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Consulting Engineers

PANORAMA NORTH

Town of Collingwood

Regional Stormwater Management Report

prepared by:

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prepared for:

Ted North (295 Mountain Road) Ltd.
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TABLE OF CONTENTS

1	Introduction	1
1.1	Objectives	1
1.2	Guidelines and Background Documents	3
2	Site Description	4
2.1	Location and Topography	4
2.2	Existing Zoning and Future Land Use Assumptions	4
3	Existing Drainage Conditions	5
3.1	Drainage Catchment Characteristics	5
3.2	Hydrologic Modeling	6
4	Regional SWM Criteria	8
4.1	Drainage Outlet Considerations	8
4.1.1	Taylor's Creek (Outlet 'A')	8
4.1.2	Mountain Road / Tenth Line Intersection (Outlet 'B')	9
4.1.3	Georgian Trail to Black Ash Creek (Outlet 'C')	9
4.1.4	Georgian Trail to Cranberry Marsh (Outlet 'D')	10
4.2	Water Quality Treatment	10
4.3	Peak Flow Attenuation	11
5	Proposed Drainage Conditions	12
5.1	Regional Stormwater Management Plan	12
5.2	Panorama North Development	13

5.3	Tenth Line Drainage	15
6	Conclusions and Recommendations	16

APPENDICES

Appendix A: Existing Conditions Modeling

Appendix B: Proposed Conditions Modeling

LIST OF TABLES

Table 1: Existing Conditions Flow Summary	7
Table 2: Taylor's Creek Design Flows	9
Table 3: Proposed Development Conditions Flow Summary	14
Table 4: Natural Channel Upstream of Outlet 'C' Peak Flows	15

LIST OF FIGURES

Figure 1: Site Location and Zoning Plan	2
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LIST OF DRAWINGS

DP-1: Pre-Development Drainage Plan
DP-2: Post-Development Drainage Plan

1 Introduction

C.C. Tatham & Associates Ltd. (CCTA) was retained by Ted North (295 Mountain Road) Ltd. to prepare a Regional Stormwater Management Study in support of the planning applications for the proposed Panorama North residential subdivision located at 295 Mountain Road, within the Town of Collingwood.

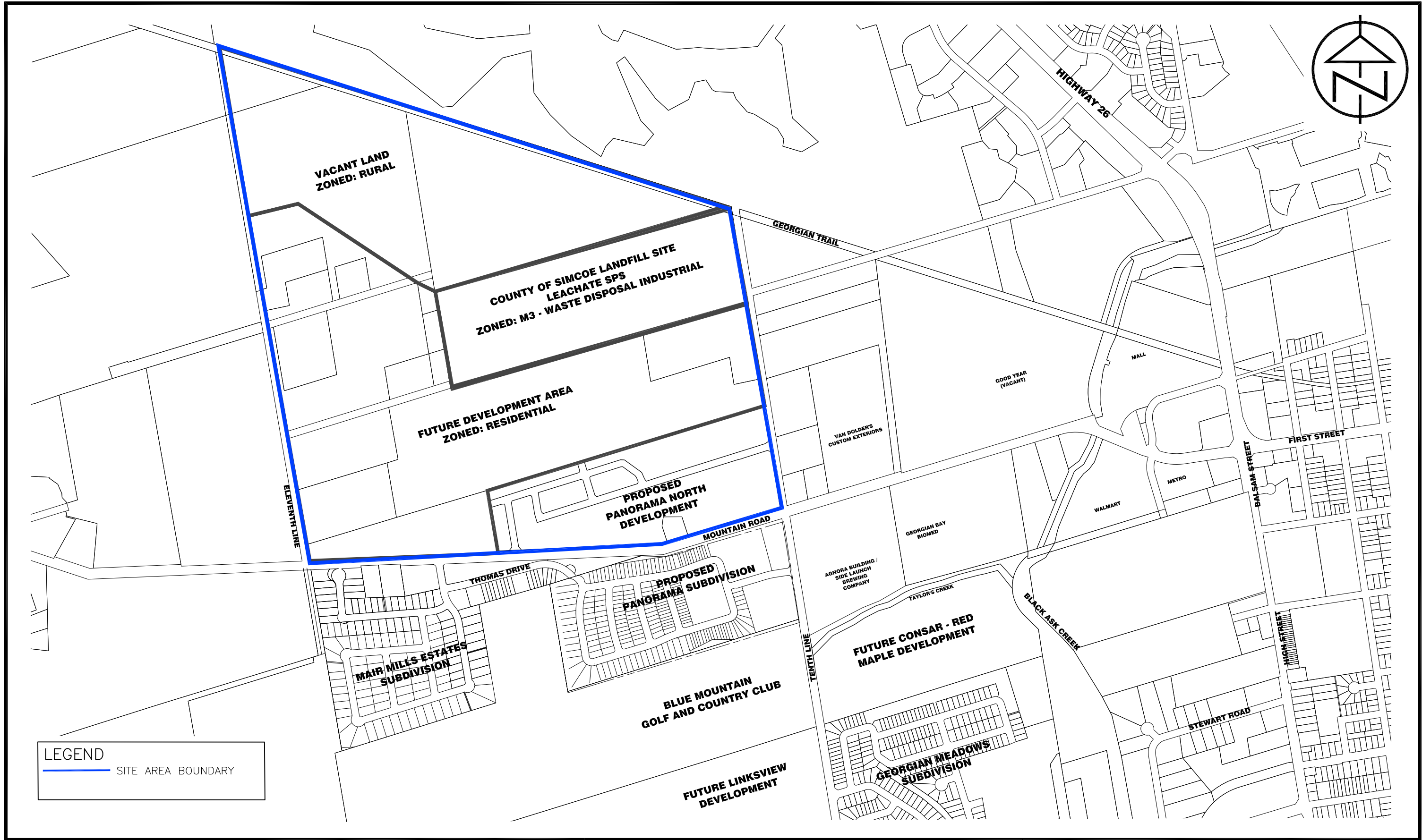
As per the *Town of Collingwood Official Plan*, the 20.12 ha development site is located within a secondary plan boundary referred to as the Mountain Road West Corridor, which is bounded by the Tenth Line to the east, Grey Road 19/Osler Bluff Road to the west, County Road 32/Sixth Street to the south and the Georgian Trail and Nottawasaga Bay shoreline to the north. For the purpose of this report, we have focused the study area to the lands that surround Panorama North and those that are potentially connected from a drainage perspective. The study area is bounded by Tenth Line to the east, Eleventh Line to the west, the Georgian Trail to the north and Mountain Road to the south. The location of the development site and the study area is illustrated in Figure 1.

1.1 Objectives

The primary objective of this report is to evaluate the stormwater management (SWM) options for the proposed development, while ensuring the proposed SWM strategy works in the regional context of the study area and specifically will not inhibit future development or future SWM plans. As requested by Town, this report presents the SWM approach for the Panorama North development in the context of the regional study area.

The intent of the study is to address the following:

- investigate the existing drainage conditions in the watersheds within and downstream of the study area and confirm the appropriate study area has been defined;
- develop SWM criteria that ensures no adverse effects to downstream drainage conditions, while meeting Town, Nottawasaga Valley Conservation Authority (NVCA) and Ministry of the Environment, Conservation and Parks (MECP) requirements;
- demonstrate how the proposed Panorama North subdivision will meet the SWM criteria while working in relation to the potential future development of the remaining secondary plan and study area; and
- where necessary provide general SWM recommendations to be considered for future development lands within the study area lands included in this assessment.



LEGEND

— SITE AREA BOUNDARY

CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

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**PANORAMA NORTH SUBDIVISION
TOWN OF COLLINGWOOD**

SITE LOCATION MAP



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

SCALE:

1:10,000

DATE:

NOV/18

DWG.

FIG. 1

JOB NO.

116167

1.2 Guidelines and Background Documents

This report was prepared recognizing the pertinent Conservation Authority, Municipal and Provincial guidelines on water resources, including the following publications:

- Black Ash Creek Subwatershed Plan, The Nottawasaga Valley Conservation Authority, August 2000;
- Development Review Guidelines, The Nottawasaga Valley Conservation Authority, December 2013;
- Stormwater Management Planning and Design Manual, The Ministry of the Environment, Conservation and Parks, March 2003; and
- Development Standards, Corporation of the Town of Collingwood (Town), July 2007.

2 Site Description

2.1 Location and Topography

Panorama North is located at the northwest corner of the Mountain Road and Tenth Line intersection. The site is legally described as Part of Lot 45, Concession 11 (formerly in the Township of Nottawasaga), Town of Collingwood, County of Simcoe.

Much of the study area is composed of undeveloped land with open fields, trees and bushes. The north side of the study area has George Christie Nature Trails on the west and a landfill, known as Site 2, which is managed by Simcoe County in the east. A few single-family dwellings are also present within the study area. The existing Mair Mills Estates development and proposed Panorama development (formerly Mair Mills Village) are located south of the study area, while various industrial and commercial properties are located immediately east along the Tenth Line.

Most of the study area drains north to low-lying wetland areas that are part of the Cranberry Marsh and Black Ash Creek drainage systems. The wetlands outlet north, through a series of culverts underneath Georgian Trail. The remainder of the study area included portion of the Panorama North property drains south to Taylor's Creek which is a tributary to Black Ash Creek. The study area also receives external drainage from the Mair Mills Estates subdivision, located south of Mountain Road and from farm fields located west of the Eleventh Line.

The Soil Survey of Simcoe County Map No. 29 of the Ontario Soil Survey shows that underlying soils in the study area are mostly a mixture of sand and loam. Specifically, there are six soil types present; Wiarton loam (Wi); Berrien sandy loam (Bes); Harkaway loam (Hal); Sargent silty clay loam (Smsc); Smithfield gravelly sandy loam (Stsl) and; Tioga sand loam (Tif).

2.2 Existing Zoning and Future Land Use Assumptions

The existing zoning for the study area is shown on Figure 1. The George Christie Nature Trails are adjacent to the Georgian trail to the north of the study area and are designated as RU – Rural and the Simcoe County landfill is east of the George Christie Nature Trails and is designated as M3 – Waste Disposal Industrial. It is assumed these areas will not be developed in the future. The proposed Panorama North site includes areas designated for residential and recreational use as per the proposed Draft Plan. The remainder of the study area is classified as DR – Deferred Residential Development. To be conservative from a SWM planning perspective it is assumed these areas will be fully developed for residential use in the future.

3 Existing Drainage Conditions

3.1 Drainage Catchment Characteristics

Existing site topography, ground cover, land uses and drainage patterns were established through site visitation, interpretation of topographic mapping and topographic survey. The study area has four ultimate drainage outlets (Outlet 'A' - Taylor's Creek; Outlet 'B' – roadside drainage ditch at intersection of Tenth Line and Mountain Road; Outlet 'C' – culvert crossings underneath Georgian Trail to Black Ash Creek and; Outlet 'D' – culvert crossings underneath Georgian Trail to Cranberry Marsh). After a review of the available background documents, site visits and a topographic survey, it has been confirmed that drainage on the study area is characterized by the following drainage divides and outlets:

- The primary outlet for the existing Panorama Subdivision site is Outlet 'A'. Currently, the Mair Mills Estates subdivision SWM pond, located south of Mountain Road and approximately 5.7 ha of undeveloped land adjacent to Mountain Road (Catchment 101 - referred to as the Sly property) drains to a culvert/watercourse system at the west limit of the Panorama North site flows to a catch basin with a 150 mm diameter subdrain. Field evidence indicates the subdrain flows east and southeast across the Panorama North site to Mountain Road, collecting surface runoff from two additional surface inlets along its path. The subdrain then crosses Mountain Road and the Panorama Subdivision site (formerly Mair Mills Village), discharging to the surface on the Blue Mountain Golf & Country Club property, approximately 50 m west of the Tenth Line. Discharge from the subdrain drains southeast overland into the Tenth Line roadside ditch and into Taylor's Creek. Surface water that flows to the existing catch basin on the Panorama North site that exceed the subdrain capacity are conveyed as overland flow across the Panorama North site to a 500 mm diameter CSP culvert that conveys runoff under Mountain Road onto the Panorama Subdivision site then southeast to Taylor's Creek. This includes approximately 8.7 Ha of the Panorama North site (Catchment 103). We note that under high flow conditions, flows were also observed to outlet from the Panorama North site directly north onto the adjacent property that drain eventually to Cranberry Marsh. This observation is supported by detailed topographic data available for the area. The exact quantity of the flow split is not known; however, a reasonable estimate is that 75% of flows drain southeast through Panorama Subdivision lands to the south and 25% of flows drain to north to the adjacent property.
- A small portion of the Panorama North site and the south portion of Tenth Line (0.7 Ha - Catchment 104) drain to the Tenth Line roadside ditch. Drainage to this location ultimately drains to Mountain Road ditch via a 400 mm diameter CSP culvert underneath Tenth Line (Outlet 'B').
- To the north of the Panorama North site a high point of land along the centre of the study area between the landfill and Panorama North split drainage from the study area to two outlet locations – Cranberry Marsh and Black Ash Creek. The Black Ash Creek outlet is north along the Tenth Line to twin 450mm diameter CSPs that cross the Georgian Trail (Outlet 'C'). From this location drainage then flows east via a ditch system eventually outletting to Black Ash Creek. Drainage to this location includes the east half of the Panorama North site and the front half of the vacant land to the north (Catchment 105) and the Simcoe County Landfill site (Catchment 106).

- The Cranberry Marsh outlet location is for the lands west of the drainage divide and its eventual drainage outlet is identified as Outlet 'D' which is a series of culverts (+- four) that cross the Georgian Trail and enter the Cranberry Marsh drainage system. Drainage to this location consists largely of external areas identified as Catchment 102 (31.1 Ha), 108 (15.5 Ha) and 107 (77.7 Ha) on Drawing DP-1. The only contribution to this drainage system from the Panorama North site is the potential spill from the external drainage referred to previously that can occur under high flows. A 31 ha area (Catchment 102) is the parcel of land north of Panorama North that drains overland to a drainage draw that exists west of the ridge from the Panorama North site to the southern boundary of the landfill. There is evidence of a drainage channel at the downstream end of this catchment that conveys flows from this point west to the Catchment 107 area which consists of wetlands and poorly draining areas. At the south-west corner of the landfill site a flow split at the start of the channel could potentially direct some flows to Outlet 'C'; however, it was noted during a site visit that 1 m high earth berm has been constructed to restrict that flow spill and direct flows west.

A Pre-Development Drainage Plan (Drawing DP-1) for the study area is included at the back of this report for illustrating the catchment boundaries.

3.2 Hydrologic Modeling

A Visual Otthymo hydrologic model has been developed to quantify pre-development flows to the four site outlets. Hydrologic modelling of the drainage area to Taylor's Creek was completed by CCTA in October 2018 as part of the Panorama Subdivision design and Taylor's Creek rechannelization works which were completed in 2018. Catchment parameters were calculated based on current land uses (as seen in aerial photography and site visits) and underlying soil data from the Soil Survey of Simcoe County.

Peak flows resulting from the 25 mm design storm, 2 year to 100 year design storms as well as the Regional Storm event (Timmins storm) at the four outlet locations are included in Table 1. The lag in peaking time for drainage areas located far from the outlets was calculated using Uplands method. The model input parameters including CN values, Time to Peak calculations and Uplands method calculations as well as the detail model results are provided in Appendix A.

Table 1: Existing Conditions Flow Summary

Design Storm	Outlet 'A': Taylor's Creek Tributary (cms)		Outlet 'B': Tenth Line/Mountain Road Intersection (cms)		Outlet 'C': Georgian Trail to Black Ash Creek (cms)		Outlet 'D': Georgian Trail to Cranberry Marsh (cms)	
	CHI	SCS	CHI	SCS	CHI	SCS	CHI	SCS
25 mm	0.034	-	0.067	-	0.225	-	0.128	-
2 Year	0.046	0.098	0.097	0.273	0.302	0.659	0.225	0.553
5 Year	0.076	0.173	0.197	0.529	0.538	1.096	0.458	1.036
10 Year	0.106	0.230	0.297	0.724	0.729	1.427	0.661	1.426
25 Year	0.147	0.300	0.438	0.968	0.984	1.862	0.944	1.962
50 Year	0.182	0.356	0.557	1.163	1.195	2.205	1.187	2.400
100 Year	0.219	0.449	0.682	1.457	1.418	2.558	1.450	2.864
Regional (Timmins)	0.711	-	2.277	-	2.801	-	5.207	-

CHI – Chicago 4 Hour Design Storms; SCS – SCS 24 Hour Type II Design Storms

4 Regional SWM Criteria

The goal of this Regional SWM Report is to evaluate the SWM options for the proposed development, while ensuring the proposed SWM strategy works in the regional context of the Secondary Plan area and specifically will not inhibit future development or future SWM plans. To achieve this, a solid understanding of the existing and future conditions of the drainage outlets and their downstream flow paths is necessary. With this understanding, outlet specific considerations for water quality and peak flow attenuation were established.

4.1 Drainage Outlet Considerations

4.1.1 Taylor's Creek (Outlet 'A')

Taylor's Creek traverses through the Blue Mountain Golf & Country Club property, crosses Tenth Line, traverses through the Red Maple Development lands and ultimately outlets to Black Ash Creek. Taylor's Creek rechannelization, east of Tenth Line to Black Ash Creek was completed in the summer of 2018. As per the Black Ash Creek sub-watershed plan, quantity control is not required within the watershed for sites discharging to the reconstructed reach of Black Ash Creek through the Town of Collingwood, provided drainage can be conveyed in a safe manner. Hence, Taylor's Creek was designed to convey peak flows that exceed the existing levels, specifically controlled peak flows resulting from the 2 year to 100 year storms, as well as the uncontrolled Regional Storm peak flow from all upstream areas including the proposed Panorama Subdivision pond (including drainage from the western portion of Panorama North).

A Visual Otthymo hydrologic model was developed to quantify ultimate design flows used for rechannelization of Taylor's Creek. Assumed design peak flow rates for Taylor's Creek at Tenth Line are shown in Table 2 and should be met with the ultimate SWM plan. The 2 year to 100 year flows were updated based on current IDF data.

Table 2: Taylor's Creek Design Flows

Design Storm	Outlet 'A': Taylor's Creek Tributary – HYD 804 (cms)	
	CHI	SCS
25 mm	0.405	-
2 Year	0.588	1.433
5 Year	1.144	2.691
10 Year	1.673	3.669
25 Year	2.393	4.964
50 Year	2.990	6.027
100 Year	3.612	7.242
Regional (Timmins)	11.883	-

CHI – Chicago 4 Hour Design Storms; SCS – SCS 24 Hour Type II Design Storms

4.1.2 Mountain Road / Tenth Line Intersection (Outlet 'B')

A small portion of the Panorama North site currently flows to the south ditch of Mountain Road via series of culverts underneath Tenth Line and Mountain Road. Approximately 240 m east of the intersection of Mountain Road and Tenth Line, a cut-off ditch conveys flow to southeast corner of the Agnora Industrial Plant where it is piped to Black Ash Creek via an 800 mm diameter culvert. However, this system is by-passed when flows exceed approximately 0.2 m³/s, resulting in downstream flooding of Mountain Road. Therefore, it is preferred to reduce the peak flows at this outlet and direct those flows to Taylor's Creek (Outlet 'A').

A Municipal Class Environmental Assessment is currently ongoing for improvements of Tenth Line, from Sixth Street and Mountain Road and Mountain Road, from Cambridge Street to Tenth Line. For the preliminary design of the drainage infrastructure on Mountain Road, it is assumed that as much of the existing drainage should be redirected to Taylor's Creek from Outlet 'B' with the exception of the lands immediately adjacent to the intersection which will continue to discharge flows to Outlet 'B' due to physical grade constraints.

4.1.3 Georgian Trail to Black Ash Creek (Outlet 'C')

The east side of the landfill area (Catchment 106) drains underneath the Georgian Trail via a 675 mm diameter culvert. A channel on the north side of Georgian Trail traverses through the Cranberry Golf Course property and drains into Black Ash Creek. It is assumed this drainage pattern will be maintained under ultimate development conditions.

The eastern portion of the study area (Catchment 105) south of the landfill drain east to the Tenth Line ditch. Tenth Line ends at the landfill entrance, however a walking trail (Tenth Line trail) continues north until it intersects Georgian Trail. The Tenth Line roadside ditch continues along the east side of Tenth

Line trail for approximately 100 m beyond the landfill entrance, until it turns east conveying flow to a low-lying wetland area across the Georgian Trail via twin 450 mm diameter culverts. Beyond the landfill entrance, the Tenth Line ditch can be characterised as a natural channel due to its defined bed and banks, formed over time by the frequent action of running water.

Development within the study area must maintain the existing drainage conditions through the downstream lands.

4.1.4 Georgian Trail to Cranberry Marsh (Outlet 'D')

The western portion of the study area (Catchments 102 and 107) along with 15 ha of external drainage area (Catchment 108) are conveyed to the low-lying wetland, bounded by Georgian Trail to the north. The wetland provides some natural storage and peak flow attenuation before outletting to the Cranberry Golf Course via four culvert crossings underneath Georgian Trail.

Development within the study area north of the Panorama North site must maintain the existing drainage conditions through the downstream lands. During detail design of residential lands within the study area, the outlets to the wetland must be designed in a manner that prevents any damage to the ecologically sensitive environment (i.e. mimic overland flow into the wetland rather than creating a concentrated point load). No drainage from Panorama North development is proposed to discharge to this location, however, the major storm event flood spill that currently occurs for the external lands (Catchment 101 and Mair Mills Estates) is proposed to be maintained.

4.2 Water Quality Treatment

As per NVCA Guidelines, all stormwater management plans are required to meet a minimum 80% TSS removal or an Enhanced (Level 1) removal. The Town has previously utilized a variety of SWM measures to provide water quality treatment such as wet ponds, dry ponds with underground infiltration chambers, oil grit separators, bio-retention facilities, etc. Infiltration measures are dependent on the depth of groundwater table and soil conditions. The geotechnical analysis of the Panorama North and Panorama Subdivision sites showed that relatively poorly draining soils exist and there is insufficient separation between the groundwater table and the existing grade to implement significant infiltration measures. Prior to development within the study area outside of the Panorama North site, geotechnical analysis should be completed to determine groundwater table and soil conditions.

Considering the large drainage area of each property and expected challenges with high groundwater conditions in the study area, it is anticipated that water quality control will be provided through conventional stormwater management facilities.

4.3 Peak Flow Attenuation

Taylor's Creek (Outlet 'A') has been rechannelized to convey higher flows than existing conditions as described in Section 4.1.1 of this report. Ultimate development flow rates to Outlet 'A' should not exceed the Taylor's Creek rechannelized design flow shown in Table 2. Drainage to the intersection of Mountain Road and Tenth Line (Outlet 'B') has been re-directed and only includes a small portion of the Panorama North lands. No additional drainage area should be directed to this outlet and the ultimate development peak flows should not exceed existing peak flows for the all storms up to the 100-year storm. For Outlets 'C' and 'D', peak flow must be attenuated to match the existing peak flows resulting from the 2 year to 100-year storms.

5 Proposed Drainage Conditions

5.1 Regional Stormwater Management Plan

The following describes the regional stormwater management plan for the study area. It is assumed that the future land uses for the northern portion of the study area that includes the low-lying wetland areas, George Christie Nature Trails and Simcoe County landfill will remain as existing. The majority of the remaining study area is designated for future residential development; however, at this time, only the draft plan for Panorama North is proposed. For the purposes of this evaluation we have assumed it all can be developed. The proposed condition drainage divides and outlets are as follows:

- As with existing conditions, the western portion of the Panorama North site (Catchment 201) will drain south through Panorama Subdivision via a culvert underneath Mountain Road. A trunk 1:100 year storm sewer will be constructed through the Panorama Subdivision outletting into the Panorama Subdivision SWM facility to accept the 100 year flow from Panorama North. The Panorama Subdivision SWM facility has also been designed to accept flow from Panorama North and provide Enhanced Level 1 water quality treatment before outletting into Taylor's Creek (Outlet 'A'). The trunk sewer will be extended through the Panorama North development to accept the existing 1:100 year external flows from the Mair Mills Estates and Sly Property (Catchment 101). This will eliminate the potential flood spill to the adjacent northern properties for all storms up to the 100 year storm. It is still proposed to divert approximately 25% of peak flow from these external areas under the Regional Storm event to the North, matching the existing conditions.
- The eastern portion of Panorama North (Catchment 202) will drain to a proposed SWM facility on the northeast corner of the Panorama North site. The SWM facility will discharge to the Tenth Line roadside ditch, and ultimately to Outlet 'B'. The ditch and culvert system on the east side of Tenth Line will be upsized for increased conveyance, as detailed in Section 5.3 of this report. Flows resulting from the Regional Storm event will overtop the spillway located on the north side of the SWM facility and drain onto neighbouring property, matching the existing conditions.
- Subject to final design it is expected the high point in Tenth Line will remain as per existing resulting in some drainage to Outlet 'B' (Catchment 203).
- The lands north of Panorama North will continue to drain separately from the Panorama North lands as per existing conditions. It is expected the ridge through the centre will continue to split drainage to Outlets 'C' and 'D'. All development in this area will provide their own SWM controls to ensure that flows at Outlets 'C' and 'D' do not exceed existing levels. Ideally the developable portions of Catchments 102 and 107 will be combined to require one SWM facility for quality and quantity control. Similarly, we expect a SWM facility will be required for the Catchment 204 lands that will outlet into the Tenth Line drainage system at its north end.

A Post-Development Drainage Plan (Drawing DP-2) for the study area is included at the back of this report for illustrating the catchment boundaries.

5.2 Panorama North Development

The Draft Plan of Subdivision for Panorama North consists of 122 single family dwellings, 588 townhouses and 219 apartment units. There is also a dedicated 1.02 ha park area and 0.8 ha SWM block. The subdivision will be accessed from Tenth Line and Mountain Road. Future road connections at the northern and western property boundaries are also provided.

The Panorama Subdivision SWM pond is designed to accept drainage from the western portion of Panorama North development (Catchment 201 - 13.1 ha). The east portion of Panorama North (8.4 ha) will drain to proposed wet pond at the northeast corner of the development.

The Panorama North wet pond will control the release of the 25 mm storm runoff between 24 and 48 hours and direct up to the 100-year storm outflow to a proposed storm sewer along the Tenth Line for approximately 130 m, then across Tenth Line into the east Tenth Line roadside ditch. This outlet path and the proposed changes are described in more details in Section 5.3. The Regional Storm flow from the pond will be directed as per existing conditions to the neighbouring northern property via an overflow spillway. Level 1 “Enhanced” water quality control in the form of 80% total suspended solids removal will be provided by sizing a permanent pool within the SWM facility. The pond outlets were configured to match post development flows to existing levels at Outlet ‘C’. Details of the pond design are provided in the Panorama North Functional Servicing and Stormwater Management Report, submitted under separate cover.

The existing condition Visual Otthymo model was updated to reflect the post development drainage conditions, including the development of Panorama Subdivision and Panorama North. The proposed conditions detail model results are provided in Appendix B. The resulting peak flows at the four outlet locations are shown in Table 3. Post development peak flows to Outlet ‘A’ are lower than the target design flows set for the rechannelized section of Taylor’s Creek. Post development peak flows up to the 100-year storm are lower than or matching the existing levels for Outlets ‘B’ and ‘C’ with the development of Panorama North. No change in flows is expected to the Outlet ‘D’ location for minor flows and a small reduction in major flows is expected as the Panorama North Subdivision is proposing to accept all external flows from Mair Mills estates and Sly property up to the 1:100 year storm flow.

Table 3: Proposed Development Conditions Flow Summary

Design Storm	Outlet 'A': Taylor's Creek Tributary (cms)		Outlet 'B': Tenth Line/Mountain Road Intersection (cms)		Outlet 'C': Georgian Trail to Black Ash Creek (cms)		Outlet 'D': Georgian Trail to Cranberry Marsh (cms)	
	CHI	SCS	CHI	SCS	CHI	SCS	CHI	SCS
25 mm	0.362 (0.405)	-	0.042 (0.067)	-	0.220 (0.225)	-	0.128 (0.128)	-
2 Year	0.554 (0.588)	1.398 (1.433)	0.069 (0.097)	0.074 (0.273)	0.289 (0.302)	0.591 (0.659)	0.225 (0.225)	0.553 (0.553)
5 Year	1.112 (0.144)	2.617 (2.691)	0.097 (0.197)	0.123 (0.529)	0.493 (0.538)	0.956 (1.096)	0.458 (0.458)	1.036 (1.036)
10 Year	1.616 (1.673)	3.563 (3.669)	0.118 (0.297)	0.157 (0.724)	0.657 (0.729)	1.229 (1.427)	0.661 (0.661)	1.425 (1.426)
25 Year	2.295 (2.393)	4.826 (4.964)	0.148 (0.438)	0.202 (0.968)	0.874 (0.984)	1.654 (1.862)	0.943 (0.944)	1.961 (1.962)
50 Year	2.857 (2.990)	5.712 (6.027)	0.170 (0.557)	0.249 (1.163)	1.051 (1.195)	2.071 (2.205)	1.187 (1.187)	2.400 (2.400)
100 Year	3.449 (3.612)	6.576 (7.242)	0.193 (0.682)	0.289 (1.457)	1.237 (1.418)	2.476 (2.558)	1.450 (1.450)	2.863 (2.864)
Regional (Timmins)	11.504 (11.883)	-	0.153 (2.277)	-	2.893 (2.801)	-	5.065 (5.207)	-

CHI – Chicago 4 Hour Design Storms; SCS – SCS 24 Hour Type II Design Storms; (0.034) – Existing condition flow rate (Taylor's Creek Design Flows for Outlet 'A', Pre-development flow rate for Outlets 'B', 'C' and 'D')

Upstream of Outlet 'C', Tenth Line roadside ditch drains into a natural channel north of the landfill entrance. The natural channel receives drainage from the east portion of Panorama North and the adjacent northern lands, south of the landfill. Table 4 specifically shows the existing and proposed peak flows through the natural channel. The post development peak flows up to the 100-year storm are controlled to match the existing levels.

Table 4: Natural Channel Upstream of Outlet 'C' Peak Flows

Design Storm	Peak Flow (m ³ /s)	
	CHI	SCS
25 mm	0.056 (0.061)	-
2 Year	0.081 (0.095)	0.202 (0.271)
5 Year	0.153 (0.199)	0.359 (0.499)
10 Year	0.216 (0.289)	0.483 (0.682)
25 Year	0.302 (0.416)	0.728 (0.930)
50 Year	0.376 (0.524)	0.991 (1.132)
100 Year	0.456 (0.641)	1.245 (1.343)
Regional (Timmins)	1.746 (1.642)	-

CHI – Chicago 4 Hour Design Storms; SCS – SCS 24 Hour Type II Design Storms; (0.034) – Existing condition flow rate

5.3 Tenth Line Drainage

Under existing conditions, the east portion Panorama North lands drain north as overland flow through the adjacent lands prior to entering the Tenth Line drainage system just south of the landfill site. The Tenth Line currently drains via a ditch and culvert system along the east side of the road. The north end of Tenth Line has a shallow slope (0.25%) and the roadside ditch in that area only has a flow capacity of 0.13 m³/s. In addition, there are also six driveway culverts (250 mm to 450 mm dia.) that restrict flow capacity in the system. The west side of the road north of the Panorama North property has a raised gravel path matching the centreline of road elevation. There is a forcemain underneath the gravel path that conveys leachate from the landfill to a sanitary maintenance hole at the intersection of Mountain Road and Tenth Line.

Under proposed conditions, all storms up to the 100 year storm from the Panorama North SWM facility should be conveyed via the Tenth Line right-of-way to the north instead of across private property. The SWM facility outflow resulting from the 100-year storm is 0.23 m³/s, which exceeds the current flow capacity of the existing ditch and culvert system. As a result, it is proposed to upgrade the Tenth Line roadside drainage system to accommodate the added flow from Panorama North. The flows will be piped in a storm sewer north along the Tenth Line for approximately 130 m. From this point, it is not feasible to continue the storm sewer due to grading and cover constraints and the storm sewer will be daylighted. The forcemain hinders construction activity on the west side of the road and therefore, it is proposed to upgrade the existing ditch and culvert system on the east side of Tenth Line to the drainage outlet that exists at the north termination of the Tenth Line. To accommodate the additional flow, six driveway culverts will be upsized and three sections of the ditch will be widened as shown conceptually on Drawing DP-2.

6 Conclusions and Recommendations

This Regional SWM plan demonstrates that Panorama North can be developed without any adverse downstream drainage conditions and without impacting the drainage plans or future development of the lands within the study area.

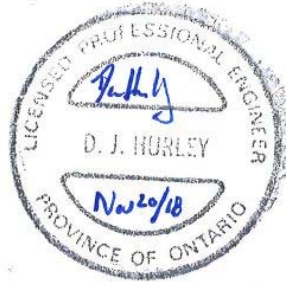
The west portion of Panorama North will drain to the Panorama Subdivision SWM facility and outlet into the rechannelized Taylor's Creek. The east portion of Panorama North development will drain into a wet pond proposed at the northeast corner of the property to provide Level 1 "Enhanced" water quality control and to attenuate flows to existing levels at Outlet 'C'. Outflows from the pond, up to the 100-year storm will be piped along Tenth Line to the north for approximately 130 m, before outletting to the improved ditch and culvert system on the east side of the road. To safely convey flows from this system, six driveway culverts and three sections of the ditch will require improvements. Regional Storm flow from the pond will spill onto the neighbouring property controlled to a peak flow that matches the existing spill at this location. Majority of peak flow from the site that previously went to Outlet 'B' will be redirected to Taylor's Creek through the development of Panorama Subdivision. Flows to Outlets 'C' and 'D' are controlled to existing levels, up to the 100 year storm.

Land designated for future development can be developed adhering to SWM criteria established in this report. Peak flow targets at a conceptual level were set for each outlet by considering existing and future drainage conditions downstream of the study area. As per NVCA requirements, future development must achieve Level 1 'Enhanced' water quality treatment. Given the large drainage areas still to be developed, it is anticipated that quantity and quality control within the study area will be provided using conventional stormwater management facilities.

This Regional SWM plan demonstrates how future development within the study area area will be developed to mitigate stormwater impacts to downstream lands. We trust that this report meets the Town's requirements to support the proposed Panorama North development.



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Intern Engineer



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Vice President,
Manager – Water Resources Engineering

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APPENDIX A: EXISTING CONDITIONS MODELING

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
	Date:	11-Oct-18
	Designed By:	ASB
	Checked By:	DJH
Subject:		HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

EXISTING CONDITIONS

Catchment 101 Area 5.7 ha

WEIGHTED CN VALUE																												
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type		
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN			
Stsl	SARGENT	AB	Sand Loam	1	2.28	0.4	2.28	1	46	0	0	0	59	0	0	0	51	0	0	68	0	0	100	0	0	50	46	
Bes	BERRIEN	AB	Sand Loam	1	1.71	0.3	1.71	1	46	0	0	0	59	0	0	0	51	0	0	68	0	0	100	0	0	50	46	
Hal	HARKAWAY	B	Loam	2	1.71	0.3	1.71	1	60	0	0	0	69	0	0	0	65	0	0	74	0	0	100	0	0	50	60	
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
Totals					5.7	1.00	5.70	1.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		50.2

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 208 m
 Minimum Catchment Elevation 197 m
 Catchment length 600 m
 Catchment Slope 2%
 Catchment Area 5.7 ha

Time of Concentration (Minutes) 25.46
 Time of Concentration (Hours) 0.42
 Time to Peak (2/3 x Time of Concentration) 0.28

Time to Peak 0.70 hrs

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 208 m
 Minimum Catchment Elevation 197 m
 Catchment length 600 m
 Catchment Slope 2%
 Catchment Area 5.7 ha

Time of Concentration (Minutes) 63.35
 Time of Concentration (Hours) 1.06
 Time to Peak (2/3 x Time of Concentration) 0.70

Initial Abstraction 10 mm

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient 0.13

Landuse Type	Soil Series				
	Stsl	Bes	Hal	0	0
Forest/Woodland	0.08	0.08	0.25	#N/A	#N/A
Cultivated	0.22	0.22	0.35	#N/A	#N/A
Pasture/Lawn	0.1	0.1	0.28	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.09	0.09	0.27	#N/A	#N/A
Soil Series Total	0.08	0.08	0.25	#N/A	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
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	Checked By:	DJH
	Subject:	HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 102 Area 31.1 ha

WEIGHTED CN VALUE																													
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMP			Average CN for Soil Type
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
Stsl	SARGENT	AB	Sand Loam	1	15.1146	0.486	9.7791	0.647	46	0	59	4.9878	0.33	51	0	91	0	68	0.3476	0.023	100	0	0	50	48.892				
Bes	BERRIEN	AB	Sand Loam	1	14.8036	0.476	12.657	0.855	46	0	59	2.1465	0.145	51	0	#N/A	0	68	0	100	0	0	50	46.725					
Hal	HARKAWAY	B	Loam	2	1.1818	0.038	1.1818	1	60	0	69	0	65	0	#N/A	0	74	0	100	0	0	50	60						
	#N/A	#N/A	#N/A	#N/A	0	0	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0				
	#N/A	#N/A	#N/A	#N/A	0	0	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0				
Totals					31.1	1.00	23.62	0.76		0.00	0.00	7.13	0.23		0.00	0.00		0.00	0.00		0.35	0.01		0.00	0.00	48.3			

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 207.6 m
 Minimum Catchment Elevation 195.6 m
 Catchment length 775 m
 Catchment Slope 2%
 Catchment Area 31.1 ha

Time of Concentration (Minutes) 28.70
 Time of Concentration (Hours) 0.48
 Time to Peak (2/3 x Time of Concentration) 0.32

Time to Peak	0.87 hrs
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For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 207.6 m
 Minimum Catchment Elevation 195.6 m
 Catchment length 775 m
 Catchment Slope 2%
 Catchment Area 31.1 ha

Time of Concentration (Minutes) 78.68
 Time of Concentration (Hours) 1.31
 Time to Peak (2/3 x Time of Concentration) 0.87

Initial Abstraction	9.5 mm
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Runoff Coefficient	0.10
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Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Landuse Type	Soil Series				
	Stsl	Bes	Hal	0	0
Forest/Woodland	0.08	0.08	0.25	#N/A	#N/A
Cultivated	0.22	0.22	0.35	#N/A	#N/A
Pasture/Lawn	0.1	0.1	0.28	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.09	0.09	0.27	#N/A	#N/A
Soil Series Total	0.1033	0.0815	0.25	#N/A	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
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	Designed By:	ASB
	Checked By:	DJH
Subject:		HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 103 Area 8.7 ha

WEIGHTED CN VALUE																									
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
Stsl	SARGENT	AB	Sand Loam	1	3.828	0.44	0	0	46	0	0	59	3.4452	0.9	51	0	0	68	0.3828	0.1	100	0	0	50	55.9
Bes	BERRIEN	AB	Sand Loam	1	2.871	0.33	0	0	46	0	0	59	2.5839	0.9	51	0	0	68	0.2871	0.1	100	0	0	50	55.9
Hal	HARKAWAY	B	Loam	2	2.001	0.23	0	0	60	0	0	69	1.7009	0.85	65	0	0	74	0.3002	0.15	100	0	0	50	70.25
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
Totals					8.7	1.00	0.00	0.00		0.00	0.00		7.73	0.89		0.00	0.00		0.97	0.11		0.00	0.00		59.2

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 200 m
 Minimum Catchment Elevation 195.9 m
 Catchment length 290 m
 Catchment Slope 1%
 Catchment Area 8.7 ha

Time of Concentration (Minutes) 12.42
 Time of Concentration (Hours) 0.21
 Time to Peak (2/3 x Time of Concentration) 0.14

Time to Peak 0.48 hrs

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 200 m
 Minimum Catchment Elevation 195.9 m
 Catchment length 290 m
 Catchment Slope 1%
 Catchment Area 8.7 ha

Time of Concentration (Minutes) 43.57
 Time of Concentration (Hours) 0.73
 Time to Peak (2/3 x Time of Concentration) 0.48

Initial Abstraction 7.3 mm

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient 0.22

Landuse Type	Soil Series				
	Stsl	Bes	Hal	0	0
Forest/Woodland	0.08	0.08	0.25	#N/A	#N/A
Cultivated	0.22	0.22	0.35	#N/A	#N/A
Pasture/Lawn	0.1	0.1	0.28	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.09	0.09	0.27	#N/A	#N/A
Soil Series Total	0.176	0.176	0.3678	#N/A	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
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	Checked By:	DJH
	Subject:	HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 104 Area 0.71 ha

WEIGHTED CN VALUE																														
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type		Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
						Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
WI	WIARTON	B	Loam or Silt Loam	2	0.71	1	0.4693	0.661	60	0	0	69	0	0	65	0.1243	0.175	91	0	0	74	0.1164	0.164	100	0	0	50	71.985		
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		0	0		
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		0	0		
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		0	0		
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		0	0		
Totals					0.71	1.00	0.47	0.66		0.00	0.00		0.00	0.00		0.12	0.18		0.00	0.00		0.12	0.16		0.00	0.00		72.0		

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 191 m
 Minimum Catchment Elevation 190.5 m
 Catchment length 317 m
 Catchment Slope 0%
 Catchment Area 0.71 ha

Time of Concentration (Minutes) 27.05
 Time of Concentration (Hours) 0.45
 Time to Peak (2/3 x Time of Concentration) 0.30

Time to Peak	0.92 hrs
---------------------	-----------------

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 191 m
 Minimum Catchment Elevation 190.5 m
 Catchment length 317 m
 Catchment Slope 0%
 Catchment Area 0.71 ha

Time of Concentration (Minutes) 83.17
 Time of Concentration (Hours) 1.39
 Time to Peak (2/3 x Time of Concentration) 0.92

Initial Abstraction	6.9 mm
----------------------------	---------------

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient	0.32
---------------------------	-------------

Landuse Type	Soil Series				
	WI	0	0	0	0
Forest/Woodland	2	#N/A	#N/A	#N/A	#N/A
Cultivated	0.25	#N/A	#N/A	#N/A	#N/A
Pasture/Lawn	0.35	#N/A	#N/A	#N/A	#N/A
Impervious	0.28	#N/A	#N/A	#N/A	#N/A
Wetland/Lake/SWMP	0.95	#N/A	#N/A	#N/A	#N/A
Meadows	0.05	#N/A	#N/A	#N/A	#N/A
Soil Series Total	0.27	#N/A	#N/A	#N/A	#N/A
Soil Series Total	0.3211	#N/A	#N/A	#N/A	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
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	Checked By:	DJH
Subject:		HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 105 Area 30.6 ha

WEIGHTED CN VALUE																													
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMP			Average CN for Soil Type
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
WI	WIARTON	B	Loam or Silt Loam	2	24.1128	0.788	17.313	0.718	60	0	69	6.0282	0.25	65	0.2894	0.012	91	0	74	0.4823	0.02	100	0	0	50	62.422			
Hal	HARKAWAY	B	Loam	2	5.661	0.185	1.1096	0.196	60	0	69	4.5288	0.8	65	0	91	0	74	0.0226	0.004	100	0	0	50	64.16				
Tif	TIOGA	A	Sand Loam	1	0.8262	0.027	0.6552	0.793	32	0	49	0	38	0.0909	0.11	91	0	62	0.0801	0.097	100	0	0	50	45.086				
	#N/A	#N/A	#N/A	#N/A	0	0	0	#N/A	0	#N/A	0	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	0	#N/A	0	0			
	#N/A	#N/A	#N/A	#N/A	0	0	0	#N/A	0	#N/A	0	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	#N/A	0	0	#N/A	0	0			
Totals					30.6	1.00	19.08	0.62		0.00	0.00	10.56	0.35		0.38	0.01		0.00	0.00		0.59	0.02		0.00	0.00	62.3			

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 196.3 m
 Minimum Catchment Elevation 184 m
 Catchment length 800 m
 Catchment Slope 2%
 Catchment Area 30.6 ha

Time of Concentration (Minutes) 29.72
 Time of Concentration (Hours) 0.50
 Time to Peak (2/3 x Time of Concentration) 0.33

Time to Peak	0.74 hrs
---------------------	-----------------

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 196.3 m
 Minimum Catchment Elevation 184 m
 Catchment length 800 m
 Catchment Slope 2%
 Catchment Area 30.6 ha

Time of Concentration (Minutes) 66.60
 Time of Concentration (Hours) 1.11
 Time to Peak (2/3 x Time of Concentration) 0.74

Initial Abstraction	9.0 mm
----------------------------	---------------

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient	0.27
---------------------------	-------------

Landuse Type	Soil Series				
	WI	Hal	Tif	0	0
Forest/Woodland	0.25	0.25	0.35	#N/A	#N/A
Cultivated	0.35	0.35	0.55	#N/A	#N/A
Pasture/Lawn	0.28	0.28	0.4	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMP	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.27	0.27	0.38	#N/A	#N/A
Soil Series Total	0.2648	0.2648	0.3697	#N/A	#N/A

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CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 106 Area 13.6 ha

WEIGHTED CN VALUE																														
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type	
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN		
WI	WIARTON	B	Loam or Silt Loam	2	12.1448	0.893	0.9777	0.0805	60	0		69	0.9777	0.0805	65	9.0114	0.742	91	0		74	1.178	0.097	100	0		0	50	87.2845	
Hal	HARKAWAY	B	Loam	2	1.4552	0.107	0	0	60	0		69	1.4494	0.996	65	0		91	0		74	0.0058	0.004	100	0			50	65.14	
	#N/A	#N/A	#N/A	#N/A			0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0	
	#N/A	#N/A	#N/A	#N/A			0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0	
	#N/A	#N/A	#N/A	#N/A			0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0	
	#N/A	#N/A	#N/A	#N/A			0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0	
Totals						13.6	1.00	0.98	0.07		0.00	0.00		2.43	0.18		9.01	0.66		0.00	0.00		1.18	0.09		0.00	0.00			84.9

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 198 m
 Minimum Catchment Elevation 182 m
 Catchment length 688 m
 Catchment Slope 2%
 Catchment Area 13.6 ha

Time of Concentration (Minutes) 25.52
 Time of Concentration (Hours) 0.43
 Time to Peak (2/3 x Time of Concentration) 0.28

Time to Peak	0.68 hrs
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For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 198 m
 Minimum Catchment Elevation 182 m
 Catchment length 688 m
 Catchment Slope 2%
 Catchment Area 13.6 ha

Time of Concentration (Minutes) 61.62
 Time of Concentration (Hours) 1.03
 Time to Peak (2/3 x Time of Concentration) 0.68

Initial Abstraction	2.3 mm
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Runoff Coefficient	0.15
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Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Landuse Type	Soil Series				
	WI	Hal	0	0	0
Forest/Woodland	0.25	0.25	#N/A	#N/A	#N/A
Cultivated	0.35	0.35	#N/A	#N/A	#N/A
Pasture/Lawn	0.28	0.28	#N/A	#N/A	#N/A
Impervious	0.95	0.95	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	#N/A	#N/A	#N/A
Meadows	0.27	0.27	#N/A	#N/A	#N/A
Soil Series Total	0.1336	0.2677	#N/A	#N/A	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
	Date:	11-Oct-18
	Designed By:	ASB
	Checked By:	DJH
Subject:		HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 107 Area 77.7 ha

WEIGHTED CN VALUE																													
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type			
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN				
Stsl	SARGENT	AB	Sand Loam		1	4.8174	0.062	0.8141	0.169	46	3.8539	0.8	59	0		51	0		0	91	0.1493	0.031	100	0		0	50	58.074	
Bes	BERRIEN	AB	Sand Loam		1	20.9013	0.269	17.369	0.831	46	3.3651	0.161	59	0		51	0		0	91	0.1672	0.008	100	0		0	50	48.525	
Hal	HARKAWAY	B	Loam		2	0.777		0.1	0.777	1	60	0	0	69	0		65	0	0	91	0	0	100	0		0	50	60	
WI	WIARTON	B	Loam or Silt Loam		2	51.2043	0.659	47.876	0.935	60	0		69	0		65	3.3283	0.065	91	0	0	100	0		0	50	62.015		
	#N/A	#N/A	#N/A	#N/A		0			0	#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
Totals						77.7		1.00	66.84	0.86		7.22	0.09		0.00	0.00		3.33	0.04		0.32	0.00		0.00	0.00		0.00		58.1

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 199 m
 Minimum Catchment Elevation 187.5 m
 Catchment length 980 m
 Catchment Slope 1%
 Catchment Area 77.7 ha

Time of Concentration (Minutes) 35.01
 Time of Concentration (Hours) 0.58
 Time to Peak (2/3 x Time of Concentration) 0.39

Time to Peak 0.96 hrs

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 199 m
 Minimum Catchment Elevation 187.5 m
 Catchment length 980 m
 Catchment Slope 1%
 Catchment Area 77.7 ha

Time of Concentration (Minutes) 86.80
 Time of Concentration (Hours) 1.45
 Time to Peak (2/3 x Time of Concentration) 0.96

Initial Abstraction 9.4 mm

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient 0.20

Landuse Type	Soil Series				
	Stsl	Bes	Hal	WI	0
Forest/Woodland	0.08	0.08	0.25	0.25	#N/A
Cultivated	0.22	0.22	0.35	0.35	#N/A
Pasture/Lawn	0.1	0.1	0.28	0.28	#N/A
Impervious	0.95	0.95	0.95	0.95	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	0.05	#N/A
Meadows	0.09	0.09	0.27	0.00	#N/A
Soil Series Total	0.123	0.0902	0.25	0.2566	#N/A

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
	Date:	11-Oct-18
	Designed By:	ASB
	Checked By:	DJH
	Subject:	HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 108 Area 15.5 ha

WEIGHTED CN VALUE																													
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent		Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
Stsl	SARGENT	AB	Sand Loam	1	6.758	0.436	0		46	0		59	6.4471	0.954	51	0		91	0		68	0.3109	0.046	100	0		0	50	53.254
Bes	BERRIEN	AB	Sand Loam	1	8.122	0.524	0		46	0		59	7.9352	0.977	51	0		91	0		68	0.1868	0.023	100	0			50	52.127
Tisl	TIOGA	A	Sand Loam	1	0.62	0.04	0		32	0		49	0.5704	0.92	38	0		91	0		62	0.0496	0.08	100	0			50	42.96
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0			#N/A	0
Totals					15.5	1.00	0.00	0.00		0.00	0.00		14.95	0.96		0.00	0.00		0.00	0.00		0.55	0.04		0.00	0.00			52.3

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 205 m
 Minimum Catchment Elevation 197.3 m
 Catchment length 775 m
 Catchment Slope 1%
 Catchment Area 15.5 ha

Time of Concentration (Minutes) 33.63
 Time of Concentration (Hours) 0.56
 Time to Peak (2/3 x Time of Concentration) 0.37

Time to Peak	0.99 hrs
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For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 205 m
 Minimum Catchment Elevation 197.3 m
 Catchment length 775 m
 Catchment Slope 1%
 Catchment Area 15.5 ha

Time of Concentration (Minutes) 89.10
 Time of Concentration (Hours) 1.48
 Time to Peak (2/3 x Time of Concentration) 0.99

Initial Abstraction	7.8 mm
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Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Runoff Coefficient	0.12
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Landuse Type	Soil Series				
	Stsl	Bes	Tisl	0	0
Forest/Woodland	0.08	0.08	0.08	#N/A	#N/A
Cultivated	0.22	0.22	0.22	#N/A	#N/A
Pasture/Lawn	0.1	0.1	0.1	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.09	0.09	0.09	#N/A	#N/A
Soil Series Total	0.1296	0.1098	0.1588	#N/A	#N/A



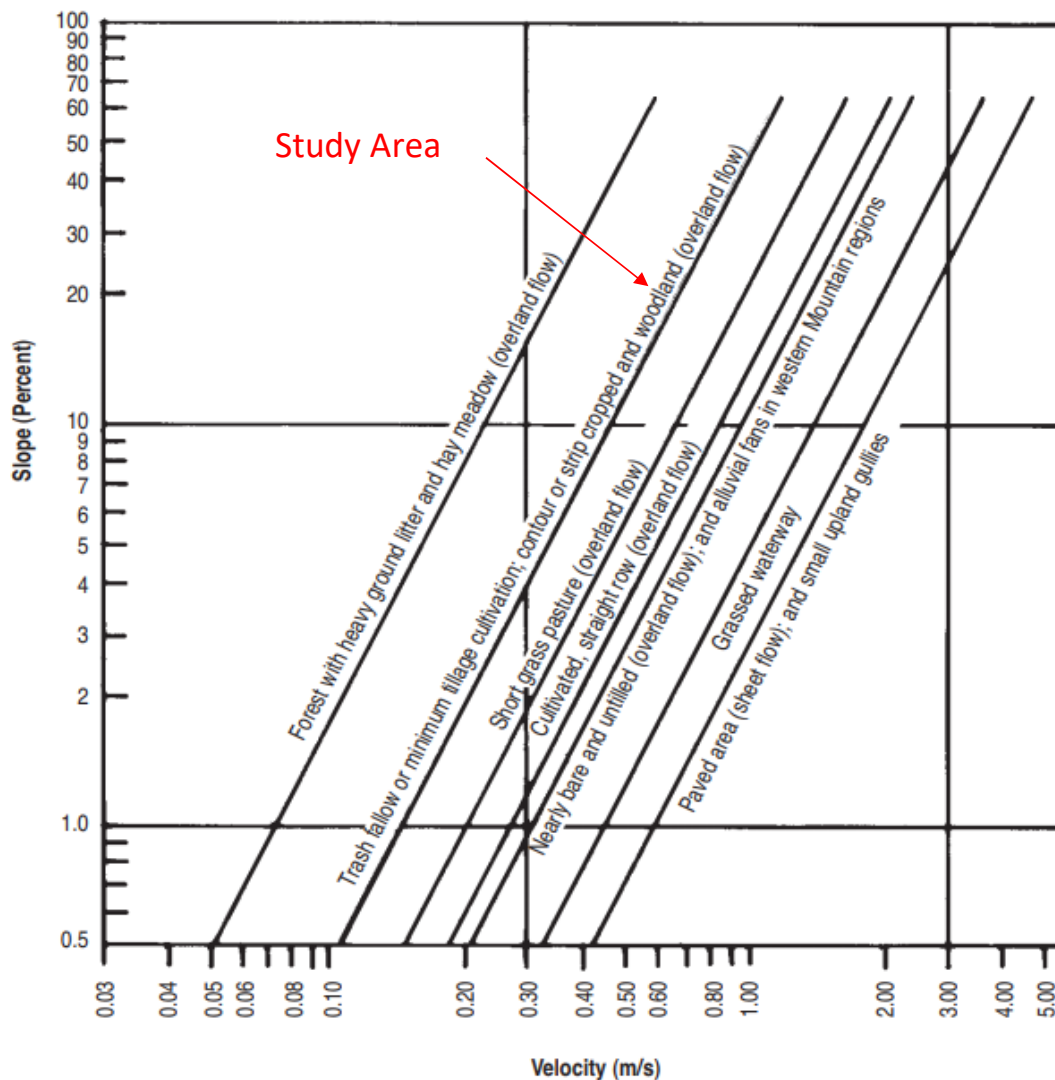
C.C. Tatham & Associates Ltd.

Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

Project:	Todco Regional SWM	Prepared By:	ASB
File No.:	116167	Reviewed By:	DJH
Revision:	1	Date:	4-Oct-18
Description:	Time to Peak Lag using Uplands Method - Existing Conditions		

Parameters	Catchment 109	Catchment 108	Catchment 102	Catchment 101
Length (m)	1530	940	500	1050
h_1 (m)	204.8	197.3	191	197
h_2 (m)	187.5	187.5	187.5	187.5
Δh (m)	17.3	9.8	3.5	9.5
Slope (%)	1.13%	1.04%	0.70%	0.90%
Land Area	Overland (forest)	Overland (forest)	Overland (forest)	Overland (forest)
v (m/s)	0.15	0.15	0.125	0.135
T_c (min)	170	104	67	130

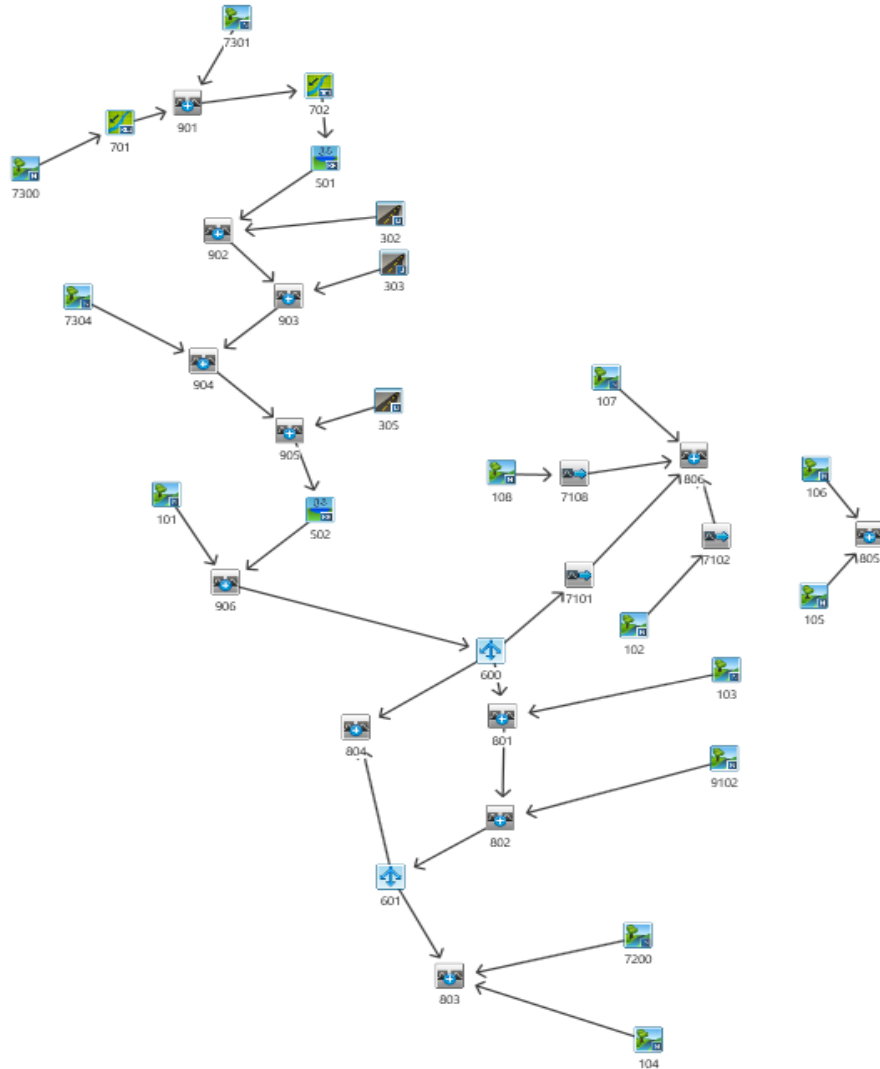




C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie Ottawa

Project:	Panorama North
Date:	19-Nov-18
File No.:	116167
Designed By:	ASB
Checked By:	DJH
Subject:	Hydrologic Model Schematic

HYDROLOGIC MODEL SCHEMATIC: EXISTING CONDITIONS



Nashyd



Route Pipe



Duhyd



Standhyd



Route Channel



Diverthyd



Addhyd



Route Reservoir

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

CHIC STORM		5.0						
[Ptot= 31.29 mm]								
* ** CALIB NASHYD	9102	1	5.0	23.00	0.08	2.50	2.77 0.09	0.000
[CN=55.3								
[N = 3.0:Tp 0.72]								
* ** CALIB NASHYD	0103	1	5.0	8.70	0.04	2.17	2.89 0.09	0.000
[CN=59.2								
[N = 3.0:Tp 0.48]								
* ** CALIB NASHYD	7300	1	5.0	4.55	0.03	2.50	5.32 0.17	0.000
[CN=71.0								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.02	3.33	5.25 n/a	0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.04	2.33	5.32 0.17	0.000
[CN=71.0								
[N = 3.0:Tp 0.63]								
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.06	2.58	5.29 n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.05	3.17	5.27 n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.05	3.42	5.26 n/a	0.000
{ST= 0.00 ha.m }								
* CALIB STANDHYD	0302	1	5.0	16.39	0.41	1.67	10.65 0.34	0.000
[I%=20.0:S%= 2.00]								
* ADD [0302+ 0501]	0902	3	5.0	26.91	0.41	1.67	8.55 n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34	0.12	1.50	12.40 0.40	0.000
[I%=25.0:S%= 2.00]								
* ADD [0303+ 0902]	0903	3	5.0	29.25	0.47	1.67	8.86 n/a	0.000
* CALIB NASHYD	7304	1	5.0	2.90	0.03	1.83	4.50 0.14	0.000
[CN=66.6								
[N = 3.0:Tp 0.28]								
* ADD [7304+ 0903]	0904	3	5.0	32.15	0.49	1.67	8.46 n/a	0.000
* CALIB STANDHYD	0305	1	5.0	0.31	0.02	1.50	9.23 0.29	0.000
[I%=20.0:S%= 0.50]								
* ADD [0305+ 0904]	0905	3	5.0	32.46	0.50	1.67	8.47 n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.46	0.02	5.67	8.42 n/a	0.000
{ST= 0.24 ha.m }								
* CALIB NASHYD	0101	1	5.0	5.70	0.01	2.67	1.66 0.05	0.000
[CN=50.2								
[N = 3.0:Tp 0.70]								
* ADD [0101+ 0502]	0906	3	5.0	38.16	0.03	4.83	7.41 n/a	0.000
* DIVERT HYD	0600	1	5.0	38.16	0.03	4.83	7.41 n/a	0.000
Outflow	0003	2	5.0	3.43	0.01	4.83	7.41 n/a	0.000
Outflow	0003	3	5.0	1.14	0.00	4.83	7.41 n/a	0.000
Outflow	0003	4	5.0	33.59	0.02	4.83	7.41 n/a	0.000
Outflow	0003	5	5.0	0.00	0.00	0.00	n/a	0.000
Outflow	0003	6	5.0	0.00	0.00	0.00	n/a	0.000
* ADD [0103+ 0600]	0801	3	5.0	12.13	0.04	2.17	4.17 n/a	0.000
* ADD [0801+ 9102]	0802	3	5.0	35.13	0.11	2.42	3.26 n/a	0.000
* DIVERT HYD	0601	1	5.0	35.13	0.11	2.42	3.26 n/a	0.000
Outflow	0002	2	5.0	26.43	0.09	2.42	3.26 n/a	0.000
Outflow	0002	3	5.0	8.71	0.03	2.42	3.26 n/a	0.000
Outflow	0002	4	5.0	0.00	0.00	0.00	n/a	0.000
Outflow	0002	5	5.0	0.00	0.00	0.00	n/a	0.000
Outflow	0002	6	5.0	0.00	0.00	0.00	n/a	0.000
* CALIB NASHYD	7200	1	5.0	3.80	0.01	2.25	1.60 0.05	0.000
[CN=49.2								
[N = 3.0:Tp 0.47]								
* CALIB NASHYD	0104	1	5.0	0.71	0.00	2.83	4.83 0.15	0.000
[CN=72.0								
[N = 3.0:Tp 0.92]								
* ADD [0104+ 0601]	0803	3	5.0	27.14	0.09	2.42	3.30 n/a	0.000

ADD [0803+ 7200]	0803	1	5.0	30.94	0.10	2.42	3.09 n/a	0.000
* ADD [0600+ 0601]	0804	3	5.0	42.29	0.05	2.42	6.55 n/a	0.000
* CALIB NASHYD	0105	1	5.0	30.40	0.10	2.67	2.78 0.09	0.000
[CN=62.1								
[N = 3.0:Tp 0.74]								
* CALIB NASHYD	0106	1	5.0	13.60	0.21	2.33	11.33 0.36	0.000
[CN=84.9								
[N = 3.0:Tp 0.68]								
* ADD [0105+ 0106]	0805	3	5.0	44.00	0.30	2.42	5.42 n/a	0.000
* SHIFT[2: 0600]	7101	1	5.0	1.14	0.00	7.00	7.41 n/a	0.000
[SHIFT=130.0 min]								
* CALIB NASHYD	0102	1	5.0	31.10	0.05	2.92	1.62 0.05	0.000
[CN=48.3								
[N = 3.0:Tp 0.87]								
* SHIFT[2: 0102]	7102	1	5.0	31.10	0.05	4.00	1.62 n/a	0.000
[SHIFT= 67.0 min]								
* CALIB NASHYD	0107	1	5.0	77.70	0.18	3.08	2.34 0.07	0.000
[CN=58.1								
[N = 3.0:Tp 0.96]								
* CALIB NASHYD	0108	1	5.0	15.50	0.03	3.00	2.16 0.07	0.000
[CN=52.3								
[N = 3.0:Tp 0.99]								
* SHIFT[2: 0108]	7108	1	5.0	15.50	0.03	4.67	2.16 n/a	0.000
[SHIFT=104.0 min]								
* ADD [0107+ 7101]	0806	3	5.0	78.84	0.18	3.08	2.41 n/a	0.000
* ADD [0806+ 7102]	0806	1	5.0	109.94	0.21	3.50	2.19 n/a	0.000
* ADD [0806+ 7108]	0806	3	5.0	125.44	0.23	3.83	2.18 n/a	0.000
* =====								

** SIMULATION : Run 03							5 YEAR, 4 HOUR	

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

CHIC STORM		5.0						
[Ptot= 41.38 mm]								
* ** CALIB NASHYD	9102	1	5.0	23.00	0.15	2.50	5.20 0.13	0.000
[CN=55.3								
[N = 3.0:Tp 0.72]								
* ** CALIB NASHYD	0103	1	5.0	8.70	0.08	2.17	5.55 0.13	0.000
[CN=59.2								
[N = 3.0:Tp 0.48]								
* ** CALIB NASHYD	7300	1	5.0	4.55	0.05	2.50	9.44 0.23	0.000
[CN=71.0								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.04	3.25	9.37 n/a	0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.08	2.33	9.44 0.23	0.000
[CN=71.0								
[N = 3.0:Tp 0.63]								
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.10	2.50	9.41 n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.09	2.92	9.39 n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.09	3.17	9.39 n/a	0.000
{ST= 0.01 ha.m }								
* CALIB STANDHYD	0302	1	5.0	16.39	0.66	1.58	16.11 0.39	0.000
[I%=20.0:S%= 2.00]								
* ADD [0302+ 0501]	0902	3	5.0	26.91	0.67	1.58	13.48 n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34	0.17	1.50	18.42 0.45	0.000
[I%=25.0:S%= 2.00]								
* ADD [0303+ 0902]	0903	3	5.0	29.25	0.79	1.58	13.88 n/a	0.000

```

* CALIB NASHYD      7304 1 5.0    2.90    0.05 1.83    8.08 0.20    0.000
[CN=66.6          ]
[ N = 3.0:Tp 0.28]
*
* ADD [ 7304+ 0903] 0904 3 5.0    32.15    0.82 1.58    13.35 n/a    0.000
*
* CALIB STANDHYD    0305 1 5.0    0.31    0.02 1.50    14.02 0.34    0.000
[I%=20.0:S%= 0.50]
*
* ADD [ 0305+ 0904] 0905 3 5.0    32.46    0.83 1.58    13.36 n/a    0.000
*
* RESRVR [ 2: 0905] 0502 1 5.0    32.46    0.08 4.67    13.31 n/a    0.000
{ST= 0.35 ha.m }
*
* CALIB NASHYD      0101 1 5.0    5.70    0.02 2.50    3.47 0.08    0.000
[CN=50.2          ]
[ N = 3.0:Tp 0.70]
*
* ADD [ 0101+ 0502] 0906 3 5.0    38.16    0.09 4.33    11.84 n/a    0.000
*
* DIVERT HYD        0600 1 5.0    38.16    0.09 4.33    11.84 n/a    0.000
Outflow            0003 2 5.0    10.42    0.05 4.33    11.84 n/a    0.000
Outflow            0003 3 5.0    3.47    0.02 4.33    11.84 n/a    0.000
Outflow            0003 4 5.0    24.26    0.02 4.33    11.84 n/a    0.000
Outflow            0003 5 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0003 6 5.0    0.00    0.00 0.00    0.00 n/a    0.000
*
* ADD [ 0103+ 0600] 0801 3 5.0    19.12    0.09 2.17    8.98 n/a    0.000
*
* ADD [ 0801+ 9102] 0802 3 5.0    42.12    0.23 2.33    6.92 n/a    0.000
*
* DIVERT HYD        0601 1 5.0    42.12    0.23 2.33    6.92 n/a    0.000
Outflow            0002 2 5.0    31.65    0.17 2.33    6.92 n/a    0.000
Outflow            0002 3 5.0    10.48    0.06 2.33    6.92 n/a    0.000
Outflow            0002 4 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0002 5 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0002 6 5.0    0.00    0.00 0.00    0.00 n/a    0.000
*
* CALIB NASHYD      7200 1 5.0    3.80    0.02 2.17    3.35 0.08    0.000
[CN=49.2          ]
[ N = 3.0:Tp 0.47]
*
* CALIB NASHYD      0104 1 5.0    0.71    0.01 2.75    8.92 0.22    0.000
[CN=72.0          ]
[ N = 3.0:Tp 0.92]
*
* ADD [ 0104+ 0601] 0803 3 5.0    32.36    0.18 2.42    6.96 n/a    0.000
*
* ADD [ 0803+ 7200] 0803 1 5.0    36.16    0.20 2.33    6.58 n/a    0.000
*
* ADD [ 0600+ 0601] 0804 3 5.0    34.74    0.08 2.33    10.36 n/a    0.000
*
* CALIB NASHYD      0105 1 5.0    30.40    0.20 2.58    5.56 0.13    0.000
[CN=62.1          ]
[ N = 3.0:Tp 0.74]
*
* CALIB NASHYD      0106 1 5.0    13.60    0.35 2.33    18.13 0.44    0.000
[CN=84.9          ]
[ N = 3.0:Tp 0.68]
*
* ADD [ 0105+ 0106] 0805 3 5.0    44.00    0.54 2.42    9.45 n/a    0.000
*
* SHIFT[ 2: 0600]   7101 1 5.0    3.47    0.02 6.50    11.84 n/a    0.000
[SHIFT=130.0 min]
*
* CALIB NASHYD      0102 1 5.0    31.10    0.11 2.83    3.35 0.08    0.000
[CN=48.3          ]
[ N = 3.0:Tp 0.87]
*
* SHIFT[ 2: 0102]   7102 1 5.0    31.10    0.11 3.92    3.35 n/a    0.000
[SHIFT= 67.0 min]
*
* CALIB NASHYD      0107 1 5.0    77.70    0.37 2.92    4.75 0.11    0.000
[CN=58.1          ]
[ N = 3.0:Tp 0.96]
*
* CALIB NASHYD      0108 1 5.0    15.50    0.07 2.92    4.25 0.10    0.000
[CN=52.3          ]
[ N = 3.0:Tp 0.99]
*
* SHIFT[ 2: 0108]   7108 1 5.0    15.50    0.07 4.58    4.25 n/a    0.000
[SHIFT=104.0 min]
*
* ADD [ 0107+ 7101] 0806 3 5.0    81.17    0.37 2.92    5.06 n/a    0.000
*
* ADD [ 0806+ 7102] 0806 1 5.0    112.27    0.44 3.33    4.58 n/a    0.000
*
* ADD [ 0806+ 7108] 0806 3 5.0    127.77    0.46 3.67    4.54 n/a    0.000
*
=====

```

```

*****
** SIMULATION : Run 04                **      10 YEAR, 4 HOUR
*****

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

START @ 0.00 hrs
-----
CHIC STORM          5.0
[ Ptot= 48.36 mm ]
*
** CALIB NASHYD     9102 1 5.0    23.00    0.21 2.42    7.24 0.15    0.000
[CN=55.3          ]
[ N = 3.0:Tp 0.72]
*
** CALIB NASHYD     0103 1 5.0    8.70    0.11 2.08    7.80 0.16    0.000
[CN=59.2          ]
[ N = 3.0:Tp 0.48]
*
** CALIB NASHYD     7300 1 5.0    4.55    0.07 2.42    12.78 0.26    0.000
[CN=71.0          ]
[ N = 3.0:Tp 0.74]
*
CHANNEL[ 2: 7300]   0701 1 5.0    4.55    0.05 3.08    12.70 n/a    0.000
*
** CALIB NASHYD     7301 1 5.0    5.97    0.11 2.33    12.78 0.26    0.000
[CN=71.0          ]
[ N = 3.0:Tp 0.63]
*
ADD [ 0701+ 7301]   0901 3 5.0    10.52    0.14 2.50    12.75 n/a    0.000
*
CHANNEL[ 2: 0901]   0702 1 5.0    10.52    0.13 2.83    12.73 n/a    0.000
*
RESRVR [ 2: 0702]   0501 1 5.0    10.52    0.12 3.08    12.72 n/a    0.000
{ST= 0.01 ha.m }
*
* CALIB STANDHYD    0302 1 5.0    16.39    0.83 1.58    20.25 0.42    0.000
[I%=20.0:S%= 2.00]
*
ADD [ 0302+ 0501]   0902 3 5.0    26.91    0.83 1.58    17.31 n/a    0.000
*
* CALIB STANDHYD    0303 1 5.0    2.34    0.22 1.50    22.94 0.47    0.000
[I%=25.0:S%= 2.00]
*
ADD [ 0303+ 0902]   0903 3 5.0    29.25    1.00 1.58    17.76 n/a    0.000
*
* CALIB NASHYD      7304 1 5.0    2.90    0.08 1.83    11.00 0.23    0.000
[CN=66.6          ]
[ N = 3.0:Tp 0.28]
*
ADD [ 7304+ 0903]   0904 3 5.0    32.15    1.05 1.58    17.15 n/a    0.000
*
* CALIB STANDHYD    0305 1 5.0    0.31    0.03 1.50    17.68 0.37    0.000
[I%=20.0:S%= 0.50]
*
ADD [ 0305+ 0904]   0905 3 5.0    32.46    1.05 1.58    17.15 n/a    0.000
*
RESRVR [ 2: 0905]   0502 1 5.0    32.46    0.12 4.50    17.10 n/a    0.000
{ST= 0.43 ha.m }
*
* CALIB NASHYD      0101 1 5.0    5.70    0.04 2.50    5.07 0.10    0.000
[CN=50.2          ]
[ N = 3.0:Tp 0.70]
*
ADD [ 0101+ 0502]   0906 3 5.0    38.16    0.13 4.25    15.31 n/a    0.000
*
* DIVERT HYD        0600 1 5.0    38.16    0.13 4.25    15.31 n/a    0.000
Outflow            0003 2 5.0    13.85    0.09 4.25    15.31 n/a    0.000
Outflow            0003 3 5.0    4.62    0.03 4.25    15.31 n/a    0.000
Outflow            0003 4 5.0    19.69    0.02 4.25    15.31 n/a    0.000
Outflow            0003 5 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0003 6 5.0    0.00    0.00 0.00    0.00 n/a    0.000
*
ADD [ 0103+ 0600]   0801 3 5.0    22.55    0.14 2.42    12.41 n/a    0.000
*
ADD [ 0801+ 9102]   0802 3 5.0    45.55    0.35 2.42    9.80 n/a    0.000
*
* DIVERT HYD        0601 1 5.0    45.55    0.35 2.42    9.80 n/a    0.000
Outflow            0002 2 5.0    34.21    0.26 2.42    9.80 n/a    0.000
Outflow            0002 3 5.0    11.34    0.09 2.42    9.80 n/a    0.000
Outflow            0002 4 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0002 5 5.0    0.00    0.00 0.00    0.00 n/a    0.000
Outflow            0002 6 5.0    0.00    0.00 0.00    0.00 n/a    0.000
*
* CALIB NASHYD      7200 1 5.0    3.80    0.03 2.17    4.89 0.10    0.000
[CN=49.2          ]
[ N = 3.0:Tp 0.47]
*
* CALIB NASHYD      0104 1 5.0    0.71    0.01 2.75    12.25 0.25    0.000

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```

[CN=72.0
[ N = 3.0:Tp 0.92]
*
ADD [ 0104+ 0601] 0803 3 5.0 34.92 0.27 2.42 9.85 n/a 0.000
*
ADD [ 0803+ 7200] 0803 1 5.0 38.72 0.30 2.42 9.36 n/a 0.000
*
ADD [ 0600+ 0601] 0804 3 5.0 31.03 0.11 2.42 13.29 n/a 0.000
*
* CALIB NASHYD
[CN=62.1
[ N = 3.0:Tp 0.74]
*
* CALIB NASHYD
[CN=84.9
[ N = 3.0:Tp 0.68]
*
ADD [ 0105+ 0106] 0805 3 5.0 44.00 0.73 2.42 12.67 n/a 0.000
*
SHIFT[ 2: 0600]
[SHIFT=130.0 min]
*
* CALIB NASHYD
0102 1 5.0 31.10 0.16 2.75 4.86 0.10 0.000
[CN=48.3
[ N = 3.0:Tp 0.87]
*
SHIFT[ 2: 0102]
[SHIFT= 67.0 min]
*
* CALIB NASHYD
0107 1 5.0 77.70 0.54 2.92 6.83 0.14 0.000
[CN=58.1
[ N = 3.0:Tp 0.96]
*
* CALIB NASHYD
0108 1 5.0 15.50 0.09 2.92 6.04 0.12 0.000
[CN=52.3
[ N = 3.0:Tp 0.99]
*
SHIFT[ 2: 0108]
[SHIFT=104.0 min]
*
ADD [ 0107+ 7101] 0806 3 5.0 82.32 0.54 2.92 7.31 n/a 0.000
*
ADD [ 0806+ 7102] 0806 1 5.0 113.42 0.64 3.33 6.64 n/a 0.000
*
ADD [ 0806+ 7108] 0806 3 5.0 128.92 0.66 3.58 6.56 n/a 0.000
*
FINISH

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=====

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*****
** SIMULATION : Run 05 ** 25 YEAR, 4 HOUR
*****

```

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

CHIC STORM		5.0						
[Ptot= 56.71 mm]								
* ** CALIB NASHYD	9102	1 5.0	23.00	0.29	2.42	10.05	0.18	0.000
[CN=55.3								
[N = 3.0:Tp 0.72]								
* ** CALIB NASHYD	0103	1 5.0	8.70	0.16	2.08	10.88	0.19	0.000
[CN=59.2								
[N = 3.0:Tp 0.48]								
* ** CALIB NASHYD	7300	1 5.0	4.55	0.10	2.42	17.20	0.30	0.000
[CN=71.0								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 7300]	0701	1 5.0	4.55	0.07	2.92	17.13	n/a	0.000
* ** CALIB NASHYD	7301	1 5.0	5.97	0.15	2.25	17.20	0.30	0.000
[CN=71.0								
[N = 3.0:Tp 0.63]								
* ADD [0701+ 7301]	0901	3 5.0	10.52	0.20	2.50	17.17	n/a	0.000
* CHANNEL[2: 0901]	0702	1 5.0	10.52	0.18	2.75	17.15	n/a	0.000
* RESRVR [2: 0702]	0501	1 5.0	10.52	0.17	3.17	17.15	n/a	0.000
{ST= 0.01 ha.m }								
* ** CALIB STANDHYD	0302	1 5.0	16.39	1.12	1.58	25.55	0.45	0.000
[I%=20.0:S%= 2.00]								

```

*
ADD [ 0302+ 0501] 0902 3 5.0 26.91 1.12 1.58 22.27 n/a 0.000
*
* CALIB STANDHYD
0303 1 5.0 2.34 0.27 1.50 28.67 0.51 0.000
[I%=25.0:S%= 2.00]
*
ADD [ 0303+ 0902] 0903 3 5.0 29.25 1.33 1.58 22.78 n/a 0.000
*
* CALIB NASHYD
7304 1 5.0 2.90 0.11 1.83 14.92 0.26 0.000
[CN=66.6
[ N = 3.0:Tp 0.28]
*
ADD [ 7304+ 0903] 0904 3 5.0 32.15 1.40 1.58 22.07 n/a 0.000
*
* CALIB STANDHYD
0305 1 5.0 0.31 0.03 1.50 22.38 0.39 0.000
[I%=20.0:S%= 0.50]
*
ADD [ 0305+ 0904] 0905 3 5.0 32.46 1.41 1.58 22.07 n/a 0.000
*
RESRVR [ 2: 0905]
{ST= 0.55 ha.m }
*
* CALIB NASHYD
0101 1 5.0 5.70 0.05 2.50 7.31 0.13 0.000
[CN=50.2
[ N = 3.0:Tp 0.70]
*
ADD [ 0101+ 0502] 0906 3 5.0 38.16 0.17 3.08 19.82 n/a 0.000
*
* DIVERT HYD
0600 1 5.0 38.16 0.17 3.08 19.82 n/a 0.000
Outflow 0003 2 5.0 16.66 0.12 3.08 19.82 n/a 0.000
Outflow 0003 3 5.0 5.55 0.04 3.08 19.82 n/a 0.000
Outflow 0003 4 5.0 15.95 0.02 3.08 19.82 n/a 0.000
Outflow 0003 5 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0003 6 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
ADD [ 0103+ 0600] 0801 3 5.0 25.36 0.23 2.33 16.76 n/a 0.000
*
ADD [ 0801+ 9102] 0802 3 5.0 48.36 0.52 2.42 13.56 n/a 0.000
*
* DIVERT HYD
0601 1 5.0 48.36 0.52 2.42 13.56 n/a 0.000
Outflow 0002 2 5.0 36.31 0.39 2.42 13.56 n/a 0.000
Outflow 0002 3 5.0 12.05 0.13 2.42 13.56 n/a 0.000
Outflow 0002 4 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0002 5 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0002 6 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
* CALIB NASHYD
7200 1 5.0 3.80 0.04 2.08 7.06 0.12 0.000
[CN=49.2
[ N = 3.0:Tp 0.47]
*
* CALIB NASHYD
0104 1 5.0 0.71 0.01 2.75 16.70 0.29 0.000
[CN=72.0
[ N = 3.0:Tp 0.92]
*
ADD [ 0104+ 0601] 0803 3 5.0 37.02 0.40 2.42 13.62 n/a 0.000
*
ADD [ 0803+ 7200] 0803 1 5.0 40.82 0.44 2.33 13.01 n/a 0.000
*
ADD [ 0600+ 0601] 0804 3 5.0 28.00 0.15 2.42 17.13 n/a 0.000
*
* CALIB NASHYD
0105 1 5.0 30.40 0.42 2.50 11.19 0.20 0.000
[CN=62.1
[ N = 3.0:Tp 0.74]
*
* CALIB NASHYD
0106 1 5.0 13.60 0.58 2.25 29.73 0.52 0.000
[CN=84.9
[ N = 3.0:Tp 0.68]
*
ADD [ 0105+ 0106] 0805 3 5.0 44.00 0.98 2.33 16.92 n/a 0.000
*
SHIFT[ 2: 0600]
[SHIFT=130.0 min]
7101 1 5.0 5.55 0.04 5.25 19.82 n/a 0.000
*
* CALIB NASHYD
0102 1 5.0 31.10 0.24 2.75 6.99 0.12 0.000
[CN=48.3
[ N = 3.0:Tp 0.87]
*
SHIFT[ 2: 0102]
[SHIFT= 67.0 min]
7102 1 5.0 31.10 0.24 3.83 6.99 n/a 0.000
*
* CALIB NASHYD
0107 1 5.0 77.70 0.78 2.83 9.71 0.17 0.000
[CN=58.1
[ N = 3.0:Tp 0.96]
*
* CALIB NASHYD
0108 1 5.0 15.50 0.13 2.83 8.53 0.15 0.000
[CN=52.3
[ N = 3.0:Tp 0.99]
*
SHIFT[ 2: 0108]
[SHIFT=104.0 min]
7108 1 5.0 15.50 0.13 4.50 8.53 n/a 0.000
*

```

* ADD [0107+ 7101]	0806	3	5.0	83.25	0.78	2.83	10.39	n/a	0.000
* ADD [0806+ 7102]	0806	1	5.0	114.35	0.91	3.25	9.46	n/a	0.000
* ADD [0806+ 7108]	0806	3	5.0	129.85	0.94	3.58	9.35	n/a	0.000

** SIMULATION : Run 06 50 YEAR, 4 HOUR **									

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	
START @ 0.00 hrs									

CHIC STORM		5.0							
[Ptot= 63.13 mm]									
* ** CALIB NASHYD	9102	1	5.0	23.00	0.36	2.42	12.44	0.20	0.000
[CN=55.3									
[N = 3.0:Tp 0.72]									
* ** CALIB NASHYD	0103	1	5.0	8.70	0.19	2.08	13.50	0.21	0.000
[CN=59.2									
[N = 3.0:Tp 0.48]									
* ** CALIB NASHYD	7300	1	5.0	4.55	0.12	2.42	20.87	0.33	0.000
[CN=71.0									
[N = 3.0:Tp 0.74]									
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.09	2.83	20.80	n/a	0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.18	2.25	20.87	0.33	0.000
[CN=71.0									
[N = 3.0:Tp 0.63]									
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.25	2.50	20.84	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.23	2.75	20.82	n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.17	3.58	20.82	n/a	0.000
{ST= 0.03 ha.m }									
* ** CALIB STANDHYD	0302	1	5.0	16.39	1.31	1.58	29.84	0.47	0.000
[I%=20.0:S%= 2.00]									
* ADD [0302+ 0501]	0902	3	5.0	26.91	1.31	1.58	26.31	n/a	0.000
* ** CALIB STANDHYD	0303	1	5.0	2.34	0.31	1.50	33.26	0.53	0.000
[I%=25.0:S%= 2.00]									
* ADD [0303+ 0902]	0903	3	5.0	29.25	1.55	1.58	26.87	n/a	0.000
* ** CALIB NASHYD	7304	1	5.0	2.90	0.13	1.83	18.21	0.29	0.000
[CN=66.6									
[N = 3.0:Tp 0.28]									
* ADD [7304+ 0903]	0904	3	5.0	32.15	1.64	1.58	26.09	n/a	0.000
* ** CALIB STANDHYD	0305	1	5.0	0.31	0.04	1.50	26.21	0.42	0.000
[I%=20.0:S%= 0.50]									
* ADD [0305+ 0904]	0905	3	5.0	32.46	1.65	1.58	26.09	n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.46	0.15	3.42	26.04	n/a	0.000
{ST= 0.57 ha.m }									
* ** CALIB NASHYD	0101	1	5.0	5.70	0.07	2.42	9.25	0.15	0.000
[CN=50.2									
[N = 3.0:Tp 0.70]									
* ADD [0101+ 0502]	0906	3	5.0	38.16	0.20	2.83	23.53	n/a	0.000
* DIVERT HYD	0600	1	5.0	38.16	0.20	2.83	23.53	n/a	0.000
Outflow	0003	2	5.0	18.11	0.14	2.83	23.53	n/a	0.000
Outflow	0003	3	5.0	6.04	0.05	2.83	23.53	n/a	0.000
Outflow	0003	4	5.0	14.01	0.02	2.83	23.53	n/a	0.000
Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
* ADD [0103+ 0600]	0801	3	5.0	26.81	0.30	2.33	20.28	n/a	0.000
* ADD [0801+ 9102]	0802	3	5.0	49.81	0.66	2.42	16.66	n/a	0.000
* DIVERT HYD	0601	1	5.0	49.81	0.66	2.42	16.66	n/a	0.000
Outflow	0002	2	5.0	37.39	0.49	2.42	16.66	n/a	0.000
Outflow	0002	3	5.0	12.42	0.16	2.42	16.66	n/a	0.000
Outflow	0002	4	5.0	0.00	0.00	0.00	0.00	n/a	0.000

Outflow	0002	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0002	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
* CALIB NASHYD	7200	1	5.0	3.80	0.05	2.08	8.95	0.14	0.000
[CN=49.2									
[N = 3.0:Tp 0.47]									
* CALIB NASHYD	0104	1	5.0	0.71	0.02	2.67	20.40	0.32	0.000
[CN=72.0									
[N = 3.0:Tp 0.92]									
* ADD [0104+ 0601]	0803	3	5.0	38.10	0.51	2.42	16.73	n/a	0.000
* ADD [0803+ 7200]	0803	1	5.0	41.90	0.56	2.33	16.02	n/a	0.000
* ADD [0600+ 0601]	0804	3	5.0	26.43	0.18	2.42	20.30	n/a	0.000
* CALIB NASHYD	0105	1	5.0	30.40	0.52	2.50	13.97	0.22	0.000
[CN=62.1									
[N = 3.0:Tp 0.74]									
* CALIB NASHYD	0106	1	5.0	13.60	0.68	2.25	34.91	0.55	0.000
[CN=84.9									
[N = 3.0:Tp 0.68]									
* ADD [0105+ 0106]	0805	3	5.0	44.00	1.20	2.33	20.44	n/a	0.000
* SHIFT[2: 0600]	7101	1	5.0	6.04	0.05	5.00	23.53	n/a	0.000
[SHIFT=130.0 min]									
* CALIB NASHYD	0102	1	5.0	31.10	0.30	2.67	8.84	0.14	0.000
[CN=48.3									
[N = 3.0:Tp 0.87]									
* SHIFT[2: 0102]	7102	1	5.0	31.10	0.30	3.75	8.84	n/a	0.000
[SHIFT= 67.0 min]									
* CALIB NASHYD	0107	1	5.0	77.70	0.98	2.83	12.19	0.19	0.000
[CN=58.1									
[N = 3.0:Tp 0.96]									
* CALIB NASHYD	0108	1	5.0	15.50	0.17	2.83	10.67	0.17	0.000
[CN=52.3									
[N = 3.0:Tp 0.99]									
* SHIFT[2: 0108]	7108	1	5.0	15.50	0.17	4.50	10.67	n/a	0.000
[SHIFT=104.0 min]									
* ADD [0107+ 7101]	0806	3	5.0	83.74	0.98	2.83	13.00	n/a	0.000
* ADD [0806+ 7102]	0806	1	5.0	114.84	1.15	3.25	11.88	n/a	0.000
* ADD [0806+ 7108]	0806	3	5.0	130.34	1.19	3.58	11.73	n/a	0.000

** SIMULATION : Run 07 100 YEAR, 4 HOUR **									

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	
START @ 0.00 hrs									

CHIC STORM		5.0							
[Ptot= 69.48 mm]									
* ** CALIB NASHYD	9102	1	5.0	23.00	0.44	2.42	14.99	0.22	0.000
[CN=55.3									
[N = 3.0:Tp 0.72]									
* ** CALIB NASHYD	0103	1	5.0	8.70	0.24	2.08	16.30	0.23	0.000
[CN=59.2									
[N = 3.0:Tp 0.48]									
* ** CALIB NASHYD	7300	1	5.0	4.55	0.15	2.42	24.71	0.36	0.000
[CN=71.0									
[N = 3.0:Tp 0.74]									
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.12	2.92	24.64	n/a	0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.21	2.25	24.71	0.36	0.000
[CN=71.0									
[N = 3.0:Tp 0.63]									
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.30	2.50	24.68	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.28	2.75	24.66	n/a	0.000

RESRVR [2: 0702]	0501	1	5.0	10.52	0.17	3.92	24.66	n/a	0.000
{ST= 0.05 ha.m }									
* CALIB STANDHYD	0302	1	5.0	16.39	1.51	1.58	34.24	0.49	0.000
[I%=20.0:S%= 2.00]									
ADD [0302+ 0501]	0902	3	5.0	26.91	1.51	1.75	30.50	n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34	0.35	1.50	37.96	0.55	0.000
[I%=25.0:S%= 2.00]									
ADD [0303+ 0902]	0903	3	5.0	29.25	1.79	1.58	31.09	n/a	0.000
* CALIB NASHYD	7304	1	5.0	2.90	0.16	1.75	21.66	0.31	0.000
[CN=66.6]									
[N = 3.0:Tp 0.28]									
ADD [7304+ 0903]	0904	3	5.0	32.15	1.91	1.67	30.24	n/a	0.000
* CALIB STANDHYD	0305	1	5.0	0.31	0.04	1.50	30.16	0.43	0.000
[I%=20.0:S%= 0.50]									
ADD [0305+ 0904]	0905	3	5.0	32.46	1.92	1.67	30.24	n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.46	0.15	2.75	30.19	n/a	0.000
{ST= 0.57 ha.m }									
* CALIB NASHYD	0101	1	5.0	5.70	0.08	2.42	11.36	0.16	0.000
[CN=50.2]									
[N = 3.0:Tp 0.70]									
ADD [0101+ 0502]	0906	3	5.0	38.16	0.23	2.67	27.38	n/a	0.000
* DIVERT HYD	0600	1	5.0	38.16	0.23	2.67	27.38	n/a	0.000
Outflow	0003	2	5.0	19.17	0.16	2.67	27.38	n/a	0.000
Outflow	0003	3	5.0	6.39	0.05	2.67	27.38	n/a	0.000
Outflow	0003	4	5.0	12.60	0.02	2.67	27.38	n/a	0.000
Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
ADD [0103+ 0600]	0801	3	5.0	27.87	0.37	2.25	23.92	n/a	0.000
* ADD [0801+ 9102]	0802	3	5.0	50.87	0.80	2.33	19.88	n/a	0.000
* DIVERT HYD	0601	1	5.0	50.87	0.80	2.33	19.88	n/a	0.000
Outflow	0002	2	5.0	38.18	0.60	2.33	19.88	n/a	0.000
Outflow	0002	3	5.0	12.69	0.20	2.33	19.88	n/a	0.000
Outflow	0002	4	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0002	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0002	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
* CALIB NASHYD	7200	1	5.0	3.80	0.07	2.08	10.99	0.16	0.000
[CN=49.2]									
[N = 3.0:Tp 0.47]									
* CALIB NASHYD	0104	1	5.0	0.71	0.02	2.67	24.27	0.35	0.000
[CN=72.0]									
[N = 3.0:Tp 0.92]									
ADD [0104+ 0601]	0803	3	5.0	38.89	0.62	2.33	19.96	n/a	0.000
* ADD [0803+ 7200]	0803	1	5.0	42.69	0.68	2.33	19.16	n/a	0.000
* ADD [0600+ 0601]	0804	3	5.0	25.29	0.22	2.33	23.62	n/a	0.000
* CALIB NASHYD	0105	1	5.0	30.40	0.64	2.50	16.92	0.24	0.000
[CN=62.1]									
[N = 3.0:Tp 0.74]									
* CALIB NASHYD	0106	1	5.0	13.60	0.79	2.25	40.17	0.58	0.000
[CN=84.9]									
[N = 3.0:Tp 0.68]									
ADD [0105+ 0106]	0805	3	5.0	44.00	1.42	2.33	24.11	n/a	0.000
* SHIFT[2: 0600]	7101	1	5.0	6.39	0.05	4.83	27.38	n/a	0.000
[SHIFT=130.0 min]									
* CALIB NASHYD	0102	1	5.0	31.10	0.37	2.67	10.84	0.16	0.000
[CN=48.3]									
[N = 3.0:Tp 0.87]									
* SHIFT[2: 0102]	7102	1	5.0	31.10	0.37	3.75	10.84	n/a	0.000
[SHIFT= 67.0 min]									
* CALIB NASHYD	0107	1	5.0	77.70	1.20	2.83	14.84	0.21	0.000
[CN=58.1]									
[N = 3.0:Tp 0.96]									
* CALIB NASHYD	0108	1	5.0	15.50	0.21	2.83	12.97	0.19	0.000
[CN=52.3]									

[N = 3.0:Tp 0.99]									
* SHIFT[2: 0108]	7108	1	5.0	15.50	0.21	4.50	12.97	n/a	0.000
[SHIFT=104.0 min]									
* ADD [0107+ 7101]	0806	3	5.0	84.09	1.20	2.83	15.79	n/a	0.000
* ADD [0806+ 7102]	0806	1	5.0	115.19	1.41	3.25	14.45	n/a	0.000
* ADD [0806+ 7108]	0806	3	5.0	130.69	1.45	3.50	14.28	n/a	0.000

** SIMULATION : Run 08									

W/E COMMAND	HYD ID	DT	AREA	'	Qpeak	Tpeak	R.V.	R.C.	Qbase
		min	ha	'	cms	hrs	mm		cms
START @ 0.00 hrs									

READ STORM			12.0						
[Ptot=193.00 mm]									
fname : C:\Users\abutton\AppData\Local\Temp\b0534ba0-a6dc-4a0f-aaf3-6aa12fc97eeb\7875034e-4eed-487c-8e32-ea5									
remark: TIMMINS REGIONAL 12 HOUR DURATION STORM									
** CALIB NASHYD	9102	1	5.0	23.00	1.10	7.42	89.13	0.46	0.000
[CN=55.3]									
[N = 3.0:Tp 0.72]									
* ** CALIB NASHYD	0103	1	5.0	8.70	0.52	7.17	95.58	0.50	0.000
[CN=59.2]									
[N = 3.0:Tp 0.48]									
* ** CALIB NASHYD	7300	1	5.0	4.55	0.30	7.42	121.14	0.63	0.000
[CN=71.0]									
[N = 3.0:Tp 0.74]									
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.28	7.75	121.07	n/a	0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.42	7.25	121.14	0.63	0.000
[CN=71.0]									
[N = 3.0:Tp 0.63]									
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.68	7.42	121.11	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.65	7.58	121.09	n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.19	12.67	121.09	n/a	0.000
{ST= 0.62 ha.m }									
* CALIB STANDHYD	0302	1	5.0	16.39	1.42	7.00	136.79	0.71	0.000
[I%=20.0:S%= 2.00]									
ADD [0302+ 0501]	0902	3	5.0	26.91	1.59	7.00	130.65	n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34	0.22	7.00	144.21	0.75	0.000
[I%=25.0:S%= 2.00]									
ADD [0303+ 0902]	0903	3	5.0	29.25	1.82	7.00	131.73	n/a	0.000
* CALIB NASHYD	7304	1	5.0	2.90	0.23	7.00	112.01	0.58	0.000
[CN=66.6]									
[N = 3.0:Tp 0.28]									
ADD [7304+ 0903]	0904	3	5.0	32.15	2.05	7.00	129.96	n/a	0.000
* CALIB STANDHYD	0305	1	5.0	0.31	0.02	7.00	125.62	0.65	0.000
[I%=20.0:S%= 0.50]									
ADD [0305+ 0904]	0905	3	5.0	32.46	2.07	7.00	129.91	n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.46	1.40	7.67	129.86	n/a	0.000
{ST= 1.19 ha.m }									
* CALIB NASHYD	0101	1	5.0	5.70	0.24	7.42	76.99	0.40	0.000
[CN=50.2]									
[N = 3.0:Tp 0.70]									
* ADD [0101+ 0502]	0906	3	5.0	38.16	1.64	7.58	121.97	n/a	0.000
* DIVERT HYD	0600	1	5.0	38.16	1.64	7.58	121.97	n/a	0.000
Outflow	0003	2	5.0	25.72	1.21	7.58	121.97	n/a	0.000
Outflow	0003	3	5.0	8.57	0.40	7.58	121.97	n/a	0.000
Outflow	0003	4	5.0	3.86	0.02	7.58	121.97	n/a	0.000
Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
ADD [0103+ 0600]	0801	3	5.0	34.42	1.66	7.50	115.30	n/a	0.000

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*
* ADD [ 0801+ 9102] 0802 3 5.0 57.42 2.76 7.50 104.82 n/a 0.000
*
* DIVERT HYD 0601 1 5.0 57.42 2.76 7.50 104.82 n/a 0.000
* Outflow 0802 2 5.0 43.07 2.07 7.50 104.82 n/a 0.000
* Outflow 0802 3 5.0 14.35 0.69 7.50 104.82 n/a 0.000
* Outflow 0802 4 5.0 0.00 0.00 0.00 0.00 n/a 0.000
* Outflow 0802 5 5.0 0.00 0.00 0.00 0.00 n/a 0.000
* Outflow 0802 6 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
* CALIB NASHYD 7200 1 5.0 3.80 0.18 7.17 75.21 0.39 0.000
* [CN=49.2 ]
* [ N = 3.0:Tp 0.47]
*
* CALIB NASHYD 0104 1 5.0 0.71 0.04 7.67 121.57 0.63 0.000
* [CN=72.0 ]
* [ N = 3.0:Tp 0.92]
*
* ADD [ 0104+ 0601] 0803 3 5.0 43.78 2.12 7.50 105.09 n/a 0.000
*
* ADD [ 0803+ 7200] 0803 1 5.0 47.58 2.28 7.42 102.70 n/a 0.000
*
* ADD [ 0600+ 0601] 0804 3 5.0 18.21 0.71 7.50 108.46 n/a 0.000
*
* CALIB NASHYD 0105 1 5.0 30.40 1.64 7.42 99.78 0.52 0.000
* [CN=62.1 ]
* [ N = 3.0:Tp 0.74]
*
* CALIB NASHYD 0106 1 5.0 13.60 1.17 7.33 154.17 0.80 0.000
* [CN=84.9 ]
* [ N = 3.0:Tp 0.68]
*
* ADD [ 0105+ 0106] 0805 3 5.0 44.00 2.80 7.42 116.60 n/a 0.000
*
* SHIFT[ 2: 0600] 7101 1 5.0 8.57 0.40 9.75 121.97 n/a 0.000
* [SHIFT=130.0 min]
*
* CALIB NASHYD 0102 1 5.0 31.10 1.13 7.67 73.94 0.38 0.000
* [CN=48.3 ]
* [ N = 3.0:Tp 0.87]
*
* SHIFT[ 2: 0102] 7102 1 5.0 31.10 1.13 8.75 73.94 n/a 0.000
* [SHIFT= 67.0 min]
*
* CALIB NASHYD 0107 1 5.0 77.70 3.45 7.83 91.91 0.48 0.000
* [CN=58.1 ]
* [ N = 3.0:Tp 0.96]
*
* CALIB NASHYD 0108 1 5.0 15.50 0.60 7.92 82.28 0.43 0.000
* [CN=52.3 ]
* [ N = 3.0:Tp 0.99]
*
* SHIFT[ 2: 0108] 7108 1 5.0 15.50 0.60 9.58 82.28 n/a 0.000
* [SHIFT=104.0 min]
*
* ADD [ 0107+ 7101] 0806 3 5.0 86.27 3.54 9.33 94.89 n/a 0.000
*
* ADD [ 0806+ 7102] 0806 1 5.0 117.37 4.62 9.25 89.34 n/a 0.000
*
* ADD [ 0806+ 7108] 0806 3 5.0 132.87 5.21 9.33 88.52 n/a 0.000
*

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V V I SSSS U U A L
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A L
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000 TTTT TTTT H H Y Y M M 000 TM
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O O T T H H Y Y M M O O
000 T T H H Y Y M M 000

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\V02\voindat

Output filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\8d4dc182-d5b6-4de8-8e67-4fe7f0b1d1e6\scen

Summary filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\8d4dc182-d5b6-4de8-8e67-4fe7f0b1d1e6\scen

DATE: 11/19/2018

TIME: 06:37:26

USER:

COMMENTS: EXISTING CONDITIONS - SCS STORMS

** SIMULATION : Run 01 ** 2 YEAR, 24 HOUR

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

MASS STORM	15.0							
[Ptot= 52.94 mm]								
* ** CALIB NASHYD	9102	1	5.0	23.00	0.19	12.42	8.73	0.16 0.000
[CN=55.3]								
[N = 3.0:Tp 0.72]								
* ** CALIB NASHYD	0103	1	5.0	8.70	0.10	12.17	9.44	0.18 0.000
[CN=59.2]								
[N = 3.0:Tp 0.48]								
* ** CALIB NASHYD	7300	1	5.0	4.55	0.07	12.42	15.15	0.29 0.000
[CN=71.0]								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.04	13.00	15.12	n/a 0.000
* ** CALIB NASHYD	7301	1	5.0	5.97	0.10	12.33	15.15	0.29 0.000
[CN=71.0]								
[N = 3.0:Tp 0.63]								
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.13	12.50	15.14	n/a 0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.11	12.83	15.12	n/a 0.000
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.11	13.00	15.12	n/a 0.000
{ST= 0.01 ha.m }								
* ** CALIB STANDHYD	0302	1	5.0	16.39	0.64	11.83	23.12	0.44 0.000
[I%=20.0:S%= 2.00]								
* ADD [0302+ 0501]	0902	3	5.0	26.91	0.66	11.83	19.99	n/a 0.000
* ** CALIB STANDHYD	0303	1	5.0	2.34	0.13	11.75	26.04	0.49 0.000
[I%=25.0:S%= 2.00]								
* ADD [0303+ 0902]	0903	3	5.0	29.25	0.76	11.83	20.47	n/a 0.000
* ** CALIB NASHYD	7304	1	5.0	2.90	0.07	11.92	13.10	0.25 0.000
[CN=66.6]								
[N = 3.0:Tp 0.28]								
* ADD [7304+ 0903]	0904	3	5.0	32.15	0.84	11.83	19.81	n/a 0.000
* ** CALIB STANDHYD	0305	1	5.0	0.31	0.01	11.75	20.20	0.38 0.000

[I%=20.0:S%= 0.50]

* ADD [0305+ 0904]	0905	3	5.0	32.46	0.84	11.83	19.81	n/a 0.000
* RESRVR [2: 0905]	0502	1	5.0	32.46	0.09	15.75	19.76	n/a 0.000
{ST= 0.38 ha.m }								
* ** CALIB NASHYD	0101	1	5.0	5.70	0.03	12.42	6.25	0.12 0.000
[CN=50.2]								
[N = 3.0:Tp 0.70]								
* ADD [0101+ 0502]	0906	3	5.0	38.16	0.10	15.58	17.74	n/a 0.000
* DIVERST HYD	0600	1	5.0	38.16	0.10	15.58	17.74	n/a 0.000
Outflow	0003	2	5.0	14.39	0.06	15.58	17.74	n/a 0.000
Outflow	0003	3	5.0	4.80	0.02	15.58	17.74	n/a 0.000
Outflow	0003	4	5.0	18.97	0.02	15.58	17.74	n/a 0.000
Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a 0.000
* ADD [0103+ 0600]	0801	3	5.0	23.09	0.13	12.33	14.61	n/a 0.000
* ADD [0801+ 9102]	0802	3	5.0	46.09	0.32	12.42	11.68	n/a 0.000
* DIVERST HYD	0601	1	5.0	46.09	0.32	12.42	11.68	n/a 0.000
Outflow	0002	2	5.0	34.63	0.24	12.42	11.68	n/a 0.000
Outflow	0002	3	5.0	11.46	0.08	12.42	11.68	n/a 0.000
Outflow	0002	4	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow	0002	5	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow	0002	6	5.0	0.00	0.00	0.00	0.00	n/a 0.000
* ** CALIB NASHYD	7200	1	5.0	3.80	0.03	12.17	6.04	0.11 0.000
[CN=49.2]								
[N = 3.0:Tp 0.47]								
* ** CALIB NASHYD	0104	1	5.0	0.71	0.01	12.67	14.63	0.28 0.000
[CN=72.0]								
[N = 3.0:Tp 0.92]								
* ADD [0104+ 0601]	0803	3	5.0	35.34	0.25	12.42	11.74	n/a 0.000
* ADD [0803+ 7200]	0803	1	5.0	39.14	0.27	12.42	11.19	n/a 0.000
* ADD [0600+ 0601]	0804	3	5.0	30.43	0.10	12.42	15.46	n/a 0.000
* ** CALIB NASHYD	0105	1	5.0	30.40	0.27	12.50	9.67	0.18 0.000
[CN=62.1]								
[N = 3.0:Tp 0.74]								
* ** CALIB NASHYD	0106	1	5.0	13.60	0.39	12.33	26.76	0.51 0.000
[CN=84.9]								
[N = 3.0:Tp 0.68]								
* ADD [0105+ 0106]	0805	3	5.0	44.00	0.66	12.42	14.95	n/a 0.000
* SHIFT[2: 0600]	7101	1	5.0	4.80	0.02	17.75	17.74	n/a 0.000
[SHIFT=130.0 min]								
* ** CALIB NASHYD	0102	1	5.0	31.10	0.15	12.67	5.98	0.11 0.000
[CN=48.3]								
[N = 3.0:Tp 0.87]								
* SHIFT[2: 0102]	7102	1	5.0	31.10	0.15	13.75	5.98	n/a 0.000
[SHIFT= 67.0 min]								
* ** CALIB NASHYD	0107	1	5.0	77.70	0.49	12.75	8.36	0.16 0.000
[CN=58.1]								
[N = 3.0:Tp 0.96]								
* ** CALIB NASHYD	0108	1	5.0	15.50	0.08	12.83	7.36	0.14 0.000
[CN=52.3]								
[N = 3.0:Tp 0.99]								
* SHIFT[2: 0108]	7108	1	5.0	15.50	0.08	14.50	7.36	n/a 0.000
[SHIFT=104.0 min]								
* ADD [0107+ 7101]	0806	3	5.0	82.50	0.49	12.75	8.91	n/a 0.000
* ADD [0806+ 7102]	0806	1	5.0	113.60	0.55	13.25	8.11	n/a 0.000
* ADD [0806+ 7108]	0806	3	5.0	129.10	0.55	13.33	8.02	n/a 0.000

** SIMULATION : Run 02 ** 5 YEAR, 24 HOUR

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

START @ 0.00 hrs										

MASS STORM			15.0							
[Ptot= 70.09 mm]										

**	CALIB NASHYD	9102	1	5.0	23.00	0.34	12.42	15.25	0.22	0.000
[CN=55.3										
[N = 3.0:Tp 0.72]										

**	CALIB NASHYD	0103	1	5.0	8.70	0.19	12.17	16.57	0.24	0.000
[CN=59.2										
[N = 3.0:Tp 0.48]										

**	CALIB NASHYD	7300	1	5.0	4.55	0.11	12.42	25.09	0.36	0.000
[CN=71.0										
[N = 3.0:Tp 0.74]										

*	CHANNEL[2: 7300]	0701	1	5.0	4.55	0.08	12.83	25.05	n/a	0.000

**	CALIB NASHYD	7301	1	5.0	5.97	0.17	12.33	25.09	0.36	0.000
[CN=71.0										
[N = 3.0:Tp 0.63]										

*	ADD [0701+ 7301]	0901	3	5.0	10.52	0.23	12.50	25.08	n/a	0.000

*	CHANNEL[2: 0901]	0702	1	5.0	10.52	0.21	12.67	25.06	n/a	0.000

*	RESRVR [2: 0702]	0501	1	5.0	10.52	0.17	13.25	25.05	n/a	0.000
{ST= 0.02 ha.m }										

*	CALIB STANDHYD	0302	1	5.0	16.39	1.11	11.83	34.67	0.49	0.000
[I%=20.0:S%= 2.00]										

*	ADD [0302+ 0501]	0902	3	5.0	26.91	1.13	11.83	30.91	n/a	0.000

*	CALIB STANDHYD	0303	1	5.0	2.34	0.22	11.75	38.41	0.55	0.000
[I%=25.0:S%= 2.00]										

*	ADD [0303+ 0902]	0903	3	5.0	29.25	1.31	11.83	31.51	n/a	0.000

*	CALIB NASHYD	7304	1	5.0	2.90	0.13	11.92	22.00	0.31	0.000
[CN=66.6										
[N = 3.0:Tp 0.28]										

*	ADD [7304+ 0903]	0904	3	5.0	32.15	1.43	11.83	30.65	n/a	0.000

*	CALIB STANDHYD	0305	1	5.0	0.31	0.02	11.75	30.52	0.44	0.000
[I%=20.0:S%= 0.50]										

*	ADD [0305+ 0904]	0905	3	5.0	32.46	1.44	11.83	30.65	n/a	0.000

*	RESRVR [2: 0905]	0502	1	5.0	32.46	0.15	14.25	30.60	n/a	0.000
{ST= 0.56 ha.m }										

*	CALIB NASHYD	0101	1	5.0	5.70	0.06	12.42	11.57	0.17	0.000
[CN=50.2										
[N = 3.0:Tp 0.70]										

*	ADD [0101+ 0502]	0906	3	5.0	38.16	0.19	12.75	27.76	n/a	0.000

DIVERT HYD			0600	1	5.0	38.16	0.19	12.75	27.76	n/a 0.000
Outflow			0003	2	5.0	18.85	0.13	12.75	27.76	n/a 0.000
Outflow			0003	3	5.0	6.28	0.04	12.75	27.76	n/a 0.000
Outflow			0003	4	5.0	13.02	0.02	12.75	27.76	n/a 0.000
Outflow			0003	5	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow			0003	6	5.0	0.00	0.00	0.00	0.00	n/a 0.000

*	ADD [0103+ 0600]	0801	3	5.0	27.55	0.28	12.33	24.23	n/a	0.000

*	ADD [0801+ 9102]	0802	3	5.0	50.55	0.62	12.33	20.14	n/a	0.000

DIVERT HYD			0601	1	5.0	50.55	0.62	12.33	20.14	n/a 0.000
Outflow			0002	2	5.0	37.94	0.46	12.33	20.14	n/a 0.000
Outflow			0002	3	5.0	12.61	0.15	12.33	20.14	n/a 0.000
Outflow			0002	4	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow			0002	5	5.0	0.00	0.00	0.00	0.00	n/a 0.000
Outflow			0002	6	5.0	0.00	0.00	0.00	0.00	n/a 0.000

*	CALIB NASHYD	7200	1	5.0	3.80	0.05	12.17	11.20	0.16	0.000
[CN=49.2										
[N = 3.0:Tp 0.47]										

*	CALIB NASHYD	0104	1	5.0	0.71	0.01	12.67	24.65	0.35	0.000
[CN=72.0										
[N = 3.0:Tp 0.92]										

*	ADD [0104+ 0601]	0803	3	5.0	38.65	0.48	12.42	20.22	n/a	0.000

*	ADD [0803+ 7200]	0803	1	5.0	42.45	0.53	12.33	19.42	n/a	0.000

*	ADD [0600+ 0601]	0804	3	5.0	25.64	0.17	12.33	24.01	n/a	0.000

*	CALIB NASHYD	0105	1	5.0	30.40	0.50	12.50	17.22	0.25	0.000
	[CN=62.1									
	[N = 3.0:Tp 0.74]									

*	CALIB NASHYD	0106	1	5.0	13.60	0.60	12.33	40.68	0.58	0.000
	[CN=84.9									
	[N = 3.0:Tp 0.68]									

*	ADD [0105+ 0106]	0805	3	5.0	44.00	1.10	12.42	24.47	n/a	0.000

*	SHIFT[2: 0600]	7101	1	5.0	6.28	0.04	14.92	27.76	n/a	0.000
	[SHIFT=130.0 min]									

*	CALIB NASHYD	0102	1	5.0	31.10	0.28	12.67	11.04	0.16	0.000
	[CN=48.3									
	[N = 3.0:Tp 0.87]									

*	SHIFT[2: 0102]	7102	1	5.0	31.10	0.28	13.75	11.04	n/a	0.000
	[SHIFT= 67.0 min]									

*	CALIB NASHYD	0107	1	5.0	77.70	0.91	12.75	15.10	0.22	0.000
	[CN=58.1									
	[N = 3.0:Tp 0.96]									

*	CALIB NASHYD	0108	1	5.0	15.50	0.15	12.75	13.20	0.19	0.000
	[CN=52.3									
	[N = 3.0:Tp 0.99]									

*	SHIFT[2: 0108]	7108	1	5.0	15.50	0.15	14.42	13.20	n/a	0.000
	[SHIFT=104.0 min]									

*	ADD [0107+ 7101]	0806	3	5.0	83.98	0.91	12.75	16.05	n/a	0.000

*	ADD [0806+ 7102]	0806	1	5.0	115.08	1.02	13.17	14.70	n/a	0.000

*	ADD [0806+ 7108]	0806	3	5.0	130.58	1.04	13.25	14.52	n/a	0.000

=====										

** SIMULATION : Run 03 ** 10 YEAR, 24 HOUR										

W/E COMMAND	HYD ID	DT	AREA	'	Qpeak	Tpeak	R.V.	R.C.	Qbase	
		min	ha		cms	hrs	mm		cms	
START @ 0.00 hrs										

MASS STORM		15.0								
[Ptot= 81.75 mm]										

** CALIB NASHYD	9102	1	5.0	23.00	0.46	12.42	20.42	0.25	0.000	
	[CN=55.3									
	[N = 3.0:Tp 0.72]									

** CALIB NASHYD	0103	1	5.0	8.70	0.25	12.17	22.22	0.27	0.000	
	[CN=59.2									
	[N = 3.0:Tp 0.48]									

** CALIB NASHYD	7300	1	5.0	4.55	0.15	12.42	32.64	0.40	0.000	
	[CN=71.0									
	[N = 3.0:Tp 0.74]									

CHANNEL[2: 7300]	0701	1	5.0	4.55	0.12	12.83	32.59	n/a	0.000	

** CALIB NASHYD	7301	1	5.0	5.97	0.22	12.33	32.64	0.40	0.000	
	[CN=71.0									
	[N = 3.0:Tp 0.63]									

ADD [0701+ 7301]	0901	3	5.0	10.52	0.31	12.50	32.62	n/a	0.000	

CHANNEL[2: 0901]	0702	1	5.0	10.52	0.28	12.67	32.60	n/a	0.000	

RESRVR [2: 0702]	0501	1	5.0	10.52	0.17	13.67	32.60	n/a	0.000	
{ST= 0.05 ha.m }										

* CALIB STANDHYD	0302	1	5.0	16.39	1.41	11.83	43.14	0.53	0.000	
[I%=20.0:S%= 2.00]										

ADD [0302+ 0501]	0902	3	5.0	26.91	1.45	11.83	39.02	n/a	0.000	

* CALIB STANDHYD	0303	1	5.0	2.34	0.28	11.75	47.38	0.58	0.000	
[I%=25.0:S%= 2.00]										

ADD [0303+ 0902]	0903	3	5.0	29.25	1.68	11.83	39.69	n/a	0.000	

* CALIB NASHYD	7304	1	5.0	2.90	0.17	11.92	28.84	0.35	0.000	
[CN=66.6										
]										

	[N = 3.0:Tp 0.28]									
*	ADD [7304+ 0903]	0904	3	5.0	32.15	1.84	11.83	38.71	n/a	0.000
*										
*	CALIB STANDHYD [I%=20.0:S%= 0.50]	0305	1	5.0	0.31	0.02	11.75	38.18	0.47	0.000
*										
*	ADD [0305+ 0904]	0905	3	5.0	32.46	1.85	11.83	38.70	n/a	0.000
*										
*	RESRVR [2: 0905] {ST= 0.58 ha.m }	0502	1	5.0	32.46	0.15	12.67	38.65	n/a	0.000
*										
*	CALIB NASHYD [CN=50.2 [N = 3.0:Tp 0.70]	0101	1	5.0	5.70	0.09	12.42	15.90	0.19	0.000
*										
*	ADD [0101+ 0502]	0906	3	5.0	38.16	0.24	12.58	35.26	n/a	0.000
*										
	DIVERT HYD	0600	1	5.0	38.16	0.24	12.58	35.26	n/a	0.000
	Outflow	0003	2	5.0	20.33	0.16	12.58	35.26	n/a	0.000
	Outflow	0003	3	5.0	6.78	0.05	12.58	35.26	n/a	0.000
	Outflow	0003	4	5.0	11.05	0.02	12.58	35.26	n/a	0.000
	Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
*										
*	ADD [0103+ 0600]	0801	3	5.0	29.03	0.40	12.25	31.35	n/a	0.000
*										
*	ADD [0801+ 9102]	0802	3	5.0	52.03	0.85	12.33	26.52	n/a	0.000
*										
	DIVERT HYD	0601	1	5.0	52.03	0.85	12.33	26.52	n/a	0.000
	Outflow	0002	2	5.0	39.05	0.64	12.33	26.52	n/a	0.000
	Outflow	0002	3	5.0	12.98	0.21	12.33	26.52	n/a	0.000
	Outflow	0002	4	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	Outflow	0002	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	Outflow	0002	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000
*										
*	CALIB NASHYD [CN=49.2 [N = 3.0:Tp 0.47]	7200	1	5.0	3.80	0.08	12.17	15.41	0.19	0.000
*										
*	CALIB NASHYD [CN=72.0 [N = 3.0:Tp 0.92]	0104	1	5.0	0.71	0.02	12.67	32.27	0.39	0.000
*										
*	ADD [0104+ 0601]	0803	3	5.0	39.76	0.65	12.33	26.62	n/a	0.000
*										
*	ADD [0803+ 7200]	0803	1	5.0	43.56	0.72	12.33	25.64	n/a	0.000
*										
*	ADD [0600+ 0601]	0804	3	5.0	24.03	0.23	12.33	30.53	n/a	0.000
*										
*	CALIB NASHYD [CN=62.1 [N = 3.0:Tp 0.74]	0105	1	5.0	30.40	0.68	12.42	23.18	0.28	0.000
*										
*	CALIB NASHYD [CN=84.9 [N = 3.0:Tp 0.68]	0106	1	5.0	13.60	0.75	12.33	50.65	0.62	0.000
*										
*	ADD [0105+ 0106]	0805	3	5.0	44.00	1.43	12.42	31.68	n/a	0.000
*										
*	SHIFT[2: 0600] [SHIFT=130.0 min]	7101	1	5.0	6.78	0.05	14.75	35.26	n/a	0.000
*										
*	CALIB NASHYD [CN=48.3 [N = 3.0:Tp 0.87]	0102	1	5.0	31.10	0.39	12.58	15.17	0.19	0.000
*										
*	SHIFT[2: 0102] [SHIFT= 67.0 min]	7102	1	5.0	31.10	0.39	13.67	15.17	n/a	0.000
*										
*	CALIB NASHYD [CN=58.1 [N = 3.0:Tp 0.96]	0107	1	5.0	77.70	1.26	12.75	20.49	0.25	0.000
*										
*	CALIB NASHYD [CN=52.3 [N = 3.0:Tp 0.99]	0108	1	5.0	15.50	0.21	12.75	17.90	0.22	0.000
*										
*	SHIFT[2: 0108] [SHIFT=104.0 min]	7108	1	5.0	15.50	0.21	14.42	17.90	n/a	0.000
*										
*	ADD [0107+ 7101]	0806	3	5.0	84.48	1.26	12.75	21.67	n/a	0.000
*										
*	ADD [0806+ 7102]	0806	1	5.0	115.58	1.41	13.17	19.92	n/a	0.000
*										
*	ADD [0806+ 7108]	0806	3	5.0	131.08	1.43	13.25	19.68	n/a	0.000
*										
=====										

** SIMULATION : Run 04				**		25 YEAR, 24 HOUR				

W/E COMMAND	HYD ID	DT min	AREA ha	'	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms	
START @ 0.00 hrs										

MASS STORM		15.0								
[Ptot= 96.01 mm]										
* ** CALIB NASHYD	9102	1	5.0	23.00	0.62	12.42	27.43	0.29	0.000	
[CN=55.3										
[N = 3.0:Tp 0.72]										
* ** CALIB NASHYD	0103	1	5.0	8.70	0.35	12.17	29.83	0.31	0.000	
[CN=59.2										
[N = 3.0:Tp 0.48]										
* ** CALIB NASHYD	7300	1	5.0	4.55	0.19	12.42	42.53	0.44	0.000	
[CN=71.0										
[N = 3.0:Tp 0.74]										
* CHANNEL[2: 7300]	0701	1	5.0	4.55	0.15	12.75	42.48	n/a	0.000	
* ** CALIB NASHYD	7301	1	5.0	5.97	0.29	12.33	42.53	0.44	0.000	
[CN=71.0										
[N = 3.0:Tp 0.63]										
* ADD [0701+ 7301]	0901	3	5.0	10.52	0.42	12.42	42.51	n/a	0.000	
* CHANNEL[2: 0901]	0702	1	5.0	10.52	0.38	12.67	42.49	n/a	0.000	
* RESRVR [2: 0702]	0501	1	5.0	10.52	0.17	14.08	42.49	n/a	0.000	
{ST= 0.10 ha.m }										
* CALIB STANDHYD	0302	1	5.0	16.39	1.82	11.83	54.01	0.56	0.000	
[I%=20.0:S%= 2.00]										
* ADD [0302+ 0501]	0902	3	5.0	26.91	1.88	11.83	49.51	n/a	0.000	
* CALIB STANDHYD	0303	1	5.0	2.34	0.35	11.75	58.81	0.61	0.000	
[I%=25.0:S%= 2.00]										
* ADD [0303+ 0902]	0903	3	5.0	29.25	2.17	11.83	50.25	n/a	0.000	
* CALIB NASHYD	7304	1	5.0	2.90	0.22	11.92	37.91	0.39	0.000	
[CN=66.6										
[N = 3.0:Tp 0.28]										
* ADD [7304+ 0903]	0904	3	5.0	32.15	2.38	11.83	49.14	n/a	0.000	
* CALIB STANDHYD	0305	1	5.0	0.31	0.03	11.75	48.09	0.50	0.000	
[I%=20.0:S%= 0.50]										
* ADD [0305+ 0904]	0905	3	5.0	32.46	2.39	11.83	49.13	n/a	0.000	
* RESRVR [2: 0905]	0502	1	5.0	32.46	0.29	15.83	49.08	n/a	0.000	
{ST= 0.64 ha.m }										
* CALIB NASHYD	0101	1	5.0	5.70	0.12	12.42	21.89	0.23	0.000	
[CN=50.2										
[N = 3.0:Tp 0.70]										
* ADD [0101+ 0502]	0906	3	5.0	38.16	0.31	15.83	45.02	n/a	0.000	
* DIVERT HYD	0600	1	5.0	38.16	0.31	15.83	45.02	n/a	0.000	
Outflow	0003	2	5.0	21.76	0.22	15.83	45.02	n/a	0.000	
Outflow	0003	3	5.0	7.25	0.07	15.83	45.02	n/a	0.000	
Outflow	0003	4	5.0	9.15	0.02	15.83	45.02	n/a	0.000	
Outflow	0003	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000	
Outflow	0003	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000	
* ADD [0103+ 0600]	0801	3	5.0	30.46	0.53	12.17	40.68	n/a	0.000	
* ADD [0801+ 9102]	0802	3	5.0	53.46	1.13	12.33	34.98	n/a	0.000	
* DIVERT HYD	0601	1	5.0	53.46	1.13	12.33	34.98	n/a	0.000	
Outflow	0002	2	5.0	40.11	0.85	12.33	34.98	n/a	0.000	
Outflow	0002	3	5.0	13.35	0.28	12.33	34.98	n/a	0.000	
Outflow	0002	4	5.0	0.00	0.00	0.00	0.00	n/a	0.000	
Outflow	0002	5	5.0	0.00	0.00	0.00	0.00	n/a	0.000	
Outflow	0002	6	5.0	0.00	0.00	0.00	0.00	n/a	0.000	
* CALIB NASHYD	7200	1	5.0	3.80	0.11	12.17	21.24	0.22	0.000	
[CN=49.2										
[N = 3.0:Tp 0.47]										
* CALIB NASHYD	0104	1	5.0	0.71	0.03	12.67	42.26	0.44	0.000	
[CN=72.0										
[N = 3.0:Tp 0.92]										

```

*
* ADD [ 0104+ 0601] 0803 3 5.0 40.82 0.87 12.33 35.11 n/a 0.000
*
* ADD [ 0803+ 7200] 0803 1 5.0 44.62 0.97 12.25 33.93 n/a 0.000
*
* ADD [ 0600+ 0601] 0804 3 5.0 22.49 0.30 12.33 39.06 n/a 0.000
*
* CALIB NASHYD
[CN=62.1
[ N = 3.0:Tp 0.74]
*
* CALIB NASHYD
[CN=84.9
[ N = 3.0:Tp 0.68]
*
* ADD [ 0105+ 0106] 0805 3 5.0 44.00 1.86 12.42 41.11 n/a 0.000
*
* SHIFT[ 2: 0600]
[SHIFT=130.0 min]
*
* CALIB NASHYD
[CN=48.3
[ N = 3.0:Tp 0.87]
*
* SHIFT[ 2: 0102]
[SHIFT= 67.0 min]
*
* CALIB NASHYD
[CN=58.1
[ N = 3.0:Tp 0.96]
*
* CALIB NASHYD
[CN=52.3
[ N = 3.0:Tp 0.99]
*
* SHIFT[ 2: 0108]
[SHIFT=104.0 min]
*
* ADD [ 0107+ 7101] 0806 3 5.0 84.95 1.72 12.75 29.27 n/a 0.000
*
* ADD [ 0806+ 7102] 0806 1 5.0 116.05 1.93 13.17 27.03 n/a 0.000
*
* ADD [ 0806+ 7108] 0806 3 5.0 131.55 1.96 13.17 26.71 n/a 0.000
*

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*****
** SIMULATION : Run 05 ** 50 YEAR, 24 HOUR
*****

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

START @ 0.00 hrs
-----
MASS STORM      15.0
[ Ptot=106.68 mm ]

*
** CALIB NASHYD
[CN=55.3
[ N = 3.0:Tp 0.72]
*
** CALIB NASHYD
[CN=59.2
[ N = 3.0:Tp 0.48]
*
** CALIB NASHYD
[CN=71.0
[ N = 3.0:Tp 0.74]
*
CHANNEL[ 2: 7300] 0701 1 5.0 4.55 0.19 12.75 50.27 n/a 0.000
*
** CALIB NASHYD
[CN=71.0
[ N = 3.0:Tp 0.63]
*
ADD [ 0701+ 7301] 0901 3 5.0 10.52 0.50 12.42 50.30 n/a 0.000
*
CHANNEL[ 2: 0901] 0702 1 5.0 10.52 0.46 12.58 50.28 n/a 0.000
*
RESRVR [ 2: 0702] 0501 1 5.0 10.52 0.17 14.25 50.28 n/a 0.000
{ST= 0.14 ha.m }
*
* CALIB STANDHYD
[I%=20.0:S%= 2.00]
*
ADD [ 0302+ 0501] 0902 3 5.0 26.91 2.22 11.83 57.70 n/a 0.000
*
* CALIB STANDHYD
[I%=25.0:S%= 2.00]

```

```

*
* ADD [ 0303+ 0902] 0903 3 5.0 29.25 2.56 11.83 58.49 n/a 0.000
*
* CALIB NASHYD
[CN=66.6
[ N = 3.0:Tp 0.28]
*
* ADD [ 7304+ 0903] 0904 3 5.0 32.15 2.82 11.83 57.29 n/a 0.000
*
* CALIB STANDHYD
[I%=20.0:S%= 0.50]
*
* ADD [ 0305+ 0904] 0905 3 5.0 32.46 2.83 11.83 57.27 n/a 0.000
*
* RESRVR [ 2: 0905]
{ST= 0.68 ha.m }
*
* CALIB NASHYD
[CN=50.2
[ N = 3.0:Tp 0.70]
*
* ADD [ 0101+ 0502] 0906 3 5.0 38.16 0.47 13.33 52.68 n/a 0.000
*
* DIVERT HYD
0600 1 5.0 38.16 0.47 13.33 52.68 n/a 0.000
Outflow 0003 2 5.0 22.65 0.34 13.33 52.68 n/a 0.000
Outflow 0003 3 5.0 7.55 0.11 13.33 52.68 n/a 0.000
Outflow 0003 4 5.0 7.96 0.02 13.33 52.68 n/a 0.000
Outflow 0003 5 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0003 6 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
* ADD [ 0103+ 0600] 0801 3 5.0 31.35 0.62 12.17 48.05 n/a 0.000
*
* ADD [ 0801+ 9102] 0802 3 5.0 54.35 1.35 12.33 41.73 n/a 0.000
*
* DIVERT HYD
0601 1 5.0 54.35 1.35 12.33 41.73 n/a 0.000
Outflow 0002 2 5.0 40.78 1.01 12.33 41.73 n/a 0.000
Outflow 0002 3 5.0 13.57 0.34 12.33 41.73 n/a 0.000
Outflow 0002 4 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0002 5 5.0 0.00 0.00 0.00 0.00 n/a 0.000
Outflow 0002 6 5.0 0.00 0.00 0.00 0.00 n/a 0.000
*
* CALIB NASHYD
[CN=49.2
[ N = 3.0:Tp 0.47]
*
* CALIB NASHYD
[CN=72.0
[ N = 3.0:Tp 0.92]
*
* ADD [ 0104+ 0601] 0803 3 5.0 41.49 1.04 12.33 41.88 n/a 0.000
*
* ADD [ 0803+ 7200] 0803 1 5.0 45.29 1.16 12.25 40.55 n/a 0.000
*
* ADD [ 0600+ 0601] 0804 3 5.0 21.53 0.36 12.33 45.78 n/a 0.000
*
* CALIB NASHYD
[CN=62.1
[ N = 3.0:Tp 0.74]
*
* CALIB NASHYD
[CN=84.9
[ N = 3.0:Tp 0.68]
*
* ADD [ 0105+ 0106] 0805 3 5.0 44.00 2.20 12.42 48.56 n/a 0.000
*
* SHIFT[ 2: 0600]
[SHIFT=130.0 min]
*
* CALIB NASHYD
[CN=48.3
[ N = 3.0:Tp 0.87]
*
* SHIFT[ 2: 0102]
[SHIFT= 67.0 min]
*
* CALIB NASHYD
0107 1 5.0 77.70 2.11 12.67 33.74 0.32 0.000
[CN=58.1
[ N = 3.0:Tp 0.96]
*
* CALIB NASHYD
0108 1 5.0 15.50 0.36 12.75 29.58 0.28 0.000
[CN=52.3
[ N = 3.0:Tp 0.99]
*
* SHIFT[ 2: 0108]
[SHIFT=104.0 min]
*
* ADD [ 0107+ 7101] 0806 3 5.0 85.25 2.11 12.67 35.42 n/a 0.000
*
* ADD [ 0806+ 7102] 0806 1 5.0 116.35 2.37 13.17 32.79 n/a 0.000
*
* ADD [ 0806+ 7108] 0806 3 5.0 131.85 2.40 13.17 32.41 n/a 0.000

```

```

*
*****
** SIMULATION : Run 06          **      100 YEAR, 24 HOUR
*****

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

START @ 0.00 hrs
-----
MASS STORM      15.0
[ Ptot=117.25 mm ]

*
** CALIB NASHYD  9102  1  5.0  23.00  0.90 12.42  39.09 0.33  0.000
[CN=55.3]
[ N = 3.0:Tp 0.72]

*
** CALIB NASHYD  0103  1  5.0   8.70  0.50 12.08  42.41 0.36  0.000
[CN=59.2]
[ N = 3.0:Tp 0.48]

*
** CALIB NASHYD  7300  1  5.0   4.55  0.27 12.42  58.33 0.50  0.000
[CN=71.0]
[ N = 3.0:Tp 0.74]

*
CHANNEL[ 2: 7300] 0701  1  5.0   4.55  0.22 12.67  58.27 n/a  0.000

*
** CALIB NASHYD  7301  1  5.0   5.97  0.40 12.25  58.33 0.50  0.000
[CN=71.0]
[ N = 3.0:Tp 0.63]

*
ADD [ 0701+ 7301] 0901  3  5.0  10.52  0.59 12.42  58.31 n/a  0.000

*
CHANNEL[ 2: 0901] 0702  1  5.0  10.52  0.54 12.58  58.29 n/a  0.000

*
RESRVR [ 2: 0702] 0501  1  5.0  10.52  0.18 14.42  58.28 n/a  0.000
{ST= 0.19 ha.m }

*
* CALIB STANDHYD  0302  1  5.0  16.39  2.48 11.83  71.04 0.61  0.000
[I%=20.0:S%= 2.00]

*
ADD [ 0302+ 0501] 0902  3  5.0  26.91  2.57 11.83  66.05 n/a  0.000

*
* CALIB STANDHYD  0303  1  5.0   2.34  0.47 11.75  76.57 0.65  0.000
[I%=25.0:S%= 2.00]

*
ADD [ 0303+ 0902] 0903  3  5.0  29.25  2.96 11.83  66.90 n/a  0.000

*
* CALIB NASHYD  7304  1  5.0   2.90  0.31 11.92  52.55 0.45  0.000
[CN=66.6]
[ N = 3.0:Tp 0.28]

*
ADD [ 7304+ 0903] 0904  3  5.0  32.15  3.26 11.83  65.60 n/a  0.000

*
* CALIB STANDHYD  0305  1  5.0   0.31  0.03 11.75  63.77 0.54  0.000
[I%=20.0:S%= 0.50]

*
ADD [ 0305+ 0904] 0905  3  5.0  32.46  3.28 11.83  65.58 n/a  0.000

*
RESRVR [ 2: 0905] 0502  1  5.0  32.46  0.57 13.08  65.53 n/a  0.000
{ST= 0.73 ha.m }

*
* CALIB NASHYD  0101  1  5.0   5.70  0.18 12.42  32.02 0.27  0.000
[CN=50.2]
[ N = 3.0:Tp 0.70]

*
ADD [ 0101+ 0502] 0906  3  5.0  38.16  0.71 12.83  60.53 n/a  0.000

*
DIVERT HYD      0600  1  5.0  38.16  0.71 12.83  60.53 n/a  0.000
Outflow        0003  2  5.0  23.34  0.52 12.83  60.53 n/a  0.000
Outflow        0003  3  5.0   7.78  0.17 12.83  60.53 n/a  0.000
Outflow        0003  4  5.0   7.04  0.02 12.83  60.53 n/a  0.000
Outflow        0003  5  5.0   0.00  0.00 0.00  0.00 n/a  0.000
Outflow        0003  6  5.0   0.00  0.00 0.00  0.00 n/a  0.000

*
ADD [ 0103+ 0600] 0801  3  5.0  32.04  0.83 12.50  55.61 n/a  0.000

*
ADD [ 0801+ 9102] 0802  3  5.0  55.04  1.72 12.50  48.71 n/a  0.000

*
DIVERT HYD      0601  1  5.0  55.04  1.72 12.50  48.71 n/a  0.000
Outflow        0002  2  5.0  41.30  1.29 12.50  48.71 n/a  0.000
Outflow        0002  3  5.0  13.75  0.43 12.50  48.71 n/a  0.000
Outflow        0002  4  5.0   0.00  0.00 0.00  0.00 n/a  0.000
Outflow        0002  5  5.0   0.00  0.00 0.00  0.00 n/a  0.000
Outflow        0002  6  5.0   0.00  0.00 0.00  0.00 n/a  0.000

*
* CALIB NASHYD  7200  1  5.0   3.80  0.16 12.08  31.13 0.27  0.000
[CN=49.2]

```

```

[ N = 3.0:Tp 0.47]

*
* CALIB NASHYD      0104  1  5.0   0.71  0.04 12.58  58.22 0.50  0.000
[CN=72.0]
[ N = 3.0:Tp 0.92]

*
ADD [ 0104+ 0601] 0803  3  5.0  42.01  1.33 12.50  48.87 n/a  0.000

*
ADD [ 0803+ 7200] 0803  1  5.0  45.81  1.46 12.42  47.40 n/a  0.000

*
ADD [ 0600+ 0601] 0804  3  5.0  20.78  0.45 12.50  52.71 n/a  0.000

*
* CALIB NASHYD      0105  1  5.0  30.40  1.34 12.42  44.44 0.38  0.000
[CN=62.1]
[ N = 3.0:Tp 0.74]

*
* CALIB NASHYD      0106  1  5.0  13.60  1.23 12.33  82.52 0.70  0.000
[CN=84.9]
[ N = 3.0:Tp 0.68]

*
ADD [ 0105+ 0106] 0805  3  5.0  44.00  2.56 12.42  56.21 n/a  0.000

*
SHIFT[ 2: 0600] 7101  1  5.0   7.78  0.17 15.00  60.53 n/a  0.000
[SHIFT=130.0 min]

*
* CALIB NASHYD      0102  1  5.0  31.10  0.81 12.58  30.58 0.26  0.000
[CN=48.3]
[ N = 3.0:Tp 0.87]

*
SHIFT[ 2: 0102] 7102  1  5.0  31.10  0.81 13.67  30.58 n/a  0.000
[SHIFT= 67.0 min]

*
* CALIB NASHYD      0107  1  5.0  77.70  2.51 12.67  39.97 0.34  0.000
[CN=58.1]
[ N = 3.0:Tp 0.96]

*
* CALIB NASHYD      0108  1  5.0  15.50  0.43 12.75  35.12 0.30  0.000
[CN=52.3]
[ N = 3.0:Tp 0.99]

*
SHIFT[ 2: 0108] 7108  1  5.0  15.50  0.43 14.42  35.12 n/a  0.000
[SHIFT=104.0 min]

*
ADD [ 0107+ 7101] 0806  3  5.0  85.48  2.51 12.67  41.84 n/a  0.000

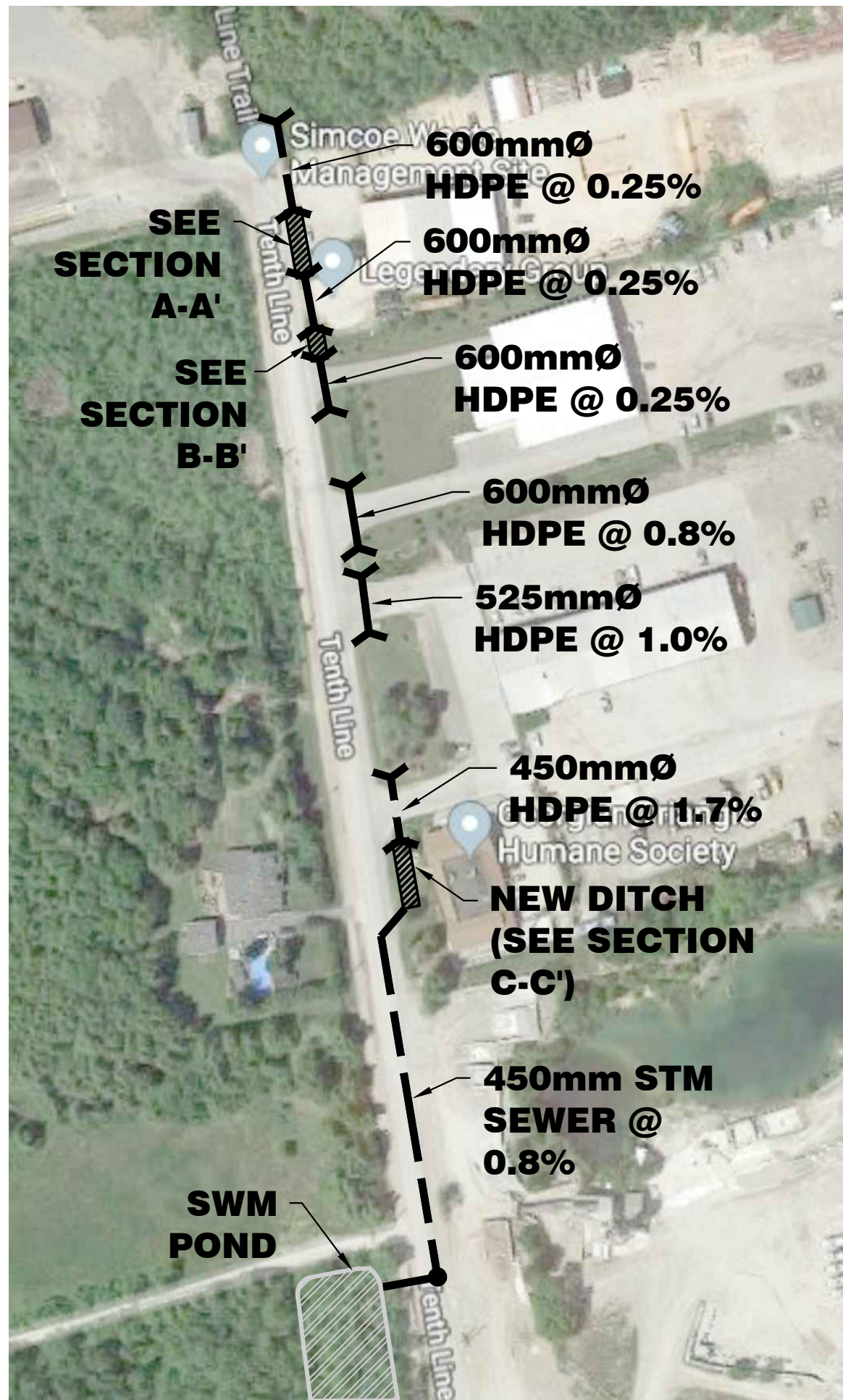
*
ADD [ 0806+ 7102] 0806  1  5.0 116.58  2.82 13.17  38.83 n/a  0.000

*
ADD [ 0806+ 7108] 0806  3  5.0 132.08  2.86 13.17  38.40 n/a  0.000

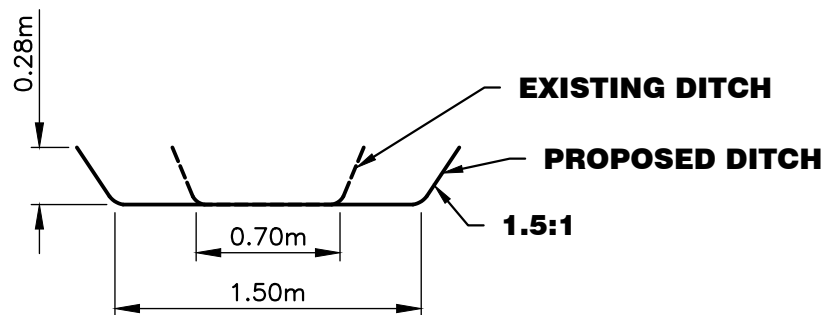
*
FINISH

```

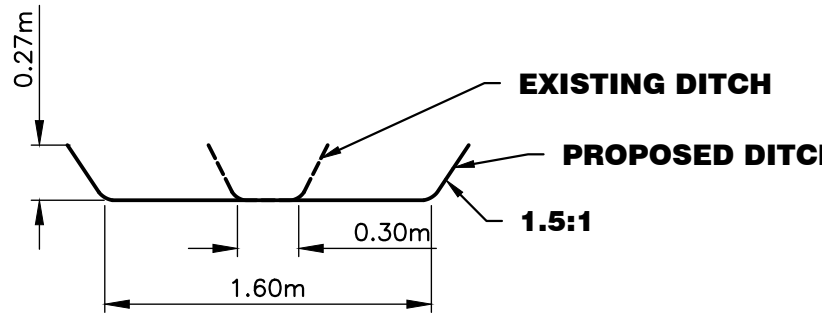
APPENDIX B: PROPOSED CONDITIONS MODELING



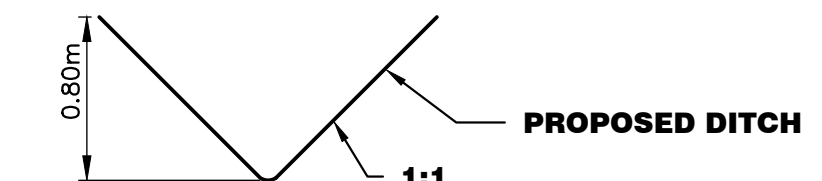
TENTH LINE IMPROVEMENTS



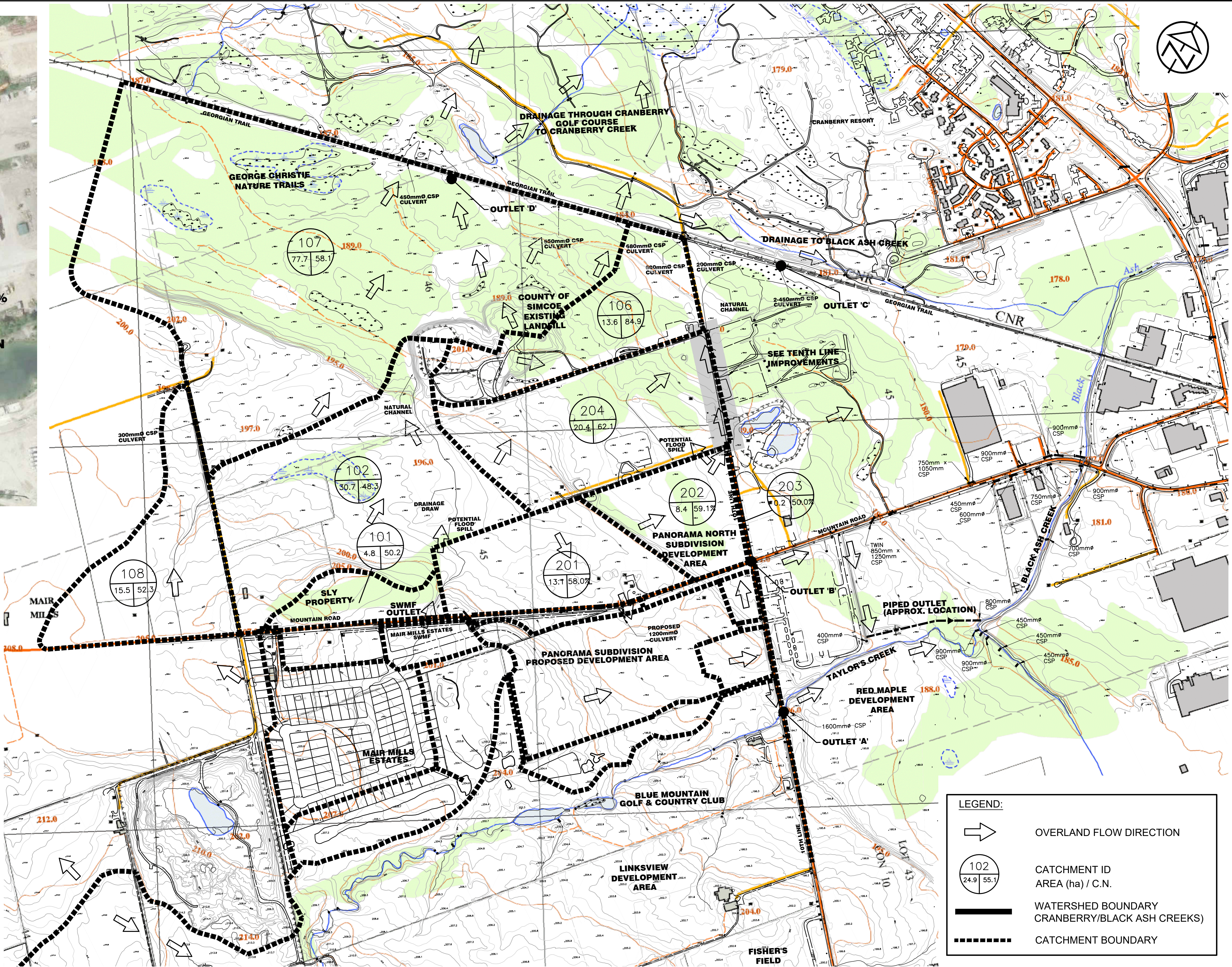
SECTION A-A'



SECTION B-B'



SECTION C-C'



LEGEND:

- OVERLAND FLOW DIRECTION
- CATCHMENT ID
AREA (ha) / C.N.
- WATERSHED BOUNDARY
CRANBERRY/BLACK ASH CREEKS
- CATCHMENT BOUNDARY

CONTRACT DRAWINGS

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.

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APPROVED

**PANORAMA NORTH SUBDIVISION
TOWN OF COLLINGWOOD**

**POST DEVELOPMENT DRAINAGE
PLAN**



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

SCALE: NTS

DESIGN: ASB

DRAWN: ASB

CHECKED: DJH

DATE: NOVEMBER 2018

JOB NO. 116167

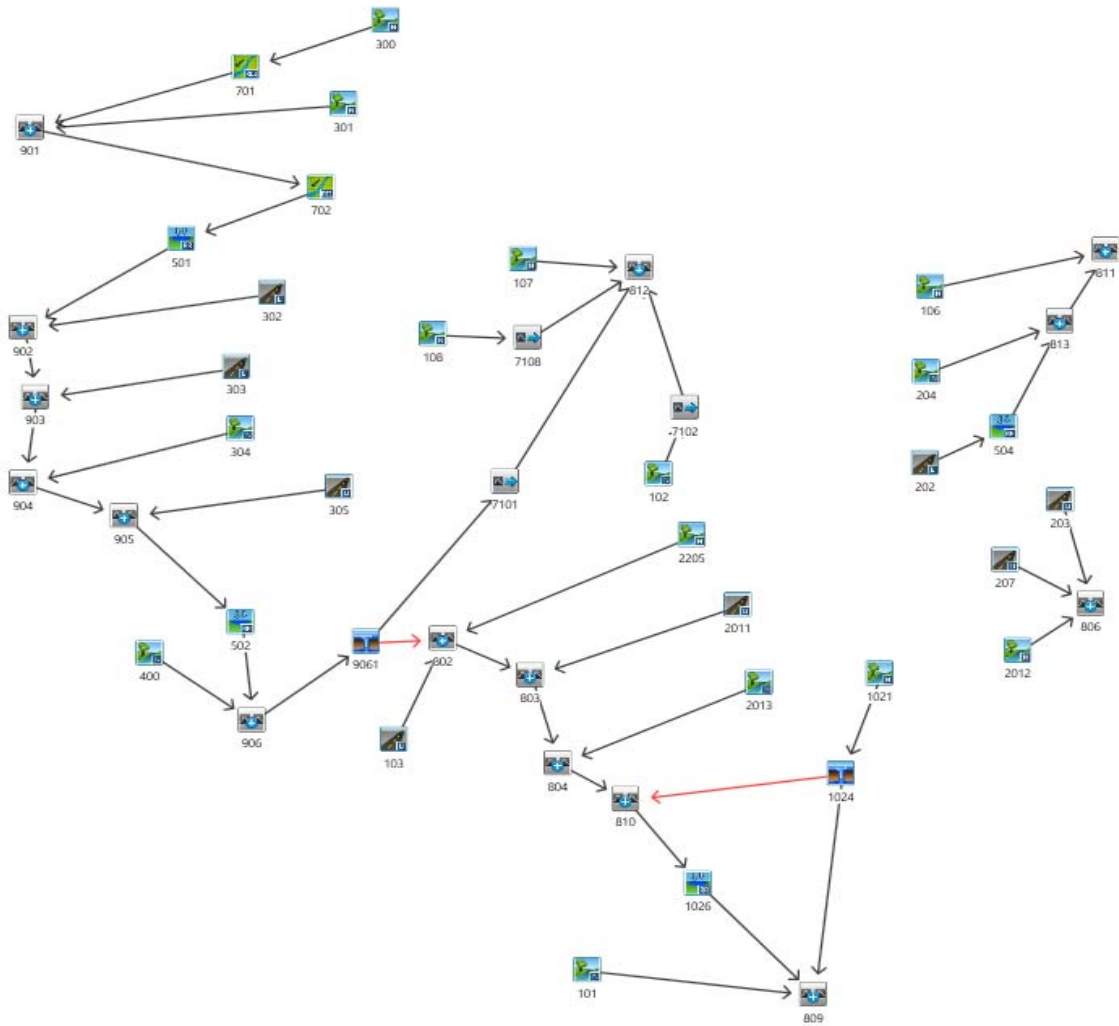
DWG. **DP-2**



C.C. Tatham & Associates Ltd.
Consulting Engineers
Collingwood Bracebridge Orillia Barrie Ottawa

Project:	Panorama North
Date:	19-Nov-18
File No.:	116167
Designed By:	ASB
Checked By:	DJH
Subject:	Hydrologic Model Schematic

HYDROLOGIC MODEL SCHEMATIC: POST DEVELOPMENT CONDITIONS



Nashyd



Route Pipe



Duhyd



Standhyd



Route Channel



Diverthyd



Addhyd



Route Reservoir

 C.C. Tatham & Associates Ltd. Consulting Engineers Collingwood Bracebridge Orillia Barrie	Project:	PANAROMA NORTH
	File No.:	116167
	Date:	11-Oct-18
	Designed By:	ASB
	Checked By:	DJH
	Subject:	HYDROLOGIC MODEL INPUT PARAMETER CALCULATIONS

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Existing Conditions

Catchment 204 Area 20.4 ha

WEIGHTED CN VALUE																													
Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics			Forest/Woodland			Pasture/Lawns			Meadows			Gravel			Cultivated			Impervious			Wetland/Lakes/SWMP			Average CN for Soil Type
					Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
WI	WIARTON	B	Loam or Silt Loam	2	15.3	0.75	11.077	0.724	60	0		69	3.825	0.25	65	0.1836	0.012	91	0		74	0.2142	0.014	100	0	0	50	62.182	
Hal	HARKAWAY	B	Loam	2	5.1	0.25	0.9996	0.196	60	0		69	4.08	0.8	65	0		91	0		74	0.0204	0.004	100	0		50	64.16	
	#N/A	#N/A	#N/A	#N/A	0				#N/A	0		#N/A	0		#N/A	0		91	0		#N/A	0		#N/A	0		#N/A	0	
	#N/A	#N/A	#N/A	#N/A	0				#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0	
	#N/A	#N/A	#N/A	#N/A	0				#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0	
Totals					20.4	1.00	12.08	0.59		0.00	0.00		7.91	0.39		0.18	0.01		0.00	0.00		0.23	0.01		0.00	0.00		62.7	

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation 196.3 m
 Minimum Catchment Elevation 184 m
 Catchment length 800 m
 Catchment Slope 2%
 Catchment Area 20.4 ha

Time of Concentration (Minutes) 30.95
 Time of Concentration (Hours) 0.52
 Time to Peak (2/3 x Time of Concentration) 0.34

Time to Peak 0.75 hrs

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation 196.3 m
 Minimum Catchment Elevation 184 m
 Catchment length 800 m
 Catchment Slope 2%
 Catchment Area 20.4 ha

Time of Concentration (Minutes) 67.07
 Time of Concentration (Hours) 1.12
 Time to Peak (2/3 x Time of Concentration) 0.75

Initial Abstraction 9.0 mm

Runoff Coefficient 0.26

Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2
Wetlands	16

Landuse Type	Soil Series				
	WI	Hal	0	0	0
Forest/Woodland	0.25	0.25	#N/A	#N/A	#N/A
Cultivated	0.35	0.35	#N/A	#N/A	#N/A
Pasture/Lawn	0.28	0.28	#N/A	#N/A	#N/A
Impervious	0.95	0.95	#N/A	#N/A	#N/A
Wetland/Lake/SWMP	0.05	0.05	#N/A	#N/A	#N/A
Meadows	0.27	0.27	#N/A	#N/A	#N/A
Soil Series Total	0.2606	0.2648	#N/A	#N/A	#N/A

=====

```
V V I SSSS U U A L
V V I SS U U A A L
V V I SS U U A A A L
V V I SS U U A A L
VV I SSSS UUUU A A LLLL
```

```
000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y M M O O
O O T T H H Y Y M M O O
000 T T H H Y M M 000
```

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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\V02\voindat

Output filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\4a3ce7ca-34c0-46a9-905a-ffc60c6c6df7\scen

Summary filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\4a3ce7ca-34c0-46a9-905a-ffc60c6c6df7\scen

DATE: 11/19/2018

TIME: 06:43:05

USER:

COMMENTS: PROPOSED CONDITIONS - CHICAGO STORMS

** SIMULATION : Run 01 ** 25mm, 4 HOUR

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

START @ 0.00 hrs

READ STORM 6.0
[Ptot= 24.97 mm]
fname : C:\Users\abutton\AppData\Local\Temp\fb63565-8700-4f77-af94-2b3081311ee8\bd384377-0dbb-4b9c-a019-fd5
remark: OWEN SOUND 25 mm (from a 2 year-4hr storm)

* ** CALIB NASHYD	1021	1	5.0	4.66	0.01	2.92	1.60	0.06	0.000
[CN=55.3]									
[N = 3.0:Tp 0.78]									
* DUHYD	1024	1	5.0	4.66	0.01	2.92	1.60	n/a	0.000
MAJOR SYSTEM:	1024	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	1024	3	5.0	4.66	0.01	2.92	1.60	n/a	0.000
* ** CALIB NASHYD	0300	1	5.0	4.50	0.02	2.83	3.22	0.13	0.000
[CN=71.0]									
[N = 3.0:Tp 0.74]									
* CHANNEL[2: 0300]	0701	1	5.0	4.50	0.01	3.58	3.17	n/a	0.000
* ** CALIB NASHYD	0301	1	5.0	5.97	0.03	2.67	3.22	0.13	0.000
[CN=71.0]									
[N = 3.0:Tp 0.63]									
* ADD [0301+ 0701]	0901	3	5.0	10.47	0.04	2.83	3.20	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.47	0.03	3.50	3.18	n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.47	0.03	3.67	3.18	n/a	0.000
{ST= 0.00 ha.m }									
* CALIB STANDHYD	0302	1	5.0	16.30	0.32	2.08	7.62	0.31	0.000
[I%=20.0:S%= 2.00]									
* ADD [0302+ 0501]	0902	3	5.0	26.77	0.32	2.08	5.89	n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34	0.07	2.00	9.00	0.36	0.000
[I%=25.0:S%= 2.00]									
* ADD [0303+ 0902]	0903	3	5.0	29.11	0.38	2.08	6.14	n/a	0.000
* CALIB NASHYD	0304	1	5.0	2.90	0.02	2.25	2.71	0.11	0.000
[CN=66.6]									
[N = 3.0:Tp 0.28]									
* ADD [0304+ 0903]	0904	3	5.0	32.01	0.40	2.08	5.82	n/a	0.000

* CALIB STANDHYD	0305	1	5.0	0.31	0.01	1.92	6.58	0.26	0.000
[I%=20.0:S%= 0.50]									
* ADD [0305+ 0904]	0905	3	5.0	32.32	0.40	2.08	5.83	n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.32	0.01	5.92	5.78	n/a	0.000
{ST= 0.17 ha.m }									
* CALIB NASHYD	0400	1	5.0	4.80	0.01	2.92	0.84	0.03	0.000
[CN=50.2]									
[N = 3.0:Tp 0.70]									
* ADD [0400+ 0502]	0906	3	5.0	37.12	0.02	3.33	5.14	n/a	0.000
* DUHYD	9061	1	5.0	37.12	0.02	3.33	5.14	n/a	0.000
MAJOR SYSTEM:	9061	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	9061	3	5.0	37.12	0.02	3.33	5.14	n/a	0.000
* CALIB NASHYD	0205	1	5.0	1.41	0.01	2.17	1.19	0.05	0.000
[CN=51.1]									
[N = 3.0:Tp 0.20]									
* CALIB STANDHYD	0103	1	1.0	12.40	0.77	1.93	11.78	0.47	0.000
[I%=43.0:S%= 2.00]									
* ADD [0103+ 0205]	0802	3	1.0	13.81	0.77	1.93	10.70	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	50.93	0.77	1.95	5.30	n/a	0.000
* CALIB STANDHYD	2011	1	1.0	16.60	1.09	1.93	11.05	0.44	0.000
[I%=41.0:S%= 2.00]									
* ADD [2011+ 0802]	0803	3	1.0	67.53	1.86	1.93	6.72	n/a	0.000
* CALIB NASHYD	2013	1	5.0	2.26	0.00	2.25	0.81	0.03	0.000
[CN=54.7]									
[N = 3.0:Tp 0.24]									
* ADD [2013+ 0803]	0804	3	1.0	69.79	1.86	1.93	6.52	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	74.45	1.86	1.93	6.22	n/a	0.000
* RESRVR [2: 0810]	1026	1	1.0	74.45	0.07	4.05	5.30	n/a	0.000
{ST= 0.30 ha.m }									
* CALIB NASHYD	0101	1	1.0	183.10	0.29	3.82	1.79	0.07	0.000
[CN=63.0]									
[N = 3.0:Tp 1.40]									
* ADD [0101+ 1024]	0809	3	1.0	183.10	0.29	3.82	1.79	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	257.55	0.36	3.82	2.81	n/a	0.000
* CALIB NASHYD	2012	1	5.0	1.04	0.01	2.17	1.60	0.06	0.000
[CN=55.3]									
[N = 3.0:Tp 0.24]									
* CALIB STANDHYD	0207	1	5.0	0.66	0.03	1.92	8.20	0.33	0.000
[I%=25.0:S%= 2.00]									
* CALIB STANDHYD	0203	1	5.0	0.24	0.01	1.92	9.97	0.40	0.000
[I%=28.0:S%= 2.00]									
* ADD [2012+ 0203]	0806	3	5.0	1.28	0.01	1.92	3.17	n/a	0.000
* ADD [0806+ 0207]	0806	1	5.0	1.94	0.04	1.92	4.87	n/a	0.000
* SHIFT[2: 9061]	7101	1	5.0	0.00	0.00	2.17	0.00	n/a	0.000
[SHIFT=130.0 min]									
* CALIB NASHYD	0102	1	5.0	31.10	0.03	3.17	0.83	0.03	0.000
[CN=48.3]									
[N = 3.0:Tp 0.87]									
* SHIFT[2: 0102]	7102	1	5.0	31.10	0.03	4.25	0.83	n/a	0.000
[SHIFT= 67.0 min]									
* CALIB NASHYD	0107	1	5.0	77.70	0.11	3.25	1.22	0.05	0.000
[CN=58.1]									
[N = 3.0:Tp 0.96]									
* CALIB NASHYD	0108	1	5.0	15.50	0.02	3.25	1.18	0.05	0.000
[CN=52.3]									
[N = 3.0:Tp 0.99]									
* SHIFT[2: 0108]	7108	1	5.0	15.50	0.02	4.92	1.18	n/a	0.000
[SHIFT=104.0 min]									
* ADD [0107+ 7101]	0812	3	5.0	77.70	0.11	3.25	1.22	n/a	0.000

```
*****
** SIMULATION : Run 02                               **      2 YEAR, 4 HOUR
*****
```

START @ 0.00 hrs										

CHIC STORM		5.0								
[Ptot= 31.29 mm]										
**	CALIB NASHYD	1021	1	5.0	4.66	0.01	2.58	2.77	0.09	0.000
	[CN=55.3	]								
	[N = 3.0:Tp 0.78]									
*										
	DUHYD	1024	1	5.0	4.66	0.01	2.58	2.77	n/a	0.000
	MAJOR SYSTEM:	1024	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	MINOR SYSTEM:	1024	3	5.0	4.66	0.01	2.58	2.77	n/a	0.000
**	CALIB NASHYD	0300	1	5.0	4.50	0.03	2.50	5.32	0.17	0.000
	[CN=71.0	]								
	[N = 3.0:Tp 0.74]									
*										
	CHANNEL[2: 0300]	0701	1	5.0	4.50	0.02	3.33	5.24	n/a	0.000
**	CALIB NASHYD	0301	1	5.0	5.97	0.04	2.33	5.32	0.17	0.000
	[CN=71.0	]								
	[N = 3.0:Tp 0.63]									
*										
	ADD [0301+ 0701]	0901	3	5.0	10.47	0.06	2.58	5.28	n/a	0.000
*										
	CHANNEL[2: 0901]	0702	1	5.0	10.47	0.05	3.17	5.26	n/a	0.000
*										
	RESRVR [2: 0702]	0501	1	5.0	10.47	0.05	3.42	5.26	n/a	0.000
	{ST= 0.00 ha.m }									
*										
	CALIB STANDHYD	0302	1	5.0	16.30	0.40	1.67	10.65	0.34	0.000
	[IX=20.0:0.5%= 2.00]									
*										
	ADD [0302+ 0501]	0902	3	5.0	26.77	0.40	1.67	8.55	n/a	0.000
*										
	CALIB STANDHYD	0303	1	5.0	2.34	0.12	1.50	12.40	0.40	0.000
	[IX=25.0:0.5%= 2.00]									
*										
	ADD [0303+ 0902]	0903	3	5.0	29.11	0.47	1.67	8.86	n/a	0.000
*										
	CALIB NASHYD	0304	1	5.0	2.90	0.03	1.83	4.50	0.14	0.000
	[CN=66.6	]								
	[N = 3.0:Tp 0.28]									
*										
	ADD [0304+ 0903]	0904	3	5.0	32.01	0.49	1.67	8.46	n/a	0.000
*										
	CALIB STANDHYD	0305	1	5.0	0.31	0.02	1.50	9.23	0.29	0.000
	[IX=20.0:0.5%= 0.50]									
*										
	ADD [0305+ 0904]	0905	3	5.0	32.32	0.49	1.67	8.47	n/a	0.000
*										
	RESRVR [2: 0905]	0502	1	5.0	32.32	0.02	5.67	8.42	n/a	0.000
	{ST= 0.24 ha.m }									
*										
	CALIB NASHYD	0400	1	5.0	4.80	0.01	2.67	1.66	0.05	0.000
	[CN=50.2	]								
	[N = 3.0:Tp 0.70]									
*										
	ADD [0400+ 0502]	0906	3	5.0	37.12	0.03	4.92	7.54	n/a	0.000

	CALIB NASHYD		0101	1	1.0	183.10	0.47	3.70	3.22	0.10	0.000
*	[CN=63.0 [N = 3.0:Tp 1.40]]										
*	ADD [0101+ 1024]	0809	3	1.0	183.10	0.47	3.70	3.22	n/a	0.000	
*	ADD [0809+ 1026]	0809	1	1.0	257.55	0.55	3.72	4.39	n/a	0.000	
*	CALIB NASHYD	2012	1	5.0	1.04	0.01	1.75	2.77	0.09	0.000	
*	[CN=55.3 [N = 3.0:Tp 0.24]]										
*	CALIB STANDHYD	0207	1	5.0	0.66	0.05	1.50	11.25	0.36	0.000	
*	[IX=25.0:5%= 2.00]										
*	CALIB STANDHYD	0203	1	5.0	0.24	0.02	1.50	13.77	0.44	0.000	
*	[IX=28.0:5%= 2.00]										
*	ADD [2012+ 0203]	0806	3	5.0	1.28	0.02	1.50	4.83	n/a	0.000	
*	ADD [0806+ 0207]	0806	1	5.0	1.94	0.07	1.50	7.01	n/a	0.000	
*	SHIFT[2: 9061] [SHIFT=130.0 min]	7101	1	5.0	0.00	0.00	2.17	0.00	n/a	0.000	
*	CALIB NASHYD	0102	1	5.0	31.10	0.05	2.92	1.62	0.05	0.000	
*	[CN=48.3 [N = 3.0:Tp 0.87]]										
*	SHIFT[2: 0102] [SHIFT= 67.0 min]	7102	1	5.0	31.10	0.05	4.00	1.62	n/a	0.000	
*	CALIB NASHYD	0107	1	5.0	77.70	0.18	3.08	2.34	0.07	0.000	
*	[CN=58.1 [N = 3.0:Tp 0.96]]										
*	CALIB NASHYD	0108	1	5.0	15.50	0.03	3.00	2.16	0.07	0.000	
*	[CN=52.3 [N = 3.0:Tp 0.99]]										
*	SHIFT[2: 0108] [SHIFT=104.0 min]	7108	1	5.0	15.50	0.03	4.67	2.16	n/a	0.000	
*	ADD [0107+ 7101]	0812	3	5.0	77.70	0.18	3.08	2.34	n/a	0.000	
*	ADD [0812+ 7102]	0812	1	5.0	108.80	0.21	3.50	2.13	n/a	0.000	
*	ADD [0812+ 7108]	0812	3	5.0	124.30	0.23	3.83	2.14	n/a	0.000	
*	CALIB NASHYD	0204	1	5.0	20.40	0.06	2.67	2.78	0.09	0.000	
*	[CN=62.1 [N = 3.0:Tp 0.74]]										
*	CALIB STANDHYD	0202	1	5.0	8.40	1.22	1.50	18.49	0.59	0.000	
*	[IX=59.1:5%= 2.00]										
*	RESERV [2: 0202] {ST= 0.14 ha.m }	0504	1	5.0	8.40	0.02	4.08	13.38	n/a	0.000	

5 YEAR, 4 HOUR

*	ADD	[0802+ 9061]	0802	1	1.0	50.93	1.49	1.55	11.62	n/a	0.000
*	CALIB STANDHYD		2011	1	1.0	16.60	2.11	1.53	20.12	0.49	0.000
*	[I%=41.0:S%= 2.00]										
*	ADD	[2011+ 0802]	0803	3	1.0	67.53	3.60	1.53	13.71	n/a	0.000
*	CALIB NASHYD		2013	1	5.0	2.26	0.02	1.83	3.71	0.09	0.000
*	[CN=54.7]										
*	[N = 3.0:Tp 0.24]										
*	ADD	[2013+ 0803]	0804	3	1.0	69.79	3.61	1.53	13.38	n/a	0.000
*	ADD	[1024+ 0804]	0810	3	1.0	74.45	3.61	1.53	12.87	n/a	0.000
*	RESVR [2: 0810]		1026	1	1.0	74.45	0.21	4.07	11.51	n/a	0.000
*	{ ST= 0.55 ha.m }										
*	CALIB NASHYD		0101	1	1.0	183.10	0.92	3.58	6.20	0.15	0.000
*	[CN=63.0]										
*	[N = 3.0:Tp 1.40]										
*	ADD	[0101+ 1024]	0809	3	1.0	183.10	0.92	3.58	6.20	n/a	0.000
*	ADD	[0809+ 1026]	0809	1	1.0	257.55	1.11	3.68	7.74	n/a	0.000
*	CALIB NASHYD		2012	1	5.0	1.04	0.01	1.75	5.20	0.13	0.000
*	[CN=55.3]										
*	[N = 3.0:Tp 0.24]										
*	CALIB STANDHYD		0207	1	5.0	0.66	0.06	1.50	16.67	0.40	0.000
*	[I%=25.0:S%= 2.00]										
*	CALIB STANDHYD		0203	1	5.0	0.24	0.03	1.50	20.44	0.49	0.000
*	[I%=28.0:S%= 2.00]										
*	ADD	[2012+ 0203]	0806	3	5.0	1.28	0.03	1.50	8.04	n/a	0.000
*	ADD	[0806+ 0207]	0806	1	5.0	1.94	0.10	1.50	10.97	n/a	0.000
*	SHIFT[2: 9061]		7101	1	5.0	0.00	0.00	2.17	0.00	n/a	0.000
*	[SHIFT=130.0 min]										
*	CALIB NASHYD		0102	1	5.0	31.10	0.11	2.83	3.35	0.08	0.000
*	[CN=48.3]										
*	[N = 3.0:Tp 0.87]										
*	SHIFT[2: 0102]		7102	1	5.0	31.10	0.11	3.92	3.35	n/a	0.000
*	[SHIFT= 67.0 min]										
*	CALIB NASHYD		0107	1	5.0	77.70	0.37	2.92	4.75	0.11	0.000
*	[CN=58.1]										
*	[N = 3.0:Tp 0.96]										
*	CALIB NASHYD		0108	1	5.0	15.50	0.07	2.92	4.25	0.10	0.000
*	[CN=52.3]										
*	[N = 3.0:Tp 0.99]										
*	SHIFT[2: 0108]		7108	1	5.0	15.50	0.07	4.58	4.25	n/a	0.000
*	[SHIFT=104.0 min]										
*	ADD	[0107+ 7101]	0812	3	5.0	77.70	0.37	2.92	4.75	n/a	0.000
*	ADD	[0812+ 7102]	0812	1	5.0	108.80	0.44	3.33	4.35	n/a	0.000
*	ADD	[0812+ 7108]	0812	3	5.0	124.30	0.46	3.67	4.34	n/a	0.000
*	CALIB NASHYD		0204	1	5.0	20.40	0.13	2.58	5.56	0.13	0.000
*	[CN=62.1]										
*	[N = 3.0:Tp 0.74]										
*	CALIB STANDHYD		0202	1	5.0	8.40	1.68	1.50	25.54	0.62	0.000
*	[I%=59.1:S%= 2.00]										

10 YEAR, 4 HOUR

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

CHIC STORM	5.0							
[Ptot= 48.36 mm]								
* ** CALIB NASHYD	1021 1 5.0	4.66	0.04	2.58	7.24	0.15	0.000	
[CN=55.3								
[N = 3.0:Tp 0.78]								
* DUHYD	1024 1 5.0	4.66	0.04	2.58	7.24	n/a	0.000	
MAJOR SYSTEM:	1024 2 5.0	0.00	0.00	0.00	0.00	n/a	0.000	
MINOR SYSTEM:	1024 3 5.0	4.66	0.04	2.58	7.24	n/a	0.000	
* ** CALIB NASHYD	0300 1 5.0	4.50	0.07	2.42	12.78	0.26	0.000	
[CN=71.0								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 0300]	0701 1 5.0	4.50	0.05	3.08	12.70	n/a	0.000	
* ** CALIB NASHYD	0301 1 5.0	5.97	0.11	2.33	12.78	0.26	0.000	
[CN=71.0								
[N = 3.0:Tp 0.63]								
* ADD [0301+ 0701]	0901 3 5.0	10.47	0.14	2.50	12.75	n/a	0.000	
* CHANNEL[2: 0901]	0702 1 5.0	10.47	0.13	2.83	12.73	n/a	0.000	
* RESRVR [2: 0702]	0501 1 5.0	10.47	0.12	3.08	12.72	n/a	0.000	
{ST= 0.01 ha.m }								
* CALIB STANDHYD	0302 1 5.0	16.30	0.82	1.58	20.25	0.42	0.000	
[I%=20.0:S%= 2.00]								
* ADD [0302+ 0501]	0902 3 5.0	26.77	0.83	1.58	17.31	n/a	0.000	
* CALIB STANDHYD	0303 1 5.0	2.34	0.22	1.50	22.94	0.47	0.000	
[I%=25.0:S%= 2.00]								
* ADD [0303+ 0902]	0903 3 5.0	29.11	0.99	1.58	17.76	n/a	0.000	
* CALIB NASHYD	0304 1 5.0	2.90	0.08	1.83	11.00	0.23	0.000	
[CN=66.6								
[N = 3.0:Tp 0.28]								
* ADD [0304+ 0903]	0904 3 5.0	32.01	1.04	1.58	17.15	n/a	0.000	
* CALIB STANDHYD	0305 1 5.0	0.31	0.03	1.50	17.68	0.37	0.000	
[I%=20.0:S%= 0.50]								
* ADD [0305+ 0904]	0905 3 5.0	32.32	1.05	1.58	17.15	n/a	0.000	
* RESRVR [2: 0905]	0502 1 5.0	32.32	0.12	4.50	17.10	n/a	0.000	
{ST= 0.43 ha.m }								
* CALIB NASHYD	0400 1 5.0	4.80	0.03	2.50	5.07	0.10	0.000	
[CN=50.2								
[N = 3.0:Tp 0.70]								
* ADD [0400+ 0502]	0906 3 5.0	37.12	0.13	4.25	15.55	n/a	0.000	
* DUHYD	9061 1 5.0	37.12	0.13	4.25	15.55	n/a	0.000	
MAJOR SYSTEM:	9061 2 5.0	0.00	0.00	0.00	0.00	n/a	0.000	
MINOR SYSTEM:	9061 3 5.0	37.12	0.13	4.25	15.55	n/a	0.000	
* CALIB NASHYD	0205 1 5.0	1.41	0.02	1.67	5.92	0.12	0.000	
[CN=51.1								
[N = 3.0:Tp 0.20]								
* CALIB STANDHYD	0103 1 1.0	12.40	1.80	1.55	26.48	0.55	0.000	
[I%=43.0:S%= 2.00]								
* ADD [0103+ 0205]	0802 3 1.0	13.81	1.82	1.55	24.38	n/a	0.000	
* ADD [0802+ 9061]	0802 1 1.0	50.93	1.83	1.55	15.18	n/a	0.000	
* CALIB STANDHYD	2011 1 1.0	16.60	2.59	1.53	24.28	0.50	0.000	
[I%=41.0:S%= 2.00]								
* ADD [2011+ 0802]	0803 3 1.0	67.53	4.41	1.53	17.41	n/a	0.000	
* CALIB NASHYD	2013 1 5.0	2.26	0.03	1.83	5.49	0.11	0.000	
[CN=54.7								
[N = 3.0:Tp 0.24]								
* ADD [2013+ 0803]	0804 3 1.0	69.79	4.42	1.53	17.03	n/a	0.000	
* ADD [1024+ 0804]	0810 3 1.0	74.45	4.42	1.53	16.42	n/a	0.000	

RESRVR [2: 0810]	1026 1 1.0	74.45	0.33	4.02	14.91	n/a	0.000	
{ST= 0.62 ha.m }								
* ** CALIB NASHYD	0101 1 1.0	183.10	1.29	3.53	8.71	0.18	0.000	
[CN=63.0								
[N = 3.0:Tp 1.40]								
* ADD [0101+ 1024]	0809 3 1.0	183.10	1.29	3.53	8.71	n/a	0.000	
* ADD [0809+ 1026]	0809 1 1.0	257.55	1.62	3.58	10.50	n/a	0.000	
* CALIB NASHYD	2012 1 5.0	1.04	0.02	1.75	7.24	0.15	0.000	
[CN=55.3								
[N = 3.0:Tp 0.24]								
* CALIB STANDHYD	0207 1 5.0	0.66	0.08	1.50	20.78	0.43	0.000	
[I%=25.0:S%= 2.00]								
* CALIB STANDHYD	0203 1 5.0	0.24	0.03	1.50	25.42	0.53	0.000	
[I%=28.0:S%= 2.00]								
* ADD [2012+ 0203]	0806 3 5.0	1.28	0.04	1.50	10.64	n/a	0.000	
* ADD [0806+ 0207]	0806 1 5.0	1.94	0.12	1.50	14.08	n/a	0.000	
* SHIFT[2: 9061]	7101 1 5.0	0.00	0.00	2.17	0.00	n/a	0.000	
[SHIFT=130.0 min]								
* CALIB NASHYD	0102 1 5.0	31.10	0.16	2.75	4.86	0.10	0.000	
[CN=48.3								
[N = 3.0:Tp 0.87]								
* SHIFT[2: 0102]	7102 1 5.0	31.10	0.16	3.83	4.86	n/a	0.000	
[SHIFT= 67.0 min]								
* CALIB NASHYD	0107 1 5.0	77.70	0.54	2.92	6.83	0.14	0.000	
[CN=58.1								
[N = 3.0:Tp 0.96]								
* CALIB NASHYD	0108 1 5.0	15.50	0.09	2.92	6.04	0.12	0.000	
[CN=52.3								
[N = 3.0:Tp 0.99]								
* SHIFT[2: 0108]	7108 1 5.0	15.50	0.09	4.58	6.04	n/a	0.000	
[SHIFT=104.0 min]								
* ADD [0107+ 7101]	0812 3 5.0	77.70	0.54	2.92	6.83	n/a	0.000	
* ADD [0812+ 7102]	0812 1 5.0	108.80	0.64	3.33	6.27	n/a	0.000	
* ADD [0812+ 7108]	0812 3 5.0	124.30	0.66	3.58	6.24	n/a	0.000	
* CALIB NASHYD	0204 1 5.0	20.40	0.19	2.50	7.93	0.16	0.000	
[CN=62.1								
[N = 3.0:Tp 0.74]								
* CALIB STANDHYD	0202 1 5.0	8.40	2.04	1.50	30.59	0.63	0.000	
[I%=59.1:S%= 2.00]								
* RESRVR [2: 0202]	0504 1 5.0	8.40	0.02	4.08	25.46	n/a	0.000	
{ST= 0.24 ha.m }								
* ADD [0204+ 0504]	0813 3 5.0	28.80	0.22	2.50	13.04	n/a	0.000	
* ** CALIB NASHYD	0106 1 5.0	13.60	0.45	2.33	23.25	0.48	0.000	
[CN=84.9								
[N = 3.0:Tp 0.68]								
* ADD [0106+ 0813]	0811 3 5.0	42.40	0.66	2.33	16.32	n/a	0.000	

** SIMULATION : Run 05	**	25 YEAR, 4 HOUR						

W/E COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

CHIC STORM	5.0							
[Ptot= 56.71 mm]								
* ** CALIB NASHYD	1021 1 5.0	4.66	0.06	2.50	10.04	0.18	0.000	
[CN=55.3								
[N = 3.0:Tp 0.78]								
* DUHYD	1024 1 5.0	4.66	0.06	2.50	10.04	n/a	0.000	
MAJOR SYSTEM:	1024 2 5.0	0.25	0.01	2.50	10.04	n/a	0.000	

* MINOR SYSTEM:	1024	3	5.0	4.41	0.05	2.17	10.04	n/a	0.000
** CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.74]	0300	1	5.0	4.50	0.10	2.42	17.20	0.30	0.000
* CHANNEL[2: 0300]	0701	1	5.0	4.50	0.07	2.92	17.13	n/a	0.000
** CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.63]	0301	1	5.0	5.97	0.15	2.25	17.20	0.30	0.000
* ADD [0301+ 0701]	0901	3	5.0	10.47	0.20	2.50	17.17	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.47	0.18	2.75	17.15	n/a	0.000
* RESRVR [2: 0702] {ST= 0.01 ha.m }	0501	1	5.0	10.47	0.17	3.08	17.15	n/a	0.000
* CALIB STANDHYD [I%=20.0:S%= 2.00]	0302	1	5.0	16.30	1.11	1.58	25.55	0.45	0.000
* ADD [0302+ 0501]	0902	3	5.0	26.77	1.11	1.58	22.27	n/a	0.000
* CALIB STANDHYD [I%=25.0:S%= 2.00]	0303	1	5.0	2.34	0.27	1.50	28.67	0.51	0.000
* ADD [0303+ 0902]	0903	3	5.0	29.11	1.32	1.58	22.78	n/a	0.000
* CALIB NASHYD [CN=66.6 [N = 3.0:Tp 0.28]	0304	1	5.0	2.90	0.11	1.83	14.92	0.26	0.000
* ADD [0304+ 0903]	0904	3	5.0	32.01	1.39	1.58	22.07	n/a	0.000
* CALIB STANDHYD [I%=20.0:S%= 0.50]	0305	1	5.0	0.31	0.03	1.50	22.38	0.39	0.000
* ADD [0305+ 0904]	0905	3	5.0	32.32	1.40	1.58	22.07	n/a	0.000
* RESRVR [2: 0905] {ST= 0.54 ha.m }	0502	1	5.0	32.32	0.15	4.50	22.02	n/a	0.000
* CALIB NASHYD [CN=50.2 [N = 3.0:Tp 0.70]	0400	1	5.0	4.80	0.04	2.50	7.31	0.13	0.000
* ADD [0400+ 0502]	0906	3	5.0	37.12	0.17	3.17	20.12	n/a	0.000
* DUHYD MAJOR SYSTEM: MINOR SYSTEM:	9061	1	5.0	37.12	0.17	3.17	20.12	n/a	0.000
	9061	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	9061	3	5.0	37.12	0.17	3.17	20.12	n/a	0.000
* CALIB NASHYD [CN=51.1 [N = 3.0:Tp 0.20]	0205	1	5.0	1.41	0.03	1.67	8.33	0.15	0.000
* CALIB STANDHYD [I%=43.0:S%= 2.00]	0103	1	1.0	12.40	2.20	1.55	32.29	0.57	0.000
* ADD [0103+ 0205]	0802	3	1.0	13.81	2.22	1.55	29.84	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	50.93	2.23	1.55	19.80	n/a	0.000
* CALIB STANDHYD [I%=41.0:S%= 2.00]	2011	1	1.0	16.60	3.15	1.53	29.46	0.52	0.000
* ADD [2011+ 0802]	0803	3	1.0	67.53	5.38	1.53	22.18	n/a	0.000
* CALIB NASHYD [CN=54.7 [N = 3.0:Tp 0.24]	2013	1	5.0	2.26	0.04	1.75	7.99	0.14	0.000
* ADD [2013+ 0803]	0804	3	1.0	69.79	5.40	1.53	21.72	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	74.20	5.40	1.53	21.02	n/a	0.000
* RESRVR [2: 0810] {ST= 0.70 ha.m }	1026	1	1.0	74.20	0.48	3.42	19.33	n/a	0.000
* CALIB NASHYD [CN=63.0 [N = 3.0:Tp 1.40]	0101	1	1.0	183.10	1.81	3.48	12.12	0.21	0.000
* ADD [0101+ 1024]	0809	3	1.0	183.35	1.81	3.48	12.12	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	257.55	2.30	3.48	14.20	n/a	0.000
* CALIB NASHYD [CN=55.3 [N = 3.0:Tp 0.24]	2012	1	5.0	1.04	0.03	1.75	10.04	0.18	0.000

*

```

*
RESRVR [ 2: 0702] 0501 1 5.0 10.47 0.17 3.58 20.82 n/a 0.000
{ST= 0.03 ha.m }

*
* CALIB STANDHYD 0302 1 5.0 16.30 1.30 1.58 29.84 0.47 0.000
[I%=20.0:S%= 2.00]

*
ADD [ 0302+ 0501] 0902 3 5.0 26.77 1.30 1.58 26.31 n/a 0.000

*
* CALIB STANDHYD 0303 1 5.0 2.34 0.31 1.50 33.26 0.53 0.000
[I%=25.0:S%= 2.00]

*
ADD [ 0303+ 0902] 0903 3 5.0 29.11 1.55 1.58 26.87 n/a 0.000

*
* CALIB NASHYD 0304 1 5.0 2.90 0.13 1.83 18.21 0.29 0.000
[CN=66.6
[ N = 3.0:Tp 0.28]

*
ADD [ 0304+ 0903] 0904 3 5.0 32.01 1.63 1.58 26.09 n/a 0.000

*
* CALIB STANDHYD 0305 1 5.0 0.31 0.04 1.50 26.21 0.42 0.000
[I%=20.0:S%= 0.50]

*
ADD [ 0305+ 0904] 0905 3 5.0 32.32 1.64 1.58 26.09 n/a 0.000

*
RESRVR [ 2: 0905] 0502 1 5.0 32.32 0.15 3.42 26.04 n/a 0.000
{ST= 0.57 ha.m }

*
* CALIB NASHYD 0400 1 5.0 4.80 0.06 2.42 9.25 0.15 0.000
[CN=50.2
[ N = 3.0:Tp 0.70]

*
ADD [ 0400+ 0502] 0906 3 5.0 37.12 0.19 2.92 23.87 n/a 0.000

*
DUHYD 9061 1 5.0 37.12 0.19 2.92 23.87 n/a 0.000
MAJOR SYSTEM: 9061 2 5.0 0.00 0.00 0.00 n/a 0.000
MINOR SYSTEM: 9061 3 5.0 37.12 0.19 2.92 23.87 n/a 0.000

*
* CALIB NASHYD 0205 1 5.0 1.41 0.04 1.67 10.41 0.16 0.000
[CN=51.1
[ N = 3.0:Tp 0.20]

*
* CALIB STANDHYD 0103 1 1.0 12.40 2.54 1.55 36.90 0.58 0.000
[I%=43.0:S%= 2.00]

*
ADD [ 0103+ 0205] 0802 3 1.0 13.81 2.57 1.55 34.19 n/a 0.000

*
ADD [ 0802+ 9061] 0802 1 1.0 50.93 2.58 1.55 23.53 n/a 0.000

*
* CALIB STANDHYD 2011 1 1.0 16.60 3.59 1.53 33.59 0.53 0.000
[I%=41.0:S%= 2.00]

*
ADD [ 2011+ 0802] 0803 3 1.0 67.53 6.16 1.53 26.00 n/a 0.000

*
* CALIB NASHYD 2013 1 5.0 2.26 0.06 1.75 10.17 0.16 0.000
[CN=54.7
[ N = 3.0:Tp 0.24]

*
ADD [ 2013+ 0803] 0804 3 1.0 69.79 6.19 1.53 25.49 n/a 0.000

*
ADD [ 1024+ 0804] 0810 3 1.0 73.76 6.19 1.53 24.79 n/a 0.000

*
RESRVR [ 2: 0810] 1026 1 1.0 73.76 0.61 3.03 22.87 n/a 0.000
{ST= 0.76 ha.m }

*
* CALIB NASHYD 0101 1 1.0 183.10 2.25 3.47 15.02 0.24 0.000
[CN=63.0
[ N = 3.0:Tp 1.40]

*
ADD [ 0101+ 1024] 0809 3 1.0 183.79 2.25 3.43 15.01 n/a 0.000

*
ADD [ 0809+ 1026] 0809 1 1.0 257.55 2.86 3.40 17.26 n/a 0.000

*
* CALIB NASHYD 2012 1 5.0 1.04 0.03 1.75 12.42 0.20 0.000
[CN=55.3
[ N = 3.0:Tp 0.24]

*
* CALIB STANDHYD 0207 1 5.0 0.66 0.11 1.50 30.24 0.48 0.000
[I%=25.0:S%= 2.00]

*
* CALIB STANDHYD 0203 1 5.0 0.24 0.05 1.50 36.68 0.58 0.000
[I%=28.0:S%= 2.00]

*
ADD [ 2012+ 0203] 0806 3 5.0 1.28 0.06 1.50 16.96 n/a 0.000

*
ADD [ 0806+ 0207] 0806 1 5.0 1.94 0.17 1.50 21.47 n/a 0.000

*
SHIFT[ 2: 9061] 7101 1 5.0 0.00 0.00 2.17 0.00 n/a 0.000
[SHIFT=130.0 min]

*
* CALIB NASHYD 0102 1 5.0 31.10 0.30 2.67 8.84 0.14 0.000

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```

[CN=48.3
[ N = 3.0:Tp 0.87]

*
SHIFT[ 2: 0102] 7102 1 5.0 31.10 0.30 3.75 8.84 n/a 0.000
[SHIFT= 67.0 min]

*
* CALIB NASHYD 0107 1 5.0 77.70 0.98 2.83 12.19 0.19 0.000
[CN=58.1
[ N = 3.0:Tp 0.96]

*
* CALIB NASHYD 0108 1 5.0 15.50 0.17 2.83 10.67 0.17 0.000
[CN=52.3
[ N = 3.0:Tp 0.99]

*
SHIFT[ 2: 0108] 7108 1 5.0 15.50 0.17 4.50 10.67 n/a 0.000
[SHIFT=104.0 min]

*
ADD [ 0107+ 7101] 0812 3 5.0 77.70 0.98 2.83 12.19 n/a 0.000

*
ADD [ 0812+ 7102] 0812 1 5.0 108.80 1.15 3.25 11.23 n/a 0.000

*
ADD [ 0812+ 7108] 0812 3 5.0 124.30 1.19 3.58 11.16 n/a 0.000

*
* CALIB NASHYD 0204 1 5.0 20.40 0.35 2.50 13.96 0.22 0.000
[CN=62.1
[ N = 3.0:Tp 0.74]

*
* CALIB STANDHYD 0202 1 5.0 8.40 2.76 1.50 41.65 0.66 0.000
[I%=59.1:S%= 2.00]

*
RESRVR [ 2: 0202] 0504 1 5.0 8.40 0.03 4.08 36.54 n/a 0.000
{ST= 0.33 ha.m }

*
ADD [ 0204+ 0504] 0813 3 5.0 28.80 0.38 2.50 20.55 n/a 0.000

*
** CALIB NASHYD 0106 1 5.0 13.60 0.68 2.25 34.91 0.55 0.000
[CN=84.9
[ N = 3.0:Tp 0.68]

*
ADD [ 0106+ 0813] 0811 3 5.0 42.40 1.05 2.33 25.16 n/a 0.000

*
=====

*****
** SIMULATION : Run 07 ** 100 YEAR, 4 HOUR
*****

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

START @ 0.00 hrs
-----
CHIC STORM 5.0
[ Ptot= 69.48 mm ]

*
** CALIB NASHYD 1021 1 5.0 4.66 0.08 2.50 14.99 0.22 0.000
[CN=55.3
[ N = 3.0:Tp 0.78]

*
DUHYD 1024 1 5.0 4.66 0.08 2.50 14.99 n/a 0.000
MAJOR SYSTEM: 1024 2 5.0 1.11 0.04 2.50 14.99 n/a 0.000
MINOR SYSTEM: 1024 3 5.0 3.55 0.05 1.92 14.99 n/a 0.000

*
** CALIB NASHYD 0300 1 5.0 4.50 0.14 2.42 24.71 0.36 0.000
[CN=71.0
[ N = 3.0:Tp 0.74]

*
CHANNEL[ 2: 0300] 0701 1 5.0 4.50 0.12 2.92 24.64 n/a 0.000

*
** CALIB NASHYD 0301 1 5.0 5.97 0.21 2.25 24.71 0.36 0.000
[CN=71.0
[ N = 3.0:Tp 0.63]

*
ADD [ 0301+ 0701] 0901 3 5.0 10.47 0.30 2.50 24.68 n/a 0.000

*
CHANNEL[ 2: 0901] 0702 1 5.0 10.47 0.28 2.75 24.66 n/a 0.000

*
RESRVR [ 2: 0702] 0501 1 5.0 10.47 0.17 3.92 24.66 n/a 0.000
{ST= 0.05 ha.m }

*
* CALIB STANDHYD 0302 1 5.0 16.30 1.50 1.58 34.24 0.49 0.000
[I%=20.0:S%= 2.00]

*
ADD [ 0302+ 0501] 0902 3 5.0 26.77 1.50 1.75 30.49 n/a 0.000

*
* CALIB STANDHYD 0303 1 5.0 2.34 0.35 1.50 37.96 0.55 0.000
[I%=25.0:S%= 2.00]

*
ADD [ 0303+ 0902] 0903 3 5.0 29.11 1.78 1.58 31.09 n/a 0.000

*

```

* CALIB NASHYD [CN=66.6 [N = 3.0:Tp 0.28]	0304	1	5.0	2.90	0.16	1.75	21.66	0.31	0.000
* ADD [0304+ 0903]	0904	3	5.0	32.01	1.90	1.67	30.24	n/a	0.000
* CALIB STANDHYD [I%=20.0:S%= 0.50]	0305	1	5.0	0.31	0.04	1.50	30.16	0.43	0.000
* ADD [0305+ 0904]	0905	3	5.0	32.32	1.91	1.67	30.24	n/a	0.000
* RESRVR [2: 0905] {ST= 0.58 ha.m }	0502	1	5.0	32.32	0.15	2.83	30.19	n/a	0.000
* CALIB NASHYD [CN=50.2 [N = 3.0:Tp 0.70]	0400	1	5.0	4.80	0.07	2.42	11.36	0.16	0.000
* ADD [0400+ 0502]	0906	3	5.0	37.12	0.21	2.75	27.75	n/a	0.000
* DUHYD MAJOR SYSTEM: MINOR SYSTEM:	9061 9061 9061	1 2 3	5.0 5.0 5.0	37.12 0.00 37.12	0.21 0.00 0.21	2.75 0.00 2.75	27.75 0.00 27.75	n/a n/a n/a	0.000 0.000 0.000
* CALIB NASHYD [CN=51.1 [N = 3.0:Tp 0.20]	0205	1	5.0	1.41	0.05	1.67	12.64	0.18	0.000
* CALIB STANDHYD [I%=43.0:S%= 2.00]	0103	1	1.0	12.40	2.87	1.55	41.57	0.60	0.000
* ADD [0103+ 0205]	0802	3	1.0	13.81	2.90	1.55	38.62	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	50.93	2.92	1.55	27.34	n/a	0.000
* CALIB STANDHYD [I%=41.0:S%= 2.00]	2011	1	1.0	16.60	4.12	1.53	37.78	0.54	0.000
* ADD [2011+ 0802]	0803	3	1.0	67.53	7.03	1.53	29.91	n/a	0.000
* CALIB NASHYD [CN=54.7 [N = 3.0:Tp 0.24]	2013	1	5.0	2.26	0.07	1.75	12.52	0.18	0.000
* ADD [2013+ 0803]	0804	3	1.0	69.79	7.06	1.53	29.35	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	73.34	7.07	1.53	28.65	n/a	0.000
* RESRVR [2: 0810] {ST= 0.83 ha.m }	1026	1	1.0	73.34	0.75	2.77	26.42	n/a	0.000
* CALIB NASHYD [CN=63.0 [N = 3.0:Tp 1.40]	0101	1	1.0	183.10	2.72	3.45	18.09	0.26	0.000
* ADD [0101+ 1024]	0809	3	1.0	184.21	2.73	3.42	18.07	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	257.55	3.45	3.35	20.45	n/a	0.000
* CALIB NASHYD [CN=55.3 [N = 3.0:Tp 0.24]	2012	1	5.0	1.04	0.04	1.75	14.98	0.22	0.000
* CALIB STANDHYD [I%=25.0:S%= 2.00]	0207	1	5.0	0.66	0.12	1.50	34.57	0.50	0.000
* CALIB STANDHYD [I%=28.0:S%= 2.00]	0203	1	5.0	0.24	0.06	1.50	41.76	0.60	0.000
* ADD [2012+ 0203]	0806	3	5.0	1.28	0.07	1.50	19.98	n/a	0.000
* ADD [0806+ 0207]	0806	1	5.0	1.94	0.19	1.50	24.94	n/a	0.000
* SHIFT[2: 9061] [SHIFT=130.0 min]	7101	1	5.0	0.00	0.00	2.17	0.00	n/a	0.000
* CALIB NASHYD [CN=48.3 [N = 3.0:Tp 0.87]	0102	1	5.0	31.10	0.37	2.67	10.84	0.16	0.000
* SHIFT[2: 0102] [SHIFT= 67.0 min]	7102	1	5.0	31.10	0.37	3.75	10.84	n/a	0.000
* CALIB NASHYD [CN=58.1 [N = 3.0:Tp 0.96]	0107	1	5.0	77.70	1.20	2.83	14.84	0.21	0.000
* CALIB NASHYD [CN=52.3 [N = 3.0:Tp 0.99]	0108	1	5.0	15.50	0.21	2.83	12.97	0.19	0.000

SHIFT[2: 0108] [SHIFT=104.0 min]	7108	1	5.0	15.50	0.21	4.50	12.97	n/a	0.000
* ADD [0107+ 7101]	0812	3	5.0	77.70	1.20	2.83	14.84	n/a	0.000
* ADD [0812+ 7102]	0812	1	5.0	108.80	1.41	3.25	13.69	n/a	0.000
* ADD [0812+ 7108]	0812	3	5.0	124.30	1.45	3.50	13.60	n/a	0.000
* CALIB NASHYD [CN=62.1 [N = 3.0:Tp 0.74]	0204	1	5.0	20.40	0.43	2.50	16.92	0.24	0.000
* CALIB STANDHYD [I%=59.1:S%= 2.00]	0202	1	5.0	8.40	3.08	1.50	46.54	0.67	0.000
* RESRVR [2: 0202] {ST= 0.36 ha.m }	0504	1	5.0	8.40	0.07	4.00	41.44	n/a	0.000
* ADD [0204+ 0504]	0813	3	5.0	28.80	0.46	2.50	24.07	n/a	0.000
** CALIB NASHYD [CN=84.9 [N = 3.0:Tp 0.68]	0106	1	5.0	13.60	0.79	2.25	40.17	0.58	0.000
* ADD [0106+ 0813]	0811	3	5.0	42.40	1.24	2.33	29.23	n/a	0.000
***** ** SIMULATION : Run 08** TIMMINS STORM *****									
W/E COMMAND	HYD ID	DT	AREA	'	Qpeak	Tpeak	R.V.	R.C.	Qbase
		min	ha	'	cms	hrs	mm		cms
START @ 0.00 hrs									

READ STORM			12.0						
[Ptot=193.00 mm]									
fname : C:\Users\abutton\AppData\Local\Temp\fb63565-8700-4f77-af94-2b3081311ee8\7875034e-4eed-487c-8e32-ea5									
remark: TIMMINS REGIONAL 12 HOUR DURATION STORM									
** CALIB NASHYD [CN=55.3 [N = 3.0:Tp 0.78]	1021	1	5.0	4.66	0.22	7.50	89.13	0.46	0.000
* DUHYD MAJOR SYSTEM: MINOR SYSTEM:	1024 1024 1024	1 2 3	5.0 5.0 5.0	4.66 2.75 1.91	0.22 0.17 0.05	7.50 7.50 5.83	89.13 89.13 89.13	n/a n/a n/a	0.000 0.000 0.000
** CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.74]	0300	1	5.0	4.50	0.30	7.42	121.14	0.63	0.000
* CHANNEL[2: 0300]	0701	1	5.0	4.50	0.27	7.75	121.07	n/a	0.000
** CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.63]	0301	1	5.0	5.97	0.42	7.25	121.14	0.63	0.000
* ADD [0301+ 0701]	0901	3	5.0	10.47	0.67	7.42	121.11	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.47	0.65	7.58	121.09	n/a	0.000
* RESRVR [2: 0702] {ST= 0.61 ha.m }	0501	1	5.0	10.47	0.19	12.67	121.09	n/a	0.000
* CALIB STANDHYD [I%=20.0:S%= 2.00]	0302	1	5.0	16.30	1.41	7.00	136.79	0.71	0.000
* ADD [0302+ 0501]	0902	3	5.0	26.77	1.59	7.00	130.65	n/a	0.000
* CALIB STANDHYD [I%=25.0:S%= 2.00]	0303	1	5.0	2.34	0.22	7.00	144.21	0.75	0.000
* ADD [0303+ 0902]	0903	3	5.0	29.11	1.81	7.00	131.74	n/a	0.000
* CALIB NASHYD [CN=66.6 [N = 3.0:Tp 0.28]	0304	1	5.0	2.90	0.23	7.00	112.01	0.58	0.000
* ADD [0304+ 0903]	0904	3	5.0	32.01	2.04	7.00	129.95	n/a	0.000
* CALIB STANDHYD [I%=20.0:S%= 0.50]	0305	1	5.0	0.31	0.02	7.00	125.62	0.65	0.000
* ADD [0305+ 0904]	0905	3	5.0	32.32	2.06	7.00	129.91	n/a	0.000
* RESRVR [2: 0905] {ST= 1.19 ha.m }	0502	1	5.0	32.32	1.39	7.67	129.86	n/a	0.000

* CALIB NASHYD [CN=50.2 [N = 3.0:Tp 0.70]	0400	1	5.0	4.80	0.20	7.42	76.99	0.40	0.000
* ADD [0400+ 0502]	0906	3	5.0	37.12	1.59	7.67	123.02	n/a	0.000
* DUHYD MAJOR SYSTEM: MINOR SYSTEM:	9861 9861 9861	1 2 3	5.0 5.0 5.0	37.12 2.30 34.82	1.59 0.39 1.20	7.67 7.67 7.08	123.02 123.02 123.02	n/a n/a n/a	0.000 0.000 0.000
* CALIB NASHYD [CN=51.1 [N = 3.0:Tp 0.20]	0205	1	5.0	1.41	0.08	7.00	80.27	0.42	0.000
* CALIB STANDHYD [I%=43.0:5%= 2.00]	0103	1	1.0	12.40	1.18	7.00	145.93	0.76	0.000
* ADD [0103+ 0205]	0802	3	1.0	13.81	1.26	7.00	139.23	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	48.63	2.40	7.05	120.40	n/a	0.000
* CALIB STANDHYD [I%=41.0:5%= 2.00]	2011	1	1.0	16.60	1.46	7.00	133.42	0.69	0.000
* ADD [2011+ 0802]	0803	3	1.0	65.23	3.84	7.02	123.71	n/a	0.000
* CALIB NASHYD [CN=54.7 [N = 3.0:Tp 0.24]	2013	1	5.0	2.26	0.14	7.00	83.99	0.44	0.000
* ADD [2013+ 0803]	0804	3	1.0	67.49	3.97	7.02	122.38	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	69.39	4.02	7.02	121.47	n/a	0.000
* RESRVR [2: 0810] {ST= 1.63 ha.m }	1026	1	1.0	69.39	3.02	7.32	114.70	n/a	0.000
* CALIB NASHYD [CN=63.0 [N = 3.0:Tp 1.40]	0101	1	1.0	183.10	8.18	9.27	102.38	0.53	0.000
* ADD [0101+ 1024]	0809	3	1.0	185.85	8.32	9.25	102.46	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	255.25	11.21	9.07	105.78	n/a	0.000
* CALIB NASHYD [CN=55.3 [N = 3.0:Tp 0.24]	2012	1	5.0	1.04	0.07	7.00	89.05	0.46	0.000
* CALIB STANDHYD [I%=25.0:5%= 2.00]	0207	1	5.0	0.66	0.06	7.00	135.73	0.70	0.000
* CALIB STANDHYD [I%=28.0:5%= 2.00]	0203	1	5.0	0.24	0.03	7.00	153.05	0.79	0.000
* ADD [2012+ 0203]	0806	3	5.0	1.28	0.09	7.00	101.01	n/a	0.000
* ADD [0806+ 0207]	0806	1	5.0	1.94	0.15	7.00	112.80	n/a	0.000
* SHIFT[2: 9061] [SHIFT=130.0 min]	7101	1	5.0	2.30	0.39	9.83	123.02	n/a	0.000
* CALIB NASHYD [CN=48.3 [N = 3.0:Tp 0.87]	0102	1	5.0	31.10	1.13	7.67	73.94	0.38	0.000
* SHIFT[2: 0102] [SHIFT= 67.0 min]	7102	1	5.0	31.10	1.13	8.75	73.94	n/a	0.000
* CALIB NASHYD [CN=58.1 [N = 3.0:Tp 0.96]	0107	1	5.0	77.70	3.45	7.83	91.91	0.48	0.000
* CALIB NASHYD [CN=52.3 [N = 3.0:Tp 0.99]	0108	1	5.0	15.50	0.60	7.92	82.28	0.43	0.000
* SHIFT[2: 0108] [SHIFT=104.0 min]	7108	1	5.0	15.50	0.60	9.58	82.28	n/a	0.000
* ADD [0107+ 7101]	0812	3	5.0	80.00	3.45	7.83	92.80	n/a	0.000
* ADD [0812+ 7102]	0812	1	5.0	111.10	4.47	9.58	87.52	n/a	0.000
* ADD [0812+ 7108]	0812	3	5.0	126.60	5.07	9.58	86.88	n/a	0.000
* CALIB NASHYD [CN=62.1 [N = 3.0:Tp 0.74]	0204	1	5.0	20.40	1.10	7.42	99.78	0.52	0.000
* CALIB STANDHYD	0202	1	5.0	8.40	0.82	7.00	151.98	0.79	0.000

[illegible]

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V V I SSSS U U A L
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***** SUMMARY OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\V02\voindat

Output filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\1cadbaa4-e573-4fa7-ac9b-f8f667933e02\scen

Summary filename:

C:\Users\abutton\AppData\Local\Civica\XH5\782b1c19-f875-4e41-a698-270c09901e28\1cadbaa4-e573-4fa7-ac9b-f8f667933e02\scen

DATE: 11/19/2018

TIME: 06:12:51

USER:

COMMENTS: POST DEVELOPMENT CONDITIONS - SCS STORMS

** SIMULATION : Run 01 ** 2 YEAR, 24 HOUR

W/E COMMAND	HYD ID	DT min	AREA ha	' Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs								

MASS STORM	15.0							
[Ptot= 52.94 mm]								
* ** CALIB NASHYD	1021	1 5.0	4.66	0.04	12.50	8.73	0.16	0.000
[CN=55.3								
[N = 3.0:Tp 0.78]								
* DUHYD	1024	1 5.0	4.66	0.04	12.50	8.73	n/a	0.000
MAJOR SYSTEM:	1024	2 5.0	0.00	0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	1024	3 5.0	4.66	0.04	12.50	8.73	n/a	0.000
* ** CALIB NASHYD	0300	1 5.0	4.50	0.07	12.42	15.15	0.29	0.000
[CN=71.0								
[N = 3.0:Tp 0.74]								
* CHANNEL[2: 0300]	0701	1 5.0	4.50	0.04	13.00	15.12	n/a	0.000
* ** CALIB NASHYD	0301	1 5.0	5.97	0.10	12.33	15.15	0.29	0.000
[CN=71.0								
[N = 3.0:Tp 0.63]								
* ADD [0301+ 0701]	0901	3 5.0	10.47	0.13	12.50	15.14	n/a	0.000
* CHANNEL[2: 0901]	0702	1 5.0	10.47	0.11	12.83	15.12	n/a	0.000
* RESRVR [2: 0702]	0501	1 5.0	10.47	0.11	13.00	15.12	n/a	0.000
{ST= 0.01 ha.m }								
* ** CALIB STANDHYD	0302	1 5.0	16.30	0.64	11.83	23.12	0.44	0.000
[I%=20.0:S%= 2.00]								
* ADD [0302+ 0501]	0902	3 5.0	26.77	0.65	11.83	19.99	n/a	0.000
* ** CALIB STANDHYD	0303	1 5.0	2.34	0.13	11.75	26.04	0.49	0.000
[I%=25.0:S%= 2.00]								
* ADD [0303+ 0902]	0903	3 5.0	29.11	0.76	11.83	20.48	n/a	0.000
* ** CALIB NASHYD	0304	1 5.0	2.90	0.07	11.92	13.10	0.25	0.000
[CN=66.6								
[N = 3.0:Tp 0.28]								
* ADD [0304+ 0903]	0904	3 5.0	32.01	0.83	11.83	19.81	n/a	0.000
* ** CALIB STANDHYD	0305	1 5.0	0.31	0.01	11.75	20.20	0.38	0.000

[I%=20.0:S%= 0.50]

* ADD [0305+ 0904]	0905	3 5.0	32.32	0.83	11.83	19.81	n/a	0.000
* RESRVR [2: 0905]	0502	1 5.0	32.32	0.09	15.75	19.76	n/a	0.000
{ST= 0.38 ha.m }								
* ** CALIB NASHYD	0400	1 5.0	4.80	0.03	12.42	6.25	0.12	0.000
[CN=50.2								
[N = 3.0:Tp 0.70]								
* ADD [0400+ 0502]	0906	3 5.0	37.12	0.10	15.67	18.01	n/a	0.000
* DUHYD	9061	1 5.0	37.12	0.10	15.67	18.01	n/a	0.000
MAJOR SYSTEM:	9061	2 5.0	0.00	0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	9061	3 5.0	37.12	0.10	15.67	18.01	n/a	0.000
* ** CALIB NASHYD	2205	1 5.0	1.41	0.02	11.83	7.20	0.14	0.000
[CN=51.1								
[N = 3.0:Tp 0.20]								
* ** CALIB STANDHYD	0103	1 1.0	12.40	1.02	11.77	29.64	0.56	0.000
[I%=43.0:S%= 2.00]								
* ADD [0103+ 2205]	0802	3 1.0	13.81	1.04	11.77	27.35	n/a	0.000
* ADD [0802+ 9061]	0802	1 1.0	50.93	1.06	11.77	16.38	n/a	0.000
* ** CALIB STANDHYD	2011	1 1.0	16.60	1.39	11.75	27.10	0.51	0.000
[I%=41.0:S%= 2.00]								
* ADD [2011+ 0802]	0803	3 1.0	67.53	2.44	11.77	19.02	n/a	0.000
* ** CALIB NASHYD	2013	1 5.0	2.26	0.03	11.92	6.81	0.13	0.000
[CN=54.7								
[N = 3.0:Tp 0.24]								
* ADD [2013+ 0803]	0804	3 1.0	69.79	2.46	11.77	18.62	n/a	0.000
* ADD [1024+ 0804]	0810	3 1.0	74.45	2.48	11.77	18.00	n/a	0.000
* RESRVR [2: 0810]	1026	1 1.0	74.45	0.23	13.80	14.14	n/a	0.000
{ST= 0.56 ha.m }								
* ** CALIB NASHYD	0101	1 1.0	183.10	1.12	13.33	7.15	0.14	0.000
[CN=63.0								
[N = 3.0:Tp 1.40]								
* ADD [0101+ 1024]	0809	3 1.0	183.10	1.12	13.33	10.53	n/a	0.000
* ADD [0809+ 1026]	0809	1 1.0	257.55	1.34	13.37	11.57	n/a	0.000
* ** CALIB NASHYD	2012	1 5.0	1.04	0.02	11.83	8.73	0.16	0.000
[CN=55.3								
[N = 3.0:Tp 0.24]								
* ** CALIB STANDHYD	0207	1 5.0	0.66	0.04	11.75	23.61	0.45	0.000
[I%=25.0:S%= 2.00]								
* ** CALIB STANDHYD	0203	1 5.0	0.24	0.02	11.75	28.81	0.54	0.000
[I%=28.0:S%= 2.00]								
* ADD [2012+ 0203]	0806	3 5.0	1.28	0.04	11.75	12.48	n/a	0.000
* ADD [0806+ 0207]	0806	1 5.0	1.94	0.07	11.75	16.26	n/a	0.000
* SHIFT[2: 9061]	7101	1 5.0	0.00	0.00	2.17	0.00	n/a	0.000
[SHIFT=130.0 min]								
* ** CALIB NASHYD	0102	1 5.0	31.10	0.15	12.67	5.98	0.11	0.000
[CN=48.3								
[N = 3.0:Tp 0.87]								
* SHIFT[2: 0102]	7102	1 5.0	31.10	0.15	13.75	5.98	n/a	0.000
[SHIFT= 67.0 min]								
* ** CALIB NASHYD	0107	1 5.0	77.70	0.49	12.75	8.36	0.16	0.000
[CN=58.1								
[N = 3.0:Tp 0.96]								
* ** CALIB NASHYD	0108	1 5.0	15.50	0.08	12.83	7.36	0.14	0.000
[CN=52.3								
[N = 3.0:Tp 0.99]								
* SHIFT[2: 0108]	7108	1 5.0	15.50	0.08	14.50	7.36	n/a	0.000
[SHIFT=104.0 min]								
* ADD [0107+ 7101]	0812	3 5.0	77.70	0.49	12.75	8.36	n/a	0.000
* ADD [0812+ 7102]	0812	1 5.0	108.80	0.55	13.25	7.68	n/a	0.000

* ADD [0812+ 7108]	0812	3	5.0	124.30	0.55	13.33	7.64	n/a	0.000
* CALIB NASHYD [CN=62.1 [N = 3.0:Tp 0.74]	0204	1	5.0	20.40	0.18	12.50	9.67	0.18	0.000
* CALIB STANDHYD [I%=59.1:S%= 2.00]	0202	1	5.0	8.40	0.90	11.75	33.96	0.64	0.000
* RESRVR [2: 0202] {ST= 0.21 ha.m }	0504	1	5.0	8.40	0.02	15.83	28.84	n/a	0.000
* ADD [0204+ 0504]	0813	3	5.0	28.80	0.20	12.50	15.26	n/a	0.000
** CALIB NASHYD [CN=84.9 [N = 3.0:Tp 0.68]	0106	1	5.0	13.60	0.39	12.33	26.76	0.51	0.000
* ADD [0106+ 0813]	0811	3	5.0	42.40	0.59	12.42	18.95	n/a	0.000
=====									

** SIMULATION : Run 02 5 YEAR, 24 HOUR									

W/E COMMAND	HYD ID	DT	AREA	' Qpeak	Tpeak	R.V.	R.C.	Qbase	
		min	ha	' cms	hrs	mm		cms	
START @ 0.00 hrs									

MASS STORM	15.0								
[Ptot= 70.09 mm]									
* ** CALIB NASHYD	1021	1	5.0	4.66	0.06	12.50	15.25	0.22	0.000
[CN=55.3 [N = 3.0:Tp 0.78]									
* DUHYD	1024	1	5.0	4.66	0.06	12.50	15.25	n/a	0.000
MAJOR SYSTEM:	1024	2	5.0	0.34	0.02	12.50	15.25	n/a	0.000
MINOR SYSTEM:	1024	3	5.0	4.32	0.05	12.08	15.25	n/a	0.000
* ** CALIB NASHYD	0300	1	5.0	4.50	0.11	12.42	25.09	0.36	0.000
[CN=71.0 [N = 3.0:Tp 0.74]									
* CHANNEL[2: 0300]	0701	1	5.0	4.50	0.08	12.83	25.05	n/a	0.000
* ** CALIB NASHYD	0301	1	5.0	5.97	0.17	12.33	25.09	0.36	0.000
[CN=71.0 [N = 3.0:Tp 0.63]									
* ADD [0301+ 0701]	0901	3	5.0	10.47	0.23	12.50	25.08	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.47	0.20	12.67	25.06	n/a	0.000
* RESRVR [2: 0702] {ST= 0.02 ha.m }	0501	1	5.0	10.47	0.17	13.25	25.05	n/a	0.000
* ** CALIB STANDHYD [I%=20.0:S%= 2.00]	0302	1	5.0	16.30	1.10	11.83	34.67	0.49	0.000
* ADD [0302+ 0501]	0902	3	5.0	26.77	1.13	11.83	30.91	n/a	0.000
* CALIB STANDHYD [I%=25.0:S%= 2.00]	0303	1	5.0	2.34	0.22	11.75	38.41	0.55	0.000
* ADD [0303+ 0902]	0903	3	5.0	29.11	1.31	11.83	31.51	n/a	0.000
* ** CALIB NASHYD	0304	1	5.0	2.90	0.13	11.92	22.00	0.31	0.000
[CN=66.6 [N = 3.0:Tp 0.28]									
* ADD [0304+ 0903]	0904	3	5.0	32.01	1.43	11.83	30.65	n/a	0.000
* ** CALIB STANDHYD [I%=20.0:S%= 0.50]	0305	1	5.0	0.31	0.02	11.75	30.52	0.44	0.000
* ADD [0305+ 0904]	0905	3	5.0	32.32	1.43	11.83	30.65	n/a	0.000
* RESRVR [2: 0905] {ST= 0.56 ha.m }	0502	1	5.0	32.32	0.15	14.42	30.60	n/a	0.000
* ** CALIB NASHYD	0400	1	5.0	4.80	0.05	12.42	11.57	0.17	0.000
[CN=50.2 [N = 3.0:Tp 0.70]									
* ADD [0400+ 0502]	0906	3	5.0	37.12	0.18	12.75	28.14	n/a	0.000
* DUHYD	9061	1	5.0	37.12	0.18	12.75	28.14	n/a	0.000

MAJOR SYSTEM:	9061	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	9061	3	5.0	37.12	0.18	12.75	28.14	n/a	0.000
* ** CALIB NASHYD	2205	1	5.0	1.41	0.04	11.83	12.87	0.18	0.000
[CN=51.1 [N = 3.0:Tp 0.20]									
* ** CALIB STANDHYD [I%=43.0:S%= 2.00]	0103	1	1.0	12.40	1.48	11.77	42.03	0.60	0.000
* ADD [0103+ 2205]	0802	3	1.0	13.81	1.52	11.77	39.05	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	50.93	1.55	11.77	26.57	n/a	0.000
* ** CALIB STANDHYD [I%=41.0:S%= 2.00]	2011	1	1.0	16.60	2.00	11.75	38.19	0.54	0.000
* ADD [2011+ 0802]	0803	3	1.0	67.53	3.54	11.75	29.43	n/a	0.000
* ** CALIB NASHYD	2013	1	5.0	2.26	0.06	11.83	12.75	0.18	0.000
[CN=54.7 [N = 3.0:Tp 0.24]									
* ADD [2013+ 0803]	0804	3	1.0	69.79	3.59	11.77	28.89	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	74.11	3.61	11.77	28.09	n/a	0.000
* RESRVR [2: 0810] {ST= 0.71 ha.m }	1026	1	1.0	74.11	0.51	12.83	23.39	n/a	0.000
* ** CALIB NASHYD	0101	1	1.0	183.10	2.01	13.30	12.86	0.18	0.000
[CN=63.0 [N = 3.0:Tp 1.40]									
* ADD [0101+ 1024]	0809	3	1.0	183.44	2.01	13.30	18.39	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	257.55	2.50	13.23	19.83	n/a	0.000
* ** CALIB NASHYD	2012	1	5.0	1.04	0.03	11.83	15.23	0.22	0.000
[CN=55.3 [N = 3.0:Tp 0.24]									
* ** CALIB STANDHYD [I%=25.0:S%= 2.00]	0207	1	5.0	0.66	0.06	11.75	34.99	0.50	0.000
* ** CALIB STANDHYD [I%=28.0:S%= 2.00]	0203	1	5.0	0.24	0.03	11.75	42.25	0.60	0.000
* ADD [2012+ 0203]	0806	3	5.0	1.28	0.06	11.75	20.28	n/a	0.000
* ADD [0806+ 0207]	0806	1	5.0	1.94	0.12	11.75	25.28	n/a	0.000
* SHIFT[2: 9061] [SHIFT=130.0 min]	7101	1	5.0	0.00	0.00	2.17	0.00	n/a	0.000
* ** CALIB NASHYD	0102	1	5.0	31.10	0.28	12.67	11.04	0.16	0.000
[CN=48.3 [N = 3.0:Tp 0.87]									
* SHIFT[2: 0102] [SHIFT= 67.0 min]	7102	1	5.0	31.10	0.28	13.75	11.04	n/a	0.000
* ** CALIB NASHYD	0107	1	5.0	77.70	0.91	12.75	15.10	0.22	0.000
[CN=58.1 [N = 3.0:Tp 0.96]									
* ** CALIB NASHYD	0108	1	5.0	15.50	0.15	12.75	13.20	0.19	0.000
[CN=52.3 [N = 3.0:Tp 0.99]									
* SHIFT[2: 0108] [SHIFT=104.0 min]	7108	1	5.0	15.50	0.15	14.42	13.20	n/a	0.000
* ADD [0107+ 7101]	0812	3	5.0	77.70	0.91	12.75	15.10	n/a	0.000
* ADD [0812+ 7102]	0812	1	5.0	108.80	1.02	13.17	13.94	n/a	0.000
* ADD [0812+ 7108]	0812	3	5.0	124.30	1.04	13.25	13.85	n/a	0.000
* ** CALIB NASHYD	0204	1	5.0	20.40	0.33	12.50	17.22	0.25	0.000
[CN=62.1 [N = 3.0:Tp 0.74]									
* ** CALIB STANDHYD [I%=59.1:S%= 2.00]	0202	1	5.0	8.40	1.24	11.75	47.02	0.67	0.000
* RESRVR [2: 0202] {ST= 0.29 ha.m }	0504	1	5.0	8.40	0.03	16.08	41.91	n/a	0.000
* ADD [0204+ 0504]	0813	3	5.0	28.80	0.36	12.50	24.42	n/a	0.000

```
** CALIB NASHYD      0106  1  5.0   13.60   0.60 12.33  40.68 0.58   0.000
[CN=84.9          ]
[ N = 3.0:Tp 0.68]
*
ADD [ 0106+ 0813] 0811  3  5.0   42.40   0.96 12.42  29.64 n/a   0.000
*
=====
```

```
*****
** SIMULATION : Run 03                10 YEAR, 24 HOUR
*****
```

W/E COMMAND	HYD ID	DT min	AREA ha	'	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
START @ 0.00 hrs									

MASS STORM		15.0							
[Ptot= 81.75 mm]									
* ** CALIB NASHYD	1021	1 5.0	4.66		0.09	12.50	20.42	0.25	0.000
[CN=55.3]									
[N = 3.0:Tp 0.78]									
* DUHYD	1024	1 5.0	4.66		0.09	12.50	20.42	n/a	0.000
MAJOR SYSTEM:	1024	2 5.0	0.76		0.04	12.50	20.42	n/a	0.000
MINOR SYSTEM:	1024	3 5.0	3.90		0.05	11.92	20.42	n/a	0.000
* ** CALIB NASHYD	0300	1 5.0	4.50		0.15	12.42	32.64	0.40	0.000
[CN=71.0]									
[N = 3.0:Tp 0.74]									
* CHANNEL[2: 0300]	0701	1 5.0	4.50		0.12	12.83	32.59	n/a	0.000
* ** CALIB NASHYD	0301	1 5.0	5.97		0.22	12.33	32.64	0.40	0.000
[CN=71.0]									
[N = 3.0:Tp 0.63]									
* ADD [0301+ 0701]	0901	3 5.0	10.47		0.31	12.50	32.62	n/a	0.000
* CHANNEL[2: 0901]	0702	1 5.0	10.47		0.28	12.67	32.60	n/a	0.000
* RESRVR [2: 0702]	0501	1 5.0	10.47		0.17	13.67	32.60	n/a	0.000
{ST= 0.05 ha.m }									
* ** CALIB STANDHYD	0302	1 5.0	16.30		1.41	11.83	43.14	0.53	0.000
[I%=20.0:S%= 2.00]									
* ADD [0302+ 0501]	0902	3 5.0	26.77		1.44	11.83	39.02	n/a	0.000
* ** CALIB STANDHYD	0303	1 5.0	2.34		0.28	11.75	47.38	0.58	0.000
[I%=25.0:S%= 2.00]									
* ADD [0303+ 0902]	0903	3 5.0	29.11		1.67	11.83	39.69	n/a	0.000
* ** CALIB NASHYD	0304	1 5.0	2.90		0.17	11.92	28.84	0.35	0.000
[CN=66.6]									
[N = 3.0:Tp 0.28]									
* ADD [0304+ 0903]	0904	3 5.0	32.01		1.83	11.83	38.71	n/a	0.000
* ** CALIB STANDHYD	0305	1 5.0	0.31		0.02	11.75	38.18	0.47	0.000
[I%=20.0:S%= 0.50]									
* ADD [0305+ 0904]	0905	3 5.0	32.32		1.84	11.83	38.70	n/a	0.000
* RESRVR [2: 0905]	0502	1 5.0	32.32		0.15	12.67	38.65	n/a	0.000
{ST= 0.57 ha.m }									
* ** CALIB NASHYD	0400	1 5.0	4.80		0.07	12.42	15.90	0.19	0.000
[CN=50.2]									
[N = 3.0:Tp 0.70]									
* ADD [0400+ 0502]	0906	3 5.0	37.12		0.22	12.58	35.71	n/a	0.000
* DUHYD	9061	1 5.0	37.12		0.22	12.58	35.71	n/a	0.000
MAJOR SYSTEM:	9061	2 5.0	0.00		0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	9061	3 5.0	37.12		0.22	12.58	35.71	n/a	0.000
* ** CALIB NASHYD	2205	1 5.0	1.41		0.06	11.83	17.43	0.21	0.000
[CN=51.1]									
[N = 3.0:Tp 0.20]									
* ** CALIB STANDHYD	0103	1 1.0	12.40		1.82	11.77	50.91	0.62	0.000
[I%=43.0:S%= 2.00]									
* ADD [0103+ 2205]	0802	3 1.0	13.81		1.88	11.77	47.50	n/a	0.000
* ADD [0802+ 9061]	0802	1 1.0	50.93		1.93	11.77	33.61	n/a	0.000
*									

* CALIB STANDHYD	2011	1 1.0	16.60		2.43	11.75	46.16	0.56	0.000
[I%=41.0:S%= 2.00]									
* ADD [2011+ 0802]	0803	3 1.0	67.53		4.34	11.77	36.70	n/a	0.000
* ** CALIB NASHYD	2013	1 5.0	2.26		0.08	11.83	17.57	0.21	0.000
[CN=54.7]									
[N = 3.0:Tp 0.24]									
* ADD [2013+ 0803]	0804	3 1.0	69.79		4.41	11.77	36.08	n/a	0.000
* ADD [1024+ 0804]	0810	3 1.0	73.69		4.44	11.77	35.25	n/a	0.000
* RESRVR [2: 0810]	1026	1 1.0	73.69		0.75	12.45	29.61	n/a	0.000
{ST= 0.82 ha.m }									
* ** CALIB NASHYD	0101	1 1.0	183.10		2.71	13.27	17.40	0.21	0.000
[CN=63.0]									
[N = 3.0:Tp 1.40]									
* ADD [0101+ 1024]	0809	3 1.0	183.86		2.72	13.25	24.55	n/a	0.000
* ADD [0809+ 1026]	0809	1 1.0	257.55		3.40	13.17	26.00	n/a	0.000
* ** CALIB NASHYD	2012	1 5.0	1.04		0.05	11.83	20.40	0.25	0.000
[CN=55.3]									
[N = 3.0:Tp 0.24]									
* ** CALIB STANDHYD	0207	1 5.0	0.66		0.08	11.75	43.33	0.53	0.000
[I%=25.0:S%= 2.00]									
* ** CALIB STANDHYD	0203	1 5.0	0.24		0.04	11.75	51.88	0.63	0.000
[I%=28.0:S%= 2.00]									
* ADD [2012+ 0203]	0806	3 5.0	1.28		0.08	11.75	26.28	n/a	0.000
* ADD [0806+ 0207]	0806	1 5.0	1.94		0.16	11.75	32.07	n/a	0.000
* SHIFT[2: 9061]	7101	1 5.0	0.00		0.00	2.17	0.00	n/a	0.000
[SHIFT=130.0 min]									
* ** CALIB NASHYD	0102	1 5.0	31.10		0.39	12.58	15.17	0.19	0.000
[CN=48.3]									
[N = 3.0:Tp 0.87]									
* SHIFT[2: 0102]	7102	1 5.0	31.10		0.39	13.67	15.17	n/a	0.000
[SHIFT= 67.0 min]									
* ** CALIB NASHYD	0107	1 5.0	77.70		1.26	12.75	20.49	0.25	0.000
[CN=58.1]									
[N = 3.0:Tp 0.96]									
* ** CALIB NASHYD	0108	1 5.0	15.50		0.21	12.75	17.90	0.22	0.000
[CN=52.3]									
[N = 3.0:Tp 0.99]									
* SHIFT[2: 0108]	7108	1 5.0	15.50		0.21	14.42	17.90	n/a	0.000
[SHIFT=104.0 min]									
* ADD [0107+ 7101]	0812	3 5.0	77.70		1.26	12.75	20.49	n/a	0.000
* ADD [0812+ 7102]	0812	1 5.0	108.80		1.41	13.17	18.97	n/a	0.000
* ADD [0812+ 7108]	0812	3 5.0	124.30		1.43	13.25	18.83	n/a	0.000
* ** CALIB NASHYD	0204	1 5.0	20.40		0.46	12.42	23.18	0.28	0.000
[CN=62.1]									
[N = 3.0:Tp 0.74]									
* ** CALIB STANDHYD	0202	1 5.0	8.40		1.51	11.75	56.22	0.69	0.000
[I%=59.1:S%= 2.00]									
* RESRVR [2: 0202]	0504	1 5.0	8.40		0.04	15.75	51.11	n/a	0.000
{ST= 0.35 ha.m }									
* ADD [0204+ 0504]	0813	3 5.0	28.80		0.48	12.42	31.33	n/a	0.000
* ** CALIB NASHYD	0106	1 5.0	13.60		0.75	12.33	50.65	0.62	0.000
[CN=84.9]									
[N = 3.0:Tp 0.68]									
* ADD [0106+ 0813]	0811	3 5.0	42.40		1.23	12.33	37.53	n/a	0.000
* FINISH									
=====									

```
*****
** SIMULATION : Run 04                25 YEAR, 24 HOUR
*****
```

W/E COMMAND	HYD	ID	DT	AREA	'	Qpeak	Tpeak	R.V.	R.C.	Qbase
			min	ha		cms	hrs	mm		cms
START @ 0.00 hrs										

MASS STORM			15.0							
[Ptot= 96.01 mm]										
* ** CALIB NASHYD	1021	1	5.0	4.66		0.12	12.50	27.43	0.29	0.000
[CN=55.3										
[N = 3.0:Tp 0.78]										
* DUHYD	1024	1	5.0	4.66		0.12	12.50	27.43	n/a	0.000
MAJOR SYSTEM:	1024	2	5.0	1.18		0.07	12.50	27.43	n/a	0.000
MINOR SYSTEM:	1024	3	5.0	3.48		0.05	11.83	27.43	n/a	0.000
* ** CALIB NASHYD	0300	1	5.0	4.50		0.19	12.42	42.53	0.44	0.000
[CN=71.0										
[N = 3.0:Tp 0.74]										
* CHANNEL[2: 0300]	0701	1	5.0	4.50		0.15	12.75	42.48	n/a	0.000
* ** CALIB NASHYD	0301	1	5.0	5.97		0.29	12.33	42.53	0.44	0.000
[CN=71.0										
[N = 3.0:Tp 0.63]										
* ADD [0301+ 0701]	0901	3	5.0	10.47		0.41	12.42	42.51	n/a	0.000
* CHANNEL[2: 0901]	0702	1	5.0	10.47		0.38	12.67	42.49	n/a	0.000
* RESRVR [2: 0702]	0501	1	5.0	10.47		0.17	14.08	42.49	n/a	0.000
{ST= 0.10 ha.m }										
* CALIB STANDHYD	0302	1	5.0	16.30		1.81	11.83	54.01	0.56	0.000
[I%=20.0:S%= 2.00]										
* ADD [0302+ 0501]	0902	3	5.0	26.77		1.87	11.83	49.51	n/a	0.000
* CALIB STANDHYD	0303	1	5.0	2.34		0.35	11.75	58.81	0.61	0.000
[I%=25.0:S%= 2.00]										
* ADD [0303+ 0902]	0903	3	5.0	29.11		2.16	11.83	50.25	n/a	0.000
* CALIB NASHYD	0304	1	5.0	2.90		0.22	11.92	37.91	0.39	0.000
[CN=66.6										
[N = 3.0:Tp 0.28]										
* ADD [0304+ 0903]	0904	3	5.0	32.01		2.37	11.83	49.14	n/a	0.000
* CALIB STANDHYD	0305	1	5.0	0.31		0.03	11.75	48.09	0.50	0.000
[I%=20.0:S%= 0.50]										
* ADD [0305+ 0904]	0905	3	5.0	32.32		2.38	11.83	49.13	n/a	0.000
* RESRVR [2: 0905]	0502	1	5.0	32.32		0.29	15.83	49.07	n/a	0.000
{ST= 0.63 ha.m }										
* CALIB NASHYD	0400	1	5.0	4.80		0.10	12.42	21.89	0.23	0.000
[CN=50.2										
[N = 3.0:Tp 0.70]										
* ADD [0400+ 0502]	0906	3	5.0	37.12		0.31	15.83	45.56	n/a	0.000
* DUHYD	9061	1	5.0	37.12		0.31	15.83	45.56	n/a	0.000
MAJOR SYSTEM:	9061	2	5.0	0.00		0.00	0.00	0.00	n/a	0.000
MINOR SYSTEM:	9061	3	5.0	37.12		0.31	15.83	45.56	n/a	0.000
* CALIB NASHYD	2205	1	5.0	1.41		0.08	11.83	23.67	0.25	0.000
[CN=51.1										
[N = 3.0:Tp 0.20]										
* CALIB STANDHYD	0103	1	1.0	12.40		2.24	11.77	62.17	0.65	0.000
[I%=43.0:S%= 2.00]										
* ADD [0103+ 2205]	0802	3	1.0	13.81		2.32	11.77	58.24	n/a	0.000
* ADD [0802+ 9061]	0802	1	1.0	50.93		2.41	11.77	42.66	n/a	0.000
* CALIB STANDHYD	2011	1	1.0	16.60		3.01	11.75	56.31	0.59	0.000
[I%=41.0:S%= 2.00]										
* ADD [2011+ 0802]	0803	3	1.0	67.53		5.40	11.77	46.01	n/a	0.000
* CALIB NASHYD	2013	1	5.0	2.26		0.12	11.83	24.20	0.25	0.000
[CN=54.7										
[N = 3.0:Tp 0.24]										
* ADD [2013+ 0803]	0804	3	1.0	69.79		5.50	11.77	45.31	n/a	0.000
* ADD [1024+ 0804]	0810	3	1.0	73.27		5.54	11.77	44.46	n/a	0.000

RESRVR [2: 0810]	1026	1	1.0	73.27		0.98	12.38	38.24	n/a	0.000
{ST= 0.98 ha.m }										
* ** CALIB NASHYD	0101	1	1.0	183.10		3.66	13.25	23.55	0.25	0.000
[CN=63.0										
[N = 3.0:Tp 1.40]										
* ADD [0101+ 1024]	0809	3	1.0	184.28		3.70	13.23	32.80	n/a	0.000
* ADD [0809+ 1026]	0809	1	1.0	257.55		4.61	13.18	34.35	n/a	0.000
* CALIB NASHYD	2012	1	5.0	1.04		0.06	11.83	27.41	0.29	0.000
[CN=55.3										
[N = 3.0:Tp 0.24]										
* CALIB STANDHYD	0207	1	5.0	0.66		0.10	11.75	54.03	0.56	0.000
[I%=25.0:S%= 2.00]										
* CALIB STANDHYD	0203	1	5.0	0.24		0.05	11.75	64.08	0.67	0.000
[I%=28.0:S%= 2.00]										
* ADD [2012+ 0203]	0806	3	5.0	1.28		0.10	11.75	34.26	n/a	0.000
* ADD [0806+ 0207]	0806	1	5.0	1.94		0.20	11.75	40.97	n/a	0.000
* SHIFT[2: 9061]	7101	1	5.0	0.00		0.00	2.17	0.00	n/a	0.000
[SHIFT=130.0 min]										
* CALIB NASHYD	0102	1	5.0	31.10		0.55	12.58	20.88	0.22	0.000
[CN=48.3										
[N = 3.0:Tp 0.87]										
* SHIFT[2: 0102]	7102	1	5.0	31.10		0.55	13.67	20.88	n/a	0.000
[SHIFT= 67.0 min]										
* CALIB NASHYD	0107	1	5.0	77.70		1.72	12.75	27.80	0.29	0.000
[CN=58.1										
[N = 3.0:Tp 0.96]										
* CALIB NASHYD	0108	1	5.0	15.50		0.29	12.75	24.33	0.25	0.000
[CN=52.3										
[N = 3.0:Tp 0.99]										
* SHIFT[2: 0108]	7108	1	5.0	15.50		0.29	14.42	24.33	n/a	0.000
[SHIFT=104.0 min]										
* ADD [0107+ 7101]	0812	3	5.0	77.70		1.72	12.75	27.80	n/a	0.000
* ADD [0812+ 7102]	0812	1	5.0	108.80		1.93	13.17	25.83	n/a	0.000
* ADD [0812+ 7108]	0812	3	5.0	124.30		1.96	13.17	25.64	n/a	0.000
* CALIB NASHYD	0204	1	5.0	20.40		0.62	12.42	31.22	0.33	0.000
[CN=62.1										
[N = 3.0:Tp 0.74]										
* CALIB STANDHYD	0202	1	5.0	8.40		1.81	11.75	67.76	0.71	0.000
[I%=59.1:S%= 2.00]										
* RESRVR [2: 0202]	0504	1	5.0	8.40		0.12	12.83	62.65	n/a	0.000
{ST= 0.37 ha.m }										
* ADD [0204+ 0504]	0813	3	5.0	28.80		0.73	12.50	40.39	n/a	0.000
* ** CALIB NASHYD	0106	1	5.0	13.60		0.94	12.33	63.23	0.66	0.000
[CN=84.9										
[N = 3.0:Tp 0.68]										
* ADD [0106+ 0813]	0811	3	5.0	42.40		1.65	12.42	47.72	n/a	0.000
=====										

** SIMULATION : Run 05										

50 YEAR, 24 HOUR										

W/E COMMAND	HYD	ID	DT	AREA	'	Qpeak	Tpeak	R.V.	R.C.	Qbase
			min	ha		cms	hrs	mm		cms
START @ 0.00 hrs										

MASS STORM			15.0							
[Ptot=106.68 mm]										
* ** CALIB NASHYD	1021	1	5.0	4.66		0.14	12.50	33.13	0.31	0.000
[CN=55.3										
[N = 3.0:Tp 0.78]										
* DUHYD	1024	1	5.0	4.66		0.14	12.50	33.13	n/a	0.000
MAJOR SYSTEM:	1024	2	5.0	1.43		0.10	12.50	33.13	n/a	0.000

	MINOR SYSTEM:	1024	3	5.0	3.23	0.05	11.83	33.13	n/a	0.000
**	CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.74]	0300	1	5.0	4.50	0.23	12.42	50.33	0.47	0.000
*	CHANNEL [2: 0300]	0701	1	5.0	4.50	0.18	12.75	50.27	n/a	0.000
**	CALIB NASHYD [CN=71.0 [N = 3.0:Tp 0.63]	0301	1	5.0	5.97	0.34	12.33	50.33	0.47	0.000
*	ADD [0301+ 0701]	0901	3	5.0	10.47	0.50	12.42	50.30	n/a	0.000
*	CHANNEL [2: 0901]	0702	1	5.0	10.47	0.46	12.58	50.28	n/a	0.000
*	RESVR [2: 0702] {ST= 0.14 ha.m }	0501	1	5.0	10.47	0.17	14.25	50.28	n/a	0.000
*	CALIB STANDHYD [I%=20.0:5%= 2.00]	0302	1	5.0	16.30	2.13	11.83	62.46	0.59	0.000
*	ADD [0302+ 0501]	0902	3	5.0	26.77	2.21	11.83	57.70	n/a	0.000
*	CALIB STANDHYD [I%=25.0:5%= 2.00]	0303	1	5.0	2.34	0.41	11.75	67.64	0.63	0.000
*	ADD [0303+ 0902]	0903	3	5.0	29.11	2.55	11.83	58.50	n/a	0.000
*	CALIB NASHYD [CN=66.6 [N = 3.0:Tp 0.28]	0304	1	5.0	2.90	0.26	11.92	45.11	0.42	0.000
*	ADD [0304+ 0903]	0904	3	5.0	32.01	2.80	11.83	57.28	n/a	0.000
*	CALIB STANDHYD [I%=20.0:5%= 0.50]	0305	1	5.0	0.31	0.03	11.75	55.85	0.52	0.000
*	ADD [0305+ 0904]	0905	3	5.0	32.32	2.82	11.83	57.27	n/a	0.000
*	RESVR [2: 0905] {ST= 0.68 ha.m }	0502	1	5.0	32.32	0.39	13.75	57.22	n/a	0.000
*	CALIB NASHYD [CN=50.2 [N = 3.0:Tp 0.70]	0400	1	5.0	4.80	0.13	12.42	26.81	0.25	0.000
*	ADD [0400+ 0502]	0906	3	5.0	37.12	0.45	13.42	53.29	n/a	0.000
*	DUHYD	9061	1	5.0	37.12	0.45	13.42	53.29	n/a	0.000
	MAJOR SYSTEM:	9061	2	5.0	0.00	0.00	0.00	0.00	n/a	0.000
	MINOR SYSTEM:	9061	3	5.0	37.12	0.45	13.42	53.29	n/a	0.000
*	CALIB NASHYD [CN=51.1 [N = 3.0:Tp 0.20]	2205	1	5.0	1.41	0.10	11.83	28.79	0.27	0.000
*	CALIB STANDHYD [I%=43.0:5%= 2.00]	0103	1	1.0	12.40	2.60	11.77	70.84	0.66	0.000
*	ADD [0103+ 2205]	0802	3	1.0	13.81	2.69	11.77	66.55	n/a	0.000
*	ADD [0802+ 9061]	0802	1	1.0	50.93	2.82	11.77	50.19	n/a	0.000
*	CALIB STANDHYD [I%=41.0:5%= 2.00]	2011	1	1.0	16.60	3.45	11.75	64.17	0.60	0.000
*	ADD [2011+ 0802]	0803	3	1.0	67.53	6.25	11.75	53.62	n/a	0.000
*	CALIB NASHYD [CN=54.7 [N = 3.0:Tp 0.24]	2013	1	5.0	2.26	0.15	11.83	29.62	0.28	0.000
*	ADD [2013+ 0803]	0804	3	1.0	69.79	6.37	11.77	52.85	n/a	0.000
*	ADD [1024+ 0804]	0810	3	1.0	73.02	6.42	11.77	51.97	n/a	0.000
*	RESVR [2: 0810] {ST= 1.13 ha.m }	1026	1	5.0	73.02	0.99	12.45	45.59	n/a	0.000
*	CALIB NASHYD [CN=63.0 [N = 3.0:Tp 1.40]	0101	1	1.0	183.10	4.43	13.25	28.54	0.27	0.000
*	ADD [0101+ 1024]	0809	3	1.0	184.53	4.48	13.22	39.43	n/a	0.000
*	ADD [0809+ 1026]	0809	1	1.0	257.55	5.47	13.22	41.18	n/a	0.000
*	CALIB NASHYD [CN=55.3 [N = 3.0:Tp 0.24]	2012	1	5.0	1.04	0.08	11.83	33.09	0.31	0.000

[illegible]

