.

Table 11 Sub-catchment Parameters under Proposed Conditions (On-site Control by Block)

Sub-catchment No.	VOH Commands	Drainage Area (ha)	Imperviousness (%)
1010	STANDHYD	0.57	100
1020	STANDHYD	1.13	100
1030	STANDHYD	0.98	100
1040	STANDHYD	0.47	100
1050	STANDHYD	2.35	77
2010	STANDHYD	1.32	100
2020	STANDHYD	0.42	100
2030	STANDHYD	0.77	100
2040	STANDHYD	0.46	100
2050	STANDHYD	0.44	100
2060	STANDHYD	0.66	100
2070	STANDHYD	0.90	100
2080	STANDHYD	0.51	100
2090	STANDHYD	1.06	100
2100	STANDHYD	1.37	100
2110	STANDHYD	1.05	100
2120	STANDHYD	0.38	100
2130	STANDHYD	2.06	100
2140	STANDHYD	1.21	100
2150	STANDHYD	0.58	100
2160	STANDHYD	0.64	100
2170	STANDHYD	0.59	100
2180	STANDHYD	0.58	100
2190	STANDHYD	0.95	100
2200	STANDHYD	0.66	100
2210	STANDHYD	0.50	100
2220	STANDHYD	0.61	100

Sub-catchment No.	VOH Commands	Drainage Area (ha)	Imperviousness (%)
2230	STANDHYD	0.61	100
2240	STANDHYD	0.61	100
2250	STANDHYD	1.19	100
2260	STANDHYD	20.31	80
2270	STANDHYD	2.81	26

Table 12 Estimated Storages by Development Block

Sub-catchment No.	Quantity Storage (m^3)	Erosion Storage (m^3)	Total Storage (m^3)	Unit Storage (m^3/ha)
1010	265	143	408	715
1020	525	283	808	715
1030	455	245	700	714
1040	220	118	338	718
1050	1025	450	1475	628
2010	610	330	940	712
2020	195	105	300	714
2030	360	193	553	718
2040	215	115	330	717
2050	210	110	320	727
2060	310	165	475	720
2070	420	225	645	717
2080	240	128	368	721
2090	490	265	755	712
2100	635	343	978	714
2110	485	263	748	712
2120	180	95	275	724
2130	950	515	1465	711

Sub-catchment No.	Quantity Storage (m^3)	Erosion Storage (m^3)	Total Storage (m^3)	Unit Storage (m^3/ha)
2140	560	303	863	713
2150	270	145	415	716
2160	300	160	460	719
2170	275	148	423	716
2180	270	145	415	716
2190	440	238	678	713
2200	310	165	475	720
2210	235	125	360	720
2220	285	153	438	717
2230	285	153	438	717
2240	285	153	438	717
2250	550	298	848	712
2260	8595	4067	12662	623
Total	20450	10337	30787	670

Table 13 Peak Flow Rates under Proposed Conditions (On-site Control by Block)

Return Period (Years)	Peak Flow Rates (m3/s)	
	Point "A"	Point "B"
2	2.05	0.18
5	3.41	0.31
10	4.08	0.40
25	5.23	0.55
100	7.35	0.84

5.4.3 Erosion Control

The channel of Pomona Mills Creek has experienced significant erosion at a number of locations downstream of the proposed development area. The Town of Markham initiated a study and Class Environmental Assessment to address this issue. This ongoing study has identified erosion sites and potential remedial measures. Recognizing these concerns, it is proposed to provide erosion control

storage within the proposed development area to control the rate of discharge to the creek for more frequent erosion generating storms. The initial sizing of this storage which will be incorporated into the distributed underground tanks associated with each development block was based upon extended detention (24 hour) of the runoff from a 25 mm storm. These volumes are shown in Table 12. Recently, the Town provided a set of erosion related discharge targets at sensitive locations further downstream on Pomona Mills Creek. These were derived from the ongoing erosion study/Class EA. Ultimately, a series of continuous model simulations will be completed during the Block or Precinct Plan stage to confirm that these targets can be met. If necessary, the erosion control storage provided will be increased or the detention time will be extended further or alternatively off site solutions that are cost shared with others may be appropriate. The storages shown in Table 12 will be the minimum which will be provided to address the erosion issue.

5.4.4 Water Quality

Water quality control will be provided on a block by block basis to provide Enhanced (Level 1) protection. The most effective method of implementing this for an intensely impervious area such as this will be through the provision of oil grit separators. These will be sized based upon the impervious area draining to them. Preliminary sizing of Stormceptor units for each development block is shown in Table 14. Other types of similar unit would be acceptable.

5.4.5 Water Balance

There a numerous types of stormwater management controls which can be utilized to help reduce the impact of urban development on the water balance. These "source controls" (also known as Low Impact Development or LID methods), range from green roofs to pervious paving to biofilters. Many approaches rely upon infiltration of stormwater into the ground to reduce the overall volume of runoff. There will be little potential for use of such techniques within this area as the soils are highly impermeable, the groundwater table is close to the ground surface and there is very little permeable surface area. However, other approaches such as green roofs, bio-swales in surface parking lots, water re-use for irrigation or other non-potable uses will be applicable. More specific recommendations will be provided during the preparation of site plans for the development blocks.

Table 14 Preliminary Sizing of Stormceptor Units for Development Blocks

Subcatchment No.	Stormceptor Units
1010	STC-750
1020	STC-750
1030	STC-750
1040	STC-300
1050	STC-2000

Subcatchment No.	Stormceptor Units
2010	STC-2000
2020	STC-300
2030	STC-750
2040	STC-300
2050	STC-300
2060	STC-750
2070	STC-750
2080	STC-300
2090	STC-750
2100	STC-2000
2110	STC-750
2120	STC-300
2130	STC-4000
2140	STC-2000
2150	STC-750
2160	STC-750
2170	STC-750
2180	STC-750
2190	STC-750
2200	STC-750
2210	STC-300
2220	STC-750
2230	STC-750
2240	STC-750
2250	STC-750
2260	5 * STC-6000

5.5 Pomona Mills Creek

5.5.1 Existing Conditions

Pomona Mills Creek is the main drainage feature of the Langstaff site. It is a permanently flowing stream with an upstream drainage area of approximately 300 hectares. The Pomona Mills Creek watershed has been fully urbanized with a mixture of residential and commercial developments, and the watercourse has been altered to accommodate these developments. The headwater reach of the watercourse has been straightened along much of its course upstream of Highway 407, and is enclosed through the Yonge Street/Highway 407 intersection. The reach of Pomona Mills Creek through the Langstaff site has been considerably altered and degraded. These lands through which the Creek presently flows are occupied by Beaver Valley Stone Limited. The watercourse has been enclosed and realigned through the yard to accommodate the operations of the enterprise where its stone products are stored. An aerial photo of the watercourse and its drainage catchment is shown in Figure 19.

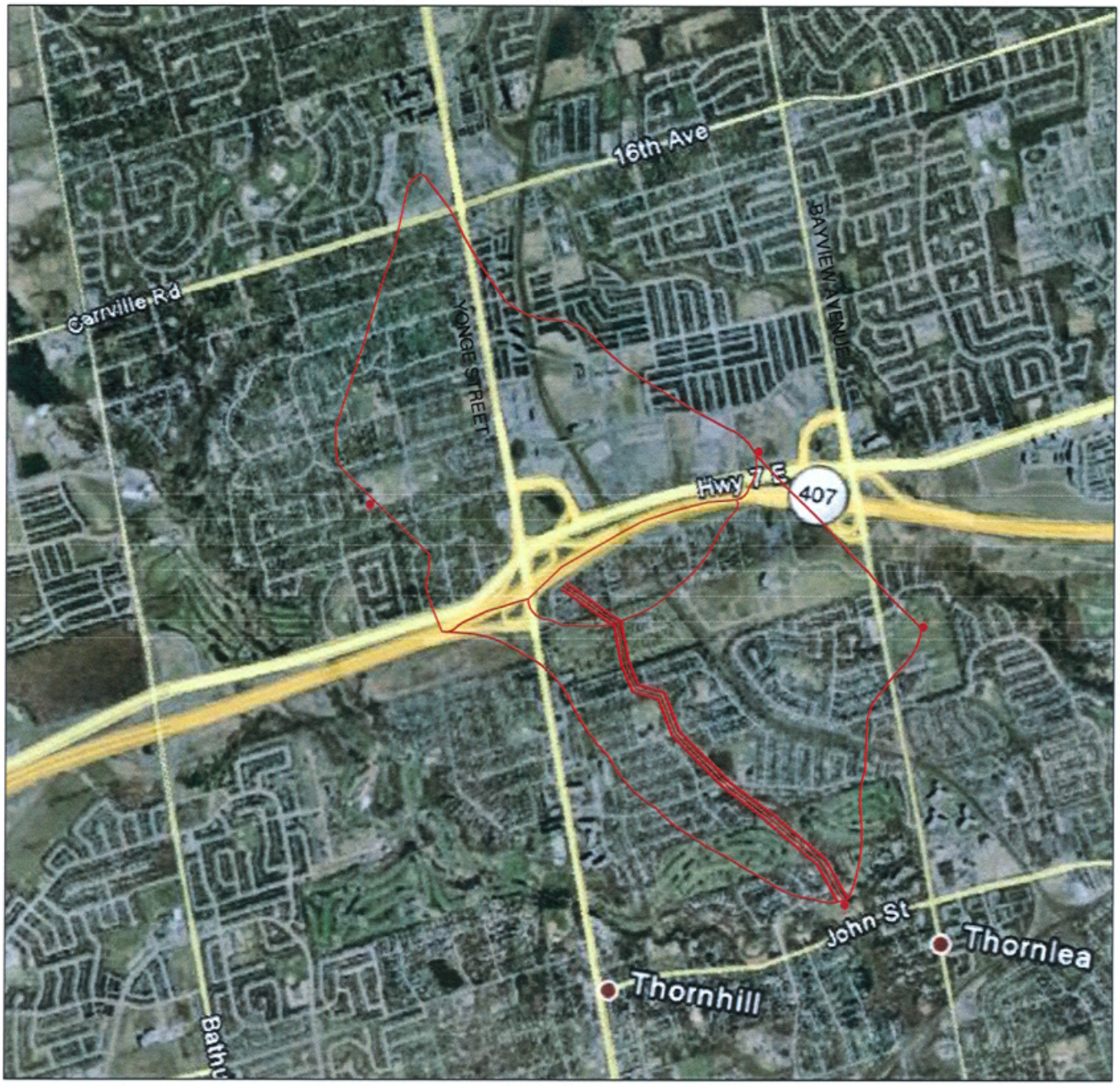
The creek discharges to the site from a box culvert under the eastbound ramp of Highway 407 (Figure 20) and enters a 1,800 mm diameter CSP, 60 m in length (see Figure 21), at the north end of the Beaver Valley Stone yard, and outlets to an entrenched, steep sided channel for a distance of 65 m. Photos of the entrenched section of the watercourse are shown in Figures 22(a) and 22(b). The watercourse then flows through the only reach that possesses vegetated banks, and which appears to have been least altered from its original condition (Figure 23). This reach still exhibits a meandering planform and a floodplain. An attempt has been made to protect its banks from erosion using large boulders.

The reach of Pomona Mills Creek that appears to be unaltered (except for the bank protection) has an average bankfull width of 3 m and an average bankfull depth of 0.5 m. The creek bed is composed of a mixture of sand and gravel, and the banks consist of silty sand.

The stream then passes through a 900 mm diameter culvert under an unpaved access road, and then flows through a short reach that is protected with boulders (Figure 24) before leaving the stone yard and entering the grounds of the Holy Cross Cemetery located downstream of Beaver Valley Stone. The reach through the cemetery has been straightened and channelized with a trapezoidal section (see Figure 25). The section of the watercourse through the cemetery is generally not armoured except for a short section where the east bank has been reinforced with gabion baskets.

The reach of Pomona Mills Creek through Beaver Valley Stone can be characterized as highly altered and degraded for much of its length.

The Toronto and Region Conservation Authority (TRCA) has delineated the regulatory floodlines for Pomona Mills Creek, and the floodline for the project section of the watercourse is shown in Figure 26. The hydraulic restrictions represented by the 1800 mm and 900 mm culverts within the site are reflected in the relatively wide flood widths upstream of the culvert inlets. During the Regulatory Flood, the capacity of the 1800 mm diameter culvert at the northern part of the site is exceeded, and flood flows will spill across the yard. Since the wider sections of the flood plain are due to back-up from man made hydraulic



TITLE	LANGSTAFF GATEWAY AERIAL PHOTO OF POMONA MILLS CREEK		
	MMM GROUP 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca		
CHECKED JCK	DATE NOV. 23, 2009	PROJ. No.	10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No.	19

Figure 20 - Pomona Mills Creek at Upstream Limit of the Study Area (Looking Upstream)

Figure 21 - Entrance of 1800 mm Diameter Culvert

Figure 22(a) - Pomona Mills Creek at Outlet of 1800 mm Diameter Culvert (Looking Upstream)

Figure 22(b) - Reach of Pomona Mills Creek Downstream of 1800 mm Diameter Culvert (Looking Downstream)

Figure 23 - Undisturbed Reach of Pomona Mills Creek

Figure 24 - Outlet of 900 mm Diameter Culvert

Figure 25 - Reach of Pomona Mills Creek at Holy Cross Cemetery Downstream of Langstaff Site

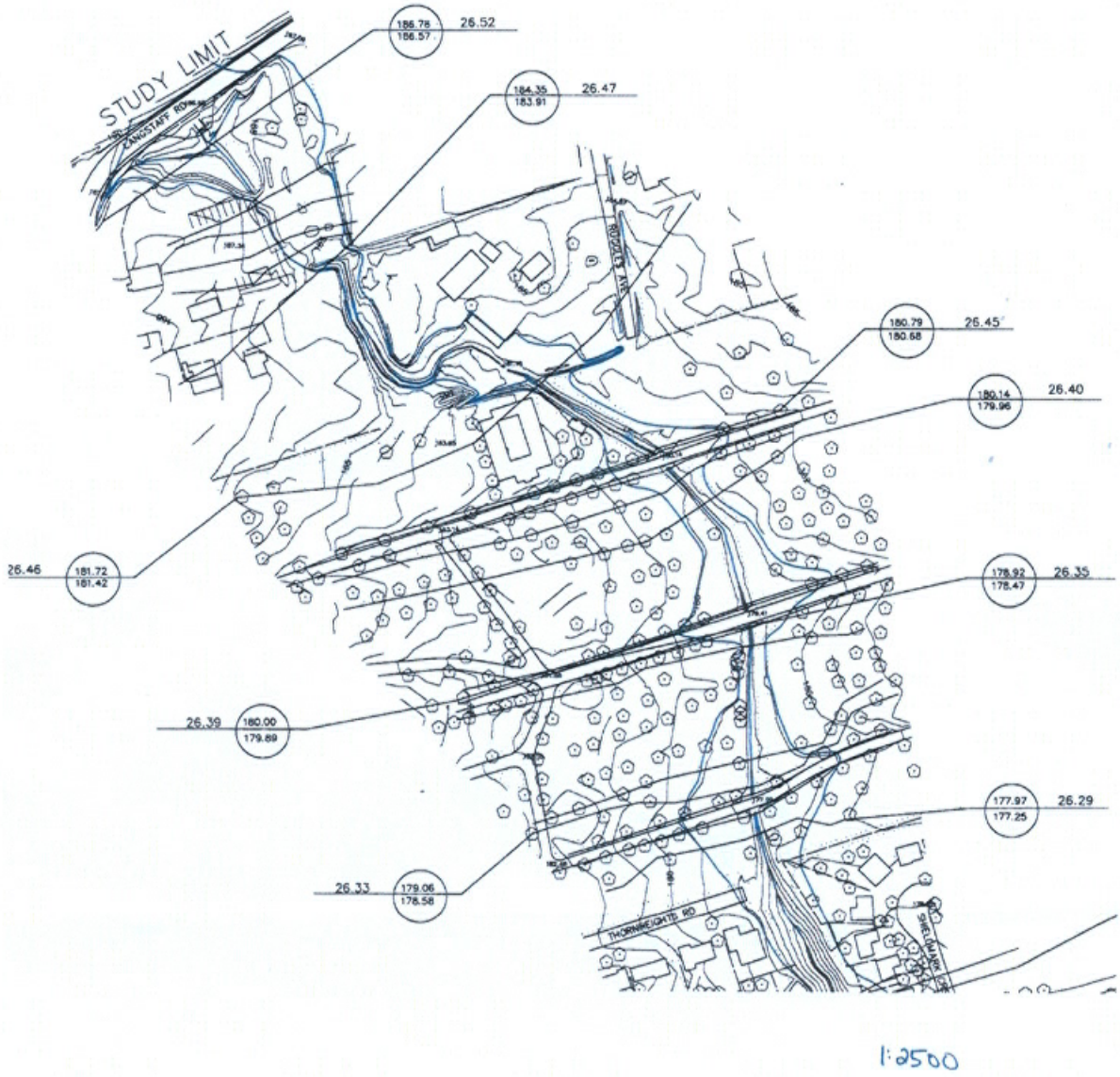


Figure 26 - Regulatory Floodline for Pomona Mills Creek

constrictions, the width of the flood plain at these locations can be reduced in the post-development condition by using larger culverts at proposed road crossings.

5.5.2 The Master Plan for Pomona Mills Creek

The proposed Master Plan for Pomona Mills Creek is shown in Figure 2 in the context of the proposed development. The plan is to restore, protect and enhance the existing creek system and make the restored creek the centre piece of a new neighbourhood park. The vision for the creek and the park is illustrated in Figure 27. The restored creek will flow diagonally across the park through a naturalized vegetated buffer. A pedestrian bridge is proposed to facilitate access to the recreational area of the park.

The restored watercourse will be a natural channel which will be designed using natural channel design principles, using natural materials such as plantings, riverstone, and wood to stabilize the stream and protect it from erosion. The restored creek will provide fish habitat in the form of riffles (for aeration of streamflows) and pools, and other habitat features to be identified by the project ecologists.

5.5.3 Natural Channel Design

As has been mentioned, Pomona Mills Creek will be restored using natural channel design principles. The restored watercourse will be realigned and located within the proposed neighbourhood park as shown in Figure 27. The morphological characteristics of the restored stream will be developed based on morphological clues gleaned from the relatively unaltered section of the creek. These will be supplemented by available morphological equations to establish critical morphological parameters such as bankfull width, bankfull depth, and periodicity of channel form. Design flows such as bankfull discharge and 100 year flood flow will be developed using TRCA data, supplemented by field measurements and morphologic relationships. Due to the highly altered and degraded condition of the watercourse, and the significant change in its hydrologic regime due to urbanization of its watershed, both up and downstream, existing stream characteristics and parameters cannot be used in the selection of morphologic parameters for the natural channel design of the new channel. There is no suitable reach of Pomona Mills Creek upstream or downstream that can be used to develop surrogate morphological parameters on which to base the design of the new natural channel.

The proposed natural channel will be a riffle/pool channel with an average slope similar to existing, and low sinuosity. The riffle/pool sequence will be designed with a wavelength of 6 to 12 times the bankfull width, and will provided in the vertical plane the periodicity dictated by morphologic equations. A conceptual sketch of the proposed riffle/pool sequence is shown in Figure 28.

The proposed channel cross-section will consist of a bankfull channel, which based on a preliminary fluvial geomorphic assessment, will have an average width of about 3 m and an average depth of 0.5 m. The channel cross-section above the bankfull channel will be designed so that the stream is moderately entrenched. That is, during floods, sufficient channel cross-sectional area will be provided so that flood velocities are relatively low (1.7 to 2 m/s) and the channel banks can be protected against erosion using

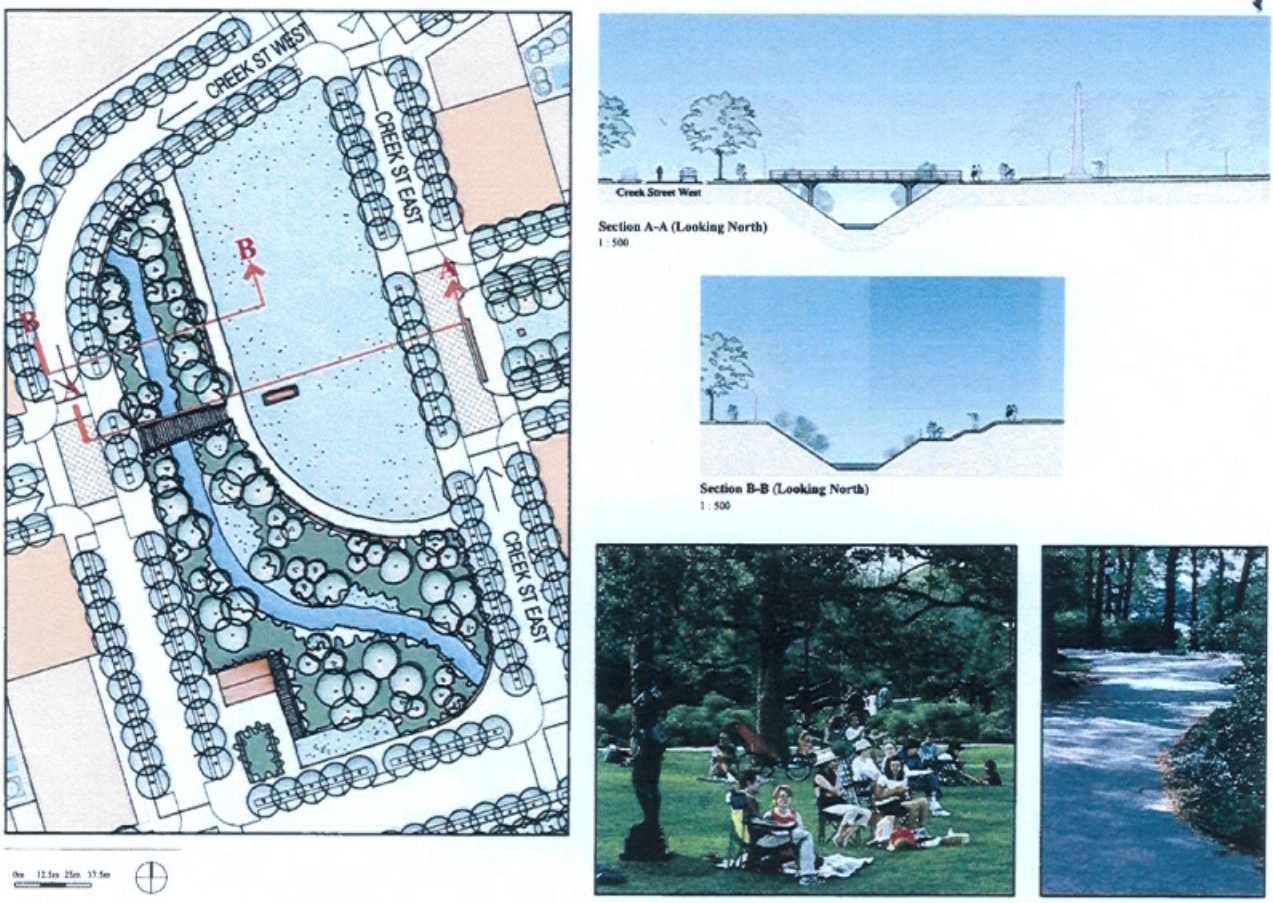


Figure 27 - Natural Channel Design Concept

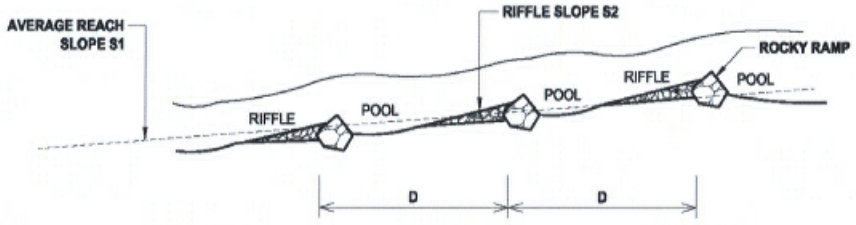


Figure 28 - Riffle-Pool Sequence

vegetation. Bio-engineering techniques such as live stakes, sod mats and brushmattressing will be used to stabilize the banks of the stream valley. The proposed concept is illustrated in Figure 29.

The restored channel will have a natural appearance and will be stable immediately following construction. The restored creek system will increase in stability as the vegetation becomes well established and rooted over time. The live stakes to be planted along the creek banks will provide shading of the active channel, and help mitigate warming of streamflows.

5.5.4 Watercourse Crossings

Culverts will be required at the upstream and downstream limits of the watercourse to convey Pomona Mills Creek under roads. The culverts will be designed so that no flooding and erosion impacts will occur downstream and upstream, and to provide fish passage by incorporating a bankfull channel and natural substrate through the crossing.

The culverts will be sized to satisfy municipal requirements and to satisfy the requirements of the Canadian Highway Bridge Design Code with regard to freeboard (to the travelled edge of roadway) and clearance (to the underside of the culvert). The design and check flood for the culverts will be selected based on Ministry of Transportation Drainage Standards if no applicable municipal standards are available. Scour protection will be provided, if required, to ensure that the culvert footings are not undermined during the check flood.

Fish habitat features such as inlet and outlet pools will be provided if specified by the project ecologists.

6.0 UTILITIES

6.1 Electrical Power Distribution

The site is presently serviced from existing hydro plant on Yonge Street and Bayview Avenue which feed the site via Langstaff Rd. The local streets within the site are feed from the aerial line on Langstaff Rd. The overhead electrical plant would be removed and replace with underground cable as the site is developed. The local provider, Powerstream, it is uncertain at this time if any upgrades to the existing hydro infrastructure external to the site would be necessary to service the proposed development.

6.2 Telecommunications

The site is currently serviced by Bell using mostly aerial plant. Rogers provides service to a portion of the site also using aerial plant. The existing telecommunications plant will be removed as part of the re-development of this site and replaced.

It is expected that the area of the site, west of the existing CN Rail tracks, will be serviced by existing Cable TV infrastructure located on Yonge Street. The area east of the CN Rail tracks may be serviced

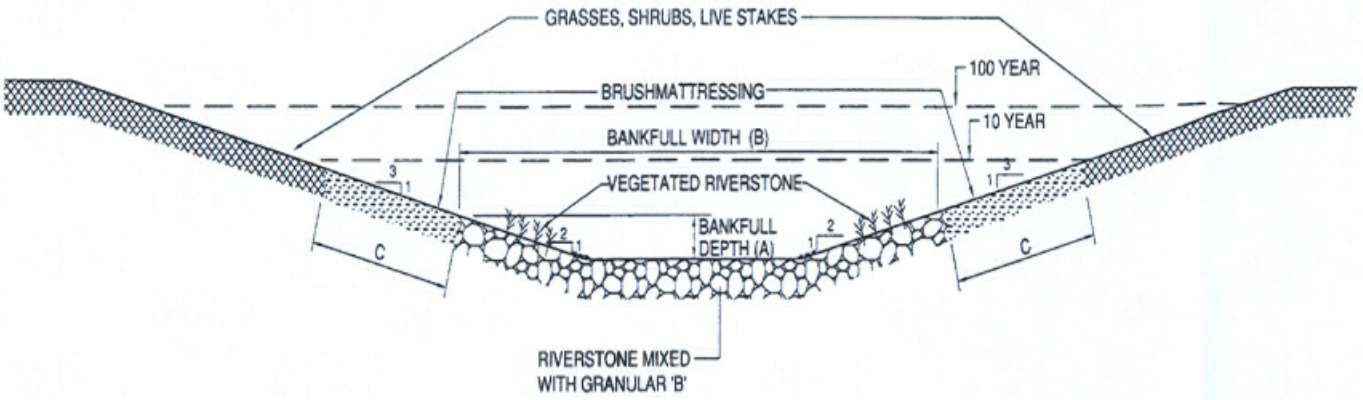


Figure 29 - Concept for Cross-Section of Natural Channel

from Bayview Avenue however, we are uncertain of the existence of any cable infrastructure on Bayview Avenue. If it is not possible to feed the area from Bayview Avenue, cable lines will need to cross the existing CN Rail tracks along the proposed roads to feed the eastern side of the development.

Bell Canada has indicated that it prefers to service the entire development from exiting infrastructure on Yonge Street. To service the east portion of the site, Bell Canada lines would need to cross the existing CN Rail tracks by following the proposed roads. If it was necessary, Bell Canada has indicated that they could service part of the site from Bayview Avenue.

6.3 Natural Gas

There are gas mains within the site including a 150 mm gas main running along Langstaff Road. All existing gas mains will be removed as part of the re-development. Enbridge Gas Distribution Limited has indicated that there is ample supply external to the site to service the proposed development. To service this development, gas would be fed from existing gas mains on both Yonge Street and Bayview Avenue.

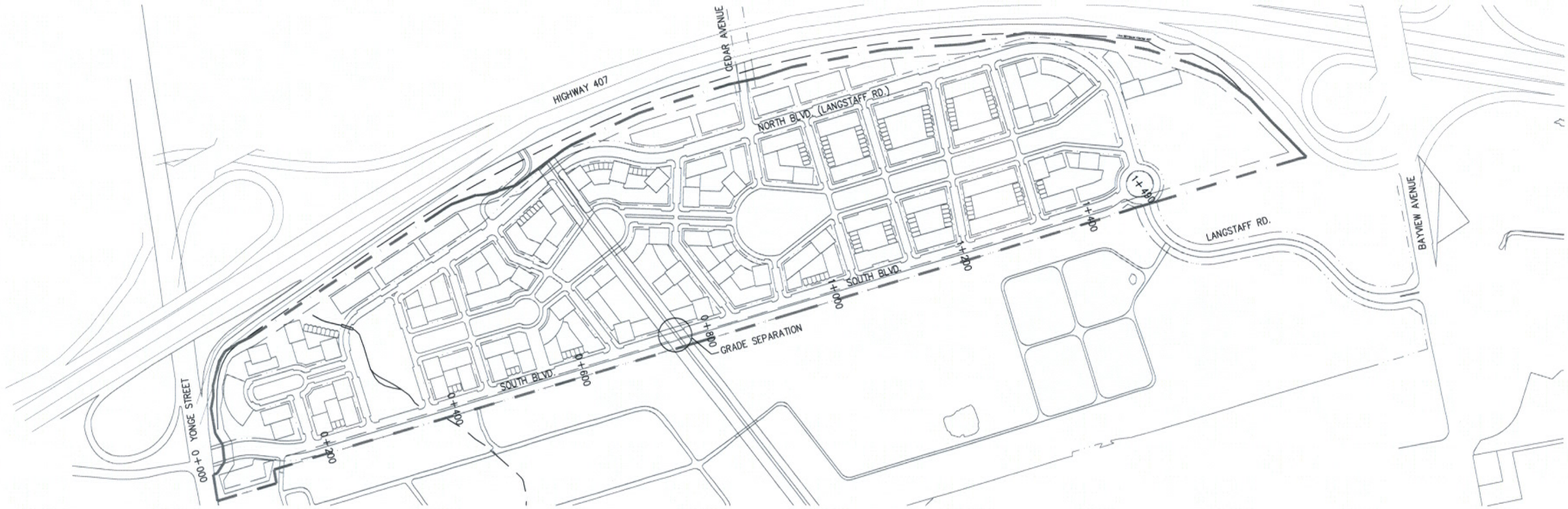
7.0 SITE GRADING

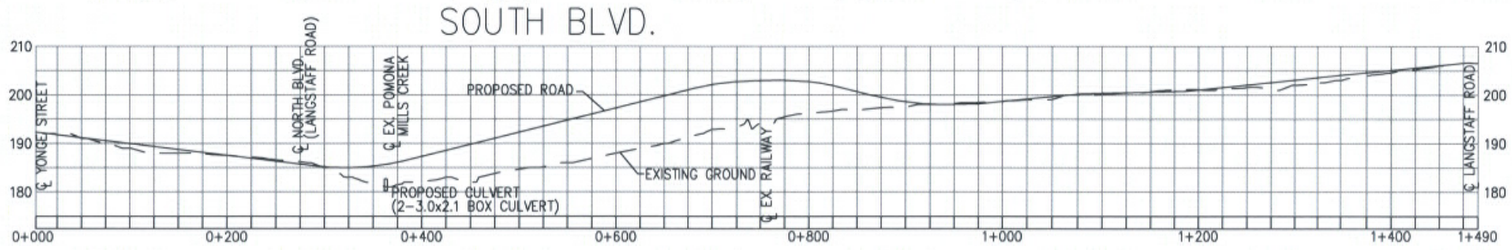
The preliminary grading scheme for the site has been prepared to ensure that the proposed roads will match into the existing entrances into the development. On the east side, the proposed roads will match into the existing Langstaff Road at the interface with Holy Cross Cemetery. On the west side, the proposed road will match into the existing grade at Yonge Street. The preliminary road grades have also designed to accommodate the extension of Cedar Avenue, under Highway 7 and Highway 407, connecting to the proposed road system.

At the crossing of the existing CN Rail tracks on both the South and North Blvds., the preliminary grading provides for grades separations with the proposed roads over the tracks. The tunnel or bridge envisioned in the Master Plan to enclose the remainder of the tracks between the North and South Blvds has also been incorporated into the preliminary grading scheme. Preliminary grades for the grade separations and the enclosure have been set to provide sufficient clearance over the CN Rail tracks. The clearance used in the preliminary design is a 9.0 m separation from the top of the existing CN Rail tracks to the finished road grade.

Highway 407 at the west end of the site is much higher than Langstaff Road and is supported by a retaining wall. This wall will be maintained for the most part but portions may become redundant in the vicinity of the grade separation.

South Blvd, along the property line, with Holy Cross Cemetery, is designed with a grade separation to go over the CN Rail tracks and as a result, there will be a significant grade differential between the proposed road and the existing cemetery land. The grade differential will be taken up with a combination of 3:1 sloping and retaining walls. Refer to Figures 30 & 31 for preliminary profiles of South and North Blvds.





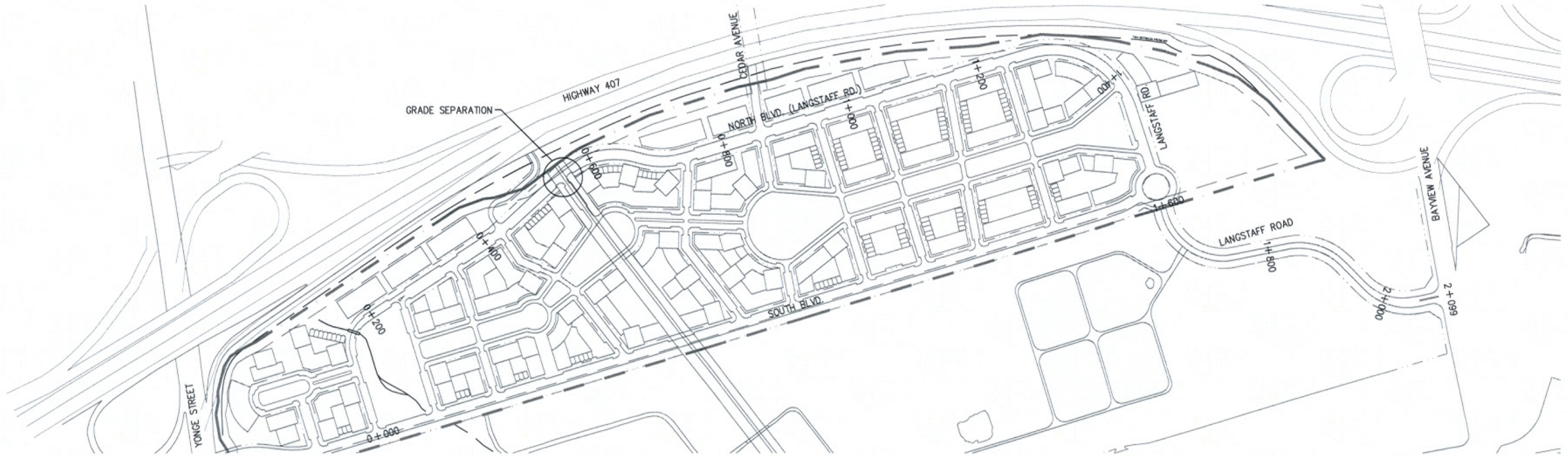
TITLE

LANGSTAFF GATEWAY

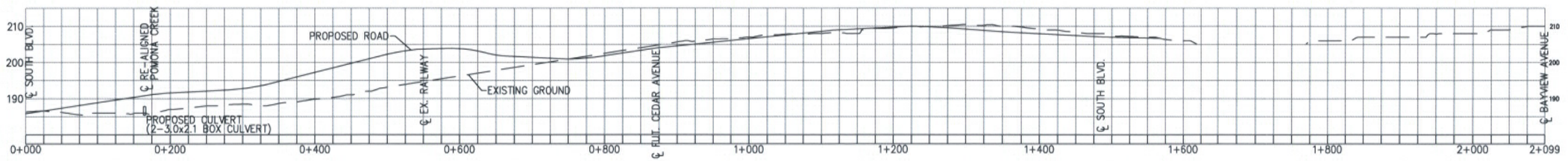
PRELIMINARY PROFILE SOUTH BLVD.

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOV. 23, 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	30



NORTH BLVD. (LANGSTAFF ROAD)



TITLE: LANGSTAFF GATEWAY
PRELIMINARY PROFILE
NORTH BLVD. (LANGSTAFF ROAD)

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOV. 23, 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	31

Within the site the remainder of the road grades have been designed to deliver overland flow to the outlets noted in the storm drainage scheme. On the west side of the tracks, grading has been designed to convey overland flow drains to a low point on South Blvd. at Pomona Mills Creek. On the east side of the tracks, overland flow drains to a low point on South Blvd. just east of the extension of Cedar Avenue. At this low point, any overland flow will be captured and conveyed by a major system storm sewer and conveyed to Pomona Mills Creek. Refer to Figure 32 for a preliminary grading design for the site.

8.0 DEVELOPMENT PHASING

The Land Use & Built Form Master Plan (Calthorpe Associates / Ferris + Associates, June 2009) provides a description of the development phasing for the site which is attached as Figure 33. Servicing requirements by phase to support this Phasing Plan are outlined below. Also incorporated into the servicing concepts by Phase is the timing of various road connections from the supporting Draft Transportation Report (IBI Group Aug 2009)

8.1 Phase 1

Phase 1 from the Calthorpe Phasing Plan consists of an area on the each side of the CN Rail tracks. On the east side of the tracks, it is the entire site area east of 'H' street (Essex Avenue). West of the tracks, it is the area between Sudbury Lane and 'A' street (approx. ex. Ruggles Avenue) which is centred on the Pomona Mills Creek Park.

Access to both areas of Phase 1 will be from Bayview Ave. and/or Yonge St. via a realigned Langstaff Rd. The portion of Langstaff Road between the east and west sections of Phase 1 will remain open utilizing the existing level crossing of the CN tracks. Temporary roads will be constructed at the limits of the two sections of phase1 to connect to the remaining portions of Langstaff Rd. Cedar Ave will be extended south under Hwy 7 and Hwy 407 and connected to Langstaff Rd. to provide an additional access point.

8.1.1 Water Distribution System – Phase 1

Local watermains sized to service the proposed development will be required along the proposed streets of Phase 1 to service the proposed development.

On the west side of Phase 1, a new connection to the existing 300 mm watermain on Yonge St. and a connection to the existing 1050 mm watermain in the vicinity of the north east corner of Phase 1 west will be required to create a loop. A pressure reducing valve (PRV) will be required at the connection with the ex. 1050 mm watermain as it operates in a higher pressure district than the Yonge St. main.

For the eastern side of Phase 1, the proposed local watermain will connected to the existing 1050 mm trunk watermain at 2 locations to create a looped local system. These connection locations would be in

HIGHWAY 407

CEDAR AVENUE

BAYVIEW AVENUE

NORTH BLVD. (LANGSTAFF ROAD)

SOUTH BLVD.

LANGSTAFF ROAD

TRACK ELEV. 194.70
9.0m FROM TRACK TO PROP. ROAD

TRACK ELEV. 194.00
9.0m FROM TRACK TO PROP. ROAD

PARK

HOLY CROSS CEMETERY

EX. RESIDENTIAL

YONGE STREET

EX. CN RAILWAY

APPROX. LIMIT OF SLOPE/RETAINING WALL

EX. POMONA MILLS CREEK

203.95 200.98 203.66 205.68 207.46 209.20 210.00 209.20 207.60 206.90 206.70 206.55 205.45 204.15 202.65 203.60 201.20 200.50 199.40 198.08 199.31 199.93 198.60 194.50 192.10 192.56 196.55 200.30 203.10 201.20 198.49 188.90 190.13 188.10 185.90 185.90 191.20

LEGEND

199.99 PROPOSED GRADE

GRADE ARROW

TITLE	LANGSTAFF GATEWAY PRELIMINARY GRADING PLAN		
	MMM GROUP 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca		
CHECKED JCK	DATE NOV. 23, 2009	PROJ. No. 10-08053	
DRAWN MSK	SCALE 1 : 5000	FIGURE No. 32	

OVERALL PHASING PLAN

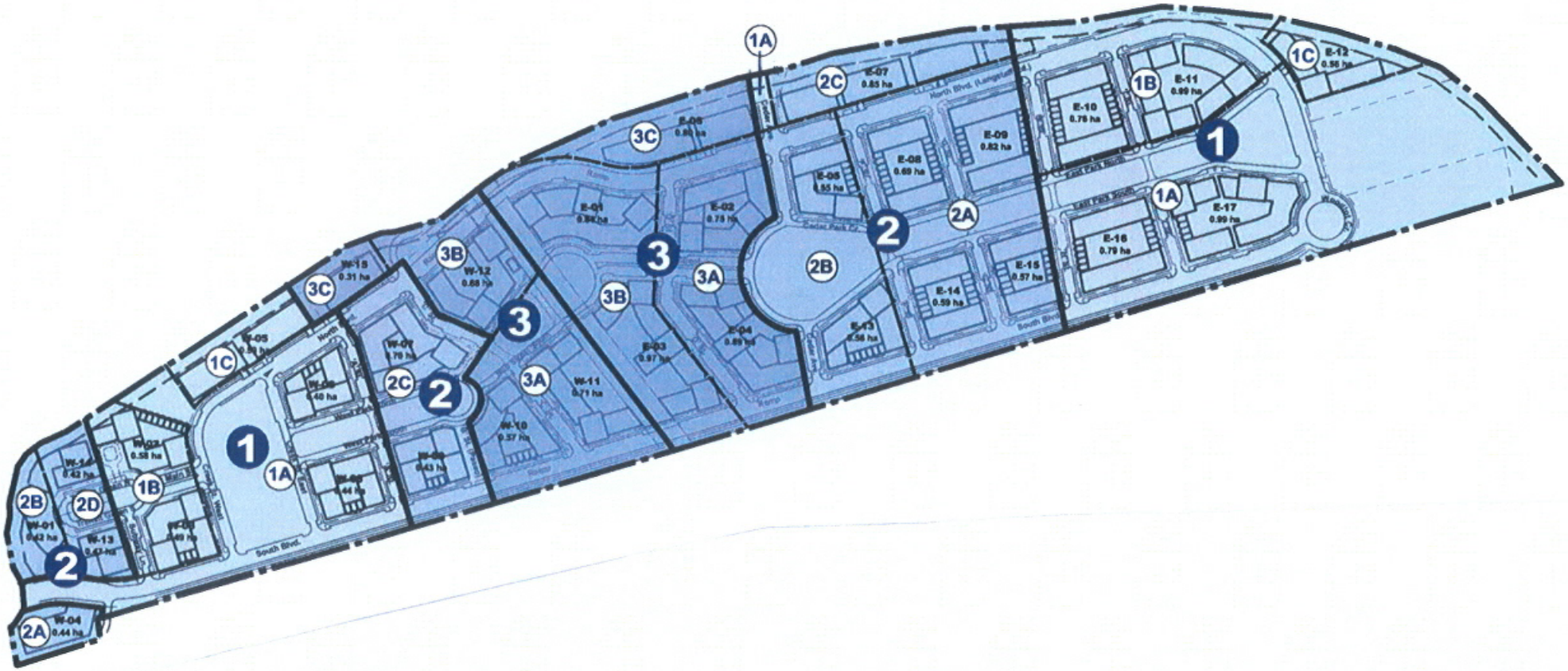


Figure 33

the south east corner of the property and in the northwest corner at Langstaff Rd. Refer to Figure 34 for more details.

8.1.2 Sanitary Servicing – Phase 1

The existing Regional trunk sewer that runs through the western portion of the site will need to be relocated to suit the Master Plan layout. Local sanitary sewers on the proposed right-of-ways will convey flow from the blocks to the existing 600 mm sanitary trunk sewer that runs south through Holy Cross Cemetery. Further analysis by the Region of York is required to determine the available capacity in the existing 600 mm sanitary trunk which will dictate how much of Phase 1 west can be serviced by the existing trunk sewer. Depending on the results of this analysis, other temporary servicing options may be needed for Phase 1 west. One such option would include construction of the ultimate pumping station and forcemain and pumping east to the existing Regional trunk east of Bayview.

At the east side on the site the local sanitary sewers will direct flow to a temporary pumping station located adjacent to the southwest corner of the phase. From this proposed pumping station, a section if the ultimate 750 mm sanitary force-main will be constructed east to connect to the existing 1050 mm sanitary trunk sewer located east of Bayview Avenue. Refer to Figure 35.

8.1.3 Storm Drainage – Phase 1

Phase 1 storm drainage works on the west side of the tracks include the revitalization of Pomona Mills Creek, two road crossings of Pomona Mills Creek, and the ultimate end of pipe storage tanks within Pomona Mills Creek park. Local storm sewers within the proposed streets and on-site storage within each of the blocks (roof-top storage and underground storage tanks) will also be required as the blocks are built out. The controlled flows from the site will be discharged Pomona Mills Creek. Interim controls may be required on the two ultimate end of pipe storage tanks to accommodate Phase 1.

East side of the tracks, an interim storm-water management pond is proposed adjacent to the southwest corner of Phase 1 east. On-site storage as above within each block will be required. Local storm sewers will convey flows to the interim SWM pond which will outlet via an interim ditch or pipe to the existing SWM pond located within the Holy Cross Cemetery lands. Refer to Figure 36.

8.2 Phase 2

Phase 2 construction consists of one area on each side of CN Rail tracks. Phase 2, on the east side of the tracks, is the site area east of Cedar Avenue to the Phase 1 East. Phase 2, on the west side of the tracks, is the area between Yonge Street and Phase 1 West, including the property on the south west corner of Yonge Street and Langstaff Road and also the next block each of Phase 1. Access to Phase 2 East will be from Phase 1 East. The temporary road at Essex Ave. and Langstaff Rd. will be removed and a new temporary road will need to be constructed connecting the existing Langstaff Rd. with the intersection of Cedar Avenue and the re-aligned Langstaff Road. Phase 2 west will be accessed from Phase 1 West.

LANGSTAFF TO REMAIN OPEN BETWEEN PHASE 1 EAST AND WEST WITH LEVEL CROSSING OF CN TRACKS.

HIGHWAY 407

EXTEND CEDAR AVENUE

CONNECT TO EX. WATERMAIN

BAYVIEW AVENUE

1050Ø WM

CONNECT TO EX. WATERMAIN AND INSTALL PRV

PARK

PARK

PARK

PARK

CONNECT TO EX. WATERMAIN

1050Ø WM

RETAIN EX. 1050Ø WATERMAIN; PROVIDE LOCAL WATERMAIN FOR SERVICE CONNECTIONS.

HOLY CROSS CEMETERY

EX. RAILWAY

YONGE STREET

EX. SWM POND

HOLY CROSS CEMETERY

EX. RESIDENTIAL

CONNECT TO EX. LOCAL WATERMAIN ON YONGE STREET

EX. POMONA MILLS CREEK

LEGEND

- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- EXISTING 1050Ø WATERMAIN
- LIMIT PHASE 1 (EAST AND WEST)
- TEMPORARY ROAD

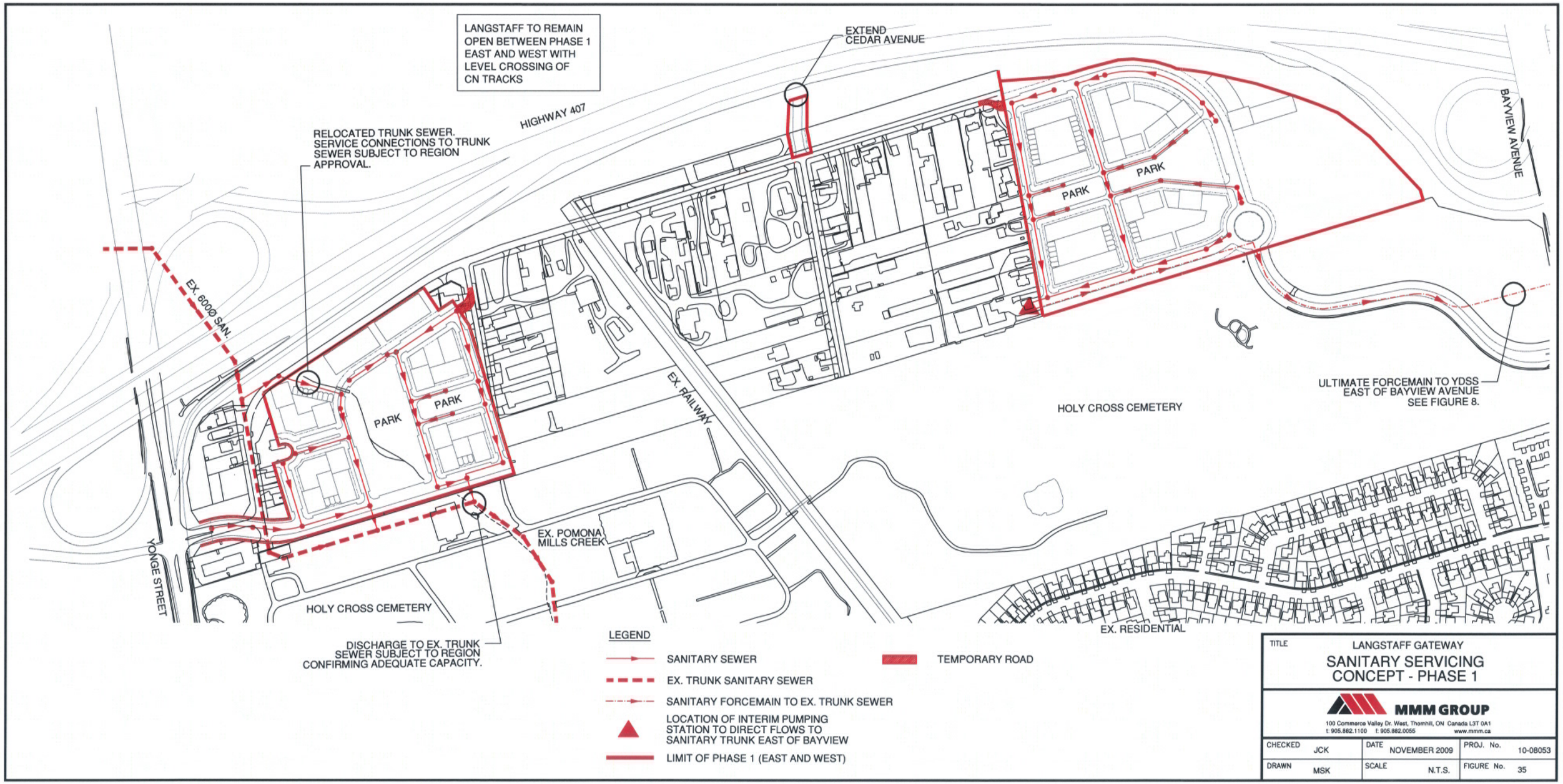
TITLE

LANGSTAFF GATEWAY

WATER DISTRIBUTION CONCEPT - PHASE 1

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

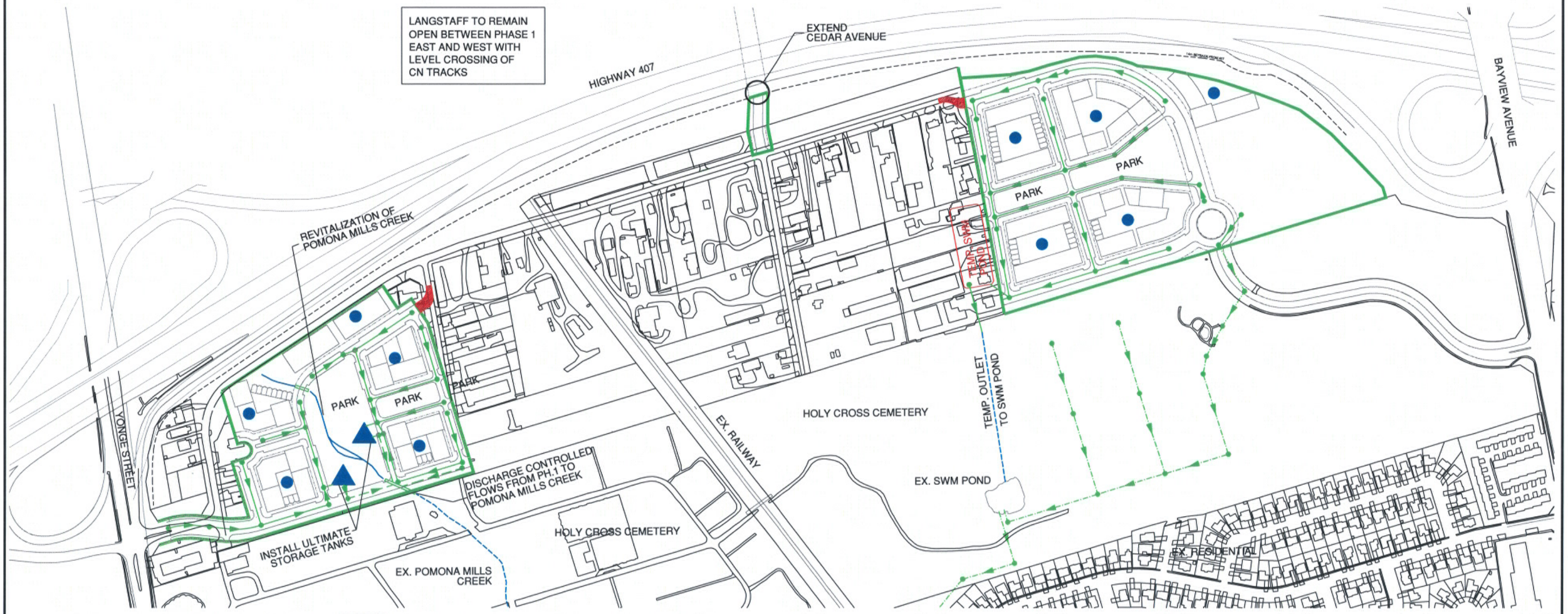
CHECKED	DATE	PROJ. No.
JCK	NOVEMBER 2009	10-08053
DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	34



TITLE
LANGSTAFF GATEWAY
SANITARY SERVICING CONCEPT - PHASE 1

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOVEMBER 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	35



LEGEND

- END OF PIPE STORAGE (UNDERGROUND STORAGE)
- ON-SITE STORAGE (STORAGE TANK AND ROOF-TOP)
- STORM SEWER
- STORM SEWER OUTLETTING TO POMONA CREEK (CONTROLLED FLOWS)
- EX. STORM SEWER
- LIMIT PHASE 1 (EAST AND WEST)
- TEMPORARY ROAD

TITLE: LANGSTAFF GATEWAY
STORM DRAINAGE CONCEPT - PHASE 1

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	DATE	PROJ. No.
JCK	NOVEMBER 2009	10-08053
DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	36

Langstaff Road will remain open from Phase 1 West to Cedar Avenue utilizing a level crossing. South Blvd. will be constructed between the east and west sections of Phase 2 complete with a grade separation to increase east west capacity.

8.2.1 Watermain Distribution System – Phase 2

The Phase 2 West watermain will connect into the watermain constructed during Phase 1. The PRV installed in Phase 1 may need to be relocated. The proposed watermain for Phase 2 East will connect to the watermain system constructed in Phase 1 East. A watermain connecting the east and west halves of Phase 2 will be required along South Blvd. for system looping. This will also include a PRV to define the interface between PD5 and PD6. Refer to Figure 37.

8.2.2 Sanitary Servicing – Phase 2

The remaining section of the existing 600 mm sanitary trunk sewer, which lies within the Phase 2 West area, will be removed and the flow directed through the Phase 1 sanitary sewer system. At this point in the development it is expected that the remaining capacity in the Regional trunk south of the site will have been utilized and the ultimate pumping stations will be required.

For Phase 2 on the east side of the tracks, the interim pumping station constructed in Phase 1 will be removed and a sanitary sewer constructed along the South Blvd. to connect to the ultimate pumping station noted above. Refer to Figure 38.

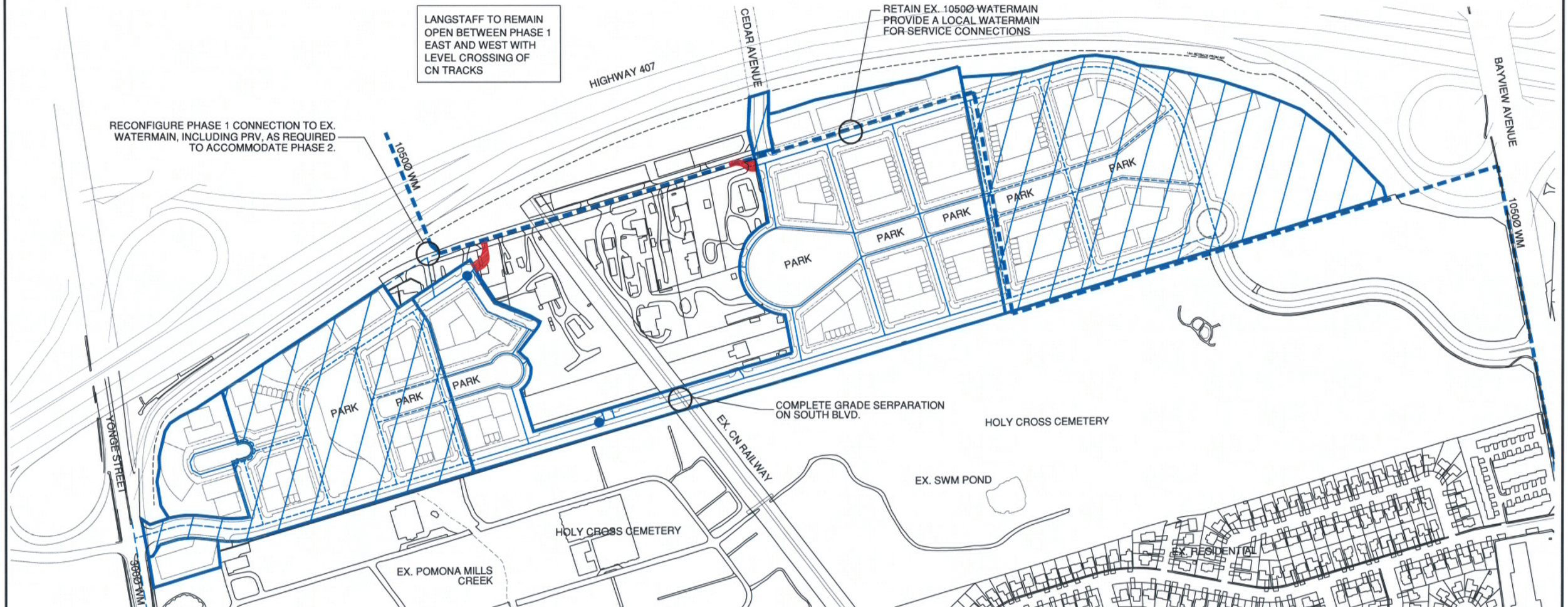
8.2.3 Storm Drainage - Phase 2

For Phase 2 on the west side of the tracks, local storm sewers will be constructed, within the proposed right-of-ways, to collect surface drainage and connections from the proposed buildings. It is proposed that the proposed buildings will have on-site storage, (roof-top storage, tanks, and\or cisterns), where possible. These storage measures will reduce the amount of flow entering the storm sewer system. The flow collected by the storm system will be directed to the Phase 1 storm sewer system.

For Phase 2 on the east side of the tracks, on-site storage is proposed where possible and local storm sewers will be constructed as mentioned previously. The flow from the storm sewer system will be directed to the proposed end of pipe storage facility, located within Cedar Park. The temporary SWM pond constructed as part of Phase 1 will be removed. The storage facility will outlet to major system storm sewer to convey flows under South Blvd. and across the CN tracks to Pomona Mills Creek. Refer to Figure 39.

8.3 Phase 3

Phase 3 construction consists of the remaining area of the development, which is the located between Phase 1 West and Phase 2 East. Access to Phase 3 will be from the two previous phases that border it.



LEGEND

- PROPOSED WATERMAIN (PHASE 2)
- WATERMAIN CONSTRUCTED IN PHASE 1
- EXISTING 1050Ø WATERMAIN
- LIMIT PHASE 1 (EAST AND WEST)
- LIMIT PHASE 2 (EAST AND WEST)
- TEMPORARY ROAD
- PROPOSED PRESSURE REDUCING VALVE

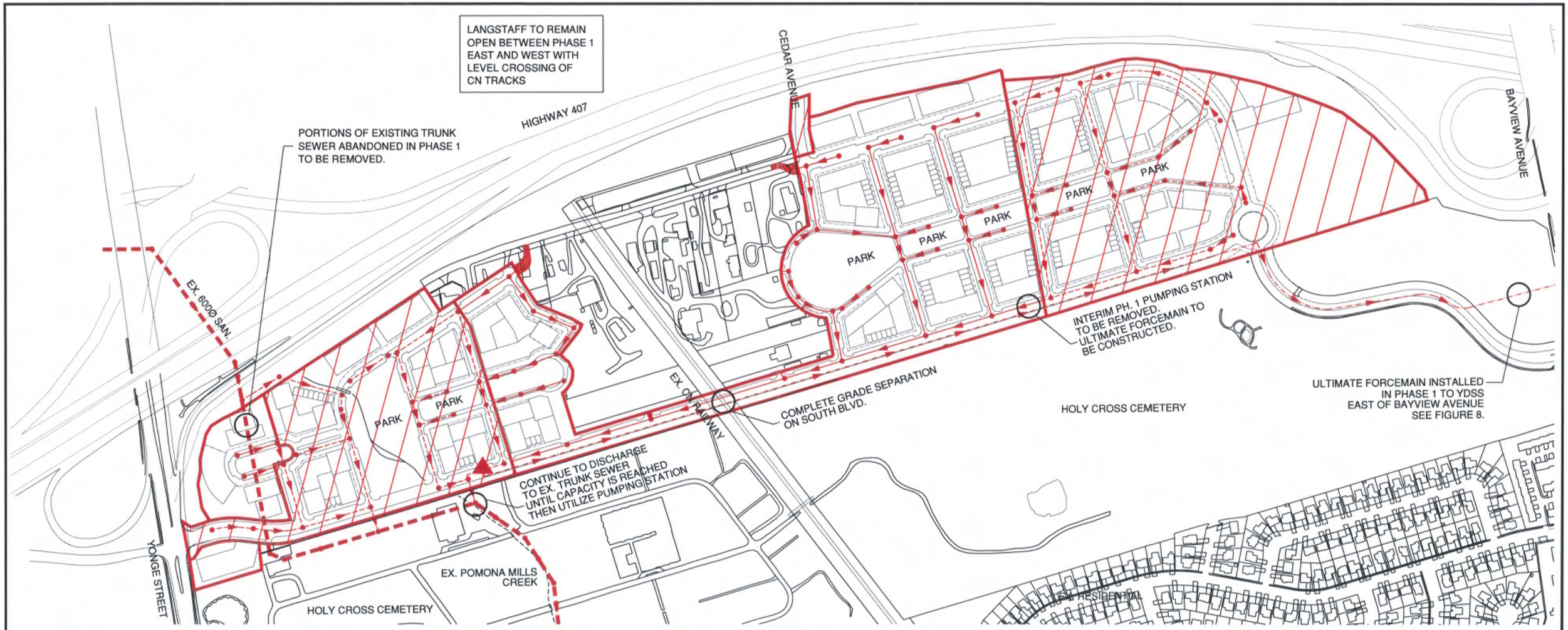
TITLE

LANGSTAFF GATEWAY

WATER DISTRIBUTION CONCEPT - PHASE 2

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOVEMBER 2009	PROJ. No. 10-08053	
DRAWN MSK	SCALE N.T.S.	FIGURE No. 37	

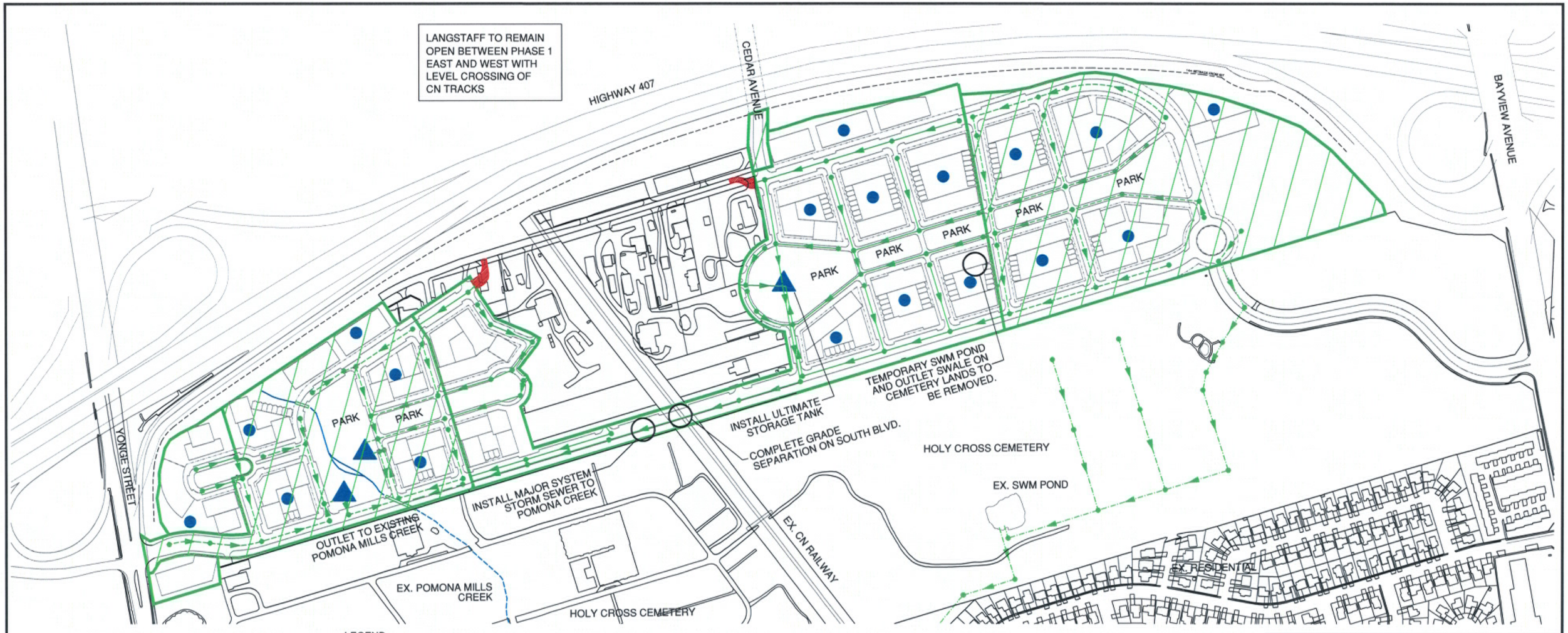


TITLE

LANGSTAFF GATEWAY
SANITARY SERVICING CONCEPT PHASE 2

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOVEMBER 2009	PROJ. No.	10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No.	38



LEGEND

- END OF PIPE STORAGE (UNDERGROUND TANK)
- ON-SITE STORAGE (STORAGE TANK AND ROOF-TOP)
- STORM SEWER (PHASE 2)
- STORM SEWER (PHASE 1)
- EX. STORM SEWER
- LIMIT PHASE 1 (EAST AND WEST)
- LIMIT PHASE 2 (EAST AND WEST)
- TEMPORARY ROAD

TITLE

LANGSTAFF GATEWAY

STORM DRAINAGE CONCEPT - PHASE 2

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	JCK	DATE	NOVEMBER 2009	PROJ. No.	10-08053
DRAWN	MSK	SCALE	N.T.S.	FIGURE No.	39

The temporary roads constructed as part of Phase 1 and Phase 2 will be removed. Phase 3 will include the grade separation over the CN tracks on North Blvd.

8.3.1 Watermain Distribution System - Phase 3

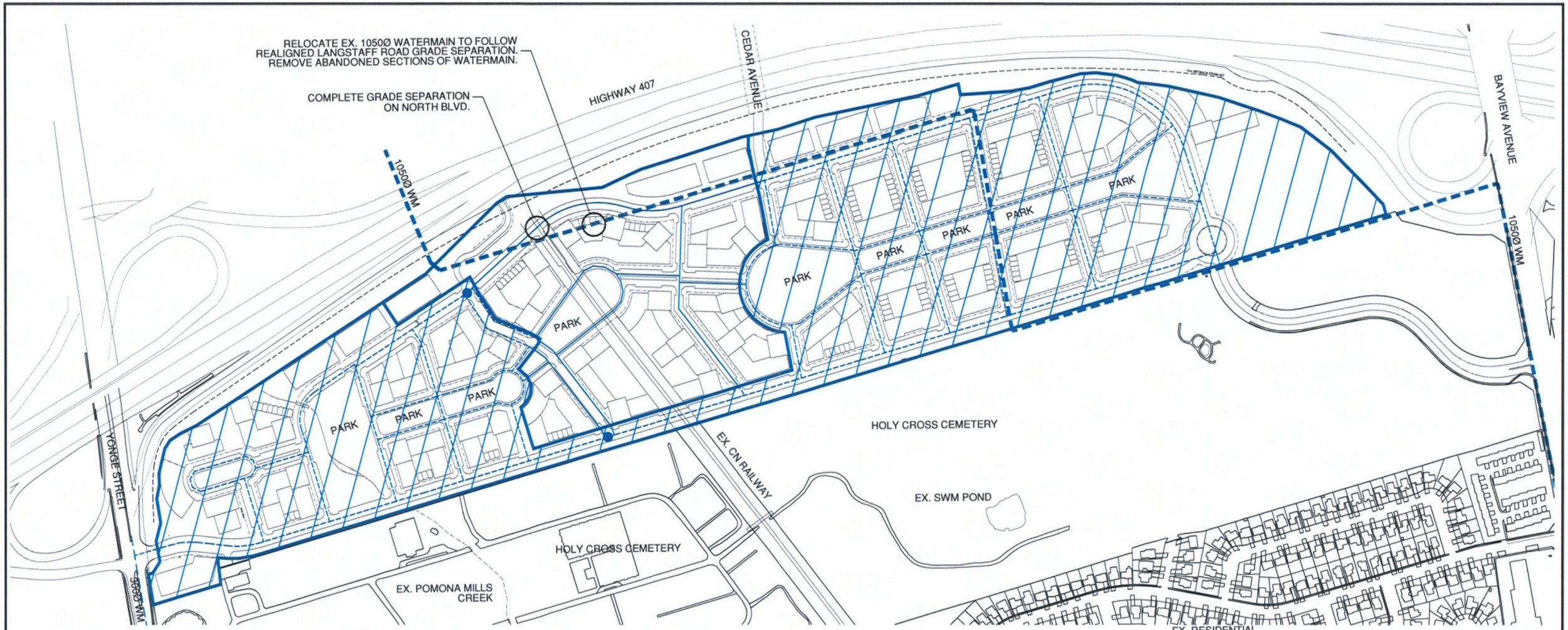
The proposed Phase 3 watermain will connect into the watermain constructed during Phase 1 and Phase 2. The 1050 mm trunk watermain on Langstaff will need to be relocated in conjunction with the grade separation at North Blvd. Refer to Figure 40.

8.3.2 Sanitary Servicing - Phase 3

For Phase 3, local sanitary sewers will be constructed, and connected to sewers constructed in Phase 1 and Phase 2. Retrofitting of the pumps to suit new flow conditions are likely. Refer to Figure 41.

8.3.3 Storm Drainage - Phase 3

For Phase 3 only, local storm sewers and on-site storage, (roof-top storage, tanks, and\or cisterns), are required as the remainder of the system has been installed. Refer to Figure 42.



LEGEND

- PROPOSED WATERMAIN (PHASE 3)
- WATERMAIN CONSTRUCTED IN PHASE 1 AND 2
- EXISTING 1050Ø WATERMAIN
- LIMIT PHASE 1 AND 2 (EAST AND WEST)
- LIMIT PHASE 3

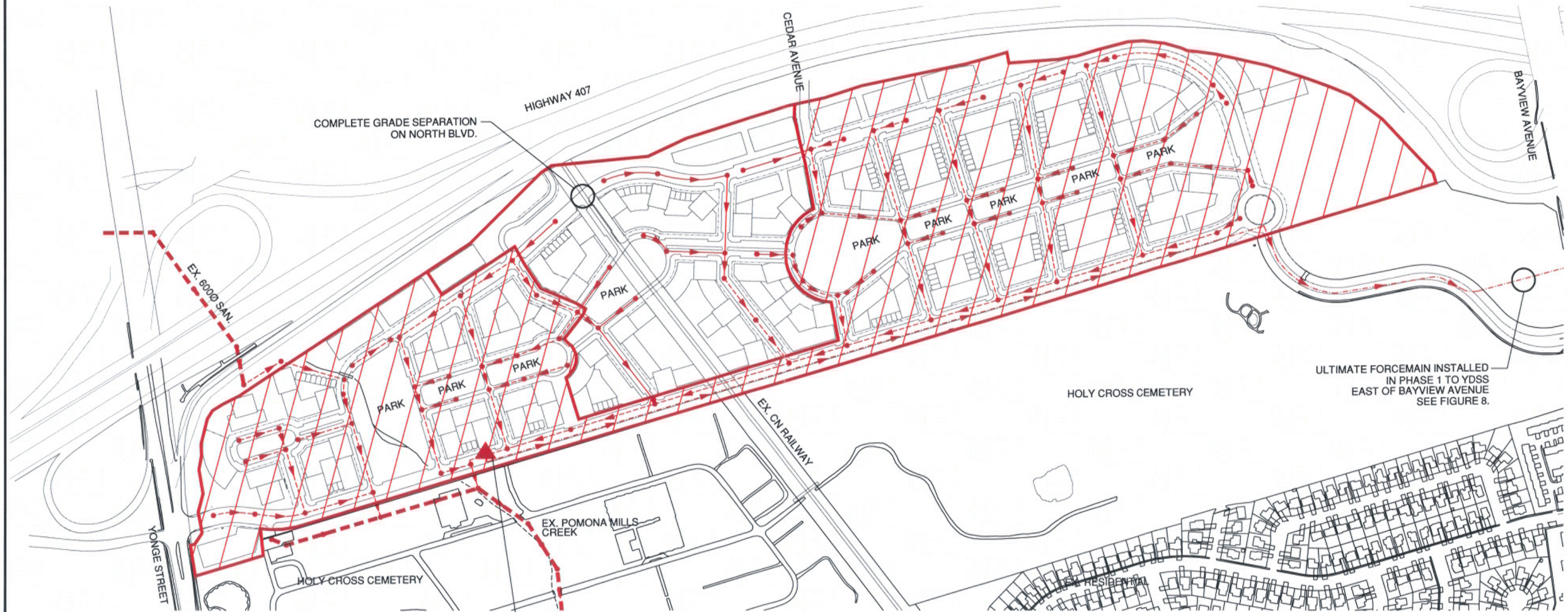
TITLE

LANGSTAFF GATEWAY

WATER DISTRIBUTION CONCEPT - PHASE 3

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

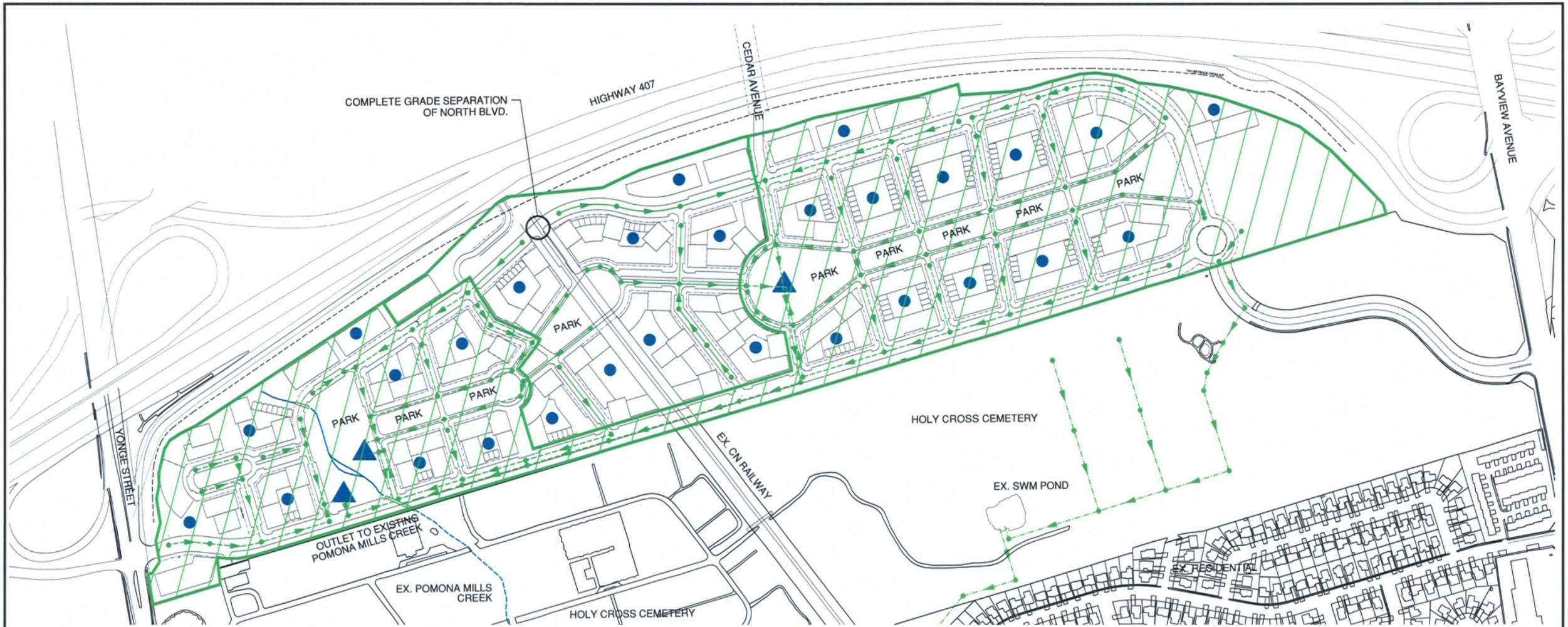
CHECKED	DATE	PROJ. No.
JCK	NOVEMBER 2009	10-08053
DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	40



TITLE
LANGSTAFF GATEWAY
SANITARY SERVICING CONCEPT PHASE 3

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	DATE	PROJ. No.
JCK	NOVEMBER 2009	10-08053
DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	41



LEGEND

- END OF PIPE STORAGE (UNDERGROUND STORAGE)
- ON-SITE STORAGE (STORAGE TANK AND ROOF-TOP)
- STORM SEWER (PHASE 3)
- STORM SEWER (PHASE 1 AND 2)
- EX. STORM SEWER
- LIMIT PHASE 3
- LIMIT PHASE 1 AND 2 (EAST AND WEST)

TITLE

LANGSTAFF GATEWAY
STORM DRAINAGE CONCEPT - PHASE 3

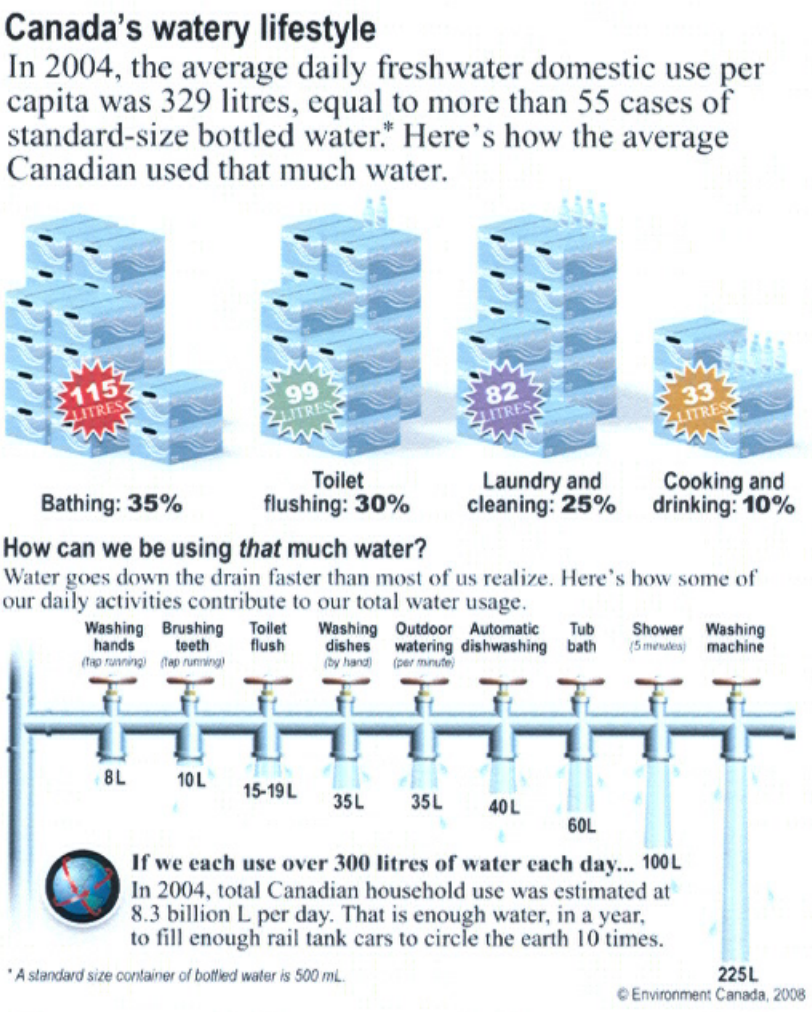
MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED	DATE	PROJ. No.
JCK	NOVEMBER 2009	10-08053
DRAWN	SCALE	FIGURE No.
MSK	N.T.S.	42

9.0 SUSTAINABLE TECHNOLOGIES

9.1 Water Conservation

Canadians have one of the highest rates of domestic use of fresh water in the world. In 2004 this rate was estimated to be 329 l/person. This total use has been further broken down by activities as shown below.



York Region and the Town of Markham are not likely different than the above, although plumbing code changes are starting to make improvements.

Additional water conservation measures can be introduced to make gains from the current plumbing code of reasonable costs. These include:

- Dual flush toilets

- Xeriscaping – drought resistant landscaping
- Frontloading washing machines
- Water efficient dishwashers

With the adoption of these items, water use rates are expected to fall to 150 to 200 l/capita/day, a significant reduction from the Canadian average noted above.

With the incorporation of these water conservation measures, there is less demand on the water supply, treatment and distribution network and also on the wastewater collection, treatment and disposal system. This reduced impact could be translated into increased allocation and/or reduced development charges using the ratio of actual water consumption vs design standards. For the Langstaff site it is recommended that these water construction measures by reviewed in detail for incorporation into the community.

Another point on the graph, albeit unsubstantiated, is a measurement of actual water useage for condominiums recently constructed in the City Toronto. These measurements translate to an approximate water use of 100 l/person/day.

9.2 Water Reuse

Once water conservation techniques and education has advanced to an acceptable level the next area to review is water reuse. This can take on several forms of increasing reuse, and increasing complexities and cost as outlined below:

- Collection of rainwater for irrigation
- Diversion of sink water to toilets for flushing (i.e. Aqus System)
- Collection of rainwater for use in cooling towers
- Collection of rainwater for toilet flushing
- Collection and treatment of grey water for toilet flushing and irrigation

Although examples of each of these can be found in various places, mostly as pilot projects, they are not the norm. Concerns relating to aerosol dispersion of impurities in non-potable irrigation water would need to be addressed. Plumbing code amendments will also be required to bring non-potable water inside the building envelope.

As these concerns are addressed and policy changes incorporated over time it may then become practical and economical to include components of these systems into the Langstaff site.

A summary of the cumulative impacts of the various conservation and reuse methods and concepts is noted below.

	Recent History	Present Day	Step 1	Step 2	Step 3
Description	Status Quo to mid 90's	Low flow fixtures in new development	More fixtures, front load washers, xeriscaping	Use rainwater for toilets, irrigation & cooling towers	Grey water reuse for toilet flushing, limited irrigation, cooling towers
Regulatory Change Required	None	Plumbing Code changed	No further changes	Plumbing Code amendment, policy change	Plumbing Code amendment, policy change
User Impact	None	Minimal	Minimal	Moderate	Moderate
Functionality in Ontario	Good	Good	Xeriscaping has no non-summer benefit	Applicable in Ont. but not a year round solution	Applicable in Ontario but not year round solution
Cost	$	$$	$$$	$$$$	$$$$$

9.3 District Energy

The benefits to both the site and ultimately to the environment, of district energy have been outlined elsewhere in the Master Plan however, the potential impact on stormwater reuse has not been mentioned.

Discussions with Markham District Energy indicate that they use significant amounts of potable water for cooling. Their system could use captured rainwater after it has been filtered. This cooling water would be evaporated into the atmosphere and therefore be removed from the amount of runoff generated by the site. In addition, the use of potable water would be reduced.

The challenge is to match water storage requirements with usage. A District Energy Plant has the greatest need for cooling water in the hot summer months when precipitation is seasonally low. As a result significant storage requirements to capture spring rainfall could be required. These storage volumes would be in addition to those required for stormwater management and would best be located adjacent to district energy facilities. To fill this storage reservoir pumping would be required from the various underground storage tanks during rainfall events.

Should a District Energy scheme be incorporated into the Langstaff Community, using captured rainwater for cooling should be investigated in more detail.

9.4 Other Sustainable Initiatives

Other sustainable initiatives that relate to servicing and road construction that should be reviewed for use within the Langstaff site include:

- Providing tighter joints on sanitary sewers through a combination of different pipe materials, improved construction practise and updated inspection and testing techniques to reduce inflow and infiltration. The relatively high water table on this site dictates that this be reviewed in detail.
- Green roofs and other LID's where appropriate
- Use of recycled concrete and other materials for road base construction.

REFERENCES

Langstaff Sewer and Water System Feasibility Study Final Report
MacViro March 2006

Pomona Mills Creek, Erosion Restoration & Habitat Enhancement Study
1st Public Open House Presentation
Aquafor Beech December 2007

Region of Durham Efficient Community Final Report
Veritec Consulting Inc. May 2008

West Thornhill Stormwater Flood Remediation Class EA Study
Project Update
Town of Markham March 2009

West Thornhill Sanitary Sewer System
Inflow Infiltration Reduction Presentation
Town of Markham March 2009

Langstaff Land Use & Built From Master Plan
Calthorpe Associates/Ferris & Associates Inc. June 2009

Langstaff Land Use & Built From Master Plan
Draft Transportation Report
IBI Group August 2009

APPENDIX A – Water Distribution Model

Waterworks for Excel
Langstaff Gateway

File: Base Model - Prelim - Nov 2009

Preliminary Analysis - Base Model

PIPE TABLE

INPUT						OUTPUT			INPUT	
Pipe	UpNode	DnNode	Length	Diameter	Roughness	Flow	Velocity	HeadLoss	Status	Description
			m	cm		l/s	m/s	m		
1	109	207	323	30	120	23.82	0.34	0.17		
2	111	209	185	30	120	14.97	0.21	0.04		
1001	101	102	21	40	120	448.64	3.57	0.64		
1002	102	103	69	30	120	236.79	3.35	2.59		
1003	103	104	107	30	120	165.81	2.35	2.07		
1004	104	105	197	30	120	108.24	1.53	1.73		
1005	105	106	94	30	120	128.58	1.82	1.14		
1006	106	107	106	30	120	117.37	1.66	1.08		
1007	107	108	90	30	120	106.15	1.50	0.76		
1008	108	109	200	30	120	64.04	0.91	0.66		
1009	109	110	101	20	110	14.15	0.45	0.17		
1010	110	111	178	20	110	-4.45	-0.14	0.04		
1011	111	112	79	30	120	-44.57	-0.63	0.13		
1012	112	113	115	30	120	-79.27	-1.12	0.57		
1013	113	114	90	30	120	-108.18	-1.53	0.79		
1014	114	115	77	30	120	-140.37	-1.99	1.09		
1015	115	116	124	30	120	-172.79	-2.44	2.59		
1016	116	102	165	30	120	-211.85	-3.00	5.01		
1017	116	117	108	20	110	13.91	0.44	0.18		
1018	117	103	172	20	110	-45.83	-1.46	2.60		
1019	117	118	32	20	110	59.74	1.90	0.79		
1020	118	104	166	20	110	-32.41	-1.03	1.32		
1021	118	119	108	20	110	46.65	1.49	1.69		
1022	119	120	92	20	110	39.96	1.27	1.08		
1023	120	121	90	20	110	33.07	1.05	0.74		
1024	121	122	173	20	110	22.16	0.71	0.68		
1025	122	110	89	20	110	6.55	0.21	0.04		
1026	122	112	161	20	110	-9.54	-0.30	0.13		
1027	113	121	141	20	110	3.75	0.12	0.02		
1028	114	120	139	20	110	7.04	0.22	0.07		
1029	115	119	141	20	110	7.26	0.23	0.07		
1030	118	105	123	20	110	20.34	0.65	0.41		
1031	119	106	124	20	110	-11.20	-0.36	0.14		
1032	120	107	124	20	110	-11.23	-0.36	0.14		
1033	121	108	123	20	110	-10.49	-0.33	0.12		
2001	201	202	173	40	120	181.05	1.44	0.97		
2002	202	203	91	40	120	137.28	1.09	0.31		
2003	203	204	96	30	120	62.81	0.89	0.31		
2004	204	205	150	30	120	41.90	0.59	0.23		
2005	205	206	90	30	120	14.73	0.21	0.02		
2006	206	207	89	30	120	0.00	0.00	0.00	n	
2007	207	208	111	30	120	4.43	0.06	0.00		
2008	208	209	162	30	120	4.43	0.06	0.00		
2009	209	210	110	30	120	0.00	0.00	0.00	y	
2010	210	211	90	30	120	-17.96	-0.25	0.03		
2011	211	212	92	30	120	-42.23	-0.60	0.14		
2012	212	203	92	30	120	-74.47	-1.05	0.40		
2013	212	213	117	20	110	12.85	0.41	0.17		
2014	211	214	117	20	110	4.88	0.16	0.03		
2015	210	215	136	30	120	-1.44	-0.02	0.00		
2016	215	208	47	20	110	0.00	0.00	0.00	n	
2017	215	214	106	30	120	-1.44	-0.02	0.00		
2018	214	213	92	20	110	-1.23	-0.04	0.00		
2019	213	205	68	20	110	-7.78	-0.25	0.04		
2020	214	206	95	30	120	-14.73	-0.21	0.02		
2021	204	216	177	20	110	-0.11	0.00	0.00		
2022	216	202	170	20	110	-21.13	-0.67	0.61		

Total System Demand = 630

Preliminary Analysis - Base Model

Residential Peaking Factor 4.5

Non-Residential Peaking Factor 0.8

NODE TABLE

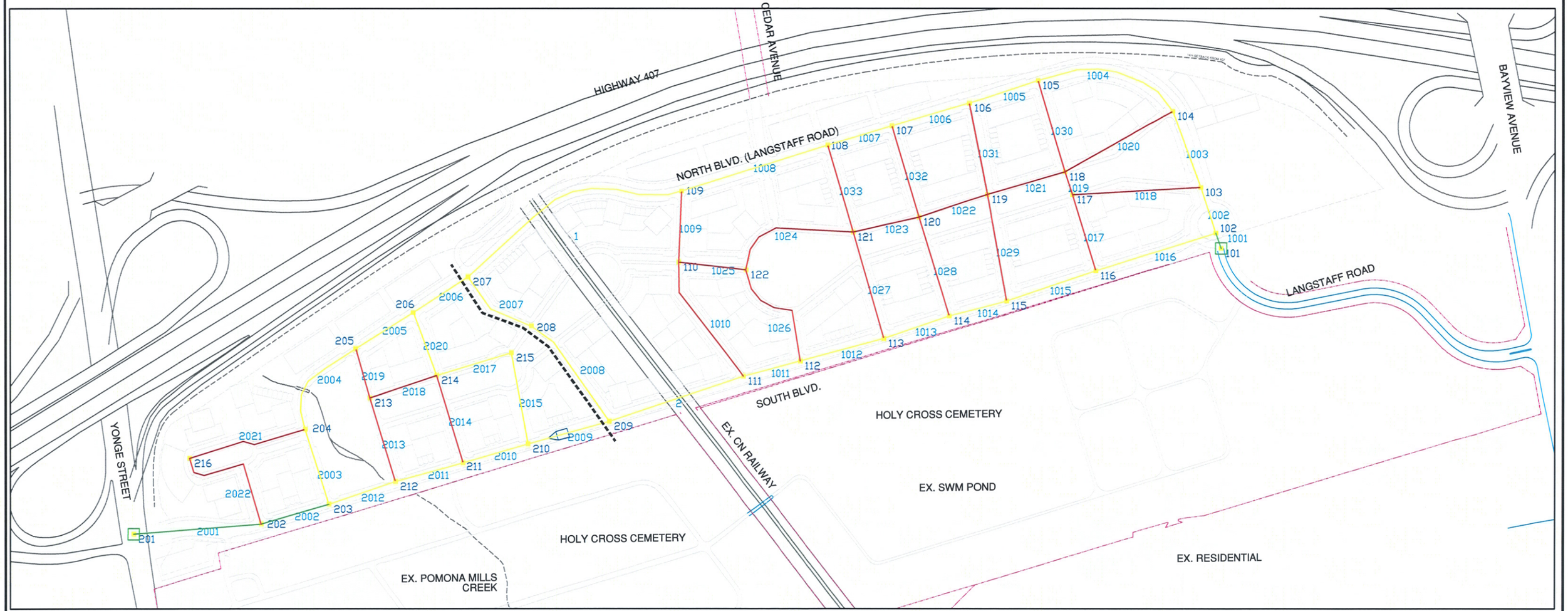
INPUT			OUTPUT		INPUT		
Node	Elevation m	Demand l/s	Pressure kPa	HGL m	XCoord	YCoord Status	Description
101	206.56	0.00	559	263.65	312001.7	4855107.1	
102	206.64	0.00	552	263.01	311995.4	4855127.4	
103	206.90	25.16	524	260.42	311975.1	4855193.7	
104	207.90	25.16	494	258.35	311938.3	4855293.8	
105	209.20	0.00	465	256.62	311761.3	4855331.0	
106	209.20	0.00	453	255.49	311671.2	4855303.6	
107	207.40	0.00	460	254.40	311569.6	4855272.6	
108	205.60	31.61	471	253.64	311483.7	4855246.5	
109	200.98	26.07	509	252.98	311292.5	4855188.2	
110	199.93	25.16	518	252.81	311289.4	4855087.5	
111	201.20	25.16	506	252.84	311374.9	4854938.3	
112	198.10	25.16	538	252.98	311450.4	4854961.3	
113	199.40	25.16	530	253.54	311560.4	4854994.7	
114	200.50	25.16	527	254.33	311646.2	4855020.9	
115	201.20	25.16	531	255.42	311719.5	4855043.2	
116	203.60	25.16	533	258.00	311837.9	4855079.3	
117	205.88	0.00	509	257.82	311806.5	4855182.5	
118	206.55	25.16	495	257.04	311797.2	4855213.0	
119	205.45	25.16	489	255.35	311693.8	4855181.6	
120	204.15	25.16	491	254.26	311605.5	4855154.7	
121	202.65	25.16	498	253.52	311519.4	4855129.3	
122	199.31	25.16	524	252.84	311377.8	4855084.8	
201	192.46	0.00	369	230.12	310572.8	4854727.9	
202	188.10	22.64	402	229.15	310742.8	4854745.9	
203	185.90	0.00	421	228.85	310829.8	4854772.4	
204	188.90	21.02	388	228.54	310802.0	4854863.9	
205	192.10	19.40	355	228.31	310864.3	4854976.1	
206	194.50	0.00	331	228.29	310939.3	4855025.8	
207	198.80	19.40	529	252.81	311013.4	4855074.8	
208	196.55	0.00	551	252.81	311096.8	4855008.6	
209	200.30	19.40	514	252.80	311197.5	4854884.3	
210	194.70	19.40	329	228.27	311092.4	4854852.3	
211	190.10	19.40	374	228.30	311006.0	4854826.0	
212	185.50	19.40	421	228.44	310918.0	4854799.3	
213	189.67	19.40	378	228.27	310884.1	4854910.8	
214	192.56	19.40	350	228.27	310972.1	4854937.5	
215	194.75	0.00	328	228.27	311069.5	4854970.6	
216	190.13	21.02	376	228.54	310646.5	4854827.9	

FIXED GRADE SOURCES TABLE

INPUT			OUTPUT		INPUT	
Node	Top Of Water :stimate m		Actual	Inflow l/s	Status	Description
101	263.65	1.00	0.71	-448.64		
201	230.12	1.00	0.29	-181.05		

REDUCING (PRV) TABLE

INPUT					OUTPUT		INPUT	
Pipe	Source	Pressure kPa m	OpenK	CKV	PRVLoss kPa	CKVState	Status	Description
2006	101	309.00	1.00	y	0.00	Open	n	
2009	101	309.00	1.00	y	27.71	Closed	y	



LEGEND

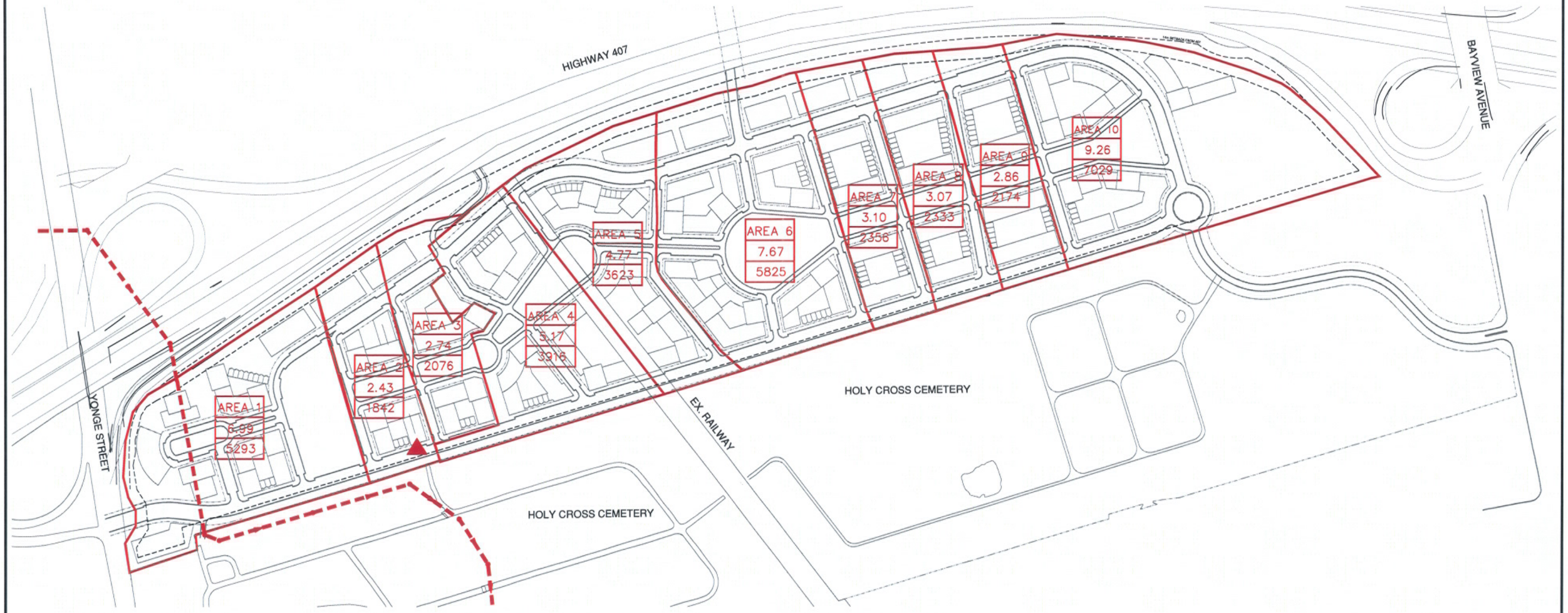
- PROPOSED 200Ø WATERMAIN
- PROPOSED 300Ø WATERMAIN
- PROPOSED 400Ø WATERMAIN
- PRESSURE ZONE DIVIDE
- PROPOSED PRESSURE REDUCING VALVE
- 2010 PIPE
- 211 NODE

TITLE: LANGSTAFF GATEWAY
PROPOSED WATER DISTRIBUTION MODEL

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOV. 23, 2009	PROJ. No. 10-08053
DRAWN JRS	SCALE N.T.S.	FIGURE No. 43

APPENDIX B – Sanitary Sewer Design



LEGEND

AREA 1	AREA NUMBER
3.50	AREA IN HECTARES
2000	EQUIVALENT POPULATION

EX. SANITARY TRUNK SEWER

PUMPING STATION TO DIRECT FLOWS TO SANITARY TRUNK EAST OF BAYVIEW ONCE CAPACITY OF TRUNK IN POMONA MILLS CREEK VALLEY HAS REACHED CAPACITY.

THIS DRAINAGE PLAN IS BASED ON THE ASSUMPTION THAT AREA 1 WILL DRAIN TO THE YDSS TRUNK SEWER ADJACENT TO POMONA MILLS CREEK; AND THE REMAINDER OF THE SITE WILL DRAIN TO THE LOW POINT OF THE SITE AND BE PUMPED TO THE YDSS TRUNK, EAST OF BAYVIEW, IN THE VICINITY ON GERMAN MILLS CREEK.

TITLE: LANGSTAFF GATEWAY
SANITARY DRAINAGE PLAN

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOV. 23, 2009	PROJ. No.	10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No.	44

TOWN OF MARKHAM
SANITARY SEWER DESIGN

M = 1 + 14 / (4+p^0.5) = PEAKING FACTOR
p = POPULATION /1000
q = 365L /PERSON /DAY
Q = Mqp / 86400 = POPULATION FLOW IN m^3/s

INFILTRATION RATE = 0.261L /s /ha
MANNING'S n = 0.013

SHEET NO. 1 OF 1
CONSULTANT MMM GROUP LIMITED

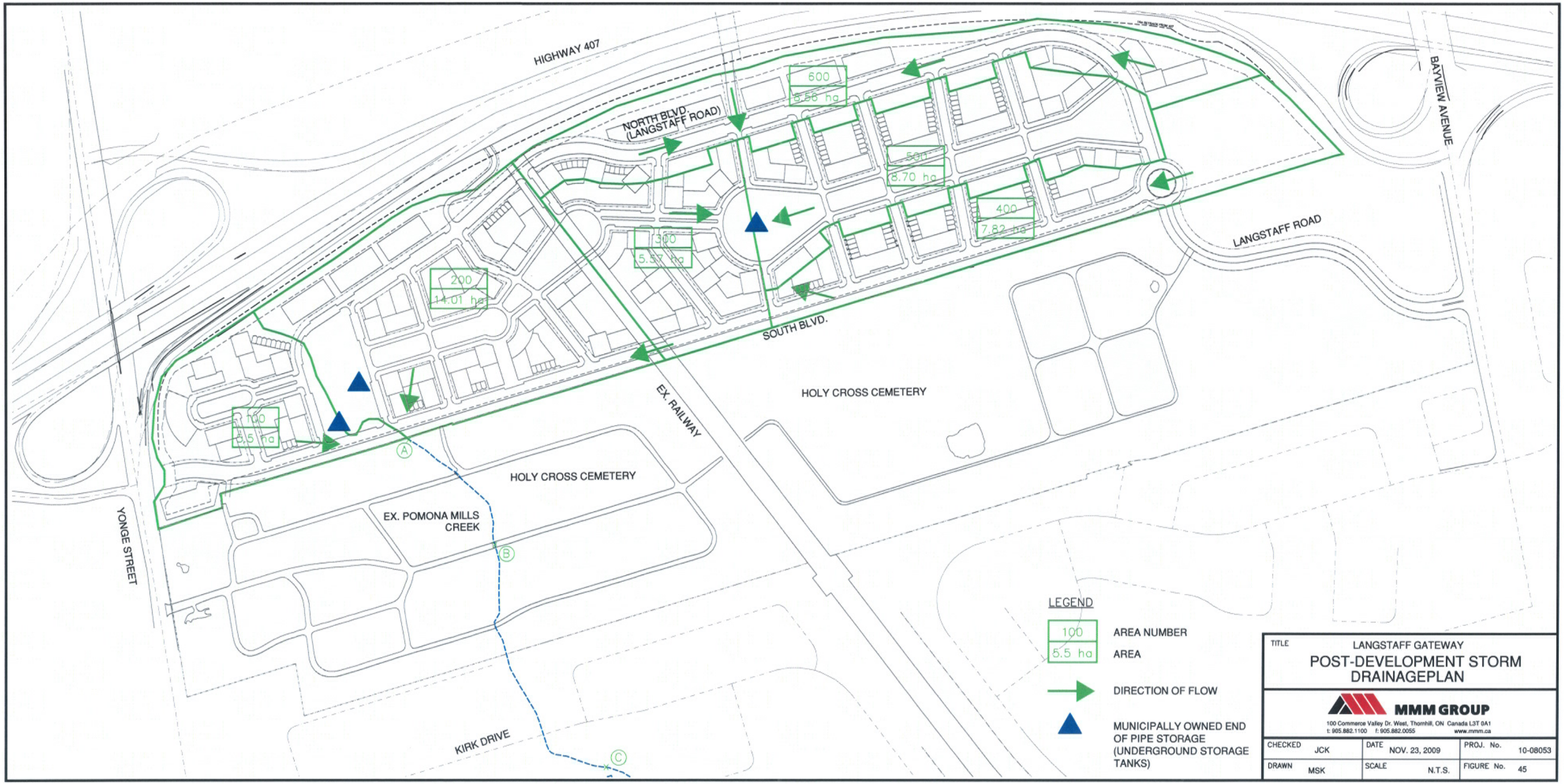
SUBDIVISION Langstaff Gateway Site
PROJECT NO. 10-08053

JOB NO.: 10-08053-001-PM1
LANGSTAFF GATEWAY SITE
CONSULTANT: MMM

LOCATION			SECTION		CUMULATIVE		M	POP. FLOW	INFIL.	CUM. FLOW	LENGTH OF SEWER	PIPE SIZE	TYPE OF PIPE	SLOPE		CAP.	VEL.	Usage
STREET	MANHOLE		POP.	AREA	POP.	AREA								m	%			
	FROM	TO		ha		ha		l/s	l/s	l/s	m	mm				l/s	m/s	
Area 1			5293	6.990	5293	6.99	3.222	72.045	1.817	73.863	735.0	250	PVC		1.64	76.1556	1.55	96.99%
Total to Pomona Creek Trunk					5293	6.99	3.222	72.045	1.817	73.863	735.0	250	CONC		1.64	76.6465	1.56	96.37%
Area 10			7029	9.260	7029	9.26	3.105	92.197	2.408	94.605	916.0	375	PVC		0.80	157.9245	1.43	59.90%
Area 9			2174	2.860	9203	12.12	2.990	116.263	3.151	119.415	575.0	375	PVC		1.28	198.3634	1.80	60.20%
Area 8			2333	3.070	11536	15.19	2.893	140.978	3.949	144.928	575.0	375	PVC		1.06	181.6179	1.64	79.80%
Area 7			2356	3.100	13892	18.29	2.812	165.016	4.755	169.771	575.0	450	CONC		0.96	279.3458	1.76	60.77%
Area 6			5825	7.670	19717	25.96	2.659	221.456	6.750	228.206	1327.0	525	CONC		0.65	348.8920	1.61	65.41%
Area 5			3623	4.770	23340	30.73	2.585	254.912	7.990	262.902	730.0	525	CONC		0.63	343.5161	1.59	76.53%
Area 4			3916	5.170	27256	35.90	2.518	289.969	9.334	299.303	973.0	525	CONC		2.23	644.3847	2.98	46.45%
Area 3			2076	2.740	29332	38.64	2.487	308.155	10.046	318.202	411.0	525	CONC		2.27	650.1189	3.00	48.95%
Area 2			1842	2.430	31174	41.07	2.461	324.085	10.678	334.763	537.0	525	CONC		2.85	728.1934	3.36	45.97%
Total to Bayview					31174	41.07	2.461	324.085	10.678	334.763	100.0	600	CONC		0.50	436.9992	1.55	76.61%

Note: Phase 1 West (Area 1) are conveyed to Pomona Mills Creek Trunk Sewer.
The remainder of the site (Areas 2-10) to be pumped to trunk sewer east of Bayview Avenue.
Office, Commerical and Residential populations have been accounted for in population numbers shown on design sheet.

APPENDIX C – Storm Sewer Design



TITLE
LANGSTAFF GATEWAY
POST-DEVELOPMENT STORM DRAINAGEPLAN

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

CHECKED JCK	DATE NOV. 23, 2009	PROJ. No. 10-08053
DRAWN MSK	SCALE N.T.S.	FIGURE No. 45

TOWN OF MARKHAM
STORM SEWER DESIGN
WITH
5 Yr. MODIFIED CURVE

NOTE: The Markham Modified Rational Method can be used up to 40 ha of drainage area.

INLET TIMES & ROUTING COEFFICIENTS

Impervious (%)	<30	<50	<70
Inlet time (min)	8	8	8.000
Routing Coefficient	Cr :		
8 ha	1.00	1.00	1.00
20 ha	1.15	1.15	1.20
40 ha	1.30	1.30	1.45

Q = KCrCIA
K = Conversion Factor = 0.00278
Cr = Routing Coef.
C = Runoff Coef.
i = Rainfall Intensity
A = Area (ha)

SHEET NO. 1 OF 1
CONSULTANT MMM GROUP
CLIENT LANGSTAFF
SUBDIVISION
PROJECT NO. 10-08053

STREET	FROM MH	Invert (m)	TO MH	AREA (ha)	CUMUL AREA (ha)	RUN OFF COEF.	CA	CUMUL CA	Cr	INT. (i) (mm/hr)	FLOW (Q) (cms)	LENGTH (m)	PIPE DIA. (mm)	SLOPE (%)	CAPACITY (cms)	VELOCITY (m/s)	SECTION TIME (min)	ACCUM TIME (min)	INLET TIME (min)
Area 100				5.50	5.50	0.90	4.95	4.95	1.00	125.17	1.722	363.0	900	1.00	1.810	2.85	2.13	10.13	8.00
Area 500				8.70	8.70	0.90	7.83	7.83	1.00	125.17	2.725	20.0	1200	1.00	3.899	3.45	0.10	8.10	8.00
Area 400				7.82	16.52	0.90	7.04	14.87	1.00	124.40	5.142	560.0	1350	1.00	5.337	3.73	2.50	10.60	8.10
Area 600				8.56	25.08	0.90	7.70	22.57	1.15	107.48	7.756	450.0	1650	1.00	9.114	4.26	1.76	12.36	10.60
Area 300				5.57	5.57	0.90	5.01	5.01	1.00	125.17	1.744	532.0	975	1.00	2.241	3.00	2.95	10.95	8.00
Area 200				14.01	14.01	0.90	12.61	12.61	1.00	105.48	3.697	375.0	1200	1.00	3.899	3.45	1.81	12.77	10.95

Note: Flows shown will be significantly reduced due to onsite storage facilities resulting in smaller pipe sizes.

APPENDIX D – Storm Water Modelling

```
 V    V   I    SSSSS  U   U   A    L
 V    V   I   SS      U   U  A A   L
  V  V    I     SS     U   U AAAAA  L
   V V    I      SS    U   U A   A  L
    VV    I   SSSSS  UUUUU  A   A  LLLLL

  000   TTTTT  TTTTT  H   H  Y   Y  M   M   000    TM, Version 2.0
 0   0    T      T    H   H   Y Y   MM MM  0   0
 0   0    T      T    H   H    Y    M M M  0   0   Licensed To: MMM Group Limited
  000     T      T    H   H    Y    M   M   000              VD2-0128

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

  Input   filename: C:\Program Files\Visual OTTHYMO v2.0\voin.dat
  Output  filename: J:\1441PR~1\2008\D99RA00~\OTTHYM~1\53KJF00~\Existing Conditions.out
  Summary filename: J:\1441PR~1\2008\D99RA00~\OTTHYM~1\53KJF00~\Existing Conditions.sum

DATE: 11/25/2009                          TIME: 11:13:48 AM

USER:

COMMENTS: _____

  ****************************
  ** SIMULATION NUMBER:   2 **
  ****************************

 READ STORM
 Ptotal= 29.16 mm
```

Filename: J:\1441 Projects by Job Number\2008\10-08053-001-H01 Langstaff @ Lands\OTTHYMO Model\Markham Jhour AES Design Storm\
Comments: 2 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	3.91	1.75	8.15	2.58	2.14
.17	1.58	1.00	4.75	1.83	5.67	2.67	2.05
.25	1.77	1.08	6.05	1.92	4.38	2.75	1.95
.33	1.86	1.17	9.35	2.00	3.61	2.83	1.86
.42	1.95	1.25	21.79	2.08	3.15	2.92	1.86
.50	2.14	1.33	41.22	2.17	2.70	3.00	1.77
.58	2.42	1.42	100.07	2.25	2.61	3.08	1.68
.67	2.61	1.50	53.18	2.33	2.42		
.75	2.98	1.58	25.03	2.42	2.33		
.83	3.35	1.67	13.35	2.50	2.23		

```
 CALIB
 STANDHYD  (0400)
 ID= 1 DT= 1.0 min
```

Area (ha)= 11.86
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.27	7.59
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	3.35	1.583	25.03	2.37	2.33
.033	.00	.817	3.35	1.600	13.35	2.38	2.33
.050	.00	.833	3.35	1.617	13.35	2.40	2.33
.067	.00	.850	3.91	1.633	13.35	2.42	2.33
.083	.00	.867	3.91	1.650	13.35	2.43	2.23
.100	1.58	.883	3.91	1.667	13.35	2.45	2.23
.117	1.58	.900	3.91	1.683	8.15	2.47	2.23
.133	1.58	.917	3.91	1.700	8.15	2.48	2.23
.150	1.58	.933	4.75	1.717	8.15	2.50	2.23
.167	1.58	.950	4.75	1.733	8.15	2.52	2.14
.183	1.77	.967	4.75	1.750	8.15	2.53	2.14
.200	1.77	.983	4.75	1.767	5.67	2.55	2.14
.217	1.77	1.000	4.75	1.783	5.67	2.57	2.14
.233	1.77	1.017	6.05	1.800	5.67	2.58	2.14
.250	1.77	1.033	6.05	1.817	5.67	2.60	2.05
.267	1.86	1.050	6.05	1.833	5.67	2.62	2.05
.283	1.86	1.067	6.05	1.850	4.38	2.63	2.05
.300	1.86	1.083	6.05	1.867	4.38	2.65	2.05
.317	1.86	1.100	9.35	1.883	4.38	2.67	2.05
.333	1.86	1.117	9.35	1.900	4.38	2.68	1.95
.350	1.95	1.133	9.35	1.917	4.38	2.70	1.95
.367	1.95	1.150	9.35	1.933	3.61	2.72	1.95
.383	1.95	1.167	9.35	1.950	3.61	2.73	1.95
.400	1.95	1.183	21.79	1.967	3.61	2.75	1.95
.417	1.95	1.200	21.79	1.983	3.61	2.77	1.86
.433	2.14	1.217	21.79	2.000	3.61	2.78	1.86
.450	2.14	1.233	21.79	2.017	3.15	2.80	1.86
.467	2.14	1.250	21.79	2.033	3.15	2.82	1.86
.483	2.14	1.267	41.22	2.050	3.15	2.83	1.86
.500	2.14	1.283	41.22	2.067	3.15	2.85	1.86
.517	2.42	1.300	41.22	2.083	3.15	2.87	1.86
.533	2.42	1.317	41.22	2.100	2.70	2.88	1.86
.550	2.42	1.333	41.22	2.117	2.70	2.90	1.86
.567	2.42	1.350	100.07	2.133	2.70	2.92	1.86
.583	2.42	1.367	100.07	2.150	2.70	2.93	1.77
.600	2.61	1.383	100.07	2.167	2.70	2.95	1.77
.617	2.61	1.400	100.07	2.183	2.61	2.97	1.77
.633	2.61	1.417	100.07	2.200	2.61	2.98	1.77
.650	2.61	1.433	53.18	2.217	2.61	3.00	1.77
.667	2.61	1.450	53.18	2.233	2.61	3.02	1.68
.683	2.98	1.467	53.18	2.250	2.61	3.03	1.68
.700	2.98	1.483	53.18	2.267	2.42	3.05	1.68
.717	2.98	1.500	53.18	2.283	2.42	3.07	1.68
.733	2.98	1.517	25.03	2.300	2.42	3.08	1.68
.750	2.98	1.533	25.03	2.317	2.42		
.767	3.35	1.550	25.03	2.333	2.42		
.783	3.35	1.567	25.03	2.350	2.33		

Max.Eff.Inten.(mm/hr)=	100.07	26.88		
over (min)	5.00	14.00		
Storage Coeff. (min)=	4.75 (ii)	13.63 (ii)		
Unit Hyd. Tpeak (min)=	5.00	14.00		
Unit Hyd. peak (cms)=	.23	.08		
				TOTALS
PEAK FLOW (cms)=	.85	.28		.939 (iii)
TIME TO PEAK (hrs)=	1.47	1.68		1.48
RUNOFF VOLUME (mm)=	28.16	8.91		15.84
TOTAL RAINFALL (mm)=	29.16	29.16		29.16
RUNOFF COEFFICIENT =	.97	.31		.54

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0500)
 ID= 1 DT= 1.0 min
```

Area (ha)= 1.05
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.27	.78
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	100.07	23.59		
over (min)	5.00	15.00		
Storage Coeff. (min)=	2.30 (ii)	14.67 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	.35	.08		
				TOTALS
PEAK FLOW (cms)=	.06	.03		.070 (iii)
TIME TO PEAK (hrs)=	1.45	1.70		1.45
RUNOFF VOLUME (mm)=	28.16	8.91		13.91
TOTAL RAINFALL (mm)=	29.16	29.16		29.16

RUNOFF COEFFICIENT =	.97	.33		.48

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0510)
 ID= 1 DT= 1.0 min
```

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	100.07	23.59		
over (min)	5.00	16.00		
Storage Coeff. (min)=	3.08 (ii)	15.66 (ii)		
Unit Hyd. Tpeak (min)=	5.00	16.00		
Unit Hyd. peak (cms)=	.30	.07		
				TOTALS
PEAK FLOW (cms)=	.16	.07		.178 (iii)
TIME TO PEAK (hrs)=	1.45	1.72		1.47
RUNOFF VOLUME (mm)=	28.16	8.91		13.91
TOTAL RAINFALL (mm)=	29.16	29.16		29.16
RUNOFF COEFFICIENT =	.97	.33		.48

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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   (2004)
   1 + 2 = 3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0500):		1.05	.070	1.45	13.91
+ ID2= 2 (0510):		2.81	.178	1.47	13.91
ID = 3 (2004):		3.86	.249	1.47	13.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 ADD HYD   (2005)
   1 + 2 = 3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0400):		11.86	.939	1.48	15.84
+ ID2= 2 (2004):		3.86	.249	1.47	13.91
ID = 3 (2005):		15.72	1.182	1.47	15.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 CALIB
 NASHYD    (0600)
 ID= 1 DT= 2.0 min
```

Area (ha)= 5.10 Curve Number (CN)= 86.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .59

NOTE: RAINFALL WAS TRANSFORMED TO 2.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.033	.00	.833	3.35	1.633	13.35	2.43	2.28
.067	.00	.867	3.91	1.667	13.35	2.47	2.23
.100	.79	.900	3.91	1.700	8.15	2.50	2.23
.133	1.58	.933	4.33	1.733	8.15	2.53	2.14
.167	1.58	.967	4.75	1.767	6.91	2.57	2.14
.200	1.77	1.000	4.75	1.800	5.67	2.60	2.10
.233	1.77	1.033	6.05	1.833	5.67	2.63	2.05
.267	1.82	1.067	6.05	1.867	4.38	2.67	2.05
.300	1.86	1.100	7.70	1.900	4.38	2.70	1.95
.333	1.86	1.133	9.35	1.933	4.00	2.73	1.95
.367	1.95	1.167	9.35	1.967	3.61	2.77	1.91
.400	1.95	1.200	21.79	2.000	3.61	2.80	1.86
.433	2.05	1.233	21.79	2.033	3.15	2.83	1.86
.467	2.14	1.267	31.51	2.067	3.15	2.87	1.86
.500	2.14	1.300	41.22	2.100	2.93	2.90	1.86
.533	2.42	1.333	41.22	2.133	2.70	2.93	1.82
.567	2.42	1.367	100.07	2.167	2.70	2.97	1.77
.600	2.52	1.400	100.07	2.200	2.61	3.00	1.77
.633	2.61	1.433	76.63	2.233	2.61	3.03	1.68
.667	2.61	1.467	53.18	2.267	2.52	3.07	1.68
.700	2.98	1.500	53.18	2.300	2.42	3.10	.84
.733	2.98	1.533	25.03	2.333	2.42		
.767	3.17	1.567	25.03	2.367	2.33		
.800	3.35	1.600	19.19	2.400	2.33		

Unit Hyd Qpeak (cms)= .330

PEAK FLOW (cms)= .091 (i)
TIME TO PEAK (hrs)= 2.100
RUNOFF VOLUME (mm)= 8.910
TOTAL RAINFALL (mm)= 29.160
RUNOFF COEFFICIENT = .306

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

```
 ADD HYD   (2006)
   1 + 2 = 3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2005):		15.72	1.182	1.47	15.37
+ ID2= 2 (0600):		5.10	.091	2.10	8.91
ID = 3 (2006):		20.82	1.191	1.48	13.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 CALIB
 NASHYD    (0700)
 ID= 1 DT= 2.0 min
```

Area (ha)= 24.12 Curve Number (CN)= 86.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .49

Unit Hyd Qpeak (cms)= 1.880

PEAK FLOW (cms)= .499 (i)
TIME TO PEAK (hrs)= 2.000
RUNOFF VOLUME (mm)= 8.910
TOTAL RAINFALL (mm)= 29.160
RUNOFF COEFFICIENT = .306

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

```
 ADD HYD   (2007)
   1 + 2 = 3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2006):		20.82	1.191	1.48	13.78
+ ID2= 2 (0700):		24.12	.499	2.00	8.91
ID = 3 (2007):		44.94	1.263	1.48	11.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 RESERVOIR (1001)
 IN= 2---> OUT= 1
 DT= 2.0 min
```

OUTFLOW (CMS)	STORAGE (ha.m.)	OUTFLOW (CMS)	STORAGE (ha.m.)
.0000	.0000	2.4450	.4161
.1170	.0697	2.9940	.5605
.4480	.1394	3.7340	.8504
.8810	.2296	4.3500	1.1711
1.2510	.3198	4.8890	1.5198

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2007)	44.94	1.26	1.48	11.17
OUTFLOW: ID= 1 (1001)	44.94	.68	2.23	11.17

PEAK FLOW REDUCTION [Qout/Qin](%)= 54.02
TIME SHIFT OF PEAK FLOW (min)= 45.00
MAXIMUM STORAGE USED (ha.m.)= .1882

CALIB
STANDHYD (0200)
ID= 1 DT= 1.0 min

Area (ha)= 14.01
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.04	8.97
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	3.35	1.583	25.03	2.37	2.33
.033	.00	.817	3.35	1.600	13.35	2.38	2.33
.050	.00	.833	3.35	1.617	13.35	2.40	2.33
.067	.00	.850	3.91	1.633	13.35	2.42	2.33
.083	.00	.867	3.91	1.650	13.35	2.43	2.23
.100	1.58	.883	3.91	1.667	13.35	2.45	2.23
.117	1.58	.900	3.91	1.683	8.35	2.47	2.23
.133	1.58	.917	3.91	1.700	8.35	2.48	2.23
.150	1.58	.933	4.75	1.717	8.35	2.50	2.23
.167	1.58	.950	4.75	1.733	8.35	2.52	2.14
.183	1.77	.967	4.75	1.750	8.35	2.53	2.14
.200	1.77	.983	4.75	1.767	5.67	2.55	2.14
.217	1.77	1.000	4.75	1.783	5.67	2.57	2.14
.233	1.77	1.017	6.05	1.800	5.67	2.58	2.14
.250	1.77	1.033	6.05	1.817	5.67	2.60	2.05
.267	1.86	1.050	6.05	1.833	5.67	2.62	2.05
.283	1.86	1.067	6.05	1.850	4.38	2.63	2.05
.300	1.86	1.083	6.05	1.867	4.38	2.65	2.05
.317	1.86	1.100	9.35	1.883	4.38	2.67	2.05
.333	1.86	1.117	9.35	1.900	4.38	2.68	1.95
.350	1.95	1.133	9.35	1.917	4.38	2.70	1.95
.367	1.95	1.150	9.35	1.933	3.61	2.72	1.95
.383	1.95	1.167	9.35	1.950	3.61	2.73	1.95
.400	1.95	1.183	21.79	1.967	3.61	2.75	1.95
.417	1.95	1.200	21.79	1.983	3.61	2.77	1.86
.433	2.14	1.217	21.79	2.000	3.61	2.78	1.86
.450	2.14	1.233	21.79	2.017	3.15	2.80	1.86
.467	2.14	1.250	21.79	2.033	3.15	2.82	1.86
.483	2.14	1.267	41.22	2.050	3.15	2.83	1.86
.500	2.14	1.283	41.22	2.067	3.15	2.85	1.86
.517	2.42	1.300	41.22	2.083	3.15	2.87	1.86
.533	2.42	1.317	41.22	2.100	2.70	2.88	1.86
.550	2.42	1.333	41.22	2.117	2.70	2.90	1.86
.567	2.42	1.350	100.07	2.133	2.70	2.92	1.86
.583	2.42	1.367	100.07	2.150	2.70	2.93	1.77
.600	2.61	1.383	100.07	2.167	2.70	2.95	1.77
.617	2.61	1.400	100.07	2.183	2.61	2.97	1.77
.633	2.61	1.417	100.07	2.200	2.61	2.98	1.77
.650	2.61	1.433	53.18	2.217	2.61	3.00	1.77
.667	2.61	1.450	53.18	2.233	2.61	3.02	1.68
.683	2.98	1.467	53.18	2.250	2.61	3.03	1.68
.700	2.98	1.483	53.18	2.267	2.42	3.05	1.68
.717	2.98	1.500	53.18	2.283	2.42	3.07	1.68
.733	2.98	1.517	25.03	2.300	2.42	3.08	1.68
.750	2.98	1.533	25.03	2.317	2.42		
.767	3.35	1.550	25.03	2.333	2.42		
.783	3.35	1.567	25.03	2.350	2.33		

Max.Eff.Inten.(mm/hr)=	100.07	26.88		
over (min)	5.00	14.00		
Storage Coeff. (min)=	4.99 (ii)	13.87 (ii)		
Unit Hyd. Tpeak (min)=	5.00	14.00		
Unit Hyd. peak (cms)=	.23	.08		
			TOTALS	
PEAK FLOW (cms)=	.98	.33	1.096 (iii)	
TIME TO PEAK (hrs)=	1.47	1.68	1.48	
RUNOFF VOLUME (mm)=	28.16	8.91	15.84	
TOTAL RAINFALL (mm)=	29.16	29.16	29.16	
RUNOFF COEFFICIENT =	.97	.31	.54	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0200):	14.01	1.096	1.48	15.84
+ ID2= 2 (0100):	5.50	.464	1.47	15.84
ID = 3 (2001):	19.51	1.557	1.48	15.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0300)
ID= 1 DT= 1.0 min

Area (ha)= 6.48
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.33	4.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	100.07	26.88		
over (min)	5.00	13.00		
Storage Coeff. (min)=	3.96 (ii)	12.84 (ii)		
Unit Hyd. Tpeak (min)=	5.00	13.00		
Unit Hyd. peak (cms)=	.26	.09		
			TOTALS	
PEAK FLOW (cms)=	.49	.16	.540 (iii)	
TIME TO PEAK (hrs)=	1.47	1.67	1.47	
RUNOFF VOLUME (mm)=	28.16	8.91	15.84	
TOTAL RAINFALL (mm)=	29.16	29.16	29.16	
RUNOFF COEFFICIENT =	.97	.31	.54	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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.

DUHYD (3000)
Imlet Cap.= .883
#of Inlets= 1
Total(cms)= .9

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	6.48	.54	1.47	15.84
MAJOR SYS.(ID= 2):	.00	.00	.00	.00
MINOR SYS.(ID= 3):	6.48	.54	1.47	15.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2001):	19.51	1.557	1.48	15.84
+ ID2= 2 (3000):	6.48	.540	1.47	15.84
ID = 3 (2002):	25.99	2.095	1.48	15.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0310)
ID= 1 DT= 1.0 min

Area (ha)= 7.05
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.54	4.51
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	100.07	26.88		
over (min)	5.00	13.00		
Storage Coeff. (min)=	4.06 (ii)	12.94 (ii)		
Unit Hyd. Tpeak (min)=	5.00	13.00		
Unit Hyd. peak (cms)=	.26	.09		
			TOTALS	
PEAK FLOW (cms)=	.52	.17	.594 (iii)	
TIME TO PEAK (hrs)=	1.47	1.67	1.47	
RUNOFF VOLUME (mm)=	28.16	8.91	15.84	
TOTAL RAINFALL (mm)=	29.16	29.16	29.16	
RUNOFF COEFFICIENT =	.97	.31	.54	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
*** W A R N I N G : HYDROGRAPH 3000 <ID= 1> IS DRY.				
*** W A R N I N G : HYDROGRAPH 2003 = HYDROGRAPH 0310				
*** W A R N I N G : HYDROGRAPH 2003 = HYDROGRAPH 0310				
ID1= 1 (3000):	.00	.000	.00	.00
+ ID2= 2 (0310):	7.05	.584	1.47	15.84
ID = 3 (2003):	7.05	.584	1.47	15.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION NUMBER: 3 **
****

READ STORM | Filename: J:\1441 Projects by Job Number\2008\10-08053-001-M01 Langstaff E Lands\OTHYMO Model\Markham 3hour AES Design Storm\

Ptotal= 42.00 mm | Comments: 5 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	5.63	1.75	11.74	2.58	3.08
.17	2.28	1.00	6.84	1.83	8.16	2.67	2.95
.25	2.55	1.08	8.71	1.92	6.32	2.75	2.82
.33	2.68	1.17	13.47	2.00	5.19	2.83	2.68
.42	2.82	1.25	31.39	2.08	4.53	2.92	2.68
.50	3.08	1.33	59.37	2.17	3.89	3.00	2.55
.58	3.49	1.42	144.13	2.25	3.75	3.08	2.41
.67	3.75	1.50	76.60	2.33	3.49		
.75	4.29	1.58	36.05	2.42	3.35		
.83	4.83	1.67	19.23	2.50	3.22		

CALIB
STANDHYD (0400)
ID= 1 DT= 1.0 min

Area (ha)= 11.86
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.27	7.59
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	4.83	1.583	36.05	2.37	3.35
.033	.00	.817	4.83	1.600	19.23	2.38	3.35
.050	.00	.833	4.83	1.617	19.23	2.40	3.35
.067	.00	.850	5.63	1.633	19.23	2.42	3.35
.083	.00	.867	5.63	1.650	19.23	2.43	3.22
.100	2.28	.883	5.63	1.667	19.23	2.45	3.22
.117	2.28	.900	5.63	1.683	11.74	2.47	3.22
.133	2.28	.917	5.63	1.700	11.74	2.48	3.22
.150	2.28	.933	6.84	1.717	11.74	2.50	3.22
.167	2.28	.950	6.84	1.733	11.74	2.52	3.08
.183	2.55	.967	6.84	1.750	11.74	2.53	3.08
.200	2.55	.983	6.84	1.767	8.16	2.55	3.08
.217	2.55	1.000	6.84	1.783	8.16	2.57	3.08
.233	2.55	1.017	8.71	1.800	8.16	2.58	3.08
.250	2.55	1.033	8.71	1.817	8.16	2.60	2.95
.267	2.68	1.050	8.71	1.833	8.16	2.62	2.95
.283	2.68	1.067	8.71	1.850	6.32	2.63	2.95
.300	2.68	1.083	8.71	1.867	6.32	2.65	2.95
.317	2.68	1.100	13.47	1.883	6.32	2.67	2.95
.333	2.68	1.117	13.47	1.900	6.32	2.68	2.82
.350	2.82	1.133	13.47	1.917	6.32	2.70	2.82
.367	2.82	1.150	13.47	1.933	5.19	2.72	2.82
.383	2.82	1.167	13.47	1.950	5.19	2.73	2.82
.400	2.82	1.183	31.39	1.967	5.19	2.75	2.82
.417	2.82	1.200	31.39	1.983	5.19	2.77	2.68
.433	3.08	1.217	31.39	2.000	5.19	2.78	2.68
.450	3.08	1.233	31.39	2.017	4.53	2.80	2.68
.467	3.08	1.250	31.39	2.033	4.53	2.82	2.68
.483	3.08	1.267	59.37	2.050	4.53	2.83	2.68
.500	3.08	1.283	59.37	2.067	4.53	2.85	2.68
.517	3.49	1.300	59.37	2.083	4.53	2.87	2.68
.533	3.49	1.317	59.37	2.100	3.89	2.88	2.68
.550	3.49	1.333	59.37	2.117	3.89	2.90	2.68
.567	3.49	1.350	144.13	2.133	3.89	2.92	2.68
.583	3.49	1.367	144.13	2.150	3.89	2.93	2.55
.600	3.75	1.383	144.13	2.167	3.89	2.95	2.55
.617	3.75	1.400	144.13	2.183	3.75	2.97	2.55
.633	3.75	1.417	144.13	2.200	3.75	2.98	2.55
.650	3.75	1.433	76.60	2.217	3.75	3.00	2.55
.667	3.75	1.450	76.60	2.233	3.75	3.02	2.41
.683	4.29	1.467	76.60	2.250	3.75	3.03	2.41
.700	4.29	1.483	76.60	2.267	3.49	3.05	2.41
.717	4.29	1.500	76.60	2.283	3.49	3.07	2.41
.733	4.29	1.517	36.05	2.300	3.49	3.08	2.41
.750	4.29	1.533	36.05	2.317	3.49		
.767	4.83	1.550	36.05	2.333	3.49		
.783	4.83	1.567	36.05	2.350	3.35		

```
Max.Eff.Inten.(mm/hr)=    144.13        53.79
          over (min)        5.00        12.00
Storage Coeff.  (min)=     4.10 (ii)   11.78 (ii)
Unit Hyd. Tpeak (min)=     5.00        12.00
Unit Hyd. peak  (cms)=      .24          .10
                                                  *TOTALS*
PEAK FLOW       (cms)=     1.27          .62        1.567 (iii)
TIME TO PEAK    (hrs)=     1.47         1.63        1.48
RUNOFF VOLUME    (mm)=    41.00        17.47       25.94
TOTAL RAINFALL   (mm)=    42.00        42.00       42.00
RUNOFF COEFFICIENT   =      .98          .42         .62

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    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 (0500)
ID= 1 DT= 1.0 min

Area (ha)= 1.05
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.27	.78
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	12.00	
Storage Coeff. (min)=		1.58 (ii)	11.03 (ii)	
Unit Hyd. Tpeak (min)=		5.00	12.00	
Unit Hyd. peak (cms)=		.38	.10	
				TOTALS
PEAK FLOW	(cms)=	.09	.07	.121 (iii)
TIME TO PEAK	(hrs)=	1.45	1.62	1.47
RUNOFF VOLUME	(mm)=	41.00	17.47	23.58
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.56

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0510)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	12.00	
Storage Coeff. (min)=		2.66 (ii)	11.71 (ii)	
Unit Hyd. Tpeak (min)=		5.00	12.00	
Unit Hyd. peak (cms)=		.33	.10	
				TOTALS
PEAK FLOW	(cms)=	.24	.17	.314 (iii)
TIME TO PEAK	(hrs)=	1.45	1.63	1.48
RUNOFF VOLUME	(mm)=	41.00	17.47	23.59
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.56

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0500):	1.05	.323	1.47	23.58
+ ID2= 2 (0510):	2.81	.314	1.48	23.59
ID = 3 (2004):	3.86	.634	1.47	23.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2005)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0400):	11.86	1.567	1.48	25.94
+ ID2= 2 (2004):	3.86	.634	1.47	23.59
ID = 3 (2005):	15.72	2.000	1.48	25.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0600)
ID= 1 DT= 2.0 min

Area (ha)= 5.10 Curve Number (CN)= 86.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .59

NOTE: RAINFALL WAS TRANSFORMED TO 2.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.033	.00	.833	4.83	1.633	19.23	2.43	3.29
.067	.00	.867	5.63	1.667	19.23	2.47	3.22
.100	1.24	.900	5.63	1.700	11.74	2.50	3.22
.133	2.28	.933	6.24	1.733	11.74	2.53	3.08
.167	2.28	.967	6.84	1.767	9.95	2.57	3.08
.200	2.55	1.000	6.84	1.800	8.16	2.60	3.02
.233	2.55	1.033	8.71	1.833	8.16	2.63	2.95
.267	2.62	1.067	8.71	1.867	6.32	2.67	2.95
.300	2.68	1.100	11.09	1.900	6.32	2.70	2.82
.333	2.68	1.133	13.47	1.933	5.74	2.73	2.82
.367	2.82	1.167	13.47	1.967	5.39	2.77	2.75
.400	2.82	1.200	31.39	2.000	5.19	2.80	2.68
.433	2.95	1.233	31.39	2.033	4.53	2.83	2.68
.467	3.08	1.267	45.38	2.067	4.53	2.87	2.68
.500	3.08	1.300	59.37	2.100	4.21	2.90	2.68
.533	3.49	1.333	59.37	2.133	3.89	2.93	2.62
.567	3.49	1.367	144.13	2.167	3.89	2.97	2.55
.600	3.62	1.400	144.13	2.200	3.75	3.00	2.55
.633	3.75	1.433	110.37	2.233	3.75	3.03	2.41
.667	3.75	1.467	76.60	2.267	3.62	3.07	2.41
.700	4.29	1.500	76.60	2.300	3.49	3.10	2.21
.733	4.29	1.533	36.05	2.333	3.49		
.767	4.56	1.567	36.05	2.367	3.35		
.800	4.83	1.600	27.64	2.400	3.35		

Unit Hyd Qpeak (cms)= .330

PEAK FLOW (cms)= .181 (i)
TIME TO PEAK (hrs)= 2.100
RUNOFF VOLUME (mm)= 17.473
TOTAL RAINFALL (mm)= 42.000
RUNOFF COEFFICIENT = .416

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

ADD HYD (2006)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2005):	15.72	2.000	1.48	25.36
+ ID2= 2 (0600):	5.10	.181	2.10	17.47
ID = 3 (2006):	20.82	2.024	1.48	23.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0700)
ID= 1 DT= 2.0 min

Area (ha)= 24.12 Curve Number (CN)= 86.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .49

Unit Hyd Qpeak (cms)= 1.880

PEAK FLOW (cms)= 1.000 (i)
TIME TO PEAK (hrs)= 1.967
RUNOFF VOLUME (mm)= 17.473
TOTAL RAINFALL (mm)= 42.000
RUNOFF COEFFICIENT = .416

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

ADD HYD (2007)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2006):	20.82	2.024	1.48	23.43
+ ID2= 2 (0700):	24.12	1.000	1.97	17.47
ID = 3 (2007):	44.94	2.267	1.55	20.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (1001)
IN= 2---> OUT= 1
DT= 2.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	2.4450	.6161	
.1170	.0697	2.9940	.5605
.4480	.1394	3.7340	.8504
.8810	.2296	4.3500	1.1731
1.2510	.3198	4.8880	1.5198

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2007)	44.94	2.27	1.55	20.23
OUTFLOW: ID= 1 (1001)	44.94	1.29	2.22	20.23

PEAK FLOW REDUCTION [Qout/Qin](%)= 57.10
TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= .3213

CALIB
STANDHYD (0200)
ID= 1 DT= 1.0 min

Area (ha)= 14.01
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.04	8.97
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	4.83	1.583	36.05	2.37	3.35
.033	.00	.817	4.83	1.600	19.23	2.38	3.35
.050	.00	.833	4.83	1.617	19.23	2.40	3.35
.067	.00	.850	5.63	1.633	19.23	2.42	3.35
.083	.00	.867	5.63	1.650	19.23	2.43	3.22
.100	2.28	.883	5.63	1.667	19.23	2.45	3.22
.117	2.28	.900	5.63	1.683	11.74	2.47	3.22
.133	2.28	.917	5.63	1.700	11.74	2.48	3.22
.150	2.28	.933	6.84	1.717	11.74	2.50	3.22
.167	2.28	.950	6.84	1.733	11.74	2.52	3.08
.183	2.55	.967	6.84	1.750	11.74	2.53	3.08
.200	2.55	.983	6.84	1.767	8.16	2.55	3.08
.217	2.55	1.000	6.84	1.783	8.16	2.57	3.08
.233	2.55	1.017	8.71	1.800	8.16	2.58	3.08
.250	2.55	1.033	8.71	1.817	8.16	2.60	2.95
.267	2.68	1.050	8.71	1.833	8.16	2.62	2.95
.283	2.68	1.067	8.71	1.850	6.32	2.63	2.95
.300	2.68	1.083	8.71	1.867	6.32	2.65	2.95
.317	2.68	1.100	13.47	1.883	6.32	2.67	2.95
.333	2.68	1.117	13.47	1.900	6.32	2.68	2.82
.350	2.82	1.133	13.47	1.917	6.32	2.70	2.82
.367	2.82	1.150	13.47	1.933	5.19	2.72	2.82
.383	2.82	1.167	13.47	1.950	5.19	2.73	2.82
.400	2.82	1.183	31.39	1.967	5.19	2.75	2.82
.417	2.82	1.200	31.39	1.983	5.19	2.77	2.68
.433	3.08	1.217	31.39	2.000	5.19	2.78	2.68
.450	3.08	1.233	31.39	2.017	4.53	2.80	2.68
.467	3.08	1.250	31.39	2.033	4.53	2.82	2.68
.483	3.08	1.267	59.37	2.050	4.53	2.83	2.68
.500	3.08	1.283	59.37	2.067	4.53	2.85	2.68
.517	3.49	1.300	59.37	2.083	4.53	2.87	2.68
.533	3.49	1.317	59.37	2.100	3.89	2.88	2.68
.550	3.49	1.333	59.37	2.117	3.89	2.90	2.68
.567	3.49	1.350	144.13	2.133	3.89	2.92	2.68
.583	3.49	1.367	144.13	2.150	3.89	2.93	2.55
.600	3.75	1.383	144.13	2.167	3.89	2.95	2.55
.617	3.75	1.400	144.13	2.183	3.75	2.97	2.55
.633	3.75	1.417	144.13	2.200	3.75	2.98	2.55
.650	3.75	1.433	76.60	2.217	3.75	3.00	2.55
.667	3.75	1.450	76.60	2.233	3.75	3.02	2.41
.683	4.29	1.467	76.60	2.250	3.75	3.03	2.41
.700	4.29	1.483	76.60	2.267	3.49	3.05	2.41
.717	4.29	1.500	76.60	2.283	3.49	3.07	2.41
.733	4.29	1.517	36.05	2.300	3.49	3.08	2.41
.750	4.29	1.533	36.05	2.317	3.49		
.767	4.83	1.550	36.05	2.333	3.49		
.783	4.83	1.567	36.05	2.350	3.35		

```
Max.Eff.Inten.(mm/hr)=    144.13        53.79
          over (min)        5.00        12.00
Storage Coeff.  (min)=     4.31 (ii)   11.99 (ii)
Unit Hyd. Tpeak (min)=     5.00        12.00
Unit Hyd. peak  (cms)=      .25          .09
                                                  *TOTALS*
PEAK FLOW       (cms)=     1.48          .73        1.832 (iii)
TIME TO PEAK    (hrs)=     1.47         1.63        1.48
RUNOFF VOLUME    (mm)=    41.00        17.47       25.94
TOTAL RAINFALL   (mm)=    42.00        42.00       42.00
RUNOFF COEFFICIENT   =      .98          .42         .62

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    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 (0100)
ID= 1 DT= 1.0 min

Area (ha)= 5.50
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.98	3.52
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	11.00	
Storage Coeff. (min)=		3.26 (ii)	10.94 (ii)	
Unit Hyd. Tpeak (min)=		5.00	11.00	
Unit Hyd. peak (cms)=		.29	.10	
				TOTALS
PEAK FLOW	(cms)=	.62	.30	.770 (iii)
TIME TO PEAK	(hrs)=	1.45	1.62	1.48
RUNOFF VOLUME	(mm)=	41.00	17.47	25.94
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.62

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (2001)
 1 +  2 =  3

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (0200):    14.01    1.012    1.48     25.94
   + ID2= 2 (0100):     5.50     .770    1.48     25.94
     ====================================================
     ID = 3 (2001):    19.51    2.603    1.48     25.94

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

```
CALIB
STANDHYD  (0300)
ID= 1 DT= 1.0 min

Area     (ha)=   6.48
Total Imp(%)=  36.00   Dir. Conn.(%)=  36.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        2.33          4.15
Dep. Storage     (mm)=        1.00          5.00
Average Slope     (%)=        1.00          2.00
Length            (m)=      237.80         40.00
Mannings n            =        .013          .250

Max.Eff.Inten.(mm/hr)=      144.13         53.79
          over (min)=        5.00         12.00
Storage Coeff.   (min)=        3.42 (ii)    11.10 (ii)
Unit Hyd. Tpeak  (min)=        5.00         12.00
Unit Hyd. peak   (cms)=         .29           .10
                                          *TOTALS*
PEAK FLOW        (cms)=         .72           .35          .883 (iii)
TIME TO PEAK     (hrs)=        1.45          1.63          1.48
RUNOFF VOLUME     (mm)=       41.00         17.47         25.94
TOTAL RAINFALL    (mm)=       42.00         42.00         42.00
RUNOFF COEFFICIENT   =         .98           .42           .62

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  86.0     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.
```

```
DUMMYD  (3000)
Inlet Cap.=  .883
#of Inlets=    1
Total(cms)=    0

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
TOTAL HYD.(ID= 1):     6.48      .88     1.48     25.94
MAJOR SYS.(ID= 2):      .00      .00      .00       .00
MINOR SYS.(ID= 3):     6.48      .88     1.48     25.94

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

```
ADD HYD  (2002)
 1 +  2 =  3

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (2001):    19.51    2.603    1.48     25.94
   + ID2= 2 (3000):     6.48      .883    1.48     25.94
     ====================================================
     ID = 3 (2002):    25.99    3.485    1.48     25.94

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

```
CALIB
STANDHYD  (0310)
ID= 1 DT= 1.0 min

Area     (ha)=   7.05
Total Imp(%)=  36.00   Dir. Conn.(%)=  36.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        2.54          4.51
Dep. Storage     (mm)=        1.00          5.00
Average Slope     (%)=        1.00          2.00
Length            (m)=      216.80         40.00
Mannings n            =        .013          .250

Max.Eff.Inten.(mm/hr)=      144.13         53.79
```

```
          over (min)=        5.00         12.00
Storage Coeff.   (min)=        3.51 (ii)    11.19 (ii)
Unit Hyd. Tpeak  (min)=        5.00         12.00
Unit Hyd. peak   (cms)=         .28           .10
                                          *TOTALS*
PEAK FLOW        (cms)=         .78           .38          .957 (iii)
TIME TO PEAK     (hrs)=        1.45          1.63          1.48
RUNOFF VOLUME     (mm)=       41.00         17.47         25.94
TOTAL RAINFALL    (mm)=       42.00         42.00         42.00
RUNOFF COEFFICIENT   =         .98           .42           .62

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  86.0     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  (2003)
 1 +  2 =  3

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
*** W A R N I N G :  HYDROGRAPH 3000 <ID= 1> IS DRY.
*** W A R N I N G :  HYDROGRAPH 2003 = HYDROGRAPH 0310
*** W A R N I N G :  HYDROGRAPH 2003 = HYDROGRAPH 0310
     ID1= 1 (3000):      .00      .000      .00       .00
   + ID2= 2 (0310):     7.05      .957    1.48     25.94
     ====================================================
     ID = 3 (2003):     7.05      .957    1.48     25.94

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

```
 ***************************
 ** SIMULATION NUMBER:   4 **
 ***************************
```

```
READ STORM

Ptotal= 49.50 mm

Filename: J:\1441 Projects by Job Number\2008\10-
          08053-001-H01 Langstaff E Lands\
          OTTHYMO Model\Markham 3hour ARS Design Storm\
Comments: 10 Year, 3 hours ARS Storm
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	6.64	1.75	13.84	2.58	3.63
.17	2.69	1.00	8.06	1.83	9.62	2.67	3.48
.25	3.00	1.08	10.27	1.92	7.44	2.75	3.32
.33	3.16	1.17	15.87	2.00	6.12	2.83	3.16
.42	3.32	1.25	37.00	2.08	5.34	2.92	3.16
.50	3.63	1.33	69.97	2.17	4.58	3.00	3.00
.58	4.11	1.42	169.87	2.25	4.42	3.08	2.84
.67	4.42	1.50	90.28	2.33	4.11		
.75	5.06	1.58	42.48	2.42	3.95		
.83	5.69	1.67	22.66	2.50	3.79		

```
CALIB
STANDHYD  (0400)
ID= 1 DT= 1.0 min

Area     (ha)=  11.86
Total Imp(%)=  36.00   Dir. Conn.(%)=  36.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        4.27          7.59
Dep. Storage     (mm)=        1.00          5.00
Average Slope     (%)=        1.00          2.00
Length            (m)=      281.20         40.00
Mannings n            =        .013          .250

NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.

                ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	5.69	1.583	42.48	2.37	3.95
.033	.00	.817	5.69	1.600	22.66	2.38	3.95
.050	.00	.833	5.69	1.617	22.66	2.40	3.95
.067	.00	.850	6.64	1.633	22.66	2.42	3.95
.083	.00	.867	6.64	1.650	22.66	2.43	3.79
.100	2.69	.883	6.64	1.667	22.66	2.45	3.79

.117	2.69	.900	6.64	1.683	13.84	2.47	3.79
.133	2.69	.917	6.64	1.700	13.84	2.48	3.79
.150	2.69	.933	8.06	1.717	13.84	2.50	3.79
.167	2.69	.950	8.06	1.733	13.84	2.52	3.63
.183	3.00	.967	8.06	1.750	13.84	2.53	3.63
.200	3.00	.983	8.06	1.767	9.62	2.55	3.63
.217	3.00	1.000	8.06	1.783	9.62	2.57	3.63
.233	3.00	1.017	10.27	1.800	9.62	2.58	3.63
.250	3.00	1.033	10.27	1.817	9.62	2.60	3.48
.267	3.16	1.050	10.27	1.833	9.62	2.62	3.48
.283	3.16	1.067	10.27	1.850	7.44	2.63	3.48
.300	3.16	1.083	10.27	1.867	7.44	2.65	3.48
.317	3.16	1.100	15.87	1.883	7.44	2.67	3.48
.333	3.16	1.117	15.87	1.900	7.44	2.68	3.32
.350	3.32	1.133	15.87	1.917	7.44	2.70	3.32
.367	3.32	1.150	15.87	1.933	6.12	2.72	3.32
.383	3.32	1.167	15.87	1.950	6.12	2.73	3.32
.400	3.32	1.183	37.00	1.967	6.12	2.75	3.32
.417	3.32	1.200	37.00	1.983	6.12	2.77	3.16
.433	3.63	1.217	37.00	2.000	6.12	2.78	3.16
.450	3.63	1.233	37.00	2.017	5.34	2.80	3.16
.467	3.63	1.250	37.00	2.033	5.34	2.82	3.16
.483	3.63	1.267	69.97	2.050	5.34	2.83	3.16
.500	3.63	1.283	69.97	2.067	5.34	2.85	3.16
.517	4.11	1.300	69.97	2.083	5.34	2.87	3.16
.533	4.11	1.317	69.97	2.100	4.58	2.88	3.16
.550	4.11	1.333	69.97	2.117	4.58	2.90	3.16
.567	4.11	1.350	169.87	2.133	4.58	2.92	3.16
.583	4.11	1.367	169.87	2.150	4.58	2.93	3.00
.600	4.42	1.383	169.87	2.167	4.58	2.95	3.00
.617	4.42	1.400	169.87	2.183	4.42	2.97	3.00
.633	4.42	1.417	169.87	2.200	4.42	2.98	3.00
.650	4.42	1.433	90.28	2.217	4.42	3.00	3.00
.667	4.42	1.450	90.28	2.233	4.42	3.02	2.84
.683	5.06	1.467	90.28	2.250	4.42	3.03	2.84
.700	5.06	1.483	90.28	2.267	4.11	3.05	2.84
.717	5.06	1.500	90.28	2.283	4.11	3.07	2.84
.733	5.06	1.517	42.48	2.300	4.11	3.08	2.84
.750	5.06	1.533	42.48	2.317	4.11		
.767	5.69	1.550	42.48	2.333	4.11		
.783	5.69	1.567	42.48	2.350	3.95		

```
Max.Eff.Inten.(mm/hr)=      169.87         71.24
          over (min)=        5.00         12.00
Storage Coeff.   (min)=        3.84 (ii)    11.03 (ii)
Unit Hyd. Tpeak  (min)=        5.00         12.00
Unit Hyd. peak   (cms)=         .29           .10
                                          *TOTALS*
PEAK FLOW        (cms)=        1.52           .86         1.955 (iii)
TIME TO PEAK     (hrs)=        1.47          1.62          1.48
RUNOFF VOLUME     (mm)=       48.50         23.06         32.22
TOTAL RAINFALL    (mm)=       49.50         49.50         49.50
RUNOFF COEFFICIENT   =         .98           .47           .65

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  86.0     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  (0500)
ID= 1 DT= 1.0 min

Area     (ha)=   1.05
Total Imp(%)=  26.00   Dir. Conn.(%)=  26.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=         .27           .78
Dep. Storage     (mm)=        1.00          5.00
Average Slope     (%)=        1.00          2.00
Length            (m)=       83.70         40.00
Mannings n            =        .013          .250

Max.Eff.Inten.(mm/hr)=      169.87         71.24
          over (min)=        5.00         11.00
Storage Coeff.   (min)=        1.86 (ii)    10.53 (ii)
Unit Hyd. Tpeak  (min)=        5.00         11.00
Unit Hyd. peak   (cms)=         .39           .13
                                          *TOTALS*
PEAK FLOW        (cms)=         .11           .09          .155 (iii)
TIME TO PEAK     (hrs)=        1.45          1.60          1.47
RUNOFF VOLUME     (mm)=       48.50         23.07         29.67
TOTAL RAINFALL    (mm)=       49.50         49.50         49.50
RUNOFF COEFFICIENT   =         .98           .47           .60

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  86.0     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  (0510)
ID= 1 DT= 1.0 min

Area     (ha)=   2.81
Total Imp(%)=  26.00   Dir. Conn.(%)=  26.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=         .73          2.08
Dep. Storage     (mm)=        1.00          5.00
Average Slope     (%)=        1.00          2.00
Length            (m)=      134.90         40.00
Mannings n            =        .013          .250

Max.Eff.Inten.(mm/hr)=      169.87         71.24
          over (min)=        5.00         12.00
Storage Coeff.   (min)=        2.50 (ii)    11.17 (ii)
Unit Hyd. Tpeak  (min)=        5.00         12.00
Unit Hyd. peak   (cms)=         .34           .10
                                          *TOTALS*
PEAK FLOW        (cms)=         .29           .23          .394 (iii)
TIME TO PEAK     (hrs)=        1.45          1.62          1.48
RUNOFF VOLUME     (mm)=       48.50         23.06         29.68
TOTAL RAINFALL    (mm)=       49.50         49.50         49.50
RUNOFF COEFFICIENT   =         .98           .47           .60

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  86.0     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  (2004)
 1 +  2 =  3

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (0500):     1.05      .155    1.47     29.67
   + ID2= 2 (0510):     2.81      .394    1.48     29.68
     ====================================================
     ID = 3 (2004):     3.86      .548    1.48     29.67

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

```
ADD HYD  (2005)
 1 +  2 =  3

                        AREA     QPEAK    TPEAK     R.V.
                        (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (0400):    11.86    1.955    1.48     32.22
   + ID2= 2 (2004):     3.86      .548    1.48     29.67
     ====================================================
     ID = 3 (2005):    15.72    2.503    1.48     31.60

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

```
CALIB
NASHYD  (0600)
ID= 1 DT= 2.0 min

Area     (ha)=   5.10   Curve Number   (CN)= 86.0
Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=    .59

NOTE:  RAINFALL WAS TRANSFORMED TO   2.0 MIN. TIME STEP.

                ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.033	.00	.833	5.69	1.633	22.66	2.43	3.87
.067	.00	.867	6.64	1.667	22.66	2.47	3.79
.100	1.35	.900	6.64	1.700	13.84	2.50	3.79
.133	2.69	.933	7.35	1.733	13.84	2.53	3.63
.167	2.69	.967	8.06	1.767	11.73	2.57	3.63
.200	3.00	1.000	8.06	1.800	9.62	2.60	3.56

.233	3.00	1.033	10.27	1.833	9.62	2.63	3.48
.267	3.08	1.067	10.27	1.867	7.44	2.67	3.48
.300	3.16	1.100	13.07	1.900	7.44	2.70	3.32
.333	3.16	1.133	15.87	1.933	6.78	2.73	3.32
.367	3.32	1.167	15.87	1.967	6.12	2.77	3.24
.400	3.32	1.200	37.00	2.000	6.12	2.80	3.16
.433	3.47	1.233	37.00	2.033	5.34	2.83	3.16
.467	3.63	1.267	53.49	2.067	5.34	2.87	3.16
.500	3.63	1.300	69.97	2.100	4.96	2.90	3.16
.533	4.11	1.333	69.97	2.133	4.58	2.93	3.08
.567	4.11	1.367	169.87	2.167	4.58	2.97	3.00
.600	4.27	1.400	169.87	2.200	4.42	3.00	3.00
.633	4.42	1.433	130.08	2.233	4.42	3.03	2.94
.667	4.42	1.467	90.28	2.267	4.27	3.07	2.86
.700	5.06	1.500	90.28	2.300	4.11	3.10	3.42
.733	5.06	1.533	42.48	2.333	4.11		
.767	5.38	1.567	42.48	2.367	3.95		
.800	5.69	1.600	32.57	2.400	3.95		

Unit Hyd Qpeak (cms)= .330

PEAK FLOW (cms)= .241 (i)
TIME TO PEAK (hrs)= 2.067
RUNOFF VOLUME (mm)= 23.065
TOTAL RAINFALL (mm)= 49.498
RUNOFF COEFFICIENT = .466

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

ADD HYD (2006)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2005):	15.72	2.503	1.48	31.60
+ ID2= 2 (0600):	5.10	.241	2.07	23.07
ID = 3 (2006):	20.82	2.538	1.48	29.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0700) | Area (ha)= 24.12 Curve Number (CN)= 86.0
ID= 1 DT= 2.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .49

Unit Hyd Qpeak (cms)= 1.880

PEAK FLOW (cms)= 1.330 (i)
TIME TO PEAK (hrs)= 1.967
RUNOFF VOLUME (mm)= 23.065
TOTAL RAINFALL (mm)= 49.498
RUNOFF COEFFICIENT = .466

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

ADD HYD (2007)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2006):	20.82	2.538	1.48	29.51
+ ID2= 2 (0700):	24.12	1.330	1.97	23.07
ID = 3 (2007):	44.94	2.917	1.55	26.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (1001)
IN= 2---> OUT= 1
DT= 2.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	2.4450	.4161
.1170	.0697	2.9940	.5605
.4480	.1394	3.7340	.8504
.8810	.2296	4.3500	1.1711
1.2510	.3198	4.8890	1.5196

	AREA	QPEAK	TPEAK	R.V.
INFLOW : ID= 2 (2007)	(ha) 44.94	(cms) 2.92	(hrs) 1.55	(mm) 26.05
OUTFLOW: ID= 1 (1001)	44.94	1.94	2.08	26.05

PEAK FLOW REDUCTION [Qout/Qin](%)= 66.49
TIME SHIFT OF PEAK FLOW (min)= 32.00
MAXIMUM STORAGE USED (ha.m.)= .3754

CALIB
STANDHYD (0200) | Area (ha)= 14.01
ID= 1 DT= 1.0 min | Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.04	8.97
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	5.69	1.583	42.48	2.37	3.95
.033	.00	.817	5.69	1.600	22.66	2.38	3.95
.050	.00	.833	5.69	1.617	22.66	2.40	3.95
.067	.00	.850	6.64	1.633	22.66	2.42	3.95
.083	.00	.867	6.64	1.650	22.66	2.43	3.79
.100	2.69	.883	6.64	1.667	22.66	2.45	3.79
.117	2.69	.900	6.64	1.683	13.84	2.47	3.79
.133	2.69	.917	6.64	1.700	13.84	2.48	3.79
.150	2.69	.933	8.06	1.717	13.84	2.50	3.79
.167	2.69	.950	8.06	1.733	13.84	2.52	3.63
.183	3.00	.967	8.06	1.750	13.84	2.53	3.63
.200	3.00	.983	8.06	1.767	9.62	2.55	3.63
.217	3.00	1.000	8.06	1.783	9.62	2.57	3.63
.233	3.00	1.017	10.27	1.800	9.62	2.58	3.63
.250	3.00	1.033	10.27	1.817	9.62	2.60	3.48
.267	3.16	1.050	10.27	1.833	9.62	2.62	3.48
.283	3.16	1.067	10.27	1.850	7.44	2.63	3.48
.300	3.16	1.083	10.27	1.867	7.44	2.65	3.48
.317	3.16	1.100	15.87	1.883	7.44	2.67	3.48
.333	3.16	1.117	15.87	1.900	7.44	2.68	3.32
.350	3.32	1.133	15.87	1.917	7.44	2.70	3.32
.367	3.32	1.150	15.87	1.933	6.12	2.72	3.32
.383	3.32	1.167	15.87	1.950	6.12	2.73	3.32
.400	3.32	1.183	37.00	1.967	6.12	2.75	3.32
.417	3.32	1.200	37.00	1.983	6.12	2.77	3.16
.433	3.63	1.217	37.00	2.000	6.12	2.78	3.16
.450	3.63	1.233	37.00	2.017	5.34	2.80	3.16
.467	3.63	1.250	37.00	2.033	5.34	2.82	3.16
.483	3.63	1.267	69.97	2.050	5.34	2.83	3.16
.500	3.63	1.283	69.97	2.067	5.34	2.85	3.16
.517	4.11	1.300	69.97	2.083	5.34	2.87	3.16
.533	4.11	1.317	69.97	2.100	4.58	2.88	3.16
.550	4.11	1.333	69.97	2.117	4.58	2.90	3.16
.567	4.11	1.350	169.87	2.133	4.58	2.92	3.16
.583	4.11	1.367	169.87	2.150	4.58	2.93	3.00
.600	4.42	1.383	169.87	2.167	4.58	2.95	3.00
.617	4.42	1.400	169.87	2.183	4.42	2.97	3.00
.633	4.42	1.417	169.87	2.200	4.42	2.98	3.00
.650	4.42	1.433	90.28	2.217	4.42	3.00	3.00
.667	4.42	1.450	90.28	2.233	4.42	3.02	2.94
.683	5.06	1.467	90.28	2.250	4.42	3.03	2.94
.700	5.06	1.483	90.28	2.267	4.11	3.05	2.94
.717	5.06	1.500	90.28	2.283	4.11	3.07	2.94
.733	5.06	1.517	42.48	2.300	4.11	3.08	2.94
.750	5.06	1.533	42.48	2.317	4.11		
.767	5.69	1.550	42.48	2.333	4.11		
.783	5.69	1.567	42.48	2.350	3.95		

Max.Eff.Inten (mm/hr)=	169.87	71.24		
over (min)	5.00	12.00		
Storage Coeff (min)=	4.04 (ii)	11.23 (ii)		
Unit Hyd. Tpeak (min)=	5.00	12.00		
Unit Hyd. peak (cms)=	.26	.10		
				TOTALS
PEAK FLOW (cms)=	1.77	1.00		2.288 (iii)
TIME TO PEAK (hrs)=	1.47	1.62		1.48
RUNOFF VOLUME (mm)=	48.50	23.06		32.22
TOTAL RAINFALL (mm)=	49.50	49.50		49.50
RUNOFF COEFFICIENT =	.98	.47		.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0100) | Area (ha)= 5.50
ID= 1 DT= 1.0 min | Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.98	3.52
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	169.87	71.24		
over (min)	5.00	11.00		
Storage Coeff. (min)=	3.05 (ii)	10.24 (ii)		
Unit Hyd. Tpeak (min)=	5.00	11.00		
Unit Hyd. peak (cms)=	.30	.11		
				TOTALS
PEAK FLOW (cms)=	.75	.41		.960 (iii)
TIME TO PEAK (hrs)=	1.45	1.60		1.48
RUNOFF VOLUME (mm)=	48.50	23.06		32.22
TOTAL RAINFALL (mm)=	49.50	49.50		49.50
RUNOFF COEFFICIENT =	.98	.47		.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0200):	14.01	2.288	1.48	32.22
+ ID2= 2 (0100):	5.50	.960	1.48	32.22
ID = 3 (2001):	19.51	3.248	1.48	32.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0300) | Area (ha)= 6.48
ID= 1 DT= 1.0 min | Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.33	4.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	169.87	71.24		
over (min)	5.00	11.00		
Storage Coeff. (min)=	3.21 (ii)	10.39 (ii)		
Unit Hyd. Tpeak (min)=	5.00	11.00		
Unit Hyd. peak (cms)=	.30	.11		
				TOTALS
PEAK FLOW (cms)=	.87	.49		1.324 (iii)
TIME TO PEAK (hrs)=	1.45	1.60		1.48
RUNOFF VOLUME (mm)=	48.50	23.06		32.22
TOTAL RAINFALL (mm)=	49.50	49.50		49.50
RUNOFF COEFFICIENT =	.98	.47		.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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.

DUMMYD (3000)
Inlet Cap.= .883
#of Inlets= 1
Total(cms)= .9

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	6.48	1.12	1.48	32.22
MAJOR SYS.(ID= 2):	.33	.24	1.48	32.22
MINOR SYS.(ID= 3):	6.15	.88	1.42	32.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2001):	19.51	3.248	1.48	32.22
+ ID2= 2 (3000):	6.15	.883	1.42	32.22
ID = 3 (2002):	25.66	4.131	1.48	32.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0310) | Area (ha)= 7.05
ID= 1 DT= 1.0 min | Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.54	4.51
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	169.87	71.24		
over (min)	5.00	11.00		
Storage Coeff. (min)=	3.29 (ii)	10.48 (ii)		
Unit Hyd. Tpeak (min)=	5.00	11.00		
Unit Hyd. peak (cms)=	.29	.11		
				TOTALS
PEAK FLOW (cms)=	.94	.53		1.219 (iii)
TIME TO PEAK (hrs)=	1.45	1.60		1.48
RUNOFF VOLUME (mm)=	48.50	23.06		32.22
TOTAL RAINFALL (mm)=	49.50	49.50		49.50
RUNOFF COEFFICIENT =	.98	.47		.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3000):	.33	.241	1.48	32.22
+ ID2= 2 (0310):	7.05	1.219	1.48	32.22
ID = 3 (2003):	7.38	1.460	1.48	32.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION NUMBER: 5 **

READ STORM | Filename: J:\1441 Projects by Job Number\2008\10-08053-001-N01 Langstaff E Lands\OTTHYMD Model\Markham 3hour AES Design Storm\
Ptotals= 61.00 mm | Comments: 25 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	8.18	1.75	17.05	2.58	4.48
.17	3.31	1.00	9.93	1.83	11.86	2.67	4.28
.25	3.70	1.08	12.66	1.92	9.17	2.75	4.09
.33	3.89	1.17	19.56	2.00	7.54	2.83	3.89
.42	4.09	1.25	45.59	2.08	6.58	2.92	3.89
.50	4.48	1.33	86.23	2.17	5.69	3.00	3.70
.58	5.06	1.42	209.33	2.25	5.45	3.08	3.51
.67	5.45	1.50	111.25	2.33	5.06		
.75	6.23	1.58	52.35	2.42	4.87		
.83	7.01	1.67	27.93	2.50	4.67		

CALIB
STANDHYD (0400)
ID= 1 DT= 1.0 min

Area (ha)= 11.86
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.27	7.59
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	7.01	1.583	52.35	2.37	4.87
.033	.00	.817	7.01	1.600	27.93	2.38	4.87
.050	.00	.833	7.01	1.617	27.93	2.40	4.87
.067	.00	.850	8.18	1.633	27.93	2.42	4.87
.083	.00	.867	8.18	1.650	27.93	2.43	4.67
.100	3.31	.883	8.18	1.667	27.93	2.45	4.67
.117	3.31	.900	8.18	1.683	17.05	2.47	4.67
.133	3.31	.917	8.18	1.700	17.05	2.48	4.67
.150	3.31	.933	9.93	1.717	17.05	2.50	4.67
.167	3.31	.950	9.93	1.733	17.05	2.52	4.48
.183	3.70	.967	9.93	1.750	17.05	2.53	4.48
.200	3.70	.983	9.93	1.767	11.86	2.55	4.48
.217	3.70	1.000	9.93	1.783	11.86	2.57	4.48
.233	3.70	1.017	12.66	1.800	11.86	2.58	4.48
.250	3.70	1.033	12.66	1.817	11.86	2.60	4.28
.267	3.89	1.050	12.66	1.833	11.86	2.62	4.28
.283	3.89	1.067	12.66	1.850	9.17	2.63	4.28
.300	3.89	1.083	12.66	1.867	9.17	2.65	4.28
.317	3.89	1.100	19.56	1.883	9.17	2.67	4.28
.333	3.89	1.117	19.56	1.900	9.17	2.68	4.09
.350	4.09	1.133	19.56	1.917	9.17	2.70	4.09
.367	4.09	1.150	19.56	1.933	7.54	2.72	4.09
.383	4.09	1.167	19.56	1.950	7.54	2.73	4.09
.400	4.09	1.183	45.59	1.967	7.54	2.75	4.09
.417	4.09	1.200	45.59	1.983	7.54	2.77	3.89
.433	4.48	1.217	45.59	2.000	7.54	2.78	3.89
.450	4.48	1.233	45.59	2.017	6.58	2.80	3.89
.467	4.48	1.250	45.59	2.033	6.58	2.82	3.89
.483	4.48	1.267	86.23	2.050	6.58	2.83	3.89
.500	4.48	1.283	86.23	2.067	6.58	2.85	3.89
.517	5.06	1.300	86.23	2.083	6.58	2.87	3.89
.533	5.06	1.317	86.23	2.100	5.69	2.88	3.89
.550	5.06	1.333	86.23	2.117	5.69	2.90	3.89
.567	5.06	1.350	209.33	2.133	5.69	2.92	3.89
.583	5.06	1.367	209.33	2.150	5.69	2.93	3.70
.600	5.45	1.383	209.33	2.167	5.69	2.95	3.70
.617	5.45	1.400	209.33	2.183	5.45	2.97	3.70
.633	5.45	1.417	209.33	2.200	5.45	2.98	3.70
.650	5.45	1.433	111.25	2.217	5.45	3.00	3.70
.667	5.45	1.450	111.25	2.233	5.45	3.02	3.51
.683	6.23	1.467	111.25	2.250	5.45	3.03	3.51
.700	6.23	1.483	111.25	2.267	5.06	3.05	3.51
.717	6.23	1.500	111.25	2.283	5.06	3.07	3.51
.733	6.23	1.517	52.35	2.300	5.06	3.08	3.51
.750	6.23	1.533	52.35	2.317	5.06		
.767	7.01	1.550	52.35	2.333	5.06		
.783	7.01	1.567	52.35	2.350	4.87		

Max.Eff.Inten.(mm/hr)=	209.33		99.55
over (min)	5.00		11.00
Storage Coeff. (min)=	3.54 (ii)		10.15 (ii)
Unit Hyd. Tpeak (min)=	5.00		11.00
Unit Hyd. peak (cms)=	.28		.11

TOTALS

PEAK FLOW	(cms)=	1.91	3.27	2.656 (iii)
TIME TO PEAK	(hrs)=	1.45	1.58	1.48
RUNOFF VOLUME	(mm)=	60.00	32.21	42.22
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0500)
ID= 1 DT= 1.0 min

Area (ha)= 1.05
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.27	.78
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	209.33		99.55
over (min)	5.00		10.00
Storage Coeff. (min)=	1.71 (ii)		9.69 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	.40		.12

TOTALS

PEAK FLOW	(cms)=	.14	.13	.215 (iii)
TIME TO PEAK	(hrs)=	1.43	1.58	1.48
RUNOFF VOLUME	(mm)=	60.00	32.21	39.43
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0510)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	209.33		99.55
over (min)	5.00		11.00
Storage Coeff. (min)=	2.30 (ii)		10.28 (ii)
Unit Hyd. Tpeak (min)=	5.00		11.00
Unit Hyd. peak (cms)=	.35		.11

TOTALS

PEAK FLOW	(cms)=	.36	.34	.547 (iii)
TIME TO PEAK	(hrs)=	1.45	1.60	1.48
RUNOFF VOLUME	(mm)=	60.00	32.21	39.44
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0500):	1.05	.215	1.48	39.43
+ ID2= 2 (0510):	2.81	.547	1.48	39.44
ID = 3 (2004):	3.86	.763	1.48	39.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2005)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0400):	11.86	2.656	1.48	42.22
+ ID2= 2 (2004):	3.86	.763	1.48	39.44
ID = 3 (2005):	15.72	3.418	1.48	41.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0600)
ID= 1 DT= 2.0 min

Area (ha)= 5.10 Curve Number (CN)= 86.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .59

NOTE: RAINFALL WAS TRANSFORMED TO 2.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.033	.00	.833	7.01	1.633	27.93	2.43	4.77
.067	.00	.867	8.18	1.667	27.93	2.47	4.67
.100	1.66	.900	8.18	1.700	17.05	2.50	4.67
.133	3.31	.933	9.06	1.733	17.05	2.53	4.48
.167	3.31	.967	9.93	1.767	14.46	2.57	4.48
.200	3.70	1.000	9.93	1.800	11.86	2.60	4.38
.233	3.70	1.033	12.66	1.833	11.86	2.63	4.28
.267	3.80	1.067	12.66	1.867	9.17	2.67	4.28
.300	3.89	1.100	16.11	1.900	9.17	2.70	4.09
.333	3.89	1.133	19.56	1.933	8.36	2.73	4.09
.367	4.09	1.167	19.56	1.967	7.54	2.77	3.99
.400	4.09	1.200	45.59	2.000	7.54	2.80	3.89
.433	4.29	1.233	45.59	2.033	6.58	2.83	3.89
.467	4.48	1.267	65.91	2.067	6.58	2.87	3.89
.500	4.48	1.300	86.23	2.100	6.14	2.90	3.89
.533	5.06	1.333	86.23	2.133	5.69	2.93	3.80
.567	5.06	1.367	209.33	2.167	5.69	2.97	3.70
.600	5.26	1.400	209.33	2.200	5.45	3.00	3.70
.633	5.45	1.433	160.29	2.233	5.45	3.03	3.51
.667	5.45	1.467	111.25	2.267	5.26	3.07	3.51
.700	6.23	1.500	111.25	2.300	5.06	3.10	1.76
.733	6.23	1.533	52.35	2.333	5.06		
.767	6.62	1.567	52.35	2.367	4.87		
.800	7.01	1.600	40.14	2.400	4.87		

Unit Hyd Qpeak (cms)= .330

PEAK FLOW	(cms)=	.339 (i)
TIME TO PEAK	(hrs)=	2.067
RUNOFF VOLUME	(mm)=	32.215
TOTAL RAINFALL	(mm)=	61.001
RUNOFF COEFFICIENT	=	.528

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

ADD HYD (2006)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2005):	15.72	3.418	1.48	41.53
+ ID2= 2 (0600):	5.10	.339	2.07	32.21
ID = 3 (2006):	20.82	3.472	1.48	39.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0700)
Area (ha)= 24.12 Curve Number (CN)= 86.0
ID= 1 DT= 2.0 min Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= .49

Unit Hyd Qpeak (cms)= 1.880

PEAK FLOW	(cms)=	1.872 (i)
TIME TO PEAK	(hrs)=	1.967
RUNOFF VOLUME	(mm)=	32.215
TOTAL RAINFALL	(mm)=	61.001
RUNOFF COEFFICIENT	=	.528

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

ADD HYD (2007)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2006):	20.82	3.472	1.48	39.25
+ ID2= 2 (0700):	24.12	1.872	1.97	32.21
ID = 3 (2007):	44.94	4.079	1.55	35.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (1001)
IN= 2---> OUT= 1
DT= 2.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	2.4450	.4161
.1170	.0697	2.9940	.5605
.4480	.1394	3.7340	.8504
.8810	.2296	4.3500	1.1711
1.2510	.3198	4.8890	1.5198

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2007)		44.94	4.08	1.55	35.47
OUTFLOW: ID= 1 (1001)		44.94	2.63	2.08	35.47
PEAK FLOW REDUCTION [Qout/Qin](%)= 64.59					
TIME SHIFT OF PEAK FLOW (min)= 32.00					
MAXIMUM STORAGE USED (ha.m.)= .4661					

CALIB
STANDHYD (0200)
ID= 1 DT= 1.0 min

Area (ha)= 14.01
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.04	8.97
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	7.01	1.583	52.35	2.37	4.87
.033	.00	.817	7.01	1.600	27.93	2.38	4.87
.050	.00	.833	7.01	1.617	27.93	2.40	4.87
.067	.00	.850	8.18	1.633	27.93	2.42	4.87
.083	.00	.867	8.18	1.650	27.93	2.43	4.67
.100	3.31	.883	8.18	1.667	27.93	2.45	4.67
.117	3.31	.900	8.18	1.683	17.05	2.47	4.67
.133	3.31	.917	8.18	1.700	17.05	2.48	4.67
.150	3.31	.933	9.93	1.717	17.05	2.50	4.67
.167	3.31	.950	9.93	1.733	17.05	2.52	4.48
.183	3.70	.967	9.93	1.750	17.05	2.53	4.48
.200	3.70	.983	9.93	1.767	11.86	2.55	4.48
.217	3.70	1.000	9.93	1.783	11.86	2.57	4.48
.233	3.70	1.017	12.66	1.800	11.86	2.58	4.48
.250	3.70	1.033	12.66	1.817	11.86	2.60	4.28
.267	3.89	1.050	12.66	1.833	11.86	2.62	4.28
.283	3.89	1.067	12.66	1.850	9.17	2.63	4.28
.300	3.89	1.083	12.66	1.867	9.17	2.65	4.28
.317	3.89	1.100	19.56	1.883	9.17	2.67	4.28

.333	3.89	1.117	19.56	1.900	9.17	2.68	4.09
.350	4.09	1.133	19.56	1.917	9.17	2.70	4.09
.367	4.09	1.150	19.56	1.933	7.54	2.72	4.09
.383	4.09	1.167	19.56	1.950	7.54	2.73	4.09
.400	4.09	1.183	45.59	1.967	7.54	2.75	4.09
.417	4.09	1.200	45.59	1.983	7.54	2.77	3.89
.433	4.48	1.217	45.59	2.000	7.54	2.78	3.89
.450	4.48	1.233	45.59	2.017	6.58	2.80	3.89
.467	4.48	1.250	45.59	2.033	6.58	2.82	3.89
.483	4.48	1.267	86.23	2.050	6.58	2.83	3.89
.500	4.48	1.283	86.23	2.067	6.58	2.85	3.89
.517	5.06	1.300	86.23	2.083	6.58	2.87	3.89
.533	5.06	1.317	86.23	2.100	5.69	2.88	3.89
.550	5.06	1.333	86.23	2.117	5.69	2.90	3.89
.567	5.06	1.350	209.33	2.133	5.69	2.92	3.89
.583	5.06	1.367	209.33	2.150	5.69	2.93	3.70
.600	5.45	1.383	209.33	2.167	5.69	2.95	3.70
.617	5.45	1.400	209.33	2.183	5.45	2.97	3.70
.633	5.45	1.417	209.33	2.200	5.45	2.98	3.70
.650	5.45	1.433	111.25	2.217	5.45	3.00	3.70
.667	5.45	1.450	111.25	2.233	5.45	3.02	3.51
.683	6.23	1.467	111.25	2.250	5.45	3.03	3.51
.700	6.23	1.483	111.25	2.267	5.06	3.05	3.51
.717	6.23	1.500	111.25	2.283	5.06	3.07	3.51
.733	6.23	1.517	52.35	2.300	5.06	3.08	3.51
.750	6.23	1.533	52.35	2.317	5.06		
.767	7.01	1.550	52.35	2.333	5.06		
.783	7.01	1.567	52.35	2.350	4.87		

Max.Eff.Inten.(mm/hr)=	209.33	99.55	
over (min)	5.00	11.00	
Storage Coeff. (min)=	3.72 (ii)	10.33 (ii)	
Unit Hyd. Tpeak (min)=	5.00	11.00	
Unit Hyd. peak (cms)=	.27	.11	
			TOTALS
PEAK FLOW (cms)=	2.23	1.48	3.111 (iii)
TIME TO PEAK (hrs)=	1.47	1.60	1.48
RUNOFF VOLUME (mm)=	60.00	32.21	42.22
TOTAL RAINFALL (mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT =	.98	.53	.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0100)
ID= 1 DT= 1.0 min

Area (ha)= 5.50
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.98	3.52
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	10.00
Storage Coeff. (min)=		2.81 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		.32	.12
			TOTALS
PEAK FLOW (cms)=		.94	.61	1.307 (iii)
TIME TO PEAK (hrs)=		1.45	1.58	1.48
RUNOFF VOLUME (mm)=		60.00	32.21	42.22
TOTAL RAINFALL (mm)=		61.00	61.00	61.00
RUNOFF COEFFICIENT =		.98	.53	.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0100):	5.50	1.307	1.48	42.22
+ ID2= 2 (0200):	14.01	3.111	1.48	42.22
ID = 3 (2001):	19.51	4.418	1.48	42.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0300)
ID= 1 DT= 1.0 min

Area (ha)= 6.48
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.33	4.15
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	10.00
Storage Coeff. (min)=		2.95 (ii)	9.56 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		.31	.12
			TOTALS
PEAK FLOW (cms)=		1.09	.72	1.531 (iii)
TIME TO PEAK (hrs)=		1.45	1.58	1.48
RUNOFF VOLUME (mm)=		60.00	32.21	42.22
TOTAL RAINFALL (mm)=		61.00	61.00	61.00
RUNOFF COEFFICIENT =		.98	.53	.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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.

DUMYD (3000)
Inlet Cap = .883
#of Inlets= 1
Total(cms)= .9

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL NYD (ID= 1):	5.49	1.53	1.48	42.22
MAJOR SYS (ID= 2):	.99	.65	1.48	42.22
MINOR SYS (ID= 3):	5.49	.88	1.40	42.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (2002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2001):	19.51	4.418	1.48	42.22
+ ID2= 2 (3000):	5.49	.883	1.40	42.22
ID = 3 (2002):	25.00	5.301	1.48	42.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0310)
ID= 1 DT= 1.0 min

Area (ha)= 7.05
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.54	4.51
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	10.00
Storage Coeff. (min)=		3.02 (ii)	9.64 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		.31	.12

			TOTALS
PEAK FLOW (cms)=	1.18	.78	1.661 (iii)
TIME TO PEAK (hrs)=	1.45	1.58	1.48
RUNOFF VOLUME (mm)=	60.00	32.21	42.22
TOTAL RAINFALL (mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT =	.98	.53	.69

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3000):	.99	.648	1.48	42.22
+ ID2= 2 (0310):	7.05	1.661	1.48	42.22
ID = 3 (2003):	8.04	2.309	1.48	42.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION NUMBER: 6 **

READ STORM
Ptotal= 80.00 mm

Filename: J:\1441 Projects by Job Number\2008\10-GHD53-001-RD1 Langstaff E Lands\OTTHYMO Model\Markham 3hour AES Design Storm\
Comments: 100 Year, 3 Hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	10.73	1.75	22.37	2.58	5.87
.17	4.34	1.00	13.02	1.83	15.55	2.67	5.62
.25	4.85	1.08	16.60	1.92	12.03	2.75	5.36
.33	5.11	1.17	25.65	2.00	9.89	2.83	5.11
.42	5.36	1.25	59.79	2.08	8.63	2.92	5.11
.50	5.87	1.33	113.08	2.17	7.41	3.00	4.85
.58	6.64	1.42	274.54	2.25	7.15	3.08	4.60
.67	7.15	1.50	145.90	2.33	6.64		
.75	8.17	1.58	68.66	2.42	6.38		
.83	9.19	1.67	36.63	2.50	6.13		

CALIB
STANDHYD (0400)
ID= 1 DT= 1.0 min

Area (ha)= 11.86
Total Imp(%)= 36.00 Dir. Conn.(%)= 36.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.27	7.59
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	9.19	1.583	68.66	2.37	6.38
.033	.00	.817	9.19	1.600	36.63	2.38	6.38
.050	.00	.833	9.19	1.617	36.63	2.40	6.38
.067	.00	.850	10.73	1.633	36.63	2.42	6.38
.083	.00	.867	10.73	1.650	36.63	2.43	6.13
.100	4.34	.883	10.73	1.667	36.63	2.45	6.13
.117	4.34	.900	10.73	1.683	22.37	2.47	6.13
.133	4.34	.917	10.73	1.700	22.37	2.48	6.13
.150	4.34	.933	13.02	1.717	22.37	2.50	6.13
.167	4.34	.950	13.02	1.733	22.37	2.52	5.87
.183	4.85	.967	13.02	1.750	22.37	2.53	5.87
.200	4.85	.983	13.02	1.767	15.55	2.55	5.87
.217	4.85	1.000	13.02	1.783	15.55	2.57	5.87
.233	4.85	1.017	16.60	1.800	15.55	2.58	5.87
.250	4.85	1.033	16.60	1.817	15.55	2.60	5.62
.267	5.11	1.050	16.60	1.833	15.55	2.62	5.62
.283	5.11	1.067	16.60	1.850	12.03	2.63	5.62
.300	5.11	1.083	16.60	1.867	12.03	2.65	5.62
.317	5.11	1.100	25.65	1.883	12.03	2.67	5.62
.333	5.11	1.117	25.65	1.900	12.03	2.68	5.36
.350	5.36	1.133	25.65	1.917	12.03	2.70	5.36
.367	5.36	1.150	25.65	1.933	9.89	2.72	5.36
.383	5.36	1.167	25.65	1.950	9.89	2.73	5.36
.400	5.36	1.183	59.79	1.967	9.89	2.75	5.36
.417	5.36	1.200	59.79	1.983	9.89	2.77	5.11
.433	5.87	1.217	59.79	2.000	9.89	2.78	5.11
.450	5.87	1.233	59.79	2.017	8.63	2.80	5.11
.467	5.87	1.250	59.79	2.033	8.63	2.82	5.11
.483	5.87	1.267	113.08	2.050	8.63	2.83	5.11
.500	5.87	1.283	113.08	2.067	8.63	2.85	5.11
.517	6.64	1.300	113.08	2.083	8.63	2.87	5.11
.533	6.64	1.317	113.08	2.100	7.41	2.88	5.11
.550	6.64	1.333	113.08	2.117	7.41	2.90	5.11
.567	6.64	1.350	274.53	2.133	7.41	2.92	5.11
.583	6.64	1.367	274.54	2.150	7.41	2.93	4.85
.600	7.15	1.383	274.54	2.167	7.41	2.95	4.85
.617	7.15	1.400	274.54	2.183	7.15	2.97	4.85
.633	7.15	1.417	274.54	2.200	7.15	2.98	4.85
.650	7.15	1.433	145.91	2.217	7.15	3.00	4.85
.667	7.15	1.450	145.90	2.233	7.15	3.02	4.60
.683	8.17	1.467	145.90	2.250	7.15	3.03	4.60
.700	8.17	1.483	145.90	2.267	6.64	3.05	4.60
.717	8.17	1.500	145.90	2.283	6.64	3.07	4.60
.733	8.17	1.517	68.66	2.300	6.64	3.08	4.60
.750	8.17	1.533	68.66	2.317	6.64		
.767	9.19	1.550	68.66	2.333	6.64		
.783	9.19	1.567	68.66	2.350	6.38		

Max.Eff.Inten.(mm/hr)=	274.54	148.83	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.17 (ii)	9.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	.30	.12	
			TOTALS
PEAK FLOW (cms)=	2.58	2.03	3.943 (iii)
TIME TO PEAK (hrs)=	1.45	1.57	1.48
RUNOFF VOLUME (mm)=	79.00	48.34	59.38
TOTAL RAINFALL (mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT =	.99	.60	.74

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0500)
ID= 1 DT= 1.0 min

Area (ha)= 1.05
Total Imp(%)= 24.00 Dir. Conn.(%)= 24.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.27	.78
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	9.00
Storage Coeff. (min)=		1.53 (ii)	8.69 (ii)
Unit Hyd. Tpeak (min)=		5.00	9.00
Unit Hyd. peak (cms)=		.42	.13
			TOTALS
PEAK FLOW (cms)=		.29	.21	.330 (iii)
TIME TO PEAK (hrs)=		1.43	1.55	1.48
RUNOFF VOLUME (mm)=		79.00	48.34	56.31
TOTAL RAINFALL (mm)=		80.00	80.00	80.00
RUNOFF COEFFICIENT =		.99	.60	.70

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0510) |   Area     (ha)=  2.81
|ID= 1 DT= 1.0 min |   Total Imp(%)= 26.00   Dir. Conn.(%)= 26.00
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                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .73         2.08
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope    (%)=     1.00         2.00
     Length           (m)=   136.90        40.00
     Mannings n            =    .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
           over      (min)=     5.00        10.00
     Storage Coeff.  (min)=     2.06 (ii)    9.22 (ii)
     Unit Hyd. Tpeak (min)=     5.00        10.00
     Unit Hyd. peak  (cms)=      .37          .12
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .48          .55          .936 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.57         1.52
     RUNOFF VOLUME   (mm)=     79.00        48.34        56.31
     TOTAL RAINFALL  (mm)=     80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .70

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD   (2004) |
|  1 +  2 =  3     |
-------------------          AREA    QPEAK    TPEAK     R.V.
                             (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (0500):     1.05     .330    1.48     56.31
        + ID2= 2 (0510):     2.81     .936    1.52     56.31
          ==========================================================
          ID = 3 (2004):     3.86    1.165    1.48     56.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-------------------
| ADD HYD   (2005) |
|  1 +  2 =  3     |
-------------------          AREA    QPEAK    TPEAK     R.V.
                             (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (0400):    11.86    3.943    1.48     59.38
        + ID2= 2 (2004):     3.86    1.165    1.48     56.31
          ==========================================================
          ID = 3 (2005):    15.72    5.108    1.48     58.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB
| NASHYD    (0600) |   Area     (ha)=  5.10   Curve Number   (CN)= 86.0
|ID= 1 DT= 2.0 min |   Ia       (mm)=  5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   .59

     NOTE:  RAINFALL WAS TRANSFORMED TO   2.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
TIME   RAIN  | TIME   RAIN  | TIME   RAIN  | TIME   RAIN  | TIME   RAIN
 hrs   mm/hr | hrs    mm/hr | hrs    mm/hr | hrs    mm/hr | hrs    mm/hr
.033    .00  | .833    9.19 | 1.633   36.63 | 2.43    6.26 |
.067    .00  | .867   10.73 | 1.667   36.63 | 2.47    6.13 |
.100   2.17  | .900   10.73 | 1.700   22.37 | 2.50    6.13 |
.133   4.34  | .933   11.88 | 1.733   22.37 | 2.53    5.87 |
.167   4.34  | .967   13.02 | 1.767   18.96 | 2.57    5.87 |
.200   4.85  | 1.000  13.02 | 1.800   15.55 | 2.60    5.75 |
.233   4.85  | 1.033  16.60 | 1.833   15.55 | 2.63    5.62 |
.267   4.98  | 1.067  16.60 | 1.867   12.03 | 2.67    5.62 |
.300   5.11  | 1.100  21.13 | 1.900   12.03 | 2.70    5.36 |
.333   5.11  | 1.133  25.65 | 1.933   10.96 | 2.73    5.36 |
.367   5.36  | 1.167  25.65 | 1.967    9.89 | 2.77    5.24 |
.400   5.36  | 1.200  59.79 | 2.000    9.89 | 2.80    5.11 |
.433   5.61  | 1.233  59.79 | 2.033    8.63 | 2.83    5.11 |
.467   5.87  | 1.267  86.44 | 2.067    8.63 | 2.87    5.11 |
.500   5.87  | 1.300 113.08 | 2.100    8.02 | 2.90    5.11 |
.533   6.64  | 1.333 113.08 | 2.133    7.41 | 2.93    4.98 |
.567   6.64  | 1.367 274.54 | 2.167    7.41 | 2.97    4.85 |
.600   6.90  | 1.400 274.54 | 2.200    7.15 | 3.00    4.85 |
.633   7.15  | 1.433 210.22 | 2.233    7.15 | 3.03    4.60 |
.667   7.15  | 1.467 145.90 | 2.267    6.90 | 3.07    4.60 |
.700   8.17  | 1.500 145.90 | 2.300    6.64 | 3.10    2.30 |
.733   8.17  | 1.533  68.66 | 2.333    6.64 |
.767   8.68  | 1.567  68.66 | 2.367    6.38 |
.800   9.19  | 1.600  52.65 | 2.400    6.38 |

     Unit Hyd Qpeak  (cms)=     .330

     PEAK FLOW       (cms)=     .513 (i)
     TIME TO PEAK    (hrs)=    2.067
     RUNOFF VOLUME    (mm)=   48.344
     TOTAL RAINFALL   (mm)=   79.998
     RUNOFF COEFFICIENT    =    .604

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

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| ADD HYD   (2006) |
|  1 +  2 =  3     |
-------------------          AREA    QPEAK    TPEAK     R.V.
                             (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (2005):    15.72    5.108    1.48     58.63
        + ID2= 2 (0600):     5.10     .513    2.07     48.34
          ==========================================================
          ID = 3 (2006):    20.82    5.199    1.48     56.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB
| NASHYD    (0700) |   Area     (ha)=  24.12   Curve Number   (CN)= 86.0
|ID= 1 DT= 2.0 min |   Ia       (mm)=  5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   .49

     Unit Hyd Qpeak  (cms)=    1.880

     PEAK FLOW       (cms)=    2.831 (i)
     TIME TO PEAK    (hrs)=    1.967
     RUNOFF VOLUME    (mm)=   48.344
     TOTAL RAINFALL   (mm)=   79.998
     RUNOFF COEFFICIENT    =    .604

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

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| ADD HYD   (2007) |
|  1 +  2 =  3     |
-------------------          AREA    QPEAK    TPEAK     R.V.
                             (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (2006):    20.82    5.199    1.48     56.11
        + ID2= 2 (0700):    24.12    2.831    1.97     48.34
          ==========================================================
          ID = 3 (2007):    44.94    6.158    1.55     51.94

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| RESERVOIR (1001) |
| IN= 2---> OUT= 1 |
| DT=  2.0 min     |
-------------------

  OUTFLOW   STORAGE  |  OUTFLOW   STORAGE
   (cms)    (ha.m.)  |   (cms)    (ha.m.)
    .0000     .0000  |   2.4450     .4141
    .1170     .0697  |   2.9940     .5605
    .4480     .1394  |   3.7340     .8504
    .8810     .2296  |   4.3500    1.1711
   1.2510     .3198  |   4.8890    1.5198

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2007)    44.94     6.16      1.55      51.94
OUTFLOW: ID= 1 (1001)    44.94     3.43      2.38      51.94

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 55.67
          TIME SHIFT OF PEAK FLOW          (min)= 38.00
          MAXIMUM  STORAGE  USED        (ha.m.)=  .7306

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| CALIB
| STANDHYD  (0200) |   Area     (ha)=  14.01
|ID= 1 DT= 1.0 min |   Total Imp(%)= 36.00   Dir. Conn.(%)= 36.00
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                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     5.04         8.97
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope    (%)=     1.00         2.00
     Length           (m)=   305.60        40.00
     Mannings n            =    .013         .250

     NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.

                        ---- TRANSFORMED HYETOGRAPH ----
TIME   RAIN  | TIME   RAIN  | TIME   RAIN  | TIME   RAIN  | TIME   RAIN
 hrs   mm/hr | hrs    mm/hr | hrs    mm/hr | hrs    mm/hr | hrs    mm/hr
.017    .00  | .800    9.19 | 1.583   68.66 | 2.37    6.38 |
.033    .00  | .817    9.19 | 1.600   36.63 | 2.38    6.38 |
.050    .00  | .833    9.19 | 1.617   36.63 | 2.40    6.38 |
.067    .00  | .850   10.73 | 1.633   36.63 | 2.42    6.38 |
.083    .00  | .867   10.73 | 1.650   36.63 | 2.43    6.13 |
.100   4.34  | .883   10.73 | 1.667   36.63 | 2.45    6.13 |
.117   4.34  | .900   10.73 | 1.683   22.37 | 2.47    6.13 |
.133   4.34  | .917   10.73 | 1.700   22.37 | 2.48    6.13 |
.150   4.34  | .933   13.02 | 1.717   22.37 | 2.50    6.13 |
.167   4.34  | .950   13.02 | 1.733   22.37 | 2.52    5.87 |
.183   4.85  | .967   13.02 | 1.750   22.37 | 2.53    5.87 |
.200   4.85  | .983   13.02 | 1.767   15.55 | 2.55    5.87 |
.217   4.85  | 1.000  13.02 | 1.783   15.55 | 2.57    5.87 |
.233   4.85  | 1.017  16.60 | 1.800   15.55 | 2.58    5.87 |
.250   4.85  | 1.033  16.60 | 1.817   15.55 | 2.60    5.62 |
.267   5.11  | 1.050  16.60 | 1.833   15.55 | 2.62    5.62 |
.283   5.11  | 1.067  16.60 | 1.850   12.03 | 2.63    5.62 |
.300   5.11  | 1.083  16.60 | 1.867   12.03 | 2.65    5.62 |
.317   5.11  | 1.100  25.65 | 1.883   12.03 | 2.67    5.62 |
.333   5.11  | 1.117  25.65 | 1.900   12.03 | 2.68    5.36 |
.350   5.36  | 1.133  25.65 | 1.917   12.03 | 2.70    5.36 |
.367   5.36  | 1.150  25.65 | 1.933    9.89 | 2.72    5.36 |
.383   5.36  | 1.167  25.65 | 1.950    9.89 | 2.73    5.36 |
.400   5.36  | 1.183  59.79 | 1.967    9.89 | 2.75    5.36 |
.417   5.36  | 1.200  59.79 | 1.983    9.89 | 2.77    5.11 |
.433   5.87  | 1.217  59.79 | 2.000    9.89 | 2.78    5.11 |
.450   5.87  | 1.233  59.79 | 2.017    8.63 | 2.80    5.11 |
.467   5.87  | 1.250  59.79 | 2.033    8.63 | 2.82    5.11 |
.483   5.87  | 1.267 113.08 | 2.050    8.63 | 2.83    5.11 |
.500   5.87  | 1.283 113.08 | 2.067    8.63 | 2.85    5.11 |
.517   6.64  | 1.300 113.08 | 2.083    8.63 | 2.87    5.11 |
.533   6.64  | 1.317 113.08 | 2.100    7.41 | 2.88    5.11 |
.550   6.64  | 1.333 113.08 | 2.117    7.41 | 2.90    5.11 |
.567   6.64  | 1.350 274.53 | 2.133    7.41 | 2.92    5.11 |
.583   6.64  | 1.367 274.54 | 2.150    7.41 | 2.93    4.85 |
.600   7.15  | 1.383 274.54 | 2.167    7.41 | 2.95    4.85 |
.617   7.15  | 1.400 274.54 | 2.183    7.15 | 2.97    4.85 |
.633   7.15  | 1.417 274.54 | 2.200    7.15 | 2.98    4.85 |
.650   7.15  | 1.433 145.91 | 2.217    7.15 | 3.00    4.85 |
.667   7.15  | 1.450 145.90 | 2.233    7.15 | 3.02    4.60 |
.683   8.17  | 1.467 145.90 | 2.250    7.15 | 3.03    4.60 |
.700   8.17  | 1.483 145.90 | 2.267    6.64 | 3.05    4.60 |
.717   8.17  | 1.500 145.90 | 2.283    6.64 | 3.07    4.60 |
.733   8.17  | 1.517  68.66 | 2.300    6.64 | 3.08    4.60 |
.750   8.17  | 1.533  68.66 | 2.317    6.64 |
.767   9.19  | 1.550  68.66 | 2.333    6.64 |
.783   9.19  | 1.567  68.66 | 2.350    6.38 |

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
           over      (min)=     5.00        10.00
     Storage Coeff.  (min)=     3.33 (ii)    9.27 (ii)
     Unit Hyd. Tpeak (min)=     5.00        10.00
     Unit Hyd. peak  (cms)=      .29          .12
                                                    *TOTALS*
     PEAK FLOW       (cms)=     3.00         2.38         4.624 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.57         1.48
     RUNOFF VOLUME   (mm)=     79.00        48.34        59.38
     TOTAL RAINFALL  (mm)=     80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .74

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0     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  (0100) |   Area     (ha)=  5.50
|ID= 1 DT= 1.0 min |   Total Imp(%)= 36.00   Dir. Conn.(%)= 36.00
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                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.98         3.52
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope    (%)=     1.00         2.00
     Length           (m)=   191.50        40.00
     Mannings n            =    .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
           over      (min)=     5.00         9.00
     Storage Coeff.  (min)=     2.52 (ii)    8.45 (ii)
     Unit Hyd. Tpeak (min)=     5.00         9.00
     Unit Hyd. peak  (cms)=      .34          .13
                                                    *TOTALS*
     PEAK FLOW       (cms)=     1.25          .98         1.944 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.55         1.48
     RUNOFF VOLUME   (mm)=     79.00        48.34        59.38
     TOTAL RAINFALL  (mm)=     80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .74

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD   (2001) |
|  1 +  2 =  3     |
-------------------          AREA    QPEAK    TPEAK     R.V.
                             (ha)    (cms)    (hrs)     (mm)
          ID1= 1 (0200):    14.01    4.624    1.48     59.38
        + ID2= 2 (0100):     5.50    1.946    1.48     59.38
          ==========================================================
          ID = 3 (2001):    19.51    6.570    1.48     59.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB
| STANDHYD  (0300) |   Area     (ha)=  6.48
|ID= 1 DT= 1.0 min |   Total Imp(%)= 36.00   Dir. Conn.(%)= 36.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     2.33         4.15
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope    (%)=     1.00         2.00
     Length           (m)=   207.80        40.00
     Mannings n            =    .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
           over      (min)=     5.00         9.00
     Storage Coeff.  (min)=     2.65 (ii)    8.58 (ii)
     Unit Hyd. Tpeak (min)=     5.00         9.00
     Unit Hyd. peak  (cms)=      .33          .13
                                                    *TOTALS*
     PEAK FLOW       (cms)=     1.46         1.15         2.281 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.55         1.48
     RUNOFF VOLUME   (mm)=     79.00        48.34        59.38
     TOTAL RAINFALL  (mm)=     80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .74

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0     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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| DUMYD     (1000) |
| Inlet Cap.= .883 |
| #of Inlets=   1  |
| Total(cms)=  .9  |       AREA     QPEAK     TPEAK     R.V.
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                      (ha)      (cms)      (hrs)      (mm)
     TOTAL HYD.(ID= 1):   6.48       2.28       1.48   59.38
     ================================================================
     MAJOR SYS.(ID= 2):   1.85       1.40       1.48   59.38
     MINOR SYS.(ID= 3):   4.63        .88       1.37   59.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD   (2002) |
|  1 +  2 =  3     |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
          ID1= 1 (2001):    19.51     6.570      1.48     59.38
        + ID2= 2 (3000):     4.63      .883      1.37     59.38
          ================================================================
          ID = 3 (2002):    24.14     7.453      1.48     59.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB            |
| STANDHYD  (0310) |   Area     (ha)=   7.05
| ID= 1 DT= 1.0 min|   Total Imp(%)=  36.00   Dir. Conn.(%)=  36.00
--------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      2.54          4.51
     Dep. Storage     (mm)=      1.00          5.00
     Average Slope     (%)=      1.00          2.00
     Length            (m)=    216.80         40.00
     Mannings n          =      .013          .250

     Max.Eff.Inten.(mm/hr)=    274.54        148.83
           over      (min)         5.00          9.00
     Storage Coeff.  (min)=      2.71 (ii)     8.65 (ii)
     Unit Hyd. Tpeak (min)=      5.00          9.00
     Unit Hyd. peak  (cms)=       .32           .13
                                                          *TOTALS*
     PEAK FLOW       (cms)=      1.59          1.25          2.475 (iii)
     TIME TO PEAK     (hrs)=     1.45          1.55          1.48
     RUNOFF VOLUME     (mm)=    79.00         48.34         59.38
     TOTAL RAINFALL    (mm)=    80.00         80.00         80.00
     RUNOFF COEFFICIENT   =      .99           .60           .74


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    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   (2003) |
|  1 +  2 =  3     |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
          ID1= 1 (3000):     1.85     1.398      1.48     59.38
        + ID2= 2 (0110):     7.05     2.475      1.48     59.38
          ================================================================
          ID = 3 (2003):     8.90     3.874      1.48     59.38

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

 FINISH
================================================================================================================
```

```
 V    V   I    SSSSS  U   U    A    L
 V    V   I   SS      U   U   A A   L
  V  V    I    SS     U   U  AAAAA  L
  V  V    I     SS    U   U  A   A  L
   VV     I   SSSSS   UUUUU  A   A  LLLLL

  OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM. Version 2.0
 O   O    T      T    H   H   Y Y   MM MM  O   O
 O   O    T      T    H   H    Y    M M M  O   O    Licensed To: MMM Group Limited
  OOO     T      T    H   H    Y    M   M   OOO                 V02-0128

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

  Input   filename: C:\Program Files\Visual OTTHYMO v2.0\voin.dat
  Output  filename: J:\1441FR-1\2008\D99RA00-\OTTHYM-1\53KJF00-\Proposed Condition (Uncontrolled).out
  Summary filename: J:\1441FR-1\2008\D99RA00-\OTTHYM-1\53KJF00-\Proposed Condition (Uncontrolled).sum

DATE: 11/25/2009                          TIME: 11:39:32 AM

USER:

COMMENTS: _____

  ***************************
  ** SIMULATION NUMBER:   2 **
  ***************************

 READ STORM
 Ptotal= 29.16 mm
```

Filename: J:\1441 Projects by Job Number\2008\10-08053-001-W01 Langstaff E Lands\OTTHYMO Model\Markham 3hour AES Design Storm\
Comments: 2 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	3.91	1.75	8.15	2.58	2.14
.17	1.58	1.00	4.75	1.83	5.67	2.67	2.05
.25	1.77	1.08	6.05	1.92	4.38	2.75	1.95
.33	1.86	1.17	9.35	2.00	3.61	2.83	1.86
.42	1.95	1.25	21.79	2.08	3.15	2.92	1.86
.50	2.14	1.33	41.22	2.17	2.70	3.00	1.77
.58	2.42	1.42	100.07	2.25	2.61	3.08	1.68
.67	2.61	1.50	53.18	2.33	2.42		
.75	2.98	1.58	25.03	2.42	2.33		
.83	3.35	1.67	13.35	2.50	2.23		

```
 CALIB
 STANDHYD  (0200)
 ID= 1 DT= 1.0 min
```

Area (ha)= 14.01
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	12.61	1.40
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	3.35	1.583	25.03	2.37	2.33
.033	.00	.817	3.35	1.600	13.35	2.38	2.33
.050	.00	.833	3.35	1.617	13.35	2.40	2.33
.067	.00	.850	3.91	1.633	13.35	2.42	2.33
.083	.00	.867	3.91	1.650	13.35	2.43	2.23
.100	1.58	.883	3.91	1.667	13.35	2.45	2.23
.117	1.58	.900	3.91	1.683	8.15	2.47	2.23
.133	1.58	.917	3.91	1.700	8.15	2.48	2.23
.150	1.58	.933	4.75	1.717	8.15	2.50	2.23
.167	1.58	.950	4.75	1.733	8.15	2.52	2.14
.183	1.77	.967	4.75	1.750	8.15	2.53	2.14
.200	1.77	.983	4.75	1.767	5.67	2.55	2.14
.217	1.77	1.000	4.75	1.783	5.67	2.57	2.14
.233	1.77	1.017	6.05	1.800	5.67	2.58	2.14
.250	1.77	1.033	6.05	1.817	5.67	2.60	2.05
.267	1.86	1.050	6.05	1.833	5.67	2.62	2.05
.283	1.86	1.067	6.05	1.850	4.38	2.63	2.05
.300	1.86	1.083	6.05	1.867	4.38	2.65	2.05
.317	1.86	1.100	9.35	1.883	4.38	2.67	2.05
.333	1.86	1.117	9.35	1.900	4.38	2.68	1.95
.350	1.95	1.133	9.35	1.917	4.38	2.70	1.95
.367	1.95	1.150	9.35	1.933	3.61	2.72	1.95
.383	1.95	1.167	9.35	1.950	3.61	2.73	1.95
.400	1.95	1.183	21.79	1.967	3.61	2.75	1.95
.417	1.95	1.200	21.79	1.983	3.61	2.77	1.86
.433	2.14	1.217	21.79	2.000	3.61	2.78	1.86
.450	2.14	1.233	21.79	2.017	3.15	2.80	1.86
.467	2.14	1.250	21.79	2.033	3.15	2.82	1.86
.483	2.14	1.267	41.22	2.050	3.15	2.83	1.86
.500	2.14	1.283	41.22	2.067	3.15	2.85	1.86
.517	2.42	1.300	41.22	2.083	3.15	2.87	1.86
.533	2.42	1.317	41.22	2.100	2.70	2.88	1.86
.550	2.42	1.333	41.22	2.117	2.70	2.90	1.86
.567	2.42	1.350	100.07	2.133	2.70	2.92	1.86
.583	2.42	1.367	100.07	2.150	2.70	2.93	1.77
.600	2.61	1.383	100.07	2.167	2.70	2.95	1.77
.617	2.61	1.400	100.07	2.183	2.61	2.97	1.77
.633	2.61	1.417	100.07	2.200	2.61	2.98	1.77
.650	2.61	1.433	53.18	2.217	2.61	3.00	1.77
.667	2.61	1.450	53.18	2.233	2.61	3.02	1.68
.683	2.98	1.467	53.18	2.250	2.61	3.03	1.68
.700	2.98	1.483	53.18	2.267	2.42	3.05	1.68
.717	2.98	1.500	53.18	2.283	2.42	3.07	1.68
.733	2.98	1.517	25.03	2.300	2.42	3.08	1.68
.750	2.98	1.533	25.03	2.317	2.42		
.767	3.35	1.550	25.03	2.333	2.42		
.783	3.35	1.567	25.03	2.350	2.33		

Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	8.00
Storage Coeff. (min)=		4.99 (ii)	7.92 (ii)
Unit Hyd. Tpeak (min)=		5.00	8.00
Unit Hyd. peak (cms)=		.23	.14
			TOTALS
PEAK FLOW	(cms)=	2.46	.07 2.505 (iii)
TIME TO PEAK	(hrs)=	1.47	1.58 1.47
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT	=	.97	.31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0100)
 ID= 1 DT= 1.0 min
```

Area (ha)= 5.50
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.95	.55
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	7.00
Storage Coeff. (min)=		3.77 (ii)	6.70 (ii)
Unit Hyd. Tpeak (min)=		5.00	7.00
Unit Hyd. peak (cms)=		.27	.17
			TOTALS
PEAK FLOW	(cms)=	1.04	.03 1.064 (iii)
TIME TO PEAK	(hrs)=	1.47	1.55 1.47
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16

RUNOFF COEFFICIENT = .97 .31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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   (2001)
   1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0100):		14.01	2.505	1.47	26.23
+ ID2= 2 (0100):		5.50	1.064	1.47	26.23
ID = 3 (2001):		19.51	3.569	1.47	26.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 CALIB
 STANDHYD  (0310)
 ID= 1 DT= 1.0 min
```

Area (ha)= 7.05
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.34	.71
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	7.00
Storage Coeff. (min)=		4.06 (ii)	6.99 (ii)
Unit Hyd. Tpeak (min)=		5.00	7.00
Unit Hyd. peak (cms)=		.26	.16
			TOTALS
PEAK FLOW	(cms)=	1.31	.04 1.340 (iii)
TIME TO PEAK	(hrs)=	1.47	1.55 1.47
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT	=	.97	.31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0300)
 ID= 1 DT= 1.0 min
```

Area (ha)= 6.48
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.83	.65
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	7.00
Storage Coeff. (min)=		3.96 (ii)	6.89 (ii)
Unit Hyd. Tpeak (min)=		5.00	7.00
Unit Hyd. peak (cms)=		.26	.16
			TOTALS
PEAK FLOW	(cms)=	1.21	.03 1.239 (iii)
TIME TO PEAK	(hrs)=	1.47	1.55 1.47
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT	=	.97	.31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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   (2002)
   1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0310):		7.05	1.340	1.47	26.23
+ ID2= 2 (0300):		6.48	1.239	1.47	26.23
ID = 3 (2002):		13.53	2.579	1.47	26.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 CALIB
 STANDHYD  (0400)
 ID= 1 DT= 1.0 min
```

Area (ha)= 11.86
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	10.67	1.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	8.00
Storage Coeff. (min)=		4.75 (ii)	7.68 (ii)
Unit Hyd. Tpeak (min)=		5.00	8.00
Unit Hyd. peak (cms)=		.23	.15
			TOTALS
PEAK FLOW	(cms)=	2.11	.04 2.153 (iii)
TIME TO PEAK	(hrs)=	1.47	1.57 1.47
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT	=	.97	.31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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   (2003)
   1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2002):		13.53	2.579	1.47	26.23
+ ID2= 2 (0400):		11.86	2.153	1.47	26.23
ID = 3 (2003):		25.39	4.732	1.47	26.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
 CALIB
 STANDHYD  (0500)
 ID= 1 DT= 1.0 min
```

Area (ha)= 1.05
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.94	.11
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	6.00
Storage Coeff. (min)=		2.30 (ii)	5.23 (ii)
Unit Hyd. Tpeak (min)=		5.00	6.00
Unit Hyd. peak (cms)=		.35	.21
			TOTALS
PEAK FLOW	(cms)=	.22	.01 .227 (iii)
TIME TO PEAK	(hrs)=	1.45	1.52 1.45
RUNOFF VOLUME	(mm)=	28.16	8.91 26.23
TOTAL RAINFALL	(mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT	=	.97	.31 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2003):	25.39	4.732	1.47	26.23
+ ID2= 2 (0500):	1.05	.227	1.45	26.23
ID = 3 (2004):	26.44	4.953	1.47	26.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0510)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	23.59
over (min)		5.00	16.00
Storage Coeff.	(min)=	3.08 (ii)	15.66 (ii)
Unit Hyd. Tpeak	(min)=	5.00	16.00
Unit Hyd. peak	(cms)=	.10	.07

TOTALS

PEAK FLOW	(cms)=	.16	.07	.178 (iii)
TIME TO PEAK	(hrs)=	1.45	1.72	1.47
RUNOFF VOLUME	(mm)=	28.16	8.91	13.91
TOTAL RAINFALL	(mm)=	29.16	29.16	29.16
RUNOFF COEFFICIENT	=	.97	.31	.48

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2005)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2004):	26.44	4.953	1.47	26.23
+ ID2= 2 (0510):	2.81	.178	1.47	13.91
ID = 3 (2005):	29.25	5.131	1.47	25.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION NUMBER: 3 **

READ STORM
Ptotal= 42.00 mm

Filename: J:\1441 Projects by Job Number\2008\10-08053-001-W01 Langstaff E Lands\OTHYMO Model\Markham 3hour AES Design Storm\
Comments: 5 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	5.63	1.75	11.74	2.58	3.08
.17	2.28	1.00	6.84	1.83	8.16	2.67	2.95
.25	2.55	1.08	8.71	1.92	6.32	2.75	2.82
.33	2.68	1.17	13.47	2.00	5.19	2.83	2.68
.42	2.82	1.25	31.39	2.08	4.53	2.92	2.68
.50	3.08	1.33	59.37	2.17	3.89	3.00	2.55
.58	3.49	1.42	144.13	2.25	3.75	3.08	2.41
.67	3.75	1.50	76.60	2.33	3.49		
.75	4.29	1.58	36.05	2.42	3.35		
.83	4.83	1.67	19.23	2.50	3.22		

CALIB
STANDHYD (0200)
ID= 1 DT= 1.0 min

Area (ha)= 14.01
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	12.61	1.40
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	4.83	1.583	36.05	2.37	3.35
.033	.00	.817	4.83	1.600	19.23	2.38	3.35
.050	.00	.833	4.83	1.617	19.23	2.40	3.35
.067	.00	.850	5.63	1.633	19.23	2.42	3.35
.083	.00	.867	5.63	1.650	19.23	2.43	3.22
.100	2.28	.883	5.63	1.667	19.23	2.45	3.22
.117	2.28	.900	5.63	1.683	11.74	2.47	3.22
.133	2.28	.917	5.63	1.700	11.74	2.48	3.22
.150	2.28	.933	6.84	1.717	11.74	2.50	3.22
.167	2.28	.950	6.84	1.733	11.74	2.52	3.08
.183	2.55	.967	6.84	1.750	11.74	2.53	3.08
.200	2.55	.983	6.84	1.767	8.16	2.55	3.08
.217	2.55	1.000	6.84	1.783	8.16	2.57	3.08
.233	2.55	1.017	8.71	1.800	8.16	2.58	3.08
.250	2.55	1.033	8.71	1.817	8.16	2.60	2.95
.267	2.68	1.050	8.71	1.833	8.16	2.62	2.95
.283	2.68	1.067	8.71	1.850	6.32	2.63	2.95
.300	2.68	1.083	8.71	1.867	6.32	2.65	2.95
.317	2.68	1.100	13.47	1.883	6.32	2.67	2.95
.333	2.68	1.117	13.47	1.900	6.32	2.68	2.82
.350	2.82	1.133	13.47	1.917	6.32	2.70	2.82
.367	2.82	1.150	13.47	1.933	5.19	2.72	2.82
.383	2.82	1.167	13.47	1.950	5.19	2.73	2.82
.400	2.82	1.183	31.39	1.967	5.19	2.75	2.82
.417	2.82	1.200	31.39	1.983	5.19	2.77	2.68
.433	3.08	1.217	31.39	2.000	5.19	2.78	2.68
.450	3.08	1.233	31.39	2.017	4.53	2.80	2.68
.467	3.08	1.250	31.39	2.033	4.53	2.82	2.68
.483	3.08	1.267	59.37	2.050	4.53	2.83	2.68
.500	3.08	1.283	59.37	2.067	4.53	2.85	2.68
.517	3.49	1.300	59.37	2.083	4.53	2.87	2.68
.533	3.49	1.317	59.37	2.100	3.89	2.88	2.68
.550	3.49	1.333	59.37	2.117	3.89	2.90	2.68
.567	3.49	1.350	144.13	2.133	3.89	2.92	2.68
.583	3.49	1.367	144.13	2.150	3.89	2.93	2.55
.600	3.75	1.383	144.13	2.167	3.89	2.95	2.55
.617	3.75	1.400	144.13	2.183	3.75	2.97	2.55
.633	3.75	1.417	144.13	2.200	3.75	2.98	2.55
.650	3.75	1.433	76.60	2.217	3.75	3.00	2.55
.667	3.75	1.450	76.60	2.233	3.75	3.02	2.41
.683	4.29	1.467	76.60	2.250	3.75	3.03	2.41
.700	4.29	1.483	76.60	2.267	3.49	3.05	2.41
.717	4.29	1.500	76.60	2.283	3.49	3.07	2.41
.733	4.29	1.517	36.05	2.300	3.49	3.08	2.41
.750	4.29	1.533	36.05	2.317	3.49		
.767	4.83	1.550	36.05	2.333	3.49		
.783	4.83	1.567	36.05	2.350	3.35		

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	7.00	
Storage Coeff.	(min)=	4.31 (ii)	6.85 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	7.00	
Unit Hyd. peak	(cms)=	.25	.16	

TOTALS

PEAK FLOW	(cms)=	3.70	.15	3.819 (iii)
TIME TO PEAK	(hrs)=	1.47	1.53	1.47
RUNOFF VOLUME	(mm)=	41.00	17.47	38.65
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0100)
ID= 1 DT= 1.0 min

Area (ha)= 5.50
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.95	.55
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	6.00
Storage Coeff.	(min)=	3.26 (ii)	5.79 (ii)
Unit Hyd. Tpeak	(min)=	5.00	6.00
Unit Hyd. peak	(cms)=	.29	.19

TOTALS

PEAK FLOW	(cms)=	1.56	.04	1.608 (iii)
TIME TO PEAK	(hrs)=	1.45	1.52	1.45
RUNOFF VOLUME	(mm)=	41.00	17.47	38.65
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0200):	14.01	3.819	1.47	38.65
+ ID2= 2 (0100):	5.50	1.608	1.45	38.65
ID = 3 (2001):	19.51	5.423	1.47	38.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0310)
ID= 1 DT= 1.0 min

Area (ha)= 7.05
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.34	.71
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	7.00
Storage Coeff.	(min)=	3.51 (ii)	6.04 (ii)
Unit Hyd. Tpeak	(min)=	5.00	7.00
Unit Hyd. peak	(cms)=	.28	.18

TOTALS

PEAK FLOW	(cms)=	1.96	.08	2.020 (iii)
TIME TO PEAK	(hrs)=	1.45	1.52	1.47
RUNOFF VOLUME	(mm)=	41.00	17.47	38.65
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0300)
ID= 1 DT= 1.0 min

Area (ha)= 6.48
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.83	.65
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	6.00
Storage Coeff.	(min)=	3.42 (ii)	5.96 (ii)
Unit Hyd. Tpeak	(min)=	5.00	6.00
Unit Hyd. peak	(cms)=	.29	.19

TOTALS

PEAK FLOW	(cms)=	1.81	.07	1.872 (iii)
TIME TO PEAK	(hrs)=	1.45	1.52	1.47
RUNOFF VOLUME	(mm)=	41.00	17.47	38.65
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0310):	7.05	2.020	1.47	38.65
+ ID2= 2 (0300):	6.48	1.872	1.47	38.65
ID = 3 (2002):	13.53	3.892	1.47	38.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0400)
ID= 1 DT= 1.0 min

Area (ha)= 11.86
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	10.67	1.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	7.00
Storage Coeff.	(min)=	4.10 (ii)	6.64 (ii)
Unit Hyd. Tpeak	(min)=	5.00	7.00
Unit Hyd. peak	(cms)=	.26	.17

TOTALS

PEAK FLOW	(cms)=	3.17	.13	3.276 (iii)
TIME TO PEAK	(hrs)=	1.47	1.53	1.47
RUNOFF VOLUME	(mm)=	41.00	17.47	38.65
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2002):	13.53	3.892	1.47	38.65
+ ID2= 2 (0400):	11.86	3.276	1.47	38.65
ID = 3 (2003):	25.39	7.167	1.47	38.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0500) ID= 1 DT= 1.0 min	Area (ha)= 1.05 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.94	.11
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	5.00
Storage Coeff. (min)=		1.98 (ii)	4.52 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		.38	.24
			TOTALS
PEAK FLOW	(cms)=	.33	.01 .339 (iii)
TIME TO PEAK	(hrs)=	1.45	1.48 1.45
RUNOFF VOLUME	(mm)=	41.00	17.47 38.65
TOTAL RAINFALL	(mm)=	42.00	42.00 42.00
RUNOFF COEFFICIENT	=	.98	.42 .92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2004)
1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2003):	25.39	7.167	1.47	38.65
+ ID2= 2 (0500):	1.05	.339	1.45	38.65
ID = 3 (2004):	26.44	7.495	1.47	38.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0510) ID= 1 DT= 1.0 min	Area (ha)= 2.81 Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	12.00
Storage Coeff. (min)=		2.66 (ii)	11.71 (ii)
Unit Hyd. Tpeak (min)=		5.00	12.00
Unit Hyd. peak (cms)=		.33	.10
			TOTALS
PEAK FLOW	(cms)=	.24	.17 .314 (iii)
TIME TO PEAK	(hrs)=	1.45	1.63 1.48
RUNOFF VOLUME	(mm)=	41.00	17.47 23.59
TOTAL RAINFALL	(mm)=	42.00	42.00 42.00
RUNOFF COEFFICIENT	=	.98	.42 .56

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2005)
1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (2004):	26.44	7.495	1.47	38.65
+ ID2= 2 (0510):	2.81	.314	1.48	23.59
ID = 3 (2005):	29.25	7.808	1.47	37.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION NUMBER: 4 **
****

READ STORM Ptotal= 49.50 mm	Filename: J:\1441 Projects by Job Number\2008\10-08053-001-N01 Langstaff E Lands\OTTHYMO Model\Markham 3hour ABS Design Storm\ Comments: 10 Year, 3 hours ABS Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	6.84	1.75	13.84	2.58	3.63
.17	2.69	1.00	8.06	1.83	9.62	2.67	3.48
.25	3.00	1.08	10.27	1.92	7.44	2.75	3.32
.33	3.16	1.17	15.87	2.00	6.12	2.83	3.16
.42	3.32	1.25	37.00	2.08	5.34	2.92	3.16
.50	3.63	1.33	69.97	2.17	4.58	3.00	3.00
.58	4.11	1.42	169.87	2.25	4.42	3.08	2.84
.67	4.42	1.50	90.28	2.33	4.11		
.75	5.06	1.58	42.48	2.42	3.95		
.83	5.69	1.67	22.66	2.50	3.79		

CALIB STANDHYD (0200) ID= 1 DT= 1.0 min	Area (ha)= 14.01 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	12.61	1.40
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	5.69	1.583	42.48	2.37	3.95
.033	.00	.817	5.69	1.600	22.66	2.38	3.95
.050	.00	.833	5.69	1.617	22.66	2.40	3.95
.067	.00	.850	6.84	1.633	22.66	2.42	3.95
.083	.00	.867	6.84	1.650	22.66	2.43	3.79
.100	2.69	.883	6.84	1.667	22.66	2.45	3.79
.117	2.69	.900	6.84	1.683	13.84	2.47	3.79
.133	2.69	.917	6.84	1.700	13.84	2.48	3.79
.150	2.69	.933	8.06	1.717	13.84	2.50	3.79
.167	2.69	.950	8.06	1.733	13.84	2.52	3.63
.183	3.00	.967	8.06	1.750	13.84	2.53	3.63
.200	3.00	.983	8.06	1.767	9.62	2.55	3.63
.217	3.00	1.000	8.06	1.783	9.62	2.57	3.63
.233	3.00	1.017	10.27	1.800	9.62	2.58	3.63
.250	3.00	1.033	10.27	1.817	9.62	2.60	3.48
.267	3.16	1.050	10.27	1.833	9.62	2.62	3.48
.283	3.16	1.067	10.27	1.850	7.44	2.63	3.48
.300	3.16	1.083	10.27	1.867	7.44	2.65	3.48
.317	3.16	1.100	15.87	1.883	7.44	2.67	3.48
.333	3.16	1.117	15.87	1.900	7.44	2.68	3.32
.350	3.32	1.133	15.87	1.917	7.44	2.70	3.32
.367	3.32	1.150	15.87	1.933	6.12	2.72	3.32
.383	3.32	1.167	15.87	1.950	6.12	2.73	3.32
.400	3.32	1.183	37.00	1.967	6.12	2.75	3.32
.417	3.32	1.200	37.00	1.983	6.12	2.77	3.16
.433	3.63	1.217	37.00	2.000	6.12	2.78	3.16
.450	3.63	1.233	37.00	2.017	5.34	2.80	3.16
.467	3.63	1.250	37.00	2.033	5.34	2.82	3.16
.483	3.63	1.267	69.97	2.050	5.34	2.83	3.16
.500	3.63	1.283	69.97	2.067	5.34	2.85	3.16
.517	4.11	1.300	69.97	2.083	5.34	2.87	3.16
.533	4.11	1.317	69.97	2.100	4.58	2.88	3.16
.550	4.11	1.333	69.97	2.117	4.58	2.90	3.16
.567	4.11	1.350	169.87	2.133	4.58	2.92	3.16
.583	4.11	1.367	169.87	2.150	4.58	2.93	3.00
.600	4.42	1.383	169.87	2.167	4.58	2.95	3.00
.617	4.42	1.400	169.87	2.183	4.42	2.97	3.00
.633	4.42	1.417	169.87	2.200	4.42	2.98	3.00
.650	4.42	1.433	90.28	2.217	4.42	3.00	3.00
.667	4.42	1.450	90.28	2.233	4.42	3.02	2.84
.683	5.06	1.467	90.28	2.250	4.42	3.03	2.84
.700	5.06	1.483	90.28	2.267	4.11	3.05	2.84
.717	5.06	1.500	90.28	2.283	4.11	3.07	2.84
.733	5.06	1.517	42.48	2.300	4.11	3.08	2.84
.750	5.06	1.533	42.48	2.317	4.11		
.767	5.69	1.550	42.48	2.333	4.11		
.783	5.69	1.567	42.48	2.350	3.95		

Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	7.00
Storage Coeff. (min)=		4.04 (ii)	6.41 (ii)
Unit Hyd. Tpeak (min)=		5.00	7.00
Unit Hyd. peak (cms)=		.26	.17
			TOTALS
PEAK FLOW	(cms)=	4.43	.21 4.605 (iii)
TIME TO PEAK	(hrs)=	1.47	1.52 1.47
RUNOFF VOLUME	(mm)=	48.50	23.07 45.95
TOTAL RAINFALL	(mm)=	49.50	49.50 49.50
RUNOFF COEFFICIENT	=	.98	.47 .93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0100) ID= 1 DT= 1.0 min	Area (ha)= 5.50 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.95	.55
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	193.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	6.00
Storage Coeff. (min)=		3.05 (ii)	5.42 (ii)
Unit Hyd. Tpeak (min)=		5.00	6.00
Unit Hyd. peak (cms)=		.30	.20
			TOTALS
PEAK FLOW	(cms)=	1.86	.09 1.936 (iii)
TIME TO PEAK	(hrs)=	1.45	1.50 1.45
RUNOFF VOLUME	(mm)=	48.50	23.07 45.95
TOTAL RAINFALL	(mm)=	49.50	49.50 49.50
RUNOFF COEFFICIENT	=	.98	.47 .91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)
1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0200):	14.01	4.605	1.47	45.95
+ ID2= 2 (0100):	5.50	1.936	1.45	45.95
ID = 3 (2001):	19.51	6.530	1.47	45.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0310) ID= 1 DT= 1.0 min	Area (ha)= 7.05 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	6.34	.71
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	216.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	6.00
Storage Coeff. (min)=		3.29 (ii)	5.66 (ii)
Unit Hyd. Tpeak (min)=		5.00	6.00
Unit Hyd. peak (cms)=		.29	.20
			TOTALS
PEAK FLOW	(cms)=	2.35	.11 2.437 (iii)
TIME TO PEAK	(hrs)=	1.45	1.50 1.45
RUNOFF VOLUME	(mm)=	48.50	23.07 45.95
TOTAL RAINFALL	(mm)=	49.50	49.50 49.50
RUNOFF COEFFICIENT	=	.98	.47 .93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0300) ID= 1 DT= 1.0 min	Area (ha)= 6.48 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.83	.65
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	207.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	6.00
Storage Coeff. (min)=		3.21 (ii)	5.58 (ii)
Unit Hyd. Tpeak (min)=		5.00	6.00
Unit Hyd. peak (cms)=		.30	.20
			TOTALS
PEAK FLOW	(cms)=	2.17	.10 2.255 (iii)
TIME TO PEAK	(hrs)=	1.45	1.50 1.45
RUNOFF VOLUME	(mm)=	48.50	23.07 45.95
TOTAL RAINFALL	(mm)=	49.50	49.50 49.50
RUNOFF COEFFICIENT	=	.98	.47 .93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2002)
1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0310):	7.05	2.437	1.45	45.95
+ ID2= 2 (0300):	6.48	2.255	1.45	45.95
ID = 3 (2002):	13.53	4.692	1.45	45.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0400) ID= 1 DT= 1.0 min	Area (ha)= 11.86 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	10.67	1.19
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	281.20	40.00
Mannings n	=	.013	.250

```
Max.Eff.Inten.(mm/hr)=    169.87        71.24
          over (min)        5.00         7.00
Storage Coeff. (min)=       3.84 (ii)    6.23 (ii)
Unit Hyd. Tpeak (min)=      5.00         7.00
Unit Hyd. peak  (cms)=       .27          .17
                                                  *TOTALS*
PEAK FLOW       (cms)=      3.80          .18      3.946 (iii)
TIME TO PEAK    (hrs)=      1.47         1.52      1.47
RUNOFF VOLUME    (mm)=     48.50        23.07     45.95
TOTAL RAINFALL   (mm)=     49.50        49.50     49.50
RUNOFF COEFFICIENT   =       .98          .47       .93

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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   (2003)
  1 +  2 =  3

                        AREA    QPEAK    TPEAK     R.V.
                        (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (2002):    13.53    4.692    1.45     45.95
   + ID2= 2 (0400):    11.86    3.946    1.47     45.95
     ==========================================
     ID = 3 (2003):    25.39    8.629    1.47     45.95

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

```
CALIB
STANDHYD  (0500)   Area     (ha)=   1.05
ID= 1 DT= 1.0 min  Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=       .94           .11
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=     83.70         40.00
Mannings n            =      .013          .250

Max.Eff.Inten.(mm/hr)=    169.87        71.24
          over (min)        5.00         5.00
Storage Coeff. (min)=       1.86 (ii)    4.23 (ii)
Unit Hyd. Tpeak (min)=      5.00         5.00
Unit Hyd. peak  (cms)=       .39          .25
                                                  *TOTALS*
PEAK FLOW       (cms)=       .39          .02       .405 (iii)
TIME TO PEAK    (hrs)=      1.45         1.48      1.45
RUNOFF VOLUME    (mm)=     48.50        23.07     45.95
TOTAL RAINFALL   (mm)=     49.50        49.50     49.50
RUNOFF COEFFICIENT   =       .98          .47       .93

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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   (2004)
  1 +  2 =  3

                        AREA    QPEAK    TPEAK     R.V.
                        (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (2003):    25.39    8.629    1.47     45.95
   + ID2= 2 (0500):     1.05     .405    1.45     45.95
     ==========================================
     ID = 3 (2004):    26.44    9.019    1.47     45.95

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

```
CALIB
STANDHYD  (0510)   Area     (ha)=   2.81
ID= 1 DT= 1.0 min  Total Imp(%)=  26.00   Dir. Conn.(%)=  26.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=       .73           2.08
```

```
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=    134.90         40.00
Mannings n            =      .013          .250

Max.Eff.Inten.(mm/hr)=    169.87        71.24
          over (min)        5.00         12.00
Storage Coeff. (min)=       2.50 (ii)    11.17 (ii)
Unit Hyd. Tpeak (min)=      5.00         12.00
Unit Hyd. peak  (cms)=       .34          .10
                                                  *TOTALS*
PEAK FLOW       (cms)=       .29          .23       .394 (iii)
TIME TO PEAK    (hrs)=      1.45         1.62      1.48
RUNOFF VOLUME    (mm)=     48.50        23.06     29.68
TOTAL RAINFALL   (mm)=     49.50        49.50     49.50
RUNOFF COEFFICIENT   =       .98          .47       .60

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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   (2005)
  1 +  2 =  3

                        AREA    QPEAK    TPEAK     R.V.
                        (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (2004):    26.44    9.019    1.47     45.95
   + ID2= 2 (0510):     2.81     .394    1.48     29.68
     ==========================================
     ID = 3 (2005):    29.25    9.411    1.47     44.39

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

```
**************************
** SIMULATION NUMBER:   5 **
**************************

READ STORM          Filename: J:\1441 Projects by Job Number\2008\10-
                    080651-001-MO1 Langstaff E Lands\
                    OTHYMHD Model\Markham 3hour AES Design Storm\
Ptotal= 61.00 mm    Comments: 25 Year, 3 hours AES Storm

 TIME   RAIN | TIME   RAIN | TIME   RAIN | TIME   RAIN | TIME   RAIN
  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr
 .08     .00 |  .92    8.18 | 1.75   17.05 | 2.58    4.48
 .17    3.31 | 1.00    9.93 | 1.83   11.86 | 2.67    4.28
 .25    3.70 | 1.08   12.66 | 1.92    9.17 | 2.75    4.09
 .33    3.89 | 1.17   19.56 | 2.00    7.54 | 2.83    3.89
 .42    4.09 | 1.25   45.59 | 2.08    6.58 | 2.92    3.89
 .50    4.48 | 1.33   86.23 | 2.17    5.69 | 3.00    3.70
 .58    5.06 | 1.42  209.33 | 2.25    5.45 | 3.08    3.51
 .67    5.45 | 1.50  111.25 | 2.33    5.06 |
 .75    6.23 | 1.58   52.35 | 2.42    4.87 |
 .83    7.01 | 1.67   27.93 | 2.50    4.67 |
```

```
CALIB
STANDHYD  (0200)   Area     (ha)=  14.01
ID= 1 DT= 1.0 min  Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      12.61          1.40
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=    305.60         40.00
Mannings n            =      .013          .250

NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.

                  ---- TRANSFORMED HYETOGRAPH ----
 TIME   RAIN | TIME   RAIN | TIME   RAIN | TIME   RAIN | TIME   RAIN
  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr
 .017     .00 | .800    7.01 | 1.583   52.35 | 2.37    4.87
 .033     .00 | .817    7.01 | 1.600   27.93 | 2.38    4.87
 .050     .00 | .833    7.01 | 1.617   27.93 | 2.40    4.87
```

```
 .067     .00 | .850    8.18 | 1.633   27.93 | 2.42    4.87
 .083     .00 | .867    8.18 | 1.650   27.93 | 2.43    4.67
 .100    3.31 | .883    8.18 | 1.667   27.93 | 2.45    4.67
 .117    3.31 | .900    8.18 | 1.683   17.05 | 2.47    4.67
 .133    3.31 | .917    8.18 | 1.700   17.05 | 2.48    4.67
 .150    3.31 | .933    9.93 | 1.717   17.05 | 2.50    4.67
 .167    3.31 | .950    9.93 | 1.733   17.05 | 2.52    4.48
 .183    3.70 | .967    9.93 | 1.750   17.05 | 2.53    4.48
 .200    3.70 | .983    9.93 | 1.767   11.86 | 2.55    4.48
 .217    3.70 | 1.000   9.93 | 1.783   11.86 | 2.57    4.48
 .233    3.70 | 1.017  12.66 | 1.800   11.86 | 2.58    4.48
 .250    3.70 | 1.033  12.66 | 1.817   11.86 | 2.60    4.28
 .267    3.89 | 1.050  12.66 | 1.833   11.86 | 2.62    4.28
 .283    3.89 | 1.067  12.66 | 1.850    9.17 | 2.63    4.28
 .300    3.89 | 1.083  12.66 | 1.867    9.17 | 2.65    4.28
 .317    3.89 | 1.100  19.56 | 1.883    9.17 | 2.67    4.28
 .333    3.89 | 1.117  19.56 | 1.900    9.17 | 2.68    4.09
 .350    4.09 | 1.133  19.56 | 1.917    9.17 | 2.70    4.09
 .367    4.09 | 1.150  19.56 | 1.933    7.54 | 2.72    4.09
 .383    4.09 | 1.167  19.56 | 1.950    7.54 | 2.73    4.09
 .400    4.09 | 1.183  45.59 | 1.967    7.54 | 2.75    4.09
 .417    4.09 | 1.200  45.59 | 1.983    7.54 | 2.77    3.89
 .433    4.48 | 1.217  45.59 | 2.000    7.54 | 2.78    3.89
 .450    4.48 | 1.233  45.59 | 2.017    6.58 | 2.80    3.89
 .467    4.48 | 1.250  45.59 | 2.033    6.58 | 2.82    3.89
 .483    4.48 | 1.267  86.23 | 2.050    6.58 | 2.83    3.89
 .500    4.48 | 1.283  86.23 | 2.067    6.58 | 2.85    3.89
 .517    5.06 | 1.300  86.23 | 2.083    6.58 | 2.87    3.89
 .533    5.06 | 1.317  86.23 | 2.100    5.69 | 2.88    3.89
 .550    5.06 | 1.333  86.23 | 2.117    5.69 | 2.90    3.89
 .567    5.06 | 1.350 209.33 | 2.133    5.69 | 2.92    3.89
 .583    5.06 | 1.367 209.33 | 2.150    5.69 | 2.93    3.70
 .600    5.45 | 1.383 209.33 | 2.167    5.69 | 2.95    3.70
 .617    5.45 | 1.400 209.33 | 2.183    5.45 | 2.97    3.70
 .633    5.45 | 1.417 209.33 | 2.200    5.45 | 2.98    3.70
 .650    5.45 | 1.433 111.25 | 2.217    5.45 | 3.00    3.70
 .667    5.45 | 1.450 111.25 | 2.233    5.45 | 3.02    3.51
 .683    6.23 | 1.467 111.25 | 2.250    5.45 | 3.03    3.51
 .700    6.23 | 1.483 111.25 | 2.267    5.06 | 3.05    3.51
 .717    6.23 | 1.500 111.25 | 2.283    5.06 | 3.07    3.51
 .733    6.23 | 1.517  52.35 | 2.300    5.06 | 3.08    3.51
 .750    6.23 | 1.533  52.35 | 2.317    5.06 |
 .767    7.01 | 1.550  52.35 | 2.333    5.06 |
 .783    7.01 | 1.567  52.35 | 2.350    4.87 |
```

```
Max.Eff.Inten.(mm/hr)=    209.33        99.55
          over (min)        5.00         6.00
Storage Coeff. (min)=       3.72 (ii)    5.90 (ii)
Unit Hyd. Tpeak (min)=      5.00         6.00
Unit Hyd. peak  (cms)=       .27          .19
                                                  *TOTALS*
PEAK FLOW       (cms)=      5.57          .33      5.852 (iii)
TIME TO PEAK    (hrs)=      1.47         1.50      1.47
RUNOFF VOLUME    (mm)=     60.00        32.21     57.22
TOTAL RAINFALL   (mm)=     61.00        61.00     61.00
RUNOFF COEFFICIENT   =       .98          .53       .94

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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  (0100)   Area     (ha)=   5.50
ID= 1 DT= 1.0 min  Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      4.95           .55
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=    193.90         40.00
Mannings n            =      .013          .250

Max.Eff.Inten.(mm/hr)=    209.33        99.55
          over (min)        5.00         5.00
Storage Coeff. (min)=       2.81 (ii)    4.99 (ii)
Unit Hyd. Tpeak (min)=      5.00         5.00
Unit Hyd. peak  (cms)=       .32          .23
                                                  *TOTALS*
PEAK FLOW       (cms)=      2.34          .13      2.459 (iii)
TIME TO PEAK    (hrs)=      1.45         1.48      1.45
```

```
RUNOFF VOLUME    (mm)=     60.00        32.21     57.22
TOTAL RAINFALL   (mm)=     61.00        61.00     61.00
RUNOFF COEFFICIENT   =       .98          .53       .94

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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   (2001)
  1 +  2 =  3

                        AREA    QPEAK    TPEAK     R.V.
                        (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (0200):    14.01    5.852    1.47     57.22
   + ID2= 2 (0100):     5.50    2.459    1.45     57.22
     ==========================================
     ID = 3 (2001):    19.51    8.282    1.47     57.22

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

```
CALIB
STANDHYD  (0310)   Area     (ha)=   7.05
ID= 1 DT= 1.0 min  Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      6.34           .71
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=    216.80         40.00
Mannings n            =      .013          .250

Max.Eff.Inten.(mm/hr)=    209.33        99.55
          over (min)        5.00         6.00
Storage Coeff. (min)=       3.02 (ii)    5.21 (ii)
Unit Hyd. Tpeak (min)=      5.00         6.00
Unit Hyd. peak  (cms)=       .33          .21
                                                  *TOTALS*
PEAK FLOW       (cms)=      2.95          .16      1.088 (iii)
TIME TO PEAK    (hrs)=      1.45         1.50      1.45
RUNOFF VOLUME    (mm)=     60.00        32.21     57.22
TOTAL RAINFALL   (mm)=     61.00        61.00     61.00
RUNOFF COEFFICIENT   =       .98          .53       .94

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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  (0300)   Area     (ha)=   6.48
ID= 1 DT= 1.0 min  Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      5.83           .65
Dep. Storage     (mm)=      1.00          5.00
Average Slope     (%)=      1.00          2.00
Length            (m)=    207.80         40.00
Mannings n            =      .013          .250

Max.Eff.Inten.(mm/hr)=    209.33        99.55
          over (min)        5.00         6.00
Storage Coeff. (min)=       2.95 (ii)    5.13 (ii)
Unit Hyd. Tpeak (min)=      5.00         6.00
Unit Hyd. peak  (cms)=       .31          .21
                                                  *TOTALS*
PEAK FLOW       (cms)=      2.73          .15      2.855 (iii)
TIME TO PEAK    (hrs)=      1.45         1.50      1.45
RUNOFF VOLUME    (mm)=     60.00        32.21     57.22
TOTAL RAINFALL   (mm)=     61.00        61.00     61.00
RUNOFF COEFFICIENT   =       .98          .53       .94

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     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 (2002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0310):		7.05	3.088	1.45	57.22
+ ID2= 2 (0300):		6.48	2.855	1.45	57.22
ID = 3 (2002):		13.53	5.942	1.45	57.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0400)	Area	(ha)= 11.86	
ID= 1 DT= 1.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00	

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	10.67	1.19	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	281.20	40.00	
Mannings n	=	.013	.250	
Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	6.00	
Storage Coeff. (min)=		3.54 (ii)	5.72 (ii)	
Unit Hyd. Tpeak (min)=		5.00	6.00	
Unit Hyd. peak (cms)=		.28	.19	
				TOTALS
PEAK FLOW	(cms)=	4.77	.26	5.009 (iii)
TIME TO PEAK	(hrs)=	1.45	1.50	1.47
RUNOFF VOLUME	(mm)=	60.00	32.21	57.22
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2002):		13.53	5.942	1.45	57.22
+ ID2= 2 (0400):		11.86	5.009	1.47	57.22
ID = 3 (2003):		25.39	10.936	1.45	57.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0500)	Area	(ha)= 1.05	
ID= 1 DT= 1.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00	

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	.94	.11	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	83.70	40.00	
Mannings n	=	.013	.250	
Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	6.00	
Storage Coeff. (min)=		1.71 (ii)	3.89 (ii)	
Unit Hyd. Tpeak (min)=		5.00	6.00	
Unit Hyd. peak (cms)=		.40	.29	
				TOTALS
PEAK FLOW	(cms)=	.48	.03	.510 (iii)
TIME TO PEAK	(hrs)=	1.43	1.47	1.45
RUNOFF VOLUME	(mm)=	60.00	32.21	57.22
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2003):		25.39	10.936	1.45	57.22
+ ID2= 2 (0500):		1.05	.510	1.45	57.22
ID = 3 (2004):		26.44	11.445	1.45	57.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0510)	Area	(ha)= 2.81	
ID= 1 DT= 1.0 min	Total Imp(%)= 26.00	Dir. Conn.(%)= 26.00	

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	.73	2.08	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	136.90	40.00	
Mannings n	=	.013	.250	
Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	11.00	
Storage Coeff. (min)=		2.30 (ii)	10.28 (ii)	
Unit Hyd. Tpeak (min)=		5.00	11.00	
Unit Hyd. peak (cms)=		.35	.11	
				TOTALS
PEAK FLOW	(cms)=	.36	.34	.547 (iii)
TIME TO PEAK	(hrs)=	1.45	1.60	1.48
RUNOFF VOLUME	(mm)=	60.00	32.21	39.44
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (2004):		26.44	11.445	1.45	57.22
+ ID2= 2 (0510):		2.81	.947	1.48	39.44
ID = 3 (2005):		29.25	11.969	1.45	55.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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*****************************
** SIMULATION NUMBER:   6 **
*****************************
```

READ STORM	Filename: J:\1441 Projects by Job Number\2008\10-08053-001-N01 Langstaff E Lands\OTTHYMO Model\Markham 3hour AES Design Storm\
Ptotal= 80.00 mm	Comments: 100 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	10.73	1.75	22.17	2.58	5.87
.17	4.34	1.00	13.02	1.83	15.55	2.67	5.62
.25	4.85	1.08	16.60	1.92	12.03	2.75	5.36
.33	5.11	1.17	25.65	2.00	9.89	2.83	5.11
.42	5.36	1.25	59.79	2.08	8.63	2.92	5.11
.50	5.87	1.33	113.08	2.17	7.41	3.00	4.85
.58	6.64	1.42	274.54	2.25	7.15	3.08	4.60
.67	7.15	1.50	145.90	2.33	6.64		
.75	8.17	1.58	68.66	2.42	6.38		
.83	9.19	1.67	36.63	2.50	6.13		

CALIB			
STANDHYD (0200)	Area	(ha)= 14.01	
ID= 1 DT= 1.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	12.61	1.40
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	305.60	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	9.19	1.583	68.66	2.37	6.38
.033	.00	.817	9.19	1.600	36.63	2.38	6.38
.050	.00	.833	9.19	1.617	36.63	2.40	6.38
.067	.00	.850	10.73	1.633	36.63	2.42	6.38
.083	.00	.867	10.73	1.650	36.63	2.43	6.13
.100	4.34	.883	10.73	1.667	36.63	2.45	6.13
.117	4.34	.900	10.73	1.683	22.37	2.47	6.13
.133	4.34	.917	10.73	1.700	22.37	2.48	6.13
.150	4.34	.933	13.02	1.717	22.37	2.50	6.13
.167	4.34	.950	13.02	1.733	22.37	2.52	5.87
.183	4.85	.967	13.02	1.750	22.37	2.53	5.87
.200	4.85	.983	13.02	1.767	15.55	2.55	5.87
.217	4.85	1.000	13.02	1.783	15.55	2.57	5.87
.233	4.85	1.017	16.60	1.800	15.55	2.58	5.87
.250	4.85	1.033	16.60	1.817	15.55	2.60	5.62
.267	5.11	1.050	16.60	1.833	15.55	2.62	5.62
.283	5.11	1.067	16.60	1.850	12.03	2.63	5.62
.300	5.11	1.083	16.60	1.867	12.03	2.65	5.62
.317	5.11	1.100	25.65	1.883	12.03	2.67	5.62
.333	5.11	1.117	25.65	1.900	12.03	2.68	5.36
.350	5.36	1.133	25.65	1.917	12.03	2.70	5.36
.367	5.36	1.150	25.65	1.933	9.89	2.72	5.36
.383	5.36	1.167	25.65	1.950	9.89	2.73	5.36
.400	5.36	1.183	59.79	1.967	9.89	2.75	5.36
.417	5.36	1.200	59.79	1.983	9.89	2.77	5.11
.433	5.87	1.217	59.79	2.000	9.89	2.78	5.11
.450	5.87	1.233	59.79	2.017	8.63	2.80	5.11
.467	5.87	1.250	59.79	2.033	8.63	2.82	5.11
.483	5.87	1.267	113.08	2.050	8.63	2.83	5.11
.500	5.87	1.283	113.08	2.067	8.63	2.85	5.11
.517	6.64	1.300	113.08	2.083	8.63	2.87	5.11
.533	6.64	1.317	113.08	2.100	7.41	2.88	5.11
.550	6.64	1.333	113.08	2.117	7.41	2.90	5.11
.567	6.64	1.350	274.53	2.133	7.41	2.92	5.11
.583	6.64	1.367	274.54	2.150	7.41	2.93	4.85
.600	7.15	1.383	274.54	2.167	7.41	2.95	4.85
.617	7.15	1.400	274.54	2.183	7.15	2.97	4.85
.633	7.15	1.417	274.54	2.200	7.15	2.98	4.85
.650	7.15	1.433	145.91	2.217	7.15	3.00	4.85
.667	7.15	1.450	145.90	2.233	7.15	3.02	4.60
.683	8.17	1.467	145.90	2.250	7.15	3.03	4.60
.700	8.17	1.483	145.90	2.267	6.64	3.05	4.60
.717	8.17	1.500	145.90	2.283	6.64	3.07	4.60
.733	8.17	1.517	68.66	2.300	6.64	3.08	4.60
.750	8.17	1.533	68.66	2.317	6.64		
.767	9.19	1.550	68.66	2.333	6.64		
.783	9.19	1.567	68.66	2.350	6.38		

Max.Eff.Inten.(mm/hr)=		274.54	148.83	
over (min)		5.00	6.00	
Storage Coeff. (min)=		3.33 (ii)	5.29 (ii)	
Unit Hyd. Tpeak (min)=		5.00	6.00	
Unit Hyd. peak (cms)=		.29	.20	
				TOTALS
PEAK FLOW	(cms)=	7.51	.48	7.930 (iii)
TIME TO PEAK	(hrs)=	1.45	1.50	1.47
RUNOFF VOLUME	(mm)=	79.00	48.34	75.93
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.95

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (0100)	Area	(ha)= 5.50	
ID= 1 DT= 1.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.95	.55
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	191.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	5.00
Storage Coeff. (min)=		2.52 (ii)	4.48 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		.34	.24
			TOTALS
PEAK FLOW	(cms)=	3.14	.20	3.328 (iii)
TIME TO PEAK	(hrs)=	1.45	1.48	1.45
RUNOFF VOLUME	(mm)=	79.00	48.34	75.93
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.95

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (2001)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0200):		14.01	7.930	1.47	75.93
+ ID2= 2 (0100):		5.50	3.328	1.45	75.93
ID = 3 (2001):		19.51	11.257	1.45	75.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0310)	Area	(ha)= 7.05	
ID= 1 DT= 1.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00	

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	6.34	.71	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	216.80	40.00	
Mannings n	=	.013	.250	
Max.Eff.Inten.(mm/hr)=		274.54	148.83	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.71 (ii)	4.67 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		.32	.24	
				TOTALS
PEAK FLOW	(cms)=	3.96	.26	4.203 (iii)
TIME TO PEAK	(hrs)=	1.45	1.48	1.45
RUNOFF VOLUME	(mm)=	79.00	48.34	75.93
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.95

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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  (0300)  |   Area     (ha)=   6.48
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
---------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     5.83          .65
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=   207.80        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         5.00
     Storage Coeff.  (min)=     2.65 (ii)    4.60 (ii)
     Unit Hyd. Tpeak (min)=     5.00         5.00
     Unit Hyd. peak  (cms)=      .33          .24
                                                    *TOTALS*
     PEAK FLOW       (cms)=     3.66          .24      3.883 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.48      1.45
     RUNOFF VOLUME    (mm)=    79.00        48.34     75.93
     TOTAL RAINFALL   (mm)=    80.00        80.00     80.00
     RUNOFF COEFFICIENT    =     .99          .60       .95

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD   (2002)  |
|  1 +  2 =  3      |          AREA    QPEAK    TPEAK     R.V.
---------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (0310):      7.05   4.203     1.45    75.93
      + ID2= 2 (0300):      6.48   3.883     1.45    75.93
        =================================================
        ID = 3 (2002):     13.53   8.086     1.45    75.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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---------------------
| CALIB             |
| STANDHYD  (0400)  |   Area     (ha)=  11.86
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
---------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=    10.67         1.19
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=   281.20        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         6.00
     Storage Coeff.  (min)=     3.17 (ii)    5.13 (ii)
     Unit Hyd. Tpeak (min)=     5.00         6.00
     Unit Hyd. peak  (cms)=      .30          .21
                                                    *TOTALS*
     PEAK FLOW       (cms)=     6.44          .41      6.797 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.50      1.45
     RUNOFF VOLUME    (mm)=    79.00        48.34     75.93
     TOTAL RAINFALL   (mm)=    80.00        80.00     80.00
     RUNOFF COEFFICIENT    =     .99          .60       .95

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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---------------------
| ADD HYD   (2003)  |
|  1 +  2 =  3      |          AREA    QPEAK    TPEAK     R.V.
---------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (2002):     13.53   8.086     1.45    75.93
      + ID2= 2 (0400):     11.86   6.797     1.45    75.93
        =================================================
        ID = 3 (2003):     25.39  14.883     1.45    75.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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---------------------
| CALIB             |
| STANDHYD  (0500)  |   Area     (ha)=   1.05
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
---------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .94          .11
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    83.70        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         4.00
     Storage Coeff.  (min)=     1.53 (ii)    3.49 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .42          .31
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .64          .04       .685 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.45      1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34     75.93
     TOTAL RAINFALL   (mm)=    80.00        80.00     80.00
     RUNOFF COEFFICIENT    =     .99          .60       .95

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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---------------------
| ADD HYD   (2004)  |
|  1 +  2 =  3      |          AREA    QPEAK    TPEAK     R.V.
---------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (2003):     25.39  14.883     1.45    75.93
      + ID2= 2 (0500):      1.05    .685     1.43    75.93
        =================================================
        ID = 3 (2004):     26.44  15.565     1.45    75.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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---------------------
| CALIB             |
| STANDHYD  (0510)  |   Area     (ha)=   2.81
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  26.00   Dir. Conn.(%)=  26.00
---------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .73         2.08
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=   136.90        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00        10.00
     Storage Coeff.  (min)=     2.06 (ii)    9.22 (ii)
     Unit Hyd. Tpeak (min)=     5.00        10.00
     Unit Hyd. peak  (cms)=      .37          .12
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .48          .55       .836 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.57      1.52
     RUNOFF VOLUME    (mm)=    79.00        48.34     56.31
     TOTAL RAINFALL   (mm)=    80.00        80.00     80.00
     RUNOFF COEFFICIENT    =     .99          .60       .70

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    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   (2005)  |
|  1 +  2 =  3      |          AREA    QPEAK    TPEAK     R.V.
---------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (2004):     26.44  15.565     1.45    75.93
      + ID2= 2 (0510):      2.81    .836     1.52    56.31
        =================================================
        ID = 3 (2005):     29.25  16.356     1.45    74.05

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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 FINISH
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*************************************************************************************

      V    V   I    SSSSS  U   U    A    L
      V    V   I   SS      U   U   A A   L
       V  V    I    SS     U   U  AAAAA  L
        V V    I     SS    U   U  A   A  L
         VV    I   SSSSS   UUUUU  A   A  LLLLL

     OOO    TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM, Version 2.0
    O   O     T      T    H   H   Y Y   MM MM  O   O
    O   O     T      T    H   H    Y    M M M  O   O    Licensed To: MMM Group Limited
     OOO      T      T    H   H    Y    M   M   OOO                 V02-0128

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

  Input   filename: C:\Program Files\Visual OTTHYMO v2.0\voin.dat
  Output  filename: J:\1441PR-1\2008\D99RA0D-\OTTHYM-1\53KJPD0-\Proposed Conditions (On-site Control By Block).out
  Summary filename: J:\1441PR-1\2008\D99RA0D-\OTTHYM-1\53KJPD0-\Proposed Conditions (On-site Control By Block).sum

DATE: 11/25/2009                          TIME: 11:12:26 AM

USER:

COMMENTS: _____________________________________________________

*************************
** SIMULATION NUMBER:  2 **
*************************

READ STORM      | Filename: J:\1441 Projects by Job Number\2008\10-
                |           08053-001-N01 Langstaff E Lands\
                |           OTTHYMO Model\Markham 1hour AES Design Storm\
Ptotal= 29.16 mm| Comments: 2 Year, 1 hours AES Storm

  TIME   RAIN |  TIME   RAIN |  TIME   RAIN |  TIME   RAIN
  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr |  hrs   mm/hr
  .08    .00  |   .92   1.91 |  1.75   8.35 |  2.58   2.14
  .17   1.58  |  1.00   4.75 |  1.83   5.67 |  2.67   2.05
  .25   1.77  |  1.08   6.05 |  1.92   4.38 |  2.75   1.95
  .33   1.86  |  1.17   9.35 |  2.00   3.61 |  2.83   1.86
  .42   1.95  |  1.25  21.79 |  2.08   3.35 |  2.92   1.86
  .50   2.14  |  1.33  41.22 |  2.17   2.70 |  3.00   1.77
  .58   2.42  |  1.42 100.07 |  2.25   2.61 |  3.08   1.68
  .67   2.61  |  1.50  53.18 |  2.33   2.42 |
  .75   2.98  |  1.58  25.03 |  2.42   2.33 |
  .83   3.35  |  1.67  13.35 |  2.50   2.23 |

CALIB
STANDHYD  (2260)  | Area     (ha)=  20.31
ID= 1 DT= 1.0 min | Total Imp(%)=  80.00   Dir. Conn.(%)=  80.00

                        IMPERVIOUS     PERVIOUS (i)
  Surface Area     (ha)=     16.25          4.06
  Dep. Storage     (mm)=      1.00          5.00
  Average Slope     (%)=      1.00          2.00
  Length            (m)=    368.00         40.00
  Mannings n            =      .013          .250

    NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 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
  .017   .00  |  .800   3.35 | 1.583  25.03 | 2.17   2.33
  .033   .00  |  .817   3.35 | 1.600  13.35 | 2.18   2.33
  .050   .00  |  .833   3.35 | 1.617  13.35 | 2.40   2.33
  .067   .00  |  .850   3.91 | 1.633  13.35 | 2.42   2.33
  .083   .00  |  .867   3.91 | 1.650  13.35 | 2.43   2.23
  .100  1.58  |  .883   3.91 | 1.667  13.35 | 2.45   2.23
  .117  1.58  |  .900   3.91 | 1.683   8.35 | 2.47   2.23
  .133  1.58  |  .917   3.91 | 1.700   8.35 | 2.48   2.23
  .150  1.58  |  .933   4.75 | 1.717   8.35 | 2.50   2.23
  .167  1.58  |  .950   4.75 | 1.733   8.35 | 2.52   2.14
  .183  1.77  |  .967   4.75 | 1.750   8.35 | 2.53   2.14
  .200  1.77  |  .983   4.75 | 1.767   5.67 | 2.55   2.14
  .217  1.77  | 1.000   4.75 | 1.783   5.67 | 2.57   2.14
  .233  1.77  | 1.017   6.05 | 1.800   5.67 | 2.58   2.14
  .250  1.77  | 1.033   6.05 | 1.817   5.67 | 2.60   2.05
  .267  1.86  | 1.050   6.05 | 1.833   5.67 | 2.62   2.05
  .283  1.86  | 1.067   6.05 | 1.850   4.38 | 2.63   2.05
  .300  1.86  | 1.083   6.05 | 1.867   4.38 | 2.65   2.05
  .317  1.86  | 1.100   9.35 | 1.883   4.38 | 2.67   2.05
  .333  1.86  | 1.117   9.35 | 1.900   4.38 | 2.68   1.95
  .350  1.95  | 1.133   9.35 | 1.917   4.38 | 2.70   1.95
  .367  1.95  | 1.150   9.35 | 1.933   3.61 | 2.72   1.95
  .383  1.95  | 1.167   9.35 | 1.950   3.61 | 2.73   1.95
  .400  1.95  | 1.183  21.79 | 1.967   3.61 | 2.75   1.95
  .417  1.95  | 1.200  21.79 | 1.983   3.61 | 2.77   1.86
  .433  2.14  | 1.217  21.79 | 2.000   3.61 | 2.78   1.86
  .450  2.14  | 1.233  21.79 | 2.017   3.15 | 2.80   1.86
  .467  2.14  | 1.250  23.79 | 2.033   3.15 | 2.82   1.86
  .483  2.14  | 1.267  41.22 | 2.050   3.15 | 2.83   1.86
  .500  2.14  | 1.283  41.22 | 2.067   3.15 | 2.85   1.86
  .517  2.42  | 1.300  41.22 | 2.083   3.15 | 2.87   1.86
  .533  2.42  | 1.317  41.22 | 2.100   2.70 | 2.88   1.86
  .550  2.42  | 1.333  41.22 | 2.117   2.70 | 2.90   1.86
  .567  2.42  | 1.350 100.07 | 2.133   2.70 | 2.92   1.86
  .583  2.42  | 1.367 100.07 | 2.150   2.70 | 2.93   1.77
  .600  2.61  | 1.383 100.07 | 2.167   2.70 | 2.95   1.77
  .617  2.61  | 1.400 100.07 | 2.183   2.61 | 2.97   1.77
  .633  2.61  | 1.417 100.07 | 2.200   2.61 | 2.98   1.77
  .650  2.61  | 1.433  53.18 | 2.217   2.61 | 3.00   1.77
  .667  2.61  | 1.450  53.18 | 2.233   2.61 | 3.02   1.68
  .683  2.98  | 1.467  53.18 | 2.250   2.61 | 3.03   1.68
  .700  2.98  | 1.483  53.18 | 2.267   2.42 | 3.05   1.68
  .717  2.98  | 1.500  53.18 | 2.283   2.42 | 3.07   1.68
  .733  2.98  | 1.517  25.03 | 2.300   2.42 | 3.08   1.68
  .750  2.98  | 1.533  25.03 | 2.317   2.42 |
  .767  3.35  | 1.550  25.03 | 2.333   2.42 |
  .783  3.35  | 1.567  25.03 | 2.350   2.33 |

Max.Eff.Inten.(mm/hr)=     92.25          55.07
          over (min)=         6.00          10.00
Storage Coeff.  (min)=      5.77 (ii)      9.82 (ii)
Unit Hyd. Tpeak (min)=      6.00          10.00
Unit Hyd. peak  (cms)=       .19            .11
                                                  *TOTALS*
PEAK FLOW       (cms)=      2.99            .18      3.100 (iii)
TIME TO PEAK    (hrs)=      1.48           1.62       1.48
RUNOFF VOLUME   (mm)=      28.16           8.91      24.31
TOTAL RAINFALL  (mm)=      29.16          29.16      29.16
RUNOFF COEFFICIENT  =        .97            .31        .83

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3226)  |
IN= 2---> OUT= 1  |
DT= 1.0 min       |     OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
                  |      (cms)     (ha.m.)  |   (cms)     (ha.m.)
                  |     .0000      .0000    | 1.6250      .5150
                  |     .8250      .2920    | 2.0850      .6450
                  |    1.3710      .4305    | 2.9320      .8595

                        AREA      QPEAK     TPEAK      R.V.
                        (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2260)  20.31      3.10      1.48      24.31
OUTFLOW: ID= 1 (3226)  20.31       .82      1.78      24.31

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.58
                TIME SHIFT OF PEAK FLOW      (min)= 18.00
                MAXIMUM  STORAGE   USED      (ha.m.)=  .2918

CALIB
STANDHYD  (2250)  | Area     (ha)=   1.19
ID= 1 DT= 1.0 min | Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
  Surface Area     (ha)=      1.18           .01
  Dep. Storage     (mm)=      1.00          5.00
  Average Slope     (%)=      1.00          2.00
  Length            (m)=     89.10         40.00
  Mannings n            =      .013          .250

  Max.Eff.Inten.(mm/hr)=    100.07        110.13
            over (min)=        5.00          4.00
  Storage Coeff.  (min)=      2.38 (ii)     3.51 (ii)
  Unit Hyd. Tpeak (min)=      5.00          4.00
  Unit Hyd. peak  (cms)=       .35           .31
                                                  *TOTALS*
  PEAK FLOW       (cms)=       .27           .00       .276 (iii)
  TIME TO PEAK    (hrs)=      1.45          1.47       1.45
  RUNOFF VOLUME   (mm)=      28.16          8.91      27.97
  TOTAL RAINFALL  (mm)=      29.16         29.16      29.16
  RUNOFF COEFFICIENT  =        .97           .31        .96

    (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
        CN* = 86.0    Ia = Dep. Storage  (Above)
   (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
        THAN THE STORAGE COEFFICIENT.
  (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3225)  |
IN= 2---> OUT= 1  |
DT= 1.0 min       |     OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
                  |      (cms)     (ha.m.)  |   (cms)     (ha.m.)
                  |     .0000      .0000    |  .1190      .0350
                  |     .0600      .0210    |  .1530      .0425
                  |     .1000      .0300    |  .2150      .0550

                        AREA      QPEAK     TPEAK      R.V.
                        (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (3250)  1.19        .26      1.45      27.97
OUTFLOW: ID= 1 (3225)  1.19        .06      1.68      27.89

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.53
                TIME SHIFT OF PEAK FLOW      (min)= 14.00
                MAXIMUM  STORAGE   USED      (ha.m.)=  .0208

CALIB
STANDHYD  (2240)  | Area     (ha)=   .61
ID= 1 DT= 1.0 min | Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
  Surface Area     (ha)=       .60           .01
  Dep. Storage     (mm)=      1.00          5.00
  Average Slope     (%)=      1.00          2.00
  Length            (m)=     63.80         40.00
  Mannings n            =      .013          .250

  Max.Eff.Inten.(mm/hr)=    100.07         26.88
            over (min)=        5.00          4.00
  Storage Coeff.  (min)=      1.95 (ii)     3.07 (ii)
  Unit Hyd. Tpeak (min)=      5.00          4.00
  Unit Hyd. peak  (cms)=       .38           .33
                                                  *TOTALS*
  PEAK FLOW       (cms)=       .15           .00       .146 (iii)
  TIME TO PEAK    (hrs)=      1.45          1.47       1.45
  RUNOFF VOLUME   (mm)=      28.16          8.91      27.97
  TOTAL RAINFALL  (mm)=      29.16         29.16      29.16
  RUNOFF COEFFICIENT  =        .97           .31        .96

    (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
        CN* = 86.0    Ia = Dep. Storage  (Above)
   (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
        THAN THE STORAGE COEFFICIENT.
  (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3224)  |
IN= 2---> OUT= 1  |
DT= 1.0 min       |     OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
                  |      (cms)     (ha.m.)  |   (cms)     (ha.m.)
                  |     .0000      .0000    |  .0610      .0180
                  |     .0110      .0110    |  .0780      .0220
                  |     .0510      .0155    |  .1100      .0285

                        AREA      QPEAK     TPEAK      R.V.
                        (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (3240)   .61        .15      1.45      27.97
OUTFLOW: ID= 1 (3224)   .61        .03      1.67      27.82

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.74
                TIME SHIFT OF PEAK FLOW      (min)= 13.00
                MAXIMUM  STORAGE   USED      (ha.m.)=  .0107

CALIB
STANDHYD  (2230)  | Area     (ha)=   .61
ID= 1 DT= 1.0 min | Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
  Surface Area     (ha)=       .60           .01
  Dep. Storage     (mm)=      1.00          5.00
  Average Slope     (%)=      1.00          2.00
  Length            (m)=     63.80         40.00
  Mannings n            =      .013          .250

  Max.Eff.Inten.(mm/hr)=    100.07         26.88
            over (min)=        5.00          4.00
  Storage Coeff.  (min)=      1.95 (ii)     3.07 (ii)
  Unit Hyd. Tpeak (min)=      5.00          4.00
  Unit Hyd. peak  (cms)=       .38           .33
                                                  *TOTALS*
  PEAK FLOW       (cms)=       .15           .00       .146 (iii)
  TIME TO PEAK    (hrs)=      1.45          1.47       1.45
  RUNOFF VOLUME   (mm)=      28.16          8.91      27.97
  TOTAL RAINFALL  (mm)=      29.16         29.16      29.16
  RUNOFF COEFFICIENT  =        .97           .31        .96

    (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
        CN* = 86.0    Ia = Dep. Storage  (Above)
   (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
        THAN THE STORAGE COEFFICIENT.
  (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3223)  |
IN= 2---> OUT= 1  |
DT= 1.0 min       |     OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
                  |      (cms)     (ha.m.)  |   (cms)     (ha.m.)
                  |     .0000      .0000    |  .0610      .0180
                  |     .0110      .0110    |  .0780      .0220
                  |     .0510      .0155    |  .1100      .0285

                        AREA      QPEAK     TPEAK      R.V.
                        (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2230)   .61        .15      1.45      27.97
OUTFLOW: ID= 1 (3223)   .61        .03      1.67      27.82

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.74
                TIME SHIFT OF PEAK FLOW      (min)= 13.00
                MAXIMUM  STORAGE   USED      (ha.m.)=  .0107

CALIB
STANDHYD  (2220)  | Area     (ha)=   .61
ID= 1 DT= 1.0 min | Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
  Surface Area     (ha)=       .60           .01
  Dep. Storage     (mm)=      1.00          5.00
  Average Slope     (%)=      1.00          2.00
  Length            (m)=     63.80         40.00
  Mannings n            =      .013          .250

  Max.Eff.Inten.(mm/hr)=    100.07         26.88
            over (min)=        5.00          4.00
  Storage Coeff.  (min)=      1.95 (ii)     3.07 (ii)
  Unit Hyd. Tpeak (min)=      5.00          4.00
  Unit Hyd. peak  (cms)=       .38           .33
                                                  *TOTALS*
  PEAK FLOW       (cms)=       .15           .00       .146 (iii)
  TIME TO PEAK    (hrs)=      1.45          1.47       1.45
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RUNOFF VOLUME     (mm)=      28.16          8.91          27.97
TOTAL RAINFALL    (mm)=      29.16         29.16          29.16
RUNOFF COEFFICIENT    =        .97           .31            .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3222)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0610      .0180
                        .0330      .0130      |   .0780      .0220
                        .0510      .0155      |   .1100      .0285

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2220)               .61        .15       1.45       27.97
OUTFLOW: ID= 1 (3222)               .61        .03       1.67       27.82

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.74
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0107

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| CALIB
| STANDHYD  (2210)   |  Area    (ha)=     .50
| ID= 1 DT= 1.0 min  |  Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .50            .00
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      57.70          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           3.00
Storage Coeff.  (min)=       1.84 (ii)      2.96 (ii)
Unit Hyd. Tpeak (min)=       5.00           3.00
Unit Hyd. peak  (cms)=        .39            .38
                                                      *TOTALS*
PEAK FLOW       (cms)=        .12            .00           .120 (iii)
TIME TO PEAK    (hrs)=       1.45           1.45          1.45
RUNOFF VOLUME    (mm)=      28.16           8.91         27.97
TOTAL RAINFALL   (mm)=      29.16          29.16         29.16
RUNOFF COEFFICIENT    =        .97            .31           .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3221)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0500      .0150
                        .0250      .0090      |   .0640      .0180
                        .0420      .0125      |   .0900      .0235

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2210)               .50        .12       1.45       27.97
OUTFLOW: ID= 1 (3221)               .50        .02       1.67       27.78

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.37
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0088

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| CALIB
| STANDHYD  (2300)   |  Area    (ha)=     .66
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|ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .65            .01
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      64.30          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           4.00
Storage Coeff.  (min)=       2.00 (ii)      3.12 (ii)
Unit Hyd. Tpeak (min)=       5.00           4.00
Unit Hyd. peak  (cms)=        .37            .33
                                                      *TOTALS*
PEAK FLOW       (cms)=        .16            .00           .157 (iii)
TIME TO PEAK    (hrs)=       1.45           1.47          1.45
RUNOFF VOLUME    (mm)=      28.16           8.91         27.97
TOTAL RAINFALL   (mm)=      29.16          29.16         29.16
RUNOFF COEFFICIENT    =        .97            .31           .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3220)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0660      .0195
                        .0330      .0115      |   .0850      .0240
                        .0560      .0145      |   .1190      .0310

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2200)               .66        .16       1.45       27.97
OUTFLOW: ID= 1 (3220)               .66        .03       1.67       27.83

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.13
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0115

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| CALIB
| STANDHYD  (2190)   |  Area    (ha)=     .95
| ID= 1 DT= 1.0 min  |  Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .94            .01
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      79.60          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           4.00
Storage Coeff.  (min)=       2.23 (ii)      3.35 (ii)
Unit Hyd. Tpeak (min)=       5.00           4.00
Unit Hyd. peak  (cms)=        .36            .32
                                                      *TOTALS*
PEAK FLOW       (cms)=        .22            .00           .223 (iii)
TIME TO PEAK    (hrs)=       1.45           1.47          1.45
RUNOFF VOLUME    (mm)=      28.16           8.91         27.97
TOTAL RAINFALL   (mm)=      29.16          29.16         29.16
RUNOFF COEFFICIENT    =        .97            .31           .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3219)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
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```
                        .0000      .0000      |   .0950      .0280
                        .0480      .0170      |   .1220      .0340
                        .0800      .0240      |   .1710      .0440

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2190)               .95        .22       1.45       27.97
OUTFLOW: ID= 1 (3219)               .95        .05       1.67       27.83

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.13
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0167

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| CALIB
| STANDHYD  (2180)   |  Area    (ha)=     .58
| ID= 1 DT= 1.0 min  |  Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .57            .01
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      62.20          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           4.00
Storage Coeff.  (min)=       1.92 (ii)      3.04 (ii)
Unit Hyd. Tpeak (min)=       5.00           4.00
Unit Hyd. peak  (cms)=        .38            .34
                                                      *TOTALS*
PEAK FLOW       (cms)=        .14            .00           .139 (iii)
TIME TO PEAK    (hrs)=       1.45           1.47          1.45
RUNOFF VOLUME    (mm)=      28.16           8.91         27.97
TOTAL RAINFALL   (mm)=      29.16          29.16         29.16
RUNOFF COEFFICIENT    =        .97            .31           .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3218)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0580      .0175
                        .0290      .0105      |   .0740      .0210
                        .0430      .0150      |   .1050      .0270

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2180)               .58        .14       1.45       27.97
OUTFLOW: ID= 1 (3218)               .58        .03       1.67       27.81

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.38
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0102

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| CALIB
| STANDHYD  (2170)   |  Area    (ha)=     .59
| ID= 1 DT= 1.0 min  |  Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .58            .01
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      62.70          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           4.00
Storage Coeff.  (min)=       1.93 (ii)      3.05 (ii)
Unit Hyd. Tpeak (min)=       5.00           4.00
Unit Hyd. peak  (cms)=        .38            .33
                                                      *TOTALS*
PEAK FLOW       (cms)=        .14            .00           .141 (iii)
TIME TO PEAK    (hrs)=       1.45           1.47          1.45
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RUNOFF VOLUME     (mm)=      28.16          8.91          27.97
TOTAL RAINFALL    (mm)=      29.16         29.16          29.16
RUNOFF COEFFICIENT    =        .97           .31            .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3217)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0590      .0175
                        .0300      .0105      |   .0760      .0215
                        .0500      .0150      |   .1060      .0275

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2170)               .59        .14       1.45       27.97
OUTFLOW: ID= 1 (3217)               .59        .03       1.67       27.82

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.93
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0103

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

| CALIB
| STANDHYD  (2160)   |  Area    (ha)=     .64
| ID= 1 DT= 1.0 min  |  Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                        IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=        .63            .01
Dep. Storage     (mm)=       1.00           5.00
Average Slope     (%)=       1.00           2.00
Length            (m)=      65.30          40.00
Mannings n            =       .013           .250

Max.Eff.Inten.(mm/hr)=     100.07          26.88
          over (min)=       5.00           4.00
Storage Coeff.  (min)=       1.98 (ii)      3.10 (ii)
Unit Hyd. Tpeak (min)=       5.00           4.00
Unit Hyd. peak  (cms)=        .38            .33
                                                      *TOTALS*
PEAK FLOW       (cms)=        .15            .00           .153 (iii)
TIME TO PEAK    (hrs)=       1.45           1.47          1.45
RUNOFF VOLUME    (mm)=      28.16           8.91         27.97
TOTAL RAINFALL   (mm)=      29.16          29.16         29.16
RUNOFF COEFFICIENT    =        .97            .31           .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3216)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                        (cms)      (ha.m.)    |    (cms)     (ha.m.)
                        .0000      .0000      |   .0640      .0190
                        .0320      .0115      |   .0820      .0230
                        .0540      .0160      |   .1150      .0300

                                   AREA       QPEAK      TPEAK       R.V.
                                    (ha)      (cms)      (hrs)       (mm)
INFLOW : ID= 2 (2160)               .64        .15       1.45       27.97
OUTFLOW: ID= 1 (3216)               .64        .03       1.67       27.83

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.57
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)= .0113

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

| CALIB
| STANDHYD  (2150)   |  Area    (ha)=     .58
```

```
|ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .57          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    62.20        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     1.92 (ii)    3.04 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .38          .34
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .34          .00          .339 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.47         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3215)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         .0000      .0000     |   .0580      .0170
                         .0290      .0105     |   .0740      .0210
                         .0490      .0150     |   .1050      .0270

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2150)     .58        .14      1.45     27.97
     OUTFLOW: ID= 1 (3215)     .58        .03      1.67     27.81

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.38
                    TIME SHIFT OF PEAK FLOW       (min)= 13.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0102

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

| CALIB
| STANDHYD  (2140)   Area    (ha)=   1.21
|ID= 1 DT= 1.0 min   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.20          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    89.80        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     2.39 (ii)    3.52 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .34          .31
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .28          .00          .280 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.47         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3214)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
```

```
                         .0000      .0000     |   .1210      .0355
                         .0610      .0210     |   .1550      .0435
                         .1020      .0300     |   .2180      .0560

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2140)    1.21        .28      1.45     27.97
     OUTFLOW: ID= 1 (3214)    1.21        .06      1.68     27.89

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.84
                    TIME SHIFT OF PEAK FLOW       (min)= 14.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0210

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

| CALIB
| STANDHYD  (2130)   Area    (ha)=   2.06
|ID= 1 DT= 1.0 min   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     2.04          .02
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=   117.20        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     2.81 (ii)    3.93 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .32          .29
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .46          .00          .462 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.50         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3213)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         .0000      .0000     |   .2040      .0690
                         .1050      .0360     |   .2640      .0735
                         .1740      .0510     |   .3730      .0950

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2130)    2.06        .46      1.45     27.97
     OUTFLOW: ID= 1 (3213)    2.06        .10      1.68     27.93

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.50
                    TIME SHIFT OF PEAK FLOW       (min)= 14.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0357

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

| CALIB
| STANDHYD  (2120)   Area    (ha)=    .38
|ID= 1 DT= 1.0 min   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .38          .00
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    50.30        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         3.00
     Storage Coeff.  (min)=     1.69 (ii)    2.81 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .40          .39
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .09          .00          .092 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.45         1.43
```

```
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.96
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3212)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         .0000      .0000     |   .0380      .0115
                         .0190      .0070     |   .0490      .0140
                         .0320      .0100     |   .0680      .0180

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2120)     .38        .09      1.43     27.96
     OUTFLOW: ID= 1 (3212)     .38        .02      1.67     27.72

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 19.83
                    TIME SHIFT OF PEAK FLOW       (min)= 14.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0068

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

| CALIB
| STANDHYD  (2110)   Area    (ha)=   1.05
|ID= 1 DT= 1.0 min   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.04          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    83.70        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     2.30 (ii)    3.42 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .35          .31
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .24          .00          .245 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.47         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3211)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         .0000      .0000     |   .1050      .0305
                         .0530      .0185     |   .1350      .0375
                         .0890      .0260     |   .1890      .0485

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2110)    1.05        .24      1.45     27.97
     OUTFLOW: ID= 1 (3211)    1.05        .05      1.67     27.88

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.65
                    TIME SHIFT OF PEAK FLOW       (min)= 13.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0183

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| CALIB
| STANDHYD  (2100)   Area    (ha)=   1.37
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```
|ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.36          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    85.60        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     2.49 (ii)    3.61 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .34          .30
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .31          .00          .315 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.47         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3210)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         .0000      .0000     |   .1370      .0400
                         .0700      .0240     |   .1760      .0490
                         .1150      .0340     |   .2470      .0635

                              AREA      QPEAK     TPEAK      R.V.
                              (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2100)    1.37        .31      1.45     27.97
     OUTFLOW: ID= 1 (3210)    1.37        .07      1.68     27.90

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.02
                    TIME SHIFT OF PEAK FLOW       (min)= 14.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  .0218

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

| CALIB
| STANDHYD  (2090)   Area    (ha)=   1.06
|ID= 1 DT= 1.0 min   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.05          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    84.10        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   100.07        26.88
           over      (min)=     5.00         4.00
     Storage Coeff.  (min)=     2.30 (ii)    3.42 (ii)
     Unit Hyd. Tpeak (min)=     5.00         4.00
     Unit Hyd. peak  (cms)=      .35          .31
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .25          .00          .247 (iii)
     TIME TO PEAK    (hrs)=     1.45         1.47         1.45
     RUNOFF VOLUME    (mm)=    28.16         8.91        27.97
     TOTAL RAINFALL   (mm)=    29.16        29.16        29.16
     RUNOFF COEFFICIENT    =      .97          .31          .96

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3209)
| IN= 2---> OUT= 1
| DT= 1.0 min          OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)     |   (cms)     (ha.m.)
```

.0000	.0000	.1060	.0310
.0540	.0185	.1360	.0380
.0890	.0265	.1910	.0490

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2090)	1.06	.25	1.45	27.97
OUTFLOW: ID= 1 (3209)	1.06	.05	1.67	27.88

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.77
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0184

CALIB
STANDHYD (2080) | Area (ha)= .51
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.50	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	58.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	3.00
Storage Coeff. (min)=		1.85 (ii)	2.97 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.38
			TOTALS
PEAK FLOW (cms)=		.12	.00 .123 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		28.16	8.91 27.97
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3208)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0510	.0150
.0260	.0090	.0650	.0185
.0430	.0130	.0920	.0240

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2080)	.51	.12	1.45	27.97
OUTFLOW: ID= 1 (3208)	.51	.03	1.67	27.79

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.00
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0089

CALIB
STANDHYD (2070) | Area (ha)= .90
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.89	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	4.00
Storage Coeff. (min)=		2.19 (ii)	3.31 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.36	.32
			TOTALS
PEAK FLOW (cms)=		.21	.00 .211 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45

RUNOFF VOLUME (mm)= 28.16 8.91 27.97
TOTAL RAINFALL (mm)= 29.16 29.16 29.16
RUNOFF COEFFICIENT = .97 .31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3207)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0900	.0265
.0460	.0160	.1150	.0325
.0760	.0225	.1620	.0420

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2070)	.90	.21	1.45	27.97
OUTFLOW: ID= 1 (3207)	.90	.05	1.67	27.87

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.37
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0157

CALIB
STANDHYD (2060) | Area (ha)= .66
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.65	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	66.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	4.00
Storage Coeff. (min)=		2.00 (ii)	3.12 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.37	.33
			TOTALS
PEAK FLOW (cms)=		.16	.00 .257 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45
RUNOFF VOLUME (mm)=		28.16	8.91 27.97
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3206)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0660	.0185
.0330	.0115	.0850	.0240
.0560	.0165	.1190	.0310

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2060)	.66	.16	1.45	27.97
OUTFLOW: ID= 1 (3206)	.66	.03	1.67	27.83

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.13
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0115

CALIB
STANDHYD (2050) | Area (ha)= .44

ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.44	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	54.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	3.00
Storage Coeff. (min)=		1.77 (ii)	2.89 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.38
			TOTALS
PEAK FLOW (cms)=		.11	.00 .106 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		28.16	8.91 27.97
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3205)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0440	.0130
.0220	.0080	.0560	.0160
.0370	.0115	.0790	.0210

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2050)	.44	.11	1.45	27.97
OUTFLOW: ID= 1 (3205)	.44	.02	1.67	27.76

PEAK FLOW REDUCTION [Qout/Qin](%)= 20.13
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0078

CALIB
STANDHYD (2040) | Area (ha)= .46
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.46	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	55.40	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	3.00
Storage Coeff. (min)=		1.79 (ii)	2.91 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.38
			TOTALS
PEAK FLOW (cms)=		.11	.00 .111 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		28.16	8.91 27.97
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3204)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)

.0000	.0000	.0460	.0135
.0230	.0085	.0590	.0165
.0390	.0115	.0830	.0215

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2040)	.46	.11	1.45	27.97
OUTFLOW: ID= 1 (3204)	.46	.02	1.67	27.76

PEAK FLOW REDUCTION [Qout/Qin](%)= 19.91
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0082

CALIB
STANDHYD (2030) | Area (ha)= .77
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.76	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	71.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	4.00
Storage Coeff. (min)=		2.09 (ii)	3.21 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.37	.32
			TOTALS
PEAK FLOW (cms)=		.18	.00 .182 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45
RUNOFF VOLUME (mm)=		28.16	8.91 27.97
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3203)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0770	.0225
.0190	.0135	.0990	.0275
.0650	.0195	.1390	.0360

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2030)	.77	.18	1.45	27.97
OUTFLOW: ID= 1 (3203)	.77	.04	1.67	27.85

PEAK FLOW REDUCTION [Qout/Qin](%)= 21.31
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0134

CALIB
STANDHYD (2010) | Area (ha)= 1.32
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.31	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	26.88
over (min)		5.00	4.00
Storage Coeff. (min)=		2.46 (ii)	3.58 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.34	.30
			TOTALS
PEAK FLOW (cms)=		.30	.00 .304 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45

```
RUNOFF VOLUME     (mm)=      28.16          8.91          27.97
TOTAL RAINFALL    (mm)=      29.16         29.16          29.16
RUNOFF COEFFICIENT    =        .97           .31            .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3201) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

 OUTFLOW   STORAGE |  OUTFLOW   STORAGE
  (cms)    (ha.m.) |   (cms)    (ha.m.)
  .0000     .0000  |   .1320     .0385
  .0670     .0235  |   .1690     .0475
  .1110     .0330  |   .2180     .0610

                 AREA     QPEAK     TPEAK      R.V.
                  (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2010)     1.32       .30      1.45     27.97
OUTFLOW: ID= 1 (3201)     1.32       .07      1.68     27.90

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.61
          TIME SHIFT OF PEAK FLOW          (min)= 14.00
          MAXIMUM  STORAGE   USED        (ha.m.)=  .0231

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| CALIB                |
| STANDHYD  (1050)     |   Area    (ha)=   2.35
| ID= 1 DT= 1.0 min    |   Total Imp(%)=  77.00   Dir. Conn.(%)=  77.00

                    IMPERVIOUS     PERVIOUS (i)
Surface Area    (ha)=      1.81          .54
Dep. Storage    (mm)=      1.00         5.00
Average Slope    (%)=      1.00         2.00
Length           (m)=    125.20        40.00
Mannings n           =      .013         .250

Max.Eff.Inten.(mm/hr)=    100.07        26.88
          over (min)=      5.00         8.00
Storage Coeff.  (min)=      2.92 (ii)    7.27 (ii)
Unit Hyd. Tpeak (min)=      5.00         8.00
Unit Hyd. peak  (cms)=       .31          .15
                                                *TOTALS*
PEAK FLOW       (cms)=       .41          .03          .420 (iii)
TIME TO PEAK    (hrs)=      1.45         1.67         1.45
RUNOFF VOLUME    (mm)=     28.16         8.91        23.73
TOTAL RAINFALL   (mm)=     29.16        29.16        29.16
RUNOFF COEFFICIENT   =       .97          .31          .81

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (8011) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

 OUTFLOW   STORAGE |  OUTFLOW   STORAGE
  (cms)    (ha.m.) |   (cms)    (ha.m.)
  .0000     .0000  |   .1800     .0635
  .0910     .0350  |   .2310     .0770
  .1520     .0515  |   .3240     .1025

                 AREA     QPEAK     TPEAK      R.V.
                  (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1050)     2.35       .42      1.45     23.73
OUTFLOW: ID= 1 (8011)     2.35       .09      1.73     23.69

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.43
          TIME SHIFT OF PEAK FLOW          (min)= 17.00
          MAXIMUM  STORAGE   USED        (ha.m.)=  .0347

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| CALIB                |
| STANDHYD  (1040)     |   Area    (ha)=   .47
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| ID= 1 DT= 1.0 min    |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                    IMPERVIOUS     PERVIOUS (i)
Surface Area    (ha)=       .47          .00
Dep. Storage    (mm)=      1.00         5.00
Average Slope    (%)=      1.00         2.00
Length           (m)=     56.00        40.00
Mannings n           =      .013         .250

Max.Eff.Inten.(mm/hr)=    100.07        61.81
          over (min)=      5.00         3.00
Storage Coeff.  (min)=      1.80 (ii)    2.93 (ii)
Unit Hyd. Tpeak (min)=      5.00         3.00
Unit Hyd. peak  (cms)=       .39          .38
                                                *TOTALS*
PEAK FLOW       (cms)=       .11          .00          .113 (iii)
TIME TO PEAK    (hrs)=      1.45         1.45         1.45
RUNOFF VOLUME    (mm)=     28.16         8.91        27.97
TOTAL RAINFALL   (mm)=     29.16        29.16        29.16
RUNOFF COEFFICIENT   =       .97          .31          .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3104) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

 OUTFLOW   STORAGE |  OUTFLOW   STORAGE
  (cms)    (ha.m.) |   (cms)    (ha.m.)
  .0000     .0000  |   .0470     .0140
  .0240     .0085  |   .0600     .0170
  .0400     .0120  |   .0850     .0220

                 AREA     QPEAK     TPEAK      R.V.
                  (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1040)      .47       .11      1.45     27.97
OUTFLOW: ID= 1 (3104)      .47       .02      1.67     27.78

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.58
          TIME SHIFT OF PEAK FLOW          (min)= 13.00
          MAXIMUM  STORAGE   USED        (ha.m.)=  .0083

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| CALIB                |
| STANDHYD  (1030)     |   Area    (ha)=   .98
| ID= 1 DT= 1.0 min    |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                    IMPERVIOUS     PERVIOUS (i)
Surface Area    (ha)=       .97          .01
Dep. Storage    (mm)=      1.00         5.00
Average Slope    (%)=      1.00         2.00
Length           (m)=     80.80        40.00
Mannings n           =      .013         .250

Max.Eff.Inten.(mm/hr)=    100.07        26.88
          over (min)=      5.00         4.00
Storage Coeff.  (min)=      2.25 (ii)    3.37 (ii)
Unit Hyd. Tpeak (min)=      5.00         4.00
Unit Hyd. peak  (cms)=       .36          .32
                                                *TOTALS*
PEAK FLOW       (cms)=       .23          .00          .229 (iii)
TIME TO PEAK    (hrs)=      1.45         1.47         1.45
RUNOFF VOLUME    (mm)=     28.16         8.91        27.97
TOTAL RAINFALL   (mm)=     29.16        29.16        29.16
RUNOFF COEFFICIENT   =       .97          .31          .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3103) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

 OUTFLOW   STORAGE |  OUTFLOW   STORAGE
  (cms)    (ha.m.) |   (cms)    (ha.m.)
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```
                  .0000     .0000  |   .0980     .0290
                  .0500     .0175  |   .1260     .0350
                  .0830     .0245  |   .1770     .0455

                 AREA     QPEAK     TPEAK      R.V.
                  (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1030)      .98       .23      1.45     27.97
OUTFLOW: ID= 1 (3103)      .98       .05      1.67     27.88

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.34
          TIME SHIFT OF PEAK FLOW          (min)= 13.00
          MAXIMUM  STORAGE   USED        (ha.m.)=  .0171

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| CALIB                |
| STANDHYD  (1020)     |   Area    (ha)=   1.13
| ID= 1 DT= 1.0 min    |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                    IMPERVIOUS     PERVIOUS (i)
Surface Area    (ha)=      1.12          .01
Dep. Storage    (mm)=      1.00         5.00
Average Slope    (%)=      1.00         2.00
Length           (m)=     86.80        40.00
Mannings n           =      .013         .250

Max.Eff.Inten.(mm/hr)=    100.07        26.88
          over (min)=      5.00         4.00
Storage Coeff.  (min)=      2.15 (ii)    3.47 (ii)
Unit Hyd. Tpeak (min)=      5.00         4.00
Unit Hyd. peak  (cms)=       .35          .31
                                                *TOTALS*
PEAK FLOW       (cms)=       .28          .00          .282 (iii)
TIME TO PEAK    (hrs)=      1.45         1.47         1.45
RUNOFF VOLUME    (mm)=     28.16         8.91        27.97
TOTAL RAINFALL   (mm)=     29.16        29.16        29.16
RUNOFF COEFFICIENT   =       .97          .31          .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3102) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

 OUTFLOW   STORAGE |  OUTFLOW   STORAGE
  (cms)    (ha.m.) |   (cms)    (ha.m.)
  .0000     .0000  |   .1130     .0330
  .0570     .0200  |   .1450     .0405
  .0950     .0280  |   .2040     .0525

                 AREA     QPEAK     TPEAK      R.V.
                  (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1020)     1.13       .26      1.45     27.97
OUTFLOW: ID= 1 (3102)     1.13       .06      1.68     27.89

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.44
          TIME SHIFT OF PEAK FLOW          (min)= 14.00
          MAXIMUM  STORAGE   USED        (ha.m.)=  .0198

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| CALIB                |
| STANDHYD  (1010)     |   Area    (ha)=   .57
| ID= 1 DT= 1.0 min    |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                    IMPERVIOUS     PERVIOUS (i)
Surface Area    (ha)=       .56          .01
Dep. Storage    (mm)=      1.00         5.00
Average Slope    (%)=      1.00         2.00
Length           (m)=     61.60        40.00
Mannings n           =      .013         .250

Max.Eff.Inten.(mm/hr)=    100.07        26.88
          over (min)=      5.00         4.00
Storage Coeff.  (min)=      1.91 (ii)    3.03 (ii)
Unit Hyd. Tpeak (min)=      5.00         4.00
Unit Hyd. peak  (cms)=       .38          .34
                                                *TOTALS*
PEAK FLOW       (cms)=       .14          .00          .137 (iii)
TIME TO PEAK    (hrs)=      1.45         1.47         1.45
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RUNOFF VOLUME     (mm)=      28.16          8.91          27.97
TOTAL RAINFALL    (mm)=      29.16         29.16          29.16
RUNOFF COEFFICIENT    =        .97           .31            .96

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| ADD HYD   (8001) |
|  1 +  2 =  3     |

                        AREA     QPEAK     TPEAK      R.V.
                         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (3102):    1.13      .056     1.68     27.89
     + ID2= 2 (3101):     .57      .029     1.67     27.81
     ================================================
     ID = 3 (8001):     1.70      .085     1.67     27.86

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD   (8002) |
|  1 +  2 =  3     |

                        AREA     QPEAK     TPEAK      R.V.
                         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (3103):     .98      .049     1.67     27.88
     + ID2= 2 (8001):    1.70      .085     1.67     27.86
     ================================================
     ID = 3 (8002):     2.68      .134     1.67     27.87

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD   (8003) |
|  1 +  2 =  3     |

                        AREA     QPEAK     TPEAK      R.V.
                         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (3104):     .47      .023     1.67     27.78
     + ID2= 2 (8002):    2.68      .134     1.67     27.87
     ================================================
     ID = 3 (8003):     3.15      .157     1.67     27.85

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD   (8004) |
|  1 +  2 =  3     |

                        AREA     QPEAK     TPEAK      R.V.
                         (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (8011):    2.35      .090     1.73     23.69
     + ID2= 2 (8003):    3.15      .157     1.67     27.85
     ================================================
     ID = 3 (8004):     5.50      .247     1.68     26.08

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD (8005) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3201):	1.32	.066	1.68	27.90
+ ID2= 2 (8004):	5.50	.247	1.68	26.08
ID = 3 (8005):	6.82	.313	1.68	26.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| STANDHYD (2020) |
| ID= 1 DT= 1.0 min |

Area (ha)= .42
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.42	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	52.90	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	100.07	26.88
over (min)	5.00	3.00
Storage Coeff. (min)=	1.74 (ii)	2.87 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.40	.39

		TOTALS
PEAK FLOW (cms)=	.10	.00 .102 (iii)
TIME TO PEAK (hrs)=	1.45	1.45 1.45
RUNOFF VOLUME (mm)=	28.16	8.91 27.97
TOTAL RAINFALL (mm)=	29.16	29.16 29.16
RUNOFF COEFFICIENT =	.97	.31 .96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (2202) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min |

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0420	.0125
.0210	.0075	.0540	.0155
.0350	.0105	.0760	.0195

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2020)	.42	.10	1.45	27.97
OUTFLOW: ID= 1 (3202)	.42	.02	1.67	27.75

PEAK FLOW REDUCTION [Qout/Qin](%)= 20.38
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0074

| ADD HYD (8006) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8005):	6.82	.313	1.68	26.43
+ ID2= 2 (3202):	.42	.021	1.67	27.75
ID = 3 (8006):	7.24	.333	1.68	26.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8007) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3203):	.77	.039	1.67	27.85
+ ID2= 2 (8006):	7.24	.333	1.68	26.51
ID = 3 (8007):	8.01	.372	1.68	26.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8008) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3204):	.46	.022	1.67	27.76
+ ID2= 2 (8007):	8.01	.372	1.68	26.63
ID = 3 (8008):	8.47	.394	1.68	26.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8009) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3205):	.44	.021	1.67	27.76
+ ID2= 2 (8008):	8.47	.394	1.68	26.70
ID = 3 (8009):	8.91	.416	1.68	26.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8010) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3206):	.66	.033	1.67	27.83
+ ID2= 2 (8009):	8.91	.416	1.68	26.75
ID = 3 (8010):	9.57	.449	1.68	26.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8011) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3207):	.90	.045	1.67	27.87
+ ID2= 2 (8010):	9.57	.449	1.68	26.82
ID = 3 (8011):	10.47	.494	1.68	26.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8012) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3208):	.51	.026	1.67	27.79
+ ID2= 2 (8011):	10.47	.494	1.68	26.91
ID = 3 (8012):	10.98	.520	1.68	26.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8013) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3209):	1.06	.054	1.67	27.88
+ ID2= 2 (8012):	10.98	.520	1.68	26.95
ID = 3 (8013):	12.04	.573	1.68	27.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8014) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3210):	1.37	.069	1.68	27.90
+ ID2= 2 (8013):	12.04	.573	1.68	27.04
ID = 3 (8014):	13.41	.643	1.68	27.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8015) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3211):	1.05	.053	1.67	27.88
+ ID2= 2 (8014):	13.41	.643	1.68	27.12
ID = 3 (8015):	14.46	.695	1.68	27.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8016) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3212):	.38	.018	1.67	27.72
+ ID2= 2 (8015):	14.46	.695	1.68	27.18
ID = 3 (8016):	14.84	.714	1.68	27.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8017) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3213):	2.06	.104	1.68	27.93
+ ID2= 2 (8016):	14.84	.714	1.68	27.19
ID = 3 (8017):	16.90	.818	1.68	27.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8018) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3214):	1.21	.061	1.68	27.89
+ ID2= 2 (8017):	16.90	.818	1.68	27.28
ID = 3 (8018):	18.11	.879	1.68	27.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8019) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3215):	.58	.028	1.67	27.81
+ ID2= 2 (8018):	18.11	.879	1.68	27.32
ID = 3 (8019):	18.69	.907	1.68	27.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8020) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3216):	.64	.031	1.67	27.83
+ ID2= 2 (8019):	18.69	.907	1.68	27.34
ID = 3 (8020):	19.33	.938	1.68	27.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8021) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3217):	.59	.030	1.67	27.82
+ ID2= 2 (8020):	19.33	.938	1.68	27.35
ID = 3 (8021):	19.92	.968	1.68	27.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8022) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3218):	.58	.028	1.67	27.81
+ ID2= 2 (8021):	19.92	.968	1.68	27.37
ID = 3 (8022):	20.50	.996	1.68	27.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8023) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3219):	.95	.047	1.67	27.87
+ ID2= 2 (8022):	20.50	.996	1.68	27.38
ID = 3 (8023):	21.45	1.043	1.68	27.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8024) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3220):	.66	.033	1.67	27.83
+ ID2= 2 (8023):	21.45	1.043	1.68	27.40
ID = 3 (8024):	22.11	1.076	1.68	27.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8025) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3221):	.50	.025	1.67	27.78
+ ID2= 2 (8024):	22.11	1.076	1.68	27.42
ID = 3 (8025):	22.61	1.101	1.68	27.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8026) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3222):	.61	.030	1.67	27.82
+ ID2= 2 (8025):	22.61	1.101	1.68	27.42
ID = 3 (8026):	23.22	1.131	1.68	27.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (8027) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3223):	.61	.030	1.67	27.82
+ ID2= 2 (8026):	23.22	1.131	1.68	27.43
ID = 3 (8027):	23.83	1.161	1.68	27.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8028)
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3224):	.61	.030	1.67	27.82
+ ID2= 2 (8027):	23.83	1.161	1.68	27.44
ID = 3 (8028):	24.44	1.191	1.68	27.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8029)
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3225):	1.19	.059	1.68	27.89
+ ID2= 2 (8028):	24.44	1.191	1.68	27.45
ID = 3 (8029):	25.63	1.251	1.68	27.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8030)
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3226):	20.31	.824	1.78	24.31
+ ID2= 2 (8029):	25.63	1.251	1.68	27.47
ID = 3 (8030):	45.94	2.054	1.73	26.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (2270)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		100.07	23.59
over (min)		5.00	16.00
Storage Coeff. (min)=		3.08 (ii)	15.66 (ii)
Unit Hyd. Tpeak (min)=		5.00	16.00
Unit Hyd. peak (cms)=		.30	.07
			TOTALS
PEAK FLOW (cms)=		.16	.07 .178 (iii)
TIME TO PEAK (hrs)=		1.45	1.72 1.47
RUNOFF VOLUME (mm)=		28.16	8.91 13.91
TOTAL RAINFALL (mm)=		29.16	29.16 29.16
RUNOFF COEFFICIENT =		.97	.31 .48

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 NUMBER: 3 **
****

Max.Eff.Inten.(mm/hr)=	144.13	53.79					
over (min)	5.00	9.00					
Storage Coeff. (min)=	4.82 (ii)	8.33 (ii)					
Unit Hyd. Tpeak (min)=	5.00	9.00					
Unit Hyd. peak (cms)=	.23	.13					
						TOTALS	
PEAK FLOW (cms)=	4.61	.40				4.868 (iii)	
TIME TO PEAK (hrs)=	1.47	1.57				1.47	
RUNOFF VOLUME (mm)=	41.00	17.47				36.29	
TOTAL RAINFALL (mm)=	42.00	42.00				42.00	
RUNOFF COEFFICIENT =	.98	.42				.86	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (1226)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	1.6250	.5150
.8250	.2920	2.0850	.6450
1.3730	.4305	2.9320	.8595

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2260)	20.31	4.87	1.47	36.29
OUTFLOW: ID= 1 (3226)	20.31	1.37	1.75	36.29

PEAK FLOW REDUCTION [Qout/Qin](%)= 28.14
TIME SHIFT OF PEAK FLOW (min)= 17.00
MAXIMUM STORAGE USED (ha.m.)= .4303

CALIB
STANDHYD (2250)
ID= 1 DT= 1.0 min

Area (ha)= 1.19
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.18	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	89.10	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	107.57
over (min)		5.00	4.00
Storage Coeff. (min)=		3.06 (ii)	3.03 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.37	.34
			TOTALS
PEAK FLOW (cms)=		.43	.00 .407 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (1225)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1190	.0350
.0600	.0210	.1530	.0425
.1000	.0300	.2150	.0550

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2250)	1.19	.41	1.45	40.76
OUTFLOW: ID= 1 (3225)	1.19	.10	1.65	40.69

READ STORM
Ptotal= 42.00 mm

Filename: J:\1441 Projects by Job Number\2008\10-08053-001-N01 Langstaff E Lands\OTHYMO Model\Markham 3hour AES Design Storm\
Comments: 5 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	5.63	1.75	11.74	2.58	3.08
.17	2.28	1.00	6.84	1.83	8.16	2.67	2.95
.25	2.55	1.08	8.71	1.92	6.32	2.75	2.82
.33	2.68	1.17	13.47	2.00	5.19	2.83	2.68
.42	2.82	1.25	31.39	2.08	4.53	2.92	2.68
.50	3.08	1.33	59.37	2.17	3.89	3.00	2.55
.58	3.49	1.42	144.13	2.25	3.75	3.08	2.41
.67	3.75	1.50	76.60	2.33	3.49		
.75	4.29	1.58	36.05	2.42	3.35		
.83	4.83	1.67	19.23	2.50	3.22		

CALIB
STANDHYD (2260)
ID= 1 DT= 1.0 min

Area (ha)= 20.31
Total Imp(%)= 80.00 Dir. Conn.(%)= 80.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	16.25	4.06
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	368.00	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	4.83	1.583	36.05	2.317	3.35
.033	.00	.817	4.83	1.600	19.23	2.333	3.35
.050	.00	.833	4.83	1.617	19.23	2.350	3.35
.067	.00	.850	5.63	1.633	19.23	2.367	3.35
.083	.00	.867	5.63	1.650	19.23	2.383	3.22
.100	2.28	.883	5.63	1.667	19.23	2.400	3.22
.117	2.28	.900	5.63	1.683	11.74	2.417	3.22
.133	2.28	.917	5.63	1.700	11.74	2.433	3.22
.150	2.28	.933	6.84	1.717	11.74	2.450	3.22
.167	2.28	.950	6.84	1.733	11.74	2.467	3.08
.183	2.55	.967	6.84	1.750	11.74	2.483	3.08
.200	2.55	.983	6.84	1.767	8.16	2.500	3.08
.217	2.55	1.000	6.84	1.783	8.16	2.517	3.08
.233	2.55	1.017	8.71	1.800	8.16	2.533	3.08
.250	2.55	1.033	8.71	1.817	8.16	2.550	2.95
.267	2.68	1.050	8.71	1.833	8.16	2.567	2.95
.283	2.68	1.067	8.71	1.850	6.32	2.583	2.95
.300	2.68	1.083	8.71	1.867	6.32	2.600	2.95
.317	2.68	1.100	13.47	1.883	6.32	2.617	2.95
.333	2.68	1.117	13.47	1.900	6.32	2.633	2.82
.350	2.82	1.133	13.47	1.917	6.32	2.650	2.82
.367	2.82	1.150	13.47	1.933	5.19	2.667	2.82
.383	2.82	1.167	13.47	1.950	5.19	2.683	2.82
.400	2.82	1.183	31.39	1.967	5.19	2.700	2.82
.417	2.82	1.200	31.39	1.983	5.19	2.717	2.68
.433	3.08	1.217	31.39	2.000	5.19	2.733	2.68
.450	3.08	1.233	31.39	2.017	4.53	2.750	2.68
.467	3.08	1.250	31.39	2.033	4.53	2.767	2.68
.483	3.08	1.267	59.37	2.050	4.53	2.783	2.68
.500	3.08	1.283	59.37	2.067	4.53	2.800	2.68
.517	3.49	1.300	59.37	2.083	4.53	2.817	2.68
.533	3.49	1.317	59.37	2.100	3.89	2.833	2.68
.550	3.49	1.333	59.37	2.117	3.89	2.850	2.68
.567	3.49	1.350	144.13	2.133	3.89	2.867	2.68
.583	3.49	1.367	144.13	2.150	3.89	2.883	2.55
.600	3.75	1.383	144.13	2.167	3.89	2.900	2.55
.617	3.75	1.400	144.13	2.183	3.75	2.917	2.55
.633	3.75	1.417	144.13	2.200	3.75	2.933	2.55
.650	3.75	1.433	76.60	2.217	3.75	2.950	2.55
.667	3.75	1.450	76.60	2.233	3.75	2.967	2.41
.683	4.29	1.467	76.60	2.250	3.75	2.983	2.41
.700	4.29	1.483	76.60	2.267	3.49	3.000	2.41
.717	4.29	1.500	76.60	2.283	3.49	3.017	2.41
.733	4.29	1.517	36.05	2.300	3.49	3.033	2.41
.750	4.29	1.533	36.05	2.317	3.49		
.767	4.83	1.550	36.05	2.333	3.49		
.783	4.83	1.567	36.05	2.350	3.35		

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.13
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0296

CALIB
STANDHYD (2240)
ID= 1 DT= 1.0 min

Area (ha)= .61
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.60	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	63.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	3.00
Storage Coeff. (min)=		3.69 (ii)	2.66 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.40	.41
			TOTALS
PEAK FLOW (cms)=		.21	.00 .214 (iii)
TIME TO PEAK (hrs)=		1.43	1.45 1.43
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (1224)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0610	.0180
.0310	.0110	.0780	.0220
.0510	.0155	.1100	.0285

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2240)	.61	.21	1.43	40.76
OUTFLOW: ID= 1 (3224)	.61	.05	1.65	40.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.34
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0153

CALIB
STANDHYD (2230)
ID= 1 DT= 1.0 min

Area (ha)= .61
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.60	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	63.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	3.00
Storage Coeff. (min)=		2.69 (ii)	2.66 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.40	.41
			TOTALS
PEAK FLOW (cms)=		.21	.00 .214 (iii)
TIME TO PEAK (hrs)=		1.43	1.45 1.43
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3223)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0610	.0180
.0310	.0110	.0780	.0220
.0510	.0155	.1100	.0285

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2230)	.61	.21	1.43	40.76
OUTFLOW: ID= 1 (3223)	.61	.05	1.65	40.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.34
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0153

CALIB
STANDHYD (2220)
ID= 1 DT= 1.0 min

Area (ha)= .61
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.60	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	63.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.69 (ii)	2.66 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.40	.41	
				TOTALS
PEAK FLOW	(cms)=	.21	.00	.214 (iii)
TIME TO PEAK	(hrs)=	1.43	1.45	1.43
RUNOFF VOLUME	(mm)=	41.00	17.47	40.76
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3222)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0610	.0180
.0310	.0110	.0780	.0220
.0510	.0155	.1100	.0285

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2220)	.61	.21	1.43	40.76
OUTFLOW: ID= 1 (3222)	.61	.05	1.65	40.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.34
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0153

CALIB
STANDHYD (2210)
ID= 1 DT= 1.0 min

Area (ha)= .50
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.50	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	57.70	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)= 144.13 53.79
over (min) 5.00 3.00
Storage Coeff. (min)= 1.59 (ii) 2.56 (ii)
Unit Hyd. Tpeak (min)= 5.00 3.00
Unit Hyd. peak (cms)= .41 .42

		TOTALS
PEAK FLOW	(cms)=	.177 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	40.76
TOTAL RAINFALL	(mm)=	42.00
RUNOFF COEFFICIENT	=	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3221)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0500	.0150
.0250	.0080	.0640	.0180
.0420	.0125	.0900	.0235

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2210)	.50	.18	1.43	40.76
OUTFLOW: ID= 1 (3221)	.50	.04	1.65	40.58

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.68
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0125

CALIB
STANDHYD (2200)
ID= 1 DT= 1.0 min

Area (ha)= .66
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.65	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	66.30	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.72 (ii)	2.70 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.40	.40	
				TOTALS
PEAK FLOW	(cms)=	.23	.00	.231 (iii)
TIME TO PEAK	(hrs)=	1.45	1.45	1.45
RUNOFF VOLUME	(mm)=	41.00	17.47	40.76
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3220)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0460	.0195
.0330	.0115	.0850	.0240
.0560	.0165	.1190	.0310

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2300)	.66	.23	1.45	40.76
OUTFLOW: ID= 1 (3220)	.66	.06	1.65	40.63

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.05
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0164

CALIB
STANDHYD (2190)
ID= 1 DT= 1.0 min

Area (ha)= .95
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.94	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	79.60	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.92 (ii)	2.90 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.38	.38	
				TOTALS
PEAK FLOW	(cms)=	.33	.00	.328 (iii)
TIME TO PEAK	(hrs)=	1.45	1.45	1.45
RUNOFF VOLUME	(mm)=	41.00	17.47	40.76
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3219)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0950	.0280
.0480	.0170	.1220	.0340
.0800	.0240	.1710	.0440

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2190)	.95	.33	1.45	40.76
OUTFLOW: ID= 1 (3219)	.95	.08	1.65	40.67

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.96
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0237

CALIB
STANDHYD (2180)
ID= 1 DT= 1.0 min

Area (ha)= .58
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.57	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.20	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.66 (ii)	2.63 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.40	.41	
				TOTALS
PEAK FLOW	(cms)=	.20	.00	.204 (iii)
TIME TO PEAK	(hrs)=	1.43	1.45	1.43
RUNOFF VOLUME	(mm)=	41.00	17.47	40.76
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

RESERVOIR (3218)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0175
.0290	.0105	.0740	.0210
.0430	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2180)	.58	.20	1.43	40.76
OUTFLOW: ID= 1 (3218)	.58	.04	1.47	40.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 20.79
TIME SHIFT OF PEAK FLOW (min)= 14.00
MAXIMUM STORAGE USED (ha.m.)= .0148

CALIB
STANDHYD (2170)
ID= 1 DT= 1.0 min

Area (ha)= .59
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.58	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.70	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		144.13	53.79	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.67 (ii)	2.64 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.40	.41	
				TOTALS
PEAK FLOW	(cms)=	.21	.00	.207 (iii)
TIME TO PEAK	(hrs)=	1.43	1.45	1.43
RUNOFF VOLUME	(mm)=	41.00	17.47	40.76
TOTAL RAINFALL	(mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT	=	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3217)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0590	.0175
.0300	.0105	.0760	.0215
.0500	.0150	.1060	.0275

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2170)	.59	.21	1.43	40.76
OUTFLOW: ID= 1 (3217)	.59	.05	1.65	40.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.50
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0147

CALIB
STANDHYD (2160)
ID= 1 DT= 1.0 min

Area (ha)= .64
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.63	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	65.30	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79
over (min)	5.00	3.00
Storage Coeff. (min)=	1.71 (ii)	2.68 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.40	.40
		TOTALS
PEAK FLOW (cms)=	.22	.00 .224 (iii)
TIME TO PEAK (hrs)=	1.43	1.45 1.43
RUNOFF VOLUME (mm)=	41.00	17.47 40.76
TOTAL RAINFALL (mm)=	42.00	42.00 42.00
RUNOFF COEFFICIENT =	.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3216)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0640	.0190
.0320	.0135	.0820	.0230
.0540	.0160	.1150	.0300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2160)	.64	.22	1.43	40.76
OUTFLOW: ID= 1 (3216)	.64	.05	1.65	40.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.03
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0160

CALIB
STANDHYD (2150)
ID= 1 DT= 1.0 min

Area (ha)= .58
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.57	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.20	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	3.00	
Storage Coeff. (min)=	1.66 (ii)	2.63 (ii)	
Unit Hyd. Tpeak (min)=	5.00	3.00	
Unit Hyd. peak (cms)=	.40	.41	
			TOTALS
PEAK FLOW (cms)=	.20	.00	.204 (iii)
TIME TO PEAK (hrs)=	1.43	1.45	1.43
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3215)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0170
.0290	.0105	.0740	.0210
.0490	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2150)	.58	.20	1.43	40.76
OUTFLOW: ID= 1 (3215)	.58	.05	1.65	40.61

THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3213)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.2060	.0600
.1050	.0360	.2640	.0735
.1740	.0510	.3710	.0950

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2130)	2.06	.69	1.45	40.76
OUTFLOW: ID= 1 (3213)	2.06	.17	1.67	40.72

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.19
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0508

CALIB
STANDHYD (2120)
ID= 1 DT= 1.0 min

Area (ha)= .38
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.38	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	50.30	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	3.00	
Storage Coeff. (min)=	1.46 (ii)	2.43 (ii)	
Unit Hyd. Tpeak (min)=	5.00	3.00	
Unit Hyd. peak (cms)=	.42	.43	
			TOTALS
PEAK FLOW (cms)=	.14	.00	.136 (iii)
TIME TO PEAK (hrs)=	1.43	1.45	1.43
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3212)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0380	.0115
.0190	.0070	.0490	.0140
.0320	.0100	.0680	.0180

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2120)	.38	.14	1.43	40.76
OUTFLOW: ID= 1 (3212)	.38	.03	1.65	40.52

PEAK FLOW REDUCTION [Qout/Qin](%)= 22.25
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0096

CALIB
STANDHYD (2110)
ID= 1 DT= 1.0 min

Area (ha)= 1.05
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.04	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.09
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0146

CALIB
STANDHYD (2140)
ID= 1 DT= 1.0 min

Area (ha)= 1.21
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.20	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	89.80	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	4.00	
Storage Coeff. (min)=	2.07 (ii)	3.04 (ii)	
Unit Hyd. Tpeak (min)=	5.00	4.00	
Unit Hyd. peak (cms)=	.37	.34	
			TOTALS
PEAK FLOW (cms)=	.41	.00	.413 (iii)
TIME TO PEAK (hrs)=	1.45	1.47	1.45
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3214)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1230	.0355
.0610	.0210	.1550	.0435
.1020	.0300	.2180	.0560

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2140)	1.21	.41	1.45	40.76
OUTFLOW: ID= 1 (3214)	1.21	.10	1.65	40.69

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.58
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0299

CALIB
STANDHYD (2130)
ID= 1 DT= 1.0 min

Area (ha)= 2.06
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.04	.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	117.20	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	4.00	
Storage Coeff. (min)=	2.43 (ii)	3.40 (ii)	
Unit Hyd. Tpeak (min)=	5.00	4.00	
Unit Hyd. peak (cms)=	.34	.31	
			TOTALS
PEAK FLOW (cms)=	.68	.00	.686 (iii)
TIME TO PEAK (hrs)=	1.45	1.47	1.45
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

Max.Eff.Inten.(mm/hr)=	144.13	53.79
over (min)	5.00	3.00
Storage Coeff. (min)=	1.98 (ii)	2.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.38	.38
		TOTALS
PEAK FLOW (cms)=	.36	.00 .361 (iii)
TIME TO PEAK (hrs)=	1.45	1.45 1.45
RUNOFF VOLUME (mm)=	41.00	17.47 40.76
TOTAL RAINFALL (mm)=	42.00	42.00 42.00
RUNOFF COEFFICIENT =	.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3211)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1050	.0305
.0510	.0165	.1350	.0375
.0890	.0260	.1890	.0485

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2110)	1.05	.36	1.45	40.76
OUTFLOW: ID= 1 (3211)	1.05	.09	1.65	40.68

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.66
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0260

CALIB
STANDHYD (2100)
ID= 1 DT= 1.0 min

Area (ha)= 1.37
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.36	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	95.60	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	4.00	
Storage Coeff. (min)=	2.15 (ii)	3.12 (ii)	
Unit Hyd. Tpeak (min)=	5.00	4.00	
Unit Hyd. peak (cms)=	.36	.33	
			TOTALS
PEAK FLOW (cms)=	.46	.00	.466 (iii)
TIME TO PEAK (hrs)=	1.45	1.47	1.45
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3210)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1370	.0400
.0700	.0240	.1760	.0490
.1150	.0340	.2470	.0635

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2100)	1.37	.47	1.45	40.76
OUTFLOW: ID= 1 (3210)	1.37	.12	1.65	40.70

```
                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.58
                    TIME SHIFT OF PEAK FLOW          (min)= 12.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0339

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

| CALIB
| STANDHYD  (2090)  |   Area     (ha)=   1.06
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      1.05          .01
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     84.10        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.99 (ii)    2.96 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .37          .38
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .36          .00          .364 (iii)
     TIME TO PEAK    (hrs)=      1.45         1.45         1.45
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3209)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .1060     .0330
                    |     .0540      .0185     |     .1360     .0380
                    |     .0890      .0265     |     .1910     .0490

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (3090)  1.06       .36      1.45     40.76
     OUTFLOW: ID= 1 (3209)  1.06       .09      1.65     40.68

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.16
                    TIME SHIFT OF PEAK FLOW          (min)= 12.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0263

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

| CALIB
| STANDHYD  (2080)  |   Area     (ha)=    .51
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .50          .01
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     58.30        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.60 (ii)    2.57 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .41          .41
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .18          .00          .181 (iii)
     TIME TO PEAK    (hrs)=      1.43         1.45         1.43
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
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     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.72 (ii)    2.70 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .40          .40
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .23          .00          .231 (iii)
     TIME TO PEAK    (hrs)=      1.45         1.45         1.45
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3206)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .0660     .0195
                    |     .0330      .0115     |     .0850     .0240
                    |     .0560      .0165     |     .1190     .0310

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (3060)  .66        .23      1.45     40.76
     OUTFLOW: ID= 1 (3206)  .66        .04      1.65     40.63

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.05
                    TIME SHIFT OF PEAK FLOW          (min)= 12.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0164

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| CALIB
| STANDHYD  (2050)  |   Area     (ha)=    .44
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .44          .00
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     54.20        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.53 (ii)    2.50 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .42          .42
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .16          .00          .157 (iii)
     TIME TO PEAK    (hrs)=      1.43         1.45         1.43
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3205)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .0440     .0130
                    |     .0220      .0080     |     .0560     .0160
                    |     .0370      .0115     |     .0790     .0210

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2050)  .44        .16      1.43     40.76
     OUTFLOW: ID= 1 (3205)  .44        .04      1.65     40.55
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                    THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3208)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .0510     .0150
                    |     .0260      .0090     |     .0650     .0185
                    |     .0430      .0130     |     .0920     .0240

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2080)  .51        .18      1.43     40.76
     OUTFLOW: ID= 1 (3208)  .51        .04      1.45     40.59

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.17
                    TIME SHIFT OF PEAK FLOW          (min)= 13.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0127

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| CALIB
| STANDHYD  (2070)  |   Area     (ha)=    .90
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .89          .01
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     77.50        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.89 (ii)    2.86 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .38          .39
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .31          .00          .311 (iii)
     TIME TO PEAK    (hrs)=      1.45         1.45         1.45
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3207)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .0900     .0265
                    |     .0460      .0160     |     .1150     .0325
                    |     .0760      .0225     |     .1620     .0420

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (3070)  .90        .31      1.45     40.76
     OUTFLOW: ID= 1 (3207)  .90        .08      1.85     40.67

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.19
                    TIME SHIFT OF PEAK FLOW          (min)= 12.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0223

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| CALIB
| STANDHYD  (2060)  |   Area     (ha)=    .66
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .65          .01
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     66.30        40.00
     Mannings n            =      .013         .250
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                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.50
                    TIME SHIFT OF PEAK FLOW          (min)= 13.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0131

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| CALIB
| STANDHYD  (2040)  |   Area     (ha)=    .46
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .46          .00
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     55.40        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.55 (ii)    2.52 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .41          .42
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .16          .00          .164 (iii)
     TIME TO PEAK    (hrs)=      1.43         1.45         1.43
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3204)
| IN= 2---> OUT= 1
| DT= 1.0 min       |     OUTFLOW    STORAGE   |    OUTFLOW    STORAGE
                    |      (cms)     (ha.m.)   |     (cms)     (ha.m.)
                    |     .0000      .0000     |     .0460     .0135
                    |     .0230      .0085     |     .0590     .0165
                    |     .0390      .0115     |     .0830     .0215

                          AREA      QPEAK     TPEAK      R.V.
                           (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2040)  .46        .16      1.43     40.76
     OUTFLOW: ID= 1 (3204)  .46        .04      1.65     40.56

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.87
                    TIME SHIFT OF PEAK FLOW          (min)= 13.00
                    MAXIMUM  STORAGE   USED          (ha.m.)=  .0115

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| CALIB
| STANDHYD  (2030)  |   Area     (ha)=    .77
| ID= 1 DT= 1.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       .76          .01
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     71.60        40.00
     Mannings n            =      .013         .250

     Max.Eff.Inten.(mm/hr)=    144.13        53.79
           over      (min)=      5.00         3.00
     Storage Coeff.  (min)=      1.81 (ii)    2.78 (ii)
     Unit Hyd. Tpeak (min)=      5.00         3.00
     Unit Hyd. peak  (cms)=       .39          .39
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .27          .00          .268 (iii)
     TIME TO PEAK    (hrs)=      1.45         1.45         1.45
     RUNOFF VOLUME    (mm)=     41.00        17.47        40.76
     TOTAL RAINFALL   (mm)=     42.00        42.00        42.00
     RUNOFF COEFFICIENT    =      .98          .42          .97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
```

THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3203)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0770	.0225
	.0390	.0135	.0990	.0275
	.0650	.0195	.1390	.0360

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2030)	.77	.27	1.45	40.76
OUTFLOW: ID= 1 (3203)	.77	.06	1.65	40.65

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.72
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0192

CALIB		
STANDHYD (2010)	Area (ha)= 1.32	
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.31	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	4.00
Storage Coeff. (min)=		2.12 (ii)	3.09 (ii)
Unit Hyd. Tpeak (min)=		5.00	4.00
Unit Hyd. peak (cms)=		.96	.33
			TOTALS
PEAK FLOW (cms)=		.45	.00 .449 (iii)
TIME TO PEAK (hrs)=		1.45	1.47 1.45
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3201)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.1320	.0385
	.0670	.0235	.1690	.0475
	.1110	.0330	.2380	.0610

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2010)	1.32	.45	1.45	40.76
OUTFLOW: ID= 1 (3201)	1.32	.11	1.65	40.70

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.47
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0328

CALIB		
STANDHYD (1050)	Area (ha)= 2.35	
ID= 1 DT= 1.0 min	Total Imp(%)= 77.00	Dir. Conn.(%)= 77.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.81	.54
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	125.20	40.00
Mannings n	=	.013	.250

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.27
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0118

CALIB		
STANDHYD (1030)	Area (ha)= .98	
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.97	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	3.00
Storage Coeff. (min)=		1.94 (ii)	2.91 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.38	.38
			TOTALS
PEAK FLOW (cms)=		.34	.00 .338 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3103)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0980	.0290
	.0500	.0175	.1240	.0350
	.0810	.0245	.1770	.0455

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1030)	.98	.34	1.45	40.76
OUTFLOW: ID= 1 (3103)	.98	.08	1.65	40.67

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.34
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0243

CALIB		
STANDHYD (1020)	Area (ha)= 1.13	
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.12	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	86.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	3.00
Storage Coeff. (min)=		2.01 (ii)	3.00 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.37	.38
			TOTALS
PEAK FLOW (cms)=		.39	.00 .387 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

Max.Eff.Inten.(mm/hr)= 144.13 53.79
over (min) 5.00 7.00
Storage Coeff. (min)= 2.53 (ii) 6.29 (ii)
Unit Hyd. Tpeak (min)= 5.00 7.00
Unit Hyd. peak (cms)= .34 .17
TOTALS
PEAK FLOW (cms)= .60 .06 .644 (iii)
TIME TO PEAK (hrs)= 1.45 1.52 1.45
RUNOFF VOLUME (mm)= 41.00 17.47 35.59
TOTAL RAINFALL (mm)= 42.00 42.00 42.00
RUNOFF COEFFICIENT = .98 .42 .85

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (8031)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.1800	.0615
	.0910	.0350	.2310	.0770
	.1520	.0515	.3240	.1025

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1050)	2.35	.64	1.45	35.59
OUTFLOW: ID= 1 (8031)	2.35	.15	1.70	35.55

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.34
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= .0511

CALIB		
STANDHYD (1040)	Area (ha)= .47	
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.47	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	56.00	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	123.71
over (min)		5.00	3.00
Storage Coeff. (min)=		1.56 (ii)	2.53 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.42
			TOTALS
PEAK FLOW (cms)=		.17	.00 .167 (iii)
TIME TO PEAK (hrs)=		1.43	1.45 1.43
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3104)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0470	.0140
	.0240	.0085	.0600	.0170
	.0400	.0120	.0850	.0220

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1040)	.47	.17	1.43	40.76
OUTFLOW: ID= 1 (3104)	.47	.04	1.65	40.58

THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3102)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.1130	.0330
	.0570	.0200	.1450	.0405
	.0950	.0280	.2040	.0525

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1020)	1.13	.39	1.45	40.76
OUTFLOW: ID= 1 (3102)	1.13	.10	1.65	40.69

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.55
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0280

CALIB		
STANDHYD (1010)	Area (ha)= .57	
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.56	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		144.13	53.79
over (min)		5.00	3.00
Storage Coeff. (min)=		1.65 (ii)	2.62 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.40	.41
			TOTALS
PEAK FLOW (cms)=		.20	.00 .201 (iii)
TIME TO PEAK (hrs)=		1.43	1.45 1.43
RUNOFF VOLUME (mm)=		41.00	17.47 40.76
TOTAL RAINFALL (mm)=		42.00	42.00 42.00
RUNOFF COEFFICIENT =		.98	.42 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3101)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0570	.0170
	.0290	.0100	.0730	.0205
	.0480	.0145	.1030	.0265

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1010)	.57	.20	1.43	40.76
OUTFLOW: ID= 1 (3101)	.57	.05	1.65	40.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.29
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0142

ADD HYD (8001)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID= 1 (3102):	1.13	.095	1.65	40.69
+ ID= 2 (3101):	.57	.047	1.65	40.61
ID = 3 (8001):	1.70	.142	1.65	40.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8002)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3103):	.98	.082	1.65	40.67	
+ ID2= 2 (8001):	1.70	.142	1.65	40.66	
ID = 3 (8002):	2.68	.224	1.65	40.67	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8003)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3104):	.47	.039	1.65	40.58	
+ ID2= 2 (8002):	2.68	.224	1.65	40.67	
ID = 3 (8003):	3.15	.263	1.65	40.65	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8004)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (8031):	2.35	.150	1.70	35.55	
+ ID2= 2 (8003):	3.15	.263	1.65	40.65	
ID = 3 (8004):	5.50	.412	1.67	38.47	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8005)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3201):	1.32	.110	1.65	40.70	
+ ID2= 2 (8004):	5.50	.412	1.67	38.47	
ID = 3 (8005):	6.82	.522	1.67	38.90	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (2020)	Area (ha)= .42		
ID= 1 DT= 1.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	.42	.00	
Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	52.00	40.00	
Mannings n =	.013	.250	
Max.Eff.Inten.(mm/hr)=	144.13	53.79	
over (min)	5.00	3.00	
Storage Coeff. (min)=	1.51 (ii)	2.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	3.00	
Unit Hyd. peak (cms)=	.42	.42	
			TOTALS
PEAK FLOW (cms)=	.15	.00	.150 (iii)
TIME TO PEAK (hrs)=	1.43	1.45	1.43
RUNOFF VOLUME (mm)=	41.00	17.47	40.76
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	.98	.42	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 (8011)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3207):	.90	.075	1.65	40.67	
+ ID2= 2 (8010):	9.57	.750	1.65	39.39	
ID = 3 (8011):	10.47	.825	1.65	39.50	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8012)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3208):	.51	.042	1.65	40.59	
+ ID2= 2 (8011):	10.47	.825	1.65	39.50	
ID = 3 (8012):	10.98	.867	1.65	39.55	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8013)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3209):	1.06	.088	1.65	40.68	
+ ID2= 2 (8012):	10.98	.867	1.65	39.55	
ID = 3 (8013):	12.04	.955	1.65	39.65	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8014)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3210):	1.37	.114	1.65	40.70	
+ ID2= 2 (8013):	12.04	.955	1.65	39.65	
ID = 3 (8014):	13.41	1.069	1.65	39.76	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8015)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3211):	1.05	.089	1.65	40.68	
+ ID2= 2 (8014):	13.41	1.069	1.65	39.76	
ID = 3 (8015):	14.46	1.158	1.65	39.82	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8016)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3212):	.38	.030	1.65	40.52	
+ ID2= 2 (8015):	14.46	1.158	1.65	39.82	
ID = 3 (8016):	14.84	1.189	1.65	39.84	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8017)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3213):	2.06	.173	1.67	40.72	
+ ID2= 2 (8016):	14.84	1.189	1.65	39.84	

RESERVOIR (3202)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0420	.0125
	.0210	.0075	.0540	.0155
	.0350	.0105	.0760	.0195

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2020)	.42	.35	1.43	40.76
OUTFLOW: ID= 1 (3202)	.42	.03	1.65	40.55

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.33
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0105

ADD HYD (8006)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (8005):	6.82	.522	1.67	38.90	
+ ID2= 2 (3202):	.42	.035	1.65	40.55	
ID = 3 (8006):	7.24	.557	1.67	39.00	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8007)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3203):	.77	.064	1.65	40.65	
+ ID2= 2 (8006):	7.24	.557	1.67	39.00	
ID = 3 (8007):	8.01	.620	1.67	39.16	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8008)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3204):	.46	.039	1.65	40.56	
+ ID2= 2 (8007):	8.01	.620	1.67	39.16	
ID = 3 (8008):	8.47	.659	1.67	39.23	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8009)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3205):	.44	.035	1.65	40.55	
+ ID2= 2 (8008):	8.47	.659	1.67	39.23	
ID = 3 (8009):	8.91	.694	1.67	39.30	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8010)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3206):	.66	.055	1.65	40.63	
+ ID2= 2 (8009):	8.91	.694	1.67	39.30	
ID = 3 (8010):	9.57	.750	1.65	39.39	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ID = 3 (8017):	16.90	1.361	1.65	39.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8018)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3214):	1.21	.102	1.65	40.69	
+ ID2= 2 (8017):	16.90	1.361	1.65	39.95	
ID = 3 (8018):	18.11	1.463	1.65	40.00	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8019)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3215):	.58	.047	1.65	40.61	
+ ID2= 2 (8018):	18.11	1.463	1.65	40.00	
ID = 3 (8019):	18.69	1.510	1.65	40.02	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8020)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3216):	.64	.054	1.65	40.62	
+ ID2= 2 (8019):	18.69	1.510	1.65	40.02	
ID = 3 (8020):	19.33	1.564	1.65	40.04	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8021)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3217):	.59	.049	1.65	40.61	
+ ID2= 2 (8020):	19.33	1.564	1.65	40.04	
ID = 3 (8021):	19.92	1.613	1.65	40.06	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8022)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3218):	.58	.042	1.67	40.61	
+ ID2= 2 (8021):	19.92	1.613	1.65	40.06	
ID = 3 (8022):	20.50	1.655	1.65	40.07	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8023)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (3219):	.95	.079	1.65	40.67	
+ ID2= 2 (8022):	20.50	1.655	1.65	40.07	
ID = 3 (8023):	21.45	1.734	1.65	40.10	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8024) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3220):       .66      .055     1.65     40.63
   + ID2= 2 (8023):     21.45     1.734     1.65     40.10
     ==========================================
     ID = 3 (8024):     22.11     1.789     1.65     40.11

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8025) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3221):       .50      .042     1.65     40.58
   + ID2= 2 (8024):     22.11     1.789     1.65     40.11
     ==========================================
     ID = 3 (8025):     22.61     1.831     1.65     40.12

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8026) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3222):       .61      .050     1.65     40.62
   + ID2= 2 (8025):     22.61     1.831     1.65     40.12
     ==========================================
     ID = 3 (8026):     23.22     1.881     1.65     40.14

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8027) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3223):       .61      .050     1.65     40.62
   + ID2= 2 (8026):     23.22     1.881     1.65     40.14
     ==========================================
     ID = 3 (8027):     23.83     1.931     1.65     40.15

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8028) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3224):       .61      .050     1.65     40.62
   + ID2= 2 (8027):     23.83     1.931     1.65     40.15
     ==========================================
     ID = 3 (8028):     24.44     1.981     1.65     40.16

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8029) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3225):      1.19      .098     1.65     40.69
   + ID2= 2 (8028):     24.44     1.981     1.65     40.16
     ==========================================
     ID = 3 (8029):     25.63     2.079     1.65     40.19

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD   (8030) |
|  1 +  2 =  3     |
-------------------
                        AREA     QPEAK    TPEAK     R.V.
                         (ha)     (cms)    (hrs)     (mm)
     ID1= 1 (3226):     20.31     1.170     1.75     36.29
   + ID2= 2 (8029):     25.63     2.079     1.65     40.19
     ==========================================
```

.083	.00	.867	6.64	1.650	22.66	2.43	3.79
.100	2.69	.883	6.64	1.667	22.66	2.45	3.79
.117	2.69	.900	6.64	1.683	13.84	2.47	3.79
.133	2.69	.917	6.64	1.700	13.84	2.48	3.79
.150	2.69	.933	8.06	1.717	13.84	2.50	3.79
.167	2.69	.950	8.06	1.733	13.84	2.52	3.63
.183	3.00	.967	8.06	1.750	13.84	2.53	3.63
.200	3.00	.983	8.06	1.767	9.62	2.55	3.63
.217	3.00	1.000	8.06	1.783	9.62	2.57	3.63
.233	3.00	1.017	10.27	1.800	9.62	2.58	3.63
.250	3.00	1.033	10.27	1.817	9.62	2.60	3.48
.267	3.16	1.050	10.27	1.833	9.62	2.62	3.48
.283	3.16	1.067	10.27	1.850	7.44	2.63	3.48
.300	3.16	1.083	10.27	1.867	7.44	2.65	3.48
.317	3.16	1.100	15.87	1.883	7.44	2.67	3.48
.333	3.16	1.117	15.87	1.900	7.44	2.68	3.32
.350	3.32	1.133	15.87	1.917	7.44	2.70	3.32
.367	3.32	1.150	15.87	1.933	6.12	2.72	3.32
.383	3.32	1.167	15.87	1.950	6.12	2.73	3.32
.400	3.32	1.183	37.00	1.967	6.12	2.75	3.32
.417	3.32	1.200	37.00	1.983	6.12	2.77	3.16
.433	3.63	1.217	37.00	2.000	6.12	2.78	3.16
.450	3.63	1.233	37.00	2.017	5.34	2.80	3.16
.467	3.63	1.250	37.00	2.033	5.34	2.82	3.16
.483	3.63	1.267	69.97	2.050	5.34	2.83	3.16
.500	3.63	1.283	69.97	2.067	5.34	2.85	3.16
.517	4.11	1.300	69.97	2.083	5.34	2.87	3.16
.533	4.11	1.317	69.97	2.100	4.58	2.88	3.16
.550	4.11	1.333	69.97	2.117	4.58	2.90	3.16
.567	4.11	1.350	169.87	2.133	4.58	2.92	3.16
.583	4.11	1.367	169.87	2.150	4.58	2.93	3.00
.600	4.42	1.383	169.87	2.167	4.58	2.95	3.00
.617	4.42	1.400	169.87	2.183	4.42	2.97	3.00
.633	4.42	1.417	169.87	2.200	4.42	2.98	3.00
.650	4.42	1.433	90.28	2.217	4.42	3.00	3.00
.667	4.42	1.450	90.28	2.233	4.42	3.02	2.84
.683	5.06	1.467	90.28	2.250	4.42	3.03	2.84
.700	5.06	1.483	90.28	2.267	4.11	3.05	2.84
.717	5.06	1.500	90.28	2.283	4.11	3.07	2.84
.733	5.06	1.517	42.48	2.300	4.11	3.08	2.84
.750	5.06	1.533	42.48	2.317	4.11		
.767	5.69	1.550	42.48	2.333	4.11		
.783	5.69	1.567	42.48	2.350	3.95		

```
   Max.Eff.Inten.(mm/hr)=     169.87        71.24
             over (min)          5.00         8.00
   Storage Coeff.  (min)=       4.52 (ii)    7.80 (ii)
   Unit Hyd. Tpeak (min)=       5.00         8.00
   Unit Hyd. peak  (cms)=        .24          .14
                                                    *TOTALS*
   PEAK FLOW       (cms)=       5.54          .55      5.951 (iii)
   TIME TO PEAK    (hrs)=       1.47         1.55       1.47
   RUNOFF VOLUME    (mm)=      48.50        23.06      43.41
   TOTAL RAINFALL   (mm)=      49.50        49.50      49.50
   RUNOFF COEFFICIENT   =        .98          .47        .88

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN* = 86.0     Ia = Dep. Storage   (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3226)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
--------------------
        OUTFLOW     STORAGE     |   OUTFLOW     STORAGE
         (cms)      (ha.m.)     |    (cms)      (ha.m.)
        .0000       .0000      |   1.6250       .5150
        .8250       .2920      |   2.0850       .6450
       1.3710       .4305      |   2.9320       .8535

                    AREA     QPEAK    TPEAK     R.V.
                     (ha)     (cms)    (hrs)     (mm)
   INFLOW : ID= 2 (2260)     20.31     5.95      1.47     43.41
   OUTFLOW: ID= 1 (3226)     20.31     1.62      1.73     43.41

            PEAK   FLOW   REDUCTION [Qout/Qin](%)= 27.30
            TIME SHIFT OF PEAK FLOW       (min)= 16.00
            MAXIMUM  STORAGE   USED       (ha.m.)=  .5150

| CALIB             |
```

```
   ID = 3 (8030):     45.94    3.413     1.68     38.46

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB
| STANDHYD  (2270)   |   Area     (ha)=   2.81
| ID= 1 DT= 1.0 min  |   Total Imp(%)=  26.00   Dir. Conn.(%)=  26.00
---------------------
                          IMPERVIOUS     PERVIOUS (i)
   Surface Area     (ha)=       .73          2.08
   Dep. Storage     (mm)=      1.00          5.00
   Average Slope     (%)=      1.00          2.00
   Length            (m)=    136.90         40.00
   Mannings n           =      .013          .250

   Max.Eff.Inten.(mm/hr)=    144.13         53.79
             over (min)        5.00         12.00
   Storage Coeff.  (min)=      2.66 (ii)    11.71 (ii)
   Unit Hyd. Tpeak (min)=      5.00         12.00
   Unit Hyd. peak  (cms)=       .13          .10
                                                  *TOTALS*
   PEAK FLOW       (cms)=       .24          .17        .314 (iii)
   TIME TO PEAK    (hrs)=      1.45         1.63       1.48
   RUNOFF VOLUME    (mm)=     41.00        17.47      23.59
   TOTAL RAINFALL   (mm)=     42.00        42.00      42.00
   RUNOFF COEFFICIENT   =       .98          .42        .56

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN* = 86.0     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 NUMBER:   4 **
   ***************************

| READ STORM        |   Filename: J:\1441 Projects by Job Number\2008\10-
|                   |             08053-001-W01 Langstaff E Lands\
|                   |             OTTHYMD Model\Markham 2hour AES Design Storm\
| Ptotal= 49.50 mm  |   Comments: 10 Year, 2 hours AES Storm
---------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	5.64	1.75	13.84	2.58	1.63
.17	2.69	1.00	8.06	1.83	9.62	2.67	3.48
.25	3.00	1.08	10.27	1.92	7.44	2.75	3.32
.33	3.16	1.17	15.87	2.00	6.12	2.83	3.16
.42	3.32	1.25	37.00	2.08	5.34	2.92	3.16
.50	3.63	1.33	69.97	2.17	4.58	3.00	3.00
.58	4.11	1.42	169.87	2.25	4.42	3.08	2.84
.67	4.42	1.50	90.28	2.33	4.11		
.75	5.06	1.58	42.48	2.42	3.95		
.83	5.69	1.67	22.66	2.50	3.79		

```
| CALIB
| STANDHYD  (2260)   |   Area     (ha)=  20.31
| ID= 1 DT= 1.0 min  |   Total Imp(%)=  80.00   Dir. Conn.(%)=  80.00
---------------------
                          IMPERVIOUS     PERVIOUS (i)
   Surface Area     (ha)=      16.25          4.06
   Dep. Storage     (mm)=       1.00          5.00
   Average Slope     (%)=       1.00          2.00
   Length            (m)=     368.00         40.00
   Mannings n           =       .013          .250

     NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.

                    ---- TRANSFORMED HYETOGRAPH ----
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	5.69	1.583	42.48	2.37	3.95
.033	.00	.817	5.69	1.600	22.66	2.38	3.95
.050	.00	.833	5.69	1.617	22.66	2.40	3.95
.067	.00	.850	6.64	1.633	22.66	2.42	3.95

```
| STANDHYD  (2250)   |   Area     (ha)=   1.19
| ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
---------------------
                          IMPERVIOUS     PERVIOUS (i)
   Surface Area     (ha)=       1.18          .01
   Dep. Storage     (mm)=       1.00         5.00
   Average Slope     (%)=       1.00         2.00
   Length            (m)=      89.10        40.00
   Mannings n           =       .013         .250

   Max.Eff.Inten.(mm/hr)=     169.87       142.48
             over (min)          5.00         3.00
   Storage Coeff.  (min)=       1.93 (ii)    2.84 (ii)
   Unit Hyd. Tpeak (min)=       5.00         3.00
   Unit Hyd. peak  (cms)=        .38          .39
                                                  *TOTALS*
   PEAK FLOW       (cms)=        .48          .00        .484 (iii)
   TIME TO PEAK    (hrs)=       1.45         1.45       1.45
   RUNOFF VOLUME    (mm)=      48.50        23.07      48.24
   TOTAL RAINFALL   (mm)=      49.50        49.50      49.50
   RUNOFF COEFFICIENT   =        .98          .47        .97

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN* = 86.0     Ia = Dep. Storage   (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3225)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
--------------------
        OUTFLOW     STORAGE     |   OUTFLOW     STORAGE
         (cms)      (ha.m.)     |    (cms)      (ha.m.)
        .0000       .0000      |   .1190        .0350
        .0600       .0210      |   .1530        .0425
        .1000       .0300      |   .2150        .0550

                    AREA     QPEAK    TPEAK     R.V.
                     (ha)     (cms)    (hrs)     (mm)
   INFLOW : ID= 2 (2250)      1.19      .48      1.45     48.24
   OUTFLOW: ID= 1 (3225)      1.19      .12      1.65     48.17

            PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.36
            TIME SHIFT OF PEAK FLOW       (min)= 12.00
            MAXIMUM  STORAGE   USED       (ha.m.)=  .0347

| CALIB
| STANDHYD  (2240)   |   Area     (ha)=   .61
| ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
---------------------
                          IMPERVIOUS     PERVIOUS (i)
   Surface Area     (ha)=        .60          .01
   Dep. Storage     (mm)=       1.00         5.00
   Average Slope     (%)=       1.00         2.00
   Length            (m)=      62.80        40.00
   Mannings n           =       .013         .250

   Max.Eff.Inten.(mm/hr)=     169.87       71.24
             over (min)          5.00        3.00
   Storage Coeff.  (min)=       1.58 (ii)   2.49 (ii)
   Unit Hyd. Tpeak (min)=       5.00        3.00
   Unit Hyd. peak  (cms)=        .41         .42
                                                  *TOTALS*
   PEAK FLOW       (cms)=        .25         .00        .255 (iii)
   TIME TO PEAK    (hrs)=       1.43        1.43       1.43
   RUNOFF VOLUME    (mm)=      48.50       23.07      48.24
   TOTAL RAINFALL   (mm)=      49.50       49.50      49.50
   RUNOFF COEFFICIENT   =        .98         .47        .97

     (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN* = 86.0     Ia = Dep. Storage   (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3224)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
--------------------
        OUTFLOW     STORAGE     |   OUTFLOW     STORAGE
```

```
---------------------  |(cms)     (ha.m.)|  |(cms)     (ha.m.)|
                       |.0000     .0000  |  |.0610     .0180  |
                       |.0310     .0110  |  |.0780     .0220  |
                       |.0510     .0155  |  |.1100     .0285  |

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2240)           .61       .26      1.43     48.24
OUTFLOW: ID= 1 (3224)           .61       .06      1.65     48.10

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.73
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0179

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

---------------------
| CALIB
| STANDHYD  (2230)  |   Area     (ha)=     .61
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .60            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    63.80          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.58 (ii)      2.49 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .41            .42

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .25            .00          .255 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43          1.43
     RUNOFF VOLUME    (mm)=    48.50          23.07         48.24
     TOTAL RAINFALL   (mm)=    49.50          49.50         49.50
     RUNOFF COEFFICIENT    =     .98            .47           .97

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

---------------------
| RESERVOIR (3223)
| IN= 2---> OUT= 1
| DT= 1.0 min       |   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
---------------------    (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         .0000      .0000    |   .0610      .0180
                         .0310      .0110    |   .0780      .0220
                         .0510      .0155    |   .1100      .0285

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2230)           .61       .26      1.43     48.24
OUTFLOW: ID= 1 (3223)           .61       .06      1.65     48.10

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.73
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0179

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

---------------------
| CALIB
| STANDHYD  (2220)  |   Area     (ha)=     .61
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .60            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    63.80          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.58 (ii)      2.49 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .41            .42

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .25            .00          .255 (iii)
```

```
     TIME TO PEAK    (hrs)=     1.43           1.43          1.43
     RUNOFF VOLUME    (mm)=    48.50          23.07         48.24
     TOTAL RAINFALL   (mm)=    49.50          49.50         49.50
     RUNOFF COEFFICIENT    =     .98            .47           .97

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

---------------------
| RESERVOIR (3222)
| IN= 2---> OUT= 1
| DT= 1.0 min       |   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
---------------------    (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         .0000      .0000    |   .0610      .0180
                         .0310      .0110    |   .0780      .0220
                         .0510      .0155    |   .1100      .0285

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2220)           .61       .26      1.43     48.24
OUTFLOW: ID= 1 (3222)           .61       .06      1.65     48.10

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.73
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0179

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

---------------------
| CALIB
| STANDHYD  (2210)  |   Area     (ha)=     .50
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .50            .00
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    57.70          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.49 (ii)      2.39 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .42            .43

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .21            .00          .211 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43          1.43
     RUNOFF VOLUME    (mm)=    48.50          23.07         48.24
     TOTAL RAINFALL   (mm)=    49.50          49.50         49.50
     RUNOFF COEFFICIENT    =     .98            .47           .97

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

---------------------
| RESERVOIR (3221)
| IN= 2---> OUT= 1
| DT= 1.0 min       |   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
---------------------    (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         .0000      .0000    |   .0500      .0150
                         .0250      .0090    |   .0640      .0180
                         .0420      .0125    |   .0900      .0235

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2210)           .50       .21      1.43     48.24
OUTFLOW: ID= 1 (3221)           .50       .05      1.65     48.06

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.22
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0147

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

---------------------
| CALIB             |
```

```
---------------------  |(cms)     (ha.m.)|  |(cms)     (ha.m.)|
| STANDHYD  (2200)  |  |.0000     .0000  |  |.0950     .0280  |
|ID= 1 DT= 1.0 min  |  |.0480     .0170  |  |.1220     .0340  |
---------------------  |.0800     .0240  |  |.1710     .0440  |

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2190)           .95       .39      1.45     48.24
OUTFLOW: ID= 1 (3219)           .95       .09      1.65     48.15

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.16
                  TIME SHIFT OF PEAK FLOW          (min)= 12.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0278

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---------------------
| CALIB
| STANDHYD  (2180)  |   Area     (ha)=     .58
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .57            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    62.20          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.55 (ii)      2.46 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .41            .43

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .24            .00          .243 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43          1.43
     RUNOFF VOLUME    (mm)=    48.50          23.07         48.24
     TOTAL RAINFALL   (mm)=    49.50          49.50         49.50
     RUNOFF COEFFICIENT    =     .98            .47           .97

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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---------------------
| RESERVOIR (3220)
| IN= 2---> OUT= 1
| DT= 1.0 min       |   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
---------------------    (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         .0000      .0000    |   .0660      .0195
                         .0330      .0115    |   .0850      .0240
                         .0560      .0165    |   .1190      .0310

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2200)           .66       .27      1.43     48.24
OUTFLOW: ID= 1 (3220)           .66       .07      1.65     48.11

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.72
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0193

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---------------------
| CALIB
| STANDHYD  (2190)  |   Area     (ha)=     .95
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .94            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    79.60          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.80 (ii)      2.71 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .39            .40

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .39            .00          .390 (iii)
     TIME TO PEAK    (hrs)=     1.45           1.45          1.45
     RUNOFF VOLUME    (mm)=    48.50          23.07         48.24
     TOTAL RAINFALL   (mm)=    49.50          49.50         49.50
     RUNOFF COEFFICIENT    =     .98            .47           .97

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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---------------------
| RESERVOIR (3219)
| IN= 2---> OUT= 1
| DT= 1.0 min       |   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
---------------------
```

```
---------------------  |(cms)     (ha.m.)|  |(cms)     (ha.m.)|
                       |.0000     .0000  |  |.0580     .0175  |
                       |.0290     .0105  |  |.0740     .0210  |
                       |.0430     .0150  |  |.1050     .0270  |

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2180)           .58       .24      1.43     48.24
OUTFLOW: ID= 1 (3218)           .58       .06      1.65     48.08

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.24
                  TIME SHIFT OF PEAK FLOW          (min)= 13.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  .0173

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---------------------
| CALIB
| STANDHYD  (2170)  |   Area     (ha)=     .59
|ID= 1 DT= 1.0 min  |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .58            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    62.70          40.00
     Mannings n            =    .013           .250

     Max.Eff.Inten.(mm/hr)=   169.87          71.24
               over (min)        5.00           3.00
     Storage Coeff.  (min)=     1.56 (ii)      2.47 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .41            .42

                                                    *TOTALS*
     PEAK FLOW       (cms)=      .25            .00          .247 (iii)
```

```
TIME TO PEAK     (hrs)=      1.43          1.43          1.43
RUNOFF VOLUME     (mm)=     48.50         23.07         48.24
TOTAL RAINFALL    (mm)=     49.50         49.50         49.50
RUNOFF COEFFICIENT   =       .98           .47           .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3217) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .0590      .0175
   .0300      .0105    |  .0760      .0215
   .0500      .0150    |  .1060      .0275

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2170)       .59       .25      1.43     48.24
OUTFLOW: ID= 1 (3217)       .59       .06      1.65     48.09

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.54
          TIME SHIFT OF PEAK FLOW       (min)= 13.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0173

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

| CALIB            |
| STANDHYD  (2160) |   Area     (ha)=     64
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      .63          .01
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=    65.30        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         3.00
Storage Coeff.  (min)=     1.60 (ii)    2.51 (ii)
Unit Hyd. Tpeak (min)=     5.00         3.00
Unit Hyd. peak  (cms)=      .41          .42
                                                 *TOTALS*
PEAK FLOW       (cms)=      .27          .00          .267 (iii)
TIME TO PEAK    (hrs)=     1.43         1.43         1.43
RUNOFF VOLUME    (mm)=    48.50        23.07        48.24
TOTAL RAINFALL   (mm)=    49.50        49.50        49.50
RUNOFF COEFFICIENT   =      .98          .47          .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3216) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0640      .0190    |  .0820      .0230
   .0320      .0115    |  .1150      .0300
   .0540      .0160    |  .1250      .0300

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2160)       .64       .27      1.43     48.24
OUTFLOW: ID= 1 (3216)       .64       .06      1.65     48.10

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.66
          TIME SHIFT OF PEAK FLOW       (min)= 13.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0188

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| CALIB            |
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```
| STANDHYD  (2150) |   Area     (ha)=     58
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      .57          .01
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=    62.20        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         3.00
Storage Coeff.  (min)=     1.55 (ii)    2.46 (ii)
Unit Hyd. Tpeak (min)=     5.00         3.00
Unit Hyd. peak  (cms)=      .41          .43
                                                 *TOTALS*
PEAK FLOW       (cms)=      .24          .00          .243 (iii)
TIME TO PEAK    (hrs)=     1.43         1.43         1.43
RUNOFF VOLUME    (mm)=    48.50        23.07        48.24
TOTAL RAINFALL   (mm)=    49.50        49.50        49.50
RUNOFF COEFFICIENT   =      .98          .47          .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3215) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .0580      .0170
   .0290      .0105    |  .0740      .0210
   .0490      .0150    |  .1050      .0270

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2150)       .58       .24      1.43     48.24
OUTFLOW: ID= 1 (3215)       .58       .06      1.65     48.09

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.93
          TIME SHIFT OF PEAK FLOW       (min)= 13.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0170

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

| CALIB            |
| STANDHYD  (2140) |   Area     (ha)=   1.21
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=     1.20          .01
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=    89.80        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         3.00
Storage Coeff.  (min)=     1.94 (ii)    2.85 (ii)
Unit Hyd. Tpeak (min)=     5.00         3.00
Unit Hyd. peak  (cms)=      .38          .39
                                                 *TOTALS*
PEAK FLOW       (cms)=      .49          .00          .492 (iii)
TIME TO PEAK    (hrs)=     1.45         1.45         1.45
RUNOFF VOLUME    (mm)=    48.50        23.07        48.24
TOTAL RAINFALL   (mm)=    49.50        49.50        49.50
RUNOFF COEFFICIENT   =      .98          .47          .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3214) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
```

```
   (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .1210      .0355
   .0610      .0210    |  .1550      .0435
   .1020      .0300    |  .2180      .0560

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2140)      1.21       .49      1.45     48.24
OUTFLOW: ID= 1 (3214)      1.21       .12      1.65     48.17

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.37
          TIME SHIFT OF PEAK FLOW       (min)= 12.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0352

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

| CALIB            |
| STANDHYD  (2130) |   Area     (ha)=   2.06
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=     2.04          .02
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=   117.20        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         4.00
Storage Coeff.  (min)=     2.27 (ii)    3.18 (ii)
Unit Hyd. Tpeak (min)=     5.00         4.00
Unit Hyd. peak  (cms)=      .35          .33
                                                 *TOTALS*
PEAK FLOW       (cms)=      .81          .00          .818 (iii)
TIME TO PEAK    (hrs)=     1.45         1.47         1.45
RUNOFF VOLUME    (mm)=    48.50        23.07        48.24
TOTAL RAINFALL   (mm)=    49.50        49.50        49.50
RUNOFF COEFFICIENT   =      .98          .47          .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3213) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .2060      .0600
   .1050      .0360    |  .2640      .0735
   .1740      .0510    |  .3710      .0950

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2130)      2.06       .82      1.45     48.24
OUTFLOW: ID= 1 (3213)      2.06       .20      1.65     48.20

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.03
          TIME SHIFT OF PEAK FLOW       (min)= 12.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0597

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

| CALIB            |
| STANDHYD  (2120) |   Area     (ha)=     38
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=      .38          .00
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=    50.30        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         3.00
Storage Coeff.  (min)=     1.37 (ii)    2.28 (ii)
Unit Hyd. Tpeak (min)=     5.00         3.00
Unit Hyd. peak  (cms)=      .43          .45
                                                 *TOTALS*
PEAK FLOW       (cms)=      .16          .00          .162 (iii)
```

```
TIME TO PEAK     (hrs)=      1.43          1.43          1.43
RUNOFF VOLUME     (mm)=     48.50         23.07         48.24
TOTAL RAINFALL    (mm)=     49.50         49.50         49.50
RUNOFF COEFFICIENT   =       .98           .47           .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

| RESERVOIR (3212) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .0380      .0115
   .0190      .0070    |  .0490      .0140
   .0320      .0100    |  .0680      .0180

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2120)       .38       .16      1.43     48.24
OUTFLOW: ID= 1 (3212)       .38       .04      1.65     48.00

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.82
          TIME SHIFT OF PEAK FLOW       (min)= 13.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0113

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

| CALIB            |
| STANDHYD  (2110) |   Area     (ha)=   1.05
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------

                     IMPERVIOUS     PERVIOUS (i)
Surface Area     (ha)=     1.04          .01
Dep. Storage     (mm)=     1.00         5.00
Average Slope     (%)=     1.00         2.00
Length            (m)=    81.70        40.00
Mannings n           =     .013         .250

Max.Eff.Inten.(mm/hr)=   169.87        71.24
          over (min)=     5.00         3.00
Storage Coeff.  (min)=     1.86 (ii)    2.77 (ii)
Unit Hyd. Tpeak (min)=     5.00         3.00
Unit Hyd. peak  (cms)=      .39          .40
                                                 *TOTALS*
PEAK FLOW       (cms)=      .43          .00          .429 (iii)
TIME TO PEAK    (hrs)=     1.45         1.45         1.45
RUNOFF VOLUME    (mm)=    48.50        23.07        48.24
TOTAL RAINFALL   (mm)=    49.50        49.50        49.50
RUNOFF COEFFICIENT   =      .98          .47          .97

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3211) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |

   OUTFLOW    STORAGE  |  OUTFLOW    STORAGE
    (cms)     (ha.m.)  |   (cms)     (ha.m.)
   .0000      .0000    |  .1050      .0305
   .0530      .0185    |  .1350      .0375
   .0890      .0260    |  .1890      .0485

                AREA     QPEAK     TPEAK      R.V.
                (ha)     (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2110)      1.05       .43      1.45     48.24
OUTFLOW: ID= 1 (3211)      1.05       .11      1.65     48.16

          PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.50
          TIME SHIFT OF PEAK FLOW       (min)= 12.00
          MAXIMUM  STORAGE   USED       (ha.m.)=  .0305

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| CALIB            |
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| STANDMYD (2100) | Area (ha)= 1.37
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.36	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	95.60	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 2.01 (ii) | 2.92 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .37 | .28
TOTALS
PEAK FLOW (cms)= | .55 | .00 .554 (iii)
TIME TO PEAK (hrs)= | 1.45 | 1.45 1.45
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3210)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1170	.0400
.0700	.0240	.1760	.0490
.1150	.0340	.2470	.0635

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2100) | 1.37 | .55 | 1.45 | 48.24
OUTFLOW: ID= 1 (3210) | 1.37 | .14 | 1.65 | 48.18

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.58
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0398

| CALIB
| STANDMYD (2030) | Area (ha)= 1.06
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.05	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	84.10	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.86 (ii) | 2.77 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .39 | .40
TOTALS
PEAK FLOW (cms)= | .43 | .00 .433 (iii)
TIME TO PEAK (hrs)= | 1.45 | 1.45 1.45
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3209)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW	STORAGE	OUTFLOW	STORAGE

	(cms)	(ha.m.)	(cms)	(ha.m.)
	.0000	.0000	.1040	.0130
	.0540	.0185	.1340	.0380
	.0890	.0265	.1910	.0490

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2090) | 1.06 | .43 | 1.45 | 48.24
OUTFLOW: ID= 1 (3209) | 1.06 | .11 | 1.65 | 48.16

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.33
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0309

| CALIB
| STANDMYD (2080) | Area (ha)= .51
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.50	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	58.30	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.50 (ii) | 2.40 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .42 | .43
TOTALS
PEAK FLOW (cms)= | .21 | .00 .215 (iii)
TIME TO PEAK (hrs)= | 1.43 | 1.43 1.43
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3208)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0510	.0150
.0260	.0090	.0650	.0185
.0430	.0130	.0920	.0240

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2080) | .51 | .21 | 1.43 | 48.24
OUTFLOW: ID= 1 (3208) | .51 | .05 | 1.65 | 48.07

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.56
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0149

| CALIB
| STANDMYD (2070) | Area (ha)= .90
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.89	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	77.50	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.77 (ii) | 2.68 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .39 | .40
TOTALS
PEAK FLOW (cms)= | .37 | .00 .370 (iii)

TIME TO PEAK (hrs)= | 1.45 | 1.45 1.45
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3207)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0900	.0265
.0460	.0160	.1150	.0325
.0760	.0225	.1620	.0420

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2070) | .90 | .37 | 1.45 | 48.24
OUTFLOW: ID= 1 (3207) | .90 | .09 | 1.65 | 48.15

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.09
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0263

| CALIB
| STANDMYD (2060) | Area (ha)= .66
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.65	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	66.10	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.62 (ii) | 2.52 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .41 | .42
TOTALS
PEAK FLOW (cms)= | .27 | .00 .275 (iii)
TIME TO PEAK (hrs)= | 1.43 | 1.43 1.43
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3206)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0640	.0195
.0330	.0115	.0850	.0240
.0560	.0165	.1190	.0310

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2060) | .66 | .27 | 1.43 | 48.24
OUTFLOW: ID= 1 (3206) | .66 | .07 | 1.65 | 48.11

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.72
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0193

| CALIB

| STANDMYD (2050) | Area (ha)= .44
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.44	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	54.20	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.43 (ii) | 2.34 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .43 | .44
TOTALS
PEAK FLOW (cms)= | .19 | .00 .187 (iii)
TIME TO PEAK (hrs)= | 1.43 | 1.43 1.43
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3205)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0440	.0130
.0220	.0080	.0560	.0160
.0370	.0115	.0790	.0210

| AREA (ha) | QPEAK (cms) | TPEAK (hrs) | R.V. (mm)
---|---|---|---|---
INFLOW : ID= 2 (2050) | .44 | .19 | 1.43 | 48.24
OUTFLOW: ID= 1 (3205) | .44 | .04 | 1.63 | 48.03

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.49
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0130

| CALIB
| STANDMYD (2040) | Area (ha)= .46
| ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.46	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	55.40	40.00
Mannings n =	.013	.250

Max.Eff.Inten.(mm/hr)= | 169.87 | 71.24
over (min) | 5.00 | 3.00
Storage Coeff. (min)= | 1.45 (ii) | 2.36 (ii)
Unit Hyd. Tpeak (min)= | 5.00 | 3.00
Unit Hyd. peak (cms)= | .42 | .44
TOTALS
PEAK FLOW (cms)= | .19 | .00 .195 (iii)
TIME TO PEAK (hrs)= | 1.43 | 1.43 1.43
RUNOFF VOLUME (mm)= | 48.50 | 23.07 48.24
TOTAL RAINFALL (mm)= | 49.50 | 49.50 49.50
RUNOFF COEFFICIENT = | .98 | .47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR (3204)
| IN= 2---> OUT= 1
| DT= 1.0 min

OUTFLOW	STORAGE	OUTFLOW	STORAGE

(cms)	(ha.m.)	(cms)	(ha.m.)
.0000	.0000	.0460	.0135
.0230	.0085	.0590	.0165
.0390	.0115	.0830	.0215

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2040)	.46	.19	1.43	48.24
OUTFLOW: ID= 1 (3204)	.46	.05	1.63	48.04

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.62
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0135

CALIB
STANDHYD (2030) | Area (ha)= .77
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.76	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	71.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	3.00
Storage Coeff. (min)=		1.69 (ii)	2.60 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.40	.41
			TOTALS
PEAK FLOW (cms)=		.32	.00 .318 (iii)
TIME TO PEAK (hrs)=		1.43	1.45 1.43
RUNOFF VOLUME (mm)=		48.50	23.07 48.24
TOTAL RAINFALL (mm)=		49.50	49.50 49.50
RUNOFF COEFFICIENT =		.98	.47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3203)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0770	.0225
.0390	.0135	.0990	.0275
.0650	.0195	.1390	.0360

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2030)	.77	.32	1.43	48.24
OUTFLOW: ID= 1 (3203)	.77	.08	1.65	48.13

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.13
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0225

CALIB
STANDHYD (2010) | Area (ha)= 1.32
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.31	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	3.00
Storage Coeff. (min)=		1.99 (ii)	2.90 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.38	.38
			TOTALS
PEAK FLOW (cms)=		.53	.00 .535 (iii)

STANDHYD (1040) | Area (ha)= .47
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.47	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	56.00	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	163.85
over (min)		5.00	3.00
Storage Coeff. (min)=		1.46 (ii)	2.37 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.44
			TOTALS
PEAK FLOW (cms)=		.20	.00 .199 (iii)
TIME TO PEAK (hrs)=		1.43	1.43 1.43
RUNOFF VOLUME (mm)=		48.50	23.07 48.24
TOTAL RAINFALL (mm)=		49.50	49.50 49.50
RUNOFF COEFFICIENT =		.98	.47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3104)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0470	.0140
.0240	.0085	.0600	.0170
.0400	.0120	.0850	.0220

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1040)	.47	.20	1.43	48.24
OUTFLOW: ID= 1 (3104)	.47	.05	1.65	48.05

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.27
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .0138

CALIB
STANDHYD (3030) | Area (ha)= .98
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.97	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	80.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	3.00
Storage Coeff. (min)=		1.82 (ii)	2.73 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.40
			TOTALS
PEAK FLOW (cms)=		.40	.00 .402 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		48.50	23.07 48.24
TOTAL RAINFALL (mm)=		49.50	49.50 49.50
RUNOFF COEFFICIENT =		.98	.47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3103)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW	STORAGE	OUTFLOW	STORAGE

TIME TO PEAK	(hrs)=	1.45	1.45 1.45
RUNOFF VOLUME	(mm)=	48.50	23.07 48.24
TOTAL RAINFALL	(mm)=	49.50	49.50 49.50
RUNOFF COEFFICIENT	=	.98	.47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3201)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1120	.0385
.0670	.0235	.1630	.0475
.1110	.0330	.2380	.0610

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2010)	1.32	.53	1.45	48.24
OUTFLOW: ID= 1 (3201)	1.32	.13	1.65	48.18

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.64
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0384

CALIB
STANDHYD (1050) | Area (ha)= 2.35
ID= 1 DT= 1.0 min | Total Imp(%)= 77.00 Dir. Conn.(%)= 77.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.81	.54
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	125.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	73.24
over (min)		5.00	6.00
Storage Coeff. (min)=		2.37 (ii)	5.89 (ii)
Unit Hyd. Tpeak (min)=		5.00	6.00
Unit Hyd. peak (cms)=		.35	.19
			TOTALS
PEAK FLOW (cms)=		.72	.08 .785 (iii)
TIME TO PEAK (hrs)=		1.45	1.50 1.45
RUNOFF VOLUME (mm)=		48.50	23.07 42.65
TOTAL RAINFALL (mm)=		49.50	49.50 49.50
RUNOFF COEFFICIENT =		.98	.47 .86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (8031)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1800	.0615
.0910	.0350	.2310	.0770
.1520	.0515	.3240	.1025

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1050)	2.35	.79	1.45	42.65
OUTFLOW: ID= 1 (8031)	2.35	.18	1.70	42.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 22.78
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= .0611

CALIB

(cms)	(ha.m.)	(cms)	(ha.m.)
.0000	.0000	.0980	.0290
.0500	.0175	.1240	.0350
.0830	.0245	.1770	.0455

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (3010)	.98	.40	1.45	48.24
OUTFLOW: ID= 1 (3103)	.98	.10	1.65	48.15

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.07
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0286

CALIB
STANDHYD (3020) | Area (ha)= 1.13
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.12	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	86.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	1.00
Storage Coeff. (min)=		1.90 (ii)	2.81 (ii)
Unit Hyd. Tpeak (min)=		5.00	1.00
Unit Hyd. peak (cms)=		.38	.39
			TOTALS
PEAK FLOW (cms)=		.46	.00 .461 (iii)
TIME TO PEAK (hrs)=		1.45	1.45 1.45
RUNOFF VOLUME (mm)=		48.50	23.07 48.24
TOTAL RAINFALL (mm)=		49.50	49.50 49.50
RUNOFF COEFFICIENT =		.98	.47 .97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3102)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1130	.0330
.0570	.0200	.1490	.0405
.0930	.0280	.2040	.0525

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (3020)	1.13	.46	1.45	48.24
OUTFLOW: ID= 1 (3102)	1.13	.11	1.65	48.17

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.46
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0329

CALIB
STANDHYD (1010) | Area (ha)= .57
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.56	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	3.00
Storage Coeff. (min)=		1.55 (ii)	2.45 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.41	.43
			TOTALS
PEAK FLOW (cms)=		.24	.00 .239 (iii)

```
TIME TO PEAK     (hrs)=      1.43          1.43          1.43
RUNOFF VOLUME    (mm)=     48.50         23.07         48.24
TOTAL RAINFALL   (mm)=     49.50         49.50         49.50
RUNOFF COEFFICIENT  =       .98           .47           .97

   (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
       CN* = 86.0    Ia = Dep. Storage  (Above)
  (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
       THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
| RESERVOIR (3101) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |
--------------------
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0570	.0170
.0230	.0100	.0730	.0205
.0480	.0145	.1030	.0265

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1010)	.57	.24	1.43	48.24
OUTFLOW: ID= 1 (3101)	.57	.06	1.65	48.09

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.36
TIME SHIFT OF PEAK FLOW       (min)= 13.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0167
```

```
| ADD HYD   (8001) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3102):	1.13	.113	1.65	48.17
+ ID2= 2 (3101):	.57	.056	1.65	48.09
ID = 3 (8001):	1.70	.169	1.65	48.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8002) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3103):	.98	.097	1.65	48.15
+ ID2= 2 (8001):	1.70	.169	1.65	48.14
ID = 3 (8002):	2.68	.265	1.65	48.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8003) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3104):	.47	.046	1.65	48.05
+ ID2= 2 (8002):	2.68	.265	1.65	48.15
ID = 3 (8003):	3.15	.311	1.65	48.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8004) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8031):	2.35	.179	1.70	42.61
+ ID2= 2 (8003):	3.15	.311	1.65	48.13
ID = 3 (8004):	5.50	.489	1.67	45.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8008) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3204):	.46	.046	1.63	48.04
+ ID2= 2 (8007):	8.01	.739	1.65	46.51
ID = 3 (8008):	8.47	.785	1.65	46.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8009) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3205):	.44	.044	1.63	48.03
+ ID2= 2 (8008):	8.47	.785	1.65	46.60
ID = 3 (8009):	8.91	.829	1.65	46.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8010) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3206):	.66	.065	1.65	48.11
+ ID2= 2 (8009):	8.91	.829	1.65	46.67
ID = 3 (8010):	9.57	.894	1.65	46.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8011) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3207):	.90	.089	1.65	48.15
+ ID2= 2 (8010):	9.57	.894	1.65	46.77
ID = 3 (8011):	10.47	.983	1.65	46.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8012) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3208):	.51	.051	1.65	48.07
+ ID2= 2 (8011):	10.47	.983	1.65	46.88
ID = 3 (8012):	10.98	1.034	1.65	46.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8013) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3209):	1.06	.105	1.65	48.16
+ ID2= 2 (8012):	10.98	1.034	1.65	46.94
ID = 3 (8013):	12.04	1.139	1.65	47.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8014) |
```

```
| ADD HYD   (8005) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3201):	1.32	.132	1.65	48.18
+ ID2= 2 (8004):	5.50	.489	1.67	45.77
ID = 3 (8005):	6.82	.621	1.67	46.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| CALIB                |
| STANDHYD  (2020)     |
| ID= 1 DT= 1.0 min    |
------------------------
```

Area (ha)= .42
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.42	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	52.90	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	169.87	71.24
over (min)	5.00	3.00
Storage Coeff. (min)=	1.41 (ii)	2.32 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.43	.44

TOTALS

PEAK FLOW (cms)=	.18	.00	.178 (iii)
TIME TO PEAK (hrs)=	1.43	1.43	1.43
RUNOFF VOLUME (mm)=	48.50	23.07	48.24
TOTAL RAINFALL (mm)=	49.50	49.50	49.50
RUNOFF COEFFICIENT =	.98	.47	.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3202) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |
--------------------
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0420	.0125
.0210	.0075	.0540	.0155
.0350	.0105	.0760	.0195

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2020)	.42	.18	1.43	48.24
OUTFLOW: ID= 1 (3202)	.42	.04	1.63	48.03

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.19
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0123
```

```
| ADD HYD   (8006) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8005):	6.82	.621	1.67	46.24
+ ID2= 2 (3202):	.42	.041	1.63	48.03
ID = 3 (8006):	7.24	.662	1.65	46.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8007) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3203):	.77	.077	1.65	48.13
+ ID2= 2 (8006):	7.24	.662	1.65	46.34
ID = 3 (8007):	8.01	.739	1.65	46.51

```
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3210):	1.37	.136	1.65	48.18
+ ID2= 2 (8013):	12.04	1.139	1.65	47.05
ID = 3 (8014):	13.41	1.275	1.65	47.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8015) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3211):	1.05	.105	1.65	48.16
+ ID2= 2 (8014):	13.41	1.275	1.65	47.16
ID = 3 (8015):	14.46	1.381	1.65	47.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8016) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3212):	.38	.037	1.65	48.00
+ ID2= 2 (8015):	14.46	1.381	1.65	47.24
ID = 3 (8016):	14.84	1.418	1.65	47.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8017) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3213):	2.06	.205	1.65	48.20
+ ID2= 2 (8016):	14.84	1.418	1.65	47.26
ID = 3 (8017):	16.90	1.622	1.65	47.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8018) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3214):	1.21	.120	1.65	48.17
+ ID2= 2 (8017):	16.90	1.622	1.65	47.37
ID = 3 (8018):	18.11	1.742	1.65	47.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8019) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3215):	.58	.058	1.65	48.09
+ ID2= 2 (8018):	18.11	1.742	1.65	47.42
ID = 3 (8019):	18.69	1.800	1.65	47.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8020) |
|  1 +  2 =  3     |
--------------------
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3216):	.64	.063	1.65	48.10
+ ID2= 2 (8019):	18.69	1.800	1.65	47.44
ID = 3 (8020):	19.33	1.864	1.65	47.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8021)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3217):	59	.058	1.65	48.09
+ ID2= 2 (8020):	19.33	1.864	1.65	47.47
ID = 3 (8021):	19.92	1.922	1.65	47.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8022)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3218):	.58	.057	1.65	48.08
+ ID2= 2 (8021):	19.92	1.922	1.65	47.49
ID = 3 (8022):	20.50	1.978	1.65	47.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8023)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3219):	.95	.094	1.65	48.15
+ ID2= 2 (8022):	20.50	1.978	1.65	47.50
ID = 3 (8023):	21.45	2.072	1.65	47.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8024)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3220):	.66	.065	1.65	48.11
+ ID2= 2 (8023):	21.45	2.072	1.65	47.53
ID = 3 (8024):	22.11	2.138	1.65	47.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8025)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3221):	.50	.049	1.65	48.06
+ ID2= 2 (8024):	22.11	2.138	1.65	47.55
ID = 3 (8025):	22.61	2.187	1.65	47.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8026)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3222):	.61	.061	1.65	48.10
+ ID2= 2 (8025):	22.61	2.187	1.65	47.56
ID = 3 (8026):	23.22	2.247	1.65	47.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8027)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3223):	.61	.061	1.65	48.10
+ ID2= 2 (8026):	23.22	2.247	1.65	47.57
ID = 3 (8027):	23.83	2.308	1.65	47.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8028)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3224):	.61	.061	1.65	48.10
+ ID2= 2 (8027):	23.83	2.308	1.65	47.59
ID = 3 (8028):	24.44	2.368	1.65	47.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8029)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3225):	1.19	.118	1.65	48.17
+ ID2= 2 (8028):	24.44	2.368	1.65	47.60
ID = 3 (8029):	25.63	2.486	1.65	47.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8030)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3226):	20.31	1.625	1.73	43.43
+ ID2= 2 (8029):	25.63	2.486	1.65	47.63
ID = 3 (8030):	45.94	4.078	1.68	45.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (2270)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		169.87	71.24
over (min)		5.00	12.00
Storage Coeff. (min)=		2.50 (ii)	11.17 (ii)
Unit Hyd. Tpeak (min)=		5.00	12.00
Unit Hyd. peak (cms)=		.34	.10

		TOTALS
PEAK FLOW	(cms)=	.394 (iii)
TIME TO PEAK	(hrs)=	1.48
RUNOFF VOLUME	(mm)=	29.68
TOTAL RAINFALL	(mm)=	49.50
RUNOFF COEFFICIENT	=	.60

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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 NUMBER: 5 **
****

READ STORM
Ptotal= 61.00 mm

Filename: J:\1441 Projects by Job Number\2008\10-08053-DS1-WD1 Langstaff E Lands\OTTHYMD Model\Markham 3hour AES Design Storm\
Comments: 25 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	8.18	1.75	17.05	2.58	4.48
.17	3.31	1.00	9.93	1.83	11.86	2.67	4.28
.25	3.70	1.08	12.66	1.92	9.17	2.75	4.09
.33	3.89	1.17	19.56	2.00	7.54	2.83	3.89
.42	4.09	1.25	45.59	2.08	6.58	2.92	3.89
.50	4.48	1.33	86.23	2.17	5.69	3.00	3.70
.58	5.06	1.42	209.33	2.25	5.45	3.08	3.51
.67	5.45	1.50	111.25	2.33	5.06		
.75	6.23	1.58	52.35	2.42	4.87		
.83	7.01	1.67	27.93	2.50	4.67		

CALIB
STANDHYD (2260)
ID= 1 DT= 1.0 min

Area (ha)= 20.31
Total Imp(%)= 80.00 Dir. Conn.(%)= 80.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	16.25	4.06
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	368.00	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	7.01	1.583	52.35	2.37	4.87
.033	.00	.817	7.01	1.600	27.93	2.38	4.87
.050	.00	.833	7.01	1.617	27.93	2.40	4.87
.067	.00	.850	8.18	1.633	27.93	2.42	4.87
.083	.00	.867	8.18	1.650	27.93	2.43	4.67
.100	3.31	.883	8.18	1.667	27.93	2.45	4.67
.117	3.31	.900	8.18	1.683	17.05	2.47	4.67
.133	3.31	.917	8.18	1.700	17.05	2.48	4.67
.150	3.31	.933	9.93	1.717	17.05	2.50	4.67
.167	3.31	.950	9.93	1.733	17.05	2.52	4.48
.183	3.70	.967	9.93	1.750	17.05	2.53	4.48
.200	3.70	.983	9.93	1.767	11.86	2.55	4.48
.217	3.70	1.000	9.93	1.783	11.86	2.57	4.48
.233	3.70	1.017	12.66	1.800	11.86	2.58	4.48
.250	3.70	1.033	12.66	1.817	11.86	2.60	4.28
.267	3.89	1.050	12.66	1.833	11.86	2.62	4.28
.283	3.89	1.067	12.66	1.850	9.17	2.63	4.28
.300	3.89	1.083	12.66	1.867	9.17	2.65	4.28
.317	3.89	1.100	19.56	1.883	9.17	2.67	4.28
.333	3.89	1.117	19.56	1.900	9.17	2.68	4.09
.350	4.09	1.133	19.56	1.917	9.17	2.70	4.09
.367	4.09	1.150	19.56	1.933	7.54	2.72	4.09
.383	4.09	1.167	19.56	1.950	7.54	2.73	4.09
.400	4.09	1.183	45.59	1.967	7.54	2.75	4.09
.417	4.09	1.200	45.59	1.983	7.54	2.77	3.89
.433	4.48	1.217	45.59	2.000	7.54	2.78	3.89
.450	4.48	1.233	45.59	2.017	6.58	2.80	3.89
.467	4.48	1.250	45.59	2.033	6.58	2.82	3.89
.483	4.48	1.267	86.23	2.050	6.58	2.83	3.89
.500	4.48	1.283	86.23	2.067	6.58	2.85	3.89
.517	5.06	1.300	86.23	2.083	6.58	2.87	3.89
.533	5.06	1.317	86.23	2.100	5.69	2.88	3.89
.550	5.06	1.333	86.23	2.117	5.69	2.90	3.89
.567	5.06	1.350	209.33	2.133	5.69	2.92	3.89
.583	5.06	1.367	209.33	2.150	5.69	2.93	3.70
.600	5.45	1.383	209.33	2.167	5.69	2.95	3.70
.617	5.45	1.400	209.33	2.183	5.45	2.97	3.70
.633	5.45	1.417	209.33	2.200	5.45	2.98	3.70
.650	5.45	1.433	111.25	2.217	5.45	3.00	3.70
.667	5.45	1.450	111.25	2.233	5.45	3.02	3.51
.683	6.23	1.467	111.25	2.250	5.45	3.03	3.51
.700	6.23	1.483	111.25	2.267	5.06	3.05	3.51
.717	6.23	1.500	111.25	2.283	5.06	3.07	3.51
.733	6.23	1.517	52.35	2.300	5.06	3.08	3.51
.750	6.23	1.533	52.35	2.317	5.06		
.767	7.01	1.550	52.35	2.333	5.06		
.783	7.01	1.567	52.35	2.350	4.87		

Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	8.00
Storage Coeff. (min)=		4.15 (ii)	7.17 (ii)
Unit Hyd. Tpeak (min)=		5.00	8.00
Unit Hyd. peak (cms)=		.25	.15

		TOTALS
PEAK FLOW	(cms)=	7.611 (iii)
TIME TO PEAK	(hrs)=	1.47
RUNOFF VOLUME	(mm)=	54.44
TOTAL RAINFALL	(mm)=	61.00
RUNOFF COEFFICIENT	=	.89

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (2226)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	1.6250	.5150
.8250	.2920	2.0850	.6450
1.3710	.4305	2.9320	.8595

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2260)	20.31	7.61	1.47	54.44
OUTFLOW: ID= 1 (2226)	20.31	2.08	1.73	54.44

PEAK FLOW REDUCTION [Qout/Qin](%)= 27.38
TIME SHIFT OF PEAK FLOW (min)= 16.00
MAXIMUM STORAGE USED (ha.m.)= .6450

CALIB
STANDHYD (2250)
ID= 1 DT= 1.0 min

Area (ha)= 1.19
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.18	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	89.10	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	199.10
over (min)		5.00	3.00
Storage Coeff. (min)=		1.77 (ii)	2.61 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.41

		TOTALS
PEAK FLOW	(cms)=	.603 (iii)
TIME TO PEAK	(hrs)=	1.45
RUNOFF VOLUME	(mm)=	59.72
TOTAL RAINFALL	(mm)=	61.00
RUNOFF COEFFICIENT	=	.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (2225)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1190	.0350
.0600	.0210	.1530	.0425
.1000	.0300	.2150	.0550

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2250)	1.19	.60	1.45	59.72

```
    OUTFLOW: ID= 1 (3225)      1.19       .15       1.63      59.65

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.32
              TIME SHIFT OF PEAK FLOW        (min)= 11.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0425

--------------------------------------------------------------------------------
 --------------------
 | CALIB              |
 | STANDHYD  (2240)   |   Area    (ha)=     .61
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .60          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     63.80        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.45 (ii)    2.29 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .42          .44
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .32          .00          .318 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
 --------------------
 | RESERVOIR (3224)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0610      .0180
                            .0310      .0110    |   .0780      .0220
                            .0510      .0155    |   .1100      .0285

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2240)     .61       .32       1.43      59.72
    OUTFLOW: ID= 1 (3224)     .61       .08       1.63      59.57

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.34
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0219

--------------------------------------------------------------------------------
 --------------------
 | CALIB              |
 | STANDHYD  (2230)   |   Area    (ha)=     .61
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .60          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     63.80        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.45 (ii)    2.29 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .42          .44
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .32          .00          .318 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
 --------------------
 | RESERVOIR (3223)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0610      .0180
                            .0310      .0110    |   .0780      .0220
                            .0510      .0155    |   .1100      .0285

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2230)     .61       .32       1.43      59.72
    OUTFLOW: ID= 1 (3223)     .61       .08       1.63      59.57

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.34
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0219

--------------------------------------------------------------------------------
 --------------------
 | CALIB              |
 | STANDHYD  (2220)   |   Area    (ha)=     .61
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .60          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     63.80        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.45 (ii)    2.29 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .42          .44
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .32          .00          .318 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 --------------------
 | RESERVOIR (3222)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0610      .0180
                            .0310      .0110    |   .0780      .0220
                            .0510      .0155    |   .1100      .0285

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2220)     .61       .32       1.43      59.72
    OUTFLOW: ID= 1 (3222)     .61       .08       1.63      59.57

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.34
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0219

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 --------------------
 | CALIB              |
 | STANDHYD  (2210)   |   Area    (ha)=     .50
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .50          .00
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     57.70        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.37 (ii)    2.20 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .43          .45
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .26          .00          .263 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
 --------------------
 | RESERVOIR (3221)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0500      .0150
                            .0250      .0090    |   .0640      .0180
                            .0420      .0125    |   .0900      .0235

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2210)     .50       .26       1.43      59.72
    OUTFLOW: ID= 1 (3221)     .50       .06       1.63      59.54

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.25
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0180

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 --------------------
 | CALIB              |
 | STANDHYD  (2200)   |   Area    (ha)=     .66
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .65          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     66.30        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.49 (ii)    2.32 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .42          .44
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .34          .00          .343 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
 --------------------
 | RESERVOIR (3220)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0680      .0195
                            .0330      .0115    |   .0850      .0240
                            .0560      .0165    |   .1190      .0310

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2200)     .66       .34       1.43      59.72
    OUTFLOW: ID= 1 (3220)     .66       .08       1.63      59.59

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.29
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0236

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 --------------------
 | CALIB              |
 | STANDHYD  (2190)   |   Area    (ha)=     .95
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .94          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     79.60        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.66 (ii)    2.49 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .40          .42
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .48          .00          .486 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
 --------------------
 | RESERVOIR (3219)   |
 | IN= 2---> OUT= 1   |
 | DT=  1.0 min       |    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
 --------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                            .0000      .0000    |   .0950      .0280
                            .0480      .0170    |   .1220      .0340
                            .0800      .0240    |   .1710      .0440

                             AREA     QPEAK      TPEAK       R.V.
                             (ha)     (cms)      (hrs)       (mm)
    INFLOW : ID= 2 (2190)     .95       .48       1.43      59.72
    OUTFLOW: ID= 1 (3219)     .95       .12       1.63      59.63

              PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.06
              TIME SHIFT OF PEAK FLOW        (min)= 12.00
              MAXIMUM  STORAGE   USED       (ha.m.)=  .0340

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 --------------------
 | CALIB              |
 | STANDHYD  (2180)   |   Area    (ha)=     .58
 |ID= 1 DT= 1.0 min   |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 --------------------
                          IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       .57          .01
    Dep. Storage     (mm)=      1.00         5.00
    Average Slope     (%)=      1.00         2.00
    Length            (m)=     62.20        40.00
    Mannings n           =      .013         .250

    Max.Eff.Inten.(mm/hr)=    209.33        99.55
              over (min)       5.00         3.00
    Storage Coeff.  (min)=      1.43 (ii)    2.27 (ii)
    Unit Hyd. Tpeak (min)=      5.00         3.00
    Unit Hyd. peak  (cms)=       .43          .45
                                                          *TOTALS*
    PEAK FLOW        (cms)=       .30          .00          .303 (iii)
    TIME TO PEAK     (hrs)=      1.43         1.43          1.43
    RUNOFF VOLUME     (mm)=     60.00        32.21         59.72
    TOTAL RAINFALL    (mm)=     61.00        61.00         61.00
    RUNOFF COEFFICIENT   =       .98          .53           .98

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  86.0    Ia = Dep. Storage  (Above)
```

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

RESERVOIR (2180)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0175
.0290	.0105	.0740	.0210
.0430	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2180)	.58	.10	1.43	59.72
OUTFLOW: ID= 1 (3218)	.58	.07	1.63	59.57

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.32
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0210

CALIB
STANDHYD (2170)
ID= 1 DT= 1.0 min

Area (ha)= .59
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.58	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.44 (ii)	2.27 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.45

		TOTALS
PEAK FLOW	(cms)=	.31 .00 .308 (iii)
TIME TO PEAK	(hrs)=	1.43 1.43 1.43
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3217)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0590	.0175
.0300	.0105	.0760	.0215
.0500	.0150	.1060	.0275

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2170)	.59	.31	1.43	59.72
OUTFLOW: ID= 1 (3217)	.59	.07	1.63	59.57

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.17
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0212

CALIB
STANDHYD (2160)
ID= 1 DT= 1.0 min

Area (ha)= .64
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.63	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	65.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.41 (ii)	2.27 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.45

		TOTALS
PEAK FLOW	(cms)=	.33 .00 .333 (iii)
TIME TO PEAK	(hrs)=	1.43 1.43 1.43
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3216)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0640	.0190
.0320	.0115	.0820	.0230
.0540	.0160	.1150	.0300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2160)	.64	.33	1.43	59.72
OUTFLOW: ID= 1 (3216)	.64	.08	1.63	59.58

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.52
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0230

CALIB
STANDHYD (2150)
ID= 1 DT= 1.0 min

Area (ha)= .58
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.57	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.43 (ii)	2.27 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.45

		TOTALS
PEAK FLOW	(cms)=	.30 .00 .303 (iii)
TIME TO PEAK	(hrs)=	1.43 1.43 1.43
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3215)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0170
.0290	.0105	.0740	.0210
.0490	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2150)	.58	.30	1.43	59.72
OUTFLOW: ID= 1 (3215)	.58	.07	1.63	59.56

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.19
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0209

CALIB
STANDHYD (2140)
ID= 1 DT= 1.0 min

Area (ha)= 1.21
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.20	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	89.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.78 (ii)	2.62 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.39	.43

		TOTALS
PEAK FLOW	(cms)=	.61 .00 .613 (iii)
TIME TO PEAK	(hrs)=	1.45 1.43 1.45
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3214)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1210	.0355
.0610	.0230	.1550	.0435
.1020	.0300	.2180	.0560

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2140)	1.21	.61	1.45	59.72
OUTFLOW: ID= 1 (3214)	1.21	.15	1.65	59.45

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.03
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0432

CALIB
STANDHYD (2130)
ID= 1 DT= 1.0 min

Area (ha)= 2.06
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.04	.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	117.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		3.09 (ii)	2.93 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.37	.38

		TOTALS
PEAK FLOW	(cms)=	1.02 .01 1.022 (iii)
TIME TO PEAK	(hrs)=	1.45 1.45 1.45
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)

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

RESERVOIR (3213)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.2060	.0600
.1050	.0360	.2640	.0735
.1740	.0510	.3710	.0950

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2130)	2.06	1.02	1.45	59.72
OUTFLOW: ID= 1 (3213)	2.06	.26	1.85	59.68

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.68
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0732

CALIB
STANDHYD (2120)
ID= 1 DT= 1.0 min

Area (ha)= .38
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.38	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	50.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.26 (ii)	2.09 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.47

		TOTALS
PEAK FLOW	(cms)=	.20 .00 .202 (iii)
TIME TO PEAK	(hrs)=	1.43 1.43 1.43
RUNOFF VOLUME	(mm)=	60.00 32.21 59.72
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3212)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0380	.0115
.0190	.0070	.0490	.0140
.0320	.0100	.0680	.0180

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2120)	.38	.20	1.43	59.72
OUTFLOW: ID= 1 (3212)	.38	.05	1.63	59.48

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.69
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0137

CALIB
STANDHYD (2110)
ID= 1 DT= 1.0 min

Area (ha)= 1.05
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.04	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00

```
Mannings n              =       .013          .250

Max.Eff.Inten.(mm/hr)=     209.33         99.55
          over (min)          5.00          3.00
Storage Coeff.  (min)=       1.73 (ii)     2.54 (ii)
Unit Hyd. Tpeak (min)=       5.00          3.00
Unit Hyd. peak  (cms)=        .42           .42
                                                    *TOTALS*
PEAK FLOW       (cms)=        .53           .00          .535 (iii)
TIME TO PEAK    (hrs)=       1.43          1.43         1.43
RUNOFF VOLUME    (mm)=      60.00         32.21        59.72
TOTAL RAINFALL   (mm)=      61.00         61.00        61.00
RUNOFF COEFFICIENT   =        .98           .53          .98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
| RESERVOIR (3211)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1050	.0305
.0530	.0185	.1350	.0375
.0890	.0260	.1890	.0485

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2110)	1.05	.53	1.43	59.72
OUTFLOW: ID= 1 (3211)	1.05	.13	1.63	59.64

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.17
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0374
```

```
| CALIB             |
| STANDHYD  (2100)  |   Area     (ha)=   1.37
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.36	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	95.60	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.85 (ii)	2.69 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.39	.40	
				TOTALS
PEAK FLOW	(cms)=	.69	.00	.691 (iii)
TIME TO PEAK	(hrs)=	1.45	1.43	1.45
RUNOFF VOLUME	(mm)=	60.00	32.21	59.72
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0   Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3210)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1370	.0400
.0700	.0240	.1760	.0490
.1150	.0340	.2470	.0615

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2100)	1.37	.69	1.45	59.72

```
OUTFLOW: ID= 1 (3210)      1.37      .17      1.65      59.66

PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.31
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0488
```

```
| CALIB             |
| STANDHYD  (2090)  |   Area     (ha)=   1.06
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.05	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.10	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.71 (ii)	2.55 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.40	.42	
				TOTALS
PEAK FLOW	(cms)=	.54	.00	.540 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	60.00	32.21	59.72
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0   Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3209)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1060	.0330
.0540	.0185	.1160	.0380
.0890	.0265	.1910	.0490

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2090)	1.06	.54	1.43	59.72
OUTFLOW: ID= 1 (3209)	1.06	.14	1.63	59.64

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.03
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0378
```

```
| CALIB             |
| STANDHYD  (2080)  |   Area     (ha)=    .51
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.50	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	58.30	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.38 (ii)	2.21 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.43	.45	
				TOTALS
PEAK FLOW	(cms)=	.27	.00	.266 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	60.00	32.21	59.72
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 84.0   Ia = Dep. Storage (Above)

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

```
| RESERVOIR (3208)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0510	.0150
.0260	.0090	.0650	.0185
.0430	.0130	.0920	.0240

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2080)	.51	.27	1.43	59.72
OUTFLOW: ID= 1 (3208)	.51	.06	1.63	59.55

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 23.92
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0183
```

```
| CALIB             |
| STANDHYD  (2070)  |   Area     (ha)=    .90
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.89	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.50	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.63 (ii)	2.47 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.41	.42	
				TOTALS
PEAK FLOW	(cms)=	.46	.00	.462 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	60.00	32.21	59.72
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0   Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3207)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0900	.0265
.0460	.0160	.1150	.0325
.0760	.0225	.1620	.0420

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2070)	.90	.46	1.43	59.72
OUTFLOW: ID= 1 (3207)	.90	.11	1.63	59.63

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.62
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0322
```

```
| CALIB             |
| STANDHYD  (2060)  |   Area     (ha)=    .66
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.65	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	66.30	40.00

```
Mannings n              =       .013          .250

Max.Eff.Inten.(mm/hr)=     209.33         99.55
          over (min)          5.00          3.00
Storage Coeff.  (min)=       1.49 (ii)     2.32 (ii)
Unit Hyd. Tpeak (min)=       5.00          3.00
Unit Hyd. peak  (cms)=        .42           .44
                                                    *TOTALS*
PEAK FLOW       (cms)=        .34           .00          .343 (iii)
TIME TO PEAK    (hrs)=       1.43          1.43         1.43
RUNOFF VOLUME    (mm)=      60.00         32.21        59.72
TOTAL RAINFALL   (mm)=      61.00         61.00        61.00
RUNOFF COEFFICIENT   =        .98           .53          .98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0     Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
| RESERVOIR (3206)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0660	.0195
.0330	.0115	.0850	.0240
.0560	.0165	.1190	.0310

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2060)	.66	.34	1.43	59.72
OUTFLOW: ID= 1 (3206)	.66	.08	1.63	59.59

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.29
TIME SHIFT OF PEAK FLOW       (min)= 12.00
MAXIMUM  STORAGE   USED       (ha.m.)=  .0216
```

```
| CALIB             |
| STANDHYD  (2050)  |   Area     (ha)=    .44
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.44	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	54.20	40.00
Mannings n	=	.013	.250

Max.Eff.Inten.(mm/hr)=		209.33	99.55	
over (min)		5.00	3.00	
Storage Coeff. (min)=		1.32 (ii)	2.15 (ii)	
Unit Hyd. Tpeak (min)=		5.00	3.00	
Unit Hyd. peak (cms)=		.44	.46	
				TOTALS
PEAK FLOW	(cms)=	.23	.00	.233 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	60.00	32.21	59.72
TOTAL RAINFALL	(mm)=	61.00	61.00	61.00
RUNOFF COEFFICIENT	=	.98	.53	.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0   Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3205)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |
```

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0440	.0130
.0220	.0080	.0560	.0160
.0370	.0115	.0790	.0210

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2050)	.44	.23	1.43	59.72

```
OUTFLOW: ID= 1 (3205)        .44        .06       1.63       59.51

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 21.83
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0159

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 ------------------
| CALIB            |
| STANDHYD  (2040) |   Area     (ha)=    .46
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .46            .00
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    55.40          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.13 (ii)      2.17 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .44            .46
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .24            .00        .243 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43       1.43
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (3204) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .0460      .0135
                         .0230      .0085    |     .0590      .0165
                         .0390      .0115    |     .0830      .0215

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2040)  .46       .24      1.43      59.72
     OUTFLOW: ID= 1 (3204)  .46       .06      1.63      59.52

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.33
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0165

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 ------------------
| CALIB            |
| STANDHYD  (2030) |   Area     (ha)=    .77
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .76            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    71.60          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.56 (ii)      2.39 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .41            .43
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .40            .00        .398 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43       1.43
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
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      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (3203) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .0770      .0225
                         .0190      .0135    |     .0990      .0275
                         .0650      .0195    |     .1390      .0360

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2030)  .77       .40      1.43      59.72
     OUTFLOW: ID= 1 (3203)  .77       .10      1.63      59.61

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.85
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0275

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 ------------------
| CALIB            |
| STANDHYD  (2010) |   Area     (ha)=   1.32
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.31            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    93.80          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.83 (ii)      2.67 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .39            .40
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .66            .00        .667 (iii)
     TIME TO PEAK    (hrs)=     1.45           1.43       1.45
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (3201) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .1320      .0385
                         .0670      .0235    |     .1690      .0475
                         .1110      .0310    |     .2380      .0610

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2010)  1.32      .67      1.45      59.72
     OUTFLOW: ID= 1 (3201)  1.32      .17      1.65      59.65

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.11
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0471

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 ------------------
| CALIB            |
| STANDHYD  (1050) |   Area     (ha)=   2.35
| ID= 1 DT= 1.0 min|   Total Imp(%)=  77.00   Dir. Conn.(%)=  77.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.81            .54
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=   125.20          40.00
```

```
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           6.00
     Storage Coeff.  (min)=     2.18 (ii)      5.41 (ii)
     Unit Hyd. Tpeak (min)=     5.00           6.00
     Unit Hyd. peak  (cms)=      .36            .20
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .90            .12        .999 (iii)
     TIME TO PEAK    (hrs)=     1.45           1.50       1.45
     RUNOFF VOLUME    (mm)=    60.00          32.21      53.61
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .88

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (8011) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .1800      .0615
                         .0910      .0350    |     .2110      .0770
                         .1520      .0515    |     .3240      .1025

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (1050)  2.35     1.00      1.45      53.61
     OUTFLOW: ID= 1 (8011)  2.35      .23      1.68      53.57

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.98
                TIME SHIFT OF PEAK FLOW          (min)= 14.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0766

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 ------------------
| CALIB            |
| STANDHYD  (1040) |   Area     (ha)=    .47
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .47            .00
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    56.00          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33         228.97
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.34 (ii)      2.18 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .44            .46
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .25            .00        .248 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43       1.43
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (3104) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .0470      .0140
                         .0240      .0085    |     .0600      .0170
                         .0400      .0120    |     .0850      .0220

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (1040)  .47       .25      1.43      59.72
```

```
OUTFLOW: ID= 1 (3104)        .47        .06       1.63       59.53

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.00
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0169

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 ------------------
| CALIB            |
| STANDHYD  (1030) |   Area     (ha)=    .98
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .97            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    80.80          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.67 (ii)      2.51 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .40            .42
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .50            .00        .501 (iii)
     TIME TO PEAK    (hrs)=     1.43           1.43       1.43
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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 ------------------
| RESERVOIR (3103) |
| IN= 2---> OUT= 1 |
| DT= 1.0 min      |     OUTFLOW    STORAGE   |   OUTFLOW    STORAGE
 ------------------      (cms)     (ha.m.)   |    (cms)     (ha.m.)
                         .0000      .0000    |     .0980      .0230
                         .0300      .0175    |     .1260      .0350
                         .0830      .0245    |     .1770      .0455

                          AREA     QPEAK     TPEAK      R.V.
                          (ha)     (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (1030)  .98       .50      1.43      59.72
     OUTFLOW: ID= 1 (3103)  .98       .13      1.63      59.63

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.14
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED         (ha.m.)=  .0350

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

 ------------------
| CALIB            |
| STANDHYD  (1020) |   Area     (ha)=   1.13
| ID= 1 DT= 1.0 min|   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
 ------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.12            .01
     Dep. Storage     (mm)=     1.00           5.00
     Average Slope     (%)=     1.00           2.00
     Length            (m)=    86.80          40.00
     Mannings n            =     .013           .250

     Max.Eff.Inten.(mm/hr)=   209.33          99.55
           over      (min)=     5.00           3.00
     Storage Coeff.  (min)=     1.75 (ii)      2.58 (ii)
     Unit Hyd. Tpeak (min)=     5.00           3.00
     Unit Hyd. peak  (cms)=      .40            .43
                                                      *TOTALS*
     PEAK FLOW       (cms)=      .57            .00        .574 (iii)
     TIME TO PEAK    (hrs)=     1.45           1.43       1.45
     RUNOFF VOLUME    (mm)=    60.00          32.21      59.72
     TOTAL RAINFALL   (mm)=    61.00          61.00      61.00
     RUNOFF COEFFICIENT    =     .98            .53        .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0     Ia = Dep. Storage   (Above)
```

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

RESERVOIR (3102)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1130	.0330
.0570	.0200	.1450	.0405
.0950	.0280	.2040	.0525

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1020)	1.13	.57	1.45	59.72
OUTFLOW: ID= 1 (3102)	1.13	.14	1.63	59.64

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.13
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0403

CALIB
STANDHYD (1010) | Area (ha)= .57
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.56	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.42 (ii)	2.26 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.43	.45
			TOTALS
PEAK FLOW (cms)=		.30	.00 .298 (iii)
TIME TO PEAK (hrs)=		1.43	1.43 1.43
RUNOFF VOLUME (mm)=		60.00	32.21 59.72
TOTAL RAINFALL (mm)=		61.00	61.00 61.00
RUNOFF COEFFICIENT =		.98	.53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3101)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0570	.0170
.0290	.0100	.0730	.0205
.0480	.0145	.1030	.0295

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1010)	.57	.30	1.43	59.72
OUTFLOW: ID= 1 (3101)	.57	.07	1.63	59.57

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.32
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0204

ADD HYD (8001)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3102):	1.13	.144	1.63	59.64
+ ID2= 2 (3101):	.57	.073	1.63	59.57
ID = 3 (8001):	1.70	.217	1.63	59.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3103):	.98	.126	1.63	59.63
+ ID2= 2 (8001):	1.70	.217	1.63	59.62
ID = 3 (8002):	2.68	.343	1.63	59.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3104):	.47	.059	1.63	59.53
+ ID2= 2 (8002):	2.68	.343	1.63	59.62
ID = 3 (8003):	3.15	.402	1.63	59.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8031):	2.35	.230	1.48	53.57
+ ID2= 2 (8003):	3.15	.402	1.63	59.61
ID = 3 (8004):	5.50	.630	1.45	57.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8005)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3201):	1.32	.167	1.65	59.65
+ ID2= 2 (8004):	5.50	.630	1.65	57.03
ID = 3 (8005):	6.82	.797	1.65	57.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (2020) | Area (ha)= .42
ID= 1 DT= 1.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.42	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	52.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	3.00
Storage Coeff. (min)=		1.30 (ii)	2.13 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.46
			TOTALS
PEAK FLOW (cms)=		.22	.00 .222 (iii)
TIME TO PEAK (hrs)=		1.43	1.43 1.43
RUNOFF VOLUME (mm)=		60.00	32.21 59.72
TOTAL RAINFALL (mm)=		61.00	61.00 61.00
RUNOFF COEFFICIENT =		.98	.53 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3202)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0420	.0125
.0210	.0075	.0540	.0155
.0350	.0105	.0760	.0195

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2020)	.42	.22	1.43	59.72
OUTFLOW: ID= 1 (3202)	.42	.05	1.63	59.51

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.59
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0151

ADD HYD (8006)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8005):	6.82	.797	1.65	57.54
+ ID2= 2 (3202):	.42	.052	1.63	59.51
ID = 3 (8006):	7.24	.850	1.65	57.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8007)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3203):	.77	.099	1.63	59.61
+ ID2= 2 (8006):	7.24	.850	1.65	57.65
ID = 3 (8007):	8.01	.949	1.65	57.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8008)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3204):	.46	.058	1.63	59.52
+ ID2= 2 (8007):	8.01	.949	1.65	57.84
ID = 3 (8008):	8.47	1.007	1.65	57.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8009)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3205):	.44	.055	1.63	59.51
+ ID2= 2 (8008):	8.47	1.007	1.65	57.93
ID = 3 (8009):	8.91	1.063	1.65	58.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8010)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3206):	.66	.083	1.63	59.59
+ ID2= 2 (8009):	8.91	1.063	1.65	58.01
ID = 3 (8010):	9.57	1.146	1.65	58.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8011)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3207):	.90	.114	1.63	59.63
+ ID2= 2 (8010):	9.57	1.146	1.65	58.12
ID = 3 (8011):	10.47	1.260	1.65	58.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8012)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3208):	.51	.064	1.63	59.55
+ ID2= 2 (8011):	10.47	1.260	1.65	58.25
ID = 3 (8012):	10.98	1.324	1.65	58.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8013)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3209):	1.06	.135	1.63	59.64
+ ID2= 2 (8012):	10.98	1.324	1.65	58.31
ID = 3 (8013):	12.04	1.459	1.65	58.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8014)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3210):	1.37	.175	1.65	59.66
+ ID2= 2 (8013):	12.04	1.459	1.65	58.43
ID = 3 (8014):	13.41	1.634	1.65	58.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8015)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3211):	1.05	.135	1.63	59.64
+ ID2= 2 (8014):	13.41	1.634	1.65	58.55
ID = 3 (8015):	14.46	1.768	1.65	58.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8016)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3212):	.38	.048	1.63	59.48
+ ID2= 2 (8015):	14.46	1.768	1.65	58.63
ID = 3 (8016):	14.84	1.816	1.65	58.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8017)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3213):	2.06	.262	1.65	59.68

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+ ID2= 2 (8016):    14.84   1.816     1.65    58.65
  ==========================================
  ID = 3 (8017):    16.90   2.079     1.65    58.78

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

ADD HYD (8018)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3214):	1.21	.153	1.65	59.65
+ ID2= 2 (8017):	16.90	2.079	1.65	58.78
ID = 3 (8018):	18.11	2.232	1.65	58.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8019)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3215):	.58	.073	1.63	59.56
+ ID2= 2 (8018):	18.11	2.232	1.65	58.84
ID = 3 (8019):	18.69	2.305	1.65	58.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8020)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3216):	.64	.082	1.63	59.58
+ ID2= 2 (8019):	18.69	2.305	1.65	58.86
ID = 3 (8020):	19.33	2.387	1.65	58.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8021)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3217):	.59	.075	1.63	59.57
+ ID2= 2 (8020):	19.33	2.387	1.65	58.88
ID = 3 (8021):	19.92	2.462	1.65	58.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8022)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3218):	.58	.074	1.63	59.57
+ ID2= 2 (8021):	19.92	2.462	1.65	58.90
ID = 3 (8022):	20.50	2.535	1.65	58.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8023)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3219):	.95	.122	1.63	59.63
+ ID2= 2 (8022):	20.50	2.535	1.65	58.92
ID = 3 (8023):	21.45	2.657	1.65	58.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8024)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3220):	.66	.083	1.63	59.59
+ ID2= 2 (8023):	21.45	2.657	1.65	58.95
ID = 3 (8024):	22.11	2.740	1.65	58.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8025)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3221):	.50	.064	1.63	59.54
+ ID2= 2 (8024):	22.11	2.740	1.65	58.97
ID = 3 (8025):	22.61	2.804	1.65	58.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8026)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3222):	.61	.077	1.63	59.57
+ ID2= 2 (8025):	22.61	2.804	1.65	58.98
ID = 3 (8026):	23.22	2.881	1.65	59.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8027)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3223):	.61	.077	1.63	59.57
+ ID2= 2 (8026):	23.22	2.881	1.65	59.00
ID = 3 (8027):	23.83	2.959	1.65	59.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8028)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3224):	.61	.077	1.63	59.57
+ ID2= 2 (8027):	23.83	2.959	1.65	59.01
ID = 3 (8028):	24.44	3.036	1.65	59.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8029)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3225):	1.19	.153	1.63	59.65
+ ID2= 2 (8028):	24.44	3.036	1.65	59.03
ID = 3 (8029):	25.63	3.189	1.65	59.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8030)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3226):	20.31	2.084	1.73	54.44
+ ID2= 2 (8029):	25.63	3.189	1.65	59.06
ID = 3 (8030):	45.94	5.228	1.67	57.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (2270) ID= 1 DT= 1.0 min | Area (ha)= 2.81 Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.73	2.08
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	136.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		209.33	99.55
over (min)		5.00	11.00
Storage Coeff. (min)=		2.10 (ii)	10.28 (ii)
Unit Hyd. Tpeak (min)=		5.00	11.00
Unit Hyd. peak (cms)=		.35	.11

		TOTALS
PEAK FLOW	(cms)=	.34 .547 (iii)
TIME TO PEAK	(hrs)=	1.45 1.68
RUNOFF VOLUME	(mm)=	60.00 12.21 39.44
TOTAL RAINFALL	(mm)=	61.00 61.00 61.00
RUNOFF COEFFICIENT	=	.98 .53 .65

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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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** SIMULATION NUMBER:   6 **
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READ STORM | Filename: J:\1441 Projects by Job Number\2008\10-0805J-001-M01 Langstaff E Lands\OTTHYMO Model\Markham 3hour AES Design Storm\
Ptotal= 80.00 mm | Comments: 100 Year, 3 hours AES Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	.00	.92	10.73	1.75	22.37	2.58	5.87
.17	4.34	1.00	13.02	1.83	15.55	2.67	5.62
.25	4.85	1.08	16.60	1.92	12.03	2.75	5.36
.33	5.11	1.17	25.65	2.00	9.89	2.83	5.11
.42	5.36	1.25	59.79	2.08	8.63	2.92	5.11
.50	5.87	1.33	113.08	2.17	7.41	3.00	4.85
.58	6.64	1.42	274.54	2.25	7.15	3.08	4.60
.67	7.15	1.50	145.90	2.33	6.64		
.75	8.17	1.58	68.66	2.42	6.38		
.83	9.19	1.67	36.63	2.50	6.13		

CALIB STANDHYD (2260) ID= 1 DT= 1.0 min | Area (ha)= 20.31 Total Imp(%)= 80.00 Dir. Conn.(%)= 80.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	16.25	4.06
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	368.00	40.00
Mannings n	=	.013	.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.017	.00	.800	9.19	1.583	68.66	2.37	6.38
.033	.00	.817	9.19	1.600	36.63	2.38	6.38
.050	.00	.833	9.19	1.617	36.63	2.40	6.38
.067	.00	.850	10.73	1.633	36.63	2.42	6.38
.083	.00	.867	10.73	1.650	36.63	2.43	6.13
.100	4.34	.883	10.73	1.667	36.63	2.45	6.13
.117	4.34	.900	10.73	1.683	22.37	2.47	6.13
.133	4.34	.917	10.73	1.700	22.37	2.48	6.13
.150	4.34	.933	13.02	1.717	22.37	2.50	6.13
.167	4.34	.950	13.02	1.733	22.37	2.52	5.87
.183	4.85	.967	13.02	1.750	22.37	2.53	5.87
.200	4.85	.983	13.02	1.767	15.55	2.55	5.87
.217	4.85	1.000	13.02	1.783	15.55	2.57	5.87
.233	4.85	1.017	16.60	1.800	15.55	2.58	5.87
.250	4.85	1.033	16.60	1.817	15.55	2.60	5.62
.267	5.11	1.050	16.60	1.833	15.55	2.62	5.62
.283	5.11	1.067	16.60	1.850	12.03	2.63	5.62
.300	5.11	1.083	16.60	1.867	12.03	2.65	5.62
.317	5.11	1.100	25.65	1.883	12.03	2.67	5.62
.333	5.11	1.117	25.65	1.900	12.03	2.68	5.36
.350	5.36	1.133	25.65	1.917	12.03	2.70	5.36
.367	5.36	1.150	25.65	1.933	9.89	2.72	5.36
.383	5.36	1.167	25.65	1.950	9.89	2.73	5.36
.400	5.36	1.183	59.79	1.967	9.89	2.75	5.36
.417	5.36	1.200	59.79	1.983	9.89	2.77	5.11
.433	5.87	1.217	59.79	2.000	9.89	2.78	5.11
.450	5.87	1.233	59.79	2.017	8.63	2.80	5.11
.467	5.87	1.250	59.79	2.033	8.63	2.82	5.11
.483	5.87	1.267	113.08	2.050	8.63	2.83	5.11
.500	5.87	1.283	113.08	2.067	8.63	2.85	5.11
.517	6.64	1.300	113.08	2.083	8.63	2.87	5.11
.533	6.64	1.317	113.08	2.100	7.41	2.88	5.11
.550	6.64	1.333	113.08	2.117	7.41	2.90	5.11
.567	6.64	1.350	274.53	2.133	7.41	2.92	5.11
.583	6.64	1.367	274.54	2.150	7.41	2.93	4.85
.600	7.15	1.383	274.54	2.167	7.41	2.95	4.85
.617	7.15	1.400	274.54	2.183	7.15	2.97	4.85
.633	7.15	1.417	274.54	2.200	7.15	2.98	4.85
.650	7.15	1.433	145.91	2.217	7.15	3.00	4.85
.667	7.15	1.450	145.90	2.233	7.15	3.02	4.60
.683	8.17	1.467	145.90	2.250	7.15	3.03	4.60
.700	8.17	1.483	145.90	2.267	6.64	3.05	4.60
.717	8.17	1.500	145.90	2.283	6.64	3.07	4.60
.733	8.17	1.517	68.66	2.300	6.64	3.08	4.60
.750	8.17	1.533	68.66	2.317	6.64		
.767	9.19	1.550	68.66	2.333	6.64		
.783	9.19	1.567	68.66	2.350	6.38		

Max.Eff.Inten.(mm/hr)=	274.54	148.83	
over (min)	5.00	7.00	
Storage Coeff. (min)=	3.73 (ii)	8.43 (ii)	
Unit Hyd. Tpeak (min)=	5.00	7.00	
Unit Hyd. peak (cms)=	.27	.17	

		TOTALS
PEAK FLOW	(cms)=	9.41 1.29 10.531 (iii)
TIME TO PEAK	(hrs)=	1.47 1.52 1.47
RUNOFF VOLUME	(mm)=	79.00 49.34 72.87
TOTAL RAINFALL	(mm)=	80.00 80.00 80.00
RUNOFF COEFFICIENT	=	.99 .60 .91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3226) IN= 2---> OUT= 1 DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	1.6250	.5150
.8250	.2920	2.0850	.6450
1.3710	.4305	2.9320	.8595

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW :	ID= 2 (2260)	20.31	10.53	1.47	72.87
OUTFLOW:	ID= 1 (3226)	20.31	2.93	1.72	72.86

PEAK FLOW REDUCTION [Qout/Qin](%)= 27.82
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= .8593

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| CALIB
| STANDHYD  (2250)  |   Area     (ha)=   1.19
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=     1.18          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    89.10        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       297.66
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.59 (ii)    2.34 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .41          .44
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .80          .01          .805 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3225)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .1190      .0350
                          .0600      .0210       |      .1530      .0425
                          .1000      .0300       |      .2150      .0550

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2250)      1.19        .80      1.43      78.69
     OUTFLOW: ID= 1 (3225)      1.19        .21      1.63      78.62

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 26.65
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0549

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| CALIB
| STANDHYD  (2240)  |   Area     (ha)=   .61
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .60          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    63.80        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.30 (ii)    2.05 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .44          .47
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .42          .00          .424 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3224)  |
| IN= 2---> OUT= 1  |
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| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .0610      .0180
                          .0310      .0110       |      .0780      .0220
                          .0510      .0155       |      .1160      .0285

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2240)      .61         .42      1.43      78.69
     OUTFLOW: ID= 1 (3224)      .61         .11      1.62      78.54

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 25.70
                TIME SHIFT OF PEAK FLOW          (min)= 11.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0283

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| CALIB
| STANDHYD  (2230)  |   Area     (ha)=   .61
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .60          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    63.80        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.30 (ii)    2.05 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .44          .47
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .42          .00          .424 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3223)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .0610      .0180
                          .0310      .0110       |      .0780      .0220
                          .0510      .0155       |      .1100      .0285

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2210)      .61         .42      1.43      78.69
     OUTFLOW: ID= 1 (3223)      .61         .11      1.62      78.54

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 25.70
                TIME SHIFT OF PEAK FLOW          (min)= 11.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0283

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| CALIB
| STANDHYD  (2220)  |   Area     (ha)=   .61
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .60          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    63.80        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.30 (ii)    2.05 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .44          .47
                                                    *TOTALS*
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     PEAK FLOW       (cms)=      .42          .00          .424 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3222)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .0610      .0180
                          .0310      .0110       |      .0780      .0220
                          .0510      .0155       |      .1100      .0285

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2220)      .61         .42      1.43      78.69
     OUTFLOW: ID= 1 (3222)      .61         .11      1.62      78.54

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 25.70
                TIME SHIFT OF PEAK FLOW          (min)= 11.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0283

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| CALIB
| STANDHYD  (2210)  |   Area     (ha)=   .50
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .50          .00
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    57.70        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         2.00
     Storage Coeff.  (min)=     1.23 (ii)    1.98 (ii)
     Unit Hyd. Tpeak (min)=     5.00         2.00
     Unit Hyd. peak  (cms)=      .45          .56
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .35          .00          .350 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.42         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3221)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .0500      .0150
                          .0250      .0090       |      .0640      .0180
                          .0420      .0125       |      .0900      .0235

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2210)      .50         .35      1.43      78.69
     OUTFLOW: ID= 1 (3221)      .50         .09      1.62      78.51

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 25.36
                TIME SHIFT OF PEAK FLOW          (min)= 13.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0232

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| CALIB
| STANDHYD  (2200)  |   Area     (ha)=   .66
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .65          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    66.30        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.33 (ii)    2.08 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .44          .47
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .45          .00          .457 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3220)  |
| IN= 2---> OUT= 1  |
| DT= 1.0 min       |     OUTFLOW     STORAGE     |    OUTFLOW     STORAGE
--------------------      (cms)      (ha.m.)     |     (cms)      (ha.m.)
                          .0000      .0000       |      .0660      .0195
                          .0330      .0115       |      .0850      .0240
                          .0560      .0165       |      .1190      .0310

                                AREA      QPEAK     TPEAK      R.V.
                                (ha)      (cms)     (hrs)      (mm)
     INFLOW : ID= 2 (2200)      .66         .46      1.43      78.69
     OUTFLOW: ID= 1 (3220)      .66         .12      1.63      78.56

                PEAK   FLOW   REDUCTION [Qout/Qinl(%)= 25.58
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0306

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| CALIB
| STANDHYD  (2190)  |   Area     (ha)=   .95
|ID= 1 DT= 1.0 min  |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
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                        IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      .94          .01
     Dep. Storage     (mm)=     1.00         5.00
     Average Slope     (%)=     1.00         2.00
     Length            (m)=    79.60        40.00
     Mannings n            =     .013         .250

     Max.Eff.Inten.(mm/hr)=   274.54       148.83
               over (min)        5.00         3.00
     Storage Coeff.  (min)=     1.49 (ii)    2.24 (ii)
     Unit Hyd. Tpeak (min)=     5.00         3.00
     Unit Hyd. peak  (cms)=      .42          .45
                                                    *TOTALS*
     PEAK FLOW       (cms)=      .64          .00          .649 (iii)
     TIME TO PEAK    (hrs)=     1.43         1.43         1.43
     RUNOFF VOLUME    (mm)=    79.00        48.34        78.69
     TOTAL RAINFALL   (mm)=    80.00        80.00        80.00
     RUNOFF COEFFICIENT    =     .99          .60          .98

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 86.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR (3219)  |
| IN= 2---> OUT= 1  |
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DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0950	.0280
	.0480	.0170	.1220	.0340
	.0800	.0240	.1710	.0440

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2190)	.95	.65	1.43	78.69
OUTFLOW: ID= 1 (3219)	.95	.17	1.63	78.60

PEAK FLOW REDUCTION [Qout/Qin](%)= 26.29
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0439

CALIB
STANDHYD (2180)
ID= 1 DT= 1.0 min

Area (ha)= .58
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.57	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.28 (ii)	2.03 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.48
			TOTALS
PEAK FLOW	(cms)=	.40	.00 .404 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43 1.43
RUNOFF VOLUME	(mm)=	79.00	48.34 78.69
TOTAL RAINFALL	(mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT	=	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3218)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0175
.0290	.0105	.0740	.0210
.0430	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2180)	.58	.40	1.43	78.69
OUTFLOW: ID= 1 (3218)	.58	.10	1.62	78.53

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.96
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0270

CALIB
STANDHYD (2170)
ID= 1 DT= 1.0 min

Area (ha)= .59
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.58	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.29 (ii)	2.04 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.47
			TOTALS

PEAK FLOW	(cms)=	.41	.00	.410 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	79.00	48.34	78.69
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3217)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0590	.0175
.0300	.0105	.0760	.0215
.0500	.0150	.1060	.0275

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2170)	.59	.41	1.43	78.69
OUTFLOW: ID= 1 (3217)	.59	.11	1.62	78.54

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.64
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0274

CALIB
STANDHYD (2160)
ID= 1 DT= 1.0 min

Area (ha)= .64
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.63	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	65.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.32 (ii)	2.07 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.47
			TOTALS

PEAK FLOW	(cms)=	.44	.00	.444 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	79.00	48.34	78.69
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3216)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0640	.0190
.0320	.0115	.0820	.0230
.0540	.0160	.1150	.0300

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2160)	.64	.44	1.43	78.69
OUTFLOW: ID= 1 (3216)	.64	.11	1.63	78.55

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.58
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0297

CALIB
STANDHYD (2150)
ID= 1 DT= 1.0 min

Area (ha)= .58
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.57	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	62.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.28 (ii)	2.03 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.48
			TOTALS
PEAK FLOW	(cms)=	.40	.00 .404 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43 1.43
RUNOFF VOLUME	(mm)=	79.00	48.34 78.69
TOTAL RAINFALL	(mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT	=	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3215)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0580	.0170
.0290	.0105	.0740	.0210
.0490	.0150	.1050	.0270

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2150)	.58	.40	1.43	78.69
OUTFLOW: ID= 1 (3215)	.58	.10	1.62	78.53

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.89
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0269

CALIB
STANDHYD (2140)
ID= 1 DT= 1.0 min

Area (ha)= 1.21
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.20	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	89.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.60 (ii)	2.35 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.41	.44
			TOTALS
PEAK FLOW	(cms)=	.81	.01 .818 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43 1.43
RUNOFF VOLUME	(mm)=	79.00	48.34 78.69
TOTAL RAINFALL	(mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT	=	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3214)
IN= 2---> OUT= 1

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.1230	.0355
	.0610	.0210	.1550	.0435
	.1020	.0300	.2180	.0560

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2140)	1.21	.82	1.43	78.69
OUTFLOW: ID= 1 (3214)	1.21	.22	1.63	78.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 26.54
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0558

CALIB
STANDHYD (2130)
ID= 1 DT= 1.0 min

Area (ha)= 2.06
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.04	.02
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	117.20	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.88 (ii)	2.63 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.38	.41
			TOTALS
PEAK FLOW	(cms)=	1.35	.01 1.362 (iii)
TIME TO PEAK	(hrs)=	1.45	1.43 1.45
RUNOFF VOLUME	(mm)=	79.00	48.34 78.69
TOTAL RAINFALL	(mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT	=	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3213)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.2060	.0600
.1050	.0360	.2640	.0735
.1740	.0510	.3710	.0950

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2130)	2.06	1.36	1.45	78.69
OUTFLOW: ID= 1 (3213)	2.06	.37	1.63	78.65

PEAK FLOW REDUCTION [Qout/Qin](%)= 27.13
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0947

CALIB
STANDHYD (2120)
ID= 1 DT= 1.0 min

Area (ha)= .38
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.38	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	50.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	2.00
Storage Coeff. (min)=		1.13 (ii)	1.88 (ii)
Unit Hyd. Tpeak (min)=		5.00	2.00
Unit Hyd. peak (cms)=		.44	.58
			TOTALS

```
PEAK FLOW        (cms)=        .27           .00           .268 (iii)
TIME TO PEAK     (hrs)=       1.43          1.42          1.43
RUNOFF VOLUME    (mm)=       79.00         48.34         78.69
TOTAL RAINFALL   (mm)=       80.00         80.00         80.00
RUNOFF COEFFICIENT   =         .99           .60           .98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3212)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0380	.0115
.0190	.0070	.0490	.0140
.0320	.0100	.0680	.0180

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2120)	.38	.27	1.43	78.69
OUTFLOW: ID= 1 (3212)	.38	.07	1.63	78.45

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.93
TIME SHIFT OF PEAK FLOW          (min)= 11.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0178
```

CALIB
STANDHYD (2110)
ID= 1 DT= 1.0 min

```
Area     (ha)=   1.05
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.04	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.70	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.53 (ii)	2.28 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.42	.44

		TOTALS
PEAK FLOW	(cms)=	.714 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3211)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1050	.0305
.0530	.0185	.1150	.0375
.0890	.0260	.1890	.0485

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2110)	1.05	.71	1.43	78.69
OUTFLOW: ID= 1 (3211)	1.05	.19	1.63	78.61

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.42
TIME SHIFT OF PEAK FLOW          (min)= 12.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0484
```

CALIB
STANDHYD (2100)
ID= 1 DT= 1.0 min

```
Area     (ha)=   1.37
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.36	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	95.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.66 (ii)	2.41 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.40	.43

		TOTALS
PEAK FLOW	(cms)=	.920 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3210)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1370	.0400
.0700	.0240	.1760	.0490
.1150	.0340	.2470	.0635

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2100)	1.37	.92	1.43	78.69
OUTFLOW: ID= 1 (3210)	1.37	.25	1.63	78.63

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.64
TIME SHIFT OF PEAK FLOW          (min)= 12.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0631
```

CALIB
STANDHYD (2090)
ID= 1 DT= 1.0 min

```
Area     (ha)=   1.06
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.05	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.10	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.54 (ii)	2.29 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.42	.44

		TOTALS
PEAK FLOW	(cms)=	.720 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3209)
IN= 2---> OUT= 1

DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1040	.0310
.0540	.0185	.1360	.0380
.0890	.0265	.1910	.0490

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2090)	1.06	.72	1.43	78.69
OUTFLOW: ID= 1 (3209)	1.06	.19	1.63	78.61

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.42
TIME SHIFT OF PEAK FLOW          (min)= 12.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0483
```

CALIB
STANDHYD (2080)
ID= 1 DT= 1.0 min

```
Area     (ha)=    .51
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.50	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	58.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	2.00
Storage Coeff. (min)=		1.23 (ii)	1.98 (ii)
Unit Hyd. Tpeak (min)=		5.00	2.00
Unit Hyd. peak (cms)=		.45	.56

		TOTALS
PEAK FLOW	(cms)=	.357 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3208)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0510	.0150
.0260	.0090	.0650	.0185
.0430	.0130	.0920	.0240

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2080)	.51	.36	1.43	78.69
OUTFLOW: ID= 1 (3208)	.51	.09	1.62	78.52

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.33
TIME SHIFT OF PEAK FLOW          (min)= 11.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0237
```

CALIB
STANDHYD (2070)
ID= 1 DT= 1.0 min

```
Area     (ha)=    .90
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.89	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	77.50	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.46 (ii)	2.21 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.42	.45

		TOTALS
PEAK FLOW	(cms)=	.616 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3207)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0900	.0245
.0460	.0160	.1150	.0325
.0760	.0225	.1620	.0420

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2070)	.90	.62	1.43	78.69
OUTFLOW: ID= 1 (3207)	.90	.16	1.63	78.59

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.01
TIME SHIFT OF PEAK FLOW          (min)= 12.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0417
```

CALIB
STANDHYD (2060)
ID= 1 DT= 1.0 min

```
Area     (ha)=    .66
Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.65	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	66.30	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.33 (ii)	2.08 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.47

		TOTALS
PEAK FLOW	(cms)=	.457 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

```
  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* = 86.0    Ia = Dep. Storage   (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

RESERVOIR (3206)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0660	.0195
.0330	.0115	.0850	.0240
.0560	.0165	.1190	.0310

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2060)	.66	.46	1.43	78.69
OUTFLOW: ID= 1 (3206)	.66	.12	1.63	78.56

```
PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.58
TIME SHIFT OF PEAK FLOW          (min)= 12.00
MAXIMUM  STORAGE   USED        (ha.m.)=  .0306
```

CALIB
STANDHYD (2050)
ID= 1 DT= 1.0 min

Area (ha)= .44
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.44	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	54.20	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	2.00
Storage Coeff. (min)=	1.18 (ii)	1.93 (ii)
Unit Hyd. Tpeak (min)=	5.00	2.00
Unit Hyd. peak (cms)=	.45	.57

	TOTALS	
PEAK FLOW (cms)=	.31	.00 .309 (iii)
TIME TO PEAK (hrs)=	1.43	1.42 1.43
RUNOFF VOLUME (mm)=	79.00	48.34 78.69
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3205)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0440	.0130
.0220	.0080	.0560	.0160
.0370	.0115	.0790	.0210

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (3050)	.44	.31	1.43	78.69
OUTFLOW: ID= 1 (3205)	.44	.08	1.62	78.48

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.88
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0206

CALIB
STANDHYD (2040)
ID= 1 DT= 1.0 min

Area (ha)= .46
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.46	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	55.40	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	2.00
Storage Coeff. (min)=	1.20 (ii)	1.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	2.00
Unit Hyd. peak (cms)=	.45	.57

	TOTALS	
PEAK FLOW (cms)=	.32	.00 .323 (iii)
TIME TO PEAK (hrs)=	1.43	1.42 1.43
RUNOFF VOLUME (mm)=	79.00	48.34 78.69
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3204)
IN= 2---> OUT= 1

DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	.0000	.0000	.0460	.0135
	.0210	.0085	.0590	.0165
	.0390	.0115	.0830	.0215

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2040)	.46	.32	1.43	78.69
OUTFLOW: ID= 1 (3204)	.46	.08	1.62	78.49

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.51
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0214

CALIB
STANDHYD (2030)
ID= 1 DT= 1.0 min

Area (ha)= .77
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.76	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	71.60	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	3.00
Storage Coeff. (min)=	1.40 (ii)	2.15 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.43	.46

	TOTALS	
PEAK FLOW (cms)=	.53	.00 .530 (iii)
TIME TO PEAK (hrs)=	1.43	1.43 1.43
RUNOFF VOLUME (mm)=	79.00	48.34 78.69
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3203)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0770	.0225
.0390	.0135	.0990	.0275
.0650	.0195	.1390	.0360

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2030)	.77	.53	1.43	78.69
OUTFLOW: ID= 1 (3203)	.77	.14	1.63	78.58

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.84
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0154

CALIB
STANDHYD (2010)
ID= 1 DT= 1.0 min

Area (ha)= 1.32
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.31	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	93.80	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	3.00
Storage Coeff. (min)=	1.64 (ii)	2.39 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.41	.43

TOTALS

PEAK FLOW	(cms)=	.88	.01	.888 (iii)
TIME TO PEAK	(hrs)=	1.43	1.43	1.43
RUNOFF VOLUME	(mm)=	79.00	48.34	78.69
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3201)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1320	.0385
.0670	.0235	.1690	.0475
.1110	.0330	.2380	.0610

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (2010)	1.32	.89	1.43	78.69
OUTFLOW: ID= 1 (3201)	1.32	.24	1.63	78.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 26.74
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= .0609

CALIB
STANDHYD (1050)
ID= 1 DT= 1.0 min

Area (ha)= 2.35
Total Imp(%)= 77.00 Dir. Conn.(%)= 77.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.81	.54
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	125.20	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	5.00
Storage Coeff. (min)=	1.95 (ii)	4.86 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	.38	.23

	TOTALS	
PEAK FLOW (cms)=	1.19	.19 1.375 (iii)
TIME TO PEAK (hrs)=	1.45	1.48 1.45
RUNOFF VOLUME (mm)=	79.00	48.34 71.95
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (8031)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.1850	.0515
.0910	.0350	.2310	.0770
.1520	.0515	.3240	.1025

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1050)	2.35	1.37	1.45	71.95
OUTFLOW: ID= 1 (8031)	2.35	.32	1.67	71.91

PEAK FLOW REDUCTION [Qout/Qin](%)= 23.47
TIME SHIFT OF PEAK FLOW (min)= 13.00
MAXIMUM STORAGE USED (ha.m.)= .1022

CALIB
STANDHYD (1040)
ID= 1 DT= 1.0 min

Area (ha)= .47
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.47	.00
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	56.00	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	342.31
over (min)	5.00	2.00
Storage Coeff. (min)=	1.20 (ii)	1.95 (ii)
Unit Hyd. Tpeak (min)=	5.00	2.00
Unit Hyd. peak (cms)=	.45	.57

	TOTALS	
PEAK FLOW (cms)=	.33	.00 .330 (iii)
TIME TO PEAK (hrs)=	1.43	1.42 1.43
RUNOFF VOLUME (mm)=	79.00	48.34 78.69
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3104)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
.0000	.0000	.0470	.0140
.0240	.0085	.0600	.0170
.0400	.0120	.0850	.0230

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (1040)	.47	.33	1.43	78.69
OUTFLOW: ID= 1 (3104)	.47	.08	1.62	78.50

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.50
TIME SHIFT OF PEAK FLOW (min)= 11.00
MAXIMUM STORAGE USED (ha.m.)= .0218

CALIB
STANDHYD (1030)
ID= 1 DT= 1.0 min

Area (ha)= .98
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	.97	.01
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	80.80	40.00
Mannings n =	.013	.250
Max.Eff.Inten.(mm/hr)=	274.54	148.83
over (min)	5.00	3.00
Storage Coeff. (min)=	1.50 (ii)	2.25 (ii)
Unit Hyd. Tpeak (min)=	5.00	3.00
Unit Hyd. peak (cms)=	.42	.45

	TOTALS	
PEAK FLOW (cms)=	.66	.00 .668 (iii)
TIME TO PEAK (hrs)=	1.43	1.43 1.43
RUNOFF VOLUME (mm)=	79.00	48.34 78.69
TOTAL RAINFALL (mm)=	80.00	80.00 80.00
RUNOFF COEFFICIENT =	.99	.60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR (3103)
IN= 2---> OUT= 1

```
| DT= 1.0 min |      OUTFLOW     STORAGE   |   OUTFLOW     STORAGE
|-------------|      (cms)       (ha.m.)   |   (cms)       (ha.m.)
                     .0000        .0000    |    .0980        .0290
                     .0500        .0175    |    .1260        .0350
                     .0830        .0245    |    .1770        .0455

                                 AREA      QPEAK     TPEAK      R.V.
                                 (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1030)             .98        .67      1.43     78.69
OUTFLOW: ID= 1 (3103)             .98        .18      1.63     78.60

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.30
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0453
```

```
| CALIB
| STANDHYD  (3020)
| ID= 1 DT= 1.0 min
```

Area (ha)= 1.13
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.12	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	86.80	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.57 (ii)	2.32 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.41	.44

		TOTALS
PEAK FLOW	(cms)=	.76 (iii)
TIME TO PEAK	(hrs)=	1.43
RUNOFF VOLUME	(mm)=	78.69
TOTAL RAINFALL	(mm)=	80.00
RUNOFF COEFFICIENT	=	.98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3102)
| ID= 2 ---> OUT= 1
| DT= 1.0 min |      OUTFLOW     STORAGE   |   OUTFLOW     STORAGE
|-------------|      (cms)       (ha.m.)   |   (cms)       (ha.m.)
                     .0000        .0000    |    .1130        .0330
                     .0570        .0200    |    .1450        .0405
                     .0950        .0280    |    .2040        .0525

                                 AREA      QPEAK     TPEAK      R.V.
                                 (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1020)            1.13        .77      1.43     78.69
OUTFLOW: ID= 1 (3102)            1.13        .20      1.63     78.61

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.43
                TIME SHIFT OF PEAK FLOW          (min)= 12.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0522
```

```
| CALIB
| STANDHYD  (1010)
| ID= 1 DT= 1.0 min
```

Area (ha)= .57
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.56	.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	61.60	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	3.00
Storage Coeff. (min)=		1.28 (ii)	2.03 (ii)
Unit Hyd. Tpeak (min)=		5.00	3.00
Unit Hyd. peak (cms)=		.44	.48

TOTALS

PEAK FLOW	(cms)=	.39 .00 .397 (iii)
TIME TO PEAK	(hrs)=	1.43 1.43 1.43
RUNOFF VOLUME	(mm)=	79.00 48.34 78.69
TOTAL RAINFALL	(mm)=	80.00 80.00 80.00
RUNOFF COEFFICIENT	=	.99 .60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3101)
| IN= 2---> OUT= 1
| DT= 1.0 min |      OUTFLOW     STORAGE   |   OUTFLOW     STORAGE
|-------------|      (cms)       (ha.m.)   |   (cms)       (ha.m.)
                     .0000        .0000    |    .0570        .0170
                     .0290        .0100    |    .0730        .0205
                     .0480        .0145    |    .1030        .0265

                                 AREA      QPEAK     TPEAK      R.V.
                                 (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (1010)             .57        .40      1.43     78.69
OUTFLOW: ID= 1 (3101)             .57        .10      1.62     78.54

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.76
                TIME SHIFT OF PEAK FLOW          (min)= 11.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0264
```

```
| ADD HYD   (8001)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3102) :		1.13	.202	1.63	78.61
+ ID2= 2 (3101) :		.57	.102	1.62	78.54
ID = 3 (8001) :		1.70	.305	1.63	78.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8002)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3103) :		.98	.176	1.63	78.60
+ ID2= 2 (8001) :		1.70	.305	1.63	78.59
ID = 3 (8002) :		2.68	.480	1.63	78.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8003)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3104) :		.47	.084	1.62	78.50
+ ID2= 2 (8002) :		2.68	.480	1.63	78.59
ID = 3 (8003) :		3.15	.564	1.63	78.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8004)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8031) :		2.35	.323	1.67	71.91
+ ID2= 2 (8003) :		3.15	.564	1.63	78.58
ID = 3 (8004) :		5.50	.884	1.65	75.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8005)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3201) :		1.32	.238	1.63	78.62
+ ID2= 2 (8004) :		5.50	.884	1.65	75.73
ID = 3 (8005) :		6.82	1.122	1.63	76.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| CALIB
| STANDHYD  (2020)
| ID= 1 DT= 1.0 min
```

Area (ha)= .42
Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	.42	.00
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	52.90	40.00
Mannings n	=	.013	.250
Max.Eff.Inten.(mm/hr)=		274.54	148.83
over (min)		5.00	2.00
Storage Coeff. (min)=		1.16 (ii)	1.91 (ii)
Unit Hyd. Tpeak (min)=		5.00	2.00
Unit Hyd. peak (cms)=		.45	.57

		TOTALS
PEAK FLOW	(cms)=	.29 .00 .296 (iii)
TIME TO PEAK	(hrs)=	1.43 1.42 1.43
RUNOFF VOLUME	(mm)=	79.00 48.34 78.69
TOTAL RAINFALL	(mm)=	80.00 80.00 80.00
RUNOFF COEFFICIENT	=	.99 .60 .98

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
| RESERVOIR (3202)
| IN= 2---> OUT= 1
| DT= 1.0 min |      OUTFLOW     STORAGE   |   OUTFLOW     STORAGE
|-------------|      (cms)       (ha.m.)   |   (cms)       (ha.m.)
                     .0000        .0000    |    .0420        .0125
                     .0210        .0075    |    .0540        .0155
                     .0350        .0105    |    .0760        .0195

                                 AREA      QPEAK     TPEAK      R.V.
                                 (ha)      (cms)     (hrs)      (mm)
INFLOW : ID= 2 (2020)             .42        .30      1.43     78.69
OUTFLOW: ID= 1 (3202)             .42        .08      1.62     78.48

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.70
                TIME SHIFT OF PEAK FLOW          (min)= 11.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  .0195
```

```
| ADD HYD   (8006)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (8005) :		6.82	1.122	1.63	76.29
+ ID2= 2 (3202) :		.42	.076	1.62	78.48
ID = 3 (8006) :		7.24	1.197	1.63	76.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8007)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3203) :		.77	.137	1.63	78.58
+ ID2= 2 (8006) :		7.24	1.197	1.63	76.42
ID = 3 (8007) :		8.01	1.335	1.63	76.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8008)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3204) :		.46	.082	1.62	78.49
+ ID2= 2 (8007) :		8.01	1.335	1.63	76.62
ID = 3 (8008) :		8.47	1.417	1.63	76.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8009)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3205) :		.44	.077	1.62	78.48
+ ID2= 2 (8008) :		8.47	1.417	1.63	76.72
ID = 3 (8009) :		8.91	1.494	1.63	76.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8010)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3206) :		.66	.117	1.63	78.56
+ ID2= 2 (8009) :		8.91	1.494	1.63	76.81
ID = 3 (8010) :		9.57	1.611	1.63	76.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8011)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3207) :		.90	.160	1.63	78.59
+ ID2= 2 (8010) :		9.57	1.611	1.63	76.93
ID = 3 (8011) :		10.47	1.771	1.63	77.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8012)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3208) :		.51	.090	1.62	78.52
+ ID2= 2 (8011) :		10.47	1.771	1.63	77.08
ID = 3 (8012) :		10.98	1.861	1.63	77.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD   (8013)
|  1 +  2 =  3
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (3209) :		1.06	.190	1.63	78.61
+ ID2= 2 (8012) :		10.98	1.861	1.63	77.14
ID = 3 (8013) :		12.04	2.052	1.63	77.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8014)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3210):	1.57	.245	1.63	78.63
+ ID2= 2 (8013):	12.04	2.052	1.63	77.27
ID = 3 (8014):	13.41	2.297	1.63	77.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8015)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3211):	1.05	.189	1.63	78.61
+ ID2= 2 (8014):	13.41	2.297	1.63	77.41
ID = 3 (8015):	14.46	2.485	1.63	77.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8016)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3212):	.38	.067	1.62	78.45
+ ID2= 2 (8015):	14.46	2.485	1.63	77.50
ID = 3 (8016):	14.84	2.552	1.63	77.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8017)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3213):	2.06	.369	1.63	78.65
+ ID2= 2 (8016):	14.84	2.552	1.63	77.52
ID = 3 (8017):	16.90	2.922	1.63	77.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8018)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3214):	1.21	.217	1.63	78.62
+ ID2= 2 (8017):	16.90	2.922	1.63	77.66
ID = 3 (8018):	18.11	3.139	1.63	77.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8019)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3215):	.58	.105	1.62	78.53
+ ID2= 2 (8018):	18.11	3.139	1.63	77.72
ID = 3 (8019):	18.69	3.243	1.63	77.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8020)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3216):	.64	.114	1.63	78.55
+ ID2= 2 (8019):	18.69	3.243	1.63	77.75
ID = 3 (8020):	19.33	3.357	1.63	77.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8021)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3217):	.59	.105	1.62	78.54
+ ID2= 2 (8020):	19.33	3.357	1.63	77.77
ID = 3 (8021):	19.92	3.462	1.63	77.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8022)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3218):	.58	.105	1.62	78.53
+ ID2= 2 (8021):	19.92	3.462	1.63	77.80
ID = 3 (8022):	20.50	3.567	1.63	77.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8023)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3219):	.95	.171	1.63	78.60
+ ID2= 2 (8022):	20.50	3.567	1.63	77.82
ID = 3 (8023):	21.45	3.737	1.63	77.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8024)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3220):	.66	.117	1.63	78.56
+ ID2= 2 (8023):	21.45	3.737	1.63	77.85
ID = 3 (8024):	22.11	3.854	1.63	77.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8025)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3221):	.50	.089	1.62	78.51
+ ID2= 2 (8024):	22.11	3.854	1.63	77.87
ID = 3 (8025):	22.61	3.943	1.63	77.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8026)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3222):	.61	.109	1.62	78.54
+ ID2= 2 (8025):	22.61	3.943	1.63	77.89
ID = 3 (8026):	23.22	4.052	1.63	77.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8027)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3223):	.61	.109	1.62	78.54
+ ID2= 2 (8026):	23.22	4.052	1.63	77.91
ID = 3 (8027):	23.83	4.161	1.63	77.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8028)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3224):	.61	.109	1.62	78.54
+ ID2= 2 (8027):	23.83	4.161	1.63	77.92
ID = 3 (8028):	24.44	4.270	1.63	77.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8029)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3225):	1.19	.214	1.63	78.62
+ ID2= 2 (8028):	24.44	4.270	1.63	77.94
ID = 3 (8029):	25.63	4.484	1.63	77.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (8030)

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (3226):	20.31	2.929	1.72	72.86
+ ID2= 2 (8029):	25.63	4.484	1.63	77.97
ID = 3 (8030):	45.94	7.352	1.67	75.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (2270)
ID= 1 DT= 1.0 min

Area (ha)= 2.81
Total Imp(%)= 26.00 Dir. Conn.(%)= 26.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	.73	2.08	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	136.90	40.00	
Mannings n	=	.013	.250	
Max.Eff.Inten.(mm/hr)=		274.54	148.83	
over (min)		5.00	10.00	
Storage Coeff. (min)=		2.06 (ii)	9.22 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		.37	.12	
				TOTALS
PEAK FLOW	(cms)=	.48	.55	.836 (iii)
TIME TO PEAK	(hrs)=	1.45	1.57	1.52
RUNOFF VOLUME	(mm)=	79.00	48.34	56.31
TOTAL RAINFALL	(mm)=	80.00	80.00	80.00
RUNOFF COEFFICIENT	=	.99	.60	.70

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 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.

FINISH