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Master Storm Sewer Report

Town of Gravenhurst

File 220536 | October 12, 2021

Document Control

File:

220536

Date:

October 12, 2021

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Issue	Date	Description
1	May 27, 2021	Existing Conditions Assessment
2	October 12, 2021	Master Storm Sewer Report

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1 Introduction

Tatham Engineering Limited (Tatham) has been retained by the Town of Gravenhurst (Town) to prepare a Master Storm Sewer Report detailing the existing function of the Town's storm sewer systems and providing recommendations for system improvements. At the outset of the project, the Town also identified several key areas with significant site-specific drainage issues to be evaluated. For this assessment, a hydrologic/hydraulic model of the Town's storm sewer infrastructure has been developed in PCSWMM and site-specific drainage issues have been considered separately using individual hydrologic/hydraulic models. This report has been prepared to summarize the data used in the study, the GIS database created, the methodology used to create the hydrologic/hydraulic models, the results of the assessment under existing conditions and a climate change scenario, and the recommended improvements to address the identified deficiencies.

1.1 STUDY AREA

The study area extends from Talisman Drive at the southern limit to The Sands Golf Course at the northern limit. The east limit is bound by Gull Lake and the Hoc Roc River and the west limit is bound by Muskoka Bay, Steamship Bay Road and North Muldrew Lake Road. The location of the study area is illustrated on Figure 1: Study Area Location Plan enclosed.

1.2 OBJECTIVES

The primary objectives of this Master Storm Sewer Report project are:

- Identify the storm sewer systems in the Town;
- Develop a GIS database to document the location, characteristics and hydraulic information of the Town's storm sewer infrastructure;
- Create an integrated hydrologic/hydraulic model of the Town's storm sewer infrastructure;
- Complete individual hydrologic/hydraulic models for the site specific drainage issues;
- Document drainage deficiencies under existing conditions and a climate change scenario;
- Identify recommended improvement projects to address the deficiencies;
- Provide cost estimates for the recommended improvements; and
- Provide guidance for prioritization of improvement projects.

1.3 GUIDELINES

This Master Storm Sewer Report has been prepared recognizing the following municipal and provincial guidelines related to stormwater drainage infrastructure:

- Engineering Design Criteria and Standards Manual. The District Municipality of Muskoka (District) and Area Municipalities (2019);
- Design Guidelines for Sewage Works. Ministry of the Environment, Conservation and Parks (MECP, 2008); and
- Stormwater Management Planning and Design Manual. Ministry of the Environment, Conservation and Parks (2003).

2 Hydraulic Model Development

A hydraulic model of the Town's storm sewer network has been created in PCSWMM, which uses a series of junctions (storm structures: maintenance holes, catchbasin maintenance holes, etc.) connected by conduits (storm sewer) to route flow through the model. Individual catchbasins, overland flow routes and watercourses have generally been excluded from the PCSWMM model. Specific culverts and ditches/watercourses have been included as required to connect consecutive storm sewer systems. For the site-specific watercourse drainage issues, HEC-RAS hydraulic models have been created to model the channels and culverts. The data acquisition and creation of the hydraulic models is described in the following sections.

2.1 DATA SOURCES

2.1.1 2016 CCTV Inspections

The initial source of information used to identify the Town's storm sewer infrastructure is the August 2016 CCTV inspection reports prepared by Sewer Technologies Inc. The inspection reports were used in combination with the District's 2018 aerial photography to map the inspected storm sewers. The CCTV inspection reports include information on sewer shape, size, and material as well as various inspection notes.

2.1.2 District Municipality of Muskoka Files

A secondary source of information used to identify the Town's storm sewer infrastructure is the District's storm basins and storm sewer GIS shapefiles. These shapefiles only provide location information and were used with the 2016 CCTV inspections reports to target areas for field investigations.

The District also provided Record Drawings and CAD files for constructed storm sewer. Record Drawings were provided for storm sewer in select areas including Muskoka Beach Road, Bay Street, Muskoka Road South, and the development area northwest of Talisman Drive.

2.1.3 Field Investigations and Survey

To address gaps in the storm sewer infrastructure data and determine key parameters for the hydraulic models, a series of field investigations and topographic surveys were completed in November and December 2020 and January and April 2021. Field investigations were completed to identify storm sewer infrastructure and take key measurements required for the hydraulic models. Topographic surveys were completed to obtain accurate spatial and elevation information at key maintenance holes, catchbasins and outlets. For the site-specific watercourse drainage issues, the channel and culvert geometry were surveyed in support of the HEC-RAS models.

2.1.4 Digital Elevation Models (DEMs)

The District also provided a digital elevation model (DEM) of The Town of Gravenhurst. LiDAR data for the Town of Gravenhurst was collected in 2018 by Airborne Imaging as part of the District's floodplain mapping study and used to create a DEM. The DEM was generally within 5 – 10 cm of the survey data collected for this study. The DEM was used to assign geometry to miscellaneous open channel conveyance sections in the PCSWMM model and inform assumptions for missing geometry information that could not be addressed via field investigations and survey. The Redwing Drive area is outside the scope of 2018 LiDAR data. The detailed topographic survey completed in this area was supplemented with the Ministry of Natural Resources and Forestry 2013 South Central Ontario Orthophotography Project (SCOOP) DEM data.

2.2 PCSWMM STORM STRUCTURE (JUNCTION) PARAMETERS

For each storm structure (junction), specific parameters must be assigned for PCSWMM hydraulic models. Additional information that may be of interest to the Town has been documented via additional GIS attributes. A complete summary of junction parameters and the data sources used to assign the parameters is provided in Table 1 and the GIS shapefiles are included in Appendix A.

Table 1: PCSWMM/GIS Junction Parameter Summary

PARAMETER	DESCRIPTION
Name	Unique user defined junction name (Auto-assigned by PCSWMM to 1000 series number)
Rim Elev. (m)	Assigned based on survey, record drawing, or DEM.
Invert Elev. (m)	Assigned based on record drawing, field investigation/survey dip measurement, or assumed.
Description	Type of junction (MH, CB, etc.)
Tag	Road name
Data Source	Survey/field investigation/record drawing/CCTV/DEM/combination
General Notes	Additional notes about source/accuracy of data/modelling choices/assumptions
CCTV Work Order	2016 CCTV Inspection Reference

PARAMETER	DESCRIPTION
CCTV Junction ID	2016 CCTV Inspection Reference
Field Date	Date of field investigation
Field Staff	Initials of staff taking field measurements
Field Notes	Any notes made during field investigation
Flag	Used to denote junctions where significant assumptions were made and additional field work is recommended

2.3 PCSWMM STORM SEWER (CONDUIT) PARAMETERS

Similarly, specific parameters must be assigned to each storm sewer (conduit) in PCSWMM hydraulic models. A complete summary of conduit parameters and the data sources used to assign the parameters is provided in Table 2 and the GIS shapefiles are included in Appendix A.

Table 2: PCSWMM/GIS Conduit Parameter Summary

PARAMETER	DESCRIPTION
Name	Unique user defined junction name (auto-assigned by PCSWMM to 2000 series number)
Inlet Node	Name of upstream junction
Outlet Node	Name of downstream junction
Description	Pipe material
Tag	Road name/major system
Length (m)	Conduit length (PCSWMM calculation/Assigned from record drawing)
Roughness	Manning's roughness coefficient for conduit material type (assigned based on District Standards)
Inlet Elev. (m)	Upstream conduit invert elevation (assigned based on record drawings, field investigation/survey dip measurement or assumed)
Outlet Elev. (m)	Downstream conduit invert elevation (assigned based on record drawings, field investigation/survey dip measurement or assumed)

PARAMETER	DESCRIPTION
Exit Loss Coeff.[1]	Energy loss coefficient at downstream junction (assigned from GIS geometry based on U.S. Department of Transportation Federal Highway Administration (FHWA) table)
Cross-Section	Shape
Geom1 (m)	Height parameter of conduit
Geom2 (m)	Width parameter of conduit
Barrels	Number of identical conduits between junctions (twinned or multi barrel pipes)
Transect	Station/elevation data of an irregular conduit cross-section
Data Source	Survey/field investigation/record drawing/CCTV/DEM/combination
General Notes	Additional notes about source/accuracy of data/modelling choices/assumptions
CCTV Work Order	2016 CCTV Inspection Reference
CCTV Pipe ID	2016 CCTV Inspection Reference
CCTV Length	2016 CCTV Inspection Reference
CCTV Notes	2016 CCTV Inspection Reference
Flag	Used to denote conduits where significant assumptions were made and additional field work is recommended

1: PCSWMM allows energy losses across junctions to be calculated at the entry or exit of a conduit or averaged along the conduit length. To ensure a single, consistent approach, an exit loss coefficient is used for this study to represent the head loss across a junction.

2.4 DUAL DRAINAGE SYSTEM

Though the PCSWMM hydraulic model has been developed for the storm sewer system, a dual drainage system is required to ensure flows that exceed the capacity of the storm sewer system are not lost. The dual drainage system conveys any surcharge from the storm sewer to the next downstream junction so that flow is not lost from the system. The dual drainage system has been built with irregular cross-sections that reflect the District's Typical Roadway Cross-section for a 20 m ROW with curb and gutter. Additional cross-sections were created for roadways with no curb, miscellaneous paved land and miscellaneous vegetated land.

2.5 HEC-RAS MODELS

Cross-section and culvert geometry for the HEC-RAS models was determined from the topographic survey. The survey data was supplemented with the DEM for the overbank areas. The Manning's roughness coefficients were assigned based on surface roughness, vegetation, channel irregularities and obstructions observed in the field. The channel reach lengths were calculated based on the distance between consecutive cross-sections along the river centreline. Overbank reach lengths were determined based on the anticipated path of the center of mass of the overbank flow. To account for energy losses between cross-sections, contraction and expansion coefficients were set according to Table 5-2 of the HEC-RAS Reference Manual and entrance losses for culverts were set according to Tables 6-3 and 6-4. Culvert exit losses were set to 1.0 which is standard for an abrupt transition.

3 Hydrologic Model Development

PCSWMM is an integrated hydrologic and hydraulic modelling software. The hydrologic model for the storm sewer system is developed directly in PCSWMM. For the site specific drainage issues, Visual OTTHYMO models have been created to determine the expected peak flows for the major (less frequent) storms.

3.1 SUBCATCHMENT DELINEATION

Following initial set up of the PCSWMM hydraulic model with junctions and conduits, the District's DEM data was used to delineate subcatchments to each junction. PCSWMM's watershed delineation tool was used to analyze the DEM topographic information for an initial delineation. These subcatchments were then verified on an individual basis and manually adjusted as required. The DEM and PCSWMM's watershed delineation tool were also used as a basis for the Visual OTTHYMO subcatchment delineation. Discretization for the Visual OTTHYMO models is coarser than for the PCSWMM storm sewer model. The Visual OTTHYMO subcatchments were delineated based on key flow change locations and culvert crossings as shown in Appendices B and C.

3.2 SUBCATCHMENT PARAMETERS

Specific hydrologic parameters must be assigned to each subcatchment to calculate expected runoff. Shapefiles from the District's GeoHub website and aerial imagery were used to determine the imperviousness of each subcatchment. In general, buildings were assumed to route over pervious areas and the remaining impervious areas (roads, parking lots, driveways) were assumed to route directly to the outlet. The soil parameters were set to reflect silt loam based on the best available soils information. A complete summary of the PCSWMM subcatchment parameters is provided in Table 3 below.

Table 3: PCSWMM Subcatchment Parameter Summary

PARAMETER	DESCRIPTION
Name	Unique user assigned subcatchment name (Prefix "S-" followed by receiving junction name)
Rain Gage	Developed based on MTO and District IDF parameters
Outlet	Receiving junction
Area (ha)	GIS (measured)
Width (m)	GIS (measured)

PARAMETER	DESCRIPTION
Flow Length (m)	GIS (hand drawn and measured)
Slope (%)	GIS (calculated)
Imperv. (%)	GIS calculated
N Imperv	Set to 0.013 per FHWA values provided on PCSWMM website.
N Perv	Set to 0.25 per FHWA values provided on PCSWMM website.
Dstore Imperv (mm)	Set to 2 mm per American Society of Civil Engineering (ASCE) values provided on PCSWMM website.
Dstore Perv (mm)	Set to 5 mm per ASCE values provided on PCSWMM website.
Zero Imperv (%)	Accounts for immediate runoff before depression storage is satisfied and represents impervious area with no surface storage. By default, set to 25%
Subarea Routing	Pervious (routes impervious area that is not directly connected to pervious area)
Percent Routed (%)	GIS calculated
Suction Head (mm)	ASCE Hydrology Handbook for silt loam
Conductivity (mm/hr)	ASCE Hydrology Handbook for silt loam
Initial Deficit (frac.)	ASCE Hydrology Handbook for silt loam

The hydrologic parameters for the Visual OTTHYMO subcatchments are detailed in the CN calculations included in Appendices B and C.

3.3 DESIGN STORMS

Design storms were modelled to assess the storm sewers and site-specific drainage issues. For the storm sewer assessment, 1:5-year and 1:10-year return frequency design storms were generated from the 4-hour Chicago and the 6-hour SCS Type II design storm distributions based on the Intensity-Duration-Frequency (IDF) data provided in the District's *Engineering Design Criteria and Standards Manual* and IDF data from the MTO web-based IDF Curve Lookup Tool. These storms are most appropriate for evaluating highly urban areas. The storms generated from the District and MTO IDF parameters have similar total rainfall volumes, however the MTO storms have higher peak intensities for the reference year 2010. Therefore, the MTO storms are generally more conservative and have been used in this assessment to identify deficiencies.

For the site-specific drainage issues, the drainage areas are larger and more pervious such that the 24-hour SCS Type II design storm distribution was found to be most conservative. 1:2-year through 1:100-year return frequency design storms and the Timmins Storm were modelled for the site-specific drainage issue assessment. The Regulatory peak flow for Muskoka District is the greater of the Timmins Storm or the 1:100-year return frequency design storm peak flow.

Given the prediction for increased intensities and frequencies of storm events from current climate change models, storm infrastructure that may be adequate for existing storm events may be deficient for future storm events. To account for climate change when assessing existing deficiencies, design storms have been generated from the MTO IDF Curve Lookup Tool for the 2050 planning horizon.

4 Hydraulic/Hydrologic Analysis

4.1 PCSWMM MODEL VALIDATION

To ensure the PCSWMM model is comprehensive and there is sufficient connectivity to route design flows without losing flow from the system, design storms up to the climate adjusted (2050) 1:10-year return frequency design storm were assigned to the subcatchments and the runoff and conveyance were simulated for a 24-hour time period. In addition to connectivity and conveyance issues, the preliminary PCSWMM results were evaluated to identify and resolve continuity errors and instabilities. Through this process, input errors were resolved, and routing errors were reduced such that the maximum design storm (climate adjusted 1:10-year return frequency design storm) was routed through the model with no flooding and routing continuity errors less than 1%.

4.2 SIGNIFICANT DRAINAGE SYSTEMS

The total drainage area evaluated in the PCSWMM model is approximately 341 ha. The key drainage outlets and contributing drainage areas are summarized in the following table.

Table 4: Significant Drainage Area Summary

OUTLET		AREA	DESCRIPTION
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	Drainage areas from east of Bethune Drive south of David Street and from Muskoka Road and John Street south of Harvie Street
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	Large undeveloped area south of Blueberry Lane
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	Drainage area from Muskoka Road north of Brown/Church Street to Mickle Memorial Cemetery
4	Muskoka Bay via Bay Street sewer	20.59 ha	Drainage area from west of Muskoka Road, north of Hotchkiss Street and south of Brown Street
5	Gull Lake via Bethune Drive sewer	18.63 ha	Drainage area from east of Muskoka Road, south of Winewood Avenue and north of Phillip Street
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	Drainage area from Muskoka Beach Road north of Thain Street

OUTLET		AREA	DESCRIPTION
7	Watercourse west of Greavette Street	16.11 ha	Drainage area from west of Muskoka Road, north of Brown Street and south of George Street
8	Abbey Lane culvert crossing	15.23 ha	Drainage area from Farquhar Street and Winewood Avenue West
	Total	**243.93 ha**	

The remaining drainage area outlets have contributing areas less than 10 ha. The total drainage area for the remaining outlets is 97.19 ha divided over 32 outlets.

Beyond the PCSWMM model, the watercourse that crosses Lorne Street and Oriole Crescent was noted for site specific drainage issues and has a total drainage area of 23.5 ha at the Oriole Crescent crossing. The Musquash Road major drainage system has a total drainage area of 12.3 ha at the McPherson Street crossing and 26.2 ha at the Muskoka District Road 169 crossing. The drainage to the deficient Redwing Drive outlet includes large wetland areas that highly impact flow at the culvert outlet on a seasonal basis.

4.3 EXISTING CONDITION FLOWS

As noted in Section 3.3, the 2010 MTO IDF parameters generate the highest peak rainfall intensities. The PCSWMM results for the 2010 MTO 1:5-year and 1:10-year return frequency design storms are summarized in the following tables and a detailed status report for the 1:5-year return frequency Chicago design storm is included in Appendix B. The digital model files are included in Appendix A for reference.

Table 5: 2010 MTO 1:5-Year Return Frequency Design Storm Peak Flow Summary

OUTLET		DRAINAGE AREA	PEAK FLOW (m^3/s)	
			1:5-YEAR 4-HOUR CHICAGO	1:5-YEAR 6-HOUR SCS
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	2.58	2.66
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	0.81	0.74
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	1.70	1.54

OUTLET		DRAINAGE AREA	PEAK FLOW (m^3/s)	
			1:5-YEAR 4-HOUR CHICAGO	1:5-YEAR 6-HOUR SCS
4	Muskoka Bay via Bay Street sewer	20.59 ha	1.45	1.45
5	Gull Lake via Bethune Drive sewer	18.63 ha	0.97	0.94
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	0.98	0.87
7	Watercourse west of Greavette Street	16.11 ha	0.98	1.03
8	Abbey Lane culvert crossing	15.23 ha	0.99	0.99
	Minor Outlets (32)	97.19 ha	9.37	8.84

Table 6: 2010 MTO 1:10-Year Return Frequency Design Storm Peak Flow Summary

OUTLET		DRAINAGE AREA	PEAK FLOW (m^3/s)	
			1:10-YEAR 4-HOUR CHICAGO	1:10-YEAR 6-HOUR SCS
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	2.89	3.04
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	1.07	1.00
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	2.14	2.01
4	Muskoka Bay via Bay Street sewer	20.59 ha	1.73	1.78
5	Gull Lake via Bethune Drive sewer	18.63 ha	1.08	1.04
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	1.21	1.13
7	Watercourse west of Greavette Street	16.11 ha	1.27	1.43
8	Abbey Lane culvert crossing	15.23 ha	1.09	1.10
	Minor Outlets (32)	97.19 ha	10.65	10.27

The peak flows for the Lorne Street and Oriole Crescent culvert crossings and the Musquash Road major drainage system are summarized in the following tables and detailed model results are included in Appendices B and C. The worst-case SCS Type II design storm distribution for the major drainage systems is the 24-hour storm which has been carried forward in the site-specific drainage system analysis.

Table 7: Oriole Crescent 2010 MTO Design Storm Peak Flow Summary

STORM	PEAK FLOW (m^3/s)			
	LORNE STREET CROSSING		ORIOLE CRESCENT CROSSING	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.42	0.53	0.71	1.02
1:5 -Year	0.61	0.88	1.07	1.67
1:10-Year	0.74	1.08	1.32	2.10
1:25-Year	0.93	1.45	1.69	2.78
1:50-Year	1.15	1.61	2.03	3.17
1:100-Year	1.30	1.69	2.33	3.53
Timmins	0.80		2.00	

Table 8: Musquash Road 2010 MTO Design Storm Peak Flow Summary

STORM	PEAK FLOW (m^3/s)			
	MCPHERSON STREET CROSSING		DISTRICT ROAD 169 CROSSING	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.09	0.26	0.35	0.76
1:5 -Year	0.18	0.46	0.56	1.35
1:10-Year	0.26	0.60	0.76	1.80
1:25-Year	0.36	0.80	1.05	2.43
1:50-Year	0.45	0.93	1.35	2.89
1:100-Year	0.54	1.09	1.61	3.40
Timmins	0.84		2.03	

4.4 CLIMATE CHANGE SCENARIO FLOWS

The PCSWMM flow results for the climate change scenario (2050 planning horizon) for the 1:5-year and 1:10-year return frequency design storms are summarized in the following tables.

Table 9: 2050 MTO 1:5-Year Return Frequency Design Storm Peak Flow Summary

OUTLET		DRAINAGE AREA	PEAK FLOW (m^3/s)	
			1:5-YEAR 4-HOUR CHICAGO	1:5-YEAR 6-HOUR SCS
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	2.63 (+2%)	2.79 (+5%)
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	0.81 (+0%)	0.81 (+9%)
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	1.78 (+5%)	1.72 (+12%)
4	Muskoka Bay via Bay Street sewer	20.59 ha	1.47 (+1%)	1.57 (+8%)
5	Gull Lake via Bethune Drive sewer	18.63 ha	0.99 (+2%)	0.98 (+4%)
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	1.03 (+5%)	0.97 (+11%)
7	Watercourse west of Greavette Street	16.11 ha	1.02 (+4%)	1.18 (+15%)
8	Abbey Lane culvert crossing	15.23 ha	1.03 (+4%)	1.06 (+7%)
	Minor Outlets (32)	97.19 ha	9.61 (+3%)	9.38 (+6%)

Note: (+2%) – Change in flow compared against 2010 MTO rainfall data.

Table 10: 2050 MTO 1:10-Year Return Frequency Design Storm Peak Flow Summary

OUTLET		DRAINAGE AREA	PEAK FLOW (m^3/s)	
			1:10-YEAR 4-HOUR CHICAGO	1:10-YEAR 6-HOUR SCS
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	2.98 (+3%)	3.16 (+4%)
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	1.13 (+6%)	1.12 (+12%)
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	2.22 (+4%)	2.20 (+9%)
4	Muskoka Bay via Bay Street sewer	20.59 ha	1.74 (+1%)	1.92 (+8%)
5	Gull Lake via Bethune Drive sewer	18.63 ha	1.10 (+2%)	1.08 (+4%)
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	1.24 (+2%)	1.22 (+8%)
7	Watercourse west of Greavette Street	16.11 ha	1.34 (+6%)	1.59 (+11%)
8	Abbey Lane culvert crossing	15.23 ha	1.11 (+2%)	1.12 (+2%)
	Minor Outlets (32)	97.19 ha	10.88 (+2%)	10.80 (+5%)

Note: (+3%) – Change in flow compared against 2010 MTO rainfall data.

The peak flows for the Lorne Street and Oriole Crescent culvert crossings and the Musquash Road major drainage system for the climate change storms are summarized in the following tables and detailed model results are included in Appendices B and C.

Table 11: Oriole 2050 MTO Design Storm Peak Flow Summary

STORM	PEAK FLOW (m^3/s)			
	LORNE STREET CROSSING		ORIOLE CRESCENT CROSSING	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.44 (+5%)	0.66 (+25%)	0.75 (+6%)	1.24 (+22%)
1:5 -Year	0.64 (+5%)	0.96 (+9%)	1.11 (+4%)	1.84 (+10%)
1:10-Year	0.78 (+5%)	1.25 (+16%)	1.38 (+5%)	2.40 (+14%)
1:25-Year	0.98 (+5%)	1.55 (+7%)	1.76 (+4%)	2.78 (+0%)
1:50-Year	1.18 (+3%)	1.66 (+3%)	2.09 (+3%)	3.39 (+7%)
1:100-Year	1.34 (+3%)	1.72 (+2%)	2.41 (+3%)	3.69 (+5%)
Timmins	0.80 (+0%)		2.00 (+0%)	

Note: (+5%) – Change in flow compared against 2010 MTO rainfall data.

Table 12: Musquash 2050 MTO Design Storm Peak Flow Summary

STORM	PEAK FLOW (m^3/s)			
	MCPHERSON STREET CROSSING		DISTRICT ROAD 169 CROSSING	
	4-HOUR CHICAGO	24-HOUR SCS	4-HOUR CHICAGO	24-HOUR SCS
1:2-Year	0.10 (+11%)	0.33 (+27%)	0.38 (+9%)	0.99 (+30%)
1:5 -Year	0.19 (+6%)	0.51 (+11%)	0.60 (+7%)	1.50 (+11%)
1:10-Year	0.27 (+4%)	0.69 (+15%)	0.81 (+7%)	2.07 (+15%)
1:25-Year	0.39 (+8%)	0.87 (+9%)	1.11 (+6%)	2.69 (+11%)
1:50-Year	0.47 (+4%)	1.03 (+11%)	1.42 (+5%)	3.19 (+10%)
1:100-Year	0.57 (+6%)	1.16 (+6%)	1.68 (+4%)	3.62 (+6%)
Timmins	0.84 (+0%)		2.03 (+0%)	

Note: (+11%) – Change in flow compared against 2010 MTO rainfall data.

5 Storm Sewer System Deficiencies

The drainage system deficiencies were established according to the District's *Engineering Design Criteria and Standards Manual*. The deficiencies are presented on the Existing Condition Storm Sewer Deficiencies maps (Drawings ED-1 through ED-4) and Climate Change Scenario Storm Sewer Deficiencies maps (Drawings ED-5 through ED-8) enclosed in Appendices E and F and are described further in the following sections.

5.1 DESIGN CRITERIA

Within the Study Area, the following roads are District roads and are subject to District design criteria:

- Muskoka Beach Road;
- Muskoka Road North and South;
- Bethune Drive;
- Winewood Avenue East;
- Brock Street; and
- Bay Street.

On District roads the following design criteria applies to storm sewers:

- Minimum storm sewer diameter is 300 mm;
- Minimum pipe slope is 0.5% except for large diameter trunk sewers where constraints necessitate a shallower slope; and
- The minor system (storm sewer) in urban commercial developments on local roads are to be designed to convey the 1:10-year return frequency design storm peak flow.

For storm sewers greater than 600 mm diameter, a minimum pipe slope of 0.20% has been applied to identify deficiencies which is consistent with criteria applied in other drainage studies and is more conservative than the MECP Design Guidelines for Sewage Works.

On Town roads, the following design criteria applies to storm sewers:

- Minimum storm sewer diameter is 250 mm;
- Minimum/maximum pipe slopes shall be in accordance with MECP Design Guidelines for Sewage Works;

- For roads classified as urban, the storm sewer must convey the 1:10-year return frequency design storm peak flow; and
- For roads classified as suburban, industrial or commercial, the storm sewer must convey the 1:5-year return frequency design storm peak flow.

The only Town road for which storm sewer must convey the 1:10-year return frequency design storm peak flow is James Street which is identified as a Collector Road.

For this assessment, the storm sewer has been characterized as follows based on conveyance capacity:

1. Peak Flow/Storm Sewer Full Flow Capacity (Qmax/Qfullflow) < 85% - storm sewer capacity exceeds design storm peak flow (storm sewer has adequate capacity) by greater than 15% and satisfies the current municipal conveyance criteria.
2. 85% <= Peak Flow/Storm Sewer Full Flow Capacity (Qmax/Qfullflow) < 100% - storm sewer capacity exceeds design storm peak flow (storm sewer has adequate capacity) by less than 15%. As such, the peak flow is approaching full flow capacity.
3. 100% <= Peak Flow/Storm Sewer Full Flow Capacity (Qmax/Qfullflow) < 115% - design storm peak flow exceeds storm sewer capacity (deficient conveyance capacity) by up to 15% - moderate exceedance.
4. Peak Flow/Storm Sewer Full Flow Capacity (Qmax/Qfullflow) >= 115% - design storm peak flow exceeds storm sewer capacity (deficient conveyance capacity) by greater than 15% - severe exceedance.

Similarly, the storm maintenance holes have been characterized as follows based on maintenance hole surcharging:

1. Maintenance Hole Surcharging < 0 m – no overland flow.
2. 0 m <= Maintenance Hole Surcharging < 0.1 m - minimal overland flow depth.
3. 0.1 m <= Maintenance Hole Surcharging < 0.3 m - overland flow depth satisfies safe access/egress criteria.
4. Maintenance Hole Surcharging >= 0.3 m - overland flow depth exceeds safe access/egress criteria.

5.2 GEOMETRY/VELOCITY DEFICIENCIES

The total number of sewers that do not meet the minimum diameter or slope criteria is summarized as follows:

- 17 sewers on District Roads do not meet the minimum slope requirements;

- 4 sewers on District Roads do not meet the minimum diameter requirements;
- 32 sewers on Town Roads do not meet the minimum slope requirements;
- 4 sewers on District Roads have full flow pipe velocities that exceed 6 m/s; and
- 2 sewers on Town Roads have full flow pipe velocities that exceed 6 m/s.

A complete list of the storm sewers with geometry/velocity deficiencies is included in Appendix C.

5.3 EXISTING CONDITIONS DEFICIENCIES

As described in Section 3.3, the MTO IDF parameter storms have higher peak intensities than the District IDF parameter storms. Therefore, the MTO storms generally produce greater peak flows and have been used to identify the storm sewers that do not satisfy the return frequency criteria (1:5-year or 1:10-year depending on road classification). Summaries of the deficiencies within the storm sewer system are provided in the following table. Deficiency maps and a complete list of storm sewer and maintenance hole deficiencies are included in Appendix C. The digital model files are included in Appendix A for reference.

Table 13: Existing Conditions Storm Sewer Deficiency Summary

OUTLET		DRAINAGE AREA	SEWER CAPACITY DEFICIENCIES				MAINTENANCE HOLE SURCHARGE DEFICIENCIES			
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	37	9	5	32	8	21	15	28
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	3	2	0	2	0	2	2	1
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	5	0	7	11	0	0	0	23
4	Muskoka Bay via Bay Street sewer	20.59 ha	8	9	3	27	1	4	9	30
5	Gull Lake via Bethune Drive sewer	18.63 ha	17	4	3	20	4	7	12	20
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	3	0	3	19	0	0	0	25
7	Watercourse west of Greavette Street	16.11 ha	7	6	2	19	1	8	6	19
8	Abbey Lane culvert crossing	15.23 ha	6	6	6	15	1	3	9	19
	Minor Outlets (32)	97.19 ha	36	14	20	149	4	5	16	194

OUTLET	DRAINAGE AREA	SEWER CAPACITY DEFICIENCIES				MAINTENANCE HOLE SURCHARGE DEFICIENCIES			
Total	**341.12 ha**	**122**	**50**	**49**	**294**	**19**	**50**	**69**	**359**

5.4 CLIMATE CHANGE SCENARIO DEFICIENCIES

Climate change design storms have been generated from the MTO IDF Curve Lookup Tool for the 2050 planning horizon to account for climate change. These storms are used to identify the existing storm sewers that will not satisfy the return frequency design criteria in the future considering predicted climate change (1:5-year or 1:10-year depending on road classification). Summaries of the deficiencies within the storm sewer system for the climate change scenario are provided in the following table. Deficiency maps and a complete list of storm sewer and maintenance hole deficiencies under the climate change scenario are included in Appendix D. The digital model files are included in Appendix A for reference.

Table 14: Climate Change Scenario Storm Sewer Deficiency Summary

OUTLET		DRAINAGE AREA	SEWER CAPACITY DEFICIENCIES				MAINTENANCE HOLE SURCHARGE DEFICIENCIES			
1	Watercourse between Ridge Road and James Street via Ridge Road sewer	68.52 ha	39	7	5	32	8	25	15	24
2	North Muldrew Lake Road sewer, ditch and culverts	61.25 ha	3	2	0	2	0	2	2	1
3	Watercourse at Oriole Crescent/Segwun Boulevard	25.30 ha	5	0	7	11	0	0	0	23
4	Muskoka Bay via Bay Street sewer	20.59 ha	10	7	3	27	1	4	10	29
5	Gull Lake via Bethune Drive sewer	18.63 ha	20	2	5	17	4	7	12	20
6	Muskoka Beach Road storm sewer east of Brydons Bay Road	18.30 ha	3	0	6	16	0	0	0	25
7	Watercourse west of Greavette Street	16.11 ha	7	6	2	19	1	8	6	19
8	Abbey Lane culvert crossing	15.23 ha	6	9	3	15	1	6	8	17
	Minor Outlets (32)	97.19 ha	39	14	21	145	4	5	25	185
	Total	**341.12 ha**	**133**	**46**	**52**	**284**	**19**	**60**	**78**	**340**

6 Site Specific Drainage Issues

6.1 SITE SPECIFIC MINOR DRAINAGE SYSTEM DEFICIENCIES

Further to the deficiencies described in Section 5, the following site-specific minor drainage system issues were noted by the Town:

1. 945 First Street (Deficiency Maps – Location A): A catchbasin in the road allowance in front of 945 First Street is connected to a small infiltration gallery that has no outlet. When the storage capacity of the infiltration gallery is exceeded, runoff surcharges the catchbasin and drains overland as sheet flow flooding 955 First Street.
2. Phillip Street (Deficiency Maps – Location B): Nuisance ponding occurs on the road due to possible blockage/deterioration of the outlet. This outlet is located on private property between 570 and 590 Phillip Street and may potentially run under an existing garage.
3. Louise Street at Wagner Street (Deficiency Maps – Location C): The invert of the Louise Street storm sewer is below the invert of the downstream storm sewer on Wagner Street.
4. Austin Street (Deficiency Maps – Location D): There is a catchbasin in a low point of Austin Street between Wagner Street and Farquhar Street with no outlet that results in roadway ponding before spilling northwest across private property.
5. Clairmont Road to Burnett Street (Deficiency Maps – Location E): An existing culvert runs north under Clairmont Road and across private property to a channel west of Burnett Street. The culvert has been subject to obstruction in the past and future maintenance and replacement of the culvert is a concern.
6. Fairview Drive (Deficiency Maps – Location F): The storm sewer network on Fairview Drive between Crescent Drive and Pinegrove Street is failing and several driveways have collapsed as a result. Furthermore, there is potential for deficiencies with the rear yard catchbasins and catchbasin leads located on private property.

As part of our field investigations and model development, the following additional drainage issues were identified:

1. 496 Muskoka Beach Road Outlet (Deficiency Maps – Location G): Muskoka Beach Road storm sewer (District infrastructure) outlets between 496 and 500 Muskoka Beach Road toward Red Oak Drive per record drawings. The outlet storm sewer from Muskoka Beach Road was confirmed, however the outlet could not be found in the field. The storm sewer outlet is located on private property which is a potential maintenance issue.

2. Lofty Pines Drive/290 Muskoka Beach Road Outlet (Deficiency Maps – Location H): The resident at 290 Muskoka Beach Road noted the outlet that runs through the property is blocked by sediment and described issues with the downstream channel. Field investigations showed significant ponded water and no outlet was evident beyond the railway tracks. This outlet is primarily for Muskoka Beach Road drainage (District infrastructure) and conveyance through private property is a potential maintenance issue.

3. Muskoka Beach Road Outlet near Winewood Avenue (Deficiency Maps – Location I): Storm sewer from Muskoka Beach Road (District infrastructure) outlets via a vacant lot south of 130 Muskoka Beach Road and appears to be blocked by development east of the railway tracks.

4. Oriole Crescent Outlet (Deficiency Maps – Location J): The storm sewer outlet on designated non-buildable land between 259 and 267 Oriole Crescent has significant debris at the outlet and the CCTV inspection noted a separated joint and large cracks in the storm sewer. The outlet is projecting with insufficient support.

5. Segwun Boulevard Outlets: Many of the culvert outlets on Segwun Boulevard have existing blockage/maintenance issues. A resident on Segwun Boulevard noted issues with drainage from Lorne Street having an insufficient conveyance system from the Segwun Boulevard backyards to the 185 Segwun Boulevard outlet. The contributing drainage area to this outlet includes a small storm sewer system from Fraser Street that outlets to a ditch system along Austin Street and crosses Lorne Street via a road culvert (Deficiency Maps – Locations K).

   Runoff from Lorne Street east of Austin Street is collected via a storm sewer system and outlets between 250 and 260 Lorne Street and between 145 and 155 Segwun Boulevard to the Segwun Boulevard outlet. Conveyance through private property is a potential maintenance issue (Deficiency Maps – Locations L).

6. Abbey Lane Outlet (Deficiency Maps – Location M): The outlet storm sewer crosses 165 Abbey Lane and discharges at extreme velocities into a very steep channel on 655 Farquhar Street. At the bottom of the hill, the channel makes a sharp bend and is frequently overtopped. The resident of 145 Abbey Lane noted significant erosion issues. Videos were provided that indicate there is insufficient inlet capacity such that significant drainage bypasses the storm sewer outlet and flows overland. The videos also shows extreme velocities from the outlet storm sewer with significant erosive potential. The model results predict the storm sewer outlet has less than a 1:2-year return frequency design storm peak flow capacity. This outlet is through private property (including an open drainage channel through 130 Abbey Lane) and is a potential maintenance issue. Continued erosion is a potential safety issue.

7. Pinedale Road Outlet (Deficiency Maps – Location N): The Pinedale Road storm sewer shows a sewer travelling south along Kelly Drive, however the outlet was not located.
8. Additional Drainage Through Private Property: Additional sewers/outlets through private property with no special designation include:
   - Outlet through 320 Bethune Drive North and vacant lot to the east (Deficiency Maps – Location O);
   - Outlet through 375 Greavette Street, 525 Isaac Street and 205 Cherokee Lane (Deficiency Maps – Location P); and
   - Storm sewer that outlets at Ridge Road includes significant sections between John Street South and Hahne Drive that cross private property (Deficiency Maps – Location Q).

6.2 ORIOLE CRESCENT MAJOR DRAINAGE SYSTEM DEFICIENCIES

Significant drainage issues have been documented by the Town between Lorne Street and Oriole Crescent, which has a total drainage area of 23.5 ha at the Oriole Crescent crossing. Specifically:

- Runoff has overtopped the banks of the watercourse between Lorne Street and Oriole Crescent and flooded the dwelling at 110 Oriole Crescent;
- Erosion is evident downstream of the Lorne Street culvert crossing, likely due to high flow velocities downstream of the culvert crossing; and
- The twin culverts crossing 110 Oriole Crescent are elevated above the channel bed and appear to have been lifted by high flows. The left culvert is approximately 50% blocked with sediment.

6.2.1 Hydrologic/Hydraulic Analysis

To assess this drainage system, a Visual OTTHYMO model was created to quantify peak flows draining through this watercourse and a HEC-RAS model was created to establish the conveyance capacity of the watercourse and culvert crossings, the extent of flooding in the area and the erosive potential along the channel banks. The HEC-RAS model extends from the Lorne Street crossing to the Oriole Crescent crossing. Downstream of Oriole Crescent, the culverts have a free outfall with a natural plunge pool. There is no evidence of a backwater condition downstream of Oriole Crescent. Based on field observations, the Manning's roughness coefficients were assigned as follows:

- The main channel contains some weeds and stones, some pooled areas and is generally straight such that a representative Manning's roughness coefficient of 0.045 has been assigned;

- Where the channel overbanks have dense weeds and some wooded areas a representative Manning's roughness coefficient of 0.100 has been assigned; and
- Where the channel overbanks include residential backyards and areas with less dense tree cover a representative Manning's roughness coefficient of 0.060 has been assigned.

The hydrologic and hydraulic model input parameters and detailed model results are included in Appendix E for reference. The digital model files are included in Appendix A for reference.

6.2.2 Existing Condition Results and Deficiency Summary

Key results of the existing conditions hydraulic model are shown on Figure 2: Oriole Crescent Study Area Plan enclosed and are summarized as follows:

- The existing twin 600 mm diameter smooth HDPE culverts crossing Lorne Street have sufficient capacity to convey the Regulatory Storm (1:100-year return frequency design storm peak flow) without overtopping the road.
- The existing twin 600 mm diameter smooth HDPE culverts running under the rear of 110 Oriole Crescent have a conveyance capacity of approximately 0.5 m^3/s before flow is expected to overtop the eroded channel crossing. This is less than the 1:2-year return frequency design storm peak flow. Flooding of the rear yard of 110 Oriole Crescent is expected to occur during a design storm with a 1:10-year return frequency.
- The existing twin 600 mm diameter smooth HDPE culverts crossing Oriole Crescent have a conveyance capacity of approximately 1.9 m^3/s, which is less than the 1:10-year return frequency design storm peak flow. The minimum required design storm capacity per the District's *Engineering Design Criteria and Standards Manual* is the 1:10-year return frequency. The depth of road overtopping during the Regulatory Storm is approximately 0.35 m. Therefore, the existing crossing does not satisfy the minimum design flood frequency criteria or the safe access/egress criteria.

6.3 MUSQUASH ROAD MAJOR DRAINAGE SYSTEM DEFICIENCIES

The Town has noted that significant flooding occurred along Musquash Road, Private Street, McPherson Street and across private property during a major storm event in 2019. The Musquash Road drainage system consists of roadside ditches and driveway culverts that drain to a storm sewer and catchbasin discharging to the rear of 620 Musquash Road. The storm sewer along Musquash Road outlets to a drainage swale that crosses 610 Musquash Road to a culvert crossing Pearl Drive. Downstream of Pearl Drive, a drainage swale conveys surface runoff southeast across private property to a storm sewer inlet at the rear of 260 Private Street. The storm sewer runs south to Private Street, then east along Private Street to McPherson Street. It is understood that runoff passed through the dwelling at 225 Private Street during the recent major storm.

6.3.1 Hydrologic/Hydraulic Analysis

To assess this drainage system, a Visual OTTHYMO model was created to quantify peak flows draining through this drainage system and a HEC-RAS model was created to establish the conveyance capacity of the overland flow route and culvert crossings, the extent of flooding in the area and the erosive potential along the drainage system. The HEC-RAS model extends from the Pearl Drive crossing to Muskoka District Road 169. There is limited grade to provide conveyance capacity from Muskoka District Road 169 to Lake Muskoka such that a significant backwater condition impacts the downstream portion of the model. The downstream boundary condition has been set to the recorded Lake Muskoka highwater level of 225.64 m for all design storms. It is unlikely that the worst-case peak flows will coincide with worst-case lake levels, however our analysis confirms that the boundary condition does not influence the primary area of concern upstream of McPherson Street. The hydraulic model of the overland flow route assumes no conveyance via the minor system (culverts and storm sewer) from Private Street to McPherson Street as there is significant debris in the upstream drainage swale that is likely to block the minor system. Based on field observations, Manning's roughness coefficients for the overland flow route were assigned as follows:

- Where the main channel includes areas with heavy weeds and other debris a representative Manning's roughness coefficient of 0.048 has been assigned;
- Where the main channel is clean and straight without any significant riffles or pools a representative Manning's roughness coefficient of 0.033 has been assigned;
- Where the channel overbanks include areas of low vegetation, unkept yards and wooded areas a representative Manning's roughness coefficient of 0.080 has been assigned;
- Where the channel overbanks include residential backyards and areas with less dense tree cover a representative Manning's roughness coefficient of 0.060 has been assigned; and
- Where the channel overbanks include paved roadway a representative Manning's roughness coefficient of 0.015 has been assigned.

The hydrologic and hydraulic model input parameters and detailed model results are included in Appendix F for reference. The digital model files are included in Appendix A for reference.

6.3.2 Existing Condition Results and Deficiency Summary

Key results of the existing conditions hydraulic model are shown on Figure 3: Musquash Road Study Area Plan enclosed and are summarized as follows:

- The existing 400 mm diameter CSP culvert crossing Pearl Drive has a conveyance capacity of approximately 0.2 m^3/s, which is approximately equal to the 1:5-year return frequency design storm peak flow. The depth of roadway overtopping during the Regulatory Storm is approximately 0.2 m. Per the District's *Engineering Design Criteria and Standards Manual*, the recommended minimum design storm capacity of the Pearl Drive culvert is the 1:10-year return frequency design storm peak flow, which is not currently provided. Furthermore, the road elevation results in significant ponding on private property during less frequent storm events due to the limited capacity of the culvert.

- Downstream of Pearl Drive, flow is conveyed in a shallow buried 450 mm diameter sewer through the rear yard of 580 Musquash Road, which has a conveyance capacity of approximately 0.2 m^3/s. Flow that is not conveyed through the sewer is contained within the rear lot, however significant rear yard flooding, and flooding of an accessory building, can be expected during the Regulatory Storm to a depth of approximately 0.4 m. It is unknown whether this sewer is municipal infrastructure or whether it was installed by a homeowner.
- The drainage swale at the rear of 620 Musquash Road has a conveyance capacity of approximately 0.1 m^3/s which is less than the 1:2-year return frequency design storm peak flow. The inlet to the downstream catchbasin system is assumed blocked due to the presence of significant debris at this location such that all flow is conveyed overland through the side yard swale between 260 and 240 Private Street.
- At Private Street, overland flow is expected to split with sheet flow along the roadway to the catchbasin inlet at the junction of Private Street and McPherson Street and excess flow through the low point at the driveway of 235 Private Street and through 225 Private Street. Due to the grading of Private Street, any flow that exceeds the roadway conveyance capacity is expected to be conveyed through 225 Private Street. There is no defined roadside gutter, ditching or swale in this area and most drainage routes through private property.
- The existing 400 mm diameter CSP culvert at McPherson Street has a conveyance capacity of approximately 0.2 m^3/s, which is less than the 1:2-year return frequency design storm peak flow. Per the District's *Engineering Design Criteria and Standards Manual*, the recommended minimum design storm capacity of the McPherson Street culvert is the 1:10-year return frequency peak flow. The depth of overtopping during the 1:10-year return frequency design storm is approximately 0.1 m.
- There are two culverts running through 210 McPherson Street and 125 Private Street. These are 400 mm and 550 mm diameter smooth HDPE culverts, respectively. The hydraulic analysis indicates both of these culverts are backwatered by the downstream 600 mm diameter smooth HDPE culvert crossing Muskoka District Road 169, and therefore have negligible conveyance capacity. For simplicity, these culverts have been excluded from the model.
- The existing 600 mm diameter smooth HDPE culvert crossing Muskoka District Road 169 has a conveyance capacity of approximately 0.7 m^3/s, which is less than the 1:2-year return

frequency design storm peak flow. As this road was originally classified as a provincial highway, the minimum design storm capacity should be the 1:50-year return frequency in accordance with the Ministry of Transportation Directive B-100. The depth of overtopping during the 1:100-year return frequency design storm is approximately 0.2 m. Conveyance capacity is severely limited by grading to the lake.

6.4 REDWING DRIVE MAJOR DRAINAGE SYSTEM DEFICIENCIES

The Town noted Redwing Drive and the private property south of Redwing Drive has flooded with notable frequency. Based on conversations with local residents, it is understood that significant flooding approaches the garage floor elevation of 18 Redwing Drive on an annual basis.

6.4.1 Hydraulic Analysis

To assess the conveyance capacity and flood potential for this drainage system, a HEC-RAS model was created based on detailed topographic survey. The SCOOP DEM was used to supplement the survey data. As the channel approaches the lake, there is significant fall such that no backwater condition is expected to influence the upstream portion of the channel. Based on field observations, the Manning's roughness coefficients were assigned as follows:

- The main channel is generally free of heavy vegetation with some pools and rocky shoals such that a representative Manning's roughness coefficient of 0.040 has been assigned; and
- The channel overbanks include unkept yards and wooded areas such that a representative Manning's roughness coefficient of 0.080 has been assigned.

The hydraulic model input parameters and detailed model results are included in Appendix G for reference. The digital model files are included in Appendix A for reference.

6.4.2 Redwing Drive Outlet Summary

Key results of the existing conditions hydraulic model are shown on Figure 4: Redwing Drive Study Area Plan enclosed and are summarized as follows:

- The low point along Redwing Drive is lower than the obvert of the culvert crossing such that roadway overtopping will occur before the full flow capacity of the culvert is reached.
- The drainage channel capacity is limited by a bedrock outcropping located immediately downstream of a footbridge (approximately 80 m downstream of Redwing Drive). The channel invert at this location is approximately 230.78 m, which is 0.13 m above the upstream culvert invert.
- The existing 600 mm diameter smooth HDPE culvert crossing Redwing Drive has an estimated capacity of 0.15 m^3/s prior to road overtopping. Roadway overtopping that exceeds 0.30 m occurs at a flow rate of 0.70 m^3/s. The hydraulic model indicates the system

capacity is controlled by the downstream flow constriction, such that the velocity of flow over the road is negligible (~0.01 m^3/s).

- The survey indicates the corner of the garage at 18 Redwing Drive is at an elevation of approximately 231.20 m. The hydraulic model indicates that flood flows reach this elevation at flow rates of 0.20 m^3/s or higher.

Of note, this hydraulic model does not account for storage which will allow for higher incoming peak flows to discharge at lower rates. It is also noted that the rocky channel may have significant gaps below the surveyed points that allows for higher discharge rates than predicted by the model. Regardless, the resident at 18 Redwing Drive has noted frequent property flooding and roadway overtopping which is confirmed by the results of the model.

7 Potential Model Improvements

As there is no streamflow or storm sewer monitoring data available, the PCSWMM model has not been calibrated. A monitoring program that allows subcatchment parameters to be calibrated would improve the accuracy of the model. Of note, the imperviousness and soil characteristics are key subcatchment parameters that would be ideal for calibration if monitoring data is collected. The imperviousness calculation utilized simplifying assumptions and does not account for bedrock and the information used to define the soil characteristics was limited.

Furthermore, the existing PCSWMM model has been limited to Town storm sewer and some District storm sewer. Where the storm sewers outlet to watercourses, a normal depth boundary condition is assumed where no better information was available. However, there is potential that downstream issues could create backwater conditions based on downstream grading or culvert restrictions. The future addition of these major drainage system elements would further improve the accuracy of the model.

8 Storm Sewer Improvements

8.1 GENERAL RECOMMENDATIONS

There is an opportunity to upsize existing storm sewers to satisfy current design standards as part of future road reconstruction projects. Beyond upsizing, there are also opportunities to address the minimum pipe diameter and slope deficiencies and to remove municipal drainage infrastructure from private property by relocating it within the municipal road allowance. A PCSWMM minor drainage system hydrologic/hydraulic model has been created with storm sewer removed from private property (relocated into the municipal road allowance) where feasible and upsized to satisfy the design criteria considering climate change storms (2050 planning horizon). The PCSWMM model digital files are enclosed for reference. Detailed model results may be accessed from the digital files. The storm sewer improvements are illustrated on the Proposed Storm Sewer Improvement Plans (Drawings PR-1 through PR-4) enclosed in Appendix H and the specific upsizing requirements are detailed in the preliminary construction cost estimates included in Appendix I.

The preliminary construction cost estimate compares the difference in price between replacement of the existing storm sewer with upsized storm sewer satisfying the design criteria. The increased construction cost relative to the existing replacement price across the entire study area is $1,656,000 as detailed in Appendix I. This relative cost increase includes District storm sewer as District storm sewer upsizing is required to resolve deficiencies in the Town storm sewer. The construction costs also include costs of replacement structures (catch basins and maintenance holes) and contingencies (construction contingencies, design costs, contract administration/construction inspection fees, and an allowance for utility/service relocations). The construction cost excludes consolidation of storm sewers that are on both sides of the road and construction of new storm sewer where relocation into the municipal road allowance is proposed. The cost of the new storm sewer is presented in Section 8.2 as part of the Site Specific Improvement recommendations. The cost of the storm sewer improvements described in Section 8.1 are summarized in the following tables.

Table 15: Climate Change Scenario Storm Sewer Deficiency Summary

OUTLET	REPLACEMENT COST	IMPROVEMENT COST	COST DIFFERENCE
1 - Watercourse between Ridge Road and James Street via Ridge Road sewer	$4,090,000	$4,978,000	$888,000
2 - North Muldrew Lake Road sewer, ditch and culverts	$410,000	$499,000	$89,000
3 - Watercourse at Oriole Crescent/Segwun Boulevard	$1,239,000	$1,239,000	$0
4 - Muskoka Bay via Bay Street sewer	$2,299,000	$2,412,000	$113,000
5 - Gull Lake via Bethune Drive sewer	$2,139,000	$2,321,000	$182,000
6 - Muskoka Beach Road storm sewer east of Brydons Bay Road	$2,190,000	$2,073,000	($117,000)
7 - Watercourse west of Greavette Street	$1,722,000	$1,883,000	$161,000
8 - Abbey Lane culvert crossing	$1,346,000	$1,336,000	$190,000
Minor Outlets (32)	$10,886,000	$11,036,000	$150,000
Total	**$26,321,000**	**$27,977,000**	**$1,656,000**

Table 16: Storm Sewer Construction Cost Summary

CONDITION	LENGTH OF SEWER	LENGTH OF DEFICIENT SEWER	REPLACEMENT COST
Existing Conditions			
Town Infrastructure	13,073 m	5,428 m	$17,862,000
District Infrastructure	6,068 m	3,008 m	$8,459,000
Total	**19,141 m**	**8,436 m**	**$26,321,000**
Proposed Improvements			
Town Infrastructure	13,073 m	0 m	$19,146,000
District Infrastructure	6,068 m	0 m	$8,831,000
Total	**19,141 m**	**0 m**	**$27,977,000**
Difference			
Town Infrastructure	0 m	-5,428 m	$1,284,000
District Infrastructure	0 m	-3,008 m	$372,000
Total	**0 m**	**-10,436 m**	**$1,656,000**

As a general requirement for all capital projects, it is recommended that upsizing local storm sewers to satisfy current design standards considering climate change and relocating storm sewer to the municipal road allowance be considered as part of future road reconstruction projects.

This assessment was limited to the existing storm infrastructure identified through CCTV inspection, District GIS files and record drawings and field investigations. As a general recommendation, streets that have no existing minor drainage system should be upgraded to include storm sewers or roadside ditches as part of future road reconstruction projects.

8.2 SITE SPECIFIC STORM SEWER IMPROVEMENTS

As described in Section 6.1, there are several site-specific minor drainage system deficiencies to be addressed. A common issue across the Town is drainage through private property. Depending on the Town's existing access agreements, acquisition of a block or easement may be required to ensure maintenance and repairs can be completed as required. To determine next steps, access rights and maintenance responsibilities need to be resolved for the following locations illustrated on the Proposed Storm Sewer Improvement Plans (Drawings PR-1 to PR-4) enclosed in Appendix H:

- Location A: Drainage swale at rear of 965, 975 and 995 First Street that connects to storm sewer inlet between 1040 and 1050 Muskoka Road South;
- Location E: A culvert and drainage channel through 165, 170 and 180 Clairmont Road and storm outlet between 105 and 155 Burnett Street;
- Location G: Sewer between 496 and 500 Muskoka Beach Road (District infrastructure), which may require CCTV to confirm outlet location;
- Location H: Outlet through 290 Muskoka Beach Road (District infrastructure) with potential access and maintenance issues beyond railway tracks to be confirmed;
- Location I: Outlet through vacant lot south of 130 Muskoka Beach Road (District infrastructure) with potential access and maintenance issues beyond railway tracks to be confirmed;
- Locations L: Outlet through private property between 250 and 260 Lorne Street and between 145 and 155 Segwun Boulevard;
- Location M: Drainage channel through 130 Abbey Lane that connects to outlet culvert/channel through 165 Abbey Lane and 655 Farquhar Street;
- Location O: Outlet through 320 Bethune Drive North and vacant lot to the east;
- Location P: Outlet through 375 Greavette Street, 525 Isaac Street and 205 Cherokee Lane; and
- Location Q: Storm sewer that outlets at Ridge Road includes significant sections between John Street South and Hahne Drive that cross private property.

Where it is determined that the Town does not have an easement or own a servicing block over the drainage infrastructure on private property; the Town should:

1. Obtain an easement of sufficient width to replace the drainage infrastructure in the future;
2. Acquire a servicing block over the drainage infrastructure of sufficient width to replace the drainage infrastructure in the future; or
3. Relocate the drainage infrastructure to municipally owned lands, removing it from private property.

Unfortunately, the drainage infrastructure at Locations A, E, G, H, I, L, M, O and P cannot be relocated, and an easement or servicing block will need to be obtained/acquired if they do not exist currently.

Additional recommendations and next steps for site specific minor drainage system deficiencies are described as follows:

1. 945 First Street (Location A): To resolve local flooding issues, the existing infiltration gallery at 945 First Street can be fitted with an outlet storm sewer to direct drainage to an existing ditch/swale approximately 90 m to the south within the Caroline Street road allowance. This will significantly reduce nuisance flooding at 955 First Street. The existing ditch/swale drains to an inlet of the Muskoka Road South storm sewer. The existing ditch is overgrown and should be cleaned out, reshaped and regraded as necessary to provide positive drainage to the storm sewer inlet. Work within the municipal road allowance may proceed as a Schedule A+ project under the Municipal Class Environmental Assessment (MCEA) Document and the storm sewer can be installed in the boulevard. The preliminary cost estimate for this project is $87,000 as detailed in Appendix I. As the work can be completed in the boulevard, this project can proceed independently of road reconstruction.
2. Phillip Street (Location B): The deficient outlet located on private property between 570 and 590 Phillip Street can be abandoned and replaced with a new outlet through municipal property between 490 and 510 Phillip Street East (Fourth Street road allowance). Rerouting the storm sewer through municipal property to Gull Lake allows it to proceed as a Schedule A+ project as designated in the MCEA Document. The topographic data available indicates there is an insufficient major overland flow route and a storm sewer with capacity to convey the 1:100-year return frequency design storm peak flow should be considered at this location.

   Due to potential fisheries impacts associated with a new outlet to Gull Lake, consultation/approvals from the Ministry of Natural Resources and Forestry (MNRF) and Fisheries and Oceans Canada (DFO) will be required. This project is recommended to be implemented as a component of road reconstruction on Phillip Street. As such, the specific costs associated with road reconstruction are excluded from the cost estimate for this project. The preliminary cost estimate for this project is $315,000 and $395,000 for the 1:5-year and 1:100-year return frequency design storm peak flow capacity, respectively. The cost estimates are detailed in Appendix I.
3. Louise Street at Wagner Street (Location C): The invert of the Louise Street storm sewer is below the invert of the downstream storm sewer on Wagner Street. When Wagner Street is reconstructed, the outlet invert of the Wagner Street storm sewer should be lowered below the upstream storm sewer invert.
4. Austin Street (Location D): The existing dead end catchbasin on Austin Street can tie into the Wagner Street or Farquhar Street storm sewer systems. There are significant drainage issues downstream of the potential Farquhar Street connection such that connection to the

Wagner Street storm sewer is recommended. Connection to the Wagner Street storm sewer requires approximately 50 m of new sewer that can be installed in the boulevard. The existing storm sewer on Wagner Street is composed of shallow CSP sewer that needs to be upgraded and should be installed in accordance with municipal standards during road reconstruction. The catchbasin connection from Austin Street requires the Wagner Street storm sewer to be lowered and should be completed when Wagner Street is reconstructed, and the Louise Street at Wagner Street (Location C) deficiency is addressed. As the catchbasin connection is located in the municipal road allowance, it can proceed as a Schedule A project. The preliminary cost estimate for the catchbasin connection project is $44,000 as detailed in Appendix I.

5. Clairmont Road to Burnett Street (Location E): The existing 400 mm diameter culvert that runs north under Clairmont Road has been subject to obstruction in the past and inlet improvements at 165 Clairmont Road (cleanout, headwall and grate) should be completed subject to confirmation of access rights. A preliminary cost estimate for this project is $122,000 as detailed in Appendix I. This estimate includes the cost to replace the CSP culvert with a concrete culvert to increase the expected life span. Periodic maintenance of the inlet is recommended to prevent obstruction in the future.

6. Fairview Drive (Location F): The existing storm sewer network on Fairview Drive between Crescent Drive and Pinegrove Street is failing and is in need of replacement. The existing storm sewer should be replaced with new storm sewer under the roadway.

   The existing Fairview Drive storm sewer is located in the boulevard below several driveways. As witnessed during our site investigations, frost heave has lifted the storm sewer causing damage to several driveways. To prevent future frost heave, the new storm sewer should be lowered to provide sufficient cover as per Municipal Standards, or to the extent possible while satisfying the MECP Sewage Design Guidelines. To lower the storm sewer, the sewer slope will have to be reduced. It is recommended that the slope of the storm sewer be reduced from Hahne Drive along Pineridge Gate and Fairview Drive to a minimum slope of 0.3%.

   Along Fairview Drive there are several rear lot catchbasins draining the area east of the properties fronting the east side of Fairview Drive. These catchbasin leads can be extended to tie into the new storm sewer. However, they also likely need to be replaced. To do so, the exact location and run of the catchbasin and lead need to be determined, the locations need to be reviewed for conflicts and the Town's access rights need to be established. Based on the location and access rights, the Town can either:

   - Replace the catchbasin lead if they are located in an appropriate location in an easement in favour of the Town or a Town-owned block (Schedule A+ project);

- Obtain an easement or acquire a servicing block over the drainage infrastructure and replace the catchbasin and lead if located appropriately; or
- Assess alternative catchbasin and lead locations to avoid conflicts through a Schedule B MCEA process.

It is anticipated that the existing catchbasins are appropriately located to collect surface runoff from the area and any replacement structure will need to be located in a similar location as the existing structure. However, many of the dwellings fronting Fairview Drive now include car ports and garages that may conflict with the catchbasin lead. The location of the leads will need to be confirmed to determine if they need to be relocated.

7. Lofty Pines Drive/290 Muskoka Beach Road Outlet (Location H): The outlet through 290 Muskoka Beach Road is blocked by sediment and there is significant ponded water with no outlet identified beyond the railway tracks. This outlet is primarily for Muskoka Beach Road drainage (District infrastructure) and is outside the scope of this study. However, the field investigation indicated this is an area of concern where coordination with the District is recommended to confirm a sufficient outlet is provided and to resolve access rights and maintenance requirements related to this outlet.

8. Muskoka Beach Road Outlet near Winewood Avenue (Location I): This outlet is primarily for Muskoka Beach Road drainage (District infrastructure) and no outlet was identified. District infrastructure is outside the scope of this study. However, it is recommended to confirm a sufficient outlet is provided and to resolve access rights and maintenance requirements related to this outlet.

9. Oriole Crescent Outlet (Location J): There is significant debris at the outlet and the CCTV inspection noted a separated joint and large cracks. The outlet sewer should be replaced, and the existing outlet needs to be cleaned out and properly supported/protected from erosion. This work is considered general maintenance and can proceed as a Schedule A project. A preliminary cost estimate for this project is $86,000 as detailed in Appendix I.

10. Segwun Boulevard Outlets: Many of the culvert outlets on Segwun Boulevard have existing blockage/maintenance issues. A routine maintenance schedule should be developed to ensure the culverts function as intended.

    (Locations K and L): Runoff from Fraser Street, Austin Street and Lorne Street currently drains through private property on Segwun Boulevard and needs to be routed to an adequate outlet with sufficient conveyance capacity. Lorne Street drainage east of Austin Street is collected via a storm sewer system that outlets through private property between 250 and 260 Lorne Street and between 145 and 155 Segwun Boulevard. The access rights to and maintenance requirements of this storm sewer system need to be confirmed. Drainage complaints were received from property owners on Seqwun Boulevard during our site investigations and the discharge of municipal drainage onto private property should be addressed. Based on our understanding of the area, we have development the following options to improve drainage and eliminate the discharge of municipal drainage onto private property:

i. Do nothing;

ii. Install catchbasins at the rear of the properties fronting the south side of Seqwun Boulevard to collect and convey runoff from Fraser Street, Austin Street and Lorne Street to the Segwun Boulevard storm sewer system via new catchbasin connections;

iii. Install new storm sewer on Lorne Street from Austin Street to the existing Lorne Street storm sewer that outlets through private property between 250 and 260 Lorne Street and between 145 and 155 Segwun Boulevard to intercept municipal drainage and convey it to and an existing drainage outlet; and

iv. A combination of solutions ii and iii.

The options described above should be evaluated through a Municipal Class EA following the Schedule B process. The estimated cost to advance the conceptual design options and complete the requisite Municipal Class EA for this project is $30,000.

11. Abbey Lane Outlet (Location M): The existing Abbey Lane storm sewer outlet discharges at high velocities to a steep channel on 655 Farquhar Street which is frequently overtopped. Erosion of the channel was noted as well as the absence of sufficient overland flow route for major storm flows during site investigations. It is recommended that the existing outlet be replaced with a new storm sewer outlet sized to convey the 1:100-year return frequency design storm peak flow. Drop structures should be incorporated into the design to dissipate energy and reduce the velocity of flow discharged to the downstream channel. The inlet capacity of the drainage system will need to be increased to capture the 1:100-year return frequency design storm peak flow by adding additional catchbasins and/or ditch inlet structures. Improvements (regrading/reshaping) to the outlet channel are also likely required between the storm sewer outlet and Muskoka Bay to prevent overtopping in the future.

    This project is considered a repair/renovation to an existing sewage collection system and can proceed to design/construction as a Schedule A project. Access rights over the storm outlet will have to be confirmed and the property owner should be consulted. A drainage easement or servicing block should be obtained/acquired over the storm outlet if one does not already exist. The estimated cost of construction of the recommended solution is $374,000 as detailed in Appendix I.

12. Ridge Road Outlet (Locations N and Q): The storm sewer system upstream of the Ridge Road Outlet has several deficiencies and several sections crossing private property. The deficient sections can be upsized to provide the required capacity. The sections crossing private property can be removed/abandoned and replaced with new storm sewer located in the municipal road allowance. The improvements to this storm sewer system should proceed from downstream to upstream as part of road reconstruction projects. This project is classified as a Schedule A+ project and the estimated cost to relocate the storm sewer (cost of the new storm sewer) is $1,454,000 as detailed in Appendix I.

8.3 SITE SPECIFIC MINOR DRAINAGE SYSTEM IMPROVEMENT RECOMMENDATIONS SUMMARY

The site specific minor drainage system improvement recommendations are summarized in Table 17.

Table 17: Site Specific Minor Drainage System Improvement Recommendations Summary

Outlet	Location	Description	Impacted Property (Required Access)	MCEA Schedule	Other Permits/Approvals	Construction Cost	MCEA Schedule B Study Cost
Minor Outlet	A	945 First Street	Drainage channel at rear of 965, 975, and 995 First Street to inlet between 1040 and 1050 Muskoka Road South	A+	Access rights to be resolved	$87,000	-
Minor Outlet	B	Phillip Street East (1:5-Year)	Abandoned outlet between 570 and 590 Phillip Street. Proposed relocation is to the Municipal Right of Way (ROW) and park area.	A+	DFO, MNRF (Potential fisheries impact at lake)	$315,000	-
		Phillip Street East (1:100-Year)				$395,000	
Minor Outlet	C	Louise Street at Wagner Street	Municipal ROW	A	-	Included in STM Replacement Cost Estimate	-
Minor Outlet	D	Austin Street	Municipal ROW	A	-	$44,000	-
4 - Muskoka Bay via Bay Street sewer	E	Clairmont Road to Burnett Street	Culvert, channel goes through 165, 170 and 180 Clairmont Road and there is a storm sewer connection between 105 and 155 Burnett Street	A	Access rights to be resolved	$122,000	-
Minor Outlet	F	Fairview Drive	Primarily within Municipal ROW. Properties with rear yard catch basins are to be determined.	A+ / B	Access rights to be resolved	Included in STM Replacement Cost Estimate	-
Minor Outlet	G	496 Muskoka Beach Road Outlet	Sewer between 496 and 500 Muskoka Beach Road	-	Access rights to be resolved	District Infrastructure	-
Minor Outlet	H	Lofty Pines Drive / 290 Muskoka Beach Road Outlet	Outlet through 290 Muskoka Beach Road	-	Access rights to be resolved	District Infrastructure	-
Minor Outlet	I	Muskoka Beach Road Outlet near Winewood Avenue	Outlet through vacant lot south of 130 Muskoka Beach Road	-	Access rights to be resolved	District Infrastructure	-
Minor Outlet	J	Oriole Crescent Outlet	Designated non-buildable land	A	-	$86,000	-
Minor Outlet	K	185 Segwun Boulevard Outlet	Drainage from Fraser Street, Austin Street and Lorne Street drains through 380 Lorne Street and ponds at rear of 225, 205 and 195 Segwun Boulevard	B	Access rights to be resolved	-	$30,000
Minor Outlet	L	145, 155 Segwun Boulevard Outlet	Outlet through private property between 250 and 260 Lorne Street and between 145 and 155 Segwun Boulevard	B	Access rights to be resolved	-	
8 - Abbey Lane culvert crossing	M	Abbey Lane Outlet	Drainge channel through 130 Abbey Lane connects to deficient outlet through 165 Abbey Lane and 655 Farquhar Street	A	DFO, MNRF (Potential fisheries impact at lake), Access rights to be resolved	$374,000	-
1 - Watercourse between Ridge Road and James Street via Ridge Road	N	Pinedale Road Outlet	Municipal ROW	A+	-	$225,000	-
5 - Gull Lake via Bethune Drive sewer	O	320 Bethune Drive North Outlet	Outlet through 320 Bethune Drive North and vacant lot to the east	-	Access rights to be resolved	Included in STM Replacement Cost Estimate	-
7 - Watercourse west of Greavette Street	P	375 Greavette Street Outlet	Outlet through 375 Greavette Street, 525 Isaac Street and 205 Cherokee Lane	-	Access rights to be resolved	Included in STM Replacement Cost Estimate	-
1 - Watercourse between Ridge Road and James Street via Ridge Road sewer	Q	Ridge Road Outlet System	Sewer to be abandoned through 973 and 985 Hahne Drive, 320, 330 340 and 360 Kelly Drive, 190 Main Street, 191 Veterans Way, 630, 660 and 690 Muskoka Road South and 121 David Street.Proposed relocation maintains routing between 251 Main Street and 845 Bethune Drive and through 830 First Street South, 231 Main Street and 511 Muskoka Road South (Shopper's Drug Mart parking lot).	A+	Access rights to be resolved	$1,229,000	-

9 Major Drainage System Improvements

As described in Sections 6.2 through 6.4, there are several site-specific major drainage system deficiencies that have been identified. Conceptual solutions for these three areas are outlined next, along with recommendations for the next steps to address the major drainage system deficiencies.

9.1 ORIOLE CRESCENT MAJOR SYSTEM DEFICIENCY IMPROVEMENTS

As noted, sections of the Oriole Crescent major drainage system show evidence of erosion and this reach of watercourse has been subject to flooding. Furthermore, it has been demonstrated through the hydraulic model that the culverts crossing Oriole Crescent are undersized and do not satisfy the minimum design flood frequency criteria which imposes a backwater condition on the upstream channel and exacerbates upstream flooding.

To alleviate the major drainage system deficiencies in the Oriole Crescent drainage system, alternative solutions have been developed and assessed to determine their feasibility as follows:

1. Do nothing;

2a. Install an energy dissipation structure (e.g., plunge pool) at the outlet of the Lorne Street culvert crossing to reduce the velocity and erosive force of flow entering the downstream watercourse (*Schedule B*);

2b. Incorporate a drop structure into the Lorne Street culvert crossing to dissipate energy and reduce the velocity and erosive force of flow entering the downstream watercourse (Schedule A).;

2c. Armour the channel downstream of Lorne Street through the downstream channel bend repairing the existing erosion and preventing further erosion (Schedule B);

3a. Realign the watercourse and provide an engineered channel downstream of Lorne Street with an adequate cross-section to convey peak flows. The channel should be realigned to minimize sharp bends and encroachments onto private property (*Schedule B*);

3b. Repair the culverts running under the rear of 110 Oriole Crescent and increase their capacity to meet the specified design standard (*Schedule A*). An easement should also be obtained to ensure the required access is maintain for maintenance and repairs as required (*Schedule B*);

4. Increase the capacity of the culverts crossing Oriole Crescent to satisfy the minimum design flood frequency criteria (*Schedule A*). The culvert should safely convey the 1:10-year return frequency design storm peak flow without surcharge at a minimum;

5. Implement linear low impact development (LID) measures throughout the contributing watershed or an end-of-pipe SWMF upstream of Lorne Street to attenuate peak flows; reducing design storm peak flows them to the conveyance capacity of the drainage system downstream of Lorne Street through Oriole Crescent; and

6. A combination of 2 through 5.

The alternative solutions are illustrated schematically on the Oriole Crescent Alternative Solutions Plan (Figure 5) enclosed. The alternative solutions presented fall under Schedule A or B of the Municipal Class EA process (as noted), however, a combination of the options presented will be required to address the identified deficiencies and the alternative solutions should be evaluated through the Schedule B Class EA process to identify the preferred solution. Additional options may be considered during Phase 2 of the Class EA, which may include, for example, channel naturalization.

The estimated cost to advance the conceptual design options and complete the requisite Municipal Class EA for this project is $45,000.

9.2 MUSQUASH ROAD MAJOR SYSTEM DEFICIENCY IMPROVEMENTS

As noted, significant flooding has occurred along Musquash Road, Private Street, McPherson Street and across private property and the model results indicate the system does not satisfy the minimum design standards.

There are opportunities to improve the drainage system by redirecting flows through the municipal road allowance via storm sewer instead of through rear yards, increasing drainage system capacity through larger culverts/sewers, and regrading the overland flow route (both drainage swales and roadways) to increase conveyance capacity and reduce flooding during major storms. Due to the topography and geology of the drainage area it is likely not practical to reroute all drainage paths through municipal road allowances, therefore improvements should consider the need for acquisition of land or easements to ensure access is maintained for future maintenance and repair of the drainage elements that are required through private property. A geotechnical investigation is also recommended as part of future project stages to determine groundwater conditions and depth to bedrock to confirm the feasibility of installing storm sewers.

To alleviate the major system deficiencies in the Musquash Road drainage system several alternative solutions have been developed and assessed for feasibility. The alternative solutions are illustrated on the Musquash Road Alternative Solutions Plan (Figure 6) enclosed and described as follows:

1. Do nothing;

2. Remove/abandon the existing storm outlet between 610 and 620 Musquash Road and construct a storm sewer on Musquash Road (north of Pearl Drive) and on Pearl Drive to collect and convey surface runoff to the existing Pearl Drive culvert crossing (Schedule A);

3a. Remove the existing 450 mm diameter culvert crossing the rear of 580 Musquash Road and reinstate the rear yard drainage swale incorporating a subdrain into the design (Schedule B);

3b. Replace the existing 450 mm diameter culvert crossing the rear of 580 Musquash Road with an appropriately sized culvert and grade an overland flow route across the rear of the property (Schedule B);

4. Improve the rear yard drainage swale between 580 Musquash Road and the storm sewer inlet at the rear of 240 and 260 Private Street to convey major storm peak flows incorporating a subdrain into the design;

5a. Replace the existing storm sewer between 240 and 260 Private Street with a storm sewer sized to convey the 1:5-year return frequency design storm peak flow, add an inlet structure designed to prevent obstruction, and regrade/reshape the overland flow route, as required, to convey major storm peak flows (Schedule A);

5b. Remove the existing storm sewer between 240 and 260 Private Street and replace it with a drainage swale sized to convey major storm peak flows (Schedule B);

5c. Replace the existing storm sewer between 240 and 260 Private Street with a storm sewer sized to convey the 1:100-year return frequency design storm peak flow and add an inlet structure designed to prevent obstruction (Schedule B);

6a. Replace the Private Street storm sewer with sewer sized to convey the 1:5-year return frequency design storm peak flow and regrade/lower Private Street and incorporate curb and gutter into the road cross-section to convey major storm peak flows without private property flooding (Schedule A);

6b. Reconstruct Private Street and McPherson Street with rural road cross-sections and roadside ditches designed to convey major storm peak flows to the existing outlet through 210 McPherson Street and 125 Private Street (Schedule B);

6c. Replace the Private Street storm sewer with sewer sized to convey the 1:100-year return frequency design storm peak flow (Schedule B);

7a. Extend the storm sewer described under alternative solutions 6A and 6c through the Private Steet road allowance to the Muskoka District Road 169 roadside ditch, diverting minor (alternative solution 6a) or major (alternative solution 6c) storm peak flows from 210 McPherson Street and 125 Private Street;

7b. Replace the existing drainage infrastructure through 210 McPherson Street and 125 Private Street with appropriately sized infrastructure (culverts/ditches) to prevent private property flooding (Schedule A);

7c. Remove the existing drainage infrastructure through 210 McPherson Street and 125 Private Street and replace it with a drainage ditch sized to convey major storm peak flows (Schedule B); and

8. Implement linear low impact development (LID) measures throughout the contributing watershed or an end-of-pipe SWMF upstream of Pearl Drive to attenuate peak flows, reducing them to the conveyance capacity of the downstream drainage system to Muskoka District Road 169 (Schedule B).

The required size of the Muskoka District Road 169 culvert crossing should be confirmed through the subsequent study and, if necessary, the District should be approached about improving this crossing. Similarly, the drainage outlet downstream of Muskoka District Road 169 should be reviewed as part of the subsequent study to determine if drainage improvements can be made to this outlet.

The alternative solutions presented fall under Schedule A or B of the Municipal Class EA process (as noted), however, a combination of the options presented will be required to address the identified issues and the alternative solutions should be evaluated through the Schedule B Class EA process to identify a preferred solution. Additional options may be considered as part of Phase 2 of the Class EA. The estimated cost to advance the conceptual design options and complete the requisite Municipal Class EA for this project is $50,000.

9.3 REDWING DRIVE MAJOR SYSTEM DEFICIENCY IMPROVEMENTS

We understand improvements have recently been completed on the Loon Lake culvert crossing that has improved drainage in this area. However, downstream of the Loon Lake culvert crossing at Redwing Drive, a drainage issued persists. As noted, Redwing Drive has flooded along with private property south of Redwing Drive due to the obstruction of the culvert and restrictions in the watercourse downstream. During our field visit it was noted that the property owner southeast of the watercourse has filled a portion of the floodplain with gravel and it was observed that a bedrock outcropping causes a significant narrowing/obstruction in the downstream channel.

To alleviate the major drainage system deficiencies in this area several alternative solutions have been developed and assessed to determine their feasibility. The alternative solutions are illustrated schematically on the Redwing Drive Alternative Solutions Plan (Figure 7) enclosed and are described as follows:

1. Do nothing;
2. Raise the road centerline elevation to utilize the available storage in the upstream wetland to attenuate peak flows to the capacity of the downstream drainage system;
3. Upsize the Redwing Drive culvert crossing to satisfy the minimum design flood frequency criteria (1:100-year return frequency design storm peak flow);
4. Improve the channel downstream of Redwing Drive including removal of the bedrock outcropping currently obstructing flow; and
5. A combination of 1. through 4. above.

The removal of the flow constraint at the bedrock overtopping downstream of the Redwing Drive culvert crossing (alternative solution 4) is expected to be a requirement to alleviate flooding issues, irrespective of other items being considered. Therefore, this project will be required to progress through the Schedule B process to determine the preferred alternative to address the identify issues. The estimate cost to advance the conceptual design options and complete the requisite Municipal Class EA for this project is $30,000.

10 Project Prioritization

As discussed, the general recommendations in Section 8.1 should be implemented as part of road reconstruction projects. This includes storm sewer upsizing to satisfy current standards and removing municipal infrastructure from private property, relocating it into the municipal road allowance. Ideally the storm sewer improvements would proceed from downstream to upstream and the road reconstruction projects would be scheduled accordingly. However, it is understood additional factors must be considered when prioritizing the road improvements in this manner.

Similarly, the site specific storm sewer improvements should be implemented as part of road reconstruction projects. For the municipal infrastructure located on private property which cannot be removed, the access rights and maintenance requirements should be resolved in advance of road reconstruction projects. The Town should explore obtaining an easement or acquiring a servicing block over the municipal infrastructure, where they do not currently have one, to facilitate future repairs and replacement.

Road improvements on Segwun Boulevard and Lorne Street are scheduled to occur beyond the 10 year planning horizon, as per the ongoing Road Needs Study. The drainage deficiencies in this area are to be addressed through the Schedule B Municipal Class Environmental Assessment Process. This study should be completed in advance of the design of the Segwun Boulevard and Lorne Street road improvements to ensure the recommended drainage improvements are incorporated into the designs. Recognizing the works are to occur beyond the 10 year planning horizon, the timing of the Schedule B MCEA should be reassessed as part of the next Road Needs Study update

The major drainage deficiencies identified in Sections 6.2 through 6.4 are to be addressed through a Schedule B Municipal Class Environmental Assessment. As the risk (both the consequence and probability) of flooding is high in these three areas and has occurred recently, we recommend the Schedule B MCEA studies occur in 2022 to identify the preferred solution to address flooding in these areas.

11 Detailed Design and Construction

Subject to available capital funding, the individual projects will proceed to detailed design and construction. Prior to construction, all required approvals should be identified and obtained as part of detailed design. During the detailed design, the owners of the existing utilities should be notified of the proposed works, of any impacts the proposed works will have on the existing utilities and of any conflicts or relocates required to complete the infrastructure improvements. Coordination with existing utilities will be required through detailed design and construction. Implementation of the conveyance capacity improvements recommended should start at the downstream end of each conveyance system and progress upstream. It is envisioned that the implementation of the conveyance capacity improvements will be completed in conjunction with road reconstruction projects. As such, it is understood that additional factors may influence the timing of projects and that it might not be feasible to implement improvements in the order recommended.

12 Funding

In 2021, the Government of Canada budgeted an additional $1,375 billion in federal funding to renew the Disaster Mitigation and Adaptation Fund (DMAF) of which $670 million is allocated to small and large scale projects. The Town of Gravenhurst is eligible to apply for funding under the DMAF and could receive up to 40% of the project cost through federal contributions. The projects eligible must aim at reducing the socio-economic, environmental and cultural impacts triggered by natural hazards and extreme weather events, such as flooding and erosion. Eligible infrastructure projects must involve new construction of public infrastructure and/or modification or reinforcement of existing infrastructure that prevent, mitigate, or protect against the impacts of climate change, natural disasters and extreme weather. However, the eligible expenditures include capital costs, design and planning.

Several areas of concern related to flooding and erosion have been identified in the Town. All of these projects may be eligible, including the site-specific major drainage system deficiencies. We recommend the Town consider applying for funding through the DMAF for the Oriole Crescent, Musquash Road and Redwing Drive improvements. If the Town elects to proceed with an application, submissions are due November 15, 2021 for small scale projects.

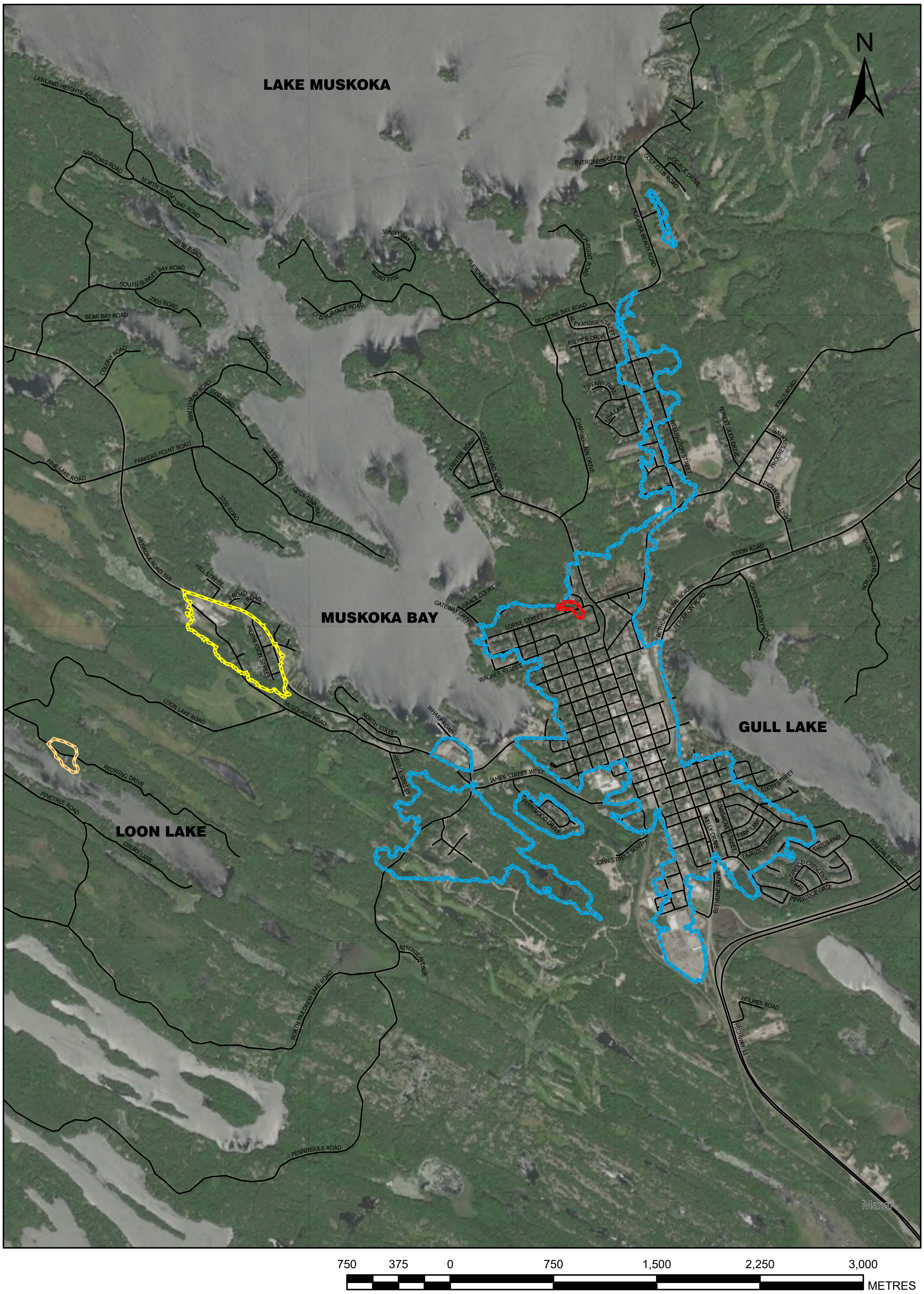
13 Summary

In summary, notable deficiencies in the Town's storm sewer infrastructure under existing conditions and a climate change scenario have been identified through this study.

The deficiencies identified included undersized sewers, lack of adequate drainage outlets and municipal infrastructure through private property. The recommended improvements include upsizing the storm sewer as required, removing municipal infrastructure from private property where feasible, and obtaining easements or acquiring servicing blocks over the municipal infrastructure that cannot be removed from private property. The recommended improvements should be implemented as part of future road reconstruction projects.

Site specific minor and major drainage system deficiencies identified by the Town and Tatham staff during field investigations have also been addressed through this study. Recommended solutions have been developed to address the minor drainage system deficiencies which should be implemented as part of future road reconstruction projects, with the exception of the Segwun Boulevard and Lorne Street drainage issue (Location K and L). It is recommended that this drainage issue be addressed through a Schedule B Municipal Class Environmental Assessment completed in advance of the design of the Segwun Boulevard and Lorne Street road improvements.

The major drainage system deficiencies at the three locations assessed (Oriole Crescent, Musquash Road and Redwing Drive) are also recommended to be resolved through a Schedule B MCEA. These Schedule B MCEAs are recommended to occur in 2022 due to the level of risk associated with flooding at each location.



LEGEND

- ORIOLE CRESCENT STUDY AREA
- MUSQUASH ROAD STUDY AREA
- REDWING DRIVE STUDY AREA
- STORM SEWER STUDY AREA
- ROADS

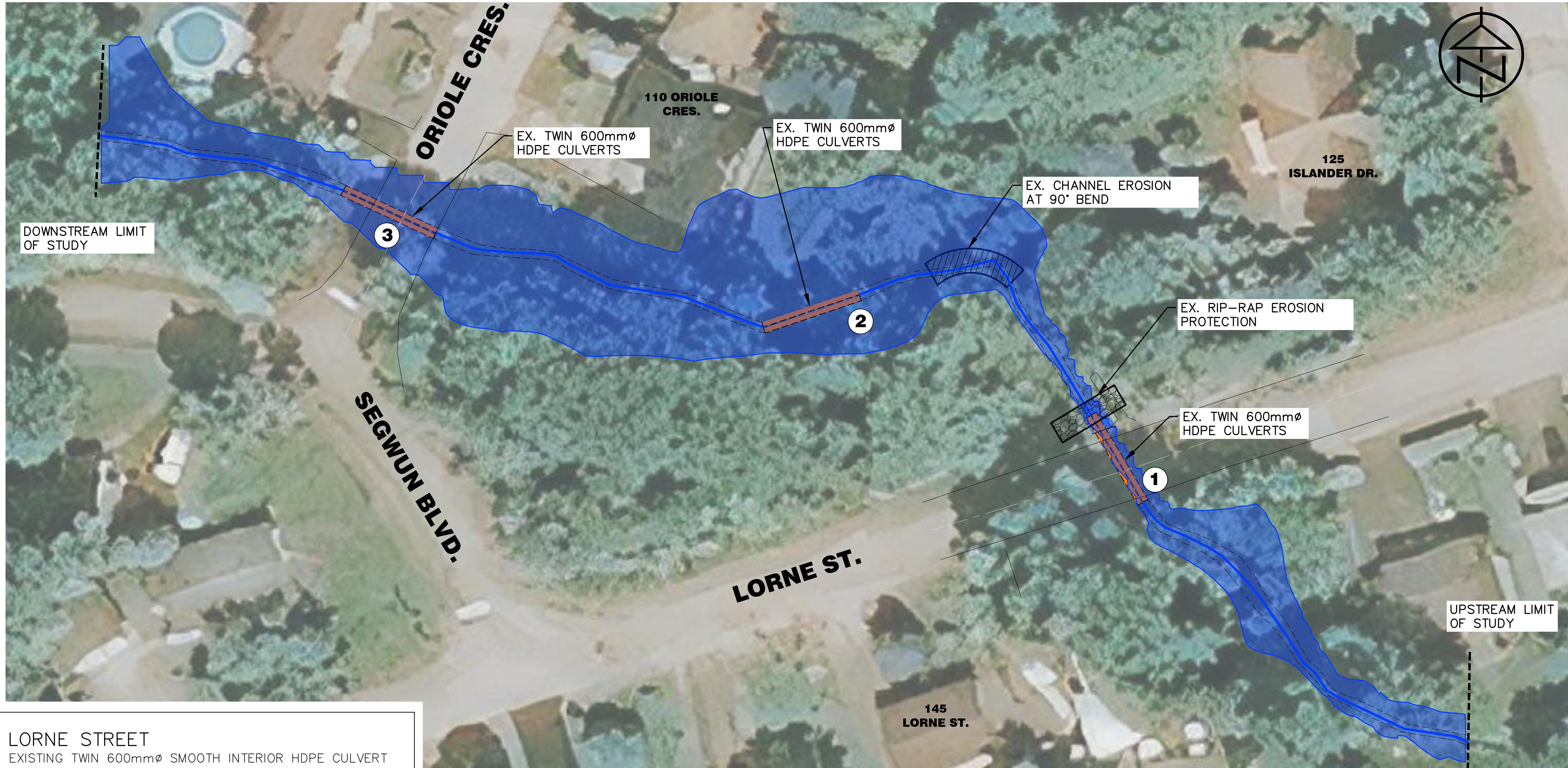
TATHAM ENGINEERING

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

STUDY AREA LOCATION PLAN

FIGURE. **1**

SCALE: 1:30,000 | DATE: APRIL 2021 | DRAWN: KKS



1 LORNE STREET
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: > 1.7 m^3/s
DESIGN FLOOD FREQUENCY: > 1:100-YEAR
NO OVERTOPPING DURING REGULATORY EVENT

2 110 ORIOLE CRESCENT
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.5 m^3/s
DESIGN FLOOD FREQUENCY: < 1:2-YEAR

3 ORIOLE CRESCENT
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 1.9 m^3/s
DESIGN FLOOD FREQUENCY: < 1:10-YEAR
DEPTH OF OVERTOPPING (REGULATORY EVENT) ≈ 0.35 m

LEGEND

- EXISTING WATERCOURSE
- EXISTING CULVERT
- EXISTING CHANNEL EROSION
- EXISTING RIP-RAP EROSION PROTECTION
- 100-YR FLOODPLAIN

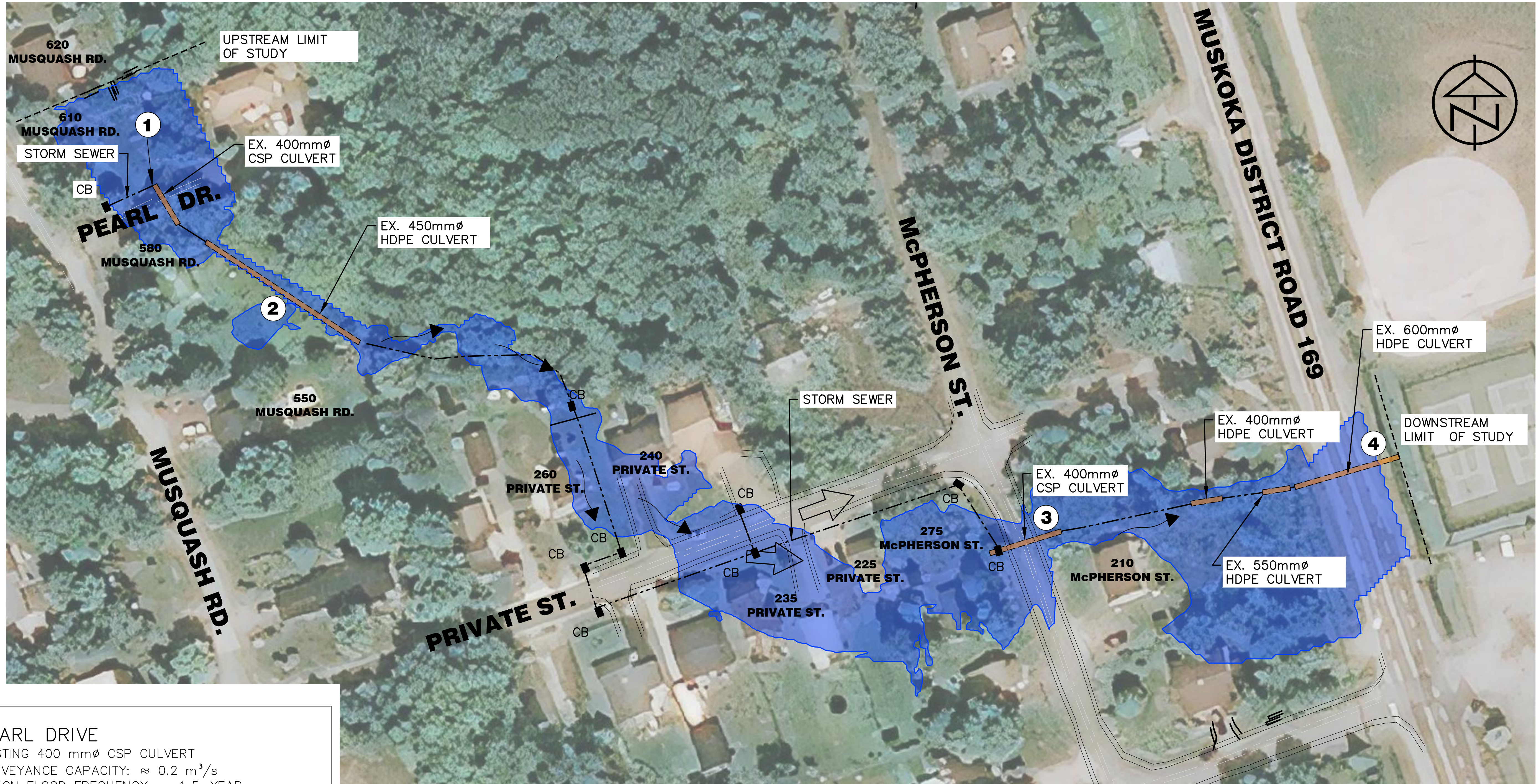
TATHAM ENGINEERING

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT
ORIOLE CRESCENT STUDY AREA

Figure. **2**

SCALE: 1:500	DRAWN: KKS	DATE: SEPT/21	JOB NO. 220536

Drawing Name: 220536 – Study Area.dwg, Plotted: Oct 05, 2021



1 PEARL DRIVE
EXISTING 400 mmø CSP CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m³/s
DESIGN FLOOD FREQUENCY: ≈ 1:5–YEAR

2 REAR YARD CULVERT
EXISTING 450 mmø HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m³/s
DESIGN FLOOD FREQUENCY: ≈ 1:5–YEAR

3 McPHERSON STEET
EXISTING 400 mmø CSP CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m³/s
DESIGN FLOOD FREQUENCY: < 1:2–YEAR

4 MUSKOKA DISTRICT ROAD 169
EXISTING 600 mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.7 m³/s
DESIGN FLOOD FREQUENCY: < 1:2–YEAR

LEGEND

EXISTING OVERLAND FLOW DIRECTION
EXISTING CULVERT
EXISTING SWALE/DIRECTION
100–YR FLOODPLAIN
STORM SEWER

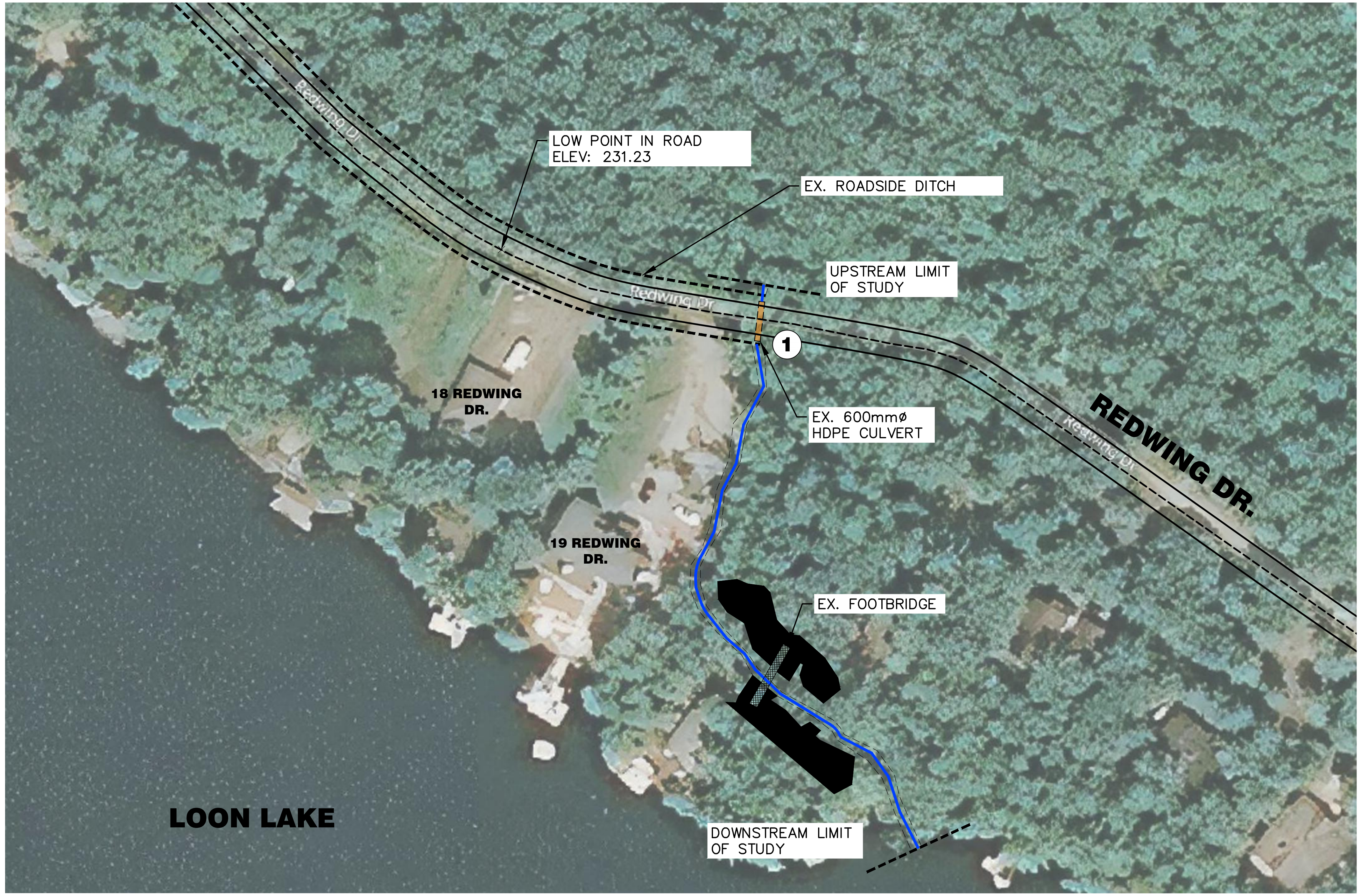
TATHAM ENGINEERING

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT
MUSQUASH ROAD STUDY AREA

Figure. 3

SCALE: 1:1000	DRAWN: KKS	DATE: SEPT/21	JOB NO. 220536

Drawing Name: 220536 – Study Area.dwg, Plotted: Oct 05, 2021



LEGEND

EXISTING WATERCOURSE
EXISTING ROADSIDE DITCH
EXISTING CULVERT
BEDROCK OUTCROPPING

(1) REDWING DRIVE
EXISTING 600 mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: 0.15 m^3/s

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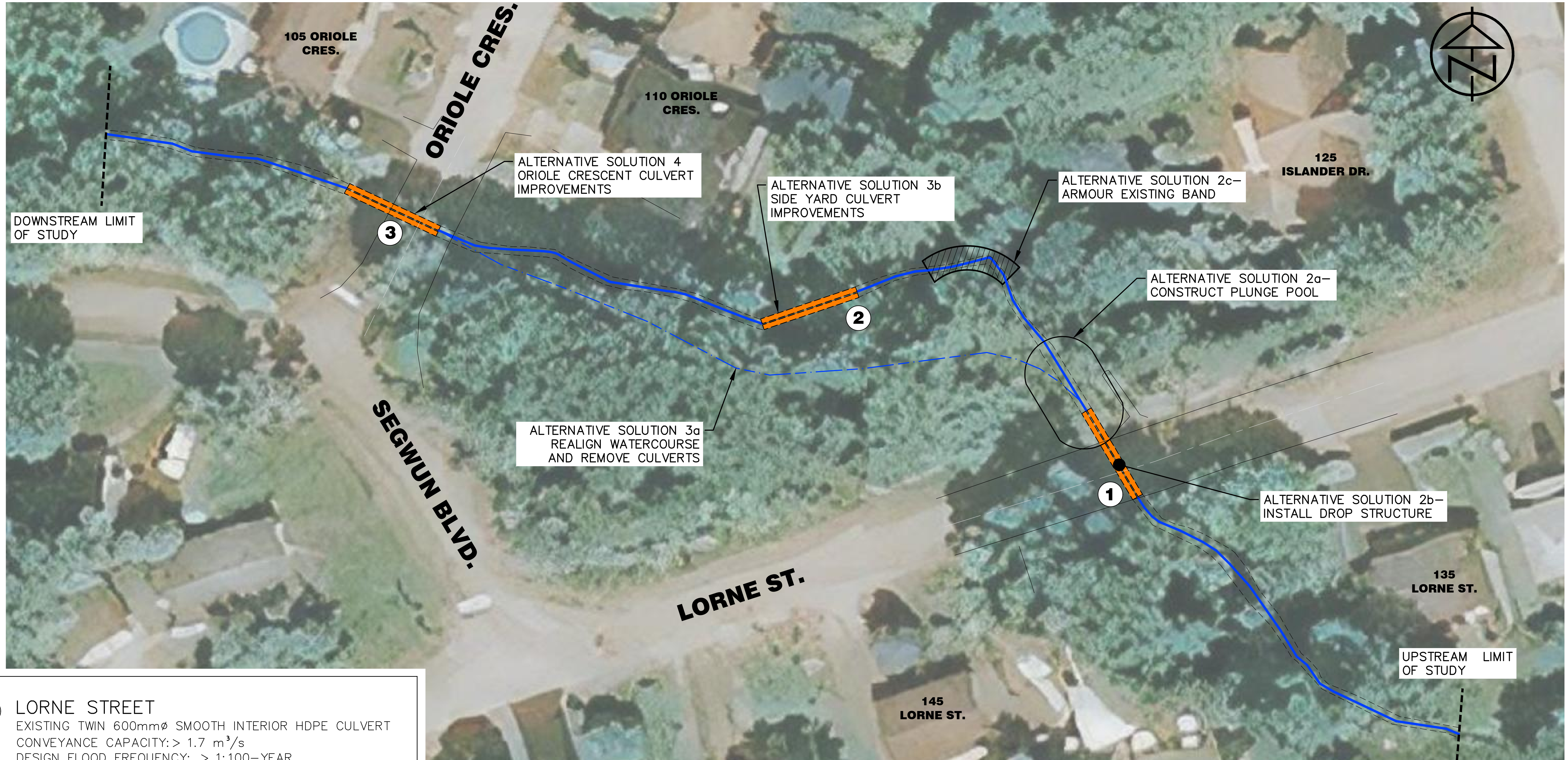
TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT
REDWING DRIVE STUDY AREA

Figure. 4

SCALE: 1:500 | DRAWN: KKS | DATE: SEPT/21 | JOB NO. 220536

Drawing Name: 220536 – Study Area.dwg, Plotted: Oct 05, 2021



1 **LORNE STREET**
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: > 1.7 m^3/s
DESIGN FLOOD FREQUENCY: > 1:100–YEAR
NO OVERTOPPING DURING REGULATORY EVENT

2 **110 ORIOLE CRESCENT**
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.5 m^3/s
DESIGN FLOOD FREQUENCY: < 1:2–YEAR
PROPOSED CAPACITY: 1:10–YEAR MINIMUM (ALT 3b)

3 **ORIOLE CRESCENT**
EXISTING TWIN 600mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 1.9 m^3/s
DESIGN FLOOD FREQUENCY: < 1:10–YEAR
DEPTH OF OVERTOPPING (REGULATORY EVENT) ≈ 0.35 m
PROPOSED CAPACITY: 1:10–YEAR MINIMUM (ALT 4)

LEGEND
- EXISTING WATERCOURSE
- EXISTING CULVERT
- EXISTING CHANNEL EROSION
- EXISTING RIP–RAP EROSION PROTECTION

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TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT
ORIOLE CRESCENT ALTERNATIVE SOLUTIONS PLAN

FIGURE. **5**

SCALE: 1:500	DRAWN: KKS	DATE: SEPT/21	JOB NO. 220536

Drawing Name: 220536 – Alternative solutions.dwg, Plotted: Oct 05, 2021

1 PEARL DRIVE
EXISTING 400 mmø CSP CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m^3/s
DESIGN FLOOD FREQUENCY: ≈ 1:5–YEAR

2 REAR YARD CULVERT
EXISTING 450 mmø HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m^3/s
DESIGN FLOOD FREQUENCY: ≈ 1:5–YEAR

3 McPHERSON STEET
EXISTING 400 mmø CSP CULVERT
CONVEYANCE CAPACITY: ≈ 0.2 m^3/s
DESIGN FLOOD FREQUENCY: < 1:2–YEAR

4 MUSKOKA DISTRICT ROAD 169
EXISTING 600 mmø SMOOTH INTERIOR HDPE CULVERT
CONVEYANCE CAPACITY: ≈ 0.7 m^3/s
DESIGN FLOOD FREQUENCY: < 1:2–YEAR

LEGEND

EXISTING OVERLAND FLOW DIRECTION
EXISTING CULVERT
EXISTING SWALE/DIRECTION
STORM SEWER

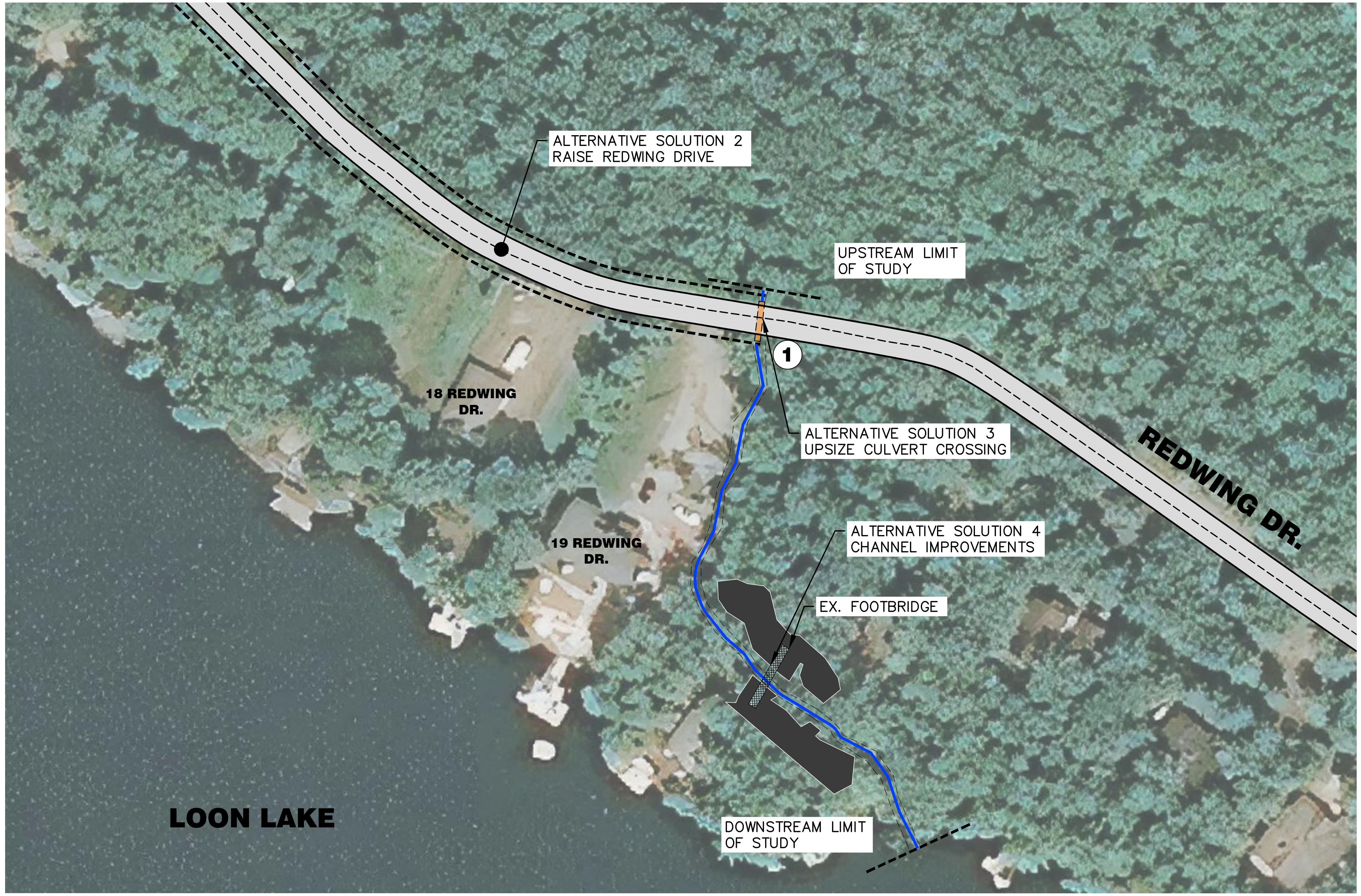
TATHAM ENGINEERING

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT
MUSQUASH ROAD ALTERNATIVE SOLUTIONS PLAN

FIGURE. 6

SCALE: 1:1000 | DRAWN: KKS | DATE: SEPT/21 | JOB NO. 220536

Drawing Name: 220536 – Alternative solutions.dwg, Plotted: Oct 05, 2021



LEGEND

EXISTING WATERCOURSE

EXISTING ROADSIDE DITCH

EXISTING CULVERT

BEDROCK OUTCROPPING

1 REDWING DRIVE

EXISTING 600 mmø SMOOTH INTERIOR HDPE CULVERT

CONVEYANCE CAPACITY: 0.15 m^3/s

PROPOSE CAPACITY: 1:10–YEAR (MINIMUM) (ALT 3)

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TOWN OF GRAVENHURST MASTER STORM SEWER REPORT REDWING DRIVE ALTERNATIVE SOLUTIONS PLAN			FIGURE. 7
SCALE: 1:500	DRAWN: KKS	DATE: SEPT/21	JOB NO. 220536

Drawing Name: 220536 – Alternative solutions.dwg, Plotted: Sep 13, 2021

Appendix A: GIS Shapefile Dataset / Digital Model Files

Appendix B:
Minor Drainage Systems
Hydrologic/Hydraulic Analysis

PCSWMM Report

5-Year Chicago Storm (2010 MTO)

Model Gravenhurst Storm Sewer - Existing.inp

Tatham Engineering

May 25, 2021

Table of Contents

Summary 1: Subcatchment statistics

Name	Gravenhurst Storm Sewer Master Plan - Existing Conditions
Max. width (m)	632.652
Min. width (m)	5.025
Max. area (ha)	29.469072
Min. area (ha)	0.006706
Total area (ha)	341.1173
Max. length of overland flow (m)	1102.3328
Min. length of overland flow (m)	8.3901
Max. slope (%)	17.802
Min. slope (%)	0.01
Max. imperviousness (%)	100
Min. imperviousness (%)	0
Max. imp. roughness	0.013
Min. imp. roughness	0.013
Max. perv. roughness	0.25
Min. perv. roughness	0.25
Max. imp. depression storage (mm)	2
Min. imp. depression storage (mm)	2
Max. perv. depression storage (mm)	5
Min. perv. depression storage (mm)	5

Summary 2: Runoff quantity continuity

Name	Gravenhurst Storm Sewer Master Plan - Existing Conditions
Initial LID storage (mm)	n/a
Initial snow cover (mm)	n/a
Total precipitation (mm)	44.090
Outfall runon (mm)	0.559
Evaporation loss (mm)	0.000
Infiltration loss (mm)	31.392
Surface runoff (mm)	12.879

Summary 2: Runoff quantity continuity (continued...)

Name	Gravenhurst Storm Sewer Master Plan - Existing Conditions
LID drainage (mm)	n/a
Snow removed (mm)	n/a
Final snow cover (mm)	n/a
Final storage (mm)	0.542
Continuity error (%)	-0.368

Summary 3: Flow routing continuity

Name	Gravenhurst Storm Sewer Master Plan - Existing Conditions
Dry weather inflow (ML)	0.000
Wet weather inflow (ML)	43.934
Groundwater inflow (ML)	0.000
RDII inflow (ML)	0.000
External inflow (ML)	0.371
External outflow (ML)	43.825
Flooding loss (ML)	0.000
Evaporation loss (ML)	0.000
Exfiltration loss (ML)	0.000
Initial stored volume (ML)	0.341
Final stored volume (ML)	0.896
Continuity error (%)	-0.170

Summary 4: Results statistics

Name	Gravenhurst Storm Sewer Master Plan - Existing Conditions
Max. subcatchment total runoff (ML)	1.3
Max. subcatchment peak runoff (m^3/s)	0.72
Max. subcatchment runoff coefficient	0.975
Max. subcatchment total precip (mm)	44.09
Min. subcatchment total precip (mm)	44.09
Max. node depth (m)	2.97
Num. nodes surcharged	1
Max. node surcharge duration (hours)	0.81
Max. node height above crown (m)	0.256
Min. node depth below rim (m)	0
Num. nodes flooded	0
Max. node flooding duration (hours)	0
Max. node flood volume (ML)	0
Max. node ponded volume or depth (ha-mm/1000 m^3/m)	0
Max. storage volume (1000 m^3)	n/a
Max. storage percent full (%)	n/a
Max. outfall flow frequency (%)	99.02
Max. outfall peak flow (m^3/s)	2.579
Max. outfall total volume (ML)	10.555
Total outfall volume (ML)	44.196
Max. link peak flow (m^3/s)	2.579
Max. link peak velocity (m/s)	7.48
Min. link peak velocity (m/s)	0
Num. conduits surcharged	294
Max. conduit surcharge duration (hours)	24
Max. conduit capacity limited duration (hours)	2.64

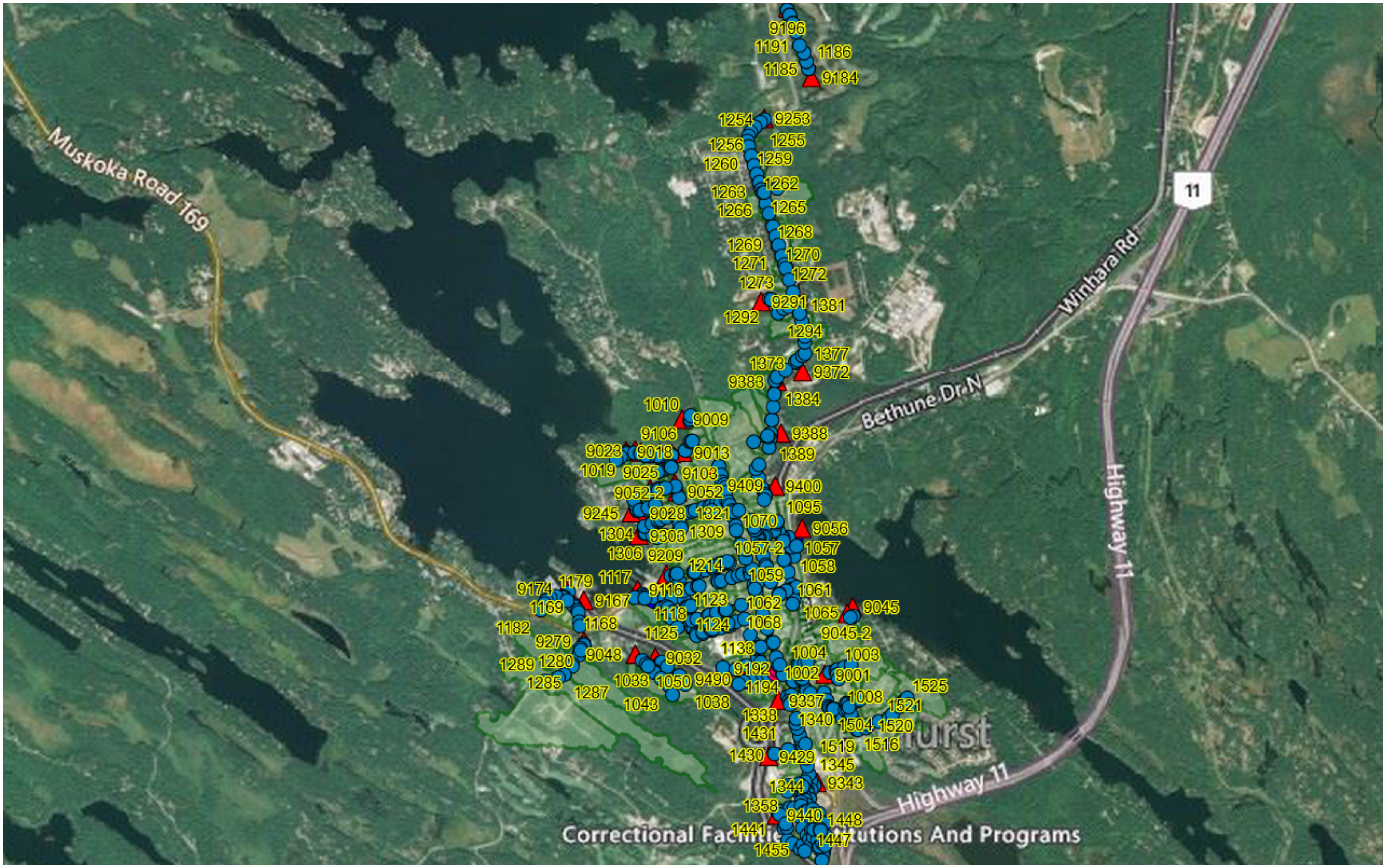

Figure 1: Extent 1

Table 1: Junctions

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1002	CB	255.93	256.61	256.97	0.383	1.31	8.91	4.073
1003	CB	256.045	256.645	256.97	0.525	1.27	8.749	3.93
1004	CB	256.259	256.839	256.99	0.428	0.774	6.05	2.41
1005	CB	257.016	257.526	257.67	0.367	0.654	5.045	2.038
1006	CB	257.356	257.836	258.01	0.382	0.631	4.955	1.982
1007	CB	256.073	256.573	256.97	0.203	0.444	2.441	1.396
1008	CULVERT	256.202	256.602	256.97	0.221	0.369	2.249	1.237
1010	CB	236.631	238.321	236.96	0.201	0.288	5.431	0.941
1011	CB	236.879	238.079	236.99	0.04	0.052	0.481	0.149
1012	MH	237.104	238.334	237.26	0.022	0.028	0.242	0.082
1014	CB	232.593	234.423	233.28	0.152	0.222	1.819	0.646
1015	CB	234.279	236.319	234.48	0.112	0.161	1.36	0.453
1016	CB	235.342	236.472	235.52	0.108	0.156	1.342	0.441
1017	CB	235.536	236.656	236.04	0.06	0.086	0.779	0.249
1019	CB	228.842	230.042	229.1	0.099	0.132	3.109	0.362
1020	CB	229.212	230.062	229.37	0.091	0.121	3.079	0.336
1021	CB	232.373	233.913	232.5	0.055	0.076	2.636	0.207
1022	CB	233.717	235.817	233.79	0.025	0.035	2.404	0.096
1024	CB	228.231	229.561	228.38	0.041	0.051	0.299	0.143
1026	CB	228.33	229.485	228.48	0.047	0.067	1.076	0.226
1027	CB	228.424	229.394	228.65	0.04	0.055	1.043	0.198
1029	CB	241.999	242.529	242.34	0.106	0.158	1.105	0.487
1030	CB	244.648	245.548	244.84	0.079	0.12	0.929	0.381
1031	CB	245.048	245.828	245.21	0.079	0.12	0.929	0.381
1033	CB	228.166	230.166	228.69	0.424	0.772	6.483	2.242
1034	CB	228.632	230.182	228.88	0.404	0.739	6.347	2.165
1035	CB	228.833	230.133	229.54	0.239	0.425	3.019	1.252
1036	CB	229.421	230.621	230.5	0.229	0.389	2.85	1.159
1037	CB	230.443	231.643	231.15	0.168	0.244	2.062	0.733
1038	CB	232.126	233.376	232.39	0.087	0.126	1.453	0.392
1039	CB	230.293	232.243	232.11	0.138	0.24	2.856	0.682
1040	MH	230.76	232.544	232.26	0.132	0.226	2.794	0.647
1041	CB	230.974	232.674	232.58	0.154	0.226	2.794	0.647
1042	CB	232.606	233.906	232.82	0.083	0.119	1.08	0.304
1043	CB	234.05	235.95	234.16	0.034	0.045	0.706	0.106
1044	CB	238.722	240.122	238.74	0.001	0.001	0.176	0
1046	OUTFALL	252.811	254.611	253.07	0.254	0.698	6.146	2.5

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1047	CB	253.187	254.327	254.37	0.447	0.741	5.75	2.358
1049	CB	229.78	230.337	230.04	0.053	0.072	0.953	0.181
1050	CB	230.415	230.965	230.57	0.039	0.052	0.667	0.135
1051	Ditch_Inlet	230.894	231.194	231.01	0.029	0.038	0.437	0.105
1053	CB	247.91	248.49	248.61	0.147	0.227	1.644	0.707
1055	CB	246.04	246.47	246.48	0.088	0.231	2.334	0.969
1057	HEADWALL	248.14	249.04	248.3	0.808	1.9	8.414	4.786
1057-2	HEADWALL	247.82	248.72	247.94	0.22	1.82	10.217	5.453
1058	MH	249.16	251.19	249.39	0.807	1.9	8.414	4.786
1059	MH	251.294	252.614	251.67	0.644	1.63	6.621	4.015
1060	MH	252.538	254.878	254.87	0.582	1.46	5.346	3.633
1061	MH	253.716	256.316	256.37	0.443	1.1	4.353	2.781
1062	CBMH	254.63	256.8	256.42	0.261	0.579	3.073	1.565
1063	MH	254.993	256.743	256.44	0.281	0.589	3.073	1.565
1064	MH	255.101	256.781	256.44	0.136	0.2	0.881	0.51
1065	CB	255.582	256.302	256.45	0.12	0.195	0.881	0.51
1066	CB	255.759	256.359	256.45	0.118	0.165	0.823	0.455
1067	CB	255.77	256.35	256.45	0.083	0.125	0.706	0.354
1068	CB	256.75	257.64	256.86	0.056	0.084	0.378	0.223
1069	MH	247.6	250.5	248.28	0.22	1.82	10.217	5.453
1070	MH	247.76	250.79	248.8	0.22	1.82	10.217	5.453
1071	STORMCEPTOR	248.05	249.5	249.1	0.22	1.83	10.217	5.453
1072	MH	247.01	249.5	249.49	0.371	1.89	10.217	5.453
1073	CBMH	247.173	249.103	249.5	0.555	1.64	8.862	4.753
1074	CBMH	247.024	249.124	249.5	0.6	1.47	7.173	4.221
1075	CBMH	247.262	249.452	249.5	0.53	1.37	6.867	3.93
1076	CBMH	247.543	249.483	249.54	0.483	1.15	5.668	3.127
1077	CBMH	247.91	249.7	249.72	0.473	1.11	5.349	3.006
1078	CBMH	249.16	251.87	250.4	0.421	1.02	3.506	2.582
1079	CBMH	253.198	255.478	253.51	0.421	1.02	3.506	2.582
1080	MH	254.346	255.686	255.14	0.336	0.85	2.764	2.151
1081	CB	254.416	256.056	256.04	0.361	0.844	2.708	2.101
1082	CB	254.422	256.092	256.16	0.425	0.801	2.577	2.011
1083	CB	255.13	256.67	256.73	0.433	0.727	2.293	1.838
1084	CB	255.567	257.247	257.3	0.348	0.58	1.807	1.436
1085	CB	256.698	257.278	257.38	0.344	0.539	1.662	1.347
1086	CB	257.461	257.861	257.93	0.276	0.429	1.142	1.035

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1087	CB	257.856	258.536	258.6	0.22	0.345	0.862	0.813
1088	CB	258.205	258.745	258.81	0.201	0.316	0.734	0.734
1089	CB	253.786	254.906	254.97	0.178	0.281	0.687	0.653
1090	CBMH	255.075	256.125	256.46	0.117	0.167	1.21	0.436
1091	MH	255.35	257.38	256.48	0.087	0.13	0.636	0.373
1092	MH	256.37	259.33	256.52	0.03	0.047	0.272	0.144
1093	MH	256.68	259.48	256.81	0.03	0.047	0.272	0.144
1094	HEADWALL	248.2	248.65	249.49	0.265	0.208	0.933	0.392
1095	CBMH	247.376	249.426	249.5	0.126	0.164	1.563	0.406
1096	HEADWALL	248.252	248.95	249.5	0.159	0.118	1.563	0.406
1097	CBMH	253.39	255.15	254.16	0.099	0.166	0.682	0.414
1098	CBMH	253.41	255.13	254.29	0.08	0.134	0.546	0.338
1099	CBMH	253.68	255.16	254.42	0.07	0.112	0.485	0.286
1100	CB	253.8	255.16	254.5	0.043	0.066	0.305	0.167
1101	Ditch_Inlet	255.243	255.543	256.04	0.053	0.042	0.113	0.075
1102	CB	254.821	255.961	256.16	0.064	0.031	0.086	0.054
1104	CB	230.429	231.859	231	0.183	0.276	3.07	0.816
1105	CB	230.717	231.867	231.83	0.175	0.263	3.021	0.786
1107	CB	229.359	230.689	230.17	0.187	0.341	6.092	1.915
1108	CB	229.571	230.981	230.5	0.192	0.341	6.092	1.915
1109	CB	233.049	235.279	233.2	0.158	0.273	5.469	1.684
1109-2	CB	230.344	232.144	230.72	0.158	0.273	5.469	1.684
1110	CB	235	235.86	235.15	0.1	0.152	1.545	0.499
1111	CB	235.272	235.992	236.12	0.06	0.085	0.995	0.279
1112	CB	236.058	236.428	236.5	0.034	0.046	0.717	0.165
1113	CB	234.267	235.717	234.35	0.036	0.09	3.675	1.098
1114	CB	234.587	235.787	234.68	0.034	0.088	3.668	1.094
1115	CB	234.889	236.039	235.01	0.029	0.08	3.64	1.074
1117	JUNCTION	224.902	226.44	225.82	2.054	3.17	20.594	8.854
1118	MH_BOX	224.945	227.68	225.88	1.422	3.05	20.422	8.741
1119	MH	225.055	227.348	225.97	1.228	2.54	14.044	7.315
1120	MH	225.325	227.894	226.17	1.221	2.45	13.998	7.28
1121	MH	228.59	230.868	229	1.177	2.32	13.69	7.096
1122	MH	230.89	233.275	231.3	1.139	2.27	13.41	6.945
1123	MH	235.67	238.6	236.03	1.069	2.15	12.794	6.63
1124	MH	238.405	241.04	238.84	1.035	2.1	12.46	6.476
1125	MH	240.735	242.973	241.09	0.919	1.93	11.435	5.948

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1126	MH	241.76	244.29	242.17	0.903	1.9	11.31	5.885
1127	CB	242.38	244.146	242.65	0.365	0.776	5.165	2.553
1128	CB	243.436	245.211	243.69	0.34	0.741	4.999	2.457
1129	CB	244.51	245.514	244.78	0.334	0.732	4.978	2.437
1130	CB	245.651	246.551	246.41	0.307	0.671	4.577	2.252
1131	CB	245.968	246.708	246.6	0.15	0.229	1.579	0.636
1132	CB	246.672	247.412	246.87	0.064	0.099	0.42	0.231
1133	CB	247.64	248.42	247.82	0.055	0.085	0.368	0.198
1134	CB	248.875	249.815	249.04	0.044	0.067	0.313	0.156
1135	CB	250.36	250.9	250.48	0.033	0.051	0.166	0.119
1136	CB	250.626	251.226	250.81	0.029	0.044	0.145	0.103
1137	CB	251.094	251.151	251.12	0.002	0.004	0.011	0.008
1138	CB	225.74	227.378	225.9	0.032	0.049	0.172	0.113
1139	CB	225.935	227.611	226.04	0.019	0.028	0.106	0.066
1140	CULVERT INLET	225.647	226.929	225.85	0.289	0.443	6.378	1.427
1141	CHANNEL	229.757	233.076	229.83	0.234	0.333	3.8	1.143
1142	CULVERT	236.941	237.59	237.05	0.091	0.124	1.64	0.446
1143	CULVERT	239.352	242.29	239.5	0.053	0.07	0.9	0.261
1144	CB	239.12	241.221	239.21	0.059	0.083	0.395	0.226
1145	CB	240.78	242.611	240.86	0.042	0.06	0.304	0.17
1146	MH	242.855	244.533	243.86	0.527	1.09	6.014	3.246
1147	MH	243.87	246.01	245.25	0.525	1.08	5.915	3.213
1148	MH	246.135	248.464	247.78	0.516	1.03	5.566	3.08
1149	MH	246.475	248.6	248.45	0.495	0.965	4.955	2.891
1150	MH	248.575	250.36	249.82	0.304	0.596	2.429	1.703
1151	MH	250.06	252.297	251.37	0.297	0.564	2.268	1.612
1152	MH	250.285	252.44	251.46	0.226	0.358	1.276	0.957
1153	MH	252.354	254.73	252.94	0.234	0.36	1.276	0.957
1154	CB	246.474	247.274	247.36	0.155	0.392	2.806	1.51
1155	CB	247.526	248.666	248.6	0.163	0.365	2.608	1.419
1156	CB	248.077	248.667	248.8	0.167	0.306	2.284	1.252
1157	CB	250.627	251.247	251.28	0.42	1.45	2.025	1.156
1158	CB	250.795	251.285	251.44	0.173	0.318	1.784	1.014
1159	CB	251.541	252.041	252.16	0.154	0.269	1.376	0.854
1160	CB	252.647	253.497	253.54	0.092	0.156	0.902	0.532
1161	CULVERT	229.837	230.8	230.07	0.112	0.163	1.552	0.545
1162	CB	230.971	232.609	231.36	0.107	0.16	1.446	0.519

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1163	CB	231.496	232.609	231.64	0.103	0.154	1.385	0.507
1164	CB	234.893	236.183	235.01	0.08	0.121	1.216	0.426
1165	CB	247.633	248.473	248.6	0.036	0.054	0.316	0.161
1166	CB	250.745	251.045	251.37	2.567	1.29	0.241	0.142
1168	CB	224.785	226.885	225.79	0.92	0.576	1.849	1.278
1169	CB	224.949	226.909	225.77	0.604	0.545	1.849	1.278
1170	CB	225.081	227.121	225.82	0.553	0.277	0.909	0.554
1171	MH	225.167	227.217	225.77	0.52	0.113	0.207	0.112
1172	CB	225.281	228.081	225.84	0.202	0.076	0.207	0.112
1173	CB	225.801	228.701	225.9	0.019	0.03	0.128	0.069
1175	MH	224.513	226.533	225.78	1.459	0.749	2.543	1.526
1176	DCB	224.853	226.353	225.74	0.797	0.723	2.543	1.526
1177	DCB	224.939	226.339	225.76	0.845	0.714	2.543	1.526
1178	CB	225.017	226.617	225.9	0.312	0.552	2.038	1.22
1179	CB	225.243	226.833	225.91	0.223	0.162	0.455	0.303
1180	CB	225.333	227.303	225.93	0.119	0.093	0.275	0.178
1181	CB	225.601	227.961	225.94	0.043	0.072	0.223	0.155
1182	CB	225.813	229.003	225.95	0.024	0.046	0.149	0.108
1183	CB	224.958	226.558	225.76	0.214	0.057	0.159	0.115
1185	CB	235.183	240.303	235.32	0.091	0.135	0.913	0.346
1186	CB	235.182	240.302	235.46	0.091	0.135	0.913	0.346
1187	CB	239.362	241.442	239.5	0.076	0.113	0.721	0.29
1188	CB	239.399	241.509	239.56	0.076	0.113	0.721	0.29
1189	CB	243.499	245.579	243.64	0.048	0.077	0.443	0.173
1190	CB	243.522	245.622	243.66	0.048	0.077	0.443	0.173
1191	CB	247.622	249.702	247.69	0.026	0.04	0.238	0.095
1193	CBMH	239.699	242.249	240.18	0.152	0.226	1.822	0.637
1194	CBMH	243.378	245.228	243.54	0.104	0.154	1.094	0.441
1195	CBMH	246.637	248.207	246.74	0.053	0.077	0.289	0.2
1197	CBMH	238.297	242.517	238.43	0.074	0.109	0.779	0.259
1198	CBMH	238.362	242.522	238.58	0.074	0.109	0.779	0.259
1199	CB	241.122	243.302	241.22	0.061	0.09	0.604	0.217
1200	CB	241.181	243.341	241.31	0.061	0.09	0.604	0.217
1201	CB	245.165	247.325	245.25	0.039	0.057	0.403	0.137
1202	CB	245.368	247.398	245.43	0.039	0.057	0.403	0.137
1203	CB	248.823	250.973	248.87	0.012	0.017	0.15	0.04
1205	CB	245.362	246.282	245.82	0.059	0.107	0.625	0.306

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1206	CB	245.656	246.136	246.14	0.042	0.078	0.539	0.24
1207	CB	245.714	246.154	246.17	0.041	0.065	0.476	0.208
1208	Ditch_Inlet	246.548	246.548	246.61	0.012	0.018	0.168	0.061
1210	HEADWALL	228.984	229.884	229.26	0.984	2.66	16.107	7.884
1211	MH	230.033	233.413	230.5	0.944	2.6	15.417	7.677
1212	DCBMH	230.113	233.263	230.82	0.717	2.23	12.547	6.501
1213	DCBMH	230.749	233.139	231.04	0.698	2.21	12.265	6.419
1214	DCBMH	231.483	233.723	231.88	0.676	2.17	11.893	6.315
1215	DCBMH	234.316	236.466	234.61	0.631	2.11	11.145	6.09
1216	DCBMH	235.692	237.742	235.94	0.626	2.1	11.115	6.075
1217	CBMH	239.489	241.609	239.77	0.582	2.01	10.276	5.765
1218	DCBMH	244.18	246.32	244.4	0.57	1.98	10.153	5.695
1219	DCB	245.711	246.971	245.96	0.349	1.42	6.58	3.957
1220	CB	247.399	248.429	248.48	0.294	1.18	4.679	3.177
1221	CB	248.858	249.568	249.68	0.291	1.17	4.627	3.143
1222	CB	250.91	251.59	251.71	0.29	1.16	4.571	3.117
1223	CB	251.877	252.637	252.76	0.316	1.14	4.461	3.059
1224	CB	252.363	253.163	253.27	0.195	0.334	0.9	0.787
1225	CB	252.875	253.715	253.82	0.192	0.319	0.836	0.746
1226	CB	253.857	254.447	254.57	0.193	0.301	0.735	0.699
1227	CB	254.228	254.898	254.94	0.193	0.301	0.735	0.699
1228	DICB	230.529	232.249	230.8	0.235	0.365	2.869	1.176
1229	CB	247.247	248.427	248.47	0.295	0.518	3.428	1.634
1230	CB	247.581	248.561	248.57	0.134	0.204	0.937	0.563
1231	CB	251.717	252.467	251.92	0.105	0.158	0.707	0.439
1232	CB	253.149	253.799	253.37	0.068	0.096	0.329	0.254
1233	CB	254.013	254.603	254.18	0.044	0.065	0.222	0.169
1234	MH	252.43	253.56	253.61	0.182	0.681	2.669	1.871
1235	CB	252.559	253.339	253.61	0.213	0.68	2.669	1.871
1236	CB	252.648	253.318	253.62	0.36	0.689	2.616	1.832
1237	CB	253.911	254.981	255.11	0.342	0.522	1.653	1.36
1238	CB	255.179	256.169	256.23	0.306	0.454	1.358	1.174
1239	CB	256.077	257.467	256.7	0.255	0.374	1.17	0.986
1240	MH	256.89	259.096	257.3	0.133	0.198	0.599	0.5
1241	MH	257.16	259.21	257.54	0.103	0.156	0.452	0.395
1242	MH	258.07	259.65	258.33	0.029	0.044	0.105	0.103
1243	CBMH	258.07	259.92	258.48	0.011	0.016	0.041	0.039

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1244	CBMH	257.52	259.52	257.96	0.03	0.043	0.147	0.105
1246	CB	238.902	240.142	239.51	0.19	0.29	2.054	0.886
1247	CB	238.888	240.228	239.53	0.074	0.12	0.991	0.374
1248	CB	239.114	240.164	239.54	0.052	0.083	0.73	0.26
1249	CB	239.108	240.228	239.54	0.039	0.062	0.392	0.192
1250	CB	240.347	240.927	240.5	0.104	0.158	0.997	0.469
1251	CB	242.641	243.371	242.85	0.083	0.125	0.827	0.379
1252	CB	245.387	245.827	245.55	0.068	0.103	0.718	0.323
1254	MH	238.77	240.45	239.57	0.983	1.64	18.3	5.048
1255	MH	238.99	241.25	239.78	0.981	1.63	18.27	5.025
1256	MH	239.28	242.45	239.92	0.976	1.62	18.187	4.993
1257	MH	239.66	243	240.22	0.966	1.6	18	4.945
1258	MH	239.82	243.03	240.47	0.954	1.58	17.767	4.889
1259	MH	240.1	242.8	240.68	0.947	1.56	17.71	4.86
1260	MH	240.33	243.05	240.94	0.926	1.53	17.185	4.771
1261	MH	243.72	246.25	244.03	0.909	1.5	16.985	4.699
1262	MH	247.63	250.09	247.92	0.893	1.47	16.741	4.633
1263	MH	250.335	252.88	250.66	0.874	1.43	16.419	4.543
1264	MH	252.16	254.9	252.52	0.846	1.39	15.821	4.411
1265	MH	253.22	256.05	253.62	0.824	1.35	15.616	4.321
1266	MH	253.66	256.6	254.27	0.816	1.34	15.571	4.293
1267	MH	255.23	258.5	255.55	0.463	0.751	6.53	2.322
1268	MH	256.02	260.3	256.35	0.426	0.686	5.942	2.128
1269	MH	256.55	260.8	256.93	0.4	0.638	5.578	1.99
1270	MH	256.931	260.15	257.29	0.364	0.576	5.176	1.809
1271	MH	257.34	259.95	257.67	0.328	0.515	4.597	1.618
1272	MH	257.74	260.6	258.03	0.246	0.386	3.187	1.153
1273	MH	258.25	261.45	258.57	0.212	0.328	2.657	0.951
1274	MH	259.57	261.75	259.76	0.156	0.243	1.938	0.699
1275	MH	260.81	262.85	261.02	0.127	0.196	1.547	0.567
1276	MH	262.03	264.01	262.13	0.033	0.05	0.46	0.143
1277	CB	253.728	256.57	254.6	0.247	0.4	7.474	1.391
1278	MH	254.22	255.87	254.86	0.237	0.369	7.257	1.306
1280	CULVERT	228.863	230	229.21	0.805	1.36	61.254	4.19
1281	CULVERT	229.74	230.34	229.9	0.799	1.35	61.188	4.165
1282	CULVERT	229.917	230.517	230.47	0.859	1.35	61.188	4.165
1283	CULVERT	230.946	231.546	231.3	0.824	1.3	60.411	4.031

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1284	CULVERT	231.028	231.628	231.72	0.825	1.31	60.411	4.031
1285	DITCH	232.47	232.77	232.84	0.809	1.27	53.224	3.96
1286	CB	234.742	235.458	235.52	0.786	1.24	47.658	3.848
1287	CB	239.052	239.558	239.64	0.771	1.2	47.439	3.774
1288	CB	239.318	240.064	240.17	0.758	1.18	47.207	3.714
1289	CB	239.83	240.536	240.66	0.723	1.11	29.469	3.536
1290	CB	230.239	231.499	230.48	0.024	0.024	0.343	0.069
1292	MH	261.22	264.755	261.56	0.168	0.272	2.125	0.837
1293	MH	261.4	264.961	261.7	0.165	0.264	2.081	0.819
1294	MH	261.95	264.336	262.2	0.125	0.199	1.705	0.631
1295	MH	262.32	264.509	262.59	0.09	0.142	1.265	0.455
1296	MH	262.53	264.358	262.66	0.033	0.051	0.679	0.197
1298	DCB	227.021	228.751	227.44	0.209	0.34	3.021	1.213
1299	DCB	227.179	228.779	227.53	0.184	0.303	2.869	1.127
1300	CB	229.188	229.948	229.25	0.007	0.01	0.041	0.023
1301	CB	228.228	228.948	228.29	0.016	0.021	0.131	0.058
1302	CB	228.446	229.196	228.5	0.01	0.012	0.086	0.036
1304	CBMH	237.11	238.21	237.61	0.989	2.23	15.225	6.894
1305	CB	237.12	238.22	238.29	0.987	2.23	15.225	6.894
1305-1	CULVERT INLET	237.257	238.29	238.34	0.583	1.12	8.278	3.58
1306	DITCH_OUTFALL	242.605	243.055	242.8	0.584	1.11	8.278	3.58
1307	CB	244	245.55	245.63	0.583	1.11	8.056	3.538
1308	CB	246.87	247.34	247.49	0.587	1.03	7.142	3.346
1309	CB	248.626	249.106	249.25	0.368	0.636	4.406	2.115
1310	MH	238.17	240.07	240.48	0.409	1.04	6.238	3.066
1311	CBMH	241.96	243.71	243.73	0.417	1.04	6.238	3.066
1312	CBMH	244.22	245.6	245.66	0.433	1	5.984	2.954
1313	CB	244.23	245.61	245.69	0.362	0.865	4.897	2.487
1314	CB	244.807	246.077	246.16	0.354	0.835	4.795	2.413
1315	CB	245.432	246.802	246.84	0.37	0.818	4.729	2.375
1316	CB	246.831	248.271	247.78	0.376	0.796	4.616	2.314
1317	CB	247.096	248.346	248.06	0.335	0.721	4.293	2.1
1318	CB	247.271	248.611	248.38	0.335	0.717	4.282	2.09
1319	CB	247.372	248.532	248.46	0.236	0.491	3.086	1.45
1320	CB	247.781	248.981	248.67	0.238	0.48	3.039	1.423
1321	CB	248.035	249.385	248.87	0.238	0.468	2.985	1.392
1322	CB	248.842	250.022	249.18	0.231	0.454	2.868	1.349

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1323	CB	249.95	250.53	250.65	0.215	0.415	2.686	1.254
1324	CB	251.66	252.26	252.34	0.195	0.341	2.183	1.023
1325	CB	251.674	252.594	252.48	0.166	0.288	1.707	0.841
1326	CB	251.808	252.678	252.52	0.139	0.24	1.513	0.725
1327	CB	252.068	253.048	252.56	0.098	0.16	1.066	0.475
1328	CB	252	253.3	252.57	0.076	0.114	0.904	0.355
1329	CB	252.434	254.134	252.57	0.049	0.073	0.5	0.23
1330	CB	247.47	248.61	247.82	0.083	0.073	0.315	0.208
1331	CB	247.625	248.595	247.84	0.056	0.074	0.315	0.208
1332	CB	247.325	248.395	248.4	0.117	0.224	1.188	0.636
1333	CB	247.569	248.509	248.41	0.125	0.21	1.143	0.6
1334	CB	247.981	248.751	248.42	0.086	0.147	0.694	0.393
1335	CB	248.196	249.366	248.43	0.062	0.11	0.447	0.277
1336	CB	252.092	252.692	252.49	0.019	0.029	0.127	0.072
1338	CBMH	251.77	253.5	252.67	0.286	0.436	1.445	1.095
1339	CBMH	251.938	253.34	252.77	0.17	0.251	0.774	0.65
1340	CBMH	252.471	254.24	253	0.09	0.132	0.383	0.323
1341	CB	252.864	254.55	253.13	0.087	0.123	0.35	0.302
1342	CBMH	253.198	254.95	253.4	0.08	0.114	0.318	0.28
1344	DICB	246.957	248.527	247.89	0.723	1.65	7.37	4.273
1345	MH	247.485	249.264	247.91	0.626	1.01	5.36	2.739
1346	MH	247.663	249.07	248.08	0.383	0.605	2.437	1.638
1347	MH	248.058	249.76	248.33	0.255	0.401	1.567	1.081
1348	MH	248.694	251.03	248.96	0.225	0.35	1.356	0.963
1349	STORMCEPTOR	247.81	249.991	247.93	0.083	0.618	1.638	1.488
1350	JUNCTION	248.541	251.802	248.67	0.083	0.618	1.638	1.488
1351	MH	248.6	251.949	251.57	0.097	0.619	1.638	1.488
1352	MH	248.92	251.906	251.58	0.107	0.512	1.341	1.191
1353	MH	249.4	251.95	251.6	0.137	0.299	0.613	0.564
1354	MH	249.89	251.076	251.49	0.086	0.106	0.07	0.07
1355	CB	250.05	251.636	251.49	0.024	0.03	0.07	0.07
1356	MH	247.604	248.754	248.03	0.197	0.312	2.404	0.847
1357	CB	247.781	248.981	248.3	0.192	0.296	2.285	0.81
1358	CB	248.817	250.427	249.03	0.08	0.114	1.445	0.315
1359	CB	248.89	250.37	249.06	0.023	0.035	0.349	0.101
1360	CBMH	249.22	251.569	251.58	0.072	0.128	0.297	0.297
1361	CB	250.11	251.54	251.58	0.046	0.064	0.148	0.148

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1362	CBMH	249.53	251.569	251.58	0.073	0.171	0.466	0.366
1363	CBMH	249.67	251.52	251.58	0.088	0.074	0.203	0.137
1364	CB	250.41	251.79	251.59	0.029	0.004	0.066	0
1365	MH	249.73	251.335	251.57	0.105	0.13	0.261	0.261
1366	CB	249.85	251.165	251.57	0.072	0.112	0.261	0.261
1367	CB	248.838	250.198	249.06	0.03	0.044	0.175	0.135
1369	CB	248.92	250.41	249.04	0.007	0.011	0.032	0.025
1370	CB	250.5	252.48	251.63	0.035	0.028	0.098	0.064
1371	CB	249.22	250.55	249.33	0.02	0.025	0.888	0.053
1373	CBMH	258.551	261	258.89	0.357	0.553	5.976	1.726
1374	MH	258.75	261.07	259.16	0.357	0.553	5.976	1.726
1375	MH	259.19	261.5	259.61	0.352	0.545	5.937	1.709
1376	MH	260.318	262.9	260.62	0.339	0.526	5.845	1.665
1377	MH	260.73	263.65	261.09	0.332	0.516	5.795	1.642
1378	MH	261.557	264.03	261.94	0.272	0.416	5.145	1.395
1379	MH	262.045	263.8	262.38	0.256	0.394	4.854	1.325
1380	MH	262.278	264	262.69	0.243	0.37	4.706	1.269
1381	MH	262.59	264.11	262.8	0.074	0.112	0.984	0.375
1382	MH	262.85	264.28	262.97	0.027	0.041	0.215	0.114
1384	CBMH	255.974	257.8	256.34	0.141	0.223	1.632	0.586
1385	CBMH	256.16	257.9	256.41	0.141	0.223	1.632	0.586
1386	MH	257.218	258.75	257.43	0.132	0.211	1.387	0.559
1387	MH	257.866	259.37	258.38	0.113	0.173	0.879	0.457
1389	MH	251.5	252.7	252.5	0.113	0.6	9.697	1.675
1390	MH	251.533	252.82	252.52	0.056	0.337	5.063	0.924
1391	MH	251.87	253.697	252.55	0.029	0.274	4.123	0.755
1392	MH	251.871	253.7	253.88	0.185	0.273	4.123	0.755
1393	MH	252.091	254.08	253.88	0.109	0.157	2.277	0.441
1394	MH	253.368	255.2	254.23	0.082	0.12	1.419	0.355
1395	MH	251.702	252.7	252.55	0.05	0.088	0.342	0.211
1396	MH	251.813	252.85	252.63	0.038	0.064	0.266	0.154
1397	CB	251.615	252.545	252.49	0.075	0.175	4.225	0.501
1398	Ditch_Inlet	251.913	252.313	252.45	0.096	0.096	0.483	0.242
1399	CB	251.703	252.583	252.49	0.004	0.002	3.093	0
1401	MH	250.762	252.41	251.99	0.383	0.672	3.416	1.882
1402	MH	250.886	252.33	252.02	0.144	0.259	1.436	0.691
1403	MH	251.342	252.59	252.34	0.114	0.194	0.977	0.503

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1404	MH	251.671	253.05	252.8	0.093	0.146	0.683	0.37
1405	MH	251.808	253.07	252.81	0.014	0.022	0.083	0.052
1406	CB	250.94	252.5	252.38	0.102	0.174	0.722	0.474
1407	CB	250.94	252.42	252.47	0.094	0.139	0.585	0.38
1408	CBMH	250.995	252.6	252.48	0.021	0.031	0.142	0.074
1410	MH	237.68	239.37	238.42	0.92	1.54	8.228	4.394
1411	MH	238.95	241.8	239.44	0.884	1.48	7.696	4.245
1412	MH	242.7	246.05	243.23	0.862	1.44	7.486	4.157
1413	MH	247.98	252	248.38	0.758	1.25	5.731	3.56
1414	MH	251.26	254.6	251.5	0.758	1.25	5.731	3.56
1415	MH	251.38	255	252.05	0.759	1.25	5.731	3.56
1416	CBMH	251.5	254.5	252.36	0.759	1.26	5.731	3.56
1417	MH	251.85	254.5	252.5	0.713	1.18	5.353	3.371
1418	MH	252.13	254.63	252.75	0.655	1.08	4.735	3.056
1419	MH	252.3	254.74	252.91	0.565	0.943	4.29	2.708
1420	MH	252.71	254.93	253.23	0.416	0.661	2.944	1.846
1421	CBMH	252.67	255.05	253.36	0.355	0.573	2.695	1.624
1422	CBMH	253.48	255.65	254.02	0.246	0.372	1.276	0.943
1423	MH	254.22	256.2	254.62	0.213	0.317	1.062	0.809
1424	MH	255.86	257.96	256.07	0.057	0.084	0.343	0.22
1425	CB	251.88	254.58	252.97	0.092	0.138	0.444	0.348
1426	MH	251.88	254.6	253.05	0.093	0.139	0.444	0.348
1427	MH	253	255	253.44	0.049	0.075	0.264	0.192
1428	CB	254.28	256.11	255.28	0.134	0.199	0.604	0.507
1430	CBMH	246.058	247.84	247.24	0.784	1.25	8.053	3.672
1431	CBMH	248.745	250.4	249.11	0.669	1.07	7.117	3.129
1432	CBMH	249.509	252.37	249.99	0.533	0.832	5.612	2.422
1433	MH	249.702	252.56	250.14	0.53	0.827	5.58	2.411
1434	MH	250.18	252.24	250.65	0.467	0.728	5.138	2.161
1435	MH	250.638	252.47	251.04	0.461	0.717	5.093	2.135
1436	MH	252.175	253.89	252.28	0.04	0.058	0.23	0.141
1437	MH	253.07	255.47	253.16	0.031	0.043	0.171	0.107
1438	MH	254.11	256.78	254.18	0.023	0.031	0.12	0.08
1439	CB	250.2	252.55	250.35	0.049	0.075	0.356	0.192
1441	MH	249.53	254.34	250.53	1.712	3.14	9.186	7.55
1442	MH	249.6	254.56	250.74	1.713	3.14	9.186	7.55
1443	MH	250.2	255.09	250.95	1.028	1.76	5.69	4.237

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1444	MH	250.35	255.59	251.09	0.946	1.6	5.27	3.838
1445	MH	250.59	253.19	251.11	0.353	0.569	2.749	1.395
1446	MH	250.88	254.51	251.25	0.335	0.538	2.635	1.321
1447	MH	251.22	255.54	251.56	0.303	0.487	2.086	1.203
1448	MH	251.82	253.96	252.04	0.171	0.271	1.029	0.666
1449	MH	252.05	253.91	252.27	0.072	0.112	0.459	0.261
1450	DCB	252.32	253.6	252.33	0	0	0.187	0
1451	MH	251.22	254.15	251.71	0.644	1.27	3.225	3.056
1452	MH	252.15	254.86	252.53	0.551	1.11	2.836	2.686
1453	MH	252.45	255.29	252.94	0.334	0.569	1.544	1.415
1454	MH	253.82	256.54	254.03	0.285	0.483	1.334	1.215
1455	MH	254.49	257.21	254.81	0.286	0.483	1.334	1.215
1456	CBMH	255.07	257.19	255.32	0.158	0.242	0.592	0.562
1457	CBMH	253.48	255.38	253.98	0.552	0.915	2.253	2.175
1458	CBMH	253.96	256.14	254.4	0.43	0.715	1.784	1.706
1459	CBMH	254.27	256.05	254.71	0.345	0.561	1.427	1.35
1460	MH	254.48	257.5	254.9	0.302	0.491	1.262	1.184
1461	MH	254.69	257.57	255.05	0.255	0.416	1.077	1.009
1462	MH	255.03	257.57	255.32	0.166	0.273	0.747	0.678
1463	MH	255.29	257.46	255.51	0.048	0.083	0.303	0.234
1464	CBMH	255.71	257.75	255.79	0.013	0.019	0.156	0.087
1465	CB	256.05	257.5	256.1	0.006	0.006	0.053	0.027
1466	MH	251.75	253.8	251.82	0.008	0.009	0.398	0.02
1467	MH	251.87	253.31	251.9	0.002	0.001	0.18	0
1468	MH	252.17	256.22	252.37	0.112	0.18	0.896	0.457
1469	MH	254.39	256.52	254.56	0.086	0.132	0.662	0.305
1470	MH	255.23	257.18	255.33	0.031	0.046	0.401	0.107
1471	MH	255.53	257.31	255.61	0.017	0.025	0.349	0.057
1472	CBMH	255.64	257.12	255.72	0.009	0.013	0.242	0.03
1473	DICB	255.86	257.47	255.88	0.001	0	0.122	0
1474	MH	252.01	253.92	252.49	0.076	0.12	0.425	0.315
1475	MH	252.25	254.38	252.56	0.024	0.036	0.22	0.12
1476	CB	252.56	253.97	252.6	0.006	0.007	0.106	0.041
1477	DCB	252.42	253.66	252.6	0.056	0.087	0.213	0.202
1478	MH	252.83	255.09	253.04	0.135	0.375	0.873	0.873
1479	CB	253.33	254.64	254.94	0.23	0.375	0.873	0.873
1480	CB	255.4	256.82	256.87	0.168	0.24	0.742	0.653

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1481	CB	255.87	257.28	255.96	0.031	0.047	0.114	0.108
1482	CB	255.9	257.34	256.03	0.044	0.068	0.159	0.159
1483	CBMH	255.47	257.3	255.72	0.091	0.142	0.332	0.332
1484	CB	255.87	257.31	256.01	0.035	0.054	0.126	0.126
1485	MH	252.68	254.72	252.79	0.027	0.049	0.234	0.152
1486	MH	254.74	256.08	254.95	0.039	0.06	0.198	0.139
1487	MH	254.83	255.92	254.95	0.008	0.013	0.032	0.031
1488	MH	255.94	257.38	256.07	0.03	0.047	0.109	0.109
1489	CB	254.76	256.07	254.96	0.017	0.027	0.096	0.062
1491	MH	244.999	247.849	247.14	2.581	10.6	68.521	32.486
1492	MH	246.6	249.3	249.02	2.497	10.2	66.444	31.635
1493	CBMH	247.6	249.65	249.71	2.091	8.96	61.18	28.167
1494	MH	249	251.06	250.52	2.006	8.75	59.565	27.521
1495	MH	249.8	252.03	251.14	2.022	8.75	59.565	27.521
1496	CBMH	251	253.05	251.51	1.136	6.38	50.315	21.288
1497	CB	251.52	252.62	253.09	2.009	6.28	49.043	20.73
1497-2	JUNCTION	251.1	252.959	251.61	0.9	6.02	49.043	20.73
1498	MH	251.7	252.79	253.09	1.465	6.22	48.873	20.615
1499	MH	252.77	254.021	253.57	0.746	4.74	40.8	16.514
1500	CULVERT	252.99	253.89	253.66	0.769	4.67	40.591	16.357
1501	CULVERT	253.17	255.02	253.67	0.838	4.67	40.591	16.357
1502	MH	254.444	256.494	255.07	0.757	4.22	37.115	14.862
1503	CULVERT	254.964	256.214	255.97	2.231	4.59	37.115	14.862
1504	CULVERT	255.35	256.3	256	1.537	4.57	37	14.818
1505	JUNCTION	255.386	256.206	256.21	0.708	4.16	36.751	14.724
1506	CULVERT	255.433	256.083	256.24	0.711	4.16	36.751	14.724
1507	DITCH	255.477	255.669	256.24	0.562	2.87	26.298	9.829
1508	CULVERT	255.474	256.8	256.24	0.283	1.4	26.298	9.829
1509	CB	255.525	256.795	256.45	0.561	2.87	26.298	9.829
1510	CB	255.564	256.934	256.64	0.548	2.75	25.709	9.511
1511	CB	255.767	256.747	256.93	0.515	1.98	19.946	7.026
1512	CB	255.728	257.048	257.08	0.524	1.97	19.539	6.924
1513	CB	255.883	257.473	257.37	0.518	1.96	19.307	6.875
1514	CB	256.079	257.369	257.45	0.538	1.96	19.307	6.875
1515	CB	256.168	257.528	257.49	0.479	1.82	18.753	6.508
1516	CB	256.249	257.529	257.51	0.5	1.8	18.671	6.464
1517	OUTFALL	256.436	257.386	257.53	0.542	1.76	18.518	6.365

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1518	CULVERT	256.595	257.545	257.53	0.609	1.68	18.161	6.122
1519	CULVERT	256.836	257.786	257.56	0.49	1.39	14.585	5.013
1520	CULVERT	256.85	257.7	257.56	0.312	0.932	9.223	3.227
1521	CBMH	256.94	258.19	257.58	0.199	0.718	7.6	2.496
1522	CBMH	257.189	258.639	257.58	0.157	0.651	7.269	2.314
1523	CBMH	257.419	258.679	257.69	0.139	0.624	7.127	2.242
1524	CB	258.123	259.063	259.01	0.144	0.553	6.805	2.049
1525	CB	258.231	259.181	259.31	0.29	0.537	6.644	1.949
1526	CB	258.312	259.052	259.32	0.678	0.503	6.299	1.776
1527	CB	258.544	259.394	259.53	0.25	0.404	5.326	1.491
1528	CB	245.056	247.706	247.19	0.201	0.309	2.077	0.85
1529	CB	247.269	249.599	247.8	0.118	0.175	0.498	0.424
1530	CB	248.501	251.671	248.91	0.095	0.144	0.388	0.349
1531	MH	248.985	251.635	249.47	0.499	1.13	4.42	3.046
1532	MH	249.52	251.39	250.27	0.397	0.97	3.852	2.635
1533	MH	249.68	251.43	251.32	0.472	0.919	3.294	2.423
1534	MH	249.74	251.34	251.5	0.476	0.625	2.386	1.7
1535	MH	250.01	251.7	251.76	0.256	0.409	1.642	1.15
1536	MH	250.51	252.85	251.81	1.098	2.37	9.249	6.233
1537	MH	251.6	253.21	252.77	1.049	2.2	8.137	5.79
1538	MH	251.93	253.7	253.75	1.803	1.91	7.311	5.005
1539	MH	252.95	255.5	255.52	0.613	1.22	3.922	3.223
1540	MH	255.34	257.49	256.93	0.391	0.699	2.154	1.791
1541	MH	256.36	258.73	257.71	0.215	0.335	0.808	0.781
1542	MH	257.4	259.5	257.85	0.072	0.114	0.265	0.265
1543	MH	257.94	259.65	258.2	0.007	0.011	0.027	0.027
1544	MH	251.535	252.99	251.76	0.022	0.032	0.25	0.077
1545	CB	252.59	253.39	253.58	0.721	1.31	7.455	3.779
1546	CB	252.948	253.558	253.73	0.705	1.28	7.344	3.688
1547	OUTFALL	253.254	253.894	254.07	0.55	0.955	5.837	2.829
1548	CB	253.938	254.708	254.87	0.511	0.869	5.209	2.553
1549	CB	254.002	254.622	254.89	0.513	0.862	5.173	2.527
1550	CB	254.243	254.773	254.92	0.248	0.408	2.479	1.18
1551	CB	254.522	254.922	255.08	0.239	0.381	2.41	1.118
1552	CB	254.46	255.14	255.27	0.202	0.319	2.267	0.975
1553	CULVERT	255.439	256.8	256.24	0.278	1.46	26.298	9.829
1554	CB	256.15	256.9	256.93	0.113	0.77	5.763	2.485

Table 1: Junctions (continued...)

Name	Description	Invert Elev. (m)	Rim Elev. (m)	Max. HGL (m)	Max. Total Inflow (m^3/s)	Total inflow (ML)	Contributing Area (ha)	Contributing Imp. Area (ha)
1555	CB	256.73	257.94	257.18	0.097	0.77	5.615	2.481
1556	CB	256.839	258.23	257.79	0.097	0.77	5.615	2.481
1557	CB	256.843	258.043	258.23	0.176	0.767	5.615	2.481
1558	CB	257.001	257.921	258.23	0.306	0.733	5.438	2.374
1559	CB	257.017	257.867	258.23	0.408	0.742	5.408	2.354
1560	CB	257.539	258.269	258.43	0.396	0.693	5.284	2.272
1561	CB	256.578	257.418	257.46	0.057	0.095	0.376	0.251
1562	CB	256.793	257.423	257.47	0.041	0.063	0.239	0.161
1563	CB	256.903	257.723	257.48	0.023	0.016	0.062	0.038
1564	CB	258.8	259.33	259.32	0.026	0.008	0.64	0.109
1565	CB	250.088	251.468	250.36	0.09	0.14	0.494	0.356
1566	MH	250.224	251.474	251.53	0.176	0.274	0.73	0.643
1567	CB	251.002	251.842	251.87	0.158	0.244	0.618	0.567
1568	CB	251.259	252.049	251.95	0.155	0.24	0.586	0.557
1569	MH	251.48	252.96	251.82	0.05	0.074	0.892	0.223
1570	MH	252.477	253.55	253.91	2.144	0.552	3.089	1.483
9056-2	CHANNEL	247.704	249.1	247.93	1.003	3.72	18.631	10.239

Table 2: Subcatchments

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1002	0.160793	40.247	89	0.475	1002	44.09	0	9.16	38.25	10.86	34.19	0.05	0.04	0.775
S1003	0.259036	37.285	48	1.842	1003	44.09	0	26.17	20.59	0.95	17.43	0.05	0.03	0.395
S1004	1.004827	77.357	37	0.824	1004	44.09	0	31.89	15.9	0.36	11.81	0.12	0.08	0.268
S1005	0.089933	22.471	62	1.125	1005	44.09	0	18.09	26.59	0.61	25.34	0.02	0.02	0.575
S1006	4.954919	239.244	40	0.512	1006	44.09	0	30.91	17.17	0.19	12.73	0.63	0.38	0.289
S1007	0.191182	29.27	83	1.408	1007	44.09	0	11.87	35.67	6.16	31.48	0.06	0.04	0.714
S1008	2.249438	185.226	55	0.877	1008	44.09	0	27.12	23.64	2.22	16.41	0.37	0.22	0.372
S1010	4.950456	178.931	16	5.863	1010	44.09	0	39.15	6.85	0.17	4.76	0.24	0.16	0.108
S1011	0.238759	37.621	28	15.441	1011	44.09	0	33.91	11.94	1.25	9.97	0.02	0.02	0.226
S1012	0.242188	40.142	34	13.228	1012	44.09	0	32.22	14.51	1.88	11.59	0.03	0.02	0.263
S1014	0.459106	38.48	42	5.691	1014	44.09	0	30.52	18	1.63	13.15	0.06	0.04	0.298
S1015	0.018674	13.071	68	2.59	1015	44.09	0	13.79	29.01	0.53	29.55	0.01	0	0.67
S1016	0.562228	50.631	34	10.799	1016	44.09	0	31.39	14.54	0.72	12.35	0.07	0.05	0.28
S1017	0.779454	65.149	32	8.686	1017	44.09	0	32.65	13.69	0.69	11.09	0.09	0.06	0.252
S1019	0.029804	19.852	86	4.996	1019	44.09	0	7.9	36.69	2.4	35.06	0.01	0.01	0.795
S1020	0.443845	75.223	29	15.382	1020	44.09	0	33.58	12.37	1.4	10.31	0.05	0.04	0.234
S1021	0.231603	49.99	48	6.934	1021	44.09	0	26.17	20.5	2.32	17.49	0.04	0.03	0.397
S1022	2.404005	118.991	4	0.994	1022	44.09	0	42.58	1.71	0.05	1.46	0.04	0.02	0.033
S1024	0.298632	63.747	48	9.965	1024	44.09	0	26.73	20.49	3.27	16.99	0.05	0.04	0.385
S1026	0.033001	11.828	85	0.609	1026	44.09	0	6.51	36.49	0.16	36.65	0.01	0.01	0.831
S1027	1.042911	74.041	19	7.433	1027	44.09	0	38.6	8.12	0.5	5.29	0.06	0.04	0.12
S1029	0.176457	30.17	60	4.163	1029	44.09	0	22.03	25.7	3.51	21.49	0.04	0.03	0.488
S1031	0.928604	82.105	41	2.051	1031	44.09	0	30.76	17.61	0.94	12.92	0.12	0.08	0.293
S1033	0.135371	25.865	57	3.952	1033	44.09	0	19.18	24.4	0.36	24.26	0.03	0.02	0.55
S1034	0.47222	69.575	49	3.364	1034	44.09	0	27.92	20.99	3.1	15.7	0.07	0.05	0.356
S1035	0.169339	39.599	55	2.335	1035	44.09	0	22.65	23.54	1.58	20.88	0.04	0.02	0.474
S1036	0.787787	81.063	54	2.867	1036	44.09	0	25.25	23.19	2.08	18.31	0.14	0.09	0.415

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1037	0.608864	75.892	56	4.834	1037	44.09	0	24.28	24	3.19	19.27	0.12	0.08	0.437
S1038	1.452958	126.33	27	3.912	1038	44.09	0	35.09	11.56	0.5	8.7	0.13	0.09	0.197
S1039	0.062036	21.398	56	6.762	1039	44.09	0	21.31	23.9	1.98	22.29	0.01	0.01	0.506
S1041	1.714059	131.266	20	12.523	1041	44.09	0	37.67	8.54	0.59	6.23	0.11	0.08	0.141
S1042	0.373479	53.164	53	2.548	1042	44.09	0	23.76	22.73	1.14	19.78	0.07	0.05	0.449
S1043	0.530618	71.218	20	8.472	1043	44.09	0	35.44	8.53	0.34	8.45	0.04	0.03	0.192
S1044	0.175773	31.723	0	6.154	1044	44.09	0	43.85	0	0.33	0.33	0	0	0.008
S1046	0.395755	49.337	36	3.808	1046	44.09	0	30.94	15.41	0.74	12.76	0.05	0.03	0.289
S1047	5.750361	198.057	41	1.01	1047	44.09	0	30.74	17.6	0.22	12.89	0.74	0.45	0.292
S1049	0.286402	54.411	16	4.382	1049	44.09	0	36.82	6.82	0.29	7.12	0.02	0.01	0.161
S1050	0.229853	56.18	13	3.806	1050	44.09	0	38.11	5.54	0.34	5.89	0.01	0.01	0.134
S1051	0.43696	86.972	24	4.759	1051	44.09	0	35.08	10.24	0.7	8.78	0.04	0.03	0.199
S1053	1.644178	149.836	43	0.963	1053	44.09	0	29.85	18.48	0.68	13.8	0.23	0.15	0.313
S1055	0.689979	57.796	38	2.612	1055	44.09	32.89	43.13	28.78	12.19	33.49	0.23	0.09	0.435
S1058	1.792596	89.177	43	0.919	1058	44.09	0	28.46	18.47	0.2	15.16	0.27	0.17	0.344
S1059	1.2753	70.969	30	1.697	1059	44.09	0	30.82	12.89	0.06	12.95	0.17	0.11	0.294
S1060	0.305593	74.991	65	0.54	1060	44.09	0	18.23	27.92	1.19	25.2	0.08	0.05	0.572
S1061	1.280318	104.164	95	1.367	1061	44.09	0	2.17	40.8	0.05	40.85	0.52	0.32	0.927
S1063	0.345987	72.122	71	1.876	1063	44.09	0	15.62	30.46	2.18	27.77	0.1	0.07	0.63
S1065	0.057919	16.473	95	4.01	1065	44.09	0	2.13	40.68	0.16	40.84	0.02	0.02	0.926
S1066	0.117598	33.611	86	4.144	1066	44.09	0	9.55	36.81	5.32	33.66	0.04	0.03	0.763
S1067	0.328228	38.096	40	3.145	1067	44.09	0	31.34	17.14	1.55	12.35	0.04	0.03	0.28
S1068	0.377607	54.216	59	1.479	1068	44.09	0	21.29	25.34	1.17	22.2	0.08	0.06	0.503
S1072	0.421472	70.481	73	0.188	1072	44.09	0	11.86	31.35	0.06	31.41	0.13	0.08	0.712
S1073	0.125913	28.404	100	0.781	1073	44.09	0	0	42.98	0	42.98	0.05	0.03	0.975
S1074	0.306222	30.571	95	1.016	1074	44.09	0	2.17	40.81	0.06	40.86	0.13	0.08	0.927
S1075	1.199151	63.025	67	1.133	1075	44.09	0	24.08	28.76	6.93	19.29	0.23	0.11	0.438

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1076	0.318536	41.57	38	11.146	1076	44.09	0	31.21	16.23	2	12.55	0.04	0.03	0.285
S1077	1.842758	201.077	23	0.937	1077	44.09	0	39.02	9.86	0.59	4.83	0.09	0.06	0.11
S1079	0.06078	14.43	28	1.377	1079	44.09	0	31.59	11.96	0.21	12.17	0.01	0.01	0.276
S1080	0.056462	13.301	89	0.731	1080	44.09	0	5.87	38.24	0.98	37.31	0.02	0.01	0.846
S1081	0.017484	17.606	84	0.302	1081	44.09	0	6.9	35.95	0.26	36.22	0.01	0	0.821
S1082	0.198361	31.495	60	1.604	1082	44.09	0	20.79	25.76	1.32	22.7	0.05	0.03	0.515
S1083	0.485195	58.354	83	3.103	1083	44.09	0	12.95	35.66	9.8	30.48	0.15	0.11	0.691
S1084	0.145244	17.37	61	2.631	1084	44.09	0	17.79	26.19	0.25	25.66	0.04	0.02	0.582
S1085	0.519759	70.422	60	2.723	1085	44.09	0	22.1	25.75	2.61	21.41	0.11	0.07	0.486
S1086	0.280906	40.238	79	1.962	1086	44.09	0	13.32	33.94	4.58	30.03	0.08	0.06	0.681
S1087	0.127114	18.463	62	2.004	1087	44.09	0	19.91	26.62	1.46	23.55	0.03	0.02	0.534
S1088	0.734459	88.511	100	1.962	1088	44.09	0	0	42.98	0	42.98	0.32	0.2	0.975
S1089	0.687232	63.518	95	2.033	1089	44.09	0	2.16	40.82	0.07	40.89	0.28	0.18	0.927
S1090	1.209974	81.866	36	0.344	1090	44.09	0	30.16	15.46	0.08	13.53	0.16	0.1	0.307
S1091	0.364181	60.378	63	2.835	1091	44.09	0	20.57	27.02	3.19	22.91	0.08	0.06	0.52
S1093	0.271536	64.94	53	0.299	1093	44.09	0	26.21	22.77	1.87	17.35	0.05	0.03	0.394
S1094	0.933439	91.139	42	2.49	1094	44.09	0	25.48	18.02	0.12	18.14	0.17	0.11	0.412
S1096	1.562688	82.068	26	2.829	1096	44.09	0	37.23	11.16	0.45	6.59	0.1	0.07	0.149
S1097	0.135334	27.094	56	0.841	1097	44.09	0	19.3	24.04	0.14	24.18	0.03	0.02	0.548
S1098	0.061486	19.932	84	1.362	1098	44.09	0	7.61	36.02	0.64	35.58	0.02	0.01	0.807
S1099	0.180204	39.513	66	0.987	1099	44.09	0	18.29	28.34	1.91	25.14	0.05	0.03	0.57
S1100	0.304537	37.925	55	0.872	1100	44.09	0	21.68	23.64	0.32	21.83	0.07	0.04	0.495
S1101	0.113321	31.382	66	1.468	1101	44.09	0	18.88	28.28	3.36	24.58	0.03	0.02	0.557
S1102	0.085707	14.183	63	0.712	1102	44.09	0	19.06	27.07	0.84	24.39	0.02	0.01	0.553
S1104	0.04899	7.17	62	4.785	1104	44.09	0	16.6	26.57	0.22	26.79	0.01	0.01	0.608
S1105	3.02148	113	26	5.665	1105	44.09	0	35.12	11.16	0.22	8.7	0.26	0.17	0.197
S1108	0.6231	85.689	37	3.264	1108	44.09	0	32.96	15.84	1.89	10.76	0.07	0.05	0.244

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1109	0.249025	32.322	35	11.223	1109	44.09	0	31.12	14.94	1.12	12.63	0.03	0.02	0.286
S1110	0.549826	51.806	40	10.032	1110	44.09	0	31.6	17.11	2.35	12.1	0.07	0.05	0.275
S1111	0.278572	28.746	41	10.073	1111	44.09	0	29.56	17.53	1.49	14.11	0.04	0.03	0.32
S1112	0.7168	71.431	23	7.964	1112	44.09	0	37.51	9.82	0.96	6.36	0.05	0.03	0.144
S1113	0.006706	7.941	67	2.72	1113	44.09	0	14.13	28.57	0.76	29.33	0	0	0.665
S1114	0.028412	8.554	71	1.774	1114	44.09	0	12.62	30.41	0.25	30.66	0.01	0.01	0.695
S1115	1.305517	71.118	8	6.147	1115	44.09	17.7	55.62	4.83	3.01	6.1	0.08	0.03	0.099
S1119	0.046517	8.712	74	1.422	1119	44.09	0	11.36	31.78	0.15	31.93	0.01	0.01	0.724
S1120	0.30748	37.376	60	4.011	1120	44.09	0	20.5	25.74	1.36	22.98	0.07	0.05	0.521
S1121	0.27973	43.355	54	5.115	1121	44.09	0	22.35	23.12	1.05	21.16	0.06	0.04	0.48
S1122	0.616876	58.171	51	6.359	1122	44.09	0	25.52	21.87	1.65	18.05	0.11	0.08	0.409
S1123	0.333989	39.329	46	7.312	1123	44.09	0	27.88	19.68	1.97	15.75	0.05	0.04	0.357
S1124	0.628878	48.298	48	5.23	1124	44.09	0	28.86	20.6	2.4	14.76	0.09	0.06	0.335
S1125	0.125047	26.969	51	4.941	1125	44.09	0	23.72	21.8	1.32	19.85	0.02	0.02	0.45
S1126	0.131433	18.893	65	4.182	1126	44.09	0	18.66	27.87	2.21	24.79	0.03	0.02	0.562
S1127	0.166151	37.53	58	2.44	1127	44.09	0	22.06	24.84	2.34	21.46	0.04	0.03	0.487
S1128	0.021202	13.825	93	8.021	1128	44.09	0	3.75	39.67	0.94	39.03	0.01	0.01	0.885
S1129	0.401241	39.67	46	2.392	1129	44.09	0	28.38	19.75	1.23	15.25	0.06	0.04	0.346
S1130	0.192194	20.105	55	1.804	1130	44.09	0	19.76	23.63	0.11	23.74	0.05	0.03	0.538
S1131	1.15927	124.45	35	2.289	1131	44.09	0	32.59	15.01	0.79	11.14	0.13	0.09	0.253
S1132	0.051448	9.237	64	2.028	1132	44.09	0	15.74	27.46	0.18	27.64	0.01	0.01	0.627
S1133	0.055548	11.18	76	2.409	1133	44.09	0	10.45	32.6	0.19	32.8	0.02	0.01	0.744
S1134	0.147103	23.657	25	1.721	1134	44.09	0	32.95	10.69	0.16	10.85	0.02	0.01	0.246
S1135	0.020916	11.965	75	0.401	1135	44.09	0	10.87	32.15	0.22	32.37	0.01	0	0.734
S1136	0.133439	12.732	71	2.147	1136	44.09	0	12.99	30.51	0.14	30.35	0.04	0.03	0.688
S1137	0.011212	9.219	74	0.247	1137	44.09	0	11.3	31.7	0.24	31.94	0	0	0.725
S1138	0.066267	13.854	71	0.167	1138	44.09	0	12.74	30.5	0.07	30.57	0.02	0.01	0.693

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1139	0.106008	32.179	62	0.896	1139	44.09	0	16.61	26.58	0.2	26.78	0.03	0.02	0.607
S1140	2.577217	164.13	11	5.368	1140	44.09	0	40.05	4.7	0.17	3.93	0.1	0.07	0.089
S1141	0.608183	64.115	25	10.546	1141	44.09	0	36.21	10.67	1.02	7.64	0.05	0.03	0.173
S1142	0.739731	79.046	25	6.645	1142	44.09	0	36.59	10.68	0.95	7.25	0.05	0.04	0.165
S1143	0.900092	102.886	29	9.841	1143	44.09	0	36.07	12.38	1.94	7.76	0.07	0.05	0.176
S1144	0.091696	23.556	61	9.016	1144	44.09	0	18.73	26.04	1.58	24.76	0.02	0.02	0.562
S1145	0.303685	38.79	56	5.607	1145	44.09	0	23.72	23.99	2.79	19.83	0.06	0.04	0.45
S1146	0.098477	22.455	34	5.198	1146	44.09	0	28.85	14.51	0.36	14.87	0.01	0.01	0.337
S1147	0.349118	47.517	38	3.09	1147	44.09	0	29.82	16.27	0.68	13.86	0.05	0.03	0.314
S1148	0.610534	58.758	31	3.08	1148	44.09	0	33.29	13.28	0.51	10.47	0.06	0.04	0.237
S1149	2.526517	91.475	47	2.351	1149	44.09	0	29.02	20.19	0.63	14.57	0.37	0.23	0.33
S1150	0.161179	30.461	57	3.913	1150	44.09	0	23.34	24.4	3.37	20.21	0.03	0.02	0.458
S1151	0.992096	85.837	66	2.076	1151	44.09	0	23	28.37	7.45	20.5	0.2	0.12	0.465
S1153	1.275682	126.654	75	2.354	1153	44.09	0	15.14	32.23	3.4	28.22	0.36	0.23	0.64
S1154	0.197845	33.028	46	2.037	1154	44.09	0	29.17	19.71	2.44	14.47	0.03	0.02	0.328
S1155	0.007852	8.241	83	1.46	1155	44.09	0	7.26	35.42	0.44	35.86	0	0	0.813
S1156	0.259367	26.658	37	2.624	1156	44.09	0	31.87	15.87	0.89	11.84	0.03	0.02	0.269
S1158	0.407778	45.818	39	2.079	1158	44.09	0	32.25	16.73	1.41	11.45	0.05	0.03	0.26
S1159	0.474285	59.158	68	2.545	1159	44.09	0	19.82	29.2	5.25	23.65	0.11	0.07	0.536
S1160	0.901656	66.695	59	3.388	1160	44.09	0	26.22	25.35	5.92	17.32	0.16	0.09	0.393
S1161	0.106881	29.113	24	4.669	1161	44.09	0	39.85	10.24	4.18	4.18	0	0.01	0.095
S1162	0.060479	14.116	21	5.748	1162	44.09	0	34.55	8.96	0.39	9.35	0.01	0	0.212
S1163	0.169032	41.891	48	9.044	1163	44.09	0	24.08	20.48	1.11	19.54	0.03	0.02	0.443
S1164	1.215996	61.159	35	4.679	1164	44.09	0	33.77	15.03	0.79	9.96	0.12	0.08	0.226
S1165	0.315936	45.992	51	1.731	1165	44.09	0	26.36	21.89	1.9	17.22	0.05	0.04	0.391
S1166	0.240844	30.594	59	1.092	1166	44.09	0	18.47	25.35	0.15	24.99	0.06	0.04	0.567
S1169	0.939793	121.483	77	0.805	1169	44.09	0	16.06	33.09	6.79	27.31	0.26	0.16	0.619

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1170	0.701843	63.972	63	1.768	1170	44.09	0	22.07	27.08	2.99	21.4	0.15	0.09	0.485
S1172	0.079495	32.962	54	1.617	1172	44.09	0	22.01	23.07	1.22	21.53	0.02	0.01	0.488
S1173	0.127534	12.596	54	1.086	1173	44.09	0	20.22	23.21	0.08	23.29	0.03	0.02	0.528
S1177	0.346062	77.645	55	2.339	1177	44.09	0	19.67	23.55	0.24	23.78	0.08	0.06	0.539
S1178	1.582428	120.963	58	1.506	1178	44.09	0	20.06	24.93	0.23	23.41	0.37	0.24	0.531
S1179	0.179872	44.166	69	2.922	1179	44.09	0	13.49	29.55	0.26	29.8	0.05	0.04	0.676
S1180	0.052557	23.562	44	3.136	1180	44.09	0	24.36	18.77	0.48	19.26	0.01	0.01	0.437
S1181	0.073354	17.064	65	2.162	1181	44.09	0	15.27	27.85	0.23	28.08	0.02	0.01	0.637
S1182	0.149496	7.84	72	0.351	1182	44.09	0	12.33	30.84	0.03	30.87	0.05	0.02	0.7
S1183	0.159492	49.64	72	1.183	1183	44.09	0	16.36	30.87	4.2	27.05	0.04	0.03	0.613
S1186	0.191741	29.376	29	5.333	1186	44.09	0	32.1	12.38	0.42	11.69	0.02	0.02	0.265
S1188	0.278439	22.426	42	8.737	1188	44.09	0	29.18	17.99	1.16	14.48	0.04	0.03	0.328
S1190	0.204896	17.383	38	7.424	1190	44.09	0	27.65	16.27	0.23	16.01	0.03	0.02	0.363
S1191	0.23813	18.736	40	2.832	1191	44.09	0	26.86	17.17	0.14	16.8	0.04	0.03	0.381
S1193	0.728172	63.515	27	4.588	1193	44.09	0	33.87	11.55	0.33	9.92	0.07	0.05	0.225
S1194	0.804417	61.877	30	2.646	1194	44.09	0	34.2	12.87	0.44	9.58	0.08	0.05	0.217
S1195	0.2892	37.898	69	4.102	1195	44.09	0	16.83	29.61	2.3	26.58	0.08	0.05	0.603
S1198	0.174753	45.983	24	3.263	1198	44.09	0	33.35	10.24	0.35	10.49	0.02	0.01	0.238
S1200	0.200919	25.437	40	7.562	1200	44.09	0	27.02	17.1	0.39	16.63	0.03	0.02	0.377
S1202	0.253284	19.156	38	8.412	1202	44.09	0	27.81	16.28	0.23	15.86	0.04	0.03	0.36
S1203	0.149861	21.523	27	7.098	1203	44.09	0	32.69	11.52	0.4	11.11	0.02	0.01	0.252
S1205	0.086208	14.8	76	0.853	1205	44.09	0	10.5	32.66	0.11	32.77	0.03	0.02	0.743
S1206	0.062819	7.082	51	1.763	1206	44.09	0	21.52	22.05	0.12	22.16	0.01	0.01	0.503
S1207	0.307981	28.553	48	1.368	1207	44.09	0	28.47	20.63	1.32	15.14	0.05	0.03	0.343
S1208	0.168331	14.18	36	0.84	1208	44.09	0	32.87	15.47	0.48	10.85	0.02	0.01	0.246
S1210	0.690637	37.627	30	10.533	1210	44.09	0	35.18	12.85	0.89	8.6	0.06	0.04	0.195
S1212	0.28294	25.86	29	13.64	1212	44.09	0	34.26	12.38	1	9.54	0.03	0.02	0.216

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1213	0.371352	34.342	28	13.847	1213	44.09	0	35.47	11.96	1.31	8.37	0.03	0.02	0.19
S1214	0.748061	71.06	30	12.105	1214	44.09	0	35.42	12.81	1.73	8.39	0.06	0.05	0.19
S1215	0.030404	20.936	50	5.086	1215	44.09	0	21.59	21.32	0.77	22.09	0.01	0	0.501
S1216	0.838434	63.414	37	6.194	1216	44.09	0	31.91	15.86	1.02	11.8	0.1	0.07	0.268
S1217	0.123621	28.891	57	10.4	1217	44.09	0	22.03	24.33	3.08	21.57	0.03	0.02	0.489
S1218	0.144229	15.055	72	1.533	1218	44.09	0	12.28	30.94	0.1	31.04	0.04	0.03	0.704
S1219	1.901702	167.051	41	4.6	1219	44.09	0	31.51	17.58	1.8	12.17	0.23	0.16	0.276
S1220	0.051151	17.16	66	2.415	1220	44.09	0	17.58	28.23	2.44	25.86	0.01	0.01	0.587
S1221	0.056556	16.249	47	7.01	1221	44.09	0	23.36	20.06	0.57	20.22	0.01	0.01	0.459
S1222	0.110094	23.331	52	0.932	1222	44.09	0	26.27	22.31	2.36	17.31	0.02	0.01	0.393
S1223	0.892521	84.958	45	1.561	1223	44.09	0	30.16	19.33	1.49	13.48	0.12	0.08	0.306
S1224	0.063361	14.881	64	2.02	1224	44.09	0	19.01	27.42	2.23	24.45	0.02	0.01	0.554
S1225	0.100806	22.764	47	1.558	1225	44.09	0	25.78	20.13	0.9	17.81	0.02	0.01	0.404
S1226	0.735425	77.342	95	2.244	1227	44.09	0	2.16	40.83	0.08	40.91	0.3	0.19	0.928
S1228	2.869094	86.36	41	5.845	1228	44.09	0	30.95	17.62	0.56	12.72	0.36	0.23	0.288
S1229	2.491399	63.677	43	1.692	1229	44.09	0	31.08	18.45	0.34	12.52	0.31	0.18	0.284
S1230	0.229649	19.711	54	3.424	1230	44.09	0	23.1	23.4	0.75	20.64	0.05	0.03	0.468
S1231	0.37764	47.926	49	1.91	1231	44.09	0	27.25	21.03	1.64	16.36	0.06	0.04	0.371
S1232	0.107762	25.589	79	2.422	1232	44.09	0	14.61	33.87	8.17	28.83	0.03	0.02	0.654
S1233	0.221734	25.668	76	3.403	1233	44.09	0	13.93	32.64	2.98	29.43	0.07	0.04	0.667
S1235	0.052399	27.673	75	0.211	1235	44.09	0	10.91	32.2	0.16	32.36	0.02	0.01	0.734
S1236	0.962721	105.079	49	1.542	1236	44.09	0	28.65	21.05	2.12	14.95	0.14	0.09	0.339
S1237	0.295672	44.063	63	2.49	1237	44.09	0	21.21	27.04	3.63	22.28	0.07	0.04	0.505
S1238	0.187572	29.562	100	2.362	1238	44.09	0	0	42.97	0	42.97	0.08	0.05	0.975
S1239	0.57169	74.316	85	1.703	1239	44.09	0	12.76	36.53	17.92	30.7	0.18	0.12	0.696
S1241	0.347163	48.589	84	1.148	1241	44.09	0	10.9	36.1	4.96	32.39	0.11	0.07	0.735
S1242	0.064353	27.046	100	0.898	1242	44.09	0	0	42.9	0	42.9	0.03	0.02	0.973

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1243	0.040524	16.913	96	0.835	1243	44.09	0	2.46	41.19	0.99	40.53	0.02	0.01	0.919
S1244	0.146508	57.222	72	1.326	1244	44.09	0	14.22	30.83	1.7	29.13	0.04	0.03	0.661
S1246	0.065937	24.978	64	9.851	1246	44.09	0	16.07	27.3	0.89	27.37	0.02	0.01	0.621
S1247	0.261202	15.011	44	4.503	1247	44.09	0	29.98	18.9	1.2	13.67	0.04	0.02	0.31
S1248	0.337812	15.362	20	4.882	1248	44.09	0	38.05	8.57	0.25	5.83	0.02	0.01	0.132
S1249	0.391847	19.688	49	5.816	1249	44.09	0	28.12	21.05	1.58	15.48	0.06	0.04	0.351
S1250	0.170351	22.073	53	4.355	1250	44.09	0	24.21	22.71	1.63	19.34	0.03	0.02	0.439
S1251	0.108598	21.625	51	5.104	1251	44.09	0	23.19	21.8	0.95	20.36	0.02	0.02	0.462
S1252	0.718274	84.64	45	1.513	1252	44.09	0	29.33	19.32	1.36	14.31	0.1	0.07	0.324
S1254	0.030236	14.429	76	2.15	1254	44.09	0	10.37	32.48	0.35	32.84	0.01	0.01	0.745
S1255	0.083176	27.263	38	5.669	1255	44.09	0	27	16.21	0.49	16.7	0.01	0.01	0.379
S1256	0.187069	41.294	26	1.964	1256	44.09	0	32.46	11.1	0.23	11.33	0.02	0.01	0.257
S1257	0.232801	54.653	24	0.61	1257	44.09	0	33.69	10.27	0.17	10.12	0.02	0.02	0.23
S1258	0.057298	19.996	50	0.105	1258	44.09	0	21.98	21.49	0.09	21.57	0.01	0.01	0.489
S1259	0.524752	50.552	17	5.367	1259	44.09	0	37.14	7.26	0.23	6.76	0.04	0.02	0.153
S1260	0.199843	30.707	36	5.148	1260	44.09	0	28.17	15.38	0.27	15.5	0.03	0.02	0.352
S1261	0.244545	37.992	27	5.641	1261	44.09	0	31.99	11.53	0.27	11.79	0.03	0.02	0.268
S1262	0.321997	34.053	28	4.495	1262	44.09	0	33.44	11.97	0.4	10.34	0.03	0.02	0.235
S1263	0.597919	50.551	22	2.799	1263	44.09	0	35.98	9.42	0.23	7.86	0.05	0.03	0.178
S1264	0.204489	39.115	44	3.653	1264	44.09	0	26.74	18.81	0.9	16.89	0.03	0.02	0.383
S1265	0.045119	25.184	63	2.792	1265	44.09	0	16.38	26.89	0.67	27.02	0.01	0.01	0.613
S1266	1.567452	94.536	37	2.491	1266	44.09	0	31.64	15.9	0.46	12.07	0.19	0.12	0.274
S1267	0.587699	60.076	33	3.43	1267	44.09	0	32.75	14.13	0.67	10.99	0.06	0.04	0.249
S1268	0.364013	63.222	38	1.93	1268	44.09	0	31.37	16.27	1.27	12.33	0.04	0.03	0.28
S1269	0.401712	44.128	45	0.077	1269	44.09	0	27.25	19.31	0.1	16.32	0.07	0.04	0.37
S1270	0.579483	61.286	33	0.666	1270	44.09	0	33.31	14.18	0.37	10.44	0.06	0.04	0.237
S1271	1.40918	136.662	33	0.359	1271	44.09	0	34.58	14.18	0.38	9.17	0.13	0.08	0.208

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1272	0.529984	64.12	38	0.351	1272	44.09	0	32.66	16.33	0.58	11.04	0.06	0.04	0.25
S1273	0.719878	64.352	35	1.546	1273	44.09	0	31.9	15.03	0.41	11.83	0.09	0.06	0.268
S1274	0.390443	55.769	34	1.671	1274	44.09	0	31.82	14.57	0.55	11.91	0.05	0.03	0.27
S1275	1.08682	91.158	39	0.554	1275	44.09	0	30.19	16.76	0.24	13.48	0.15	0.09	0.306
S1276	0.460302	64.327	31	0.475	1276	44.09	0	32.99	13.31	0.26	10.77	0.05	0.03	0.244
S1277	0.217001	55.541	39	1.561	1277	44.09	0	29.17	16.68	0.83	14.5	0.03	0.02	0.329
S1278	7.257062	210.992	18	0.853	1278	44.09	0	38.81	7.74	0.06	5.09	0.37	0.24	0.115
S1280	0.066337	22.303	38	7.165	1280	44.09	0	26.96	16.21	0.55	16.76	0.01	0.01	0.38
S1282	0.434639	63.68	15	11.517	1282	44.09	0	39.29	6.4	0.81	4.71	0.02	0.02	0.107
S1284	7.187103	125.1	1	3.861	1284	44.09	0	43.64	0.43	0.03	0.44	0.03	0.02	0.01
S1285	5.566291	136.315	2	2.542	1285	44.09	0	43.44	0.85	0.04	0.63	0.04	0.03	0.014
S1286	0.21843	29.569	34	5.822	1286	44.09	0	28.93	14.53	0.24	14.77	0.03	0.02	0.335
S1287	0.23214	59.814	26	1.289	1287	44.09	0	33.37	11.1	0.34	10.44	0.02	0.02	0.237
S1288	17.73786	160.912	1	1.324	1288	44.09	0	43.66	0.43	0.01	0.42	0.08	0.05	0.01
S1289	29.46907	632.652	12	1.509	1289	44.09	0	40.21	5.16	0.04	3.75	1.11	0.72	0.085
S1290	0.342601	30.874	20	10.5	1290	44.09	0	36.92	8.54	0.48	6.97	0.02	0.02	0.158
S1292	0.044641	34.734	42	0.078	1292	44.09	0	25.45	18	0.16	18.16	0.01	0.01	0.412
S1293	0.375979	46.741	50	0.485	1293	44.09	0	26.34	21.49	0.69	17.23	0.06	0.04	0.391
S1294	0.439381	83.749	40	0.83	1294	44.09	0	30.52	17.15	0.98	13.16	0.06	0.04	0.299
S1295	0.586431	52.339	44	0.268	1295	44.09	0	28.1	18.9	0.2	15.51	0.09	0.06	0.352
S1296	0.678802	75.258	29	0.51	1296	44.09	0	36.33	12.46	0.48	7.46	0.05	0.03	0.169
S1298	0.151923	16.656	57	1.884	1298	44.09	0	18.87	24.49	0.11	24.6	0.04	0.02	0.558
S1299	2.0719	96	35.703	7.18	1299	44.09	5.15	35.72	17.15	1.54	13.15	0.27	0.16	0.267
S1300	0.04127	19.548	56	7.052	1300	44.09	0	19.65	23.88	0.99	23.92	0.01	0.01	0.542
S1301	0.044818	18.839	49	6.973	1301	44.09	0	23.11	20.91	1.13	20.58	0.01	0.01	0.467
S1302	0.085777	24.381	42	4.688	1302	44.09	0	30.41	17.93	3.88	13.38	0.01	0.01	0.303
S1305	0.709708	103.309	35	8.714	1305	44.09	0	31.23	14.94	1.16	12.51	0.09	0.06	0.284

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1306	0.221773	43.926	19	3.783	1306	44.09	0	41.61	8.1	2.38	2.38	0.01	0.01	0.054
S1307	0.914171	78.264	21	3.253	1307	44.09	0	35.42	8.98	0.17	8.43	0.08	0.05	0.191
S1308	2.735905	142.536	45	1.518	1308	44.09	0	29.15	19.34	0.54	14.46	0.4	0.25	0.328
S1309	4.405722	117.773	48	1.556	1309	44.09	0	29.11	20.59	0.42	14.43	0.64	0.37	0.327
S1311	0.253712	38.596	44	4.031	1311	44.09	0	28.23	18.83	1.48	15.41	0.04	0.03	0.35
S1312	1.087041	78.215	43	2.209	1312	44.09	0	30.84	18.47	1.17	12.81	0.14	0.09	0.291
S1313	0.102258	29.386	72	2.098	1313	44.09	0	14.81	30.84	2.34	28.56	0.03	0.02	0.648
S1314	0.066282	17.887	58	1.943	1314	44.09	0	21.22	24.83	1.68	22.29	0.01	0.01	0.505
S1315	0.112951	18.874	54	3.008	1315	44.09	0	24.01	23.14	1.96	19.54	0.02	0.02	0.443
S1316	0.007285	7.499	78	3.805	1316	44.09	0	9.37	33.26	0.64	33.9	0	0	0.769
S1317	0.011061	11.451	88	3.617	1317	44.09	0	5.08	37.53	0.45	37.98	0	0	0.861
S1318	0.007437	8.864	60	1.896	1318	44.09	0	17.21	25.59	0.74	26.32	0	0	0.597
S1319	0.046894	16.38	58	1.816	1319	44.09	0	19.27	24.8	0.63	24.2	0.01	0.01	0.549
S1320	0.054673	17.471	57	1.63	1320	44.09	0	21.45	24.39	1.57	22.06	0.01	0.01	0.5
S1321	0.116444	30.476	37	1.78	1321	44.09	0	31.85	15.81	1.76	11.88	0.01	0.01	0.269
S1322	0.182691	22.037	52	1.809	1322	44.09	0	22.07	22.33	0.25	21.46	0.04	0.03	0.487
S1323	0.502256	60.417	46	2.695	1323	44.09	0	28.92	19.73	1.9	14.72	0.07	0.05	0.334
S1324	0.47637	55.467	38	0.605	1324	44.09	0	32.67	16.33	0.75	11.04	0.05	0.03	0.25
S1325	0.067475	19.814	65	1.38	1325	44.09	0	15.27	27.85	0.23	28.08	0.02	0.01	0.637
S1326	0.447047	44.386	56	1.609	1326	44.09	0	25.55	24.06	2.59	17.99	0.08	0.05	0.408
S1327	0.162081	27.999	74	1.641	1327	44.09	0	14.68	31.78	2.63	28.69	0.05	0.03	0.651
S1328	0.40392	47.646	31	1.368	1328	44.09	0	33.71	13.29	0.49	10.06	0.04	0.03	0.228
S1329	0.499792	43.403	46	4.464	1329	44.09	0	28.99	19.73	1.82	14.65	0.07	0.05	0.332
S1331	0.3153	18.455	66	2.148	1331	44.09	0	20.44	28.36	2.26	22.97	0.07	0.04	0.521
S1332	0.045546	20.522	79	1.014	1332	44.09	0	13.37	33.84	5.61	29.98	0.01	0.01	0.68
S1333	0.448948	67.196	46	1.244	1333	44.09	0	29.57	19.74	2.03	14.07	0.06	0.04	0.319
S1334	0.246836	47.809	47	1.638	1334	44.09	0	28.41	20.14	2.33	15.22	0.04	0.03	0.345

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1335	0.447137	12.878	62	1.483	1335	44.09	0	18.78	26.58	0.11	24.56	0.11	0.06	0.557
S1336	0.12671	22.785	57	2.014	1336	44.09	0	20.76	24.44	0.72	22.72	0.03	0.02	0.515
S1338	0.287288	36.555	42	0.522	1338	44.09	0	25.52	18.05	0.07	18.12	0.05	0.03	0.411
S1339	0.774388	91.817	84	1.959	1339	44.09	0	10.87	36.1	5.01	32.44	0.25	0.17	0.736
S1340	0.032539	14.866	67	3.838	1340	44.09	0	14.27	28.6	0.46	29.06	0.01	0.01	0.659
S1341	0.03207	20.805	67	4.931	1341	44.09	0	14.19	28.58	0.63	29.21	0.01	0.01	0.662
S1342	0.318349	45.842	88	3.687	1342	44.09	0	7.48	37.79	2.86	35.73	0.11	0.08	0.81
S1344	0.373225	64.26	12	0.866	1344	44.09	0	38.71	5.12	0.13	5.25	0.02	0.01	0.119
S1345	0.519077	74.274	49	0.234	1345	44.09	0	25.01	21.06	0.23	18.55	0.1	0.06	0.421
S1346	0.870408	100.851	64	0.963	1346	44.09	0	19.97	27.51	1.46	23.47	0.2	0.13	0.532
S1347	0.210248	21.981	56	1.056	1347	44.09	0	19.34	24.07	0.08	24.15	0.05	0.03	0.548
S1348	1.356292	159.249	71	1.509	1348	44.09	0	17.57	30.51	3.55	25.83	0.35	0.22	0.586
S1353	0.543123	89.095	91	2.128	1353	44.09	0	8.22	39.09	33.07	35.02	0.19	0.14	0.794
S1355	0.07018	16.568	100	0.63	1355	44.09	0	0	42.98	0	42.98	0.03	0.02	0.975
S1356	0.118939	17.955	31	0.494	1356	44.09	0	30.36	13.31	0.09	13.39	0.02	0.01	0.304
S1357	0.839856	40	59	2.11	1357	44.09	0	21.83	25.35	0.58	21.62	0.18	0.11	0.49
S1358	0.032029	12.276	79	3.988	1369	44.09	0	9.05	33.76	0.36	34.12	0.01	0.01	0.774
S1359	0.349182	38.968	29	1.546	1359	44.09	0	33.85	12.43	0.36	9.93	0.03	0.02	0.225
S1360	0.14954	27.686	100	0.975	1360	44.09	0	0	42.98	0	42.98	0.06	0.04	0.975
S1361	0.14755	29.448	100	1.285	1361	44.09	0	0	42.97	0	42.97	0.06	0.04	0.975
S1362	0.164819	31.271	100	1.382	1362	44.09	0	0	42.97	0	42.97	0.07	0.05	0.975
S1363	0.137211	28.772	100	2.832	1363	44.09	0	0	42.92	0	42.92	0.06	0.04	0.974
S1364	0.066186	25.635	0	3.484	1364	44.09	0	43.73	0	0.5	0.5	0	0	0.011
S1366	0.261285	40.577	100	1.917	1366	44.09	0	0	42.97	0	42.97	0.11	0.07	0.975
S1367	0.1753	22.413	77	1.921	1367	44.09	0	18.5	33.09	16.83	25.1	0.04	0.03	0.569
S1370	0.097767	10.043	65	4.55	1370	44.09	0	15.32	27.9	0.16	28.06	0.03	0.02	0.636
S1371	0.888241	70.46	6	13.51	1371	44.09	0	41.28	2.56	0.22	2.78	0.02	0.02	0.063

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1374	0.039202	18.614	44	5.318	1374	44.09	0	24.31	18.76	0.62	19.38	0.01	0.01	0.44
S1375	0.092017	24.806	48	3.423	1375	44.09	0	22.69	20.51	0.33	20.84	0.02	0.01	0.473
S1376	0.049761	27.705	46	4.509	1376	44.09	0	23.41	19.62	0.65	20.26	0.01	0.01	0.46
S1377	0.650351	49.466	38	3.187	1377	44.09	0	28.32	16.31	0.19	15.36	0.1	0.07	0.348
S1378	0.29047	44.633	24	4.66	1378	44.09	0	36.17	10.24	0.82	7.69	0.02	0.02	0.174
S1379	0.14795	52.104	38	2.067	1379	44.09	0	27.23	16.22	0.37	16.43	0.02	0.02	0.373
S1380	3.722785	198.868	24	1.601	1380	44.09	0	36.92	10.31	0.22	6.92	0.26	0.17	0.157
S1381	0.768947	98.244	34	0.729	1381	44.09	0	34.44	14.6	0.84	9.3	0.07	0.05	0.211
S1382	0.21462	38.045	53	0.816	1382	44.09	0	24.6	22.76	1.2	18.95	0.04	0.03	0.43
S1385	0.244819	36.702	11	6.207	1385	44.09	0	39.04	4.69	0.28	4.97	0.01	0.01	0.113
S1386	0.507826	55.01	20	5.276	1386	44.09	0	36.45	8.54	0.34	7.43	0.04	0.03	0.168
S1387	0.87921	61.984	52	2.722	1387	44.09	0	23.85	22.35	0.48	19.7	0.17	0.11	0.447
S1389	0.067584	34.572	58	0.523	1389	44.09	0	18.34	24.83	0.25	25.08	0.02	0.01	0.569
S1390	0.939442	49.658	18	2.273	1390	44.09	0	37.23	7.72	0.1	6.66	0.06	0.04	0.151
S1392	1.846625	60.533	17	3.176	1392	44.09	0	37.77	7.3	0.08	6.14	0.11	0.08	0.139
S1393	0.857135	40.526	10	4.393	1393	44.09	0	39.62	4.27	0.08	4.35	0.04	0.03	0.099
S1394	1.419462	93.808	25	5.029	1394	44.09	0	35.35	10.71	0.33	8.47	0.12	0.08	0.192
S1395	0.076796	13.828	74	0.27	1395	44.09	0	11.41	31.8	0.07	31.87	0.02	0.02	0.723
S1396	0.265506	26.844	58	0.192	1396	44.09	0	19.22	24.89	0.06	24.2	0.06	0.04	0.549
S1397	0.648807	69.748	40	0.538	1397	44.09	0	31.95	17.19	0.72	11.73	0.08	0.05	0.266
S1398	0.483205	50.687	50	1.038	1398	44.09	0	26.69	21.49	0.99	16.89	0.08	0.05	0.383
S1399	3.09252	90.819	0	2.593	1399	44.09	0	44.06	0	0.04	0.04	0	0	0.001
S1401	1.258751	101.07	57	2.746	1401	44.09	0	24.55	24.49	2.32	18.98	0.24	0.15	0.43
S1402	0.458422	40.645	41	1.642	1402	44.09	0	29.57	17.61	0.54	14.1	0.06	0.04	0.32
S1403	0.294084	61.452	45	0.919	1403	44.09	0	27.05	19.3	0.75	16.57	0.05	0.03	0.376
S1404	0.600237	43.844	53	5.048	1404	44.09	0	22.78	22.76	0.5	20.76	0.12	0.08	0.471
S1405	0.083003	30.117	63	0.472	1405	44.09	0	17.28	27.03	0.45	26.13	0.02	0.01	0.593

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1406	0.136848	18.594	69	1.481	1406	44.09	0	17.74	29.65	2.55	25.68	0.04	0.02	0.582
S1407	0.443271	56.867	69	2.848	1407	44.09	0	19.07	29.63	5.13	24.39	0.11	0.07	0.553
S1408	0.141763	14.166	52	3.487	1408	44.09	0	21.47	22.32	0.19	22.06	0.03	0.02	0.5
S1410	0.532006	71.655	28	13.443	1410	44.09	0	31.5	11.95	0.35	12.29	0.07	0.05	0.279
S1411	0.209258	40.803	42	17.802	1411	44.09	0	26.43	17.92	0.99	17.29	0.04	0.03	0.392
S1412	1.755459	146.617	34	6.475	1412	44.09	0	32.99	14.56	0.99	10.74	0.19	0.13	0.244
S1416	0.378099	31.383	50	4.109	1416	44.09	0	22.15	21.46	0.15	21.4	0.08	0.05	0.485
S1417	0.618145	70.006	51	2.866	1417	44.09	0	28.09	21.89	3.49	15.52	0.1	0.06	0.352
S1419	1.346202	90.346	64	0.376	1419	44.09	0	22.45	27.45	1.4	20.89	0.28	0.16	0.474
S1420	0.249589	58.865	89	0.811	1420	44.09	0	7.77	38.24	4.51	35.49	0.09	0.06	0.805
S1421	1.418594	90.034	48	0.267	1421	44.09	0	29.29	20.59	0.44	14.24	0.2	0.12	0.323
S1422	0.213948	49.155	63	1.884	1422	44.09	0	17.79	27	0.8	25.64	0.05	0.04	0.582
S1423	0.114554	38.525	71	3.766	1423	44.09	0	12.99	30.35	0.56	30.3	0.03	0.02	0.687
S1424	0.343353	51.91	64	2.555	1424	44.09	0	19.09	27.46	1.84	24.36	0.08	0.06	0.553
S1426	0.180795	58.126	86	0.617	1426	44.09	0	7.68	37.26	1.59	35.87	0.06	0.04	0.814
S1427	0.263598	35.597	73	1.621	1427	44.09	0	15.03	31.37	1.98	28.33	0.07	0.05	0.643
S1428	0.604161	66.618	84	2.492	1428	44.09	0	10.39	36.1	4.02	32.9	0.2	0.13	0.746
S1430	0.936285	88.133	58	2.702	1430	44.09	0	23.7	24.92	2.38	19.82	0.19	0.12	0.449
S1431	1.504482	140.455	47	1.029	1431	44.09	0	27.9	20.2	0.76	15.71	0.24	0.15	0.356
S1432	0.032169	13.596	34	1.014	1432	44.09	0	28.88	14.52	0.3	14.82	0	0	0.336
S1433	0.086124	28.23	67	0.618	1433	44.09	0	14.42	28.75	0.18	28.93	0.02	0.02	0.656
S1434	0.045017	21.073	58	0.749	1434	44.09	0	18.33	24.82	0.27	25.09	0.01	0.01	0.569
S1435	4.862587	226.409	41	1.704	1435	44.09	0	30.1	17.62	0.34	13.55	0.66	0.42	0.307
S1436	0.058722	18.268	58	4.573	1436	44.09	0	18.25	24.77	0.4	25.17	0.01	0.01	0.571
S1437	0.051733	20.642	52	3.83	1437	44.09	0	20.85	22.19	0.46	22.65	0.01	0.01	0.514
S1438	0.119687	41.645	67	1.774	1438	44.09	0	17.48	28.67	2.73	25.96	0.03	0.02	0.589
S1439	0.356202	61.11	54	0.429	1439	44.09	0	22.49	23.21	0.38	21.03	0.07	0.05	0.477

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1442	0.27087	47.786	95	1.201	1442	44.09	0	2.15	40.83	0.09	40.92	0.11	0.07	0.928
S1443	0.419797	61.021	95	0.422	1443	44.09	0	5.1	40.8	38.04	38.04	0.16	0.1	0.863
S1444	0.268965	46.399	100	0.492	1444	44.09	0	0	42.96	0	42.96	0.12	0.07	0.974
S1445	0.113318	24.127	65	4.085	1445	44.09	0	15.24	27.82	0.27	28.09	0.03	0.02	0.637
S1446	0.150919	23.179	65	1.579	1446	44.09	0	15.33	27.92	0.14	28.05	0.04	0.03	0.636
S1447	0.161542	19.95	50	1.217	1447	44.09	0	21.97	21.48	0.11	21.58	0.03	0.02	0.49
S1448	0.144852	15.69	62	1.748	1448	44.09	0	16.68	26.64	0.11	26.75	0.04	0.03	0.607
S1449	0.058645	19.335	100	1.729	1449	44.09	0	0	42.89	0	42.89	0.03	0.02	0.973
S1450	0.187425	26.038	0	0.166	1450	44.09	0	44.06	0	0.05	0.05	0	0	0.001
S1451	0.388936	48.679	95	1.481	1451	44.09	0	2.16	40.83	0.08	40.9	0.16	0.1	0.928
S1452	0.419515	58.316	95	1.904	1452	44.09	0	2.15	40.83	0.09	40.92	0.17	0.11	0.928
S1453	0.210194	27.649	95	1.552	1453	44.09	0	2.16	40.83	0.08	40.91	0.09	0.06	0.928
S1456	0.591936	130.495	95	1.208	1456	44.09	0	2.15	40.81	0.1	40.92	0.24	0.16	0.928
S1457	0.468823	57.937	100	1.063	1457	44.09	0	0	42.97	0	42.97	0.2	0.13	0.975
S1458	0.356263	61.741	100	0.173	1458	44.09	0	0	42.91	0	42.91	0.15	0.09	0.973
S1459	0.165407	44.353	100	2.574	1459	44.09	0	0	42.89	0	42.89	0.07	0.05	0.973
S1460	0.070639	21.325	95	0.421	1460	44.09	0	2.15	40.83	0.09	40.92	0.03	0.02	0.928
S1461	0.172076	32.534	100	1.735	1461	44.09	0	0	42.96	0	42.96	0.07	0.05	0.974
S1462	0.112003	19.273	100	1.407	1462	44.09	0	0	42.98	0	42.98	0.05	0.03	0.975
S1463	0.147206	29.886	100	0.364	1463	44.09	0	0	42.97	0	42.97	0.06	0.04	0.974
S1464	0.10325	21.812	58	0.211	1464	44.09	0	31.01	24.93	12.59	12.59	0.01	0.01	0.286
S1465	0.052534	13.857	52	1.578	1465	44.09	0	31.62	22.26	12.15	12.15	0.01	0.01	0.276
S1466	0.218201	30.663	9	2.498	1466	44.09	0	39.99	3.84	0.17	4.01	0.01	0.01	0.091
S1467	0.179715	56.201	0	2.088	1467	44.09	0	43.85	0	0.33	0.33	0	0	0.008
S1469	0.062611	14.795	95	2.592	1469	44.09	0	2.13	40.76	0.13	40.89	0.03	0.02	0.927
S1470	0.052738	17.558	95	3.918	1470	44.09	0	2.12	40.65	0.17	40.83	0.02	0.01	0.926
S1471	0.106399	23.716	25	2.134	1471	44.09	0	32.89	10.67	0.24	10.92	0.01	0.01	0.248

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m^3/s)	Runoff Coefficient
S1472	0.120734	15.936	25	0.383	1472	44.09	0	33.02	10.73	0.07	10.8	0.01	0.01	0.245
S1473	0.121515	17.143	0	2.654	1473	44.09	0	43.96	0	0.18	0.18	0	0	0.004
S1474	0.205516	27.008	95	1.135	1474	44.09	0	2.16	40.83	0.07	40.9	0.08	0.05	0.928
S1475	0.113592	21.883	69	1.368	1475	44.09	0	17.98	29.62	3.53	25.45	0.03	0.02	0.577
S1476	0.106067	16.327	39	2.913	1476	44.09	0	36.75	16.69	7.03	7.03	0.01	0.01	0.16
S1477	0.212899	26.917	95	1.99	1477	44.09	0	2.16	40.83	0.08	40.91	0.09	0.06	0.928
S1479	0.872745	90.36	100	0.972	1479	44.09	0	0	42.95	0	42.95	0.37	0.23	0.974
S1480	0.74195	80.184	88	1.284	1480	44.09	0	11.02	37.82	30.51	32.4	0.24	0.17	0.735
S1481	0.114047	36.078	95	1.325	1481	44.09	0	2.14	40.76	0.13	40.89	0.05	0.03	0.927
S1482	0.158723	29.492	100	1.297	1482	44.09	0	0	42.97	0	42.97	0.07	0.04	0.975
S1483	0.096294	19.61	100	0.406	1483	44.09	0	0	42.97	0	42.97	0.04	0.03	0.975
S1484	0.126271	22.837	100	1.371	1484	44.09	0	0	42.97	0	42.97	0.05	0.03	0.975
S1485	0.233648	32.967	65	0.112	1485	44.09	0	22.51	27.89	2.15	20.84	0.05	0.03	0.473
S1486	0.070058	11.121	65	1.741	1486	44.09	0	15.32	27.91	0.15	28.06	0.02	0.01	0.636
S1487	0.032337	5.025	95	0.868	1487	44.09	0	2.16	40.83	0.07	40.9	0.01	0.01	0.928
S1488	0.109024	22.145	100	1.127	1488	44.09	0	0	42.97	0	42.97	0.05	0.03	0.975
S1489	0.095806	12.456	65	0.83	1489	44.09	0	15.37	27.94	0.09	28.03	0.03	0.02	0.636
S1492	0.843838	75.185	50	2.074	1492	44.09	0	25.13	21.48	0.61	18.44	0.16	0.1	0.418
S1493	1.614767	157.675	40	2.014	1493	44.09	0	30.79	17.17	0.87	12.89	0.21	0.14	0.292
S1496	1.022959	101.786	47	1.07	1496	44.09	0	28.15	20.2	0.92	15.46	0.16	0.1	0.351
S1497	0.169703	36.51	68	1.527	1497	44.09	0	19.57	29.18	5.53	23.91	0.04	0.03	0.542
S1498	0.6174	107.352	52	1.372	1498	44.09	0	26.4	22.31	2.46	17.19	0.11	0.07	0.39
S1499	0.209896	17.117	75	2.538	1499	44.09	0	10.95	32.23	0.09	32.33	0.07	0.04	0.733
S1501	3.475472	217.385	43	1.969	1501	44.09	0	30.87	18.48	0.96	12.79	0.44	0.28	0.29
S1503	0.115484	23.014	38	1.614	1503	44.09	0	27.2	16.26	0.19	16.45	0.02	0.01	0.373
S1504	0.248842	29.236	38	1.046	1504	44.09	0	27.27	16.32	0.1	16.41	0.04	0.03	0.372
S1506	1.433297	80.385	53	0.685	1506	44.09	93.65	46.59	72.36	47.15	90.56	1.3	0.17	0.658

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1509	0.589678	68.206	54	1.541	1509	44.09	0	24.12	23.2	1.09	19.42	0.11	0.08	0.44
S1511	0.406371	111.109	25	1.503	1511	44.09	0	40.41	10.67	3.52	3.52	0.01	0.01	0.08
S1512	0.232721	65.64	21	1.574	1512	44.09	0	41.23	8.96	2.73	2.73	0.01	0.01	0.062
S1514	0.177784	70.091	65	2.381	1514	44.09	0	18.82	27.78	3.55	24.66	0.04	0.03	0.559
S1515	0.081597	29.631	54	1.291	1515	44.09	0	22.27	23.1	1.15	21.25	0.02	0.01	0.482
S1516	0.152726	21.602	65	0.834	1516	44.09	0	16.59	27.93	0.28	26.82	0.04	0.03	0.608
S1517	0.357215	58.333	68	2.918	1517	44.09	0	20.67	29.17	7.69	22.86	0.08	0.06	0.518
S1518	3.57652	152.842	31	0.51	1518	44.09	0	35.58	13.31	0.18	8.17	0.29	0.18	0.185
S1519_1	1.014448	61.798	39	0.091	1519	44.09	0	33.9	16.71	0.19	9.72	0.1	0.05	0.22
S1519_2	4.347396	120.037	32	0.464	1519	44.09	0	35.5	13.72	0.11	8.21	0.36	0.2	0.186
S1520	1.622654	104.346	45	0.858	1520	44.09	0	30.46	19.34	0.78	13.16	0.21	0.13	0.298
S1521	0.331197	52.066	55	1.085	1521	44.09	0	23.31	23.62	1.09	20.22	0.07	0.04	0.459
S1522	0.141484	34.51	51	0.683	1522	44.09	0	24.03	21.88	0.71	19.53	0.03	0.02	0.443
S1523	0.322117	49.945	60	1.116	1523	44.09	0	21.39	25.77	1.48	22.1	0.07	0.05	0.501
S1524	0.161537	46.817	62	0.406	1524	44.09	0	19.67	26.63	1.16	23.8	0.04	0.03	0.54
S1525	0.34452	41.708	50	0.23	1525	44.09	0	29.36	21.48	1.31	14.2	0.05	0.03	0.322
S1526	0.332562	34.618	53	0.01	1526	44.09	0	25.43	22.63	0.05	17.93	0.06	0.02	0.407
S1527	5.326304	225.469	28	0.441	1527	44.09	0	36.2	12.03	0.12	7.58	0.4	0.25	0.172
S1528	1.578737	146.722	27	1.989	1528	44.09	0	35.49	11.57	0.44	8.31	0.13	0.09	0.188
S1529	0.11038	41.51	68	6.694	1529	44.09	0	15.09	29.02	1.36	28.35	0.03	0.02	0.643
S1530	0.387934	55.006	90	1.134	1530	44.09	0	5.94	38.68	1.64	37.22	0.14	0.1	0.844
S1531	0.074368	19.921	74	0.536	1531	44.09	0	11.64	31.79	0.19	31.66	0.02	0.02	0.718
S1532	0.557569	105.552	38	0.133	1532	44.09	0	30.53	16.33	0.26	13.16	0.07	0.05	0.298
S1533	0.178578	40.234	45	1.9	1533	44.09	0	29.84	19.26	3.25	13.84	0.02	0.02	0.314
S1534	0.743934	59.346	74	2.665	1534	44.09	0	17.96	31.8	7.33	25.46	0.19	0.12	0.577
S1535	1.642212	113.897	70	3.01	1535	44.09	0	18.46	30.08	3.57	24.93	0.41	0.26	0.565
S1536	0.220356	28.714	100	0.73	1536	44.09	0	0	42.96	0	42.96	0.09	0.06	0.974

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1537	0.825686	70.388	95	1.543	1537	44.09	0	2.17	40.81	0.06	40.87	0.34	0.21	0.927
S1538	0.299864	35.071	100	2.14	1538	44.09	0	0	42.98	0	42.98	0.13	0.08	0.975
S1539	1.768217	113.182	81	1.683	1539	44.09	0	13.62	34.79	5.98	29.64	0.52	0.3	0.672
S1540	1.345961	106.583	75	1.96	1540	44.09	0	16.02	32.23	4.12	27.32	0.37	0.23	0.62
S1541	0.543469	61.516	95	2.349	1541	44.09	0	2.16	40.83	0.08	40.91	0.22	0.14	0.928
S1542	0.238145	43.037	100	0.669	1542	44.09	0	0	42.98	0	42.98	0.1	0.06	0.975
S1543	0.026648	17.089	100	1.539	1543	44.09	0	0	42.77	0	42.77	0.01	0.01	0.97
S1544	0.2498	35.183	31	4	1544	44.09	0	30.75	13.25	0.27	12.99	0.03	0.02	0.295
S1545	0.111378	14.65	82	1.118	1545	44.09	0	10.94	35.24	2.73	32.33	0.04	0.02	0.733
S1546	1.507094	124.091	57	2.56	1546	44.09	0	21.58	24.49	0.61	21.92	0.33	0.22	0.497
S1547	0.62788	55.66	44	1.472	1547	44.09	0	30.35	18.91	1.2	13.3	0.08	0.05	0.302
S1548	0.036239	29.381	71	1.622	1548	44.09	0	12.5	30.3	0.49	30.79	0.01	0.01	0.698
S1549	2.693793	101.744	50	1.103	1549	44.09	0	26.68	21.46	0.32	16.84	0.45	0.27	0.382
S1550	0.068297	23.251	91	0.749	1550	44.09	0	4.9	39.07	1.12	38.24	0.03	0.02	0.867
S1551	0.143153	31.745	100	2.749	1551	44.09	0	0	42.92	0	42.92	0.06	0.04	0.973
S1552	2.267271	133.683	43	1.006	1552	44.09	0	29.57	18.48	0.39	14.06	0.32	0.2	0.319
S1554	0.148141	26.181	3	2.782	1554	44.09	0	43.78	1.28	0.35	0.35	0	0	0.008
S1557	0.177138	38.298	60	1.037	1557	44.09	0	21.31	25.75	1.84	22.19	0.04	0.03	0.503
S1558	0.030263	14.154	69	0.327	1558	44.09	0	15.06	29.61	0.77	28.3	0.01	0.01	0.642
S1559	0.123168	36.9	66	1.048	1559	44.09	0	18.43	28.3	2.66	25.01	0.03	0.02	0.567
S1560	5.284352	188.603	43	0.575	1560	44.09	0	30.47	18.44	0.21	13.12	0.69	0.4	0.298
S1561	0.13694	33.93	66	1.411	1561	44.09	0	19.1	28.3	3.41	24.36	0.03	0.02	0.552
S1562	0.177453	37.463	69	0.886	1562	44.09	0	17.31	29.64	2.39	26.1	0.05	0.03	0.592
S1563	0.061891	22.883	62	2.032	1563	44.09	0	17.84	26.54	0.93	25.62	0.02	0.01	0.581
S1564	0.64031	83.054	17	0.674	1564	44.09	0	43.11	7.28	0.81	0.81	0.01	0	0.018
S1565	0.494023	49.138	72	1.353	1565	44.09	0	15.07	30.94	1.04	28.27	0.14	0.09	0.641
S1566	0.111473	30.329	68	1.197	1566	44.09	0	16.92	29.16	2	26.49	0.03	0.02	0.601

Table 2: Subcatchments (continued...)

Name	Area (ha)	Width (m)	Imperv. (%)	Slope (%)	Outlet	Precipitation (mm)	Runon (mm)	Infiltration (mm)	Imperv Runoff (mm)	Perv Runoff (mm)	Runoff Depth (mm)	Runoff Volume (ML)	Peak Runoff (m³/s)	Runoff Coefficient
S1567	0.032215	12.466	33	0.929	1567	44.09	0	29.35	14.09	0.27	14.36	0	0	0.326
S1568	0.585893	81.168	95	1.71	1568	44.09	0	2.15	40.83	0.08	40.91	0.24	0.15	0.928
S1569	0.892428	66.447	25	1.198	1569	44.09	0	35.48	10.73	0.19	8.35	0.07	0.05	0.189
S1570	3.088694	127.314	48	1.308	1570	44.09	0	26.98	20.61	0.29	16.58	0.51	0.31	0.376
S9001	0.108891	33.512	57	0.308	9001	44.09	0	20.35	24.48	0.38	23.14	0.03	0.02	0.525
S9013_1	0.97075	50.418	23	7.593	9013	44.09	0	36.76	9.85	0.38	7.08	0.07	0.05	0.161
S9013_2	14.28026	429.762	20	4.539	9013	44.09	0	37.72	8.59	0.14	6.15	0.88	0.58	0.14
S9028	0.150161	29.797	56	4.385	9028	44.09	0	24.32	23.96	4.17	19.26	0.03	0.02	0.437
S9032	0.099163	24.193	20	6.195	9032	44.09	0	40.76	8.53	3.3	3.3	0	0	0.075
S9048	1.290586	173.723	5	3.489	9048	44.09	0	41.88	2.13	0.21	2.19	0.03	0.02	0.05

Table 3: Outfalls

Name	Description	Invert Elev. (m)	Contributing Area (ha)	Contributing Imp. Area (ha)	Max. Flow (m^3/s)	Total Flow (ML)
9001	CB	255.855	9.019	4.135	0.153	1.342
9009	OUTFALL	234.31	5.431	0.941	0.202	0.288
9013	OUTFALL	232.29	17.07	3.725	0.779	1.169
9018	OUTFALL	228.641	3.109	0.362	0.099	0.132
9023	OUTFALL	228.09	0.299	0.143	0.041	0.051
9025	OUTFALL	228.27	1.076	0.226	0.047	0.067
9028	OUTFALL	240.245	1.255	0.571	0.121	0.187
9032	OUTFALL	227.823	6.582	2.262	0.428	0.775
9045	OUTFALL	248.048	6.146	2.5	0.254	0.698
9045-2	OUTFALL	253.75	5.75	2.358	0.221	0.094
9048	OUTFALL	229.18	2.244	0.245	0.076	0.101
9052	OUTFALL	247.284	1.644	0.707	0.05	0.176
9052-2	OUTFALL	247.8	1.644	0.707	0.094	0.051
9054	OUTFALL	245.954	2.334	0.969	0.038	0.169
9054-2	OUTFALL	246.35	2.334	0.969	0.05	0.062
9056	OUTFALL	246.5	18.631	10.239	0.973	3.719
9103	OUTFALL	230.371	3.07	0.816	0.183	0.276
9106	OUTFALL	229.25	6.092	1.915	0.187	0.341
9116	OUTFALL	224.815	20.594	8.854	2.054	3.166
9167	OUTFALL	224.395	1.849	1.278	0.92	0.581
9174	OUTFALL	224.277	2.543	1.526	1.459	0.75
9184	OUTFALL	231.949	0.913	0.346	0.091	0.135
9192	OUTFALL	239.468	1.822	0.637	0.152	0.226
9196	OUTFALL	237.291	0.779	0.259	0.074	0.109
9204	OUTFALL	245.304	0.625	0.306	0.058	0.107
9209	OUTFALL	227.27	16.107	7.884	0.982	2.657
9245	OUTFALL	237.9	2.054	0.886	0.191	0.285
9253	OUTFALL	238.708	18.3	5.048	0.982	1.644
9279	CULVERT_OUTFALL	228.474	61.254	4.19	0.805	1.36
9291	OUTFALL	260.89	2.125	0.837	0.168	0.272
9297	OUTFALL	226.989	3.021	1.213	0.208	0.34
9303	OUTFALL	232.902	15.225	6.894	0.989	2.234
9337	MH	251.44	1.445	1.095	0.279	0.436
9343	OUTFALL	246.9	7.37	4.273	0.724	1.65
9372	OUTFALL	254.5	5.976	1.726	0.356	0.553
9383	OUTFALL	255.874	1.632	0.586	0.14	0.223
9388	OUTFALL	251.2	9.697	1.675	0.103	0.6

Table 3: Outfalls (continued...)

Name	Description	Invert Elev. (m)	Contributing Area (ha)	Contributing Imp. Area (ha)	Max. Flow (m^3/s)	Total Flow (ML)
9400	OUTFALL	250.65	3.416	1.882	0.378	0.672
9409	OUTFALL	237.62	8.228	4.394	0.92	1.545
9429	OUTFALL	245.6	8.053	3.672	0.773	1.255
9440	CONC_HEADWALL	249.37	9.186	7.55	1.712	3.145
9490	OUTFALL	244.491	68.521	32.486	2.579	10.555

Table 4: Conduits

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2002	CSP	1002	9001	35.893	CIRCULAR	0.4	0	0.00209	0.151	1.2	2.93	1
2003	CSP	1003	1002	39.782	CIRCULAR	0.4	0	0.00289	0.086	0.69	1.42	1
2004	CSP	1004	1003	15.425	CIRCULAR	0.4	0.4	0.01128	0.122	0.97	1.02	1
2005	CSP	1005	1004	47.743	CIRCULAR	0.4	0.4	0.01376	0.134	1.06	1.01	1
2006	CSP	1006	1005	49.502	CIRCULAR	0.3	0.3	0.00687	0.066	0.98	1.52	1
2007	CSP	1007	1003	27.326	CIRCULAR	0.4	0	0.00102	0.053	0.42	1.46	1
2008	CSP	1008	1007	30.963	CIRCULAR	0.4	0.3	0.00417	0.027	0.26	0.37	1
2010	CSP	1010	9009	54.239	CIRCULAR	0.375	0.3	0.04283	0.202	2.02	1.03	0.94
2011	CONC	1011	1010	13.428	CIRCULAR	0.3	0	0.01773	0.04	0.77	0.31	0.69
2012	CSP	1012	1011	24.01	CIRCULAR	0.3	0.3	0.00812	0.022	0.72	0.46	0.44
2014	CONC	1014	9013	20.764	CIRCULAR	0.3	0.3	0.01459	0.148	2.12	1.27	0.97
2015	CONC	1015	1014	67.333	CIRCULAR	0.3	0.3	0.02416	0.111	1.87	0.74	0.84
2016	CONC	1016	1015	12.7	CIRCULAR	0.3	0.3	0.05702	0.108	2.8	0.47	0.54
2017	PVC	1017	1016	8.576	CIRCULAR	0.2	0.2	0.01446	0.06	1.91	1.52	0.98
2019	CONC	1019	9018	9.575	CIRCULAR	0.3	0.3	0.021	0.099	1.76	0.7	0.74
2020	PVC	1020	1019	8.53	CIRCULAR	0.3	0.3	0.03402	0.091	2.33	0.51	0.56
2021	CONC	1021	1020	47.453	CIRCULAR	0.375	0.375	0.06591	0.055	2.7	0.12	0.24
2022	CONC	1022	1021	35.43	CIRCULAR	0.375	0.375	0.03796	0.025	1.04	0.07	0.27
2024	CONC	1024	9023	18.575	CIRCULAR	0.35	0.3	0.00759	0.041	1.08	0.32	0.41
2026	CONC	1026	9025	6.44	CIRCULAR	0.525	0	0.00932	0.047	1.08	0.11	0.26
2027	CONC	1027	1026	10.163	CIRCULAR	0.45	0.375	-0.00354	0.04	0.66	0.23	0.4
2029	CSP	1029	9028	52.059	CIRCULAR	0.3	0	0.03371	0.1	1.54	1.04	1
2030	CSP	1030	1029	60.015	CIRCULAR	0.3	0	0.04418	0.079	1.39	0.71	0.81
2031	CSP	1031	1030	10.23	CIRCULAR	0.4	0	0.03913	0.079	1.48	0.35	0.44
2033	CONC	1033	9032	50.156	CIRCULAR	0.6	0.6	0.00684	0.424	1.79	0.84	0.78
2034	CONC	1034	1033	7.414	CIRCULAR	0.6	0.6	0.0562	0.404	2.49	0.28	0.6
2035	CONC	1035	1034	14.407	CIRCULAR	0.375	0.375	0.01048	0.239	2.19	1.33	0.96

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2036	CONC	1036	1035	48.976	CIRCULAR	0.375	0.375	0.01058	0.219	1.98	1.21	1
2037	CONC	1037	1036	101.266	CIRCULAR	0.375	0.375	0.0099	0.14	1.41	0.8	1
2038	PVC	1038	1037	70.876	CIRCULAR	0.3	0.3	0.02488	0.087	1.67	0.57	0.77
2039	CONC	1039	1034	63.665	CIRCULAR	0.25	0.25	0.02217	0.123	2.5	1.38	1
2040	CONC	1040	1039	9.197	CIRCULAR	0.3	0	0.03994	0.128	2.64	0.66	1
2041	CONC	1041	1040	11.185	CIRCULAR	0.3	0	0.02415	0.132	1.91	0.88	1
2042	CONC	1042	1041	61.023	CIRCULAR	0.3	0.3	0.02511	0.078	1.36	0.51	0.86
2043	CONC	1043	1042	76.56	CIRCULAR	0.25	0.25	0.01821	0.033	1.53	0.41	0.54
2044	CONC	1044	1043	62.043	CIRCULAR	0.25	0.25	0.07389	0.001	0.99	0.01	0.06
2046	CSP	1046	9045	74.84	CIRCULAR	0.4	0.3	0.06444	0.254	3.99	0.48	0.5
2047	CONC	1047	1046	23.173	CIRCULAR	0.3	0.3	0.01623	0.219	3.2	1.78	0.93
2049	CSP	1049	9048	62.62	CIRCULAR	0.3	0.3	0.00958	0.053	0.81	1.04	0.93
2050	CSP	1050	1049	36.383	CIRCULAR	0.3	0.3	0.01746	0.038	0.75	0.56	0.7
2051	CSP	1051	1050	18.583	CIRCULAR	0.3	0.3	0.02578	0.028	0.88	0.34	0.47
2053	CSP	1053	9052	42.537	CIRCULAR	0.25	0.25	0.01472	0.05	1.02	1.28	1
2055	CSP	1055	9054	18.369	CIRCULAR	0.25	0.25	0.00468	0.038	0.77	1.71	1
2059	CONC	1059	1058	60.398	CIRCULAR	0.6	0	0.0327	0.644	3.74	0.58	0.59
2060	CONC	1060	1059	68.568	CIRCULAR	0.45	0.45	0.01815	0.546	3.58	1.42	0.92
2061	CONC	1061	1060	87.504	CIRCULAR	0.45	0	0.01038	0.355	2.23	1.22	1
2062	CONC	1062	1061	87.756	CIRCULAR	0.45	0	0.01042	0.244	1.53	0.84	1
2063	CONC	1063	1062	27.468	CIRCULAR	0.45	0	0.01249	0.261	2.12	0.82	1
2064	CONC	1064	1063	5.477	CIRCULAR	0.45	0	-0.00402	0.14	1.07	0.77	1
2065	STEEL	1065	1064	37.769	CIRCULAR	0.35	0.35	0.00559	0.136	1.42	1.25	1
2066	STEEL	1066	1065	13.542	CIRCULAR	0.375	0.375	-0.00022	0.118	1.13	4.51	1
2067	STEEL	1067	1066	21.065	CIRCULAR	0.375	0.375	-0.00043	0.113	1.02	3.12	1
2068	STEEL	1068	1067	28.789	CIRCULAR	0.375	0.375	0.03128	0.055	1.01	0.18	0.64
2069	HDPE	1069	1057-2	22.261	CIRCULAR	0.45	0	-0.00988	0.22	2.05	0.78	0.64

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2070	HDPE	1070	1069	71.89	CIRCULAR	0.45	0	0.00153	0.22	1.38	1.97	1
2071	HDPE	1071	1070	37.34	CIRCULAR	0.45	0	0.00589	0.22	1.38	1.01	1
2073	HDPE	1073	1072	44	CIRCULAR	0.9	0	0.00182	0.307	0.48	0.28	1
2074	HDPE	1074	1073	32.749	CIRCULAR	0.9	0	-0.00547	0.432	0.68	0.32	1
2075	HDPE	1075	1074	66.128	CIRCULAR	0.9	0	0.00209	0.526	0.83	0.64	1
2076	CONC	1076	1075	24.583	CIRCULAR	0.6	0	0.0098	0.434	1.53	0.71	1
2077	CONC	1077	1076	42.767	CIRCULAR	0.6	0	0.00818	0.411	1.45	0.74	1
2078	HDPE	1078	1077	17.3	CIRCULAR	0.45	0	0.06604	0.421	2.79	0.57	1
2079	CSP	1079	1078	27.8	CIRCULAR	0.45	0	0.1114	0.421	3.58	0.82	0.69
2080	CSP	1080	1079	10.564	CIRCULAR	0.45	0.45	0.01212	0.336	2.16	1.98	0.94
2081	CONC	1081	1080	49.651	CIRCULAR	0.45	0.45	0.0006	0.332	2.09	4.74	1
2082	CONC	1082	1081	11.704	CIRCULAR	0.45	0.45	-0.00205	0.34	2.14	2.63	1
2083	CONC	1083	1082	63.607	CIRCULAR	0.45	0	0.01097	0.307	1.93	1.03	1
2084	CONC	1084	1083	61.296	CIRCULAR	0.45	0.3	0.0068	0.271	1.7	1.15	1
2085	STEEL	1085	1084	14.919	CIRCULAR	0.45	0.3	0.00945	0.252	1.67	1.68	1
2086	STEEL	1086	1085	48.568	CIRCULAR	0.3	0.45	0.01345	0.073	1.09	1.21	1
2087	STEEL	1087	1086	36.82	CIRCULAR	0.3	0.45	0.01073	0.071	1	1.3	1
2089	CONC	1089	1060	3.104	CIRCULAR	0.2	0.2	0.20317	0.153	4.87	1.04	1
2090	CONC	1090	1063	31.884	CIRCULAR	0.2	0	0.00194	0.06	1.92	4.15	1
2091	CONC	1091	1063	42.76	CIRCULAR	0.45	0	0.00624	0.081	1.06	0.36	1
2092	CONC	1092	1091	51.613	CIRCULAR	0.3	0	0.00911	0.03	1.13	0.32	0.75
2093	CONC	1093	1092	6.836	CIRCULAR	0.3	0	0.04099	0.03	1.77	0.15	0.29
2094	CONC	1094	1072	28.5	CIRCULAR	0.45	0	0.0014	0.16	1.01	1	1
2095	RIBBED_HDPE	1095	1073	58.517	CIRCULAR	0.9	0	0.00701	0.126	0.2	0.17	1
2096	HDPE	1096	1095	12.576	CIRCULAR	0.45	0	0.05495	0.111	1.19	0.17	1
2097	PVC	1097	1079	59.902	CIRCULAR	0.3	0.3	0.00287	0.097	1.37	1.87	0.99
2098	PVC	1098	1097	12.727	CIRCULAR	0.3	0.3	-0.00471	0.079	1.11	1.18	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2099	PVC	1099	1098	20.381	CIRCULAR	0.3	0.3	0.0103	0.066	0.93	0.67	1
2100	PVC	1100	1099	49.455	CIRCULAR	0.3	0.3	0.00233	0.04	0.75	0.85	1
2101	CSP	1101	1081	7.422	CIRCULAR	0.3	0.45	0.10116	0.079	1.12	0.48	1
2102	PVC	1102	1082	11.54	CIRCULAR	0.3	0	0.01309	0.067	0.95	0.61	1
2104	CONC	1104	9103	5.793	CIRCULAR	0.35	0	0.01001	0.183	1.9	1.25	1
2105	CONC	1105	1104	8.597	CIRCULAR	0.25	0	0.02187	0.174	3.55	1.98	1
2107	CONC	1107	9106	22.85	CIRCULAR	0.35	0	0.00521	0.187	1.94	1.85	1
2108	CONC	1108	1107	10.413	CIRCULAR	0.35	0	0.02036	0.187	1.94	0.9	1
2109_1	HDPE	1109	1109-2	38.591	CIRCULAR	0.4	0	0.06922	0.158	3.38	0.29	0.59
2109_2	HDPE	1109-2	1108	37.018	CIRCULAR	0.4	0	0.01989	0.147	1.74	0.5	0.96
2110	CSP	1110	1109	13.246	CIRCULAR	0.6	0	0.04618	0.1	1.77	0.14	0.25
2111	CSP	1111	1110	25.591	CIRCULAR	0.15	0	0.00555	0.015	0.91	2.45	0.88
2112	HDPE	1112	1111	21.591	CIRCULAR	0.15	0	0.03643	0.02	1.13	0.69	1
2113	CONC	1113	1109	37.719	CIRCULAR	0.375	0	0.03125	0.036	1.66	0.12	0.26
2114	CONC	1114	1113	9.162	CIRCULAR	0.375	0	0.02402	0.034	1.65	0.13	0.24
2115	CSP	1115	1114	12.558	CIRCULAR	0.525	0	0.0137	0.029	0.81	0.1	0.22
2119	CONC	1119	1118	20.817	CIRCULAR	0.9	0	0.00408	1.229	2.1	1.06	1
2120	CONC	1120	1119	46.274	CIRCULAR	0.9	0	0.00497	1.22	2.03	0.96	0.89
2121	CONC	1121	1120	73.495	CIRCULAR	0.675	0	0.04338	1.177	3.83	0.67	0.8
2122	CONC	1122	1121	48.318	CIRCULAR	0.675	0	0.04475	1.139	5.16	0.64	0.59
2123	CONC	1123	1122	83.33	CIRCULAR	0.675	0	0.05667	1.069	5.61	0.53	0.53
2124	CONC	1124	1123	54.154	CIRCULAR	0.675	0	0.0477	1.034	4.73	0.56	0.59
2125	CONC	1125	1124	55.315	CIRCULAR	0.675	0	0.04189	0.919	4.43	0.53	0.57
2126	CONC	1126	1125	34.677	CIRCULAR	0.675	0	0.02784	0.903	4.04	0.64	0.6
2127	CONC	1127	1126	22.493	CIRCULAR	0.525	0	0.02757	0.365	2.44	0.51	0.65
2128	CONC	1128	1127	34.1	CIRCULAR	0.525	0.475	0.02951	0.34	3.28	0.46	0.48
2129	CONC	1129	1128	13.063	CIRCULAR	0.45	0.475	0.07523	0.334	3.89	0.43	0.53

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2130	STEEL	1130	1129	37.9	CIRCULAR	0.375	0.375	0.02338	0.299	2.71	1.11	1
2131	CSP	1131	1130	12.295	CIRCULAR	0.4	0	0.01765	0.142	1.37	0.95	1
2132	CSP	1132	1131	46.036	CIRCULAR	0.375	0	0.01399	0.063	0.9	0.56	0.77
2133	CSP	1133	1132	60.438	CIRCULAR	0.375	0.375	0.01602	0.055	0.98	0.45	0.51
2134	CSP	1134	1133	58.637	CIRCULAR	0.375	0.375	0.02124	0.043	1	0.31	0.42
2135	CSP	1135	1134	55.742	CIRCULAR	0.375	0.375	0.02665	0.033	0.87	0.21	0.37
2136	CSP	1136	1135	14.355	CIRCULAR	0.3	0.3	0.01435	0.029	0.91	0.45	0.46
2137	CSP	1137	1136	5.244	CIRCULAR	0.3	0.3	0.0896	0.002	0.11	0.02	0.35
2138	CONC	1138	1117	32.036	CIRCULAR	0.3	0	0.00499	0.031	0.92	0.46	0.49
2139	CONC	1139	1138	30.981	CIRCULAR	0.3	0	0.00533	0.019	0.79	0.27	0.39
2143	CSP	1143	1142	77.499	CIRCULAR	0.4	0	0.03186	0.052	1.52	0.26	0.32
2144	CONC	1144	1124	9.923	CIRCULAR	0.375	0	0.06412	0.059	1.25	0.13	0.59
2145	CONC	1145	1144	21.52	CIRCULAR	0.375	0	0.0762	0.042	2.67	0.09	0.2
2146	CONC	1146	1126	13.52	CIRCULAR	0.45	0	0.02405	0.526	3.31	1.19	1
2147	CONC	1147	1146	34.475	CIRCULAR	0.45	0	0.02815	0.52	3.27	1.09	1
2148	CONC	1148	1147	80.92	CIRCULAR	0.45	0	0.02744	0.497	3.25	1.05	1
2149	CONC	1149	1148	7.763	CIRCULAR	0.375	0	0.02642	0.473	4.28	1.66	1
2150	CONC	1150	1149	49.937	CIRCULAR	0.375	0	0.04028	0.32	3.02	0.91	1
2151	CONC	1151	1150	62.101	CIRCULAR	0.375	0	0.02352	0.284	2.73	1.06	1
2152	CONC	1152	1151	6.721	CIRCULAR	0.375	0	0.03275	0.202	2.19	0.64	1
2153	CONC	1153	1152	108.109	CIRCULAR	0.375	0	0.0217	0.226	2.57	0.88	0.89
2154	CSP	1154	1130	49.221	CIRCULAR	0.375	0.375	0.01449	0.154	1.45	1.35	1
2155	CSP	1155	1154	58.333	CIRCULAR	0.375	0.375	0.01752	0.141	1.3	1.12	1
2156	CSP	1156	1155	11.565	CIRCULAR	0.375	0.375	0.01738	0.14	1.42	1.12	1
2157	CSP	1157	1156	108.933	CIRCULAR	0.375	0.375	0.02342	0.146	1.41	1	1
2158	CSP	1158	1157	14.434	CIRCULAR	0.3	0.3	0.0061	0.098	1.42	2.39	1
2159	CSP	1159	1158	42.657	CIRCULAR	0.3	0.3	0.01702	0.069	0.98	1.02	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2160	CSP	1160	1159	59.293	CIRCULAR	0.3	0.3	0.01815	0.08	1.13	1.13	1
2163	STEEL	1163	1162	15.724	CIRCULAR	0.875	0.875	0.03341	0.103	0.66	0.06	0.31
2164	STEEL	1164	1163	41.748	CIRCULAR	0.675	0.675	0.07697	0.079	1.97	0.06	0.17
2165	CSP	1165	1155	45.717	CIRCULAR	0.3	0.3	0.00147	0.066	0.98	3.27	1
2166	CSP	1166	1157	3.965	CIRCULAR	0.3	0.3	0.01968	0.134	1.93	1.83	1
2168	PVC	1168	9167	70.72	CIRCULAR	0.9	0	0.00551	0.92	1.66	0.68	1
2169	PVC	1169	1168	8.087	CIRCULAR	0.9	0	0.0141	0.604	1.42	0.28	0.96
2170	PVC	1170	1169	32.944	CIRCULAR	0.75	0	0.00401	0.553	1.37	0.78	0.98
2171	PVC	1171	1170	15.151	CIRCULAR	0.6	0.6	0.00502	0.52	2.22	1.2	0.99
2172	PVC	1172	1171	63.31	CIRCULAR	0.6	0.6	0.00164	0.202	1.02	0.81	0.93
2173	HDPE_RIBBED	1173	1172	28.296	CIRCULAR	0.3	0.3	0.00778	0.019	0.96	0.22	0.46
2175	PVC	1175	9174	30.964	CIRCULAR	0.9	0	0.00762	1.459	2.41	0.92	1
2176	PVC	1176	1175	44.898	CIRCULAR	0.8	0	0.00757	0.797	1.75	0.69	1
2177	PVC	1177	1176	8.565	CIRCULAR	0.8	0	0.00654	0.844	2.56	0.79	1
2178	PVC	1178	1177	48.673	CIRCULAR	0.625	0	0.00058	0.31	1.14	1.89	1
2179	PVC	1179	1178	41.237	CIRCULAR	0.6	0	0.00184	0.223	1.04	0.85	1
2180	PVC	1180	1179	30.438	CIRCULAR	0.375	0	-0.00131	0.119	1.17	1.87	1
2181	PVC	1181	1180	25.898	CIRCULAR	0.375	0	0.00687	0.047	0.64	0.32	0.95
2182	PVC	1182	1181	47.831	CIRCULAR	0.375	0	0.00422	0.026	0.74	0.23	0.61
2183	PVC	1183	1177	35.01	CIRCULAR	0.6	0	-0.00089	0.214	1.06	2.16	1
2185	HDPE	1185	9184	61.839	CIRCULAR	0.3	0	0.05237	0.091	2.89	0.41	0.46
2186	HDPE	1186	1185	0.816	CIRCULAR	0.375	0	-0.00123	0.091	1.43	1.49	0.56
2187	HDPE	1187	1186	49.473	CIRCULAR	0.3	0	0.08541	0.076	1.58	0.27	0.64
2188	HDPE	1188	1187	0.9	CIRCULAR	0.3	0	0.04115	0.076	2.21	0.39	0.49
2189	HDPE	1189	1188	60.057	CIRCULAR	0.3	0	0.0686	0.048	2.27	0.19	0.34
2190	HDPE	1190	1189	0.827	CIRCULAR	0.3	0	0.02782	0.048	1.49	0.3	0.47
2191	HDPE	1191	1190	58.336	CIRCULAR	0.3	0	0.06959	0.026	1.78	0.1	0.26

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2193	HDPE	1193	9192	7.253	CIRCULAR	0.3	0	0.03187	0.152	2.33	0.88	0.86
2194	HDPE	1194	1193	88.549	CIRCULAR	0.3	0	0.03706	0.103	2.63	0.55	0.54
2195	HDPE	1195	1194	76.909	CIRCULAR	0.3	0	0.04176	0.052	2.22	0.26	0.37
2197	HDPE	1197	9196	16.286	CIRCULAR	0.3	0	0.06189	0.074	2.71	0.31	0.41
2198	HDPE	1198	1197	0.805	CIRCULAR	0.3	0	0.08101	0.074	1.73	0.27	0.59
2199	HDPE	1199	1198	37.113	CIRCULAR	0.3	0	0.07376	0.061	1.85	0.23	0.48
2200	HDPE	1200	1199	0.827	CIRCULAR	0.3	0	0.05935	0.061	2.43	0.26	0.39
2201	HDPE	1201	1200	59.038	CIRCULAR	0.3	0	0.06576	0.039	2.54	0.16	0.27
2202	HDPE	1202	1201	0.827	CIRCULAR	0.3	0	0.24	0.039	3.19	0.08	0.23
2203	HDPE	1203	1202	60.284	CIRCULAR	0.3	0	0.05691	0.012	1.7	0.05	0.15
2205	CSP	1205	9204	14.489	CIRCULAR	0.3	0	0.004	0.058	0.83	1.76	1
2206	CSP	1206	1205	48.422	CIRCULAR	0.3	0.3	0.00525	0.042	0.6	1.11	1
2207	CSP	1207	1206	10.285	CIRCULAR	0.3	0.3	0.00272	0.037	0.67	1.37	1
2208	CSP	1208	1207	50.592	CIRCULAR	0.3	0.3	0.01649	0.007	0.16	0.11	0.61
2211	HDPE	1211	1210	34.175	CIRCULAR	0.9	0	0.03071	0.945	3.78	0.3	0.42
2212	HDPE	1212	1211	5.861	CIRCULAR	0.9	0	0.00512	0.717	1.67	0.55	0.64
2213	HDPE	1213	1212	16.409	CIRCULAR	0.9	0	0.03879	0.698	1.94	0.2	0.55
2214	HDPE	1214	1213	34.296	CIRCULAR	0.75	0.625	0.01761	0.677	3.03	0.46	0.5
2215	PVC	1215	1214	52.042	CIRCULAR	0.6	0.525	0.05182	0.631	4.75	0.45	0.48
2216	PVC	1216	1215	15.51	CIRCULAR	0.6	0.525	0.08907	0.627	5.11	0.34	0.45
2217	HDPE	1217	1216	59.584	CIRCULAR	0.6	0.375	0.06321	0.582	4.74	0.38	0.45
2218	HDPE	1218	1217	46.072	CIRCULAR	0.6	0.375	0.10235	0.57	5.05	0.29	0.42
2219	PVC	1219	1218	11.219	CIRCULAR	0.45	0	0.05723	0.349	4.12	0.51	0.53
2220	CSP	1220	1219	91.231	CIRCULAR	0.4	0	0.01851	0.172	1.67	1.12	0.81
2221	CSP	1221	1220	35.201	CIRCULAR	0.4	0	0.04006	0.198	1.66	0.87	1
2222	CSP	1222	1221	34.948	CIRCULAR	0.3	0	0.05882	0.144	2.14	1.14	1
2223	CSP	1223	1222	53.811	CIRCULAR	0.4	0	0.01779	0.161	1.4	1.07	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2224	CSP	1224	1223	30.014	CIRCULAR	0.4	0	0.01553	0.145	1.16	1.03	1
2225	CSP	1225	1224	34.71	CIRCULAR	0.4	0	0.01389	0.144	1.17	1.08	1
2226	CSP	1226	1225	44.263	CIRCULAR	0.3	0	0.01586	0.089	1.3	1.35	1
2227	CSP	1227	1226	11.726	CIRCULAR	0.3	0	0.02995	0.11	1.56	1.22	1
2228	HDPE	1228	1211	9.53	CIRCULAR	0.6	0	0.01007	0.234	1.96	0.38	0.44
2229	CSP	1229	1218	99.568	CIRCULAR	0.4	0	0.02097	0.195	1.64	1.19	0.9
2230	CSP	1230	1229	7.377	CIRCULAR	0.4	0	0.0426	0.116	0.98	0.5	1
2231	CSP	1231	1230	122.575	CIRCULAR	0.4	0	0.0327	0.104	1.48	0.51	0.75
2232	CSP	1232	1231	65.173	CIRCULAR	0.3	0	0.02075	0.065	1.24	0.87	0.7
2233	CSP	1233	1232	45.901	CIRCULAR	0.3	0	0.01883	0.044	0.95	0.61	0.65
2234	CSP	1234	1223	91.35	CIRCULAR	0.375	0	0.00573	0.098	0.96	1.37	1
2235	CSP	1235	1234	12.315	CIRCULAR	0.3	0	0.0056	0.095	1.34	2.42	1
2236	CSP	1236	1235	18.84	CIRCULAR	0.3	0.3	-0.00058	0.071	1	5.57	1
2237	CSP	1237	1236	74.253	CIRCULAR	0.375	0.375	0.01661	0.138	1.25	1.13	1
2238	CONC	1238	1237	47.398	CIRCULAR	0.3	0	0.01874	0.151	2.13	1.14	1
2239	CONC	1239	1238	29.423	CIRCULAR	0.4	0.4	0.02985	0.255	2.03	0.71	1
2240	CONC	1240	1239	53.185	CIRCULAR	0.4	0.4	0.00852	0.132	1.63	0.69	0.61
2241	CONC	1241	1240	21.046	CIRCULAR	0.375	0	0.01235	0.103	1.39	0.53	0.64
2242	CONC	1242	1241	70.739	CIRCULAR	0.25	0	0.01103	0.029	1.24	0.46	0.48
2243	CONC	1243	1242	20	CIRCULAR	0.25	0	0.005	0.011	0.71	0.26	0.35
2244	CONC	1244	1240	21.707	CIRCULAR	0.25	0	0.01014	0.03	1.21	0.5	0.5
2246	HDPE	1246	9245	40.492	CIRCULAR	0.4	0	0.03415	0.191	2.83	0.49	0.53
2247	PVC	1247	1246	13.975	CIRCULAR	0.45	0.45	-0.001	0.074	0.47	0.82	1
2248	PVC	1248	1247	32.542	CIRCULAR	0.45	0.45	0.00695	0.052	0.33	0.22	0.97
2249	PVC	1249	1248	32.194	CIRCULAR	0.45	0.45	0.00075	0.039	0.27	0.49	0.85
2250	HDPE	1250	1246	19.934	CIRCULAR	0.3	0	0.04293	0.104	2.81	0.52	0.52
2251	CSP	1251	1250	57.08	CIRCULAR	0.3	0	0.04022	0.082	1.81	0.78	0.61

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2252	CSP	1252	1251	54.935	CIRCULAR	0.3	0	0.05005	0.067	1.46	0.57	0.62
2254	PE	1254	9253	9.8	CIRCULAR	0.9	0	0.00633	0.982	1.93	0.68	0.75
2255	PE	1255	1254	32.1	CIRCULAR	0.9	0	0.00592	0.978	1.67	0.7	0.87
2256	PE	1256	1255	49.5	CIRCULAR	0.9	0	0.00566	0.974	1.82	0.71	0.79
2257	PE	1257	1256	44	CIRCULAR	0.9	0	0.00682	0.966	2.36	0.65	0.62
2258	PE	1258	1257	29.7	CIRCULAR	0.9	0	0.00303	0.954	2.06	0.96	0.68
2259	PE	1259	1258	35	CIRCULAR	0.9	0	0.00629	0.947	2.17	0.66	0.65
2260	PE	1260	1259	36.8	CIRCULAR	0.9	0	0.00598	0.927	2.11	0.66	0.66
2261	PE	1261	1260	65.5	CIRCULAR	0.75	0	0.05029	0.909	3.66	0.36	0.55
2262	PE	1262	1261	68.1	CIRCULAR	0.825	0	0.05648	0.893	5.31	0.26	0.35
2263	PE	1263	1262	59	CIRCULAR	0.75	0	0.04488	0.874	4.86	0.37	0.43
2264	PE	1264	1263	60	CIRCULAR	0.75	0	0.0301	0.847	4.16	0.44	0.47
2265	PE	1265	1264	51.209	CIRCULAR	0.75	0	0.02031	0.825	3.56	0.52	0.52
2266	PE	1266	1265	25.5	CIRCULAR	0.75	0	0.00549	0.817	2.21	0.99	0.78
2267	PE	1267	1266	78	CIRCULAR	0.75	0	0.01257	0.463	2.59	0.37	0.43
2268	PE	1268	1267	70.4	CIRCULAR	0.75	0	0.01009	0.426	2.33	0.38	0.43
2269	PE	1269	1268	91.3	CIRCULAR	0.75	0	0.00526	0.399	1.81	0.49	0.5
2270	PE	1270	1269	69.8	CIRCULAR	0.75	0	0.00532	0.364	1.71	0.45	0.49
2271	PE	1271	1270	64.3	CIRCULAR	0.75	0	0.00605	0.326	1.73	0.38	0.44
2272	PE	1272	1271	72	CIRCULAR	0.75	0	0.00542	0.247	1.49	0.3	0.4
2273	PE	1273	1272	62.8	CIRCULAR	0.525	0	0.0051	0.21	1.54	0.68	0.6
2274	PE	1274	1273	26.5	CIRCULAR	0.45	0	0.02378	0.156	2.49	0.35	0.42
2275	PE	1275	1274	82	CIRCULAR	0.375	0	0.01464	0.125	1.99	0.59	0.55
2276	PE	1276	1275	87.1	CIRCULAR	0.375	0	0.01355	0.033	0.97	0.16	0.36
2277	PE	1277	1266	13	CIRCULAR	0.3	0	0.00523	0.242	1.71	1.73	1
2278	PE	1278	1277	93.7	CIRCULAR	0.525	0	0.00504	0.226	1.17	0.74	1
2280	CSP	1280	9279	16.951	CIRCULAR	0.6	0	0.02295	0.805	1.68	0.53	0.55

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2282	CSP	1282	1281	30.705	CIRCULAR	0.6	0	0.00576	0.799	1.65	1.05	0.6
2284	CSP	1284	1283	8.054	CIRCULAR	0.6	0	0.01018	0.442	1.93	1.32	0.8
2286	PVC	1286	1285	14.01	CIRCULAR	0.3	0	0.07717	0.33	4.69	0.84	1
2287	PVC	1287	1286	76.705	CIRCULAR	0.3	0	0.05615	0.23	3.9	1	1
2288	PVC	1288	1287	45.264	CIRCULAR	0.3	0	0.00499	0.13	2.01	1.75	1
2289	PVC	1289	1288	91.461	CIRCULAR	0.3	0	0.00472	0.091	1.29	1.26	1
2292	PVC	1292	9291	59.4	CIRCULAR	0.45	0	0.00556	0.168	1.38	0.79	0.72
2293	PVC	1293	1292	13.671	CIRCULAR	0.45	0.45	0.00805	0.163	1.55	0.64	0.63
2294	PVC	1294	1293	102.324	CIRCULAR	0.45	0.45	0.00528	0.125	1.26	0.6	0.6
2295	PVC	1295	1294	47.371	CIRCULAR	0.375	0.375	0.00464	0.087	1.16	0.73	0.65
2296	PVC	1296	1295	35.122	CIRCULAR	0.375	0.375	0.00484	0.033	0.69	0.27	0.48
2298	CONC	1298	9297	9.645	CIRCULAR	0.6	0	0.00332	0.208	1.13	0.59	0.62
2299	UNKNOWN	1299	1298	8.515	CIRCULAR	0.4	0	0.00681	0.184	1.65	1.07	0.83
2300	STEEL	1300	1299	39.381	CIRCULAR	0.2	0	0.04196	0.007	0.9	0.2	0.3
2301	HDPE	1301	1299	24.051	CIRCULAR	0.15	0	0.02034	0.016	1.1	0.37	0.43
2302	HDPE	1302	1301	19.112	CIRCULAR	0.15	0	0.01036	0.009	0.77	0.3	0.38
2304	CSP	1304	9303	36.37	CIRCULAR	0.6	0	0.11648	0.989	4.21	0.87	0.78
2305	RIBBED_HDPE	1305	1304	9.427	CIRCULAR	0.55	0	0.0191	0.679	3.16	1.86	0.95
2307	CSP	1307	1306	42.393	CIRCULAR	0.45	0	0.03292	0.316	2.65	1.13	0.71
2308	CSP	1308	1307	56.667	CIRCULAR	0.35	0	0.0362	0.164	1.76	1.09	1
2309	PVC	1309	1308	100.647	CIRCULAR	0.3	0.3	0.01745	0.129	1.86	1.01	1
2310	CONC	1310	1305	47.115	CIRCULAR	0.375	0	0.02229	0.352	3.18	1.34	1
2311	CONC	1311	1310	54.358	CIRCULAR	0.375	0	0.06249	0.392	3.91	0.89	1
2312	CONC	1312	1311	46.375	CIRCULAR	0.375	0	0.05052	0.393	3.95	1	1
2313	HDPE	1313	1312	11.058	CIRCULAR	0.45	0	-0.00452	0.322	2.08	1.68	1
2314	HDPE	1314	1313	18.419	CIRCULAR	0.45	0	0.0308	0.333	2.09	0.67	1
2315	PVC	1315	1314	43.462	CIRCULAR	0.45	0.45	0.01438	0.347	2.35	1.01	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2316	PVC	1316	1315	61.486	CIRCULAR	0.45	0.45	0.0226	0.355	2.58	0.83	1
2317	PVC	1317	1316	8.763	CIRCULAR	0.45	0.45	0.03025	0.333	2.46	0.67	1
2318	PVC	1318	1317	10.142	CIRCULAR	0.45	0.45	0.0212	0.332	2.09	0.8	1
2319	PVC	1319	1318	8.121	CIRCULAR	0.45	0.45	0.00751	0.235	1.48	0.95	1
2320	PVC	1320	1319	30.788	CIRCULAR	0.45	0.45	0.01296	0.232	1.55	0.72	1
2321	PVC	1321	1320	29.137	CIRCULAR	0.45	0.45	0.00906	0.23	1.94	0.85	1
2322	PVC	1322	1321	34.52	CIRCULAR	0.45	0.45	0.0257	0.229	2.12	0.5	0.79
2323	CSP	1323	1322	21.909	CIRCULAR	0.25	0.25	0.05522	0.088	1.8	1.16	1
2324	PVC	1324	1323	61.661	CIRCULAR	0.3	0.3	0.02644	0.158	2.23	1	1
2325	PVC	1325	1324	44.06	CIRCULAR	0.45	0.45	0.00032	0.164	1.04	3.24	1
2326	PVC	1326	1325	13.476	CIRCULAR	0.45	0.45	0.00252	0.139	0.98	0.97	1
2327	PVC	1327	1326	33.088	CIRCULAR	0.45	0.45	0.00816	0.095	0.95	0.37	1
2328	PVC	1328	1327	30.109	CIRCULAR	0.45	0.45	-0.0006	0.069	0.73	0.99	1
2329	PVC	1329	1328	42.179	CIRCULAR	0.45	0.45	0.01029	0.048	0.53	0.17	0.66
2330	PVC	1330	1316	10.695	CIRCULAR	0.45	0.45	0.05422	0.046	1.02	0.07	0.88
2331	PVC	1331	1330	2.345	CIRCULAR	0.45	0.45	0.06624	0.083	2.32	0.11	0.53
2332	PVC	1332	1318	3.559	CIRCULAR	0.45	0.45	0.01517	0.114	0.72	0.32	1
2333	PVC	1333	1332	17.028	CIRCULAR	0.45	0.45	0.01316	0.107	0.99	0.33	1
2334	PVC	1334	1333	30.563	CIRCULAR	0.45	0.45	0.01217	0.084	1.54	0.27	0.99
2335	PVC	1335	1334	36.444	CIRCULAR	0.45	0.45	0.00535	0.062	1.12	0.29	0.73
2336	PVC	1336	1325	33.663	CIRCULAR	0.3	0.3	0.00648	0.021	0.7	0.27	1
2338	PE	1338	9337	65.111	CIRCULAR	0.45	0	0.00507	0.279	1.76	1.38	1
2339	PE	1339	1338	29.5	CIRCULAR	0.45	0	0.00502	0.167	1.05	0.83	1
2340	PE	1340	1338	31.5	CIRCULAR	0.3	0	0.01972	0.087	1.31	0.64	1
2341	PE	1341	1340	17.2	CIRCULAR	0.3	0	0.01995	0.083	1.88	0.61	0.94
2342	PE	1342	1341	14.2	CIRCULAR	0.3	0	0.02	0.08	1.77	0.59	0.67
2344	PVC	1344	9343	28.9	CIRCULAR	0.825	0	0.00197	0.724	1.35	1.14	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2345	PVC	1345	1344	41.091	CIRCULAR	0.9	0	0.01285	0.628	1.4	0.31	0.74
2346	CONC	1346	1345	45	CIRCULAR	0.75	0	0.00351	0.375	1.59	0.57	0.55
2347	CONC	1347	1346	58.044	CIRCULAR	0.75	0	0.00646	0.254	1.34	0.28	0.45
2348	CONC	1348	1347	54	CIRCULAR	0.525	0	0.011	0.223	2.06	0.49	0.5
2349	CONC	1349	1344	34.389	CIRCULAR	0.525	0	0.02481	0.083	1.05	0.12	0.62
2350	CONC	1350	1349	26.319	CIRCULAR	0.45	0	0.02779	0.083	2.2	0.17	0.29
2352	CONC	1352	1351	19.6	CIRCULAR	0.45	0	0.01531	0.076	0.48	0.22	1
2353	CONC	1353	1352	34.2	CIRCULAR	0.45	0	0.01199	0.073	0.7	0.23	1
2354	PVC	1354	1353	29.1	CIRCULAR	0.25	0	0.0134	0.068	1.38	0.98	1
2355	PVC	1355	1354	12.9	CIRCULAR	0.25	0	0.00853	0.024	0.84	0.43	1
2356	PVC	1356	1345	40.791	CIRCULAR	0.65	0	0.00123	0.196	1.07	0.74	0.6
2357	PVC	1357	1356	42.326	CIRCULAR	0.45	0.45	0.00182	0.187	1.32	1.54	0.84
2358	PVC	1358	1357	69.815	CIRCULAR	0.3	0.3	0.01527	0.079	1.31	0.66	0.8
2359	PVC	1359	1358	20.995	CIRCULAR	0.3	0.3	0.00157	0.023	0.66	0.61	0.56
2360	PVC	1360	1351	19.8	CIRCULAR	0.375	0	0.02324	0.06	0.55	0.23	1
2361	PVC	1361	1360	36	CIRCULAR	0.25	0	0.02056	0.033	1.04	0.38	1
2362	PVC	1362	1352	22.4	CIRCULAR	0.375	0	0.01875	0.057	1.04	0.24	1
2363	PVC	1363	1362	36.5	CIRCULAR	0.375	0	0.00247	0.045	0.53	0.52	1
2364	PVC	1364	1363	31.8	CIRCULAR	0.25	0	0.01384	0.029	0.59	0.41	1
2365	PVC	1365	1352	33	CIRCULAR	0.25	0	0.01121	0.052	1.05	0.82	1
2366	PVC	1366	1365	4.4	CIRCULAR	0.25	0	0.02273	0.061	1.6	0.68	1
2367	PVC	1367	1358	14.136	CIRCULAR	0.3	0.3	0.00149	0.03	0.65	0.81	0.72
2369	PVC	1369	1358	4.168	CIRCULAR	0.25	0.3	0.0096	0.007	0.71	0.13	0.33
2370	PVC	1370	1362	48.2	CIRCULAR	0.25	0	0.0193	0.02	0.82	0.24	1
2371	PVC	1371	1358	28.868	CIRCULAR	0.25	0	0.00935	0.019	1.02	0.34	0.41
2373	CSP	1373	9372	76.53	CIRCULAR	0.5	0	0.05301	0.356	2.58	0.76	0.66
2374	PE	1374	1373	6.5	CIRCULAR	0.45	0	0.02447	0.357	2.63	0.8	0.8

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2375	PE	1375	1374	16	CIRCULAR	0.45	0	0.02438	0.352	2.42	0.79	0.87
2376	PE	1376	1375	45.7	CIRCULAR	0.45	0	0.02335	0.339	2.79	0.78	0.73
2377	PE	1377	1376	23	CIRCULAR	0.45	0	0.01574	0.332	2.49	0.93	0.78
2378	PE	1378	1377	76	CIRCULAR	0.45	0	0.0104	0.27	1.98	0.93	0.8
2379	PE	1379	1378	39.5	CIRCULAR	0.45	0	0.01109	0.256	2.07	0.85	0.73
2380	PE	1380	1379	37.3	CIRCULAR	0.45	0	0.00598	0.24	1.69	1.09	0.84
2381	PE	1381	1380	67	CIRCULAR	0.375	0	0.00448	0.073	0.78	0.62	0.78
2382	PE	1382	1381	54.7	CIRCULAR	0.375	0	0.00475	0.027	0.56	0.22	0.44
2384	PE	1384	9383	10	CIRCULAR	0.375	0	0.01	0.14	1.45	0.8	0.82
2385	PE	1385	1384	6.8	CIRCULAR	0.375	0	0.02	0.141	1.72	0.57	0.75
2386	PE	1386	1385	34	CIRCULAR	0.3	0	0.0311	0.132	2.23	0.77	0.78
2387	PE	1387	1386	72.5	CIRCULAR	0.3	0	0.00825	0.106	1.56	1.21	0.92
2389	CSP	1389	9388	75.07	CIRCULAR	0.375	0	0.004	0.103	0.93	1.71	1
2390	PE	1390	1389	23.5	CIRCULAR	0.375	0	0.0014	0.051	0.46	0.78	1
2391	PE	1391	1390	89	CIRCULAR	0.3	0	0.0038	0.024	0.57	0.4	1
2393	PE	1393	1392	88	CIRCULAR	0.9	0	0.00128	0.118	0.31	0.18	1
2394	PE	1394	1393	86	CIRCULAR	0.3	0	0.01078	0.076	1.42	0.76	1
2395	PE	1395	1389	14.5	CIRCULAR	0.3	0	0.01221	0.048	0.68	0.45	1
2396	PE	1396	1395	60.5	CIRCULAR	0.3	0	0.0017	0.035	0.57	0.88	1
2397	CSP	1397	1389	16.075	CIRCULAR	0.3	0	0.00404	0.048	0.68	1.45	1
2398	PVC	1398	1397	103.231	CIRCULAR	0.375	0.375	0.0024	0.049	0.5	0.57	1
2399	PVC	1399	1397	8.695	CIRCULAR	0.3	0.375	0.01012	0.004	0.05	0.04	1
2401	PE	1401	9400	85	CIRCULAR	0.525	0	0.00132	0.378	1.75	2.42	1
2402	PE	1402	1401	12	CIRCULAR	0.525	0	0.007	0.148	0.68	0.41	1
2403	PE	1403	1402	76.5	CIRCULAR	0.375	0	0.004	0.111	1.01	1	1
2404	PE	1404	1403	63.5	CIRCULAR	0.3	0	0.004	0.082	1.16	1.34	1
2405	PE	1405	1404	34	CIRCULAR	0.3	0	0.00285	0.015	0.34	0.28	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2406	PE	1406	1401	31.4	CIRCULAR	0.3	0	-0.0015	0.103	1.46	2.76	1
2407	PE	1407	1406	14	CIRCULAR	0.3	0	-0.00714	0.087	1.23	1.07	1
2408	PE	1408	1407	26	CIRCULAR	0.3	0	-0.00173	0.024	0.34	0.59	1
2410	CONC	1410	9409	16.01	CIRCULAR	0.9	0	0.00999	0.92	2.27	0.51	0.61
2411	CONC	1411	1410	60.327	CIRCULAR	0.825	0	0.0199	0.884	2.62	0.44	0.6
2412	CONC	1412	1411	48.925	CIRCULAR	0.825	0	0.08038	0.862	4.44	0.21	0.39
2413	CONC	1413	1412	21.509	CIRCULAR	0.825	0	0.20404	0.758	7.48	0.12	0.24
2414	CONC	1414	1413	22.01	CIRCULAR	0.825	0	0.06008	0.758	6.11	0.17	0.28
2415	CONC	1415	1414	33.501	CIRCULAR	0.825	0	0.00501	0.758	1.96	0.75	0.68
2416	CONC	1416	1415	66.037	CIRCULAR	0.825	0	0.00501	0.759	1.95	0.75	0.68
2417	CONC	1417	1416	25.38	CIRCULAR	0.825	0	0.00473	0.713	1.92	0.72	0.66
2418	CONC	1418	1417	45.714	CIRCULAR	0.75	0	0.00547	0.655	1.97	0.8	0.71
2419	CONC	1419	1418	35.301	CIRCULAR	0.75	0	0.00453	0.564	1.76	0.75	0.68
2420	CONC	1420	1419	64.495	CIRCULAR	0.675	0	0.00512	0.415	1.72	0.69	0.64
2421	CONC	1421	1420	30.13	CIRCULAR	0.675	0	0.00465	0.355	1.59	0.62	0.6
2422	CONC	1422	1421	100.321	CIRCULAR	0.6	0	0.00638	0.244	1.72	0.5	0.5
2423	CONC	1423	1422	46.007	CIRCULAR	0.45	0	0.01	0.211	1.94	0.74	0.65
2424	CONC	1424	1423	53.524	CIRCULAR	0.375	0	0.02916	0.056	1.46	0.19	0.45
2425	CONC	1425	1418	9.664	CIRCULAR	0.375	0	0.00259	0.092	1.06	1.03	0.73
2426	CONC	1426	1425	12.67	CIRCULAR	0.375	0	0.00276	0.092	0.86	1	0.93
2427	CONC	1427	1426	36.805	CIRCULAR	0.3	0	0.01495	0.049	1.06	0.41	0.7
2428	CONC	1428	1423	20.034	CIRCULAR	0.3	0	0.00499	0.133	1.91	1.94	0.95
2430	CONC	1430	9429	41.6	CIRCULAR	0.6	0	0.01101	0.773	2.73	1.2	1
2431	CONC	1431	1430	97	CIRCULAR	0.6	0	0.02751	0.668	2.74	0.66	0.8
2432	CONC	1432	1431	93	CIRCULAR	0.6	0	0.008	0.527	2.2	0.96	0.8
2433	CONC	1433	1432	11	CIRCULAR	0.6	0	0.01309	0.53	2.48	0.75	0.73
2434	CONC	1434	1433	38.5	CIRCULAR	0.6	0	0.01112	0.466	2.16	0.72	0.71

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2435	CONC	1435	1434	25.5	CIRCULAR	0.525	0	0.01502	0.46	2.61	0.87	0.76
2436	CONC	1436	1435	52.5	CIRCULAR	0.3	0	0.025	0.04	1.68	0.26	0.47
2437	CONC	1437	1436	35	CIRCULAR	0.3	0	0.02501	0.03	1.68	0.2	0.3
2438	CONC	1438	1437	33	CIRCULAR	0.3	0	0.03001	0.022	1.64	0.13	0.25
2439	CONC	1439	1433	19.1	CIRCULAR	0.3	0	0.01047	0.049	1.38	0.49	0.5
2441	CONC	1441	9440	23	CIRCULAR	1.05	0	0.00696	1.712	2.31	0.75	0.8
2442	CONC	1442	1441	7.4	CIRCULAR	1.05	0	0.0027	1.712	2.01	1.21	0.95
2443	CONC	1443	1442	81.1	CIRCULAR	0.9	0	0.00555	1.029	1.7	0.76	0.92
2444	CONC	1444	1443	26.4	CIRCULAR	0.9	0	0.00455	0.936	1.95	0.77	0.81
2445	CONC	1445	1444	51	CIRCULAR	0.825	0	0.00392	0.342	0.99	0.38	0.74
2446	CONC	1446	1445	47	CIRCULAR	0.825	0	0.00511	0.335	1.48	0.33	0.51
2447	CONC	1447	1446	69.6	CIRCULAR	0.75	0	0.00445	0.303	1.58	0.41	0.45
2448	CONC	1448	1447	71.8	CIRCULAR	0.675	0	0.00808	0.17	1.28	0.23	0.4
2449	CONC	1449	1448	24.4	CIRCULAR	0.525	0	0.00287	0.072	0.95	0.31	0.38
2450	CONC	1450	1449	19.1	CIRCULAR	0.45	0	0.011	0	0.01	0	0.19
2451	CONC	1451	1442	23.1	CIRCULAR	0.75	0	0.01342	0.642	2.45	0.5	0.57
2452	CONC	1452	1451	98.1	CIRCULAR	0.75	0	0.00938	0.551	2.12	0.51	0.57
2453	CONC	1453	1452	85.3	CIRCULAR	0.6	0	0.0027	0.325	1.5	1.02	0.72
2454	CONC	1454	1453	41.4	CIRCULAR	0.6	0	0.03117	0.285	2.06	0.26	0.51
2455	CONC	1455	1454	63.6	CIRCULAR	0.525	0	0.00991	0.285	2.1	0.67	0.6
2456	CONC	1456	1455	33.2	CIRCULAR	0.45	0	0.01325	0.157	1.89	0.48	0.52
2457	CONC	1457	1444	60.5	CIRCULAR	0.75	0	0.00562	0.547	1.87	0.66	0.63
2458	CONC	1458	1457	86.5	CIRCULAR	0.675	0	0.00486	0.43	1.74	0.73	0.65
2459	CONC	1459	1458	60.5	CIRCULAR	0.6	0	0.00413	0.344	1.68	0.87	0.68
2460	CONC	1460	1459	30	CIRCULAR	0.525	0	0.00567	0.301	1.68	0.93	0.77
2461	CONC	1461	1460	30.8	CIRCULAR	0.525	0	0.00649	0.254	1.51	0.73	0.73
2462	CONC	1462	1461	56.5	CIRCULAR	0.525	0	0.00513	0.165	1.32	0.54	0.57

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2463	PVC	1463	1462	44.6	CIRCULAR	0.375	0	0.00135	0.046	0.82	0.71	0.51
2464	PVC	1464	1463	31.4	CIRCULAR	0.25	0	0.00987	0.013	0.94	0.22	0.36
2465	PVC	1465	1464	31.5	CIRCULAR	0.25	0	0.00984	0.006	0.77	0.1	0.22
2466	PVC	1466	1446	22.7	CIRCULAR	0.375	0	0.00661	0.007	0.66	0.05	0.16
2467	PVC	1467	1466	34.8	CIRCULAR	0.3	0	0.00345	0.001	0.17	0.02	0.17
2468	CONC	1468	1447	61.7	CIRCULAR	0.45	0	0.01054	0.112	1.7	0.38	0.43
2469	PVC	1469	1468	25	CIRCULAR	0.375	0	0.0148	0.085	1.8	0.4	0.44
2470	PVC	1470	1469	27.5	CIRCULAR	0.375	0	0.01491	0.031	1.37	0.15	0.26
2471	PVC	1471	1470	27.7	CIRCULAR	0.375	0	0.00866	0.017	0.93	0.1	0.22
2472	PVC	1472	1471	28.1	CIRCULAR	0.3	0	0.00356	0.009	0.61	0.16	0.26
2473	PVC	1473	1472	12.6	CIRCULAR	0.25	0	0.0127	0.001	0.38	0.01	0.08
2474	PVC	1474	1448	16.6	CIRCULAR	0.25	0	0.00723	0.074	1.56	1.47	0.94
2475	PVC	1475	1474	37.6	CIRCULAR	0.25	0	0.00559	0.024	0.6	0.54	1
2476	PVC	1476	1475	7.9	CIRCULAR	0.25	0	0.038	0.006	0.61	0.06	0.57
2477	PVC	1477	1449	19.3	CIRCULAR	0.3	0	0.01036	0.056	1.34	0.57	0.57
2478	CONC	1478	1452	20.4	CIRCULAR	0.45	0	0.02354	0.135	2.13	0.31	0.42
2479	PVC	1479	1478	25.5	CIRCULAR	0.25	0	0.01098	0.135	2.75	2.16	1
2480	PVC	1480	1455	33.9	CIRCULAR	0.25	0	0.018	0.136	2.77	1.7	1
2481	PVC	1481	1460	31.2	CIRCULAR	0.25	0	0.03592	0.031	1.87	0.27	0.47
2482	PVC	1482	1461	46	CIRCULAR	0.25	0	0.02044	0.044	1.69	0.51	0.52
2483	PVC	1483	1462	11.3	CIRCULAR	0.3	0	0.01593	0.09	1.6	0.74	0.74
2484	PVC	1484	1483	29.1	CIRCULAR	0.25	0	0.01031	0.035	1.23	0.58	0.58
2485	PVC	1485	1468	16.9	CIRCULAR	0.25	0	0.01835	0.027	1.39	0.33	0.42
2486	PVC	1486	1469	45	CIRCULAR	0.25	0	0.00511	0.038	0.99	0.89	0.73
2487	PVC	1487	1486	9.9	CIRCULAR	0.25	0	0.00404	0.008	0.46	0.22	0.55
2488	PVC	1488	1483	38.8	CIRCULAR	0.25	0	0.00954	0.03	1.12	0.52	0.56
2489	PVC	1489	1486	2.9	CIRCULAR	0.25	0	-0.01035	0.017	0.51	0.29	0.71

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2491	PVC	1491	9490	45	CIRCULAR	0.9	0	0.01129	2.579	4.05	1.34	1
2492	PVC	1492	1491	93.23	CIRCULAR	0.9	0.9	0.01739	2.495	3.92	1.04	1
2493	HDPE	1493	1492	35.959	CIRCULAR	0.75	0	0.02782	1.858	4.35	1	1
2494	CSP	1494	1493	41.861	CIRCULAR	1.05	0	0.03179	2.005	3.09	0.76	1
2495	CSP	1495	1494	27.18	CIRCULAR	1.05	0	0.02945	2.006	3.09	0.79	1
2496	CSP	1496	1495	39.043	CIRCULAR	1.05	0	0.03075	1.134	2.37	0.44	0.73
2497_1	HDPE	1497	1497-2	67.211	CIRCULAR	0.6	0	0.00625	0.9	3.21	1.85	0.97
2498	HDPE	1498	1497	12.41	CIRCULAR	0.6	0	0.01451	0.656	2.32	1.64	1
2499	CSP	1499	1498	101.39	CIRCULAR	0.9	0	0.01105	0.748	1.25	0.73	0.92
2500	CSP	1500	1499	12.237	CIRCULAR	0.9	0	0.00981	0.74	1.75	0.76	0.76
2502	CSP	1502	1501	97.75	CIRCULAR	1.2	0	0.0071	0.703	1.53	0.4	0.43
2503	CSP	1503	1502	53.961	CIRCULAR	0.825	0	0.00593	0.757	1.62	1.26	0.82
2505	CSP	1505	1504	13.672	CIRCULAR	0.9	0	0.00263	0.706	1.48	1.4	0.76
2509_1	CSP	1509	1508	22.134	CIRCULAR	0.6	0	0.0023	0.283	1	1.77	1
2509_2	CSP	1509	1553	23.119	CIRCULAR	0.6	0	0.00372	0.278	0.98	1.37	1
2510_1	CSP	1510	1509	26.581	CIRCULAR	0.6	0	0.00071	0.279	0.99	3.14	1
2510_2	CSP	1510	1509	26.581	CIRCULAR	0.6	0	0.00372	0.269	0.95	1.32	1
2511	CSP	1511	1510	44.728	CIRCULAR	0.75	0	0.00163	0.46	1.04	1.89	1
2512	CSP	1512	1511	39.265	CIRCULAR	0.75	0	0.0002	0.488	1.1	5.67	1
2513	CSP	1513	1512	33.026	CIRCULAR	0.75	0	0.00318	0.517	1.17	1.52	1
2514	CSP	1514	1513	13.208	CIRCULAR	0.8	0	0.00727	0.518	1.07	0.85	1
2515	PVC	1515	1514	21.663	CIRCULAR	0.9	0.9	0.00319	0.479	0.99	0.47	1
2516	PVC	1516	1515	18.718	CIRCULAR	0.9	0.9	0.00326	0.475	1.12	0.46	1
2517	PVC	1517	1516	23.223	CIRCULAR	0.9	0.9	0.00805	0.476	1.41	0.29	1
2519	HDPE	1519	1518	53.149	CIRCULAR	0.9	0	0.00453	0.449	1.52	0.37	0.86
2521	CONC	1521	1520	71.584	CIRCULAR	0.75	0	0.00126	0.186	0.74	0.47	0.83
2522	CONC	1522	1521	72.56	CIRCULAR	0.75	0	0.00343	0.156	0.85	0.24	0.62

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2523	CONC	1523	1522	35.817	CIRCULAR	0.75	0	0.00586	0.139	1.26	0.16	0.34
2524	CSP	1524	1523	70.641	CIRCULAR	0.375	0	0.00487	0.106	1.09	1.6	0.82
2525	CSP	1525	1524	38.738	CIRCULAR	0.375	0	0.00279	0.12	1.08	2.39	1
2526	CSP	1526	1525	14.325	CIRCULAR	0.375	0	0.00216	0.199	1.81	4.51	1
2527	CSP	1527	1526	25.706	CIRCULAR	0.375	0	0.00786	0.121	1.09	1.43	1
2528	PVC	1528	1491	2.343	CIRCULAR	0.375	0.375	0.13217	0.194	1.76	0.31	1
2529	PVC	1529	1528	46.495	CIRCULAR	0.3	0.3	0.04118	0.113	2.33	0.57	0.96
2530	PVC	1530	1529	36.85	CIRCULAR	0.3	0.3	0.03264	0.095	2.4	0.54	0.67
2531	CONC	1531	1492	81.65	CIRCULAR	0.6	0	0.02616	0.487	2.84	0.49	0.86
2532	CONC	1532	1531	41.623	CIRCULAR	0.45	0.45	0.01285	0.394	2.51	1.22	0.98
2533	PVC	1533	1532	64.246	CIRCULAR	0.45	0.45	0.00249	0.369	2.32	2.6	1
2534	PVC	1534	1533	40.445	CIRCULAR	0.45	0.45	0.00148	0.299	1.88	2.72	1
2535	PVC	1535	1534	56.107	CIRCULAR	0.4	0.4	0.0041	0.184	1.47	1.38	1
2536	CONC	1536	1495	36.701	CIRCULAR	0.675	0	0.01417	1.097	3.26	1.1	0.96
2537	CONC	1537	1536	55.586	CIRCULAR	0.675	0	0.01133	1.001	2.8	1.12	1
2538	CONC	1538	1537	102.782	CIRCULAR	0.675	0	0.00457	0.862	2.41	1.52	1
2539	CONC	1539	1538	100.213	CIRCULAR	0.525	0	0.00908	0.563	2.6	1.37	1
2540	CONC	1540	1539	102.169	CIRCULAR	0.45	0	0.01791	0.364	2.64	0.95	1
2541	CONC	1541	1540	98.468	CIRCULAR	0.375	0	0.00955	0.189	1.76	1.1	1
2542	CONC	1542	1541	56.196	CIRCULAR	0.3	0	0.01068	0.072	1.51	0.72	0.94
2543	CONC	1543	1542	24.162	CIRCULAR	0.3	0	0.00993	0.007	0.8	0.08	0.19
2544	CSP	1544	1496	15.957	CIRCULAR	0.3	0	0.00533	0.022	0.65	0.58	0.49
2545	CSP	1545	1498	51.123	CIRCULAR	0.3	0	0.01448	0.062	0.93	1.43	1
2546	HDPE_RIBBED	1546	1545	10.585	CIRCULAR	0.3	0	0.01682	0.066	1.08	0.97	1
2547	CSP	1547	1546	33.651	CIRCULAR	0.3	0.3	0.00909	0.051	0.75	1.02	1
2548	CSP	1548	1547	54.279	CIRCULAR	0.375	0.375	0.01187	0.115	1.04	1.11	1
2549	CSP	1549	1548	10.407	CIRCULAR	0.375	0.375	0.00423	0.105	0.95	1.7	1

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2550	CSP	1550	1549	13.072	CIRCULAR	0.375	0.375	0.01461	0.061	0.64	0.53	1
2551	CSP	1551	1550	33.256	CIRCULAR	0.375	0.375	0.00839	0.069	0.81	0.79	1
2552	CSP	1552	1551	22.033	CIRCULAR	0.375	0.375	-9E-05	0.09	0.81	9.89	1
2554	CSP	1554	1510	42.449	CIRCULAR	0.4	0	0.00956	0.128	1.03	1.16	1
2555	STEEL	1555	1554	16.686	CIRCULAR	0.35	0.35	0.03178	0.113	1.46	0.8	1
2556	STEEL	1556	1555	40.281	CIRCULAR	0.35	0.35	0.00122	0.097	1.11	3.52	0.99
2557	PVC	1557	1556	10.375	CIRCULAR	0.25	0.25	0.00231	0.097	1.97	3.39	1
2558	CONC	1558	1557	41.379	CIRCULAR	0.35	0.35	0.00527	0.079	0.82	0.75	1
2559	PVC	1559	1558	8.163	CIRCULAR	0.25	0.25	0.00074	0.072	1.47	4.46	1
2560	PVC	1560	1559	34.036	CIRCULAR	0.25	0.25	0.0174	0.067	1.37	0.86	1
2561	CSP	1561	1514	18.539	CIRCULAR	0.4	0	0.00642	0.055	0.72	0.61	1
2562	CSP	1562	1561	29.511	CIRCULAR	0.4	0	0.00559	0.035	0.61	0.41	1
2563	CSP	1563	1562	50.143	CIRCULAR	0.3	0	0.00199	0.012	0.26	0.52	1
2564	CSP	1564	1526	39.844	CIRCULAR	0.375	0.375	0.01175	0.026	0.31	0.25	1
2565	HDPE	1565	1531	10.568	CIRCULAR	0.25	0	0.03816	0.089	2.21	0.77	0.77
2566	PVC	1566	1533	9.327	CIRCULAR	0.3	0.3	0.0133	0.154	2.18	1.38	1
2567	CSP	1567	1566	25.41	CIRCULAR	0.4	0.4	0.03063	0.133	1.23	0.67	1
2568	PVC	1568	1567	8.007	CIRCULAR	0.375	0.375	0.01336	0.155	1.91	0.76	1
2569	PE	1569	1536	9.035	CIRCULAR	0.45	0	0.00553	0.048	0.97	0.23	0.69
2570	CONC	1570	1538	13.062	CIRCULAR	0.3	0	0.00513	0.218	3.08	3.15	1
2088	STEEL	1088	1087	19.3	EGG	0.375	0	0.01472	0.077	1.1	1.21	1
2162	STEEL	1162	1161	27.797	FILLED_CIRCULAR	0.875	0.3	0.03795	0.107	1.41	0.1	0.15
2306_2	CSP	1305-1	1305	1.536	FILLED_CIRCULAR	0.55	0.3	0	0.349	3.32	1.43	1
2140	CSPA	1140	1118	19.275	HORIZ_ELLIPSE	0.82	1.15	0.01531	0.219	0.8	0.11	0.38
2003-S		1003	1002	39.782	IRREGULAR	0	0	0.00088	0.316	0.21	0.03	0.45
2004-S		1004	1003	15.425	IRREGULAR	0	0	0.01258	0.315	0.3	0.01	0.3
2005-S		1005	1004	47.743	IRREGULAR	0	0	0.01439	0.228	0.41	0.01	0.19

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2006-S		1006	1005	49.502	IRREGULAR	0	0	0.00626	0.309	0.41	0.01	0.21
2007-S		1007	1003	27.326	IRREGULAR	0	0	-0.00263	0.089	0.08	0	0.47
2008-S		1008	1007	30.963	IRREGULAR	0	0	0.00094	0.155	0.08	0.01	0.5
2011-S		1011	1010	13.428	IRREGULAR	0	0	-0.01802	0	0	0	0
2012-S		1012	1011	24.01	IRREGULAR	0	0	0.01062	0	0	0	0
2015-S		1015	1014	67.333	IRREGULAR	0	0	0.02817	0	0	0	0
2016-S		1016	1015	12.7	IRREGULAR	0	0	0.01205	0	0	0	0
2017-S		1017	1016	8.576	IRREGULAR	0	0	0.02146	0	0	0	0
2020-S		1020	1019	8.53	IRREGULAR	0	0	0.00234	0	0	0	0
2021-S		1021	1020	47.453	IRREGULAR	0	0	0.08142	0	0	0	0
2022-S		1022	1021	35.43	IRREGULAR	0	0	0.05382	0	0	0	0
2027-S		1027	1026	10.163	IRREGULAR	0	0	-0.00895	0	0	0	0
2030-S		1030	1029	60.015	IRREGULAR	0	0	0.05037	0	0	0	0
2031-S		1031	1030	10.23	IRREGULAR	0	0	0.02738	0	0	0	0
2034-S		1034	1033	7.414	IRREGULAR	0	0	0.00216	0	0	0	0
2035-S		1035	1034	14.407	IRREGULAR	0	0	-0.0034	0	0	0	0
2036-S		1036	1035	48.976	IRREGULAR	0	0	0.00996	0	0	0	0
2037-S		1037	1036	101.266	IRREGULAR	0	0	0.01009	0	0	0	0
2038-S		1038	1037	70.876	IRREGULAR	0	0	0.02446	0	0	0	0
2039-S		1039	1034	63.665	IRREGULAR	0	0	0.03239	0	0	0	0
2040-S		1040	1039	9.197	IRREGULAR	0	0	0.03275	0	0	0	0
2041-S		1041	1040	11.185	IRREGULAR	0	0	0.01162	0	0	0	0
2042-S		1042	1041	61.023	IRREGULAR	0	0	0.02019	0	0	0	0
2043-S		1043	1042	76.56	IRREGULAR	0	0	0.02671	0	0	0	0
2044-S		1044	1043	62.043	IRREGULAR	0	0	0.0674	0	0	0	0
2047-S		1047	9045-2	35.032	IRREGULAR	0	0	0.01647	0.221	0.47	0.01	0.05
2050-S		1050	1049	36.383	IRREGULAR	0	0	0.01726	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2051-S		1051	1050	18.583	IRREGULAR	0	0	0.01232	0	0	0	0
2053-S		1053	9052-2	41.608	IRREGULAR	0	0	0.01659	0.094	0.4	0	0.16
2055-S		1055	9054-2	16.683	IRREGULAR	0	0	0.00719	0.05	0.34	0	0.01
2057_1	CHANNEL	9056-2	9056	132.723	IRREGULAR	0	0	0.00907	0.973	0.27	0.1	0.68
2057_2	CHANNEL	1057	9056-2	12.874	IRREGULAR	0	0	0.00901	0.807	0.81	0.04	0.31
2057_3	CHANNEL	1057-2	9056-2	12.823	IRREGULAR	0	0	0.00905	0.22	0.4	0.02	0.28
2058-S		1058	1057	23.854	IRREGULAR	0	0	0.0905	0	0	0	0
2059-S		1059	1058	60.398	IRREGULAR	0	0	0.02474	0	0	0	0
2060-S		1060	1059	68.568	IRREGULAR	0	0	0.03304	0	0	0	0
2061-S		1061	1060	87.504	IRREGULAR	0	0	0.01644	0.003	0.29	0	0.06
2062-S		1062	1061	87.756	IRREGULAR	0	0	0.00552	0	0	0	0.03
2063-S		1063	1062	27.468	IRREGULAR	0	0	-0.00208	0	0	0	0
2064-S		1064	1063	5.477	IRREGULAR	0	0	0.00694	0	0	0	0
2065-S		1065	1064	37.769	IRREGULAR	0	0	-0.01268	0	0	0	0.11
2066-S		1066	1065	13.542	IRREGULAR	0	0	0.00421	0.063	0.17	0	0.17
2067-S		1067	1066	21.065	IRREGULAR	0	0	-0.00043	0.031	0.11	0	0.14
2068-S		1068	1067	28.789	IRREGULAR	0	0	0.04485	0	0	0	0.07
2069-S		1069	1057-2	22.261	IRREGULAR	0	0	0.08022	0	0	0	0
2070-S		1070	1069	71.89	IRREGULAR	0	0	0.0057	0	0	0	0
2071-S		1071	1070	37.34	IRREGULAR	0	0	-0.03779	0	0	0	0
2073-S		1073	1072	46.5	IRREGULAR	0	0	-0.00854	0	0	0	0.2
2074-S		1074	1073	32.749	IRREGULAR	0	0	0.00064	0.32	0.16	0.02	0.38
2075-S		1075	1074	66.128	IRREGULAR	0	0	0.00496	0.146	0.07	0	0.21
2076-S		1076	1075	24.583	IRREGULAR	0	0	0.00126	0.149	0.37	0.01	0.04
2077-S		1077	1076	42.767	IRREGULAR	0	0	0.00507	0.075	0.34	0	0.03
2078-S		1078	1077	17.3	IRREGULAR	0	0	0.12643	0	0	0	0.01
2079-S		1079	1078	27.8	IRREGULAR	0	0	0.13089	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2080-S		1080	1079	10.564	IRREGULAR	0	0	0.01969	0	0	0	0
2081-S		1081	1080	49.651	IRREGULAR	0	0	0.00745	0	0	0	0
2082-S		1082	1081	11.704	IRREGULAR	0	0	0.00308	0.077	0.43	0	0.09
2083-S		1083	1082	63.607	IRREGULAR	0	0	0.00909	0.117	0.62	0	0.09
2084-S		1084	1083	61.296	IRREGULAR	0	0	0.00941	0.069	0.51	0	0.08
2085-S		1085	1084	14.919	IRREGULAR	0	0	0.00208	0.215	0.52	0.01	0.13
2086-S		1086	1085	48.568	IRREGULAR	0	0	0.012	0.216	0.77	0.01	0.13
2087-S		1087	1086	36.82	IRREGULAR	0	0	0.01834	0.149	0.78	0	0.1
2088-S		1088	1087	19.3	IRREGULAR	0	0	0.01083	0.146	0.7	0	0.09
2089-S		1089	1060	3.104	IRREGULAR	0	0	0.00902	0.107	0.6	0	0.09
2090-S		1090	1063	31.884	IRREGULAR	0	0	-0.01939	0	0	0	0.24
2091-S		1091	1063	42.76	IRREGULAR	0	0	0.0149	0	0	0	0
2092-S		1092	1091	51.613	IRREGULAR	0	0	0.03781	0	0	0	0
2093-S		1093	1092	6.836	IRREGULAR	0	0	0.02195	0	0	0	0
2094-S		1094	1072	25.2	IRREGULAR	0	0	-0.03375	0	0	0	0.42
2095-S		1095	1073	58.517	IRREGULAR	0	0	0.00552	0.057	0.03	0	0.23
2096-S		1096	1095	12.576	IRREGULAR	0	0	-0.03788	0.014	0	0	0.31
2097-S		1097	1079	59.902	IRREGULAR	0	0	-0.00548	0	0	0	0
2098-S		1098	1097	12.727	IRREGULAR	0	0	-0.00157	0	0	0	0
2099-S		1099	1098	20.381	IRREGULAR	0	0	0.00147	0	0	0	0
2100-S		1100	1099	49.455	IRREGULAR	0	0	0	0	0	0	0
2101-S		1101	1081	7.422	IRREGULAR	0	0	-0.06928	0	0	0	0.36
2102-S		1102	1082	11.54	IRREGULAR	0	0	-0.01135	0.04	0.05	0	0.13
2105-S		1105	1104	8.597	IRREGULAR	0	0	0.00093	0	0	0	0
2108-S		1108	1107	10.413	IRREGULAR	0	0	0.02805	0	0	0	0
2109_1-S		1109	1109-2	38.591	IRREGULAR	0	0	0.08151	0	0	0	0
2109_2-S		1109-2	1108	37.018	IRREGULAR	0	0	0.03143	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2110-S		1110	1109	13.246	IRREGULAR	0	0	0.0439	0	0	0	0
2111-S		1111	1110	25.591	IRREGULAR	0	0	0.00516	0.04	0.25	0	0.15
2112-S		1112	1111	21.591	IRREGULAR	0	0	0.0202	0.013	0.14	0	0.13
2113-S		1113	1109	37.719	IRREGULAR	0	0	0.01161	0	0	0	0
2114-S		1114	1113	9.162	IRREGULAR	0	0	0.00764	0	0	0	0
2115-S		1115	1114	12.558	IRREGULAR	0	0	0.02007	0	0	0	0
2118-S		1118	1117	16.289	IRREGULAR	0	0	0.07635	0	0	0	0
2119-S		1119	1118	20.817	IRREGULAR	0	0	-0.01595	0	0	0	0
2120-S		1120	1119	46.274	IRREGULAR	0	0	0.0118	0	0	0	0
2121-S		1121	1120	73.495	IRREGULAR	0	0	0.0405	0	0	0	0
2122-S		1122	1121	48.318	IRREGULAR	0	0	0.04988	0	0	0	0
2123-S		1123	1122	83.33	IRREGULAR	0	0	0.06403	0	0	0	0
2124-S		1124	1123	54.154	IRREGULAR	0	0	0.0451	0	0	0	0
2125-S		1125	1124	55.315	IRREGULAR	0	0	0.03497	0	0	0	0
2126-S		1126	1125	34.677	IRREGULAR	0	0	0.03801	0	0	0	0
2127-S		1127	1126	22.493	IRREGULAR	0	0	-0.0064	0	0	0	0
2128-S		1128	1127	34.1	IRREGULAR	0	0	0.03125	0	0	0	0
2129-S		1129	1128	13.063	IRREGULAR	0	0	0.0232	0	0	0	0
2130-S		1130	1129	37.9	IRREGULAR	0	0	0.02737	0	0	0	0
2131-S		1131	1130	12.295	IRREGULAR	0	0	0.01277	0	0	0	0
2132-S		1132	1131	46.036	IRREGULAR	0	0	0.01529	0	0	0	0
2133-S		1133	1132	60.438	IRREGULAR	0	0	0.01668	0	0	0	0
2134-S		1134	1133	58.637	IRREGULAR	0	0	0.0238	0	0	0	0
2135-S		1135	1134	55.742	IRREGULAR	0	0	0.01947	0	0	0	0
2136-S		1136	1135	14.355	IRREGULAR	0	0	0.02272	0	0	0	0
2137-S		1137	1136	5.244	IRREGULAR	0	0	-0.0143	0	0	0	0
2138-S		1138	1117	32.036	IRREGULAR	0	0	0.02929	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2139-S		1139	1138	30.981	IRREGULAR	0	0	0.00752	0	0	0	0
2141	CHANNEL	1141	1140	131.973	IRREGULAR	0	0	0.03116	0.224	0.31	0	0.07
2142	CHANNEL	1142	1141	96.848	IRREGULAR	0	0	0.07438	0.089	1.36	0	0.03
2144-S		1144	1124	9.923	IRREGULAR	0	0	0.01824	0	0	0	0
2145-S		1145	1144	21.52	IRREGULAR	0	0	0.06473	0	0	0	0
2146-S		1146	1126	13.52	IRREGULAR	0	0	0.01798	0	0	0	0
2147-S		1147	1146	34.475	IRREGULAR	0	0	0.04288	0	0	0	0
2148-S		1148	1147	80.92	IRREGULAR	0	0	0.03034	0	0	0	0
2149-S		1149	1148	7.763	IRREGULAR	0	0	0.01752	0	0	0	0
2150-S		1150	1149	49.937	IRREGULAR	0	0	0.03527	0	0	0	0
2151-S		1151	1150	62.101	IRREGULAR	0	0	0.03121	0	0	0	0
2152-S		1152	1151	6.721	IRREGULAR	0	0	0.02128	0	0	0	0
2153-S		1153	1152	108.109	IRREGULAR	0	0	0.02119	0	0	0	0
2154-S		1154	1130	49.221	IRREGULAR	0	0	0.01469	0.014	0.39	0	0.1
2155-S		1155	1154	58.333	IRREGULAR	0	0	0.02387	0	0	0	0.06
2156-S		1156	1155	11.565	IRREGULAR	0	0	9E-05	0.018	0.2	0.01	0.13
2157-S		1157	1156	108.933	IRREGULAR	0	0	0.02369	0.002	0.06	0	0.1
2158-S		1158	1157	14.434	IRREGULAR	0	0	0.00263	0.083	0.24	0	0.17
2159-S		1159	1158	42.657	IRREGULAR	0	0	0.01773	0.078	0.41	0	0.17
2160-S		1160	1159	59.293	IRREGULAR	0	0	0.02456	0.003	0.08	0	0.1
2163-S		1163	1162	15.724	IRREGULAR	0	0	0	0	0	0	0
2164-S		1164	1163	41.748	IRREGULAR	0	0	0.08592	0	0	0	0
2165-S		1165	1155	45.717	IRREGULAR	0	0	-0.00422	0	0	0	0.1
2166-S		1166	1157	3.965	IRREGULAR	0	0	-0.05101	2.558	2.66	0.03	0.34
2169-S		1169	1168	8.087	IRREGULAR	0	0	0.00297	0	0	0	0
2170-S		1170	1169	32.944	IRREGULAR	0	0	0.00644	0	0	0	0
2171-S		1171	1170	15.151	IRREGULAR	0	0	0.00634	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2172-S		1172	1171	63.31	IRREGULAR	0	0	0.01365	0	0	0	0
2173-S		1173	1172	28.296	IRREGULAR	0	0	0.02192	0	0	0	0
2176-S		1176	1175	44.898	IRREGULAR	0	0	-0.00401	0	0	0	0
2177-S		1177	1176	8.565	IRREGULAR	0	0	-0.00163	0	0	0	0
2178-S		1178	1177	48.673	IRREGULAR	0	0	0.00571	0	0	0	0
2179-S		1179	1178	41.237	IRREGULAR	0	0	0.00524	0	0	0	0
2180-S		1180	1179	30.438	IRREGULAR	0	0	0.01544	0	0	0	0
2181-S		1181	1180	25.898	IRREGULAR	0	0	0.02542	0	0	0	0
2182-S		1182	1181	47.831	IRREGULAR	0	0	0.02179	0	0	0	0
2183-S		1183	1177	35.01	IRREGULAR	0	0	0.00626	0	0	0	0
2187-S		1187	1186	49.473	IRREGULAR	0	0	0.02305	0	0	0	0
2188-S		1188	1187	0.9	IRREGULAR	0	0	0.07465	0	0	0	0
2189-S		1189	1188	60.057	IRREGULAR	0	0	0.06793	0	0	0	0
2190-S		1190	1189	0.827	IRREGULAR	0	0	0.05207	0	0	0	0
2191-S		1191	1190	58.336	IRREGULAR	0	0	0.07011	0	0	0	0
2194-S		1194	1193	88.549	IRREGULAR	0	0	0.03366	0	0	0	0
2195-S		1195	1194	76.909	IRREGULAR	0	0	0.03876	0	0	0	0
2199-S		1199	1198	37.113	IRREGULAR	0	0	0.02102	0	0	0	0
2200-S		1200	1199	0.827	IRREGULAR	0	0	0.04721	0	0	0	0
2201-S		1201	1200	59.038	IRREGULAR	0	0	0.06764	0	0	0	0
2202-S		1202	1201	0.827	IRREGULAR	0	0	0.08862	0	0	0	0
2203-S		1203	1202	60.284	IRREGULAR	0	0	0.05941	0	0	0	0
2206-S		1206	1205	48.422	IRREGULAR	0	0	-0.00302	0	0	0	0
2207-S		1207	1206	10.285	IRREGULAR	0	0	0.00175	0.01	0.12	0	0.01
2208-S		1208	1207	50.592	IRREGULAR	0	0	0.00779	0.004	0.22	0	0.07
2210	CHANNEL	1210	9209	32.565	IRREGULAR	0	0	0.05268	0.982	1.93	0.06	0.3
2213-S		1213	1212	16.409	IRREGULAR	0	0	-0.00756	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2214-S		1214	1213	34.296	IRREGULAR	0	0	0.01703	0	0	0	0
2215-S		1215	1214	52.042	IRREGULAR	0	0	0.05278	0	0	0	0
2216-S		1216	1215	15.51	IRREGULAR	0	0	0.08255	0	0	0	0
2217-S		1217	1216	59.584	IRREGULAR	0	0	0.06504	0	0	0	0
2218-S		1218	1217	46.072	IRREGULAR	0	0	0.10279	0	0	0	0
2219-S		1219	1218	11.219	IRREGULAR	0	0	0.05812	0	0	0	0
2220-S		1220	1219	91.231	IRREGULAR	0	0	0.01598	0.119	0.77	0	0.08
2221-S		1221	1220	35.201	IRREGULAR	0	0	0.03237	0.094	0.58	0	0.15
2222-S		1222	1221	34.948	IRREGULAR	0	0	0.05795	0.164	0.76	0	0.15
2223-S		1223	1222	53.811	IRREGULAR	0	0	0.01946	0.128	0.48	0	0.16
2224-S		1224	1223	30.014	IRREGULAR	0	0	0.01753	0.043	0.24	0	0.15
2225-S		1225	1224	34.71	IRREGULAR	0	0	0.01591	0.045	0.41	0	0.14
2226-S		1226	1225	44.263	IRREGULAR	0	0	0.01654	0.113	0.44	0	0.16
2227-S		1227	1226	11.726	IRREGULAR	0	0	0.03849	0.101	0.7	0	0.12
2229-S		1229	1218	99.568	IRREGULAR	0	0	0.02117	0.051	0.69	0	0.06
2230-S		1230	1229	7.377	IRREGULAR	0	0	0.01817	0.015	0.08	0	0.02
2231-S		1231	1230	122.575	IRREGULAR	0	0	0.03188	0	0	0	0
2232-S		1232	1231	65.173	IRREGULAR	0	0	0.02044	0	0	0	0
2233-S		1233	1232	45.901	IRREGULAR	0	0	0.01752	0	0	0	0
2234-S		1234	1223	91.35	IRREGULAR	0	0	0.0101	0.083	0.23	0	0.13
2235-S		1235	1234	12.315	IRREGULAR	0	0	-0.01795	0.171	0.12	0	0.16
2236-S		1236	1235	18.84	IRREGULAR	0	0	-0.00111	0.205	0.18	0.02	0.37
2237-S		1237	1236	74.253	IRREGULAR	0	0	0.0224	0.157	0.15	0	0.26
2238-S		1238	1237	47.398	IRREGULAR	0	0	0.02507	0.154	0.58	0	0.13
2239-S		1239	1238	29.423	IRREGULAR	0	0	0.04416	0	0	0	0.04
2240-S		1240	1239	53.185	IRREGULAR	0	0	0.03064	0	0	0	0
2241-S		1241	1240	21.046	IRREGULAR	0	0	0.00542	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2242-S		1242	1241	70.739	IRREGULAR	0	0	0.00622	0	0	0	0
2243-S		1243	1242	20	IRREGULAR	0	0	0.0135	0	0	0	0
2244-S		1244	1240	21.707	IRREGULAR	0	0	0.01954	0	0	0	0
2247-S		1247	1246	13.975	IRREGULAR	0	0	0.00615	0	0	0	0
2248-S		1248	1247	32.542	IRREGULAR	0	0	-0.00197	0	0	0	0
2249-S		1249	1248	32.194	IRREGULAR	0	0	0.00199	0	0	0	0
2250-S		1250	1246	19.934	IRREGULAR	0	0	0.03941	0	0	0	0
2251-S		1251	1250	57.08	IRREGULAR	0	0	0.04286	0	0	0	0
2252-S		1252	1251	54.935	IRREGULAR	0	0	0.04475	0	0	0	0
2255-S		1255	1254	32.1	IRREGULAR	0	0	0.02493	0	0	0	0
2256-S		1256	1255	49.5	IRREGULAR	0	0	0.02425	0	0	0	0
2257-S		1257	1256	44	IRREGULAR	0	0	0.0125	0	0	0	0
2258-S		1258	1257	29.7	IRREGULAR	0	0	0.00101	0	0	0	0
2259-S		1259	1258	35	IRREGULAR	0	0	-0.00657	0	0	0	0
2260-S		1260	1259	36.8	IRREGULAR	0	0	0.00679	0	0	0	0
2261-S		1261	1260	65.5	IRREGULAR	0	0	0.04891	0	0	0	0
2262-S		1262	1261	68.1	IRREGULAR	0	0	0.05648	0	0	0	0
2263-S		1263	1262	59	IRREGULAR	0	0	0.04734	0	0	0	0
2264-S		1264	1263	60	IRREGULAR	0	0	0.03369	0	0	0	0
2265-S		1265	1264	51.209	IRREGULAR	0	0	0.02246	0	0	0	0
2266-S		1266	1265	25.5	IRREGULAR	0	0	0.02157	0	0	0	0
2267-S		1267	1266	78	IRREGULAR	0	0	0.02437	0	0	0	0
2268-S		1268	1267	70.4	IRREGULAR	0	0	0.02558	0	0	0	0
2269-S		1269	1268	91.3	IRREGULAR	0	0	0.00548	0	0	0	0
2270-S		1270	1269	69.8	IRREGULAR	0	0	-0.00931	0	0	0	0
2271-S		1271	1270	64.3	IRREGULAR	0	0	-0.00311	0	0	0	0
2272-S		1272	1271	72	IRREGULAR	0	0	0.00903	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2273-S		1273	1272	62.8	IRREGULAR	0	0	0.01354	0	0	0	0
2274-S		1274	1273	26.5	IRREGULAR	0	0	0.01132	0	0	0	0
2275-S		1275	1274	82	IRREGULAR	0	0	0.01342	0	0	0	0
2276-S		1276	1275	87.1	IRREGULAR	0	0	0.01332	0	0	0	0
2277-S		1277	1266	13	IRREGULAR	0	0	-0.00231	0	0	0	0
2278-S		1278	1277	93.7	IRREGULAR	0	0	-0.00747	0	0	0	0
2281	DITCH	1281	1280	10.436	IRREGULAR	0	0	0.08433	0.799	1.03	0.02	0.26
2282-S		1282	1281	30.705	IRREGULAR	0	0	0.00576	0	0	0	0
2283	DITCH	1283	1282	39.618	IRREGULAR	0	0	0.02598	0.824	1.18	0.08	0.43
2284-S		1284	1283	8.054	IRREGULAR	0	0	0.01018	0.382	0.89	0.01	0.14
2285	DITCH	1285	1284	77.44	IRREGULAR	0	0	0.01862	0.805	0.77	0.07	0.5
2286-S		1286	1285	14.01	IRREGULAR	0	0	0.19549	0.46	2.66	0	0.09
2287-S		1287	1286	76.705	IRREGULAR	0	0	0.05353	0.549	1.78	0.01	0.11
2288-S		1288	1287	45.264	IRREGULAR	0	0	0.01118	0.652	1.13	0.02	0.16
2289-S		1289	1288	91.461	IRREGULAR	0	0	0.00516	0.638	0.89	0.02	0.18
2293-S		1293	1292	13.671	IRREGULAR	0	0	0.01507	0	0	0	0
2294-S		1294	1293	102.324	IRREGULAR	0	0	-0.00611	0	0	0	0
2295-S		1295	1294	47.371	IRREGULAR	0	0	0.00365	0	0	0	0
2296-S		1296	1295	35.122	IRREGULAR	0	0	-0.0043	0	0	0	0
2299-S		1299	1298	8.515	IRREGULAR	0	0	0.00329	0	0	0	0
2300-S		1300	1299	39.381	IRREGULAR	0	0	0.0297	0	0	0	0
2301-S		1301	1299	24.051	IRREGULAR	0	0	0.00703	0	0	0	0
2302-S		1302	1301	19.112	IRREGULAR	0	0	0.01298	0	0	0	0
2305-S		1305	1304	9.427	IRREGULAR	0	0	0.00106	0.316	0.56	0.02	0.06
2306_1	DITCH	1306	1305-1	60.033	IRREGULAR	0	0	0.08944	0.583	0.62	0.01	0.4
2306_2-S		1305-1	1305	1.536	IRREGULAR	0	0	0.04562	0.441	0.77	0.01	0.06
2307-S		1307	1306	42.393	IRREGULAR	0	0	0.0599	0.262	0.75	0	0.04

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2308-S		1308	1307	56.667	IRREGULAR	0	0	0.0309	0.401	0.72	0.01	0.19
2309-S		1309	1308	100.647	IRREGULAR	0	0	0.01755	0.217	0.45	0	0.19
2310-S		1310	1305	47.115	IRREGULAR	0	0	0.04313	0.062	0.66	0	0.13
2311-S		1311	1310	54.358	IRREGULAR	0	0	0.06064	0.017	0.38	0	0.11
2312-S		1312	1311	46.375	IRREGULAR	0	0	0.04079	0.05	0.64	0	0.13
2313-S		1313	1312	11.058	IRREGULAR	0	0	0.00814	0.267	0.55	0.01	0.07
2314-S		1314	1313	18.419	IRREGULAR	0	0	0.02319	0.02	0.5	0	0.1
2315-S		1315	1314	43.462	IRREGULAR	0	0	0.01668	0.003	0.11	0	0.08
2316-S		1316	1315	61.486	IRREGULAR	0	0	0.0239	0	0	0	0.03
2317-S		1317	1316	8.763	IRREGULAR	0	0	0.00856	0	0	0	0
2318-S		1318	1317	10.142	IRREGULAR	0	0	0.02614	0	0	0	0
2319-S		1319	1318	8.121	IRREGULAR	0	0	-0.00973	0	0	0	0
2320-S		1320	1319	30.788	IRREGULAR	0	0	0.01459	0	0	0	0
2321-S		1321	1320	29.137	IRREGULAR	0	0	0.01387	0	0	0	0
2322-S		1322	1321	34.52	IRREGULAR	0	0	0.01846	0	0	0	0
2323-S		1323	1322	21.909	IRREGULAR	0	0	0.02319	0.129	0.5	0	0.16
2324-S		1324	1323	61.661	IRREGULAR	0	0	0.02807	0.019	0.18	0	0.13
2325-S		1325	1324	44.06	IRREGULAR	0	0	0.00758	0	0	0	0.05
2326-S		1326	1325	13.476	IRREGULAR	0	0	0.00623	0	0	0	0
2327-S		1327	1326	33.088	IRREGULAR	0	0	0.01118	0	0	0	0
2328-S		1328	1327	30.109	IRREGULAR	0	0	0.00837	0	0	0	0
2329-S		1329	1328	42.179	IRREGULAR	0	0	0.01978	0	0	0	0
2330-S		1330	1316	10.695	IRREGULAR	0	0	0.03171	0	0	0	0
2331-S		1331	1330	2.345	IRREGULAR	0	0	-0.0064	0	0	0	0
2332-S		1332	1318	3.559	IRREGULAR	0	0	-0.0608	0	0	0	0
2333-S		1333	1332	17.028	IRREGULAR	0	0	0.0067	0	0	0	0
2334-S		1334	1333	30.563	IRREGULAR	0	0	0.00792	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2335-S		1335	1334	36.444	IRREGULAR	0	0	0.01688	0	0	0	0
2336-S		1336	1325	33.663	IRREGULAR	0	0	0.00291	0	0	0	0
2339-S		1339	1338	29.5	IRREGULAR	0	0	-0.00542	0	0	0	0
2340-S		1340	1338	31.5	IRREGULAR	0	0	0.0235	0	0	0	0
2341-S		1341	1340	17.2	IRREGULAR	0	0	0.01803	0	0	0	0
2342-S		1342	1341	14.2	IRREGULAR	0	0	0.02818	0	0	0	0
2345-S		1345	1344	41.091	IRREGULAR	0	0	0.01794	0	0	0	0
2346-S		1346	1345	45	IRREGULAR	0	0	-0.00431	0	0	0	0
2347-S		1347	1346	58.044	IRREGULAR	0	0	0.01189	0	0	0	0
2348-S		1348	1347	54	IRREGULAR	0	0	0.02353	0	0	0	0
2349-S		1349	1344	34.389	IRREGULAR	0	0	0.04261	0	0	0	0
2350-S		1350	1349	26.319	IRREGULAR	0	0	0.06897	0	0	0	0
2352-S		1352	1351	19.6	IRREGULAR	0	0	-0.00219	0	0	0	0
2353-S		1353	1352	34.2	IRREGULAR	0	0	0.00129	0	0	0	0
2354-S		1354	1353	29.1	IRREGULAR	0	0	-0.03005	0	0	0	0.21
2355-S		1355	1354	12.9	IRREGULAR	0	0	0.04345	0	0	0	0.21
2356-S		1356	1345	40.791	IRREGULAR	0	0	-0.0125	0	0	0	0
2357-S		1357	1356	42.326	IRREGULAR	0	0	0.00536	0	0	0	0
2358-S		1358	1357	69.815	IRREGULAR	0	0	0.02072	0	0	0	0
2359-S		1359	1358	20.995	IRREGULAR	0	0	-0.00271	0	0	0	0
2360-S		1360	1351	19.8	IRREGULAR	0	0	-0.0192	0	0	0	0
2361-S		1361	1360	36	IRREGULAR	0	0	-0.00081	0.015	0.06	0	0.02
2362-S		1362	1352	22.4	IRREGULAR	0	0	-0.01505	0	0	0	0.01
2363-S		1363	1362	36.5	IRREGULAR	0	0	-0.00134	0.015	0.04	0	0.04
2364-S		1364	1363	31.8	IRREGULAR	0	0	0.00849	0	0	0	0.03
2365-S		1365	1352	33	IRREGULAR	0	0	-0.01731	0	0	0	0.12
2366-S		1366	1365	4.4	IRREGULAR	0	0	-0.03867	0.06	0.06	0	0.32

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2367-S		1367	1358	14.136	IRREGULAR	0	0	-0.0162	0	0	0	0
2369-S		1369	1358	4.168	IRREGULAR	0	0	-0.00408	0	0	0	0
2370-S		1370	1362	48.2	IRREGULAR	0	0	0.0189	0	0	0	0.01
2371-S		1371	1358	28.868	IRREGULAR	0	0	0.00426	0	0	0	0
2374-S		1374	1373	6.5	IRREGULAR	0	0	0.01077	0	0	0	0
2375-S		1375	1374	16	IRREGULAR	0	0	0.02688	0	0	0	0
2376-S		1376	1375	45.7	IRREGULAR	0	0	0.03065	0	0	0	0
2377-S		1377	1376	23	IRREGULAR	0	0	0.03263	0	0	0	0
2378-S		1378	1377	76	IRREGULAR	0	0	0.005	0	0	0	0
2379-S		1379	1378	39.5	IRREGULAR	0	0	-0.00582	0	0	0	0
2380-S		1380	1379	37.3	IRREGULAR	0	0	0.00536	0	0	0	0
2381-S		1381	1380	67	IRREGULAR	0	0	0.00164	0	0	0	0
2382-S		1382	1381	54.7	IRREGULAR	0	0	0.00311	0	0	0	0
2386-S		1386	1385	34	IRREGULAR	0	0	0.02501	0	0	0	0
2387-S		1387	1386	72.5	IRREGULAR	0	0	0.00855	0	0	0	0
2390-S		1390	1389	23.5	IRREGULAR	0	0	0.00511	0	0	0	0
2391-S		1391	1390	89	IRREGULAR	0	0	0.00985	0	0	0	0
2393-S		1393	1392	88	IRREGULAR	0	0	0.00432	0	0	0	0.13
2394-S		1394	1393	86	IRREGULAR	0	0	0.01302	0	0	0	0
2395-S		1395	1389	14.5	IRREGULAR	0	0	0	0	0	0	0
2396-S		1396	1395	60.5	IRREGULAR	0	0	0.00248	0	0	0	0
2397-S		1397	1389	16.075	IRREGULAR	0	0	-0.00964	0	0	0	0
2398-S		1398	1397	103.231	IRREGULAR	0	0	-0.00225	0	0	0	0.1
2399-S		1399	1397	8.695	IRREGULAR	0	0	0.00437	0	0	0	0
2402-S		1402	1401	12	IRREGULAR	0	0	-0.00667	0	0	0	0
2403-S		1403	1402	76.5	IRREGULAR	0	0	0.0034	0	0	0	0
2404-S		1404	1403	63.5	IRREGULAR	0	0	0.00724	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2405-S		1405	1404	34	IRREGULAR	0	0	0.00059	0	0	0	0
2406-S		1406	1401	31.4	IRREGULAR	0	0	0.00287	0	0	0	0
2407-S		1407	1406	14	IRREGULAR	0	0	-0.00571	0	0	0	0.04
2408-S		1408	1407	26	IRREGULAR	0	0	0.00692	0	0	0	0.04
2411-S		1411	1410	60.327	IRREGULAR	0	0	0.04031	0	0	0	0
2412-S		1412	1411	48.925	IRREGULAR	0	0	0.0872	0	0	0	0
2413-S		1413	1412	21.509	IRREGULAR	0	0	0.28786	0	0	0	0
2414-S		1414	1413	22.01	IRREGULAR	0	0	0.11896	0	0	0	0
2415-S		1415	1414	33.501	IRREGULAR	0	0	0.01194	0	0	0	0
2416-S		1416	1415	66.037	IRREGULAR	0	0	-0.00757	0	0	0	0
2417-S		1417	1416	25.38	IRREGULAR	0	0	0	0	0	0	0
2418-S		1418	1417	45.714	IRREGULAR	0	0	0.00284	0	0	0	0
2419-S		1419	1418	35.301	IRREGULAR	0	0	0.00312	0	0	0	0
2420-S		1420	1419	64.495	IRREGULAR	0	0	0.00295	0	0	0	0
2421-S		1421	1420	30.13	IRREGULAR	0	0	0.00398	0	0	0	0
2422-S		1422	1421	100.321	IRREGULAR	0	0	0.00598	0	0	0	0
2423-S		1423	1422	46.007	IRREGULAR	0	0	0.01196	0	0	0	0
2424-S		1424	1423	53.524	IRREGULAR	0	0	0.0329	0	0	0	0
2425-S		1425	1418	9.664	IRREGULAR	0	0	-0.00517	0	0	0	0
2426-S		1426	1425	12.67	IRREGULAR	0	0	0.00158	0	0	0	0
2427-S		1427	1426	36.805	IRREGULAR	0	0	0.01087	0	0	0	0
2428-S		1428	1423	20.034	IRREGULAR	0	0	-0.00449	0	0	0	0
2431-S		1431	1430	97	IRREGULAR	0	0	0.0264	0	0	0	0
2432-S		1432	1431	93	IRREGULAR	0	0	0.02119	0	0	0	0
2433-S		1433	1432	11	IRREGULAR	0	0	0.01728	0	0	0	0
2434-S		1434	1433	38.5	IRREGULAR	0	0	-0.00831	0	0	0	0
2435-S		1435	1434	25.5	IRREGULAR	0	0	0.00902	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2436-S		1436	1435	52.5	IRREGULAR	0	0	0.02706	0	0	0	0
2437-S		1437	1436	35	IRREGULAR	0	0	0.04519	0	0	0	0
2438-S		1438	1437	33	IRREGULAR	0	0	0.03973	0	0	0	0
2439-S		1439	1433	19.1	IRREGULAR	0	0	-0.00052	0	0	0	0
2442-S		1442	1441	7.4	IRREGULAR	0	0	0.02974	0	0	0	0
2443-S		1443	1442	81.1	IRREGULAR	0	0	0.00654	0	0	0	0
2444-S		1444	1443	26.4	IRREGULAR	0	0	0.01894	0	0	0	0
2445-S		1445	1444	51	IRREGULAR	0	0	-0.04711	0	0	0	0
2446-S		1446	1445	47	IRREGULAR	0	0	0.0281	0	0	0	0
2447-S		1447	1446	69.6	IRREGULAR	0	0	0.0148	0	0	0	0
2448-S		1448	1447	71.8	IRREGULAR	0	0	-0.02201	0	0	0	0
2449-S		1449	1448	24.4	IRREGULAR	0	0	-0.00205	0	0	0	0
2450-S		1450	1449	19.1	IRREGULAR	0	0	-0.01623	0	0	0	0
2451-S		1451	1442	23.1	IRREGULAR	0	0	-0.01775	0	0	0	0
2452-S		1452	1451	98.1	IRREGULAR	0	0	0.00724	0	0	0	0
2453-S		1453	1452	85.3	IRREGULAR	0	0	0.00504	0	0	0	0
2454-S		1454	1453	41.4	IRREGULAR	0	0	0.03021	0	0	0	0
2455-S		1455	1454	63.6	IRREGULAR	0	0	0.01054	0	0	0	0
2456-S		1456	1455	33.2	IRREGULAR	0	0	-0.0006	0	0	0	0
2457-S		1457	1444	60.5	IRREGULAR	0	0	-0.00347	0	0	0	0
2458-S		1458	1457	86.5	IRREGULAR	0	0	0.00879	0	0	0	0
2459-S		1459	1458	60.5	IRREGULAR	0	0	-0.00149	0	0	0	0
2460-S		1460	1459	30	IRREGULAR	0	0	0.04839	0	0	0	0
2461-S		1461	1460	30.8	IRREGULAR	0	0	0.00227	0	0	0	0
2462-S		1462	1461	56.5	IRREGULAR	0	0	0	0	0	0	0
2463-S		1463	1462	44.6	IRREGULAR	0	0	-0.00247	0	0	0	0
2464-S		1464	1463	31.4	IRREGULAR	0	0	0.00924	0	0	0	0

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2465-S		1465	1464	31.5	IRREGULAR	0	0	-0.00794	0	0	0	0
2466-S		1466	1446	22.7	IRREGULAR	0	0	-0.03129	0	0	0	0
2467-S		1467	1466	34.8	IRREGULAR	0	0	-0.01408	0	0	0	0
2468-S		1468	1447	61.7	IRREGULAR	0	0	0.01102	0	0	0	0
2469-S		1469	1468	25	IRREGULAR	0	0	0.012	0	0	0	0
2470-S		1470	1469	27.5	IRREGULAR	0	0	0.02401	0	0	0	0
2471-S		1471	1470	27.7	IRREGULAR	0	0	0.00469	0	0	0	0
2472-S		1472	1471	28.1	IRREGULAR	0	0	-0.00676	0	0	0	0
2473-S		1473	1472	12.6	IRREGULAR	0	0	0.02779	0	0	0	0
2474-S		1474	1448	16.6	IRREGULAR	0	0	-0.00241	0	0	0	0
2475-S		1475	1474	37.6	IRREGULAR	0	0	0.01223	0	0	0	0
2476-S		1476	1475	7.9	IRREGULAR	0	0	-0.05197	0	0	0	0
2477-S		1477	1449	19.3	IRREGULAR	0	0	-0.01295	0	0	0	0
2478-S		1478	1452	20.4	IRREGULAR	0	0	0.01128	0	0	0	0
2479-S		1479	1478	25.5	IRREGULAR	0	0	-0.01765	0	0	0	0.15
2480-S		1480	1455	33.9	IRREGULAR	0	0	-0.01151	0	0	0	0.02
2481-S		1481	1460	31.2	IRREGULAR	0	0	-0.00705	0	0	0	0
2482-S		1482	1461	46	IRREGULAR	0	0	-0.005	0	0	0	0
2483-S		1483	1462	11.3	IRREGULAR	0	0	-0.0239	0	0	0	0
2484-S		1484	1483	29.1	IRREGULAR	0	0	0.00034	0	0	0	0
2485-S		1485	1468	16.9	IRREGULAR	0	0	-0.08911	0	0	0	0
2486-S		1486	1469	45	IRREGULAR	0	0	-0.00978	0	0	0	0
2487-S		1487	1486	9.9	IRREGULAR	0	0	-0.01616	0	0	0	0
2488-S		1488	1483	38.8	IRREGULAR	0	0	0.00206	0	0	0	0
2489-S		1489	1486	2.9	IRREGULAR	0	0	-0.00345	0	0	0	0
2492-S		1492	1491	93.23	IRREGULAR	0	0	0.01557	0	0	0	0
2493-S		1493	1492	35.959	IRREGULAR	0	0	0.00973	0.583	0.99	0.01	0.06

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2494-S		1494	1493	41.861	IRREGULAR	0	0	0.0337	0	0	0	0.03
2495-S		1495	1494	27.18	IRREGULAR	0	0	0.03571	0	0	0	0
2496-S		1496	1495	39.043	IRREGULAR	0	0	0.02613	0	0	0	0
2497-S		1497	1496	86.069	IRREGULAR	0	0	-0.00558	0.202	0.07	0.01	0.28
2498-S		1498	1497	12.41	IRREGULAR	0	0	0.02176	1.919	0.8	0.05	0.38
2500-S		1500	1499	12.237	IRREGULAR	0	0	-0.05081	0	0	0	0.17
2501	DITCH	1501	1500	30.904	IRREGULAR	0	0	0.00582	0.769	1.02	0.27	1
2504	DITCH	1504	1503	45.075	IRREGULAR	0	0	0.00856	2.23	1.12	0.02	0.37
2505-S		1505	1504	13.672	IRREGULAR	0	0	-0.00688	0	0	0	0
2506-S		1506	1505	17.864	IRREGULAR	0	0	-0.00689	0.147	0.16	0	0.09
2507	DITCH	1508	1507	2.503	IRREGULAR	0	0	0.01878	0.283	0.12	0.02	0.7
2507_2	DITCH	1507	1506	5.881	IRREGULAR	0	0	0.07897	0.565	0.21	0.06	0.74
2511-S		1511	1510	44.728	IRREGULAR	0	0	-0.00418	0	0	0	0.09
2512-S		1512	1511	39.265	IRREGULAR	0	0	0.00767	0.098	0.1	0	0.11
2513-S		1513	1512	33.026	IRREGULAR	0	0	0.01287	0	0	0	0.02
2514-S		1514	1513	13.208	IRREGULAR	0	0	-0.00787	0	0	0	0.04
2515-S		1515	1514	21.663	IRREGULAR	0	0	0.00734	0	0	0	0.05
2516-S		1516	1515	18.718	IRREGULAR	0	0	5E-05	0	0	0	0
2517-S		1517	1516	23.223	IRREGULAR	0	0	-0.00616	0.001	0	0	0.07
2518	DITCH	1518	1517	9.422	IRREGULAR	0	0	0.01688	0.492	0.75	0.03	0.88
2520	DITCH	1520	1519	28.747	IRREGULAR	0	0	0.00049	0.27	0.31	0.18	0.78
2521-S		1521	1520	71.584	IRREGULAR	0	0	0.00685	0	0	0	0
2522-S		1522	1521	72.56	IRREGULAR	0	0	0.00619	0	0	0	0
2523-S		1523	1522	35.817	IRREGULAR	0	0	0.00112	0	0	0	0
2524-S		1524	1523	70.641	IRREGULAR	0	0	0.00544	0	0	0	0
2525-S		1525	1524	38.738	IRREGULAR	0	0	0.00305	0.018	0.2	0	0.13
2526-S		1526	1525	14.325	IRREGULAR	0	0	-0.00901	0.408	1.56	0.01	0.26

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m³/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2527-S		1527	1526	25.706	IRREGULAR	0	0	0.01331	0.146	0.39	0	0.23
2528-S		1528	1491	2.343	IRREGULAR	0	0	-0.06115	0	0	0	0
2529-S		1529	1528	46.495	IRREGULAR	0	0	0.04075	0	0	0	0
2530-S		1530	1529	36.85	IRREGULAR	0	0	0.05632	0	0	0	0
2531-S		1531	1492	81.65	IRREGULAR	0	0	0.02861	0	0	0	0
2532-S		1532	1531	41.623	IRREGULAR	0	0	-0.00589	0	0	0	0
2533-S		1533	1532	64.246	IRREGULAR	0	0	0.00062	0	0	0	0
2534-S		1534	1533	40.445	IRREGULAR	0	0	-0.00223	0.157	0.28	0.01	0.16
2535-S		1535	1534	56.107	IRREGULAR	0	0	0.00642	0.091	0.38	0	0.15
2536-S		1536	1495	36.701	IRREGULAR	0	0	0.02235	0	0	0	0
2537-S		1537	1536	55.586	IRREGULAR	0	0	0.00648	0	0	0	0
2538-S		1538	1537	102.782	IRREGULAR	0	0	0.00477	0.037	0.39	0	0.06
2539-S		1539	1538	100.213	IRREGULAR	0	0	0.01796	0.004	0.08	0	0.04
2540-S		1540	1539	102.169	IRREGULAR	0	0	0.01948	0	0	0	0.01
2541-S		1541	1540	98.468	IRREGULAR	0	0	0.01259	0	0	0	0
2542-S		1542	1541	56.196	IRREGULAR	0	0	0.0137	0	0	0	0
2543-S		1543	1542	24.162	IRREGULAR	0	0	0.00621	0	0	0	0
2544-S		1544	1496	15.957	IRREGULAR	0	0	-0.00376	0	0	0	0
2545-S		1545	1498	51.123	IRREGULAR	0	0	0.01076	0.662	0.61	0.02	0.27
2546-S		1546	1545	10.585	IRREGULAR	0	0	0.01587	0.64	0.59	0.01	0.23
2547-S		1547	1546	33.651	IRREGULAR	0	0	0.00999	0.482	0.5	0.01	0.23
2548-S		1548	1547	54.279	IRREGULAR	0	0	0.015	0.387	0.48	0.01	0.21
2549-S		1549	1548	10.407	IRREGULAR	0	0	-0.00826	0.46	0.27	0.01	0.28
2550-S		1550	1549	13.072	IRREGULAR	0	0	0.01155	0.208	0.13	0.01	0.27
2551-S		1551	1550	33.256	IRREGULAR	0	0	0.00448	0.166	0.29	0.01	0.19
2552-S		1552	1551	22.033	IRREGULAR	0	0	0.00989	0.112	0.23	0	0.19
2553	DITCH	1553	1507	1.582	IRREGULAR	0	0	0.00759	0.278	0.11	0.03	0.72

Table 4: Conduits (continued...)

Name	Description	Inlet Node	Outlet Node	Length (m)	Cross-Section	Geom1 (m)	Geom2 (m)	Slope (m/m)	Max. |Flow| (m^3/s)	Max. |Velocity| (m/s)	Max/Full Flow	Max/Full Depth
2554-S		1554	1510	42.449	IRREGULAR	0	0	-0.0008	0	0	0	0.02
2555-S		1555	1554	16.686	IRREGULAR	0	0	0.06245	0	0	0	0.02
2556-S		1556	1555	40.281	IRREGULAR	0	0	0.0072	0	0	0	0
2557-S		1557	1556	10.375	IRREGULAR	0	0	-0.01803	0.003	0	0	0.1
2558-S		1558	1557	41.379	IRREGULAR	0	0	-0.00295	0.14	0.1	0.01	0.32
2559-S		1559	1558	8.163	IRREGULAR	0	0	-0.00662	0.291	0.18	0.01	0.44
2560-S		1560	1559	34.036	IRREGULAR	0	0	0.01181	0.333	0.35	0.01	0.31
2561-S		1561	1514	18.539	IRREGULAR	0	0	0.00264	0.001	0.07	0	0.08
2562-S		1562	1561	29.511	IRREGULAR	0	0	0.00017	0.001	0.05	0	0.06
2563-S		1563	1562	50.143	IRREGULAR	0	0	0.00598	0	0	0	0.03
2564-S		1564	1526	39.844	IRREGULAR	0	0	0.00698	0	0	0	0.13
2565-S		1565	1531	10.568	IRREGULAR	0	0	-0.0158	0	0	0	0
2566-S		1566	1533	9.327	IRREGULAR	0	0	0.00472	0.059	0.44	0	0.07
2567-S		1567	1566	25.41	IRREGULAR	0	0	0.01448	0.026	0.29	0	0.06
2568-S		1568	1567	8.007	IRREGULAR	0	0	0.02586	0	0	0	0.02
2569-S		1569	1536	9.035	IRREGULAR	0	0	0.01218	0	0	0	0
2570-S		1570	1538	13.062	IRREGULAR	0	0	-0.01148	1.88	0.79	0.05	0.37
4072-S		1072	1071	3.757	IRREGULAR	0	0	0	0	0	0	0
2058	CONC	1058	1057	23.854	RECT_CLOSED	0.6	0.9	0.0428	0.808	4.65	0.29	0.32
2117	CONC	1117	9116	43.659	RECT_CLOSED	0.9	1.8	0.00069	2.054	1.71	0.82	0.96
2118	CONC	1118	1117	16.289	RECT_CLOSED	0.9	1.8	0.00264	1.424	1.41	0.5	0.97
2497_2	CONC	1497-2	1496	18.142	RECT_CLOSED	0.9	0.9	0.00551	0.9	2.18	0.53	0.57
2506	CONC	1506	1505	17.864	RECT_CLOSED	0.6	0.9	0.00263	0.639	1.18	0.94	1
2161	DITCH	1161	1141	9.738	TRIANGULAR	0.6	3.6	0.00822	0.112	1.59	0.09	0.26
2290	DITCH	1290	1282	15.209	TRIANGULAR	0.6	3.6	0.02118	0.028	0.25	0.01	0.66

Appendix C:
Minor Drainage System Existing Deficiencies

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No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
2.	MASTER STORM SEWER REPORT	OCT/21

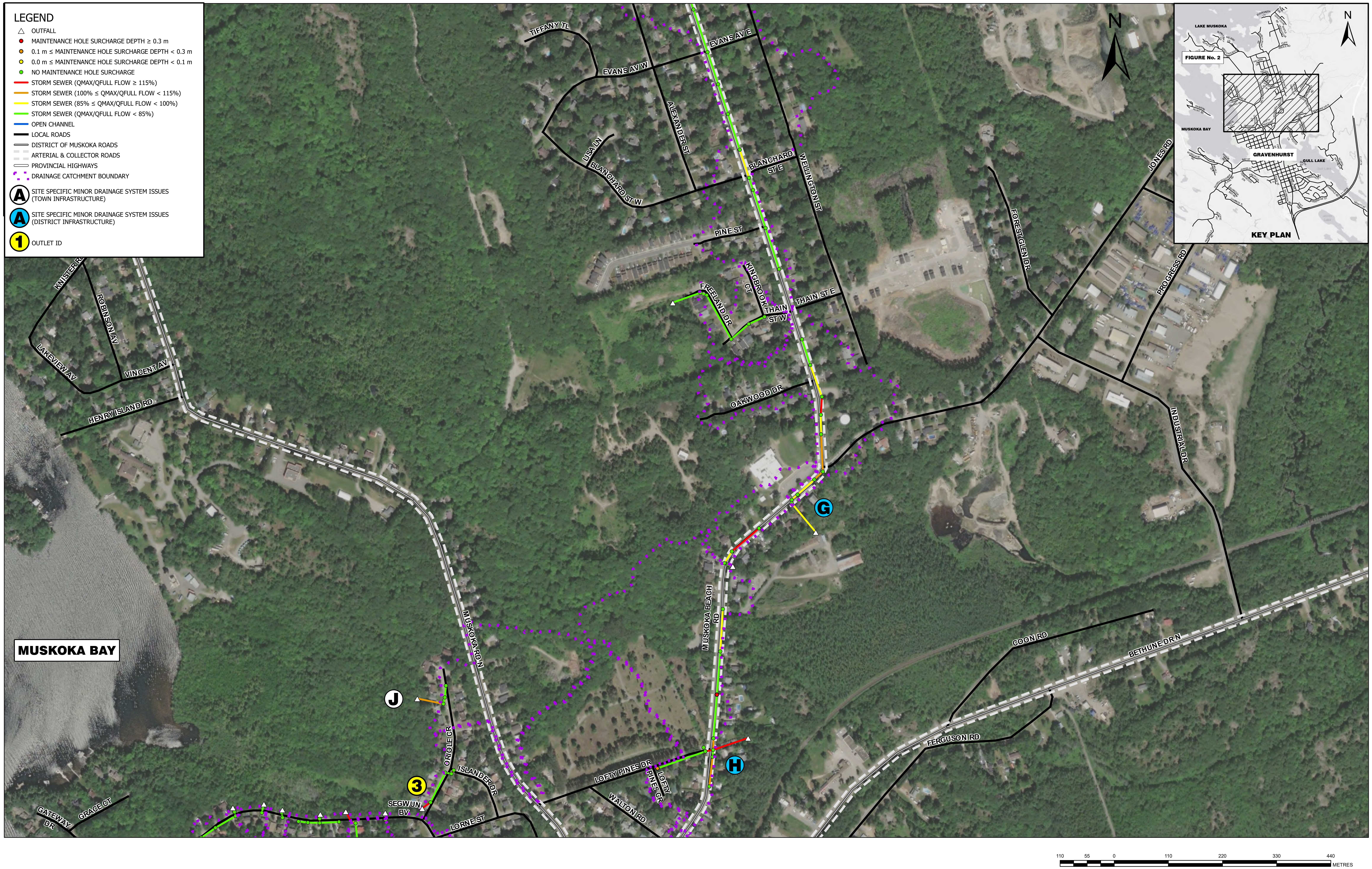
ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

EXISTING CONDITION
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	ED-1
CHECK: DRT	SCALE: 1:3,500	



No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
2.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

EXISTING CONDITION
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	**ED-2**
CHECK: DRT	SCALE: 1:3,500	

DISCLAMER AND COPYRIGHT	No.	REVISION DESCRIPTION	DATE
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.	1.	FIRST SUBMISSION	MAY/21
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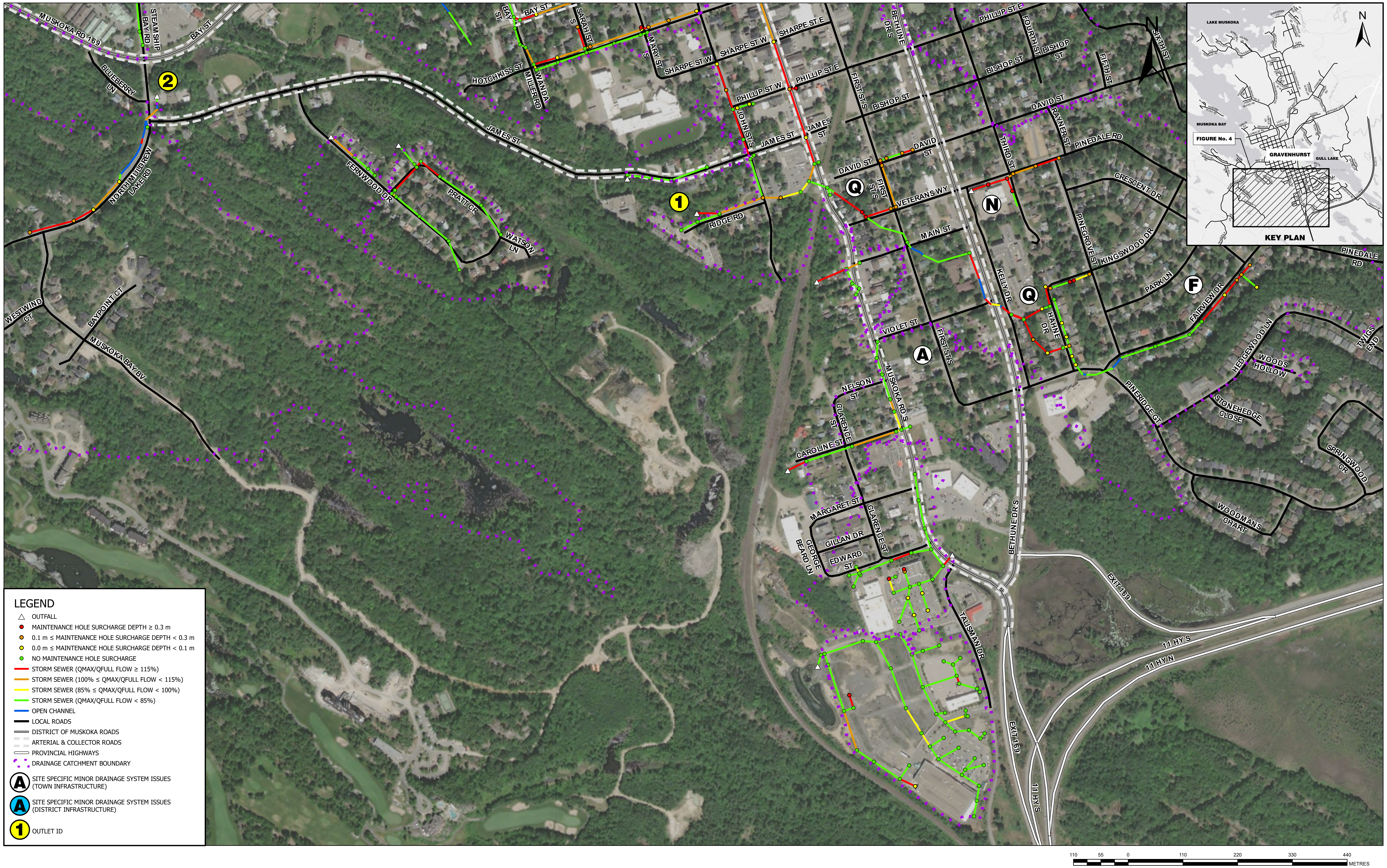
ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

EXISTING CONDITION
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	**ED-3**
CHECK: DRT	SCALE: 1:3,500	



DISCLAMER AND COPYRIGHT

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

No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
2.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

EXISTING CONDITION
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	ED-4
CHECK: DRT	SCALE: 1:3,500	

Existing Condition Storm Sewer Minimum Slope Deficiences Per 2019 District Engineering Design Criteria and Standards Manual and 2008 MECP Design Guidelines for Sewage Works

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Classification
<0.50%	2090	BROCK_ST	CIRCULAR	0.2	0	District Road
<0.50%	2407	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2408	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2406	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2396	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2405	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2391	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2404	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2397	MUSOKOKA_BEACH_ROAD	CIRCULAR	0.3	0	District Road
<0.50%	2390	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	District Road
<0.50%	2425	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	District Road
<0.50%	2426	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	District Road
<0.50%	2403	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	District Road
<0.50%	2381	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	District Road
<0.50%	2069	BETHUNE_DR_N	CIRCULAR	0.45	0	District Road
<0.20%	2117	BAY_ST	RECT_CLOSED	0.9	1.8	District Road
<0.28%	2489	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	Town Road
<0.28%	2559	KINGSWOOD_DR	CIRCULAR	0.25	0.25	Town Road
<0.28%	2557	HAHNE_DR	CIRCULAR	0.25	0.25	Town Road
<0.22%	2098	FIRST_ST	CIRCULAR	0.3	0.3	Town Road
<0.22%	2236	BROWN_ST	CIRCULAR	0.3	0.3	Town Road
<0.22%	2165	SARAH_ST_S	CIRCULAR	0.3	0.3	Town Road
<0.22%	2367	EDWARD_ST	CIRCULAR	0.3	0.3	Town Road
<0.22%	2359	EDWARD_ST	CIRCULAR	0.3	0.3	Town Road
<0.22%	2563	HAHNE_DR	CIRCULAR	0.3	0	Town Road
<0.17%	2556	HAHNE_DR	CIRCULAR	0.35	0.35	Town Road
<0.15%	2180	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	Town Road
<0.15%	2186	MAPLE_HEIGHTS_DR	CIRCULAR	0.375	0	Town Road
<0.15%	2067	SECOND_ST_S	CIRCULAR	0.375	0.375	Town Road
<0.15%	2066	SECOND_ST_S	CIRCULAR	0.375	0.375	Town Road
<0.15%	2552	DAVID_ST	CIRCULAR	0.375	0.375	Town Road
<0.15%	2463	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	Town Road
<0.14%	2007	THIRD_ST	CIRCULAR	0.4	0	Town Road
<0.12%	2313	FARQUHAR	CIRCULAR	0.45	0	Town Road
<0.12%	2064	CENTENNIAL_DR	CIRCULAR	0.45	0	Town Road
<0.12%	2027	SEGWUN_BV	CIRCULAR	0.45	0.375	Town Road
<0.12%	2082	FIRST_ST	CIRCULAR	0.45	0.45	Town Road
<0.12%	2247	LOUISE_ST	CIRCULAR	0.45	0.45	Town Road
<0.12%	2328	FARQUHAR	CIRCULAR	0.45	0.45	Town Road
<0.12%	2325	FARQUHAR	CIRCULAR	0.45	0.45	Town Road
<0.12%	2081	FIRST_ST	CIRCULAR	0.45	0.45	Town Road
<0.12%	2249	LOUISE_ST	CIRCULAR	0.45	0.45	Town Road
<0.10%	2306_2	WINEWOOD_FARQUHAR	FILLED_CIRCULAR	0.55	0.3	Town Road
<0.08%	2183	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0	Town Road
<0.08%	2510_1	KELLY_HAHNE	CIRCULAR	0.6	0	Town Road
<0.07%	2178	STEAMSHIP_BAY_RD	CIRCULAR	0.625	0	Town Road
<0.06%	2512	KELLY_HAHNE	CIRCULAR	0.75	0	Town Road
<0.05%	2074	YMCA_PARKING_LOT	CIRCULAR	0.9	0	Town Road
<0.05%	2393	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	District Road

Existing Condition Storm Sewer - Maximum Full Flow Velocity > 6 m/s

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Classification
	2262	MUSKOKA_BEACH_ROAD	CIRCULAR	0.825	0	District Road
	2414	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	District Road
	2413	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	District Road
	2412	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	District Road
	2216	GREAVETTE_ST	CIRCULAR	0.6	0.525	Town Road
	2218	BROWN_ST	CIRCULAR	0.6	0.375	Town Road

Existing Condition Storm Sewer - Minimum Diameter < 300 mm

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Classification
	2242	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	District Road
	2244	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	District Road
	2243	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	District Road
	2090	BROCK_ST	CIRCULAR	0.2	0	District Road

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1101	FIRST_ST	Ditch_Inlet	0.497
	1497	FIRST_MUSKOKA	CB	0.49
	1073	YMCA_PARKING_LOT	CBMH	0.437
	1366	LCBO_PARKING_LOT	CB	0.435
	1090	BROCK_ST	CBMH	0.435
	1354	LCBO_PARKING_LOT	MH	0.434
	1007	THIRD_ST	CB	0.427
	1310	FARQUHAR	MH	0.42
	1074	YMCA_PARKING_LOT	CBMH	0.416
	1002	PINEDALE_RD	CB	0.39
	1559	KINGSWOOD_DR	CB	0.383
	1570	MUSKOKA_ROAD_SOUTH	MH	0.36
	1003	PINEDALE_RD	CB	0.355
	1392	MUSKOKA_BEACH_ROAD	MH	0.35
	1558	KINGSWOOD_DR	CB	0.329
	1166	HOTCHKISS_ST	CB	0.325
	1498	FIRST_MUSKOKA	MH	0.32
	1236	BROWN_ST	CB	0.302
	1479	COMMERCIAL_PARKING_LOT	CB	0.3
	1235	BROWN_ST	CB	0.281
	1526	FAIRVIEW_DR	CB	0.278
	1549	DAVID_ST	CB	0.268
	1365	LCBO_PARKING_LOT	MH	0.265
	1511	KELLY_HAHNE	CB	0.213
	1557	HAHNE_DR	CB	0.207
	1102	FIRST_ST	CB	0.199
	1545	FIRST_ST_S	CB	0.19
	1006	PINEDALE_RD	CB	0.174
	1546	FIRST_ST_S	CB	0.172
	1407	MUSKOKA_BEACH_ROAD	CB	0.17
	1534	JOHN_ST_S	MH	0.17
	1398	LOFTY_PINES_RD	Ditch_Inlet	0.167
	1165	SARAH_ST_S	CB	0.167
	1548	FIRST_ST_S	CB	0.162
	1560	KINGSWOOD_DR	CB	0.161
	1004	PINEDALE_RD	CB	0.161
	1551	DAVID_ST	CB	0.158
	1158	HOTCHKISS_ST	CB	0.155
	1308	WINEWOOD_AVE_W	CB	0.15
	1065	SECOND_ST_S	CB	0.148
	1550	DAVID_ST	CB	0.147
	1309	WINEWOOD_AVE_W	CB	0.144
	1005	PINEDALE_RD	CB	0.144
	1156	HOTCHKISS_ST	CB	0.143
	1525	FAIRVIEW_DR	CB	0.139
	1527	FAIRVIEW_DR	CB	0.136
	1223	PETER_ST	CB	0.133
	1552	FIRST_ST_S	CB	0.13
	1222	PETER_ST	CB	0.13
	1237	BROWN_ST	CB	0.129
	1111	LORNE_ST	CB	0.128
	1289	MULDREW_LAKE_RD	CB	0.124
	1226	PETER_ST	CB	0.123
	1221	PETER_ST	CB	0.122
	1514	HAHNE_DR	CB	0.121
	1323	FARQUHAR	CB	0.12
	1053	EMMA_ST	CB	0.12
	1159	HOTCHKISS_ST	CB	0.119
	1061	CENTENNIAL_DR	MH	0.114
	1095	YMCA_PARKING_LOT	CBMH	0.114
	1492	RIDGE_RD	MH	0.11

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1224	PETER_ST	CB	0.107
	1288	MULDREW_LAKE_RD	CB	0.106
	1225	PETER_ST	CB	0.105
	1060	CHURCH_ST	MH	0.102
	1085	FIRST_ST	CB	0.102
	1538	MUSKOKA_ROAD_SOUTH	MH	0.1
	1493	SHOPPERS_PARKING_LOT	CBMH	0.1
	1067	SECOND_ST_S	CB	0.1
	1314	FARQUHAR	CB	0.093
	1066	SECOND_ST_S	CB	0.091
	1075	YMCA_PARKING_LOT	CBMH	0.088
	1154	HOTCHKISS_ST	CB	0.086
	1287	MULDREW_LAKE_RD	CB	0.082
	1561	HAHNE_DR	CB	0.082
	1324	FARQUHAR	CB	0.08
	1149	BAY_ST	MH	0.08
	1313	FARQUHAR	CB	0.08
	1307	WINEWOOD_AVE_W	CB	0.08
	1562	HAHNE_DR	CB	0.077
	1524	FAIRVIEW_DR	CB	0.077
	1160	HOTCHKISS_ST	CB	0.073
	1157	HOTCHKISS_ST	CB	0.073
	1112	LORNE_ST	CB	0.072
	1305	FARQUHAR	CB	0.07
	1363	LCBO_PARKING_LOT	CBMH	0.07
	1312	FARQUHAR	CBMH	0.07
	1086	FIRST_ST	CB	0.069
	1082	FIRST_ST	CB	0.068
	1076	YMCA_PARKING_LOT	CBMH	0.067
	1088	FIRST_ST	CB	0.065
	1087	FIRST_ST	CB	0.064
	1089	CHURCH_ST	CB	0.064
	1208	FRASER_ST	Ditch_Inlet	0.062
	1286	MULDREW_LAKE_RD	CB	0.062
	1238	BROWN_ST	CB	0.061
	1220	PETER_ST	CB	0.061
	1083	FIRST_ST	CB	0.06
	1535	JOHN_ST_S	MH	0.06
	1234	BROWN_ST	MH	0.06
	1539	MUSKOKA_ROAD_SOUTH	MH	0.06
	1406	MUSKOKA_BEACH_ROAD	CB	0.06
	1537	MUSKOKA_ROAD_SOUTH	MH	0.06
	1566	PHILLIP_ST_W	MH	0.056
	1084	FIRST_ST	CB	0.053
	1480	COMMERCIAL_PARKING_LOT	CB	0.05
	1554	HAHNE_DR	CB	0.05
	1315	FARQUHAR	CB	0.048
	1148	BAY_ST	MH	0.046
	1047	PHILLIP_ST_E	CB	0.043
	1229	SARAH_ST	CB	0.043
	1227	PETER_ST	CB	0.042
	1512	KELLY_HAHNE	CB	0.042
	1361	LCBO_PARKING_LOT	CB	0.04
	1311	FARQUHAR	CBMH	0.04
	1072	BETHUNE_DR	MH	0.04
	1150	BAY_ST	MH	0.04
	1151	BAY_ST	MH	0.033
	1077	FIRST_ST	CBMH	0.03
	1404	MUSKOKA_BEACH_ROAD	MH	0.03
	1567	PHILLIP_ST_W	CB	0.028
	1362	LCBO_PARKING_LOT	CBMH	0.021

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1516	HAHNE_DR	CB	0.021
	1055	EMMA_ST	CB	0.02
	1152	BAY_ST	MH	0.02
	1207	FRASER_ST	CB	0.016
	1360	LCBO_PARKING_LOT	CBMH	0.011
	1405	MUSKOKA_BEACH_ROAD	MH	0.01
	1147	BAY_ST	MH	0.01
	1540	MUSKOKA_ROAD_SOUTH	MH	0.01
	1230	PETER_ST	CB	0.009
	1332	SARAH_ST_N	CB	0.005
	1206	FRASER_ST	CB	0.004
	1515	HAHNE_DR	CB	0.002
	1564	FAIRVIEW_DR	CB	0
	1556	HAHNE_DR	CB	0
	1408	MUSKOKA_BEACH_ROAD	CBMH	0
	1403	MUSKOKA_BEACH_ROAD	MH	0
	1081	FIRST_ST	CB	-0.016
	1395	MUSKOKA_BEACH_ROAD	MH	-0.02
	1155	HOTCHKISS_ST	CB	-0.026
	1491	RIDGE_RD	MH	-0.029
	1393	MUSKOKA_BEACH_ROAD	MH	-0.03
	1137	MARY_ST_S	CB	-0.031
	1105	SEGWUN_BV	CB	-0.037
	1396	MUSKOKA_BEACH_ROAD	MH	-0.04
	1397	LOFTY_PINES_RD	CB	-0.045
	1513	KELLY_HAHNE	CB	-0.053
	1533	JOHN_ST_S	MH	-0.07
	1319	FARQUHAR	CB	-0.072
	1041	FERNWOOD_DR	CB	-0.074
	1399	LOFTY_PINES_RD	CB	-0.083
	1494	SHOPPERS_PARKING_LOT	MH	-0.09
	1333	SARAH_ST_N	CB	-0.099
	1568	PHILLIP_ST_W	CB	-0.099
	1389	MUSKOKA_BEACH_ROAD	MH	-0.1
	1402	MUSKOKA_BEACH_ROAD	MH	-0.1
	1131	HOTCHKISS_ST	CB	-0.108
	1325	FARQUHAR	CB	-0.114
	1036	PRATT_CR	CB	-0.121
	1039	PRATT_CR	CB	-0.123
	1355	LCBO_PARKING_LOT	CB	-0.126
	1495	MUSKOKA_ROAD_SOUTH	MH	-0.13
	1130	HOTCHKISS_ST	CB	-0.141
	1326	FARQUHAR	CB	-0.158
	1541	MUSKOKA_ROAD_SOUTH	MH	-0.17
	1051	FERNWOOD_DR	Ditch_Inlet	-0.174
	1390	MUSKOKA_BEACH_ROAD	MH	-0.18
	1029	WAGNER_ST	CB	-0.189
	1430	CAROLINE_STREET	CBMH	-0.19
	1063	CENTENNIAL_DR	MH	-0.193
	1364	LCBO_PARKING_LOT	CB	-0.2
	1339	MUSKOKA_ROAD_SOUTH	CBMH	-0.2
	1336	JOHN_ST_N	CB	-0.202
	1510	KELLY_HAHNE	CB	-0.204
	1563	HAHNE_DR	CB	-0.213
	1071	YMCA_PARKING_LOT	STORMCEPTOR	-0.22
	1401	MUSKOKA_BEACH_ROAD	MH	-0.22
	1318	FARQUHAR	CB	-0.231
	1108	SEGWUN_BV	CB	-0.271
	1040	FERNWOOD_DR	MH	-0.274
	1252	WAGNER_ST	CB	-0.277
	1062	CENTENNIAL_DR	CBMH	-0.28

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1509	KELLY_HAHNE	CB	-0.285
	1317	FARQUHAR	CB	-0.286
	1049	FERNWOOD_DR	CB	-0.287
	1320	FARQUHAR	CB	-0.311
	1352	LCBO_PARKING_LOT	MH	-0.316
	1334	SARAH_ST_N	CB	-0.331
	1064	CENTENNIAL_DR	MH	-0.341
	1353	LCBO_PARKING_LOT	MH	-0.35
	1536	MUSKOKA_ROAD_SOUTH	MH	-0.36
	1394	MUSKOKA_BEACH_ROAD	MH	-0.37
	1153	BAY_ST	MH	-0.37
	1499	FIRST_ST_S	MH	-0.371
	1351	LCBO_PARKING_LOT	MH	-0.379
	1146	BAY_ST	MH	-0.383
	1050	FERNWOOD_DR	CB	-0.385
	1107	SEGWUN_BV	CB	-0.389
	1528	RIDGE_RD	CB	-0.406
	1136	HOTCHKISS_ST	CB	-0.416
	1135	HOTCHKISS_ST	CB	-0.42
	1233	PETER_ST	CB	-0.423
	1250	WAGNER_ST	CB	-0.427
	1232	PETER_ST	CB	-0.429
	1205	FRASER_ST	CB	-0.462
	1569	MUSKOKA_ROAD_SOUTH	MH	-0.47
	1327	FARQUHAR	CB	-0.488
	1316	FARQUHAR	CB	-0.491
	1037	PRATT_CR	CB	-0.493
	1338	MUSKOKA_ROAD_SOUTH	CBMH	-0.51
	1321	FARQUHAR	CB	-0.515
	1387	MUSKOKA_BEACH_ROAD	MH	-0.52
	1251	WAGNER_ST	CB	-0.521
	1132	HOTCHKISS_ST	CB	-0.542
	1080	FIRST_ST	MH	-0.546
	1231	PETER_ST	CB	-0.547
	1344	MUSKOKA_ROAD_SOUTH	DICB	-0.567
	1521	FAIRVIEW_DR	CBMH	-0.57
	1428	MUSKOKA_ROAD_SOUTH	CB	-0.57
	1177	STEAMSHIP_BAY_RD	DCB	-0.579
	1035	PRATT_CR	CB	-0.593
	1133	HOTCHKISS_ST	CB	-0.6
	1304	FARQUHAR	CBMH	-0.6
	1176	STEAMSHIP_BAY_RD	DCB	-0.613
	1017	ORIOLE_CR	CB	-0.616
	1031	WAGNER_ST	CB	-0.618
	1248	LOUISE_ST	CB	-0.624
	1555	HAHNE_DR	CB	-0.63
	1246	LOUISE_ST	CB	-0.632
	1301	SEGWUN_BV	CB	-0.648
	1100	FIRST_ST	CB	-0.66
	1357	EDWARD_ST	CB	-0.681
	1020	SEGWUN_BV	CB	-0.682
	1302	SEGWUN_BV	CB	-0.686
	1249	LOUISE_ST	CB	-0.688
	1247	LOUISE_ST	CB	-0.698
	1300	SEGWUN_BV	CB	-0.698
	1110	LORNE_ST	CB	-0.7
	1030	WAGNER_ST	CB	-0.708
	1542	MUSKOKA_ROAD_SOUTH	MH	-0.71
	1178	STEAMSHIP_BAY_RD	CB	-0.717
	1356	EDWARD_ST	MH	-0.724
	1328	FARQUHAR	CB	-0.73

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1129	WANDA_MILLER_RD	CB	-0.734
	1027	SEGWUN_BV	CB	-0.734
	1254	MUSKOKA_BEACH_ROAD	MH	-0.74
	1099	FIRST_ST	CBMH	-0.74
	1175	STEAMSHIP_BAY_RD	MH	-0.753
	1331	FARQUHAR	CB	-0.755
	1091	BROCK_ST	MH	-0.76
	1239	BROWN_ST	CB	-0.767
	1134	HOTCHKISS_ST	CB	-0.775
	1068	SECOND_ST_S	CB	-0.78
	1330	FARQUHAR	CB	-0.79
	1340	MUSKOKA_ROAD_SOUTH	CBMH	-0.79
	1183	STEAMSHIP_BAY_RD	CB	-0.798
	1543	MUSKOKA_ROAD_SOUTH	MH	-0.84
	1098	FIRST_ST	CBMH	-0.84
	1410	MUSKOKA_ROAD_SOUTH	MH	-0.84
	1322	FARQUHAR	CB	-0.842
	1370	LCBO_PARKING_LOT	CB	-0.85
	1104	SEGWUN_BV	CB	-0.859
	1341	MUSKOKA_ROAD_SOUTH	CB	-0.9
	1346	MUSKOKA_ROAD_SOUTH	MH	-0.91
	1059	BETHUNE_DR	MH	-0.914
	1179	STEAMSHIP_BAY_RD	CB	-0.923
	1019	SEGWUN_BV	CB	-0.932
	1335	SARAH_ST_N	CB	-0.936
	1016	ORIOLE_CR	CB	-0.952
	1163	BURNETT_ST	CB	-0.969
	1487	COMMERCIAL_PARKING_LOT	MH	-0.97
	1038	PRATT_CR	CB	-0.986
	1523	FAIRVIEW_DR	CBMH	-0.989
	1097	FIRST_ST	CBMH	-0.99
	1219	SARAH_ST	DCB	-0.991
	1115	LORNE_ST	CB	-0.999
	1026	SEGWUN_BV	CB	-1.005
	1278	CATHERINE_STREET	MH	-1.01
	1532	JOHN_ST_S	MH	-1.01
	1290	MULDREW_LAKE_RD	CB	-1.019
	1522	FAIRVIEW_DR	CBMH	-1.019
	1381	MUSKOKA_BEACH_ROAD	MH	-1.02
	1391	MUSKOKA_BEACH_ROAD	MH	-1.027
	1380	MUSKOKA_BEACH_ROAD	MH	-1.05
	1477	COMMERCIAL_PARKING_LOT	DCB	-1.06
	1012	ORIOLE_CR	MH	-1.064
	1011	ORIOLE_CR	CB	-1.079
	1042	FERNWOOD_DR	CB	-1.086
	1114	LORNE_ST	CB	-1.087
	1168	STEAMSHIP_BAY_RD	CB	-1.095
	1565	JOHN_ST_S	CB	-1.108
	1489	COMMERCIAL_PARKING_LOT	CB	-1.11
	1342	MUSKOKA_ROAD_SOUTH	CBMH	-1.11
	1109-2	LORNE_SEGWUN	CB	-1.124
	1367	EDWARD_ST	CB	-1.128
	1486	COMMERCIAL_PARKING_LOT	MH	-1.13
	1386	MUSKOKA_BEACH_ROAD	MH	-1.13
	1169	STEAMSHIP_BAY_RD	CB	-1.139
	1014	ORIOLE_CR	CB	-1.143
	1382	MUSKOKA_BEACH_ROAD	MH	-1.17
	1024	SEGWUN_BV	CB	-1.171
	1164	BURNETT_ST	CB	-1.173
	1431	CAROLINE_STREET	CBMH	-1.18
	1379	MUSKOKA_BEACH_ROAD	MH	-1.19

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1435	MUSKOKA_ROAD_SOUTH	MH	-1.19
	1371	COMMERCIAL_PARKING_LOT	CB	-1.21
	1345	MUSKOKA_ROAD_SOUTH	MH	-1.214
	1544	MUSKOKA_ROAD_SOUTH	MH	-1.23
	1255	MUSKOKA_BEACH_ROAD	MH	-1.24
	1299	SEGWUN_BV	DCB	-1.249
	1162	BURNETT_ST	CB	-1.249
	1450	COMMERCIAL_PARKING_LOT	DCB	-1.27
	1484	COMMERCIAL_PARKING_LOT	CB	-1.3
	1170	STEAMSHIP_BAY_RD	CB	-1.301
	1034	PRATT_CR	CB	-1.302
	1359	EDWARD_ST	CB	-1.31
	1482	COMMERCIAL_PARKING_LOT	CB	-1.31
	1488	COMMERCIAL_PARKING_LOT	MH	-1.31
	1242	MUSKOKA_ROAD_SOUTH	MH	-1.31
	1298	SEGWUN_BV	DCB	-1.311
	1481	COMMERCIAL_PARKING_LOT	CB	-1.32
	1459	COMMERCIAL_PARKING_LOT	CBMH	-1.34
	1113	LORNE_ST	CB	-1.347
	1496	MUSKOKA_ROAD_SOUTH	CBMH	-1.35
	1476	COMMERCIAL_PARKING_LOT	CB	-1.36
	1010	ORIOLE_CR	CB	-1.361
	1119	BAY_ST	MH	-1.368
	1369	EDWARD_ST	CB	-1.37
	1384	MUSKOKA_BEACH_ROAD	CBMH	-1.37
	1044	FERNWOOD_DR	CB	-1.372
	1180	STEAMSHIP_BAY_RD	CB	-1.373
	1465	COMMERCIAL_PARKING_LOT	CB	-1.39
	1347	MUSKOKA_ROAD_SOUTH	MH	-1.39
	1467	COMMERCIAL_PARKING_LOT	MH	-1.39
	1358	EDWARD_ST	CB	-1.397
	1457	COMMERCIAL_PARKING_LOT	CBMH	-1.4
	1472	COMMERCIAL_PARKING_LOT	CBMH	-1.4
	1502	BETHUNE_DR	MH	-1.404
	1385	MUSKOKA_BEACH_ROAD	CBMH	-1.41
	1021	SEGWUN_BV	CB	-1.413
	1434	MUSKOKA_ROAD_SOUTH	MH	-1.42
	1474	COMMERCIAL_PARKING_LOT	MH	-1.43
	1243	MUSKOKA_ROAD_SOUTH	CBMH	-1.43
	1171	STEAMSHIP_BAY_RD	MH	-1.447
	1195	JAMES_ST	CBMH	-1.447
	1228	GREAVETTE_ST	DICB	-1.449
	1138	BAY_ST	CB	-1.458
	1078	FIRST_ST	CBMH	-1.47
	1426	MUSKOKA_ROAD_SOUTH	MH	-1.47
	1033	PRATT_CR	CB	-1.476
	1127	BAY_ST	CB	-1.496
	1423	MUSKOKA_ROAD_SOUTH	MH	-1.52
	1128	WANDA_MILLER_RD	CB	-1.521
	1244	MUSKOKA_ROAD_SOUTH	CBMH	-1.54
	1427	MUSKOKA_ROAD_SOUTH	MH	-1.54
	1425	MUSKOKA_ROAD_SOUTH	CB	-1.56
	1139	BAY_ST	CB	-1.561
	1329	FARQUHAR	CB	-1.564
	1120	BAY_ST	MH	-1.574
	1483	COMMERCIAL_PARKING_LOT	CBMH	-1.58
	1422	MUSKOKA_ROAD_SOUTH	CBMH	-1.58
	1473	COMMERCIAL_PARKING_LOT	DICB	-1.58
	1436	MUSKOKA_ROAD_SOUTH	MH	-1.59
	1070	BETHUNE_DR	MH	-1.61
	1421	MUSKOKA_ROAD_SOUTH	CBMH	-1.62

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1241	MUSKOKA_ROAD_SOUTH	MH	-1.63
	1420	MUSKOKA_ROAD_SOUTH	MH	-1.63
	1449	COMMERCIAL_PARKING_LOT	MH	-1.64
	1194	JAMES_ST	CBMH	-1.668
	1375	MUSKOKA_BEACH_ROAD	MH	-1.69
	1296	THAIN_ST	MH	-1.698
	1471	COMMERCIAL_PARKING_LOT	MH	-1.7
	1419	MUSKOKA_ROAD_SOUTH	MH	-1.73
	1458	COMMERCIAL_PARKING_LOT	CBMH	-1.74
	1145	BAY_ST	CB	-1.751
	1240	BROWN_ST	MH	-1.756
	1043	FERNWOOD_DR	CB	-1.78
	1058	BETHUNE_DR	MH	-1.78
	1418	MUSKOKA_ROAD_SOUTH	MH	-1.78
	1216	GREAVETTE_ST	DCBMH	-1.782
	1529	RIDGE_RD	CB	-1.799
	1118	BAY_ST	MH_BOX	-1.8
	1275	MUSKOKA_BEACH_ROAD	MH	-1.8
	1214	GREAVETTE_ST	DCBMH	-1.803
	1217	BROWN_ST	CBMH	-1.809
	1374	MUSKOKA_BEACH_ROAD	MH	-1.81
	1193	JAMES_ST	CBMH	-1.819
	1475	COMMERCIAL_PARKING_LOT	MH	-1.82
	1378	MUSKOKA_BEACH_ROAD	MH	-1.82
	1121	BAY_ST	MH	-1.828
	1215	GREAVETTE_ST	DCBMH	-1.836
	1015	ORIOLE_CR	CB	-1.839
	1470	COMMERCIAL_PARKING_LOT	MH	-1.85
	1125	BAY_ST	MH	-1.863
	1456	COMMERCIAL_PARKING_LOT	CBMH	-1.87
	1276	MUSKOKA_BEACH_ROAD	MH	-1.87
	1424	MUSKOKA_ROAD_SOUTH	MH	-1.88
	1218	BROWN_ST	DCBMH	-1.9
	1417	MUSKOKA_ROAD_SOUTH	MH	-1.9
	1295	THAIN_ST	MH	-1.919
	1448	COMMERCIAL_PARKING_LOT	MH	-1.92
	1485	COMMERCIAL_PARKING_LOT	MH	-1.93
	1122	BAY_ST	MH	-1.935
	1189	MAPLE_HEIGHTS_DR	CB	-1.939
	1187	MAPLE_HEIGHTS_DR	CB	-1.942
	1531	JOHN_ST_S	MH	-1.945
	1188	MAPLE_HEIGHTS_DR	CB	-1.949
	1463	COMMERCIAL_PARKING_LOT	MH	-1.95
	1464	COMMERCIAL_PARKING_LOT	CBMH	-1.95
	1469	COMMERCIAL_PARKING_LOT	MH	-1.96
	1190	MAPLE_HEIGHTS_DR	CB	-1.962
	1202	MAPLE_HEIGHTS_DR	CB	-1.968
	1079	FIRST_ST	CBMH	-1.968
	1277	CATHERINE_STREET	CB	-1.97
	1466	COMMERCIAL_PARKING_LOT	MH	-1.97
	1274	MUSKOKA_BEACH_ROAD	MH	-1.97
	1260	MUSKOKA_BEACH_ROAD	MH	-1.98
	1259	MUSKOKA_BEACH_ROAD	MH	-2.01
	1144	BAY_ST	CB	-2.011
	1191	MAPLE_HEIGHTS_DR	CB	-2.012
	1181	STEAMSHIP_BAY_RD	CB	-2.021
	1022	SEGWUN_BV	CB	-2.027
	1348	MUSKOKA_ROAD_SOUTH	MH	-2.03
	1200	MAPLE_HEIGHTS_DR	CB	-2.031
	1416	MUSKOKA_ROAD_SOUTH	CBMH	-2.04
	1478	COMMERCIAL_PARKING_LOT	MH	-2.05

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1349	LCBO_PARKING_LOT	STORMCEPTOR	-2.061
	1109	LORNE_ST	CB	-2.069
	1373	MUSKOKA_BEACH_ROAD	CBMH	-2.07
	1201	MAPLE_HEIGHTS_DR	CB	-2.075
	1213	GREAVETTE_ST	DCBMH	-2.079
	1445	COMMERCIAL_PARKING_LOT	MH	-2.08
	1069	BETHUNE_DR	MH	-2.08
	1199	MAPLE_HEIGHTS_DR	CB	-2.082
	1126	BAY_ST	MH	-2.09
	1203	MAPLE_HEIGHTS_DR	CB	-2.103
	1262	MUSKOKA_BEACH_ROAD	MH	-2.13
	1294	FREELAND_DR	MH	-2.136
	1124	BAY_ST	MH	-2.16
	1439	CAROLINE_STREET	CB	-2.17
	1432	CAROLINE_STREET	CBMH	-2.17
	1263	MUSKOKA_BEACH_ROAD	MH	-2.18
	1261	MUSKOKA_BEACH_ROAD	MH	-2.18
	1266	MUSKOKA_BEACH_ROAD	MH	-2.18
	1256	MUSKOKA_BEACH_ROAD	MH	-2.2
	1433	MUSKOKA_ROAD_SOUTH	MH	-2.21
	1376	MUSKOKA_BEACH_ROAD	MH	-2.23
	1172	STEAMSHIP_BAY_RD	CB	-2.231
	1271	MUSKOKA_BEACH_ROAD	MH	-2.24
	1462	COMMERCIAL_PARKING_LOT	MH	-2.25
	1411	MUSKOKA_ROAD_SOUTH	MH	-2.29
	1437	MUSKOKA_ROAD_SOUTH	MH	-2.3
	1452	COMMERCIAL_PARKING_LOT	MH	-2.33
	1264	MUSKOKA_BEACH_ROAD	MH	-2.34
	1453	COMMERCIAL_PARKING_LOT	MH	-2.35
	1265	MUSKOKA_BEACH_ROAD	MH	-2.38
	1212	GREAVETTE_ST	DCBMH	-2.383
	1455	COMMERCIAL_PARKING_LOT	MH	-2.4
	1377	MUSKOKA_BEACH_ROAD	MH	-2.43
	1451	COMMERCIAL_PARKING_LOT	MH	-2.44
	1258	MUSKOKA_BEACH_ROAD	MH	-2.45
	1454	COMMERCIAL_PARKING_LOT	MH	-2.51
	1461	COMMERCIAL_PARKING_LOT	MH	-2.52
	1123	BAY_ST	MH	-2.54
	1272	MUSKOKA_BEACH_ROAD	MH	-2.54
	1438	MUSKOKA_ROAD_SOUTH	MH	-2.59
	1460	COMMERCIAL_PARKING_LOT	MH	-2.6
	1257	MUSKOKA_BEACH_ROAD	MH	-2.6
	1092	BROCK_ST	MH	-2.63
	1093	BROCK_ST	MH	-2.66
	1530	RIDGE_RD	CB	-2.761
	1412	MUSKOKA_ROAD_SOUTH	MH	-2.79
	1173	STEAMSHIP_BAY_RD	CB	-2.801
	1270	MUSKOKA_BEACH_ROAD	MH	-2.81
	1273	MUSKOKA_BEACH_ROAD	MH	-2.82
	1415	MUSKOKA_ROAD_SOUTH	MH	-2.85
	1211	GREAVETTE_ST	MH	-2.893
	1267	MUSKOKA_BEACH_ROAD	MH	-2.91
	1182	STEAMSHIP_BAY_RD	CB	-3.053
	1414	MUSKOKA_ROAD_SOUTH	MH	-3.08
	1292	FREELAND_DR	MH	-3.195
	1446	COMMERCIAL_PARKING_LOT	MH	-3.26
	1293	FREELAND_DR	MH	-3.261
	1413	MUSKOKA_ROAD_SOUTH	MH	-3.59
	1441	COMMERCIAL_PARKING_LOT	MH	-3.81
	1442	COMMERCIAL_PARKING_LOT	MH	-3.82
	1269	MUSKOKA_BEACH_ROAD	MH	-3.82

Existing Condition Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1468	COMMERCIAL_PARKING_LOT	MH	-3.85
	1268	MUSKOKA_BEACH_ROAD	MH	-3.91
	1198	MAPLE_HEIGHTS_DR	CBMH	-3.942
	1447	COMMERCIAL_PARKING_LOT	MH	-3.98
	1197	MAPLE_HEIGHTS_DR	CBMH	-4.087
	1443	COMMERCIAL_PARKING_LOT	MH	-4.14
	1444	COMMERCIAL_PARKING_LOT	MH	-4.5
	1186	MAPLE_HEIGHTS_DR	CB	-4.842
	1185	MAPLE_HEIGHTS_DR	CB	-4.983

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2552	DAVID_ST	CIRCULAR	0.375	0.375	989%
	2512	KELLY_HAHNE	CIRCULAR	0.75	0	567%
	2236	BROWN_ST	CIRCULAR	0.3	0.3	560%
	2066	SECOND_ST_S	CIRCULAR	0.375	0.375	495%
	2081	FIRST_ST	CIRCULAR	0.45	0.45	474%
	2526	FAIRVIEW_DR	CIRCULAR	0.375	0	451%
	2559	KINGSWOOD_DR	CIRCULAR	0.25	0.25	446%
	2090	BROCK_ST	CIRCULAR	0.2	0	422%
	2556	HAHNE_DR	CIRCULAR	0.35	0.35	419%
	2067	SECOND_ST_S	CIRCULAR	0.375	0.375	345%
	2557	HAHNE_DR	CIRCULAR	0.25	0.25	340%
	2165	SARAH_ST_S	CIRCULAR	0.3	0.3	340%
	2407	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	336%
	2510_1	KELLY_HAHNE	CIRCULAR	0.6	0	334%
	2406	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	326%
	2325	FARQUHAR	CIRCULAR	0.45	0.45	324%
	2570	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	315%
	2534	JOHN_ST_S	CIRCULAR	0.45	0.45	303%
	2002	PINEDALE_RD	CIRCULAR	0.4	0	299%
	2401	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	271%
	2082	FIRST_ST	CIRCULAR	0.45	0.45	263%
	2533	JOHN_ST_S	CIRCULAR	0.45	0.45	260%
	2397	MUSOKOKA_BEACH_ROAD	CIRCULAR	0.3	0	253%
	2525	FAIRVIEW_DR	CIRCULAR	0.375	0	249%
	2111	LORNE_ST	CIRCULAR	0.15	0	245%
	2235	BROWN_ST	CIRCULAR	0.3	0	242%
	2158	HOTCHKISS_ST	CIRCULAR	0.3	0.3	239%
	2428	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	236%
	2479	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	216%
	2183	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0	216%
	2070	BETHUNE_DR_N	CIRCULAR	0.45	0	213%
	2107	SEGWUN_BV	CIRCULAR	0.35	0	206%
	2080	FIRST_ST	CIRCULAR	0.45	0.45	198%
	2105	SEGWUN_BV	CIRCULAR	0.25	0	198%
	2178	STEAMSHIP_BAY_RD	CIRCULAR	0.625	0	189%
	2511	KELLY_HAHNE	CIRCULAR	0.75	0	189%
	2180	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	188%
	2509_1	KELLY_HAHNE	CIRCULAR	0.6	0	188%
	2097	FIRST_ST	CIRCULAR	0.3	0.3	187%
	2497_1	FIRST_MUSKOKA	CIRCULAR	0.6	0	187%
	2305	WINEWOOD_FARQUHAR	CIRCULAR	0.55	0	186%
	2166	HOTCHKISS_ST	CIRCULAR	0.3	0.3	183%
	2389	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	180%
	2047	PHILLIP_ST_E	CIRCULAR	0.3	0.3	178%
	2505	BETHUNE_DR	CIRCULAR	0.9	0	178%
	2205	FRASER_ST	CIRCULAR	0.3	0	176%
	2288	MULDREW_LAKE_RD	CIRCULAR	0.3	0	175%
	2277	CATHERINE_STREET	CIRCULAR	0.3	0	173%
	2055	EMMA_ST	CIRCULAR	0.25	0.25	172%
	2549	FIRST_ST_S	CIRCULAR	0.375	0.375	171%
	2524	FAIRVIEW_DR	CIRCULAR	0.375	0	171%
	2149	BAY_ST	CIRCULAR	0.375	0	171%
	2480	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	170%
	2313	FARQUHAR	CIRCULAR	0.45	0	169%
	2085	FIRST_ST	CIRCULAR	0.45	0.3	168%
	2498	FIRST_MUSKOKA	CIRCULAR	0.6	0	164%
	2338	MAIN_STREET	CIRCULAR	0.45	0	163%
	2007	THIRD_ST	CIRCULAR	0.4	0	159%
	2513	KELLY_HAHNE	CIRCULAR	0.75	0	159%
	2491	RIDGE_RD	CIRCULAR	0.9	0	158%
	2404	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	157%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2357	EDWARD_ST	CIRCULAR	0.45	0.45	154%
	2538	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	153%
	2503	BETHUNE_DR	CIRCULAR	0.825	0	153%
	2017	ORIOLE_CR	CIRCULAR	0.2	0.2	152%
	2006	PINEDALE_RD	CIRCULAR	0.3	0.3	152%
	2186	MAPLE_HEIGHTS_DR	CIRCULAR	0.375	0	149%
	2474	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	147%
	2509_2	KELLY_HAHNE	CIRCULAR	0.6	0	146%
	2060	CHURCH_ST	CIRCULAR	0.45	0.45	146%
	2306_2	WINEWOOD_FARQUHAR	FILLED_CIRCULAR	0.55	0.3	144%
	2387	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	144%
	2003	PINEDALE_RD	CIRCULAR	0.4	0	143%
	2527	FAIRVIEW_DR	CIRCULAR	0.375	0	143%
	2545	VETERANS_WAY	CIRCULAR	0.3	0	143%
	2566	PHILLIP_ST_W	CIRCULAR	0.3	0.3	142%
	2430	CAROLINE_STREET	CIRCULAR	0.6	0	142%
	2510_2	KELLY_HAHNE	CIRCULAR	0.6	0	141%
	2403	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	140%
	2039	PRATT_CR	CIRCULAR	0.25	0.25	139%
	2535	JOHN_ST_S	CIRCULAR	0.4	0.4	138%
	2539	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	138%
	2234	MARY_ST	CIRCULAR	0.375	0	138%
	2146	BAY_ST	CIRCULAR	0.45	0	138%
	2207	FRASER_ST	CIRCULAR	0.3	0.3	137%
	2344	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	136%
	2065	SECOND_ST_S	CIRCULAR	0.35	0.35	135%
	2154	HOTCHKISS_ST	CIRCULAR	0.375	0.375	135%
	2226	PETER_ST	CIRCULAR	0.3	0	135%
	2310	FARQUHAR	CIRCULAR	0.375	0	134%
	2035	PRATT_CR	CIRCULAR	0.375	0.375	133%
	2284	MULDREW_LAKE_RD	CIRCULAR	0.6	0	132%
	2087	FIRST_ST	CIRCULAR	0.3	0.45	130%
	2053	EMMA_ST	CIRCULAR	0.25	0.25	128%
	2289	MULDREW_LAKE_RD	CIRCULAR	0.3	0	128%
	2014	ORIOLE_CR	CIRCULAR	0.3	0.3	127%
	2380	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	127%
	2061	CENTENNIAL_DR	CIRCULAR	0.45	0	126%
	2147	BAY_ST	CIRCULAR	0.45	0	126%
	2425	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	126%
	2104	SEGWUN_BV	CIRCULAR	0.35	0	125%
	2119	BAY_ST	CIRCULAR	0.9	0	123%
	2532	JOHN_ST_S	CIRCULAR	0.45	0.45	122%
	2227	PETER_ST	CIRCULAR	0.3	0	122%
	2426	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	122%
	2266	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	122%
	2086	FIRST_ST	CIRCULAR	0.3	0.45	121%
	2088	FIRST_ST	EGG	0.375	0	121%
	2036	PRATT_CR	CIRCULAR	0.375	0.375	121%
	2442	COMMERCIAL_PARKING_LOT	CIRCULAR	1.05	0	121%
	2171	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0.6	120%
	2554	KELLY_HAHNE	CIRCULAR	0.4	0	120%
	2258	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	120%
	2229	SARAH_ST	CIRCULAR	0.4	0	119%
	2537	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	119%
	2098	FIRST_ST	CIRCULAR	0.3	0.3	118%
	2323	FARQUHAR	CIRCULAR	0.25	0.25	116%
	2084	FIRST_ST	CIRCULAR	0.45	0.3	115%
	2220	SARAH_ST	CIRCULAR	0.4	0	115%
	2541	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	115%
	2160	HOTCHKISS_ST	CIRCULAR	0.3	0.3	114%
	2155	HOTCHKISS_ST	CIRCULAR	0.375	0.375	114%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2238	BROWN_ST	CIRCULAR	0.3	0	114%
	2222	PETER_ST	CIRCULAR	0.3	0	114%
	2536	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	114%
	2151	BAY_ST	CIRCULAR	0.375	0	114%
	2237	BROWN_ST	CIRCULAR	0.375	0.375	113%
	2307	WINEWOOD_FARQUHAR	CIRCULAR	0.45	0	113%
	2148	BAY_ST	CIRCULAR	0.45	0	113%
	2156	HOTCHKISS_ST	CIRCULAR	0.375	0.375	112%
	2390	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	112%
	2206	FRASER_ST	CIRCULAR	0.3	0.3	111%
	2548	FIRST_ST_S	CIRCULAR	0.375	0.375	111%
	2130	WANDA_MILLER_RD	CIRCULAR	0.375	0.375	111%
	2432	CAROLINE_STREET	CIRCULAR	0.6	0	111%
	2193	JAMES_ST	CIRCULAR	0.3	0	111%
	2120	BAY_ST	CIRCULAR	0.9	0	110%
	2492	RIDGE_RD	CIRCULAR	0.9	0.9	109%
	2308	WINEWOOD_AVE_W	CIRCULAR	0.35	0	109%
	2071	BETHUNE_DR_N	CIRCULAR	0.45	0	109%
	2396	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	109%
	2225	PETER_ST	CIRCULAR	0.4	0	108%
	2299	SEGWUN_BV	CIRCULAR	0.4	0	107%
	2223	PETER_ST	CIRCULAR	0.4	0	107%
	2378	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	107%
	2282	MULDREW_LAKE_RD	CIRCULAR	0.6	0	105%
	2377	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	105%
	2435	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	105%
	2049	FERNWOOD_DR	CIRCULAR	0.3	0.3	104%
	2089	CHURCH_ST	CIRCULAR	0.2	0.2	104%
	2029	WAGNER_ST	CIRCULAR	0.3	0	104%
	2083	FIRST_ST	CIRCULAR	0.45	0	103%
	2010	ORIOLE_CR	CIRCULAR	0.375	0.3	103%
	2224	PETER_ST	CIRCULAR	0.4	0	103%
	2546	FIRST_ST_S	CIRCULAR	0.3	0	103%
	2315	FARQUHAR	CIRCULAR	0.45	0.45	102%
	2004	PINEDALE_RD	CIRCULAR	0.4	0.4	102%
	2547	FIRST_ST_S	CIRCULAR	0.3	0.3	102%
	2159	HOTCHKISS_ST	CIRCULAR	0.3	0.3	102%
	2453	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	102%
	2540	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	102%
	2309	WINEWOOD_AVE_W	CIRCULAR	0.3	0.3	101%
	2005	PINEDALE_RD	CIRCULAR	0.4	0.4	101%
	2157	HOTCHKISS_ST	CIRCULAR	0.375	0.375	101%
	2324	FARQUHAR	CIRCULAR	0.3	0.3	100%
	2108	SEGWUN_BV	CIRCULAR	0.35	0	100%
	2287	MULDREW_LAKE_RD	CIRCULAR	0.3	0	100%
	2312	FARQUHAR	CIRCULAR	0.375	0	100%
	2493	SHOPPERS_PARKING_LOT	CIRCULAR	0.75	0	100%
	2094	YMCA_PARKING_LOT	CIRCULAR	0.45	0	100%
	2339	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	100%
	2328	FARQUHAR	CIRCULAR	0.45	0.45	99%
	2354	LCBO_PARKING_LOT	CIRCULAR	0.25	0	98%
	2394	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	98%
	2326	FARQUHAR	CIRCULAR	0.45	0.45	97%
	2495	SHOPPERS_PARKING_LOT	CIRCULAR	1.05	0	97%
	2384	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	97%
	2379	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	96%
	2418	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	96%
	2319	FARQUHAR	CIRCULAR	0.45	0.45	95%
	2131	HOTCHKISS_ST	CIRCULAR	0.4	0	95%
	2506	BETHUNE_DR	RECT_CLOSED	0.6	0.9	94%
	2153	BAY_ST	CIRCULAR	0.375	0	94%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2069	BETHUNE_DR_N	CIRCULAR	0.45	0	94%
	2460	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	93%
	2062	CENTENNIAL_DR	CIRCULAR	0.45	0	93%
	2494	SHOPPERS_PARKING_LOT	CIRCULAR	1.05	0	93%
	2150	BAY_ST	CIRCULAR	0.375	0	92%
	2175	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	92%
	2386	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	92%
	2408	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	92%
	2374	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	91%
	2419	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	91%
	2416	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	91%
	2415	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	91%
	2423	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	91%
	2311	FARQUHAR	CIRCULAR	0.375	0	90%
	2375	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	90%
	2486	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	89%
	2376	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	89%
	2433	CAROLINE_STREET	CIRCULAR	0.6	0	89%
	2381	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	89%
	2560	KINGSWOOD_DR	CIRCULAR	0.25	0.25	88%
	2041	FERNWOOD_DR	CIRCULAR	0.3	0	88%
	2417	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	88%
	2256	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	88%
	2367	EDWARD_ST	CIRCULAR	0.3	0.3	87%
	2459	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	87%
	2221	PETER_ST	CIRCULAR	0.4	0	87%
	2232	PETER_ST	CIRCULAR	0.3	0	87%
	2514	KELLY_HAHNE	CIRCULAR	0.8	0	87%
	2304	WINEWOOD_FARQUHAR	CIRCULAR	0.6	0	87%
	2373	MUSKOKA_BEACH_ROAD	CIRCULAR	0.5	0	86%
	2255	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	86%
	2100	FIRST_ST	CIRCULAR	0.3	0.3	85%
	2321	FARQUHAR	CIRCULAR	0.45	0.45	85%
	2179	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0	85%
	2434	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.6	0	85%
	2420	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	85%
	2273	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	85%
	2033	PRATT_CR	CIRCULAR	0.6	0.6	84%
	2286	MULDREW_LAKE_RD	CIRCULAR	0.3	0	84%
	2064	CENTENNIAL_DR	CIRCULAR	0.45	0	84%
	2063	CENTENNIAL_DR	CIRCULAR	0.45	0	84%
	2254	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	84%
	2316	FARQUHAR	CIRCULAR	0.45	0.45	83%
	2259	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	83%
	2247	LOUISE_ST	CIRCULAR	0.45	0.45	82%
	2555	HAHNE_DR	CIRCULAR	0.35	0.35	82%
	2117	BAY_ST	RECT_CLOSED	0.9	1.8	82%
	2079	FIRST_ST	CIRCULAR	0.45	0	82%
	2365	LCBO_PARKING_LOT	CIRCULAR	0.25	0	82%
	2500	FIRST_ST_S	CIRCULAR	0.9	0	82%
	2260	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	82%
	2172	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0.6	81%
	2318	FARQUHAR	CIRCULAR	0.45	0.45	80%
	2037	PRATT_CR	CIRCULAR	0.375	0.375	80%
	2257	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	80%
	2551	DAVID_ST	CIRCULAR	0.375	0.375	79%
	2177	STEAMSHIP_BAY_RD	CIRCULAR	0.8	0	79%
	2292	FREELAND_DR	CIRCULAR	0.45	0	79%
	2170	STEAMSHIP_BAY_RD	CIRCULAR	0.75	0	78%
	2251	WAGNER_ST	CIRCULAR	0.3	0	78%
	2542	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	78%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2444	COMMERCIAL_PARKING_LOT	CIRCULAR	0.9	0	77%
	2565	JOHN_ST_S	CIRCULAR	0.25	0	77%
	2499	FIRST_MUSKOKA	CIRCULAR	0.9	0	77%
	2121	BAY_ST	CIRCULAR	0.675	0	77%
	2421	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	77%
	2568	PHILLIP_ST_W	CIRCULAR	0.375	0.375	76%
	2443	COMMERCIAL_PARKING_LOT	CIRCULAR	0.9	0	76%
	2431	CAROLINE_STREET	CIRCULAR	0.6	0	76%
	2558	KINGSWOOD_DR	CIRCULAR	0.35	0.35	75%
	2441	COMMERCIAL_PARKING_LOT	CIRCULAR	1.05	0	75%
	2340	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	75%
	2015	ORIOLE_CR	CIRCULAR	0.3	0.3	74%
	2077	FIRST_ST	CIRCULAR	0.6	0	74%
	2278	CATHERINE_STREET	CIRCULAR	0.525	0	74%
	2483	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	74%
	2356	EDWARD_ST	CIRCULAR	0.65	0	74%
	2295	THAIN_ST	CIRCULAR	0.375	0.375	73%
	2461	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	73%
	2458	COMMERCIAL_PARKING_LOT	CIRCULAR	0.675	0	73%
	2122	BAY_ST	CIRCULAR	0.675	0	73%
	2019	SEGWUN_BV	CIRCULAR	0.3	0.3	72%
	2320	FARQUHAR	CIRCULAR	0.45	0.45	72%
	2463	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	72%
	2275	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	72%
	2239	BROWN_ST	CIRCULAR	0.4	0.4	71%
	2076	YMCA_PARKING_LOT	CIRCULAR	0.6	0	71%
	2030	WAGNER_ST	CIRCULAR	0.3	0	71%
	2126	BAY_ST	CIRCULAR	0.675	0	71%
	2341	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	71%
	2194	JAMES_ST	CIRCULAR	0.3	0	71%
	2346	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	70%
	2240	BROWN_ST	CIRCULAR	0.4	0.4	69%
	2102	FIRST_ST	CIRCULAR	0.3	0	69%
	2112	LORNE_ST	CIRCULAR	0.15	0	69%
	2176	STEAMSHIP_BAY_RD	CIRCULAR	0.8	0	69%
	2152	BAY_ST	CIRCULAR	0.375	0	69%
	2385	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	69%
	2358	EDWARD_ST	CIRCULAR	0.3	0.3	68%
	2366	LCBO_PARKING_LOT	CIRCULAR	0.25	0	68%
	2168	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	68%
	2342	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	68%
	2099	FIRST_ST	CIRCULAR	0.3	0.3	67%
	2317	FARQUHAR	CIRCULAR	0.45	0.45	67%
	2567	PHILLIP_ST_W	CIRCULAR	0.4	0.4	67%
	2040	PRATT_CR	CIRCULAR	0.3	0	67%
	2455	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	67%
	2314	FARQUHAR	CIRCULAR	0.45	0	67%
	2075	YMCA_PARKING_LOT	CIRCULAR	0.9	0	66%
	2457	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	66%
	2402	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	65%
	2293	FREELAND_DR	CIRCULAR	0.45	0.45	64%
	2059	BETHUNE_DR_N	CIRCULAR	0.6	0	64%
	2241	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	64%
	2265	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	64%
	2410	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.9	0	64%
	2212	GREAVETTE_ST	CIRCULAR	0.9	0	63%
	2124	BAY_ST	CIRCULAR	0.675	0	63%
	2244	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	63%
	2391	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	63%
	2475	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	62%
	2422	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.6	0	62%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2359	EDWARD_ST	CIRCULAR	0.3	0.3	61%
	2233	PETER_ST	CIRCULAR	0.3	0	61%
	2561	HAHNE_DR	CIRCULAR	0.4	0	61%
	2123	BAY_ST	CIRCULAR	0.675	0	61%
	2118	BAY_ST	RECT_CLOSED	0.9	1.8	61%
	2269	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	61%
	2348	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	61%
	2294	FREELAND_DR	CIRCULAR	0.45	0.45	60%
	2439	CAROLINE_STREET	CIRCULAR	0.3	0	60%
	2298	SEGWUN_BV	CIRCULAR	0.6	0	59%
	2050	FERNWOOD_DR	CIRCULAR	0.3	0.3	59%
	2219	BROWN_ST	CIRCULAR	0.45	0	59%
	2125	BAY_ST	CIRCULAR	0.675	0	59%
	2544	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	58%
	2484	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	58%
	2398	LOFTY_PINES_RD	CIRCULAR	0.375	0.375	57%
	2038	PRATT_CR	CIRCULAR	0.3	0.3	57%
	2529	RIDGE_RD	CIRCULAR	0.3	0.3	57%
	2078	FIRST_ST	CIRCULAR	0.45	0	57%
	2477	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	57%
	2252	WAGNER_ST	CIRCULAR	0.3	0	57%
	2109_2	LORNE_SEGWUN	CIRCULAR	0.4	0	57%
	2132	HOTCHKISS_ST	CIRCULAR	0.375	0	56%
	2138	BAY_ST	CIRCULAR	0.3	0	56%
	2270	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	56%
	2395	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	56%
	2301	SEGWUN_BV	CIRCULAR	0.15	0	39%
	2530	RIDGE_RD	CIRCULAR	0.3	0.3	54%
	2462	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	54%
	2242	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	54%
	2264	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	54%
	2411	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	54%
	2020	SEGWUN_BV	CIRCULAR	0.3	0.3	53%
	2550	DAVID_ST	CIRCULAR	0.375	0.375	53%
	2280	MULDREW_LAKE_RD	CIRCULAR	0.6	0	53%
	2497_2	FIRST_MUSKOKA	RECT_CLOSED	0.9	0.9	53%
	2012	ORIOLE_CR	CIRCULAR	0.3	0.3	52%
	2215	GREAVETTE_ST	CIRCULAR	0.6	0.525	52%
	2214	GREAVETTE_ST	CIRCULAR	0.75	0.625	52%
	2363	LCBO_PARKING_LOT	CIRCULAR	0.375	0	52%
	2488	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	52%
	2563	HAHNE_DR	CIRCULAR	0.3	0	52%
	2250	WAGNER_ST	CIRCULAR	0.3	0	52%
	2042	FERNWOOD_DR	CIRCULAR	0.3	0.3	51%
	2127	BAY_ST	CIRCULAR	0.525	0	51%
	2452	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	51%
	2482	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	51%
	2231	PETER_ST	CIRCULAR	0.4	0	51%
	2427	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	51%
	2101	FIRST_ST	CIRCULAR	0.3	0.45	50%
	2322	FARQUHAR	CIRCULAR	0.45	0.45	50%
	2515	HAHNE_DR	CIRCULAR	0.9	0.9	50%
	2496	MUSKOKA_ROAD_SOUTH	CIRCULAR	1.05	0	50%
	2451	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	50%
	2230	PETER_ST	CIRCULAR	0.4	0	50%
	2249	LOUISE_ST	CIRCULAR	0.45	0.45	49%
	2516	HAHNE_DR	CIRCULAR	0.9	0.9	49%
	2531	JOHN_ST_S	CIRCULAR	0.6	0	49%
	2246	WAGNER_ST	CIRCULAR	0.4	0	49%
	2046	PHILLIP_ST_E	CIRCULAR	0.4	0.3	48%
	2456	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	48%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2016	ORIOLE_CR	CIRCULAR	0.3	0.3	47%
	2521	FAIRVIEW_DR	CIRCULAR	0.75	0	47%
	2271	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	47%
	2268	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	47%
	2405	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	47%
	2128	WANDA_MILLER_RD	CIRCULAR	0.525	0.475	46%
	2355	LCBO_PARKING_LOT	CIRCULAR	0.25	0	46%
	2267	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	46%
	2263	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	46%
	2091	BROCK_ST	CIRCULAR	0.45	0	46%
	2008	THIRD_ST	CIRCULAR	0.4	0.3	45%
	2136	HOTCHKISS_ST	CIRCULAR	0.3	0.3	45%
	2133	HOTCHKISS_ST	CIRCULAR	0.375	0.375	45%
	2261	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	45%
	2274	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	44%
	2043	FERNWOOD_DR	CIRCULAR	0.25	0.25	43%
	2129	WANDA_MILLER_RD	CIRCULAR	0.45	0.475	43%
	2217	BROWN_ST	CIRCULAR	0.6	0.375	43%
	2502	BETHUNE_FIRST	CIRCULAR	1.2	0	42%
	2364	LCBO_PARKING_LOT	CIRCULAR	0.25	0	41%
	2447	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	41%
	2371	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	41%
	2562	HAHNE_DR	CIRCULAR	0.4	0	41%
	2185	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	41%
	2469	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	40%
	2216	GREAVETTE_ST	CIRCULAR	0.6	0.525	39%
	2188	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	39%
	2092	BROCK_ST	CIRCULAR	0.3	0	39%
	2361	LCBO_PARKING_LOT	CIRCULAR	0.25	0	38%
	2445	COMMERCIAL_PARKING_LOT	CIRCULAR	0.825	0	38%
	2468	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	38%
	2228	GREAVETTE_ST	CIRCULAR	0.6	0	38%
	2345	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.9	0	38%
	2327	FARQUHAR	CIRCULAR	0.45	0.45	37%
	2519	FAIRVIEW_DR	CIRCULAR	0.9	0	37%
	2272	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	37%
	2051	FERNWOOD_DR	CIRCULAR	0.3	0.3	36%
	2011	ORIOLE_CR	CIRCULAR	0.3	0	35%
	2302	SEGWUN_BV	CIRCULAR	0.15	0	35%
	2031	WAGNER_ST	CIRCULAR	0.4	0	35%
	2347	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	35%
	2436	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	34%
	2024	SEGWUN_BV	CIRCULAR	0.35	0.3	33%
	2333	SARAH_ST_N	CIRCULAR	0.45	0.45	33%
	2218	BROWN_ST	CIRCULAR	0.6	0.375	33%
	2446	COMMERCIAL_PARKING_LOT	CIRCULAR	0.825	0	33%
	2485	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	33%
	2143	CLAIRMONT_RD	CIRCULAR	0.4	0	33%
	2109_1	LORNE_SEGWUN	CIRCULAR	0.4	0	33%
	2058	BETHUNE_DR_N	RECT_CLOSED	0.6	0.9	33%
	2139	BAY_ST	CIRCULAR	0.3	0	33%
	2195	JAMES_ST	CIRCULAR	0.3	0	33%
	2332	SARAH_ST_N	CIRCULAR	0.45	0.45	32%
	2074	YMCA_PARKING_LOT	CIRCULAR	0.9	0	32%
	2181	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	32%
	2262	MUSKOKA_BEACH_ROAD	CIRCULAR	0.825	0	32%
	2134	HOTCHKISS_ST	CIRCULAR	0.375	0.375	31%
	2528	RIDGE_RD	CIRCULAR	0.375	0.375	31%
	2478	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	31%
	2449	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	31%
	2211	GREAVETTE_ST	CIRCULAR	0.9	0	31%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2197	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	31%
	2243	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	31%
	2382	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	31%
	2190	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	30%
	2335	SARAH_ST_N	CIRCULAR	0.45	0.45	29%
	2517	HAHNE_DR	CIRCULAR	0.9	0.9	29%
	2489	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	29%
	2569	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	29%
	2034	PRATT_CR	CIRCULAR	0.6	0.6	28%
	2464	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	28%
	2169	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	28%
	2073	YMCA_PARKING_LOT	CIRCULAR	0.9	0	28%
	2296	THAIN_ST	CIRCULAR	0.375	0.375	27%
	2336	JOHN_ST_N	CIRCULAR	0.3	0.3	27%
	2334	SARAH_ST_N	CIRCULAR	0.45	0.45	27%
	2481	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	27%
	2198	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	27%
	2187	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	27%
	2454	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	26%
	2200	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	26%
	2412	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	26%
	2437	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	26%
	2027	SEGWUN_BV	CIRCULAR	0.45	0.375	25%
	2564	FAIRVIEW_DR	CIRCULAR	0.375	0.375	25%
	2362	LCBO_PARKING_LOT	CIRCULAR	0.375	0	24%
	2370	LCBO_PARKING_LOT	CIRCULAR	0.25	0	24%
	2522	FAIRVIEW_DR	CIRCULAR	0.75	0	24%
	2424	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	24%
	2096	YMCA_PARKING_LOT	CIRCULAR	0.45	0	23%
	2353	LCBO_PARKING_LOT	CIRCULAR	0.45	0	23%
	2360	LCBO_PARKING_LOT	CIRCULAR	0.375	0	23%
	2448	COMMERCIAL_PARKING_LOT	CIRCULAR	0.675	0	23%
	2182	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	23%
	2199	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	23%
	2393	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	23%
	2248	LOUISE_ST	CIRCULAR	0.45	0.45	22%
	2173	STEAMSHIP_BAY_RD	CIRCULAR	0.3	0.3	22%
	2352	LCBO_PARKING_LOT	CIRCULAR	0.45	0	22%
	2487	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	22%
	2213	GREAVETTE_ST	CIRCULAR	0.9	0	22%
	2135	HOTCHKISS_ST	CIRCULAR	0.375	0.375	21%
	2300	SEGWUN_BV	CIRCULAR	0.2	0	20%
	2414	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	20%
	2276	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	20%
	2093	BROCK_ST	CIRCULAR	0.3	0	20%
	2189	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	19%
	2068	SECOND_ST_S	CIRCULAR	0.375	0.375	18%
	2114	LORNE_ST	CIRCULAR	0.375	0	18%
	2329	FARQUHAR	CIRCULAR	0.45	0.45	17%
	2095	YMCA_PARKING_LOT	CIRCULAR	0.9	0	17%
	2350	LCBO_PARKING_LOT	CIRCULAR	0.45	0	17%
	2523	FAIRVIEW_DR	CIRCULAR	0.75	0	17%
	2438	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	17%
	2543	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	17%
	2472	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	16%
	2115	LORNE_ST	CIRCULAR	0.525	0	16%
	2113	LORNE_ST	CIRCULAR	0.375	0	16%
	2201	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	16%
	2470	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	15%
	2110	LORNE_ST	CIRCULAR	0.6	0	15%
	2413	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	14%

Existing Condition Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2369	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0.3	13%
	2140	BAY_ST	HORIZ_ELLIPSE	0.82	1.15	13%
	2144	BAY_ST	CIRCULAR	0.375	0	13%
	2465	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	13%
	2021	SEGWUN_BV	CIRCULAR	0.375	0.375	12%
	2026	SEGWUN_BV	CIRCULAR	0.525	0	12%
	2349	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	12%
	2208	FRASER_ST	CIRCULAR	0.3	0.3	11%
	2331	FARQUHAR	CIRCULAR	0.45	0.45	11%
	2162	BURNETT_ST	FILLED_CIRCULAR	0.875	0.3	10%
	2471	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	10%
	2191	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	10%
	2145	BAY_ST	CIRCULAR	0.375	0	9%
	2399	LOFTY_PINES_RD	CIRCULAR	0.3	0.375	8%
	2476	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	8%
	2202	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	8%
	2022	SEGWUN_BV	CIRCULAR	0.375	0.375	7%
	2330	FARQUHAR	CIRCULAR	0.45	0.45	7%
	2466	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	7%
	2164	BURNETT_ST	CIRCULAR	0.675	0.675	6%
	2163	BURNETT_ST	CIRCULAR	0.875	0.875	6%
	2467	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	6%
	2203	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	5%
	2044	FERNWOOD_DR	CIRCULAR	0.25	0.25	2%
	2137	MARY_ST_S	CIRCULAR	0.3	0.3	2%
	2473	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	2%
	2450	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	0%

Appendix D:
Minor Drainage System Climate Change Deficiencies

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No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
2.	MASTER STORM SEWER REPORT	OCT/21

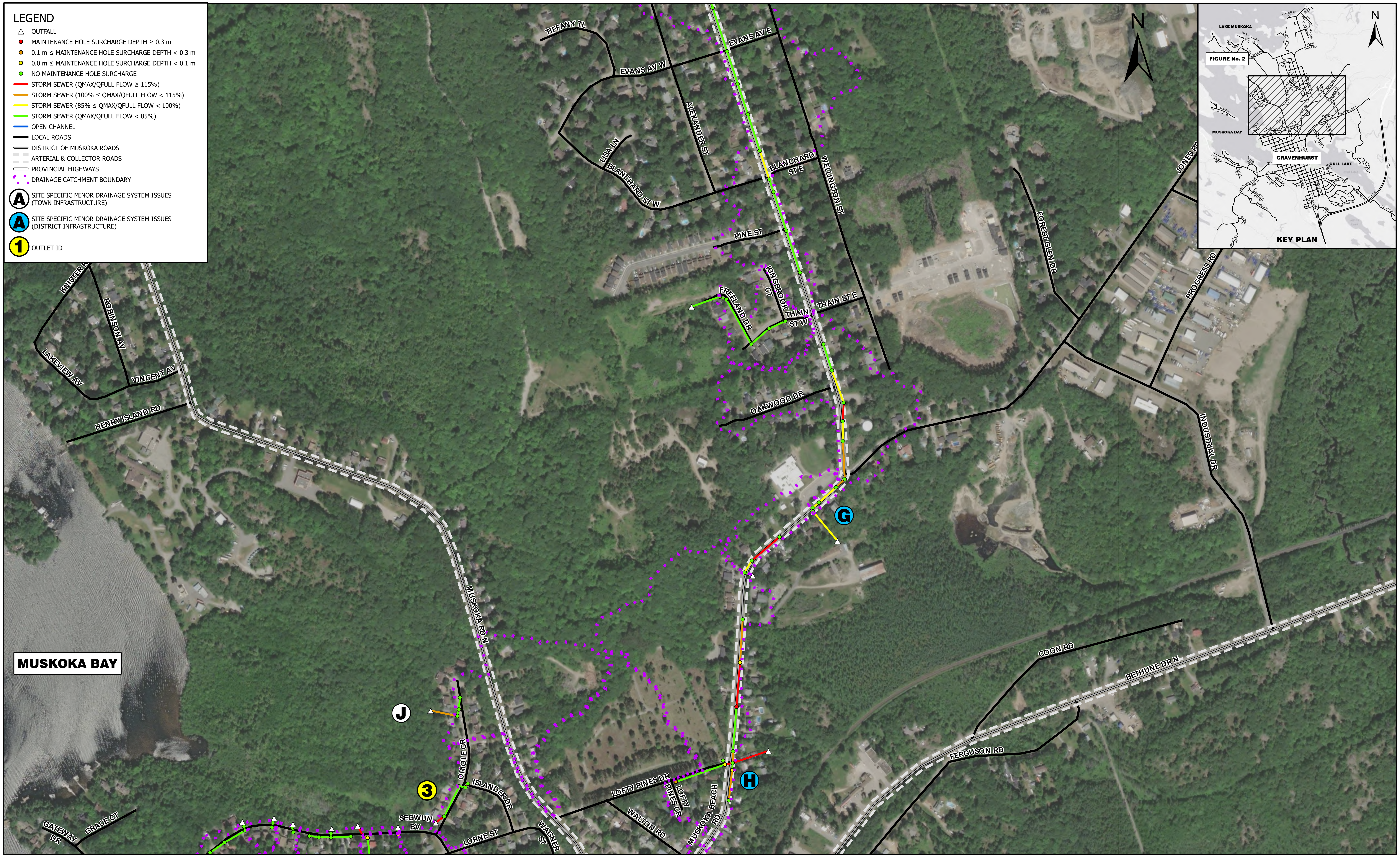
ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

CLIMATE CHANGE SCENARIO
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	ED-5
CHECK: DRT	SCALE: 1:3,500	



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No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
2.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

CLIMATE CHANGE SCENARIO
STORM SEWER DEFICIENCIES

TATHAM ENGINEERING

DESIGN:	DAM	FILE:	220536	DWG:	ED-6
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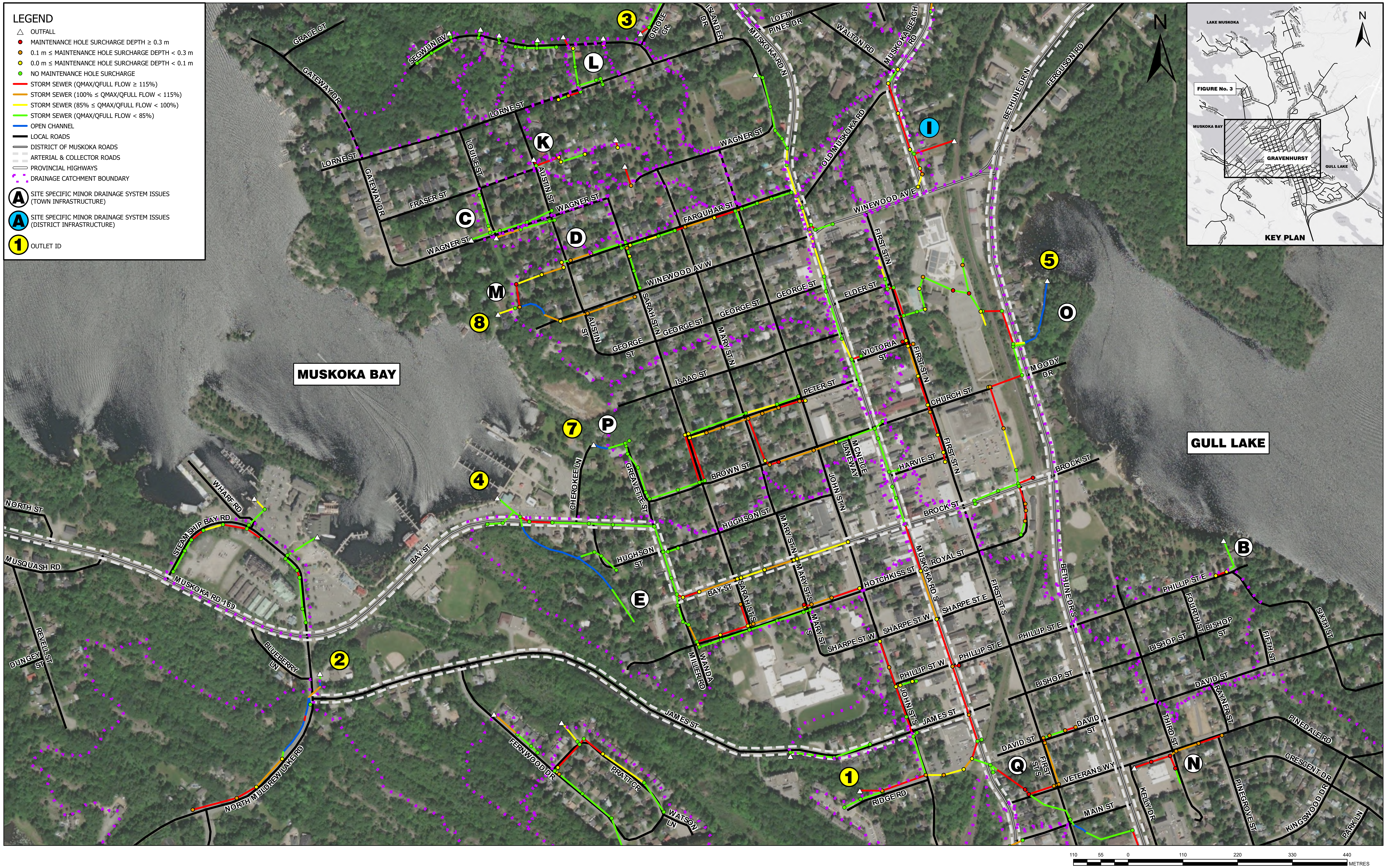

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ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

CLIMATE CHANGE SCENARIO
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
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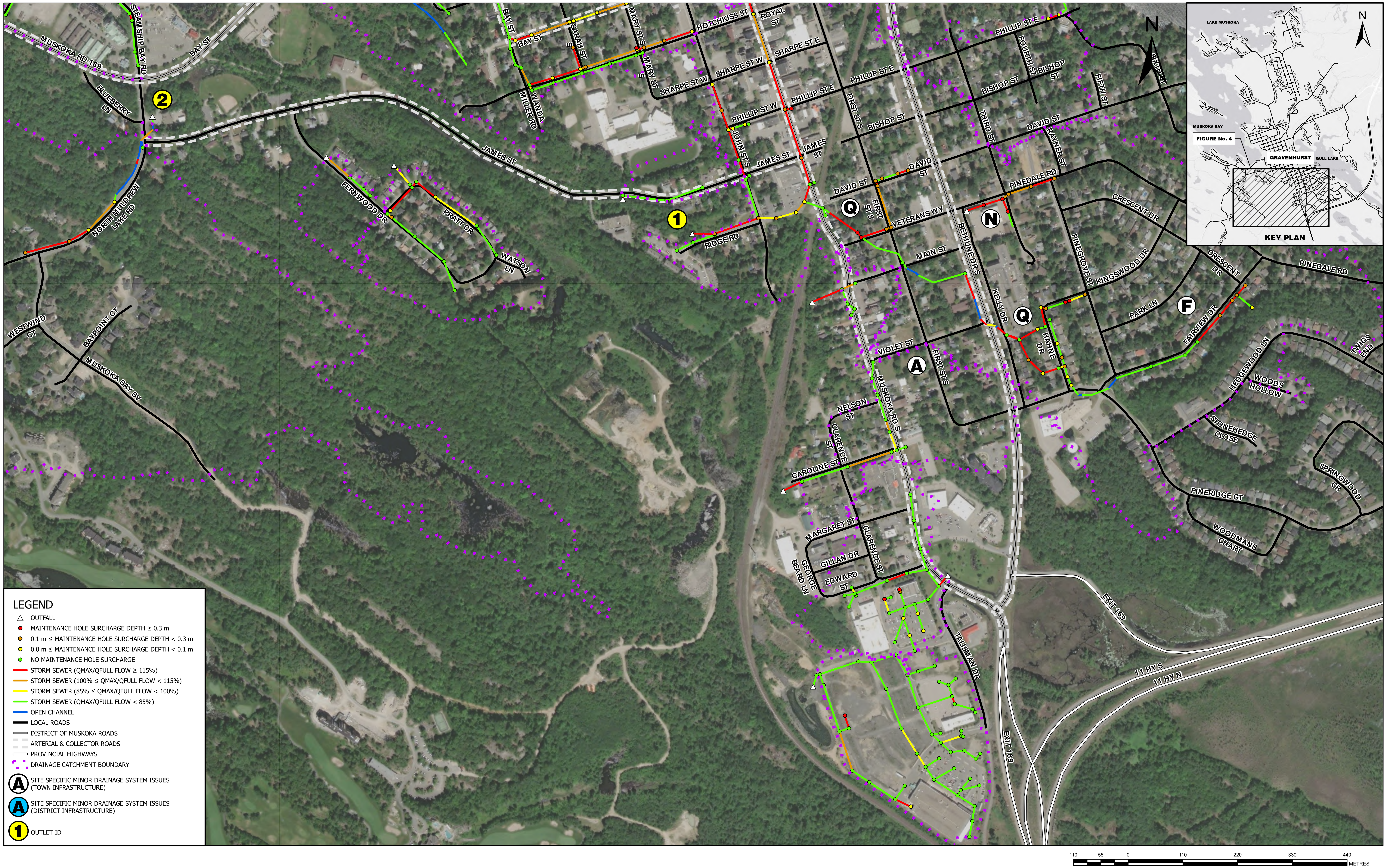

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No.	REVISION DESCRIPTION	DATE
1.	FIRST SUBMISSION	MAY/21
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ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

CLIMATE CHANGE SCENARIO
STORM SEWER DEFICIENCIES

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: APRIL 2021	ED-8
CHECK: DRT	SCALE: 1:3,500	

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1101	FIRST_ST	Ditch_Inlet	0.597
	1497	FIRST_MUSKOKA	CB	0.51
	1090	BROCK_ST	CBMH	0.475
	1354	LCBO_PARKING_LOT	MH	0.474
	1073	YMCA_PARKING_LOT	CBMH	0.467
	1007	THIRD_ST	CB	0.457
	1366	LCBO_PARKING_LOT	CB	0.455
	1074	YMCA_PARKING_LOT	CBMH	0.446
	1002	PINEDALE_RD	CB	0.43
	1310	FARQUHAR	MH	0.42
	1392	MUSKOKA_BEACH_ROAD	MH	0.41
	1559	KINGSWOOD_DR	CB	0.403
	1003	PINEDALE_RD	CB	0.385
	1570	MUSKOKA_ROAD_SOUTH	MH	0.36
	1558	KINGSWOOD_DR	CB	0.349
	1498	FIRST_MUSKOKA	MH	0.34
	1479	COMMERCIAL_PARKING_LOT	CB	0.33
	1166	HOTCHKISS_ST	CB	0.315
	1236	BROWN_ST	CB	0.312
	1235	BROWN_ST	CB	0.291
	1526	FAIRVIEW_DR	CB	0.288
	1365	LCBO_PARKING_LOT	MH	0.285
	1549	DAVID_ST	CB	0.268
	1511	KELLY_HAHNE	CB	0.243
	1557	HAHNE_DR	CB	0.227
	1102	FIRST_ST	CB	0.219
	1165	SARAH_ST_S	CB	0.217
	1004	PINEDALE_RD	CB	0.201
	1407	MUSKOKA_BEACH_ROAD	CB	0.2
	1545	FIRST_ST_S	CB	0.19
	1534	JOHN_ST_S	MH	0.19
	1398	LOFTY_PINES_RD	Ditch_Inlet	0.187
	1006	PINEDALE_RD	CB	0.184
	1065	SECOND_ST_S	CB	0.178
	1546	FIRST_ST_S	CB	0.172
	1332	SARAH_ST_N	CB	0.165
	1158	HOTCHKISS_ST	CB	0.165
	1548	FIRST_ST_S	CB	0.162
	1560	KINGSWOOD_DR	CB	0.161
	1491	RIDGE_RD	MH	0.161
	1551	DAVID_ST	CB	0.158
	1156	HOTCHKISS_ST	CB	0.153
	1514	HAHNE_DR	CB	0.151
	1308	WINEWOOD_AVE_W	CB	0.15
	1525	FAIRVIEW_DR	CB	0.149
	1550	DAVID_ST	CB	0.147
	1309	WINEWOOD_AVE_W	CB	0.144
	1005	PINEDALE_RD	CB	0.144
	1095	YMCA_PARKING_LOT	CBMH	0.144
	1223	PETER_ST	CB	0.143
	1111	LORNE_ST	CB	0.138
	1527	FAIRVIEW_DR	CB	0.136
	1221	PETER_ST	CB	0.132
	1552	FIRST_ST_S	CB	0.13
	1323	FARQUHAR	CB	0.13
	1067	SECOND_ST_S	CB	0.13
	1222	PETER_ST	CB	0.13
	1237	BROWN_ST	CB	0.129
	1075	YMCA_PARKING_LOT	CBMH	0.128
	1524	FAIRVIEW_DR	CB	0.127
	1289	MULDREW_LAKE_RD	CB	0.124

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1226	PETER_ST	CB	0.123
	1066	SECOND_ST_S	CB	0.121
	1053	EMMA_ST	CB	0.12
	1492	RIDGE_RD	MH	0.12
	1159	HOTCHKISS_ST	CB	0.119
	1288	MULDREW_LAKE_RD	CB	0.116
	1225	PETER_ST	CB	0.115
	1061	CENTENNIAL_DR	MH	0.114
	1538	MUSKOKA_ROAD_SOUTH	MH	0.11
	1493	SHOPPERS_PARKING_LOT	CBMH	0.11
	1224	PETER_ST	CB	0.107
	1041	FERNWOOD_DR	CB	0.106
	1314	FARQUHAR	CB	0.103
	1060	CHURCH_ST	MH	0.102
	1085	FIRST_ST	CB	0.102
	1561	HAHNE_DR	CB	0.102
	1537	MUSKOKA_ROAD_SOUTH	MH	0.1
	1305	FARQUHAR	CB	0.1
	1319	FARQUHAR	CB	0.098
	1076	YMCA_PARKING_LOT	CBMH	0.097
	1562	HAHNE_DR	CB	0.097
	1154	HOTCHKISS_ST	CB	0.096
	1157	HOTCHKISS_ST	CB	0.093
	1112	LORNE_ST	CB	0.092
	1324	FARQUHAR	CB	0.09
	1149	BAY_ST	MH	0.09
	1082	FIRST_ST	CB	0.088
	1160	HOTCHKISS_ST	CB	0.083
	1287	MULDREW_LAKE_RD	CB	0.082
	1406	MUSKOKA_BEACH_ROAD	CB	0.08
	1363	LCBO_PARKING_LOT	CBMH	0.08
	1313	FARQUHAR	CB	0.08
	1307	WINEWOOD_AVE_W	CB	0.08
	1086	FIRST_ST	CB	0.079
	1315	FARQUHAR	CB	0.078
	1208	FRASER_ST	Ditch_Inlet	0.072
	1220	PETER_ST	CB	0.071
	1535	JOHN_ST_S	MH	0.07
	1083	FIRST_ST	CB	0.07
	1539	MUSKOKA_ROAD_SOUTH	MH	0.07
	1234	BROWN_ST	MH	0.07
	1312	FARQUHAR	CBMH	0.07
	1072	BETHUNE_DR	MH	0.07
	1039	PRATT_CR	CB	0.067
	1088	FIRST_ST	CB	0.065
	1087	FIRST_ST	CB	0.064
	1089	CHURCH_ST	CB	0.064
	1286	MULDREW_LAKE_RD	CB	0.062
	1512	KELLY_HAHNE	CB	0.062
	1238	BROWN_ST	CB	0.061
	1333	SARAH_ST_N	CB	0.061
	1516	HAHNE_DR	CB	0.061
	1533	JOHN_ST_S	MH	0.06
	1554	HAHNE_DR	CB	0.06
	1480	COMMERCIAL_PARKING_LOT	CB	0.06
	1311	FARQUHAR	CBMH	0.06
	1393	MUSKOKA_BEACH_ROAD	MH	0.06
	1566	PHILLIP_ST_W	MH	0.056
	1148	BAY_ST	MH	0.056
	1084	FIRST_ST	CB	0.053
	1047	PHILLIP_ST_E	CB	0.053

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name Tag	Description	Maintenance Hole Surcharging (m)
	1147 BAY_ST	MH	0.05
	1361 LCBO_PARKING_LOT	CB	0.05
	1150 BAY_ST	MH	0.05
	1402 MUSKOKA_BEACH_ROAD	MH	0.05
	1151 BAY_ST	MH	0.043
	1229 SARAH_ST	CB	0.043
	1227 PETER_ST	CB	0.042
	1515 HAHNE_DR	CB	0.042
	1556 HAHNE_DR	CB	0.04
	1567 PHILLIP_ST_W	CB	0.038
	1081 FIRST_ST	CB	0.034
	1362 LCBO_PARKING_LOT	CBMH	0.031
	1152 BAY_ST	MH	0.03
	1077 FIRST_ST	CBMH	0.03
	1404 MUSKOKA_BEACH_ROAD	MH	0.03
	1403 MUSKOKA_BEACH_ROAD	MH	0.03
	1540 MUSKOKA_ROAD_SOUTH	MH	0.03
	1036 PRATT_CR	CB	0.029
	1146 BAY_ST	MH	0.027
	1155 HOTCHKISS_ST	CB	0.024
	1360 LCBO_PARKING_LOT	CBMH	0.021
	1055 EMMA_ST	CB	0.02
	1405 MUSKOKA_BEACH_ROAD	MH	0.02
	1408 MUSKOKA_BEACH_ROAD	CBMH	0.02
	1495 MUSKOKA_ROAD_SOUTH	MH	0.02
	1494 SHOPPERS_PARKING_LOT	MH	0.02
	1207 FRASER_ST	CB	0.016
	1206 FRASER_ST	CB	0.014
	1153 BAY_ST	MH	0.01
	1564 FAIRVIEW_DR	CB	0.01
	1108 SEGWUN_BV	CB	0.009
	1230 PETER_ST	CB	0.009
	1397 LOFTY_PINES_RD	CB	0.005
	1105 SEGWUN_BV	CB	0.003
	1395 MUSKOKA_BEACH_ROAD	MH	0
	1513 KELLY_HAHNE	CB	-0.003
	1040 FERNWOOD_DR	MH	-0.014
	1396 MUSKOKA_BEACH_ROAD	MH	-0.02
	1536 MUSKOKA_ROAD_SOUTH	MH	-0.03
	1137 MARY_ST_S	CB	-0.031
	1399 LOFTY_PINES_RD	CB	-0.033
	1049 FERNWOOD_DR	CB	-0.037
	1131 HOTCHKISS_ST	CB	-0.038
	1029 WAGNER_ST	CB	-0.049
	1401 MUSKOKA_BEACH_ROAD	MH	-0.06
	1541 MUSKOKA_ROAD_SOUTH	MH	-0.07
	1071 YMCA_PARKING_LOT	STORMCEPTOR	-0.07
	1318 FARQUHAR	CB	-0.071
	1325 FARQUHAR	CB	-0.074
	1304 FARQUHAR	CBMH	-0.08
	1355 LCBO_PARKING_LOT	CB	-0.086
	1568 PHILLIP_ST_W	CB	-0.089
	1389 MUSKOKA_BEACH_ROAD	MH	-0.09
	1130 HOTCHKISS_ST	CB	-0.091
	1510 KELLY_HAHNE	CB	-0.094
	1320 FARQUHAR	CB	-0.101
	1326 FARQUHAR	CB	-0.118
	1430 CAROLINE_STREET	CBMH	-0.12
	1569 MUSKOKA_ROAD_SOUTH	MH	-0.13
	1339 MUSKOKA_ROAD_SOUTH	CBMH	-0.13
	1394 MUSKOKA_BEACH_ROAD	MH	-0.14

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1063	CENTENNIAL_DR	MH	-0.153
	1317	FARQUHAR	CB	-0.156
	1390	MUSKOKA_BEACH_ROAD	MH	-0.16
	1336	JOHN_ST_N	CB	-0.162
	1051	FERNWOOD_DR	Ditch_Inlet	-0.164
	1334	SARAH_ST_N	CB	-0.171
	1364	LCBO_PARKING_LOT	CB	-0.18
	1563	HAHNE_DR	CB	-0.193
	1037	PRATT_CR	CB	-0.203
	1509	KELLY_HAHNE	CB	-0.215
	1107	SEGWUN_BV	CB	-0.219
	1528	RIDGE_RD	CB	-0.246
	1062	CENTENNIAL_DR	CBMH	-0.25
	1499	FIRST_ST_S	MH	-0.251
	1252	WAGNER_ST	CB	-0.267
	1321	FARQUHAR	CB	-0.275
	1352	LCBO_PARKING_LOT	MH	-0.306
	1064	CENTENNIAL_DR	MH	-0.311
	1353	LCBO_PARKING_LOT	MH	-0.33
	1387	MUSKOKA_BEACH_ROAD	MH	-0.35
	1351	LCBO_PARKING_LOT	MH	-0.359
	1050	FERNWOOD_DR	CB	-0.365
	1316	FARQUHAR	CB	-0.381
	1233	PETER_ST	CB	-0.413
	1136	HOTCHKISS_ST	CB	-0.416
	1250	WAGNER_ST	CB	-0.417
	1232	PETER_ST	CB	-0.419
	1135	HOTCHKISS_ST	CB	-0.42
	1327	FARQUHAR	CB	-0.438
	1338	MUSKOKA_ROAD_SOUTH	CBMH	-0.45
	1205	FRASER_ST	CB	-0.452
	1080	FIRST_ST	MH	-0.456
	1017	ORIOLE_CR	CB	-0.496
	1251	WAGNER_ST	CB	-0.511
	1521	FAIRVIEW_DR	CBMH	-0.53
	1428	MUSKOKA_ROAD_SOUTH	CB	-0.53
	1132	HOTCHKISS_ST	CB	-0.532
	1035	PRATT_CR	CB	-0.543
	1344	MUSKOKA_ROAD_SOUTH	DICB	-0.547
	1231	PETER_ST	CB	-0.547
	1177	STEAMSHIP_BAY_RD	DCB	-0.579
	1100	FIRST_ST	CB	-0.58
	1542	MUSKOKA_ROAD_SOUTH	MH	-0.59
	1133	HOTCHKISS_ST	CB	-0.6
	1555	HAHNE_DR	CB	-0.6
	1176	STEAMSHIP_BAY_RD	DCB	-0.603
	1031	WAGNER_ST	CB	-0.608
	1248	LOUISE_ST	CB	-0.614
	1246	LOUISE_ST	CB	-0.632
	1331	FARQUHAR	CB	-0.635
	1330	FARQUHAR	CB	-0.64
	1301	SEGWUN_BV	CB	-0.648
	1357	EDWARD_ST	CB	-0.661
	1020	SEGWUN_BV	CB	-0.662
	1099	FIRST_ST	CBMH	-0.67
	1328	FARQUHAR	CB	-0.67
	1249	LOUISE_ST	CB	-0.678
	1302	SEGWUN_BV	CB	-0.686
	1247	LOUISE_ST	CB	-0.688
	1110	LORNE_ST	CB	-0.69
	1178	STEAMSHIP_BAY_RD	CB	-0.697

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1300	SEGWUN_BV	CB	-0.698
	1322	FARQUHAR	CB	-0.702
	1356	EDWARD_ST	MH	-0.704
	1030	WAGNER_ST	CB	-0.708
	1091	BROCK_ST	MH	-0.71
	1340	MUSKOKA_ROAD_SOUTH	CBMH	-0.71
	1027	SEGWUN_BV	CB	-0.714
	1109-2	LORNE_SEGWUN	CB	-0.714
	1543	MUSKOKA_ROAD_SOUTH	MH	-0.72
	1254	MUSKOKA_BEACH_ROAD	MH	-0.72
	1129	WANDA_MILLER_RD	CB	-0.724
	1239	BROWN_ST	CB	-0.727
	1042	FERNWOOD_DR	CB	-0.746
	1175	STEAMSHIP_BAY_RD	MH	-0.753
	1098	FIRST_ST	CBMH	-0.77
	1134	HOTCHKISS_ST	CB	-0.775
	1068	SECOND_ST_S	CB	-0.78
	1335	SARAH_ST_N	CB	-0.786
	1183	STEAMSHIP_BAY_RD	CB	-0.788
	1341	MUSKOKA_ROAD_SOUTH	CB	-0.8
	1532	JOHN_ST_S	MH	-0.81
	1410	MUSKOKA_ROAD_SOUTH	MH	-0.81
	1011	ORIOLE_CR	CB	-0.829
	1019	SEGWUN_BV	CB	-0.842
	1104	SEGWUN_BV	CB	-0.849
	1370	LCBO_PARKING_LOT	CB	-0.85
	1346	MUSKOKA_ROAD_SOUTH	MH	-0.89
	1381	MUSKOKA_BEACH_ROAD	MH	-0.9
	1179	STEAMSHIP_BAY_RD	CB	-0.903
	1059	BETHUNE_DR	MH	-0.904
	1097	FIRST_ST	CBMH	-0.94
	1278	CATHERINE_STREET	MH	-0.94
	1016	ORIOLE_CR	CB	-0.942
	1219	SARAH_ST	DCB	-0.951
	1163	BURNETT_ST	CB	-0.959
	1290	MULDREW_LAKE_RD	CB	-0.959
	1380	MUSKOKA_BEACH_ROAD	MH	-0.96
	1487	COMMERCIAL_PARKING_LOT	MH	-0.96
	1038	PRATT_CR	CB	-0.966
	1522	FAIRVIEW_DR	CBMH	-0.969
	1115	LORNE_ST	CB	-0.979
	1026	SEGWUN_BV	CB	-0.985
	1523	FAIRVIEW_DR	CBMH	-0.989
	1391	MUSKOKA_BEACH_ROAD	MH	-1.007
	1342	MUSKOKA_ROAD_SOUTH	CBMH	-1.01
	1014	ORIOLE_CR	CB	-1.013
	1386	MUSKOKA_BEACH_ROAD	MH	-1.02
	1012	ORIOLE_CR	MH	-1.034
	1544	MUSKOKA_ROAD_SOUTH	MH	-1.04
	1382	MUSKOKA_BEACH_ROAD	MH	-1.05
	1477	COMMERCIAL_PARKING_LOT	DCB	-1.05
	1435	MUSKOKA_ROAD_SOUTH	MH	-1.07
	1114	LORNE_ST	CB	-1.077
	1168	STEAMSHIP_BAY_RD	CB	-1.095
	1565	JOHN_ST_S	CB	-1.098
	1489	COMMERCIAL_PARKING_LOT	CB	-1.1
	1496	MUSKOKA_ROAD_SOUTH	CBMH	-1.1
	1367	EDWARD_ST	CB	-1.108
	1379	MUSKOKA_BEACH_ROAD	MH	-1.11
	1010	ORIOLE_CR	CB	-1.121
	1169	STEAMSHIP_BAY_RD	CB	-1.129

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1486	COMMERCIAL_PARKING_LOT	MH	-1.13
	1431	CAROLINE_STREET	CBMH	-1.15
	1024	SEGWUN_BV	CB	-1.161
	1164	BURNETT_ST	CB	-1.173
	1371	COMMERCIAL_PARKING_LOT	CB	-1.19
	1345	MUSKOKA_ROAD_SOUTH	MH	-1.194
	1299	SEGWUN_BV	DCB	-1.199
	1255	MUSKOKA_BEACH_ROAD	MH	-1.21
	1162	BURNETT_ST	CB	-1.249
	1384	MUSKOKA_BEACH_ROAD	CBMH	-1.26
	1450	COMMERCIAL_PARKING_LOT	DCB	-1.26
	1034	PRATT_CR	CB	-1.282
	1298	SEGWUN_BV	DCB	-1.291
	1482	COMMERCIAL_PARKING_LOT	CB	-1.3
	1359	EDWARD_ST	CB	-1.3
	1484	COMMERCIAL_PARKING_LOT	CB	-1.3
	1170	STEAMSHIP_BAY_RD	CB	-1.301
	1242	MUSKOKA_ROAD_SOUTH	MH	-1.31
	1488	COMMERCIAL_PARKING_LOT	MH	-1.31
	1481	COMMERCIAL_PARKING_LOT	CB	-1.32
	1434	MUSKOKA_ROAD_SOUTH	MH	-1.32
	1459	COMMERCIAL_PARKING_LOT	CBMH	-1.33
	1113	LORNE_ST	CB	-1.337
	1385	MUSKOKA_BEACH_ROAD	CBMH	-1.35
	1369	EDWARD_ST	CB	-1.35
	1180	STEAMSHIP_BAY_RD	CB	-1.353
	1476	COMMERCIAL_PARKING_LOT	CB	-1.36
	1119	BAY_ST	MH	-1.368
	1044	FERNWOOD_DR	CB	-1.372
	1358	EDWARD_ST	CB	-1.377
	1467	COMMERCIAL_PARKING_LOT	MH	-1.38
	1502	BETHUNE_DR	MH	-1.384
	1347	MUSKOKA_ROAD_SOUTH	MH	-1.39
	1457	COMMERCIAL_PARKING_LOT	CBMH	-1.39
	1465	COMMERCIAL_PARKING_LOT	CB	-1.39
	1472	COMMERCIAL_PARKING_LOT	CBMH	-1.39
	1474	COMMERCIAL_PARKING_LOT	MH	-1.4
	1021	SEGWUN_BV	CB	-1.403
	1078	FIRST_ST	CBMH	-1.42
	1243	MUSKOKA_ROAD_SOUTH	CBMH	-1.43
	1033	PRATT_CR	CB	-1.436
	1228	GREAVETTE_ST	DICB	-1.439
	1171	STEAMSHIP_BAY_RD	MH	-1.447
	1195	JAMES_ST	CBMH	-1.447
	1138	BAY_ST	CB	-1.458
	1426	MUSKOKA_ROAD_SOUTH	MH	-1.46
	1127	BAY_ST	CB	-1.486
	1120	BAY_ST	MH	-1.494
	1329	FARQUHAR	CB	-1.504
	1423	MUSKOKA_ROAD_SOUTH	MH	-1.51
	1128	WANDA_MILLER_RD	CB	-1.511
	1244	MUSKOKA_ROAD_SOUTH	CBMH	-1.54
	1427	MUSKOKA_ROAD_SOUTH	MH	-1.54
	1425	MUSKOKA_ROAD_SOUTH	CB	-1.55
	1139	BAY_ST	CB	-1.551
	1483	COMMERCIAL_PARKING_LOT	CBMH	-1.57
	1422	MUSKOKA_ROAD_SOUTH	CBMH	-1.58
	1473	COMMERCIAL_PARKING_LOT	DICB	-1.58
	1436	MUSKOKA_ROAD_SOUTH	MH	-1.59
	1070	BETHUNE_DR	MH	-1.6
	1421	MUSKOKA_ROAD_SOUTH	CBMH	-1.61

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1420	MUSKOKA_ROAD_SOUTH	MH	-1.62
	1241	MUSKOKA_ROAD_SOUTH	MH	-1.63
	1449	COMMERCIAL_PARKING_LOT	MH	-1.63
	1529	RIDGE_RD	CB	-1.649
	1375	MUSKOKA_BEACH_ROAD	MH	-1.65
	1194	JAMES_ST	CBMH	-1.658
	1296	THAIN_ST	MH	-1.688
	1471	COMMERCIAL_PARKING_LOT	MH	-1.69
	1419	MUSKOKA_ROAD_SOUTH	MH	-1.71
	1458	COMMERCIAL_PARKING_LOT	CBMH	-1.73
	1418	MUSKOKA_ROAD_SOUTH	MH	-1.75
	1145	BAY_ST	CB	-1.751
	1216	GREAVETTE_ST	DCBMH	-1.752
	1214	GREAVETTE_ST	DCBMH	-1.753
	1240	BROWN_ST	MH	-1.756
	1193	JAMES_ST	CBMH	-1.759
	1378	MUSKOKA_BEACH_ROAD	MH	-1.76
	1043	FERNWOOD_DR	CB	-1.77
	1217	BROWN_ST	CBMH	-1.779
	1475	COMMERCIAL_PARKING_LOT	MH	-1.78
	1058	BETHUNE_DR	MH	-1.78
	1531	JOHN_ST_S	MH	-1.795
	1118	BAY_ST	MH_BOX	-1.8
	1275	MUSKOKA_BEACH_ROAD	MH	-1.8
	1374	MUSKOKA_BEACH_ROAD	MH	-1.8
	1215	GREAVETTE_ST	DCBMH	-1.806
	1121	BAY_ST	MH	-1.808
	1015	ORIOLE_CR	CB	-1.809
	1125	BAY_ST	MH	-1.833
	1470	COMMERCIAL_PARKING_LOT	MH	-1.85
	1276	MUSKOKA_BEACH_ROAD	MH	-1.86
	1424	MUSKOKA_ROAD_SOUTH	MH	-1.87
	1456	COMMERCIAL_PARKING_LOT	CBMH	-1.87
	1218	BROWN_ST	DCBMH	-1.88
	1417	MUSKOKA_ROAD_SOUTH	MH	-1.88
	1295	THAIN_ST	MH	-1.909
	1122	BAY_ST	MH	-1.915
	1277	CATHERINE_STREET	CB	-1.92
	1448	COMMERCIAL_PARKING_LOT	MH	-1.92
	1463	COMMERCIAL_PARKING_LOT	MH	-1.93
	1485	COMMERCIAL_PARKING_LOT	MH	-1.93
	1189	MAPLE_HEIGHTS_DR	CB	-1.939
	1464	COMMERCIAL_PARKING_LOT	CBMH	-1.94
	1187	MAPLE_HEIGHTS_DR	CB	-1.942
	1188	MAPLE_HEIGHTS_DR	CB	-1.949
	1260	MUSKOKA_BEACH_ROAD	MH	-1.95
	1190	MAPLE_HEIGHTS_DR	CB	-1.952
	1079	FIRST_ST	CBMH	-1.958
	1202	MAPLE_HEIGHTS_DR	CB	-1.958
	1274	MUSKOKA_BEACH_ROAD	MH	-1.96
	1469	COMMERCIAL_PARKING_LOT	MH	-1.96
	1466	COMMERCIAL_PARKING_LOT	MH	-1.96
	1259	MUSKOKA_BEACH_ROAD	MH	-1.98
	1181	STEAMSHIP_BAY_RD	CB	-2.001
	1144	BAY_ST	CB	-2.011
	1191	MAPLE_HEIGHTS_DR	CB	-2.012
	1416	MUSKOKA_ROAD_SOUTH	CBMH	-2.02
	1022	SEGWUN_BV	CB	-2.027
	1126	BAY_ST	MH	-2.03
	1348	MUSKOKA_ROAD_SOUTH	MH	-2.03
	1445	COMMERCIAL_PARKING_LOT	MH	-2.03

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1200	MAPLE_HEIGHTS_DR	CB	-2.031
	1478	COMMERCIAL_PARKING_LOT	MH	-2.05
	1109	LORNE_ST	CB	-2.059
	1213	GREAVETTE_ST	DCBMH	-2.059
	1349	LCBO_PARKING_LOT	STORMCEPTOR	-2.061
	1373	MUSKOKA_BEACH_ROAD	CBMH	-2.07
	1069	BETHUNE_DR	MH	-2.07
	1201	MAPLE_HEIGHTS_DR	CB	-2.075
	1199	MAPLE_HEIGHTS_DR	CB	-2.082
	1439	CAROLINE_STREET	CB	-2.1
	1203	MAPLE_HEIGHTS_DR	CB	-2.103
	1432	CAROLINE_STREET	CBMH	-2.11
	1124	BAY_ST	MH	-2.12
	1262	MUSKOKA_BEACH_ROAD	MH	-2.12
	1294	FREELAND_DR	MH	-2.126
	1256	MUSKOKA_BEACH_ROAD	MH	-2.15
	1433	MUSKOKA_ROAD_SOUTH	MH	-2.16
	1266	MUSKOKA_BEACH_ROAD	MH	-2.16
	1263	MUSKOKA_BEACH_ROAD	MH	-2.17
	1261	MUSKOKA_BEACH_ROAD	MH	-2.17
	1376	MUSKOKA_BEACH_ROAD	MH	-2.21
	1271	MUSKOKA_BEACH_ROAD	MH	-2.23
	1172	STEAMSHIP_BAY_RD	CB	-2.231
	1462	COMMERCIAL_PARKING_LOT	MH	-2.25
	1411	MUSKOKA_ROAD_SOUTH	MH	-2.28
	1437	MUSKOKA_ROAD_SOUTH	MH	-2.29
	1212	GREAVETTE_ST	DCBMH	-2.303
	1452	COMMERCIAL_PARKING_LOT	MH	-2.32
	1264	MUSKOKA_BEACH_ROAD	MH	-2.33
	1453	COMMERCIAL_PARKING_LOT	MH	-2.34
	1265	MUSKOKA_BEACH_ROAD	MH	-2.37
	1258	MUSKOKA_BEACH_ROAD	MH	-2.38
	1455	COMMERCIAL_PARKING_LOT	MH	-2.39
	1377	MUSKOKA_BEACH_ROAD	MH	-2.41
	1451	COMMERCIAL_PARKING_LOT	MH	-2.43
	1461	COMMERCIAL_PARKING_LOT	MH	-2.51
	1454	COMMERCIAL_PARKING_LOT	MH	-2.51
	1123	BAY_ST	MH	-2.52
	1257	MUSKOKA_BEACH_ROAD	MH	-2.52
	1272	MUSKOKA_BEACH_ROAD	MH	-2.53
	1092	BROCK_ST	MH	-2.57
	1438	MUSKOKA_ROAD_SOUTH	MH	-2.58
	1460	COMMERCIAL_PARKING_LOT	MH	-2.59
	1093	BROCK_ST	MH	-2.66
	1530	RIDGE_RD	CB	-2.761
	1412	MUSKOKA_ROAD_SOUTH	MH	-2.79
	1270	MUSKOKA_BEACH_ROAD	MH	-2.8
	1173	STEAMSHIP_BAY_RD	CB	-2.801
	1273	MUSKOKA_BEACH_ROAD	MH	-2.81
	1415	MUSKOKA_ROAD_SOUTH	MH	-2.83
	1211	GREAVETTE_ST	MH	-2.843
	1267	MUSKOKA_BEACH_ROAD	MH	-2.9
	1182	STEAMSHIP_BAY_RD	CB	-3.033
	1414	MUSKOKA_ROAD_SOUTH	MH	-3.07
	1292	FREELAND_DR	MH	-3.175
	1293	FREELAND_DR	MH	-3.251
	1446	COMMERCIAL_PARKING_LOT	MH	-3.26
	1413	MUSKOKA_ROAD_SOUTH	MH	-3.59
	1441	COMMERCIAL_PARKING_LOT	MH	-3.78
	1442	COMMERCIAL_PARKING_LOT	MH	-3.8
	1269	MUSKOKA_BEACH_ROAD	MH	-3.81

Climate Change Scenario Storm Maintenance Hole Deficiencies - Surcharge Depth

Condition	Name	Tag	Description	Maintenance Hole Surcharging (m)
	1468	COMMERCIAL_PARKING_LOT	MH	-3.85
	1268	MUSKOKA_BEACH_ROAD	MH	-3.9
	1198	MAPLE_HEIGHTS_DR	CBMH	-3.932
	1447	COMMERCIAL_PARKING_LOT	MH	-3.97
	1443	COMMERCIAL_PARKING_LOT	MH	-4.08
	1197	MAPLE_HEIGHTS_DR	CBMH	-4.087
	1444	COMMERCIAL_PARKING_LOT	MH	-4.45
	1186	MAPLE_HEIGHTS_DR	CB	-4.832
	1185	MAPLE_HEIGHTS_DR	CB	-4.973

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2552	DAVID_ST	CIRCULAR	0.375	0.375	990%
	2082	FIRST_ST	CIRCULAR	0.45	0.45	594%
	2512	KELLY_HAHNE	CIRCULAR	0.75	0	568%
	2236	BROWN_ST	CIRCULAR	0.3	0.3	561%
	2066	SECOND_ST_S	CIRCULAR	0.375	0.375	556%
	2081	FIRST_ST	CIRCULAR	0.45	0.45	529%
	2526	FAIRVIEW_DR	CIRCULAR	0.375	0	448%
	2559	KINGSWOOD_DR	CIRCULAR	0.25	0.25	441%
	2556	HAHNE_DR	CIRCULAR	0.35	0.35	427%
	2090	BROCK_ST	CIRCULAR	0.2	0	425%
	2067	SECOND_ST_S	CIRCULAR	0.375	0.375	386%
	2510_1	KELLY_HAHNE	CIRCULAR	0.6	0	360%
	2165	SARAH_ST_S	CIRCULAR	0.3	0.3	347%
	2325	FARQUHAR	CIRCULAR	0.45	0.45	341%
	2557	HAHNE_DR	CIRCULAR	0.25	0.25	341%
	2407	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	341%
	2406	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	332%
	2570	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	315%
	2002	PINEDALE_RD	CIRCULAR	0.4	0	306%
	2397	MUSOKOKA_BEACH_ROAD	CIRCULAR	0.3	0	296%
	2401	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	291%
	2534	JOHN_ST_S	CIRCULAR	0.45	0.45	287%
	2393	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	271%
	2533	JOHN_ST_S	CIRCULAR	0.45	0.45	261%
	2525	FAIRVIEW_DR	CIRCULAR	0.375	0	250%
	2111	LORNE_ST	CIRCULAR	0.15	0	246%
	2428	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	243%
	2235	BROWN_ST	CIRCULAR	0.3	0	242%
	2158	HOTCHKISS_ST	CIRCULAR	0.3	0.3	234%
	2107	SEGWUN_BV	CIRCULAR	0.35	0	230%
	2070	BETHUNE_DR_N	CIRCULAR	0.45	0	225%
	2479	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	218%
	2183	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0	216%
	2080	FIRST_ST	CIRCULAR	0.45	0.45	212%
	2509_1	KELLY_HAHNE	CIRCULAR	0.6	0	203%
	2105	SEGWUN_BV	CIRCULAR	0.25	0	202%
	2178	STEAMSHIP_BAY_RD	CIRCULAR	0.625	0	195%
	2097	FIRST_ST	CIRCULAR	0.3	0.3	191%
	2511	KELLY_HAHNE	CIRCULAR	0.75	0	189%
	2180	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	188%
	2497_1	FIRST_MUSKOKA	CIRCULAR	0.6	0	187%
	2305	WINEWOOD_FARQUHAR	CIRCULAR	0.55	0	186%
	2166	HOTCHKISS_ST	CIRCULAR	0.3	0.3	182%
	2389	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	181%
	2277	CATHERINE_STREET	CIRCULAR	0.3	0	180%
	2505	BETHUNE_DR	CIRCULAR	0.9	0	179%
	2205	FRASER_ST	CIRCULAR	0.3	0	179%
	2047	PHILLIP_ST_E	CIRCULAR	0.3	0.3	178%
	2524	FAIRVIEW_DR	CIRCULAR	0.375	0	176%
	2288	MULDREW_LAKE_RD	CIRCULAR	0.3	0	175%
	2055	EMMA_ST	CIRCULAR	0.25	0.25	173%
	2149	BAY_ST	CIRCULAR	0.375	0	172%
	2480	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	171%
	2513	KELLY_HAHNE	CIRCULAR	0.75	0	169%
	2313	FARQUHAR	CIRCULAR	0.45	0	169%
	2085	FIRST_ST	CIRCULAR	0.45	0.3	168%
	2017	ORIOLE_CR	CIRCULAR	0.2	0.2	168%
	2338	MAIN_STREET	CIRCULAR	0.45	0	168%
	2549	FIRST_ST_S	CIRCULAR	0.375	0.375	166%
	2404	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	164%
	2498	FIRST_MUSKOKA	CIRCULAR	0.6	0	164%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2491	RIDGE_RD	CIRCULAR	0.9	0	164%
	2357	EDWARD_ST	CIRCULAR	0.45	0.45	162%
	2007	THIRD_ST	CIRCULAR	0.4	0	161%
	2146	BAY_ST	CIRCULAR	0.45	0	160%
	2509_2	KELLY_HAHNE	CIRCULAR	0.6	0	157%
	2186	MAPLE_HEIGHTS_DR	CIRCULAR	0.375	0	156%
	2503	BETHUNE_DR	CIRCULAR	0.825	0	155%
	2538	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	154%
	2474	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	153%
	2006	PINEDALE_RD	CIRCULAR	0.3	0.3	152%
	2510_2	KELLY_HAHNE	CIRCULAR	0.6	0	152%
	2065	SECOND_ST_S	CIRCULAR	0.35	0.35	151%
	2387	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	147%
	2060	CHURCH_ST	CIRCULAR	0.45	0.45	146%
	2430	CAROLINE_STREET	CIRCULAR	0.6	0	145%
	2039	PRATT_CR	CIRCULAR	0.25	0.25	143%
	2566	PHILLIP_ST_W	CIRCULAR	0.3	0.3	143%
	2003	PINEDALE_RD	CIRCULAR	0.4	0	143%
	2527	FAIRVIEW_DR	CIRCULAR	0.375	0	143%
	2545	VETERANS_WAY	CIRCULAR	0.3	0	143%
	2306_2	WINEWOOD_FARQUHAR	FILLED_CIRCULAR	0.55	0.3	142%
	2207	FRASER_ST	CIRCULAR	0.3	0.3	140%
	2535	JOHN_ST_S	CIRCULAR	0.4	0.4	140%
	2035	PRATT_CR	CIRCULAR	0.375	0.375	139%
	2403	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	139%
	2344	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	139%
	2014	ORIOLE_CR	CIRCULAR	0.3	0.3	138%
	2539	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	138%
	2234	MARY_ST	CIRCULAR	0.375	0	137%
	2154	HOTCHKISS_ST	CIRCULAR	0.375	0.375	136%
	2226	PETER_ST	CIRCULAR	0.3	0	135%
	2102	FIRST_ST	CIRCULAR	0.3	0	134%
	2310	FARQUHAR	CIRCULAR	0.375	0	134%
	2284	MULDREW_LAKE_RD	CIRCULAR	0.6	0	132%
	2087	FIRST_ST	CIRCULAR	0.3	0.45	130%
	2119	BAY_ST	CIRCULAR	0.9	0	129%
	2425	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	129%
	2036	PRATT_CR	CIRCULAR	0.375	0.375	128%
	2053	EMMA_ST	CIRCULAR	0.25	0.25	128%
	2380	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	128%
	2104	SEGWUN_BV	CIRCULAR	0.35	0	128%
	2289	MULDREW_LAKE_RD	CIRCULAR	0.3	0	128%
	2061	CENTENNIAL_DR	CIRCULAR	0.45	0	127%
	2147	BAY_ST	CIRCULAR	0.45	0	126%
	2266	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	126%
	2426	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	125%
	2442	COMMERCIAL_PARKING_LOT	CIRCULAR	1.05	0	124%
	2258	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	123%
	2098	FIRST_ST	CIRCULAR	0.3	0.3	122%
	2532	JOHN_ST_S	CIRCULAR	0.45	0.45	122%
	2227	PETER_ST	CIRCULAR	0.3	0	122%
	2554	KELLY_HAHNE	CIRCULAR	0.4	0	122%
	2299	SEGWUN_BV	CIRCULAR	0.4	0	121%
	2086	FIRST_ST	CIRCULAR	0.3	0.45	121%
	2088	FIRST_ST	EGG	0.375	0	121%
	2492	RIDGE_RD	CIRCULAR	0.9	0.9	121%
	2171	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0.6	120%
	2229	SARAH_ST	CIRCULAR	0.4	0	119%
	2537	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	119%
	2220	SARAH_ST	CIRCULAR	0.4	0	119%
	2101	FIRST_ST	CIRCULAR	0.3	0.45	116%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2323	FARQUHAR	CIRCULAR	0.25	0.25	116%
	2120	BAY_ST	CIRCULAR	0.9	0	116%
	2536	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	116%
	2193	JAMES_ST	CIRCULAR	0.3	0	116%
	2071	BETHUNE_DR_N	CIRCULAR	0.45	0	116%
	2084	FIRST_ST	CIRCULAR	0.45	0.3	115%
	2206	FRASER_ST	CIRCULAR	0.3	0.3	115%
	2160	HOTCHKISS_ST	CIRCULAR	0.3	0.3	115%
	2155	HOTCHKISS_ST	CIRCULAR	0.375	0.375	115%
	2541	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	115%
	2130	WANDA_MILLER_RD	CIRCULAR	0.375	0.375	114%
	2049	FERNWOOD_DR	CIRCULAR	0.3	0.3	114%
	2151	BAY_ST	CIRCULAR	0.375	0	114%
	2432	CAROLINE_STREET	CIRCULAR	0.6	0	114%
	2238	BROWN_ST	CIRCULAR	0.3	0	114%
	2222	PETER_ST	CIRCULAR	0.3	0	114%
	2237	BROWN_ST	CIRCULAR	0.375	0.375	113%
	2148	BAY_ST	CIRCULAR	0.45	0	113%
	2307	WINEWOOD_FARQUHAR	CIRCULAR	0.45	0	113%
	2156	HOTCHKISS_ST	CIRCULAR	0.375	0.375	112%
	2396	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	112%
	2108	SEGWUN_BV	CIRCULAR	0.35	0	112%
	2548	FIRST_ST_S	CIRCULAR	0.375	0.375	111%
	2378	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	109%
	2308	WINEWOOD_AVE_W	CIRCULAR	0.35	0	109%
	2394	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	108%
	2225	PETER_ST	CIRCULAR	0.4	0	108%
	2377	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	107%
	2435	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	107%
	2223	PETER_ST	CIRCULAR	0.4	0	107%
	2328	FARQUHAR	CIRCULAR	0.45	0.45	106%
	2282	MULDREW_LAKE_RD	CIRCULAR	0.6	0	106%
	2089	CHURCH_ST	CIRCULAR	0.2	0.2	105%
	2453	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	105%
	2010	ORIOLE_CR	CIRCULAR	0.375	0.3	104%
	2326	FARQUHAR	CIRCULAR	0.45	0.45	104%
	2390	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	104%
	2224	PETER_ST	CIRCULAR	0.4	0	104%
	2029	WAGNER_ST	CIRCULAR	0.3	0	104%
	2083	FIRST_ST	CIRCULAR	0.45	0	103%
	2319	FARQUHAR	CIRCULAR	0.45	0.45	103%
	2315	FARQUHAR	CIRCULAR	0.45	0.45	103%
	2159	HOTCHKISS_ST	CIRCULAR	0.3	0.3	103%
	2339	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	103%
	2547	FIRST_ST_S	CIRCULAR	0.3	0.3	102%
	2540	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	102%
	2546	FIRST_ST_S	CIRCULAR	0.3	0	102%
	2324	FARQUHAR	CIRCULAR	0.3	0.3	101%
	2309	WINEWOOD_AVE_W	CIRCULAR	0.3	0.3	101%
	2005	PINEDALE_RD	CIRCULAR	0.4	0.4	101%
	2004	PINEDALE_RD	CIRCULAR	0.4	0.4	101%
	2157	HOTCHKISS_ST	CIRCULAR	0.375	0.375	101%
	2384	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	100%
	2287	MULDREW_LAKE_RD	CIRCULAR	0.3	0	100%
	2312	FARQUHAR	CIRCULAR	0.375	0	100%
	2495	SHOPPERS_PARKING_LOT	CIRCULAR	1.05	0	100%
	2418	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	99%
	2131	HOTCHKISS_ST	CIRCULAR	0.4	0	99%
	2493	SHOPPERS_PARKING_LOT	CIRCULAR	0.75	0	99%
	2354	LCBO_PARKING_LOT	CIRCULAR	0.25	0	98%
	2153	BAY_ST	CIRCULAR	0.375	0	97%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2379	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	97%
	2494	SHOPPERS_PARKING_LOT	CIRCULAR	1.05	0	97%
	2408	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	96%
	2460	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	96%
	2069	BETHUNE_DR_N	CIRCULAR	0.45	0	95%
	2094	YMCA_PARKING_LOT	CIRCULAR	0.45	0	95%
	2386	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	94%
	2423	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	94%
	2419	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	94%
	2416	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	94%
	2415	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	94%
	2506	BETHUNE_DR	RECT_CLOSED	0.6	0.9	94%
	2062	CENTENNIAL_DR	CIRCULAR	0.45	0	94%
	2367	EDWARD_ST	CIRCULAR	0.3	0.3	93%
	2150	BAY_ST	CIRCULAR	0.375	0	93%
	2041	FERNWOOD_DR	CIRCULAR	0.3	0	93%
	2374	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	93%
	2064	CENTENNIAL_DR	CIRCULAR	0.45	0	93%
	2304	WINEWOOD_FARQUHAR	CIRCULAR	0.6	0	93%
	2381	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	92%
	2375	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	92%
	2486	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	92%
	2175	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	92%
	2321	FARQUHAR	CIRCULAR	0.45	0.45	91%
	2417	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	91%
	2256	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	90%
	2376	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	90%
	2433	CAROLINE_STREET	CIRCULAR	0.6	0	90%
	2459	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	90%
	2232	PETER_ST	CIRCULAR	0.3	0	90%
	2311	FARQUHAR	CIRCULAR	0.375	0	90%
	2033	PRATT_CR	CIRCULAR	0.6	0.6	89%
	2560	KINGSWOOD_DR	CIRCULAR	0.25	0.25	89%
	2255	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	89%
	2100	FIRST_ST	CIRCULAR	0.3	0.3	88%
	2037	PRATT_CR	CIRCULAR	0.375	0.375	88%
	2273	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	88%
	2373	MUSKOKA_BEACH_ROAD	CIRCULAR	0.5	0	88%
	2221	PETER_ST	CIRCULAR	0.4	0	88%
	2420	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	87%
	2434	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.6	0	87%
	2514	KELLY_HAHNE	CIRCULAR	0.8	0	87%
	2247	LOUISE_ST	CIRCULAR	0.45	0.45	86%
	2260	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	86%
	2254	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	86%
	2259	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	85%
	2179	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0	85%
	2019	SEGWUN_BV	CIRCULAR	0.3	0.3	84%
	2316	FARQUHAR	CIRCULAR	0.45	0.45	84%
	2079	FIRST_ST	CIRCULAR	0.45	0	84%
	2286	MULDREW_LAKE_RD	CIRCULAR	0.3	0	84%
	2063	CENTENNIAL_DR	CIRCULAR	0.45	0	84%
	2500	FIRST_ST_S	CIRCULAR	0.9	0	84%
	2555	HAHNE_DR	CIRCULAR	0.35	0.35	83%
	2365	LCBO_PARKING_LOT	CIRCULAR	0.25	0	83%
	2126	BAY_ST	CIRCULAR	0.675	0	82%
	2121	BAY_ST	CIRCULAR	0.675	0	82%
	2117	BAY_ST	RECT_CLOSED	0.9	1.8	82%
	2251	WAGNER_ST	CIRCULAR	0.3	0	82%
	2292	FREELAND_DR	CIRCULAR	0.45	0	82%
	2015	ORIOLE_CR	CIRCULAR	0.3	0.3	81%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2172	STEAMSHIP_BAY_RD	CIRCULAR	0.6	0.6	81%
	2257	MUSKOKA_BEACH_ROAD	CIRCULAR	0.9	0	81%
	2318	FARQUHAR	CIRCULAR	0.45	0.45	80%
	2542	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	80%
	2565	JOHN_ST_S	CIRCULAR	0.25	0	80%
	2499	FIRST_MUSKOKA	CIRCULAR	0.9	0	80%
	2568	PHILLIP_ST_W	CIRCULAR	0.375	0.375	79%
	2551	DAVID_ST	CIRCULAR	0.375	0.375	79%
	2122	BAY_ST	CIRCULAR	0.675	0	79%
	2421	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.675	0	79%
	2444	COMMERCIAL_PARKING_LOT	CIRCULAR	0.9	0	79%
	2170	STEAMSHIP_BAY_RD	CIRCULAR	0.75	0	79%
	2177	STEAMSHIP_BAY_RD	CIRCULAR	0.8	0	79%
	2358	EDWARD_ST	CIRCULAR	0.3	0.3	78%
	2431	CAROLINE_STREET	CIRCULAR	0.6	0	78%
	2443	COMMERCIAL_PARKING_LOT	CIRCULAR	0.9	0	78%
	2463	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	78%
	2356	EDWARD_ST	CIRCULAR	0.65	0	78%
	2320	FARQUHAR	CIRCULAR	0.45	0.45	77%
	2278	CATHERINE_STREET	CIRCULAR	0.525	0	77%
	2340	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	77%
	2441	COMMERCIAL_PARKING_LOT	CIRCULAR	1.05	0	77%
	2295	THAIN_ST	CIRCULAR	0.375	0.375	76%
	2461	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	76%
	2483	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	76%
	2458	COMMERCIAL_PARKING_LOT	CIRCULAR	0.675	0	76%
	2558	KINGSWOOD_DR	CIRCULAR	0.35	0.35	75%
	2030	WAGNER_ST	CIRCULAR	0.3	0	75%
	2239	BROWN_ST	CIRCULAR	0.4	0.4	74%
	2077	FIRST_ST	CIRCULAR	0.6	0	74%
	2275	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	74%
	2040	PRATT_CR	CIRCULAR	0.3	0	73%
	2341	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	73%
	2346	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	73%
	2194	JAMES_ST	CIRCULAR	0.3	0	73%
	2212	GREAVETTE_ST	CIRCULAR	0.9	0	73%
	2050	FERNWOOD_DR	CIRCULAR	0.3	0.3	72%
	2240	BROWN_ST	CIRCULAR	0.4	0.4	71%
	2076	YMCA_PARKING_LOT	CIRCULAR	0.6	0	71%
	2385	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	71%
	2219	BROWN_ST	CIRCULAR	0.45	0	71%
	2124	BAY_ST	CIRCULAR	0.675	0	70%
	2112	LORNE_ST	CIRCULAR	0.15	0	70%
	2099	FIRST_ST	CIRCULAR	0.3	0.3	69%
	2152	BAY_ST	CIRCULAR	0.375	0	69%
	2075	YMCA_PARKING_LOT	CIRCULAR	0.9	0	69%
	2342	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	69%
	2366	LCBO_PARKING_LOT	CIRCULAR	0.25	0	69%
	2455	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	69%
	2168	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	69%
	2176	STEAMSHIP_BAY_RD	CIRCULAR	0.8	0	69%
	2109_2	LORNE_SEGWUN	CIRCULAR	0.4	0	68%
	2567	PHILLIP_ST_W	CIRCULAR	0.4	0.4	68%
	2125	BAY_ST	CIRCULAR	0.675	0	68%
	2457	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	68%
	2475	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	68%
	2317	FARQUHAR	CIRCULAR	0.45	0.45	67%
	2118	BAY_ST	RECT_CLOSED	0.9	1.8	67%
	2314	FARQUHAR	CIRCULAR	0.45	0	67%
	2293	FREELAND_DR	CIRCULAR	0.45	0.45	66%
	2123	BAY_ST	CIRCULAR	0.675	0	66%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2265	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	66%
	2241	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	66%
	2410	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.9	0	66%
	2059	BETHUNE_DR_N	CIRCULAR	0.6	0	66%
	2298	SEGWUN_BV	CIRCULAR	0.6	0	65%
	2402	MUSKOKA_BEACH_ROAD	CIRCULAR	0.525	0	65%
	2244	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	65%
	2012	ORIOLE_CR	CIRCULAR	0.3	0.3	64%
	2359	EDWARD_ST	CIRCULAR	0.3	0.3	64%
	2422	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.6	0	64%
	2348	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	64%
	2233	PETER_ST	CIRCULAR	0.3	0	64%
	2020	SEGWUN_BV	CIRCULAR	0.3	0.3	63%
	2294	FREELAND_DR	CIRCULAR	0.45	0.45	63%
	2398	LOFTY_PINES_RD	CIRCULAR	0.375	0.375	63%
	2269	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	63%
	2391	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	63%
	2561	HAHNE_DR	CIRCULAR	0.4	0	63%
	2038	PRATT_CR	CIRCULAR	0.3	0.3	62%
	2544	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	61%
	2439	CAROLINE_STREET	CIRCULAR	0.3	0	61%
	2214	GREAVETTE_ST	CIRCULAR	0.75	0.625	60%
	2252	WAGNER_ST	CIRCULAR	0.3	0	60%
	2215	GREAVETTE_ST	CIRCULAR	0.6	0.525	59%
	2078	FIRST_ST	CIRCULAR	0.45	0	59%
	2484	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	59%
	2477	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	59%
	2529	RIDGE_RD	CIRCULAR	0.3	0.3	58%
	2138	BAY_ST	CIRCULAR	0.3	0	58%
	2132	HOTCHKISS_ST	CIRCULAR	0.375	0	58%
	2270	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	58%
	2395	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	57%
	2530	RIDGE_RD	CIRCULAR	0.3	0.3	56%
	2264	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	56%
	2411	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	56%
	2242	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	55%
	2462	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	55%
	2250	WAGNER_ST	CIRCULAR	0.3	0	55%
	2043	FERNWOOD_DR	CIRCULAR	0.25	0.25	54%
	2515	HAHNE_DR	CIRCULAR	0.9	0.9	54%
	2371	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	54%
	2497_2	FIRST_MUSKOKA	RECT_CLOSED	0.9	0.9	54%
	2550	DAVID_ST	CIRCULAR	0.375	0.375	53%
	2516	HAHNE_DR	CIRCULAR	0.9	0.9	53%
	2427	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	53%
	2452	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	53%
	2488	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	53%
	2482	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	53%
	2231	PETER_ST	CIRCULAR	0.4	0	53%
	2280	MULDREW_LAKE_RD	CIRCULAR	0.6	0	53%
	2016	ORIOLE_CR	CIRCULAR	0.3	0.3	52%
	2249	LOUISE_ST	CIRCULAR	0.45	0.45	52%
	2322	FARQUHAR	CIRCULAR	0.45	0.45	52%
	2042	FERNWOOD_DR	CIRCULAR	0.3	0.3	52%
	2127	BAY_ST	CIRCULAR	0.525	0	52%
	2496	MUSKOKA_ROAD_SOUTH	CIRCULAR	1.05	0	52%
	2363	LCBO_PARKING_LOT	CIRCULAR	0.375	0	52%
	2246	WAGNER_ST	CIRCULAR	0.4	0	52%
	2451	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	51%
	2230	PETER_ST	CIRCULAR	0.4	0	50%
	2531	JOHN_ST_S	CIRCULAR	0.6	0	50%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2563	HAHNE_DR	CIRCULAR	0.3	0	50%
	2091	BROCK_ST	CIRCULAR	0.45	0	50%
	2217	BROWN_ST	CIRCULAR	0.6	0.375	49%
	2268	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	49%
	2456	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	49%
	2046	PHILLIP_ST_E	CIRCULAR	0.4	0.3	48%
	2271	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	48%
	2267	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	48%
	2263	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	48%
	2521	FAIRVIEW_DR	CIRCULAR	0.75	0	48%
	2128	WANDA_MILLER_RD	CIRCULAR	0.525	0.475	47%
	2136	HOTCHKISS_ST	CIRCULAR	0.3	0.3	47%
	2133	HOTCHKISS_ST	CIRCULAR	0.375	0.375	47%
	2261	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	47%
	2405	MUSKOKA_BEACH_ROAD	CIRCULAR	0.3	0	47%
	2008	THIRD_ST	CIRCULAR	0.4	0.3	46%
	2355	LCBO_PARKING_LOT	CIRCULAR	0.25	0	46%
	2301	SEGWUN_BV	CIRCULAR	0.15	0	45%
	2216	GREAVETTE_ST	CIRCULAR	0.6	0.525	45%
	2274	MUSKOKA_BEACH_ROAD	CIRCULAR	0.45	0	45%
	2502	BETHUNE_FIRST	CIRCULAR	1.2	0	45%
	2129	WANDA_MILLER_RD	CIRCULAR	0.45	0.475	44%
	2011	ORIOLE_CR	CIRCULAR	0.3	0	44%
	2051	FERNWOOD_DR	CIRCULAR	0.3	0.3	43%
	2185	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	43%
	2469	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	42%
	2447	COMMERCIAL_PARKING_LOT	CIRCULAR	0.75	0	42%
	2562	HAHNE_DR	CIRCULAR	0.4	0	42%
	2092	BROCK_ST	CIRCULAR	0.3	0	42%
	2364	LCBO_PARKING_LOT	CIRCULAR	0.25	0	41%
	2188	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	41%
	2302	SEGWUN_BV	CIRCULAR	0.15	0	40%
	2468	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	40%
	2228	GREAVETTE_ST	CIRCULAR	0.6	0	40%
	2327	FARQUHAR	CIRCULAR	0.45	0.45	39%
	2272	MUSKOKA_BEACH_ROAD	CIRCULAR	0.75	0	39%
	2361	LCBO_PARKING_LOT	CIRCULAR	0.25	0	39%
	2445	COMMERCIAL_PARKING_LOT	CIRCULAR	0.825	0	39%
	2143	CLAIRMONT_RD	CIRCULAR	0.4	0	39%
	2218	BROWN_ST	CIRCULAR	0.6	0.375	38%
	2345	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.9	0	38%
	2109_1	LORNE_SEGWUN	CIRCULAR	0.4	0	38%
	2024	SEGWUN_BV	CIRCULAR	0.35	0.3	37%
	2031	WAGNER_ST	CIRCULAR	0.4	0	37%
	2519	FAIRVIEW_DR	CIRCULAR	0.9	0	37%
	2436	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	36%
	2347	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.75	0	36%
	2211	GREAVETTE_ST	CIRCULAR	0.9	0	36%
	2485	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	35%
	2333	SARAH_ST_N	CIRCULAR	0.45	0.45	34%
	2139	BAY_ST	CIRCULAR	0.3	0	34%
	2262	MUSKOKA_BEACH_ROAD	CIRCULAR	0.825	0	34%
	2446	COMMERCIAL_PARKING_LOT	CIRCULAR	0.825	0	34%
	2181	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	34%
	2195	JAMES_ST	CIRCULAR	0.3	0	34%
	2058	BETHUNE_DR_N	RECT_CLOSED	0.6	0.9	34%
	2332	SARAH_ST_N	CIRCULAR	0.45	0.45	33%
	2382	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	33%
	2197	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	33%
	2134	HOTCHKISS_ST	CIRCULAR	0.375	0.375	32%
	2074	YMCA_PARKING_LOT	CIRCULAR	0.9	0	32%

Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2449	COMMERCIAL_PARKING_LOT	CIRCULAR	0.525	0	32%
	2335	SARAH_ST_N	CIRCULAR	0.45	0.45	31%
	2528	RIDGE_RD	CIRCULAR	0.375	0.375	31%
	2243	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.25	0	31%
	2478	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	31%
	2464	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	31%
	2190	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	31%
	2027	SEGWUN_BV	CIRCULAR	0.45	0.375	30%
	2034	PRATT_CR	CIRCULAR	0.6	0.6	30%
	2569	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.45	0	30%
	2296	THAIN_ST	CIRCULAR	0.375	0.375	29%
	2336	JOHN_ST_N	CIRCULAR	0.3	0.3	29%
	2517	HAHNE_DR	CIRCULAR	0.9	0.9	29%
	2489	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	29%
	2198	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	29%
	2481	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	28%
	2169	STEAMSHIP_BAY_RD	CIRCULAR	0.9	0	28%
	2187	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	28%
	2334	SARAH_ST_N	CIRCULAR	0.45	0.45	27%
	2412	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	27%
	2437	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	27%
	2454	COMMERCIAL_PARKING_LOT	CIRCULAR	0.6	0	27%
	2200	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	27%
	2073	YMCA_PARKING_LOT	CIRCULAR	0.9	0	27%
	2096	YMCA_PARKING_LOT	CIRCULAR	0.45	0	26%
	2213	GREAVETTE_ST	CIRCULAR	0.9	0	26%
	2424	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.375	0	25%
	2353	LCBO_PARKING_LOT	CIRCULAR	0.45	0	25%
	2362	LCBO_PARKING_LOT	CIRCULAR	0.375	0	25%
	2370	LCBO_PARKING_LOT	CIRCULAR	0.25	0	25%
	2182	STEAMSHIP_BAY_RD	CIRCULAR	0.375	0	25%
	2564	FAIRVIEW_DR	CIRCULAR	0.375	0.375	25%
	2199	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	25%
	2522	FAIRVIEW_DR	CIRCULAR	0.75	0	24%
	2248	LOUISE_ST	CIRCULAR	0.45	0.45	23%
	2173	STEAMSHIP_BAY_RD	CIRCULAR	0.3	0.3	23%
	2360	LCBO_PARKING_LOT	CIRCULAR	0.375	0	23%
	2487	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	23%
	2448	COMMERCIAL_PARKING_LOT	CIRCULAR	0.675	0	23%
	2135	HOTCHKISS_ST	CIRCULAR	0.375	0.375	22%
	2352	LCBO_PARKING_LOT	CIRCULAR	0.45	0	22%
	2114	LORNE_ST	CIRCULAR	0.375	0	22%
	2276	MUSKOKA_BEACH_ROAD	CIRCULAR	0.375	0	21%
	2414	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	21%
	2300	SEGWUN_BV	CIRCULAR	0.2	0	21%
	2093	BROCK_ST	CIRCULAR	0.3	0	21%
	2115	LORNE_ST	CIRCULAR	0.525	0	20%
	2113	LORNE_ST	CIRCULAR	0.375	0	20%
	2189	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	20%
	2068	SECOND_ST_S	CIRCULAR	0.375	0.375	19%
	2331	FARQUHAR	CIRCULAR	0.45	0.45	18%
	2543	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	18%
	2438	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.3	0	18%
	2523	FAIRVIEW_DR	CIRCULAR	0.75	0	18%
	2329	FARQUHAR	CIRCULAR	0.45	0.45	17%
	2095	YMCA_PARKING_LOT	CIRCULAR	0.9	0	17%
	2350	LCBO_PARKING_LOT	CIRCULAR	0.45	0	17%
	2472	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	17%
	2110	LORNE_ST	CIRCULAR	0.6	0	17%
	2140	BAY_ST	HORIZ_ELLIPSE	0.82	1.15	16%
	2201	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	16%

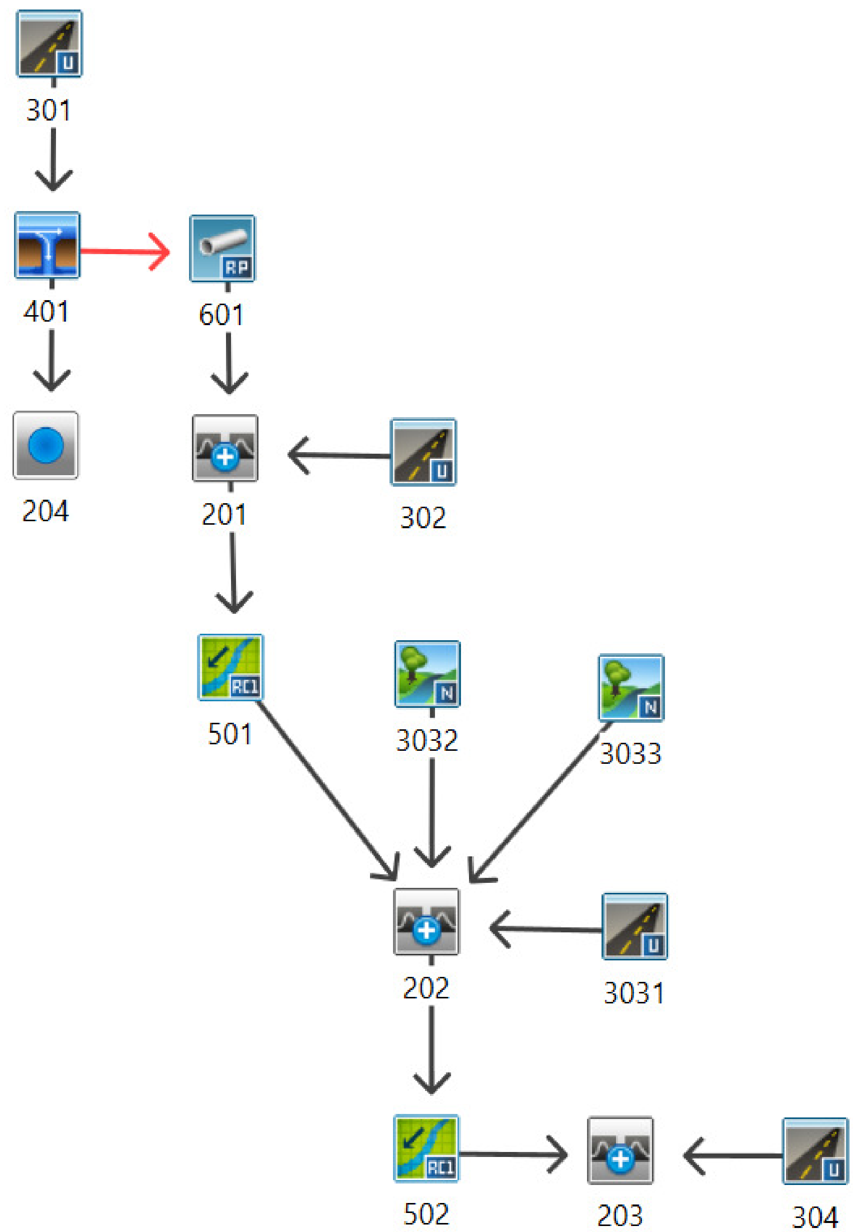
Climate Change Scenario Storm Sewer Deficiencies - Conveyance Capacity

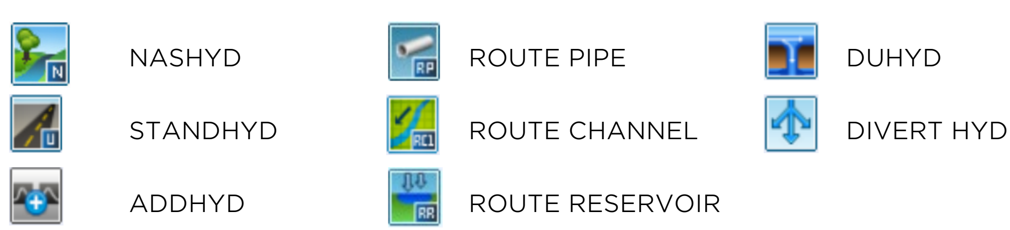
Condition	Name	Tag	Cross-Section	Geom1 (m)	Geom2 (m)	Peak Flow / Storm Sewer Full Flow Capacity
	2413	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.825	0	15%
	2470	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	15%
	2021	SEGWUN_BV	CIRCULAR	0.375	0.375	14%
	2144	BAY_ST	CIRCULAR	0.375	0	14%
	2465	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	14%
	2026	SEGWUN_BV	CIRCULAR	0.525	0	14%
	2399	LOFTY_PINES_RD	CIRCULAR	0.3	0.375	13%
	2369	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0.3	13%
	2349	MUSKOKA_ROAD_SOUTH	CIRCULAR	0.525	0	12%
	2208	FRASER_ST	CIRCULAR	0.3	0.3	11%
	2162	BURNETT_ST	FILLED_CIRCULAR	0.875	0.3	11%
	2471	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	11%
	2191	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	11%
	2467	COMMERCIAL_PARKING_LOT	CIRCULAR	0.3	0	10%
	2145	BAY_ST	CIRCULAR	0.375	0	9%
	2466	COMMERCIAL_PARKING_LOT	CIRCULAR	0.375	0	9%
	2476	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	9%
	2202	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	9%
	2022	SEGWUN_BV	CIRCULAR	0.375	0.375	8%
	2330	FARQUHAR	CIRCULAR	0.45	0.45	8%
	2164	BURNETT_ST	CIRCULAR	0.675	0.675	7%
	2163	BURNETT_ST	CIRCULAR	0.875	0.875	7%
	2203	MAPLE_HEIGHTS_DR	CIRCULAR	0.3	0	6%
	2044	FERNWOOD_DR	CIRCULAR	0.25	0.25	3%
	2473	COMMERCIAL_PARKING_LOT	CIRCULAR	0.25	0	3%
	2137	MARY_ST_S	CIRCULAR	0.3	0.3	2%
	2450	COMMERCIAL_PARKING_LOT	CIRCULAR	0.45	0	0%

Appendix E:
Oriole Crescent Analysis

PROJECT	Town of Gravenhurst Master Storm Sewer Report	FILE	220536
		DATE	May 2021
SUBJECT	Oriole Crescent Drainage Area Schematic	NAME	AMT
		PAGE	1 OF 47

Oriole Crescent Drainage Area





TATHAM ENGINEERING

PROJECT	Town of Gravenhurst Master Storm Sewer Report	FILE	220536
		DATE	May 2021
SUBJECT	Oriole Crescent Drainage Area Plan	NAME	AMT
		PAGE	2 OF 47

Oriole Crescent Drainage Area

PARAMETER	DESCRIPTION	CATCHMENT ID					
		301	302	303a	303b	303c	304
TYPE	Hydrograph Type	StandHYD	StandHYD	StandHYD	NasHYD	NasHYD	StandHYD
AREA	Catchment Area (ha)	5.73	2.50	4.43	4.06	5.79	0.97
TIMP	Total Impervious Area (%)	42.8%	38.9%	50.0%	-	-	20.3%
XIMP	Directly Connected Impervious Area (%)	27.8%	30.5%	35.0%	-	-	13.0%
LOSS	Modified SCS CN Method	69.3	67.4	69.2	72.8	68.5	60.9
IA	Initial Abstraction (mm)	4.97	6.04	4.99	5.56	6.59	9.63
TP	Time to Peak (hr)	-	-	-	0.27	0.67	-
SLPP	Average Slope Pervious Area (%)	2.00	2.00	2.00	-	-	2.00
LGP	Overland Flow Length Pervious Area (m)	40	40	40	-	-	40
MNP	Manning's Roughness Coefficient (Pervious)	0.25	0.25	0.25	-	-	0.25
DPSI	Depression Storage Impervious Area (mm)	2.00	2.00	2.00	-	-	2.00
SLPI	Average Slope Impervious Area (%)	0.6%	3.2%	1.6%	-	-	2.2%
LGI	Impervious Overland Flow Length (m)	195	129	172	-	-	80
MNI	Manning's Roughness Coefficient (Imperviou:	0.013	0.013	0.013	-	-	0.013

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

Gravenhusrt Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	301
Catchment Area (ha):	5.73
Impervious %:	43%
Pervious Area (ha):	3.28

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**BI**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		3.28							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	0.05	89						
Woodland	10		60						
Pasture/Lawns	5	3.23	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		69.30							
Average IA		4.97							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	69.3
Catchment IA (mm):	4.97

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

Gravenhusrt Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	302
Catchment Area (ha):	2.50
Impervious %:	39%
Pervious Area (ha):	1.53

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**BI**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		1.53							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	0.03	89						
Woodland	10	0.33	60						
Pasture/Lawns	5	1.17	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		67.45							
Average IA		6.04							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	67.4
Catchment IA (mm):	6.04

Visual OTTHYMO Model Parameter Calculations (StandHYD)

TATHAM ENGINEERING

Project Details

Gravenhusrt Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	303a
Catchment Area (ha):	4.43
Impervious %:	39%
Pervious Area (ha):	2.71

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**BI**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		2.71							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	0.03	89						
Woodland	10	0.00	60						
Pasture/Lawns	5	2.68	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		69.18							
Average IA		4.99							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	69.2
Catchment IA (mm):	4.99

Visual OTTHYMO Model Parameter Calculations (NasHYD)

TATHAM ENGINEERING

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	303b
Catchment Area (ha):	4.06
Impervious %:	18%

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

Soil Symbol		**Bl**											
Soil Series		Bondhead											
Hydrologic Soils Group		B											
Soil Texture		Loam or Silt Loam											
Runoff Coefficient Type		2											
Area (ha)		4.06											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.75	100	0.95									
Gravel	3	0.02	89	0.27									
Woodland	10	0.91	60	0.25									
Pasture/Lawns	5	2.37	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		72.81											
Average C		0.40											
Average IA		5.56											

Time to Peak Calculations

Max. Catchment Elev. (m):	246.80
Min. Catchment Elev. (m):	236.90
Catchment Length (m):	265.39
Catchment Slope (%):	3.73%
Method:	Airport Method
Time of Concentration (mins):	24.18

Summary

Catchment CN:	72.8
Catchment C:	0.40
Catchment IA (mm):	5.56
Time of Concentration (hrs):	0.40
Catchment Time to Peak (hrs):	0.27
Catchment Time Step (mins):	3.22

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Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	303c
Catchment Area (ha):	5.79
Impervious %:	9%

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

Soil Symbol		**Bl**											
Soil Series		Bondhead											
Hydrologic Soils Group		B											
Soil Texture		Loam or Silt Loam											
Runoff Coefficient Type		2											
Area (ha)		5.79											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.53	100	0.95									
Gravel	3	0.02	89	0.27									
Woodland	10	2.16	60	0.25									
Pasture/Lawns	5	3.08	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		68.55											
Average C		0.33											
Average IA		6.59											

Time to Peak Calculations

Max. Catchment Elev. (m):	254.37
Min. Catchment Elev. (m):	250.90
Catchment Length (m):	475.37
Catchment Slope (%):	0.73%
Method: Airport Method	
Time of Concentration (mins):	60.73

Summary

Catchment CN:	68.5
Catchment C:	0.33
Catchment IA (mm):	6.59
Time of Concentration (hrs):	1.01
Catchment Time to Peak (hrs):	0.67
Catchment Time Step (mins):	8.10

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Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

Gravenhusrt Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	304
Catchment Area (ha):	0.97
Impervious %:	20%
Pervious Area (ha):	0.77

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**Bl**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		0.77							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	0.01	89						
Woodland	10	0.72	60						
Pasture/Lawns	5	0.04	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		60.88							
Average IA		9.63							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	60.9
Catchment IA (mm):	9.63

Manning's Equation

Circular Pipe, Full Flow

Manning's n	0.015	
Slope	0.005	m/m
Diameter	0.9	m
Area	0.6362	m^2
Perimeter	2.8274	m
Hydraulic Radius	0.225	m
Flow	**1.1094**	**cms**

$$Q = \frac{1}{n} \cdot A \cdot R^{2/3} \cdot S^{1/2}$$

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

       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU   A   A  LLLLL

        OOO    TTTTT  TTTTT  H    H  Y   Y  M    M   OOO     TM
       O   O     T      T    H    H   Y Y   MM MM   O   O
       O   O     T      T    H    H    Y    M    M  O   O
        OOO      T      T    H    H    Y    M    M   OOO
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                   *****  D E T A I L E D   O U T P U T *****

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  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\ba921b52-c
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DATE: 05-04-2021                          TIME: 05:34:13

USER:


COMMENTS: ____________________________________________________________

----------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 100yr 24hr 15min SCS (2010)   **
  ************************************************


--------------------
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|                  |              ata\Local\Temp\
|                  |              247ff696-f278-4249-912f-3e1ac05bebec\3ae16858
| Ptotal=124.80 mm |    Comments: 100yr 24hr 15min SCS (2010)
--------------------
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.25	12.75	17.97	19.00	2.25
0.50	1.37	6.75	2.25	13.00	9.24	19.25	2.25
0.75	1.37	7.00	2.25	13.25	9.24	19.50	2.25
1.00	1.37	7.25	2.25	13.50	6.74	19.75	2.25
1.25	1.37	7.50	2.75	13.75	6.74	20.00	2.25
1.50	1.37	7.75	2.75	14.00	5.24	20.25	2.25
1.75	1.37	8.00	2.75	14.25	5.24	20.50	1.50
2.00	1.37	8.25	2.75	14.50	3.74	20.75	1.50
2.25	1.37	8.50	3.24	14.75	3.74	21.00	1.50
2.50	1.62	8.75	3.24	15.00	3.74	21.25	1.50
2.75	1.62	9.00	3.49	15.25	3.74	21.50	1.50
3.00	1.62	9.25	3.49	15.50	3.74	21.75	1.50
3.25	1.62	9.50	3.99	15.75	3.74	22.00	1.50
3.50	1.62	9.75	3.99	16.00	3.74	22.25	1.50
3.75	1.62	10.00	4.49	16.25	3.74	22.50	1.50
4.00	1.62	10.25	4.49	16.50	2.25	22.75	1.50
4.25	1.62	10.50	5.74	16.75	2.25	23.00	1.50
4.50	2.00	10.75	5.74	17.00	2.25	23.25	1.50
4.75	2.00	11.00	7.74	17.25	2.25	23.50	1.50
5.00	2.00	11.25	7.74	17.50	2.25	23.75	1.50
5.25	2.00	11.50	11.98	17.75	2.25	24.00	1.50
5.50	2.00	11.75	11.98	18.00	2.25	24.25	1.50
5.75	2.00	12.00	36.94	18.25	2.25		
6.00	2.00	12.25	152.76	18.50	2.25		
6.25	2.00	12.50	17.97	18.75	2.25		

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

--------------------
| CALIB            |
| NASHYD   (  3033)|   Area     (ha)=    5.79   Curve Number   (CN)= 68.5
|ID= 1 DT= 2.0 min |   Ia       (mm)=    6.59   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    0.67

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50

2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

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Unit Hyd Qpeak  (cms)=   0.330

PEAK FLOW       (cms)=   0.374 (i)
TIME TO PEAK    (hrs)=  12.867
RUNOFF VOLUME    (mm)=  59.458
TOTAL RAINFALL   (mm)= 124.799
RUNOFF COEFFICIENT   =   0.476

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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-------------------------------------------------------------------------------
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| CALIB              |
| NASHYD   (  3032)|   Area    (ha)=   4.06   Curve Number   (CN)= 72.8
|ID= 1 DT= 2.0 min |   Ia      (mm)=   5.56   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.27

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25

1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50

4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

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Unit Hyd Qpeak  (cms)=   0.574

PEAK FLOW       (cms)=   0.569 (i)
TIME TO PEAK    (hrs)=  12.400
RUNOFF VOLUME    (mm)=  66.394
TOTAL RAINFALL   (mm)= 124.799
RUNOFF COEFFICIENT   =   0.532

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

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| CALIB              |
| STANDHYD ( 0301)|   Area    (ha)=   5.73
|ID= 1 DT= 2.0 min |   Total Imp(%)=  42.78   Dir. Conn.(%)=  27.79
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                          IMPERVIOUS    PERVIOUS (i)
Surface Area      (ha)=        2.45          3.28
Dep. Storage      (mm)=        2.00          4.97
Average Slope      (%)=        0.64          2.00
Length             (m)=      195.47         40.00
Mannings n            =       0.013         0.250

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

                         ---- TRANSFORMED HYETOGRAPH ----
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50

2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50

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               5.567    2.00 |11.633   11.98 |17.700    2.25 | 23.77    1.50
               5.600    2.00 |11.667   11.98 |17.733    2.25 | 23.80    1.50
               5.633    2.00 |11.700   11.98 |17.767    2.25 | 23.83    1.50
               5.667    2.00 |11.733   11.98 |17.800    2.25 | 23.87    1.50
               5.700    2.00 |11.767   24.49 |17.833    2.25 | 23.90    1.50
               5.733    2.00 |11.800   36.94 |17.867    2.25 | 23.93    1.50
               5.767    2.00 |11.833   36.94 |17.900    2.25 | 23.97    1.50
               5.800    2.00 |11.867   36.94 |17.933    2.25 | 24.00    1.50
               5.833    2.00 |11.900   36.94 |17.967    2.25 | 24.03    1.50
               5.867    2.00 |11.933   36.94 |18.000    2.25 | 24.07    1.50
               5.900    2.00 |11.967   36.94 |18.033    2.25 | 24.10    1.50
               5.933    2.00 |12.000   37.10 |18.067    2.25 | 24.13    1.50
               5.967    2.00 |12.033  152.76 |18.100    2.25 | 24.17    1.50
               6.000    2.00 |12.067  152.76 |18.133    2.25 | 24.20    1.50
               6.033    2.00 |12.100  152.76 |18.167    2.25 | 24.23    1.50
               6.067    2.00 |12.133  152.76 |18.200    2.25 | 24.27    0.75

     Max.Eff.Inten.(mm/hr)=     152.76       126.58
                over (min)       5.00        12.00
     Storage Coeff.  (min)=      3.69 (ii)   11.64 (ii)
     Unit Hyd. Tpeak (min)=      4.00        12.00
     Unit Hyd. peak  (cms)=      0.29         0.10
                                                          *TOTALS*
     PEAK FLOW       (cms)=      0.66         0.75         1.302 (iii)
     TIME TO PEAK    (hrs)=     12.23        12.33         12.27
     RUNOFF VOLUME    (mm)=    122.80        69.55         84.35
     TOTAL RAINFALL   (mm)=    124.80       124.80        124.80
     RUNOFF COEFFICIENT   =      0.98         0.56          0.68

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  69.3    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| DUHYD    (  0401)|
| Inlet Cap.= 1.110|
| #of Inlets=     1|
| Total(cms)=   1.1|     AREA     QPEAK     TPEAK     R.V.
--------------------     (ha)     (cms)     (hrs)     (mm)
     TOTAL HYD.(ID= 1):  5.73      1.30     12.27    84.35
     ==================================================
     MAJOR SYS.(ID= 2):  0.07      0.19     12.27    84.35
     MINOR SYS.(ID= 3):  5.66      1.11     12.20    84.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ROUTEPIPE(  0601)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)= 900.00
| DT=  2.0 min     |     Length       (m)= 270.00
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY     TRAV.TIME
        (m)      (cu.m.)     (cms)        (m/s)          min
       0.05     .346E+01      0.0          0.53          8.41
       0.09     .964E+01      0.0          0.83          5.39
       0.14     .174E+02      0.1          1.07          4.19
       0.19     .263E+02      0.1          1.28          3.52
       0.24     .361E+02      0.2          1.45          3.10
       0.28     .465E+02      0.3          1.61          2.80
       0.33     .574E+02      0.4          1.74          2.58
       0.38     .687E+02      0.5          1.86          2.42
       0.43     .801E+02      0.6          1.97          2.29
       0.47     .916E+02      0.7          2.06          2.19
       0.52     .103E+03      0.8          2.13          2.11
       0.57     .114E+03      0.9          2.20          2.05
       0.62     .125E+03      1.0          2.24          2.01
       0.66     .136E+03      1.1          2.28          1.98
       0.71     .145E+03      1.2          2.29          1.96
       0.76     .154E+03      1.3          2.29          1.96
       0.81     .162E+03      1.4          2.27          1.98
       0.85     .168E+03      1.4          2.21          2.04
       0.90     .172E+03      1.3          2.01          2.23
                                   <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0401)     5.66     1.11   12.20  84.35      0.65      2.27
   OUTFLOW: ID= 1 (  0601)     5.66     1.11   12.30  84.34      0.65      2.26


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--------------------
| CALIB            |
| STANDHYD (  0302)|   Area    (ha)=   2.50
|ID= 1 DT= 2.0 min |   Total Imp(%)=  38.87   Dir. Conn.(%)=  30.50
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.97         1.53
     Dep. Storage     (mm)=      2.00         6.04
     Average Slope     (%)=      3.18         2.00
     Length            (m)=    129.00        40.00
     Mannings n           =     0.013        0.250

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


                          ---- TRANSFORMED HYETOGRAPH ----
            TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
           0.033    0.00 | 6.100    2.00 |12.167  152.76 | 18.23    2.25
           0.067    0.00 | 6.133    2.00 |12.200  152.76 | 18.27    2.25
           0.100    0.00 | 6.167    2.00 |12.233  152.76 | 18.30    2.25
           0.133    0.00 | 6.200    2.00 |12.267   85.16 | 18.33    2.25
           0.167    0.00 | 6.233    2.00 |12.300   17.97 | 18.37    2.25
           0.200    0.00 | 6.267    2.12 |12.333   17.97 | 18.40    2.25
           0.233    0.00 | 6.300    2.25 |12.367   17.97 | 18.43    2.25
           0.267    0.69 | 6.333    2.25 |12.400   17.97 | 18.47    2.25
           0.300    1.37 | 6.367    2.25 |12.433   17.97 | 18.50    2.25
           0.333    1.37 | 6.400    2.25 |12.467   17.97 | 18.53    2.25
           0.367    1.37 | 6.433    2.25 |12.500   17.97 | 18.57    2.25
           0.400    1.37 | 6.467    2.25 |12.533   17.97 | 18.60    2.25
           0.433    1.37 | 6.500    2.25 |12.567   17.97 | 18.63    2.25
           0.467    1.37 | 6.533    2.25 |12.600   17.97 | 18.67    2.25
           0.500    1.37 | 6.567    2.25 |12.633   17.97 | 18.70    2.25
           0.533    1.37 | 6.600    2.25 |12.667   17.97 | 18.73    2.25
           0.567    1.37 | 6.633    2.25 |12.700   17.97 | 18.77    2.25
           0.600    1.37 | 6.667    2.25 |12.733   17.97 | 18.80    2.25
           0.633    1.37 | 6.700    2.25 |12.767   13.59 | 18.83    2.25
           0.667    1.37 | 6.733    2.25 |12.800    9.24 | 18.87    2.25
           0.700    1.37 | 6.767    2.25 |12.833    9.24 | 18.90    2.25
           0.733    1.37 | 6.800    2.25 |12.867    9.24 | 18.93    2.25
           0.767    1.37 | 6.833    2.25 |12.900    9.24 | 18.97    2.25
           0.800    1.37 | 6.867    2.25 |12.933    9.24 | 19.00    2.25
           0.833    1.37 | 6.900    2.25 |12.967    9.24 | 19.03    2.25
           0.867    1.37 | 6.933    2.25 |13.000    9.24 | 19.07    2.25
           0.900    1.37 | 6.967    2.25 |13.033    9.24 | 19.10    2.25
           0.933    1.37 | 7.000    2.25 |13.067    9.24 | 19.13    2.25
           0.967    1.37 | 7.033    2.25 |13.100    9.24 | 19.17    2.25
           1.000    1.37 | 7.067    2.25 |13.133    9.24 | 19.20    2.25
           1.033    1.37 | 7.100    2.25 |13.167    9.24 | 19.23    2.25
           1.067    1.37 | 7.133    2.25 |13.200    9.24 | 19.27    2.25
           1.100    1.37 | 7.167    2.25 |13.233    9.24 | 19.30    2.25
           1.133    1.37 | 7.200    2.25 |13.267    7.98 | 19.33    2.25
           1.167    1.37 | 7.233    2.25 |13.300    6.74 | 19.37    2.25
           1.200    1.37 | 7.267    2.50 |13.333    6.74 | 19.40    2.25
           1.233    1.37 | 7.300    2.75 |13.367    6.74 | 19.43    2.25
           1.267    1.37 | 7.333    2.75 |13.400    6.74 | 19.47    2.25
           1.300    1.37 | 7.367    2.75 |13.433    6.74 | 19.50    2.25
           1.333    1.37 | 7.400    2.75 |13.467    6.74 | 19.53    2.25
           1.367    1.37 | 7.433    2.75 |13.500    6.74 | 19.57    2.25
           1.400    1.37 | 7.467    2.75 |13.533    6.74 | 19.60    2.25
           1.433    1.37 | 7.500    2.75 |13.567    6.74 | 19.63    2.25
           1.467    1.37 | 7.533    2.75 |13.600    6.74 | 19.67    2.25
           1.500    1.37 | 7.567    2.75 |13.633    6.74 | 19.70    2.25
           1.533    1.37 | 7.600    2.75 |13.667    6.74 | 19.73    2.25
           1.567    1.37 | 7.633    2.75 |13.700    6.74 | 19.77    2.25
           1.600    1.37 | 7.667    2.75 |13.733    6.74 | 19.80    2.25
           1.633    1.37 | 7.700    2.75 |13.767    5.99 | 19.83    2.25
           1.667    1.37 | 7.733    2.75 |13.800    5.24 | 19.87    2.25
           1.700    1.37 | 7.767    2.75 |13.833    5.24 | 19.90    2.25
           1.733    1.37 | 7.800    2.75 |13.867    5.24 | 19.93    2.25
           1.767    1.37 | 7.833    2.75 |13.900    5.24 | 19.97    2.25
           1.800    1.37 | 7.867    2.75 |13.933    5.24 | 20.00    2.25
           1.833    1.37 | 7.900    2.75 |13.967    5.24 | 20.03    2.25
           1.867    1.37 | 7.933    2.75 |14.000    5.24 | 20.07    2.25
           1.900    1.37 | 7.967    2.75 |14.033    5.24 | 20.10    2.25
           1.933    1.37 | 8.000    2.75 |14.067    5.24 | 20.13    2.25
           1.967    1.37 | 8.033    2.75 |14.100    5.24 | 20.17    2.25
           2.000    1.37 | 8.067    2.75 |14.133    5.24 | 20.20    2.25
           2.033    1.37 | 8.100    2.75 |14.167    5.24 | 20.23    2.25
```

2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

Max.Eff.Inten.(mm/hr)=	152.76	103.29	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.78 (ii)	9.64 (ii)	
Unit Hyd. Tpeak (min)=	4.00	10.00	
Unit Hyd. peak (cms)=	0.43	0.12	
			TOTALS
PEAK FLOW (cms)=	0.32	0.31	0.596 (iii)
TIME TO PEAK (hrs)=	12.23	12.30	12.23
RUNOFF VOLUME (mm)=	122.80	62.74	81.06
TOTAL RAINFALL (mm)=	124.80	124.80	124.80
RUNOFF COEFFICIENT =	0.98	0.50	0.65

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 67.4 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (0201)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0302):	2.50	0.596	12.23	81.06
+ ID2= 2 (0601):	5.66	1.107	12.30	84.34
ID = 3 (0201):	8.16	1.689	12.27	83.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(0501)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 2.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning
0.00	239.56	0.0500
0.70	239.43	0.0500
1.72	239.31	0.0500
3.74	239.11	0.0500
6.79	238.87	0.0500
7.80	238.57	0.0500
8.82	238.10	0.0500

9.83	237.66	0.0300	Main Channel
10.84	237.33	0.0300	Main Channel
11.86	237.14	0.0300	Main Channel
12.79	236.77	0.0300	Main Channel
12.87	236.75	0.0300	Main Channel
13.89	236.90	0.0300	Main Channel
14.90	237.16	0.0300	Main Channel
17.13	237.83	0.0500	
18.96	238.31	0.0500	
19.97	238.43	0.0500	
24.06	238.72	0.0500	
24.06	238.72	0.0500	

<--------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	236.85	.939E+01	0.0	0.52	6.06
0.20	236.95	.358E+02	0.2	0.85	3.75
0.30	237.05	.755E+02	0.4	1.12	2.83
0.40	237.15	.128E+03	0.9	1.34	2.36
0.51	237.25	.196E+03	1.6	1.51	2.09
0.61	237.35	.280E+03	2.5	1.70	1.87
0.71	237.46	.378E+03	3.8	1.90	1.67
0.81	237.56	.488E+03	5.4	2.09	1.52
0.91	237.66	.611E+03	7.3	2.27	1.40
1.02	237.76	.753E+03	9.9	2.51	1.26
1.12	237.87	.908E+03	13.1	2.74	1.15
1.23	237.98	.108E+04	17.0	3.00	1.06
1.34	238.08	.126E+04	21.3	3.22	0.98
1.44	238.19	.145E+04	26.0	3.41	0.93
1.55	238.30	.166E+04	31.3	3.58	0.88
1.66	238.40	.188E+04	36.9	3.73	0.85
1.76	238.51	.213E+04	43.1	3.84	0.82
1.87	238.62	.242E+04	49.8	3.92	0.81
1.98	238.72	.274E+04	57.2	3.97	0.80

	AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0201)	8.16	1.69	12.27	83.34	0.52	1.54
OUTFLOW: ID= 1 (0501)	8.16	1.67	12.27	83.34	0.52	1.53

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| CALIB              |
| STANDHYD (  3031)|    Area    (ha)=   4.43
|ID= 1 DT= 2.0 min |    Total Imp(%)=  50.00   Dir. Conn.(%)=  35.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.21	2.21
Dep. Storage	(mm)=	2.00	4.99
Average Slope	(%)=	1.60	2.00
Length	(m)=	171.79	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50

3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
Max.Eff.Inten.(mm/hr)=      152.76       131.89
            over (min)        5.00        10.00
Storage Coeff.  (min)=        2.59 (ii)    9.46 (ii)
Unit Hyd. Tpeak (min)=        4.00        10.00
Unit Hyd. peak  (cms)=        0.36         0.12
                                                   *TOTALS*
PEAK FLOW       (cms)=        0.65         0.59          1.172 (iii)
TIME TO PEAK    (hrs)=       12.23        12.30         12.23
RUNOFF VOLUME    (mm)=      122.80        70.37         88.72
TOTAL RAINFALL   (mm)=      124.80       124.80        124.80
RUNOFF COEFFICIENT   =        0.98         0.56          0.71

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
       CN*  =  69.2    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
       THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

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

--------------------
| ADD HYD  (  0202)|
|  1 +  2 =  3     |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  3031):      4.43    1.172    12.23    88.72
    + ID2= 2 (  3032):      4.06    0.569    12.40    66.39
      ==================================================
      ID = 3 (  0202):      8.48    1.603    12.27    78.04

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

--------------------
| ADD HYD  (  0202)|
|  3 +  2 =  1     |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
      ID1= 3 (  0202):      8.48    1.603    12.27    78.04
    + ID2= 2 (  3033):      5.79    0.374    12.87    59.46
      ==================================================
      ID = 1 (  0202):     14.27    1.743    12.27    70.50

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

--------------------
| ADD HYD  (  0202)|
|  1 +  2 =  3     |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0202):     14.27    1.743    12.27    70.50
    + ID2= 2 (  0501):      8.16    1.668    12.27    83.34
      ==================================================
      ID = 3 (  0202):     22.43    3.411    12.27    75.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0502)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  2.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance       Elevation       Manning
                   0.00          236.64        0.0500
                   2.97          236.20    0.0500 /0.0300  Main Channel
                   7.29          234.84        0.0300      Main Channel
                  10.78          233.88        0.0300      Main Channel
                  13.11          233.40        0.0300      Main Channel
                  15.13          233.28        0.0300      Main Channel
                  16.87          233.88        0.0300      Main Channel
                  19.48          234.94    0.0300 /0.0500  Main Channel
                  25.57          235.19        0.0500
                  27.27          235.41        0.0500
                  31.66          235.50        0.0500
                  37.43          235.74        0.0500
                  41.48          236.09        0.0500
                  45.47          236.06        0.0500
                  49.94          236.17        0.0500
                  56.90          236.16        0.0500
                  64.79          236.54        0.0500
                  70.94          236.39        0.0500
                  77.79          236.43        0.0500
                  79.59          236.75        0.0500

      <--------------------- TRAVEL TIME TABLE --------------------->
       DEPTH     ELEV      VOLUME     FLOW RATE     VELOCITY    TRAV.TIME
        (m)       (m)      (cu.m.)      (cms)         (m/s)       (min)
       0.17    233.45    .263E+02        0.2          0.69        2.40
       0.33    233.61    .823E+02        0.9          1.14        1.46
       0.50    233.78    .159E+03        2.4          1.47        1.13
       0.66    233.94    .257E+03        4.6          1.77        0.94
```

0.83	234.11	.373E+03	7.7	2.05	0.81
0.99	234.27	.506E+03	11.7	2.31	0.72
1.16	234.44	.655E+03	16.6	2.54	0.66
1.33	234.61	.821E+03	22.6	2.76	0.60
1.49	234.77	.100E+04	29.7	2.96	0.56
1.66	234.94	.120E+04	38.1	3.16	0.53
1.85	235.13	.149E+04	50.3	3.37	0.49
2.03	235.31	.186E+04	64.8	3.49	0.48
2.22	235.50	.229E+04	81.3	3.55	0.47
2.41	235.69	.284E+04	101.3	3.57	0.47
2.60	235.88	.348E+04	125.2	3.60	0.46
2.79	236.07	.417E+04	151.7	3.64	0.46
2.98	236.26	.511E+04	180.7	3.54	0.47
3.17	236.45	.625E+04	219.1	3.50	0.48
3.36	236.64	.769E+04	269.5	3.50	0.48

```
                                <---- hydrograph ---->   <-pipe / channel->
                         AREA    QPEAK   TPEAK   R.V.    MAX DEPTH  MAX VEL
                         (ha)    (cms)   (hrs)   (mm)      (m)       (m/s)
 INFLOW : ID= 2 (  0202)  22.43    3.41   12.27  75.17      0.58       1.60
 OUTFLOW: ID= 1 (  0502)  22.43    3.37   12.27  75.17      0.57       1.60
```

```
--------------------------------------------------------------------------------
--------------------
| CALIB              |
| STANDHYD (  0304)|   Area     (ha)=   0.97
|ID= 1 DT= 2.0 min |   Total Imp(%)=  20.30   Dir. Conn.(%)=  12.95
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     0.20         0.77
     Dep. Storage     (mm)=     2.00         9.63
     Average Slope     (%)=     2.23         2.00
     Length            (m)=    80.45        40.00
     Mannings n          =     0.013        0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50

4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
     Max.Eff.Inten.(mm/hr)=     152.76        80.52
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      1.49 (ii)    9.18 (ii)
     Unit Hyd. Tpeak (min)=      4.00        10.00
     Unit Hyd. peak  (cms)=      0.46         0.12
                                                          *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.12          0.166 (iii)
     TIME TO PEAK    (hrs)=     12.23        12.30          12.27
     RUNOFF VOLUME    (mm)=    122.80        50.70          60.04
     TOTAL RAINFALL   (mm)=    124.80       124.80         124.80
     RUNOFF COEFFICIENT   =      0.98         0.41           0.48

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  60.9    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

--------------------
| ADD HYD  (  0203)|
```

```
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0304):     0.97   0.166    12.27    60.04
      + ID2= 2 (  0502):    22.43   3.368    12.27    75.17
        ==================================================
        ID = 3 (  0203):    23.40   3.534    12.27    74.54

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

  --------------------------
  | Junction Command(0204) |
  --------------------------

                          AREA    QPEAK   TPEAK     R.V.
                          (ha)    (cms)   (hrs)     (mm)
  INFLOW : ID= 1(  0401)   0.07    0.19   12.27    84.35
  OUTFLOW: ID= 2(  0204)   0.07    0.19   12.27    84.35

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

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

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\ba921b52-c
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\ba921b52-c

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 24hr 15min SCS (2010)   **
  ************************************************

  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                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
 ** CALIB NASHYD           3033  1  2.0    5.79    0.37 12.87  59.46 0.48   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
 *
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
 ** CALIB NASHYD           3032  1  2.0    4.06    0.57 12.40  66.39 0.53   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
 *
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
 ** CALIB STANDHYD         0301  1  2.0    5.73    1.30 12.27  84.35 0.68   0.000
    [I%=27.8:S%= 2.00]
 *
    DUHYD                  0401  1  2.0    5.73    1.30 12.27  84.35  n/a   0.000
       MAJOR SYSTEM:       0401  2  2.0    0.07    0.19 12.27  84.35  n/a   0.000
       MINOR SYSTEM:       0401  3  2.0    5.66    1.11 12.20  84.35  n/a   0.000
 *
    PIPE    [ 2:  0401]    0601  1  2.0    5.66    1.11 12.30  84.34  n/a   0.000
 *
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
  * CALIB STANDHYD         0302  1  2.0    2.50    0.60 12.23  81.06 0.65   0.000
    [I%=30.5:S%= 2.00]
 *
    ADD [  0302+  0601]    0201  3  2.0    8.16    1.69 12.27  83.34  n/a   0.000
 *
    CHANNEL[ 2:  0201]     0501  1  2.0    8.16    1.67 12.27  83.34  n/a   0.000
 *
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
  * CALIB STANDHYD         3031  1  2.0    4.43    1.17 12.23  88.72 0.71   0.000
    [I%=35.0:S%= 2.00]
 *
    ADD [  3031+  3032]    0202  3  2.0    8.48    1.60 12.27  78.04  n/a   0.000
 *
    ADD [  0202+  3033]    0202  1  2.0   14.27    1.74 12.27  70.50  n/a   0.000
 *
    ADD [  0202+  0501]    0202  3  2.0   22.43    3.41 12.27  75.17  n/a   0.000
 *
    CHANNEL[ 2:  0202]     0502  1  2.0   22.43    3.37 12.27  75.17  n/a   0.000
 *
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3ae16858-6ca9-40bf-b7e6-
    remark: 100yr 24hr 15min SCS (2010)
 *
  * CALIB STANDHYD         0304  1  2.0    0.97    0.17 12.27  60.04 0.48   0.000
    [I%=12.9:S%= 2.00]
 *
    ADD [  0304+  0502]    0203  3  2.0   23.40    3.53 12.27  74.54  n/a   0.000
 *
=========================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\95962dab-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\95962dab-d

DATE: 05-04-2021                          TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 24hr 15min SCS (2050)   **
  ************************************************

  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                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
    remark: 100yr 24hr 15min SCS (2050)
 *
 ** CALIB NASHYD           3033  1  2.0    5.79    0.40 12.87  63.10 0.49   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
 *
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
```

```
    remark: 100yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.60 12.40  70.27 0.54   0.000
    [CN=72.8        ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
    remark: 100yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    1.37 12.27  88.54 0.68   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    1.37 12.27  88.54  n/a   0.000
       MAJOR SYSTEM:    0401  2  2.0    0.10    0.26 12.27  88.54  n/a   0.000
       MINOR SYSTEM:    0401  3  2.0    5.63    1.11 12.20  88.54  n/a   0.000
*
    PIPE   [ 2:  0401]  0601  1  2.0    5.63    1.11 12.33  88.53  n/a   0.000
*
    READ STORM                15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD      0302  1  2.0    2.50    0.63 12.23  85.12 0.66   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.12    1.72 12.23  87.48  n/a   0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.12    1.71 12.27  87.48  n/a   0.000
*
    READ STORM                15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD      3031  1  2.0    4.43    1.23 12.23  92.98 0.72   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    1.69 12.27  82.12  n/a   0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    1.84 12.27  74.40  n/a   0.000
*
    ADD [  0202+  0501] 0202  3  2.0   22.40    3.55 12.27  79.15  n/a   0.000
*
    CHANNEL[ 2:  0202]  0502  1  2.0   22.40    3.51 12.27  79.15  n/a   0.000
*
    READ STORM                15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\baeed92c-9f23-459b-97dd-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD      0304  1  2.0    0.97    0.18 12.27  63.54 0.49   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502] 0203  3  2.0   23.37    3.69 12.27  78.50  n/a   0.000
*
=============================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\b1e16b53-1
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\b1e16b53-1
```

```
DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 4hr 10min Chicago (2010 **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.19  2.17  24.51 0.33   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.29  1.60  28.50 0.39   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.91  1.33  42.06 0.57   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    0.91  1.33  42.06  n/a   0.000
       MAJOR SYSTEM:    0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:    0401  3  2.0    5.73    0.91  1.33  42.06  n/a   0.000
*
    PIPE   [ 2:  0401]  0601  1  2.0    5.73    0.89  1.37  42.06  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 *  CALIB STANDHYD      0302  1  2.0    2.50    0.46  1.33  40.31 0.55   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.23    1.30  1.37  41.53  n/a   0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.23    1.24  1.37  41.53  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 *  CALIB STANDHYD      3031  1  2.0    4.43    0.92  1.33  45.35 0.62   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    1.03  1.33  37.29  n/a   0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    1.04  1.33  32.11  n/a   0.000
*
    ADD [  0202+  0501] 0202  3  2.0   22.50    2.28  1.37  35.55  n/a   0.000
*
    CHANNEL[ 2:  0202]  0502  1  2.0   22.50    2.25  1.37  35.55  n/a   0.000
*
    CHIC STORM                10.0
    [ Ptot= 73.73 mm ]
*
 *  CALIB STANDHYD      0304  1  2.0    0.97    0.08  1.33  26.41 0.36   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502] 0203  3  2.0   23.47    2.33  1.37  35.17  n/a   0.000
*
=============================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL
```

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\f25289a9-8
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\f25289a9-8

DATE: 05-04-2021                           TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 4hr 10min Chicago (2050 **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
 ** CALIB NASHYD           3033  1  2.0    5.79    0.20  2.17  25.94 0.34    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
 ** CALIB NASHYD           3032  1  2.0    4.06    0.30  1.60  30.09 0.40    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
 ** CALIB STANDHYD         0301  1  2.0    5.73    0.94  1.33  43.91 0.58    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                  0401  1  2.0    5.73    0.94  1.33  43.91  n/a    0.000
       MAJOR SYSTEM:       0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:       0401  3  2.0    5.73    0.94  1.33  43.91  n/a    0.000
*
    PIPE    [ 2:  0401]    0601  1  2.0    5.73    0.91  1.37  43.91  n/a    0.000
*
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB STANDHYD         0302  1  2.0    2.50    0.47  1.33  42.08 0.55    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]    0201  3  2.0    8.23    1.34  1.37  43.35  n/a    0.000
*
    CHANNEL[ 2:  0201]     0501  1  2.0    8.23    1.27  1.37  43.35  n/a    0.000
*
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB STANDHYD         3031  1  2.0    4.43    0.95  1.33  47.26 0.62    0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]    0202  3  2.0    8.48    1.06  1.33  39.05  n/a    0.000
*
    ADD [  0202+  3033]    0202  1  2.0   14.27    1.08  1.33  33.73  n/a    0.000
*
    ADD [  0202+  0501]    0202  3  2.0   22.50    2.35  1.37  37.25  n/a    0.000
*
    CHANNEL[ 2:  0202]     0502  1  2.0   22.50    2.33  1.37  37.25  n/a    0.000
*
```

```
    CHIC STORM                    10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB STANDHYD         0304  1  2.0    0.97    0.08  1.33  27.79 0.37    0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]    0203  3  2.0   23.47    2.41  1.37  36.86  n/a    0.000
*
==========================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\65cf60ca-c
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\65cf60ca-c

DATE: 05-04-2021                           TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 10yr 24hr 15min SCS (2010)    **
  ************************************************

  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                    15.0
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD           3033  1  2.0    5.79    0.20 12.87  32.40 0.37    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                    15.0
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD           3032  1  2.0    4.06    0.31 12.40  37.18 0.43    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                    15.0
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD         0301  1  2.0    5.73    0.77 12.27  52.06 0.60    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                  0401  1  2.0    5.73    0.77 12.27  52.06  n/a    0.000
       MAJOR SYSTEM:       0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:       0401  3  2.0    5.73    0.77 12.27  52.06  n/a    0.000
*
    PIPE    [ 2:  0401]    0601  1  2.0    5.73    0.74 12.27  52.06  n/a    0.000
*
    READ STORM                    15.0
```

```
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       0302  1  2.0    2.50    0.35 12.23  49.90 0.58   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]  0201  3  2.0    8.23    1.08 12.27  51.40  n/a   0.000
*
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    1.05 12.30  51.40  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       3031  1  2.0    4.43    0.70 12.23  55.67 0.64   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]  0202  3  2.0    8.48    0.93 12.27  46.83  n/a   0.000
*
    ADD [  0202+  3033]  0202  1  2.0   14.27    1.00 12.27  40.98  n/a   0.000
*
    ADD [  0202+  0501]  0202  3  2.0   22.50    2.03 12.27  44.79  n/a   0.000
*
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    2.02 12.30  44.79  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 86.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\644f421b-3010-49e6-971f-
    remark: 10yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.08 12.27  34.01 0.39   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]  0203  3  2.0   23.47    2.10 12.30  44.34  n/a   0.000
*
=============================================================================================================

       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A    A  LLLLL

        OOO   TTTTT  TTTTT  H    H  Y    Y  M    M   OOO     TM
       O   O    T      T    H    H   Y Y    MM MM   O   O
       O   O    T      T    H    H    Y     M    M  O   O
        OOO     T      T    H    H    Y     M    M   OOO
Developed and Distributed by Smart City Water Inc
```



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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\c21eb505-4
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\c21eb505-4


DATE: 05-04-2021                            TIME: 05:34:14

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 10yr 24hr 15min SCS (2050)    **
  ************************************************

  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                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
```

```
*
 ** CALIB NASHYD         3033  1  2.0    5.79    0.23 12.87  37.14 0.40   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD         3032  1  2.0    4.06    0.36 12.40  42.37 0.45   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.89 12.27  57.92 0.62   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                0401  1  2.0    5.73    0.89 12.27  57.92  n/a   0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.89 12.27  57.92  n/a   0.000
*
    PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.87 12.27  57.91  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD       0302  1  2.0    2.50    0.39 12.23  55.53 0.59   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]  0201  3  2.0    8.23    1.25 12.27  57.19  n/a   0.000
*
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    1.21 12.30  57.19  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD       3031  1  2.0    4.43    0.77 12.23  61.69 0.66   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]  0202  3  2.0    8.48    1.05 12.27  52.45  n/a   0.000
*
    ADD [  0202+  3033]  0202  1  2.0   14.27    1.13 12.27  46.24  n/a   0.000
*
    ADD [  0202+  0501]  0202  3  2.0   22.50    2.32 12.27  50.24  n/a   0.000
*
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    2.31 12.30  50.24  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\8cdb602f-ef8f-4091-acf2-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.10 12.27  38.58 0.41   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]  0203  3  2.0   23.47    2.40 12.30  49.76  n/a   0.000
*
=============================================================================================================

       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A    A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\a8edba5e-5
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\a8edba5e-5

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 10yr 4hr 10min Chicago (2010) **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 ** CALIB NASHYD          3033  1  2.0    5.79    0.09  2.20  12.31 0.24   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 ** CALIB NASHYD          3032  1  2.0    4.06    0.14  1.60  14.80 0.29   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 ** CALIB STANDHYD        0301  1  2.0    5.73    0.53  1.33  25.47 0.50   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                 0401  1  2.0    5.73    0.53  1.33  25.47  n/a   0.000
       MAJOR SYSTEM:      0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:      0401  3  2.0    5.73    0.53  1.33  25.47  n/a   0.000
*
    PIPE    [ 2:  0401]   0601  1  2.0    5.73    0.51  1.37  25.47  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB STANDHYD        0302  1  2.0    2.50    0.26  1.33  24.49 0.48   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]   0201  3  2.0    8.23    0.74  1.33  25.17  n/a   0.000
*
    CHANNEL[ 2:  0201]    0501  1  2.0    8.23    0.71  1.37  25.17  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB STANDHYD        3031  1  2.0    4.43    0.56  1.33  28.05 0.55   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]   0202  3  2.0    8.48    0.61  1.33  21.72  n/a   0.000
*
    ADD [  0202+  3033]   0202  1  2.0   14.27    0.61  1.33  17.90  n/a   0.000
*
    ADD [  0202+  0501]   0202  3  2.0   22.50    1.30  1.37  20.56  n/a   0.000
*
    CHANNEL[ 2:  0202]    0502  1  2.0   22.50    1.28  1.37  20.56  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB STANDHYD        0304  1  2.0    0.97    0.04  1.33  14.50 0.28   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]   0203  3  2.0   23.47    1.31  1.37  20.31  n/a   0.000
*
=============================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\64b7e5c7-4
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\64b7e5c7-4

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 10yr 4hr 10min Chicago (2050) **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 53.64 mm ]
*
 ** CALIB NASHYD          3033  1  2.0    5.79    0.10  2.20  13.51 0.25   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                  10.0
    [ Ptot= 53.64 mm ]
*
 ** CALIB NASHYD          3032  1  2.0    4.06    0.15  1.60  16.17 0.30   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                  10.0
    [ Ptot= 53.64 mm ]
*
 ** CALIB STANDHYD        0301  1  2.0    5.73    0.56  1.33  27.19 0.51   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                 0401  1  2.0    5.73    0.56  1.33  27.19  n/a   0.000
       MAJOR SYSTEM:      0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:      0401  3  2.0    5.73    0.56  1.33  27.19  n/a   0.000
*
    PIPE    [ 2:  0401]   0601  1  2.0    5.73    0.54  1.37  27.19  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 53.64 mm ]
*
 *  CALIB STANDHYD        0302  1  2.0    2.50    0.28  1.33  26.12 0.49   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]   0201  3  2.0    8.23    0.78  1.37  26.87  n/a   0.000
*
    CHANNEL[ 2:  0201]    0501  1  2.0    8.23    0.75  1.37  26.87  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 53.64 mm ]
*
 *  CALIB STANDHYD        3031  1  2.0    4.43    0.58  1.33  29.86 0.56   0.000
    [I%=35.0:S%= 2.00]
*
```

```
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.63  1.33  23.31  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.64  1.33  19.33  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    1.37  1.37  22.09  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.34  1.37  22.09  n/a    0.000
*
   CHIC STORM                 10.0
   [ Ptot= 53.64 mm ]
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.05  1.33  15.69 0.29    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    1.38  1.37  21.82  n/a    0.000
*
=====================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\ec918916-e
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\ec918916-e


DATE: 05-04-2021                           TIME: 05:34:13

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 25yr 24hr 15min SCS (2010)    **
  ************************************************

  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                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
** CALIB NASHYD         3033  1  2.0    5.79    0.27 12.87  43.73 0.42    0.000
   [CN=68.5        ]
   [ N = 3.0:Tp 0.67]
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
** CALIB NASHYD         3032  1  2.0    4.06    0.42 12.40  49.51 0.48    0.000
   [CN=72.8        ]
   [ N = 3.0:Tp 0.27]
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
** CALIB STANDHYD       0301  1  2.0    5.73    1.03 12.27  65.88 0.64    0.000
   [I%=27.8:S%= 2.00]
```

```
*
   DUHYD                0401  1  2.0    5.73    1.03 12.27  65.88  n/a    0.000
      MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
      MINOR SYSTEM:     0401  3  2.0    5.73    1.03 12.27  65.88  n/a    0.000
*
   PIPE    [ 2:  0401]  0601  1  2.0    5.73    1.00 12.27  65.88  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
 * CALIB STANDHYD       0302  1  2.0    2.50    0.47 12.23  63.20 0.61    0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    1.45 12.27  65.06  n/a    0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    1.41 12.30  65.06  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
 * CALIB STANDHYD       3031  1  2.0    4.43    0.88 12.23  69.86 0.68    0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    1.20 12.27  60.13  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    1.30 12.27  53.48  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    2.69 12.27  57.71  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    2.67 12.30  57.71  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\cf4e182e-d608-4666-89df-
   remark: 25yr 24hr 15min SCS (2010)
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.11 12.27  44.92 0.44    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    2.78 12.30  57.18  n/a    0.000
*
=====================================================================================================


       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\0e0cf598-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\0e0cf598-d


DATE: 05-04-2021                           TIME: 05:34:14

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 25yr 24hr 15min SCS (2050)    **
  ************************************************

  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              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.29 12.87  47.13 0.44   0.000
   [CN=68.5         ]
   [ N = 3.0:Tp 0.67]
*
   READ STORM              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.45 12.40  53.18 0.49   0.000
   [CN=72.8         ]
   [ N = 3.0:Tp 0.27]
*
   READ STORM              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    1.10 12.27  69.92 0.65   0.000
   [I%=27.8:S%= 2.00]
*
   DUHYD                0401  1  2.0    5.73    1.10 12.27  69.92  n/a   0.000
      MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
      MINOR SYSTEM:     0401  3  2.0    5.73    1.10 12.27  69.92  n/a   0.000
*
   PIPE   [ 2:  0401]   0601  1  2.0    5.73    1.06 12.27  69.92  n/a   0.000
*
   READ STORM              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 * CALIB STANDHYD       0302  1  2.0    2.50    0.50 12.23  67.10 0.62   0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    1.55 12.27  69.07  n/a   0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    1.50 12.30  69.06  n/a   0.000
*
   READ STORM              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 * CALIB STANDHYD       3031  1  2.0    4.43    0.93 12.23  74.00 0.69   0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    1.28 12.27  64.04  n/a   0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    1.39 12.27  57.18  n/a   0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    2.88 12.27  61.52  n/a   0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    2.86 12.30  61.52  n/a   0.000
*
   READ STORM              15.0
   [ Ptot=108.00 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e5bb62a7-c5bb-4d6f-902a-
   remark: 25yr 24hr 15min SCS (2050)
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.12 12.27  48.18 0.45   0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    2.97 12.30  60.97  n/a   0.000
*
=======================================================================================================

      V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
      V    V   I    SS     U    U   A A   L
       V  V    I     SS    U    U  AAAAA  L
       V  V    I      SS   U    U  A   A  L
        VV     I    SSSSS  UUUUU   A   A  LLLLL

       OOO    TTTTT  TTTTT  H   H  Y   Y  M   M  OOO    TM
```

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\81a6d10e-7
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\81a6d10e-7

DATE: 05-04-2021                         TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 25yr 4hr 10min Chicago (2010) **
  ************************************************

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

     START @  0.00 hrs
     --------------------
   CHIC STORM               10.0
   [ Ptot= 60.31 mm ]
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.13  2.20  16.92 0.28   0.000
   [CN=68.5         ]
   [ N = 3.0:Tp 0.67]
*
   CHIC STORM               10.0
   [ Ptot= 60.31 mm ]
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.20  1.60  20.03 0.33   0.000
   [CN=72.8         ]
   [ N = 3.0:Tp 0.27]
*
   CHIC STORM               10.0
   [ Ptot= 60.31 mm ]
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.67  1.33  31.97 0.53   0.000
   [I%=27.8:S%= 2.00]
*
   DUHYD                0401  1  2.0    5.73    0.67  1.33  31.97  n/a   0.000
      MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
      MINOR SYSTEM:     0401  3  2.0    5.73    0.67  1.33  31.97  n/a   0.000
*
   PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.65  1.37  31.97  n/a   0.000
*
   CHIC STORM               10.0
   [ Ptot= 60.31 mm ]
*
 * CALIB STANDHYD       0302  1  2.0    2.50    0.33  1.33  30.68 0.51   0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    0.93  1.37  31.58  n/a   0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.90  1.37  31.57  n/a   0.000
*
   CHIC STORM               10.0
   [ Ptot= 60.31 mm ]
*
 * CALIB STANDHYD       3031  1  2.0    4.43    0.71  1.33  34.86 0.58   0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.78  1.33  27.77  n/a   0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.79  1.33  23.37  n/a   0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    1.68  1.37  26.37  n/a   0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.64  1.37  26.37  n/a   0.000
*
   CHIC STORM               10.0
```

```
    [ Ptot= 60.31 mm ]
 *
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.06  1.33  19.04 0.32    0.000
    [I%=12.9:S%= 2.00]
 *
    ADD [  0304+  0502]  0203  3  2.0   23.47    1.69  1.37  26.07  n/a    0.000
 *
=============================================================================================================

       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A    A  LLLLL

        OOO   TTTTT  TTTTT  H    H  Y   Y  M   M   OOO     TM
       O   O    T      T    H    H   Y Y   MM MM  O   O
       O   O    T      T    H    H    Y    M   M  O   O
        OOO     T      T    H    H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8cc23496-3
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8cc23496-3

DATE: 05-04-2021                           TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 25yr 4hr 10min Chicago (2050) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 ** CALIB NASHYD         3033  1  2.0    5.79    0.14  2.20  18.19 0.29    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
 *
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 ** CALIB NASHYD         3032  1  2.0    4.06    0.21  1.60  21.46 0.34    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
 *
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.69  1.33  33.70 0.54    0.000
    [I%=27.8:S%= 2.00]
 *
    DUHYD                0401  1  2.0    5.73    0.69  1.33  33.70  n/a    0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.69  1.33  33.70  n/a    0.000
 *
    PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.67  1.37  33.70  n/a    0.000
 *
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 *  CALIB STANDHYD       0302  1  2.0    2.50    0.35  1.33  32.32 0.52    0.000
    [I%=30.5:S%= 2.00]
 *
    ADD [  0302+  0601]  0201  3  2.0    8.23    0.98  1.37  33.28  n/a    0.000
 *
```

```
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.94  1.37  33.28  n/a    0.000
 *
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 *  CALIB STANDHYD       3031  1  2.0    4.43    0.73  1.33  36.66 0.59    0.000
    [I%=35.0:S%= 2.00]
 *
    ADD [  3031+  3032]  0202  3  2.0    8.48    0.81  1.33  29.39  n/a    0.000
 *
    ADD [  0202+  3033]  0202  1  2.0   14.27    0.82  1.33  24.85  n/a    0.000
 *
    ADD [  0202+  0501]  0202  3  2.0   22.50    1.75  1.37  27.93  n/a    0.000
 *
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.71  1.37  27.93  n/a    0.000
 *
    CHIC STORM                 10.0
    [ Ptot= 62.67 mm ]
 *
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.06  1.33  20.27 0.32    0.000
    [I%=12.9:S%= 2.00]
 *
    ADD [  0304+  0502]  0203  3  2.0   23.47    1.76  1.37  27.61  n/a    0.000
 *
=============================================================================================================

       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A    A  LLLLL

        OOO   TTTTT  TTTTT  H    H  Y   Y  M   M   OOO     TM
       O   O    T      T    H    H   Y Y   MM MM  O   O
       O   O    T      T    H    H    Y    M   M  O   O
        OOO     T      T    H    H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\98c0aa7f-6
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\98c0aa7f-6

DATE: 05-04-2021                           TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 2yr 24hr 15min SCS (2010)     **
  **************************************************

  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                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
 *
 ** CALIB NASHYD         3033  1  2.0    5.79    0.09 12.90  14.28 0.26    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
 *
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
 *
 ** CALIB NASHYD         3032  1  2.0    4.06    0.14 12.43  17.05 0.31    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
```

```
*
    READ STORM                  15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.38 12.27  28.29 0.51   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                0401  1  2.0    5.73    0.38 12.27  28.29  n/a   0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.38 12.27  28.29  n/a   0.000
*
    PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.37 12.30  28.29  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       0302  1  2.0    2.50    0.18 12.23  27.17 0.49   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]  0201  3  2.0    8.23    0.53 12.27  27.95  n/a   0.000
*
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.51 12.30  27.95  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       3031  1  2.0    4.43    0.36 12.23  31.01 0.56   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]  0202  3  2.0    8.48    0.46 12.27  24.34  n/a   0.000
*
    ADD [  0202+  3033]  0202  1  2.0   14.27    0.49 12.27  20.26  n/a   0.000
*
    ADD [  0202+  0501]  0202  3  2.0   22.50    0.99 12.27  23.07  n/a   0.000
*
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    0.99 12.30  23.07  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\7eb0ad9a-af8b-4792-86ae-
    remark: 2yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.03 12.23  16.45 0.30   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]  0203  3  2.0   23.47    1.02 12.27  22.80  n/a   0.000
*
===========================================================================================================


       V    V   I    SSSSS  U   U    A    L               (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8165e109-2
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8165e109-2


DATE: 05-04-2021                           TIME: 05:34:14

USER:
```

```
COMMENTS: ____________________________________________________________


  **************************************************
  ** SIMULATION : 2yr 24hr 15min SCS (2050)      **
  **************************************************

  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                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD         3033  1  2.0    5.79    0.11 12.90  18.04 0.29   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD         3032  1  2.0    4.06    0.18 12.40  21.29 0.34   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.46 12.27  33.50 0.54   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                0401  1  2.0    5.73    0.46 12.27  33.50  n/a   0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.46 12.27  33.50  n/a   0.000
*
    PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.45 12.27  33.50  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD       0302  1  2.0    2.50    0.22 12.23  32.13 0.51   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]  0201  3  2.0    8.23    0.66 12.27  33.08  n/a   0.000
*
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.63 12.30  33.08  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD       3031  1  2.0    4.43    0.44 12.23  36.46 0.58   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]  0202  3  2.0    8.48    0.56 12.27  29.20  n/a   0.000
*
    ADD [  0202+  3033]  0202  1  2.0   14.27    0.60 12.27  24.68  n/a   0.000
*
    ADD [  0202+  0501]  0202  3  2.0   22.50    1.22 12.27  27.75  n/a   0.000
*
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.21 12.30  27.75  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 62.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\31950b19-1c45-4983-a0fc-
    remark: 2yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.04 12.27  20.13 0.32   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]  0203  3  2.0   23.47    1.24 12.30  27.44  n/a   0.000
*
===========================================================================================================
```

```
      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\80b987d5-f
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\80b987d5-f

DATE: 05-04-2021                           TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 2yr 4hr 10min Chicago (2010)   **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD         3033  1  2.0    5.79    0.03  2.30    4.82 0.15    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD         3032  1  2.0    4.06    0.05  1.63    6.09 0.19    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.30  1.33   13.68 0.42    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                0401  1  2.0    5.73    0.30  1.33   13.68  n/a    0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00    0.00  n/a    0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.30  1.33   13.68  n/a    0.000
*
    PIPE    [ 2:  0401]  0601  1  2.0    5.73    0.28  1.37   13.67  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 ** CALIB STANDHYD       0302  1  2.0    2.50    0.16  1.33   13.28 0.40    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]  0201  3  2.0    8.23    0.42  1.33   13.56  n/a    0.000
*
    CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.40  1.37   13.56  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 ** CALIB STANDHYD       3031  1  2.0    4.43    0.31  1.33   15.50 0.47    0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]  0202  3  2.0    8.48    0.33  1.33   11.00  n/a    0.000
*
    ADD [  0202+  3033]  0202  1  2.0   14.27    0.33  1.33    8.49  n/a    0.000
*
    ADD [  0202+  0501]  0202  3  2.0   22.50    0.70  1.37   10.34  n/a    0.000
*
    CHANNEL[ 2:  0202]   0502  1  2.0   22.50    0.69  1.37   10.34  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 32.84 mm ]
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.03  1.33    6.87 0.21    0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]  0203  3  2.0   23.47    0.71  1.37   10.20  n/a    0.000
*
=====================================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\e3b93b9a-8
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\e3b93b9a-8

DATE: 05-04-2021                           TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 2yr 4hr 10min Chicago (2050)   **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD         3033  1  2.0    5.79    0.04  2.30    5.68 0.16    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD         3032  1  2.0    4.06    0.06  1.63    7.12 0.20    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    0.31  1.33   15.18 0.43    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                0401  1  2.0    5.73    0.31  1.33   15.18  n/a    0.000
       MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00    0.00  n/a    0.000
       MINOR SYSTEM:     0401  3  2.0    5.73    0.31  1.33   15.18  n/a    0.000
*
    PIPE    [ 2:  0401]  0601  1  2.0    5.73    0.29  1.37   15.18  n/a    0.000
*
```

```
   CHIC STORM                 10.0
   [ Ptot= 35.36 mm ]
*
 ** CALIB STANDHYD       0302  1  2.0    2.50    0.16  1.33  14.71 0.42    0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    0.44  1.33  15.04  n/a    0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.42  1.37  15.03  n/a    0.000
*
   CHIC STORM                 10.0
   [ Ptot= 35.36 mm ]
*
 ** CALIB STANDHYD       3031  1  2.0    4.43    0.33  1.33  17.12 0.48    0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.34  1.33  12.34  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.34  1.33   9.64  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    0.74  1.37  11.61  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    0.73  1.37  11.61  n/a    0.000
*
   CHIC STORM                 10.0
   [ Ptot= 35.36 mm ]
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.03  1.33   7.79 0.22    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    0.75  1.37  11.45  n/a    0.000
*
================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\26f97f94-b
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\26f97f94-b

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 50yr 24hr 15min SCS (2010)     **
  **************************************************

  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                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD         3033  1  2.0    5.79    0.32 12.87  50.58 0.45    0.000
   [CN=68.5          ]
   [ N = 3.0:Tp 0.67]
*
```

```
   READ STORM                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD         3032  1  2.0    4.06    0.49 12.40  56.89 0.50    0.000
   [CN=72.8          ]
   [ N = 3.0:Tp 0.27]
*
   READ STORM                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD       0301  1  2.0    5.73    1.17 12.27  74.00 0.66    0.000
   [I%=27.8:S%= 2.00]
*
   DUHYD                 0401  1  2.0    5.73    1.17 12.27  74.00  n/a    0.000
      MAJOR SYSTEM:      0401  2  2.0    0.01    0.06 12.27  74.00  n/a    0.000
      MINOR SYSTEM:      0401  3  2.0    5.72    1.11 12.23  74.00  n/a    0.000
*
   PIPE   [ 2:  0401]   0601  1  2.0    5.72    1.09 12.27  74.00  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD       0302  1  2.0    2.50    0.53 12.23  71.04 0.63    0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.21    1.61 12.27  73.10  n/a    0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.21    1.57 12.30  73.10  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD       3031  1  2.0    4.43    1.03 12.23  78.17 0.69    0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    1.39 12.27  67.99  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    1.51 12.27  60.93  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.49    3.07 12.27  65.37  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.49    3.04 12.30  65.37  n/a    0.000
*
   READ STORM                 15.0
   [ Ptot=112.80 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\397e4ce7-f505-4630-851f-
   remark: 50yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD       0304  1  2.0    0.97    0.14 12.27  51.50 0.46    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.46    3.17 12.30  64.80  n/a    0.000
*
================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
```



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\dce5e883-9
```

```
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\dce5e883-9

DATE: 05-04-2021                          TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 50yr 24hr 15min SCS (2050)     **
  **************************************************

  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                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD          3033  1  2.0    5.79    0.35 12.87  55.87 0.47    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD          3032  1  2.0    4.06    0.54 12.40  62.56 0.52    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD        0301  1  2.0    5.73    1.28 12.27  80.19 0.67    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                 0401  1  2.0    5.73    1.28 12.27  80.19  n/a    0.000
       MAJOR SYSTEM:      0401  2  2.0    0.06    0.17 12.27  80.19  n/a    0.000
       MINOR SYSTEM:      0401  3  2.0    5.67    1.11 12.20  80.19  n/a    0.000
*
    PIPE    [ 2:  0401]   0601  1  2.0    5.67    1.11 12.30  80.18  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0302  1  2.0    2.50    0.57 12.23  77.03 0.64    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]   0201  3  2.0    8.17    1.66 12.27  79.22  n/a    0.000
*
    CHANNEL[ 2:  0201]    0501  1  2.0    8.17    1.63 12.27  79.21  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        3031  1  2.0    4.43    1.11 12.23  84.48 0.70    0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032]   0202  3  2.0    8.48    1.52 12.27  74.00  n/a    0.000
*
    ADD [  0202+  3033]   0202  1  2.0   14.27    1.65 12.27  66.64  n/a    0.000
*
    ADD [  0202+  0501]   0202  3  2.0   22.44    3.28 12.27  71.22  n/a    0.000
*
    CHANNEL[ 2:  0202]    0502  1  2.0   22.44    3.24 12.30  71.22  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\c13f447f-a05d-4e5d-a621-
    remark: 50yr 24hr 15min SCS (2050)
```

```
*
 *  CALIB STANDHYD        0304  1  2.0    0.97    0.16 12.27  56.58 0.47    0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502]   0203  3  2.0   23.41    3.39 12.27  70.61  n/a    0.000
*
==========================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
```



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\bce00464-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\bce00464-d

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 50yr 4hr 10min Chicago (2010) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 ** CALIB NASHYD          3033  1  2.0    5.79    0.16  2.17  20.58 0.31    0.000
    [CN=68.5          ]
    [ N = 3.0:Tp 0.67]
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 ** CALIB NASHYD          3032  1  2.0    4.06    0.24  1.60  24.13 0.36    0.000
    [CN=72.8          ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 ** CALIB STANDHYD        0301  1  2.0    5.73    0.80  1.33  36.91 0.55    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD                 0401  1  2.0    5.73    0.80  1.33  36.91  n/a    0.000
       MAJOR SYSTEM:      0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:      0401  3  2.0    5.73    0.80  1.33  36.91  n/a    0.000
*
    PIPE    [ 2:  0401]   0601  1  2.0    5.73    0.78  1.37  36.91  n/a    0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB STANDHYD        0302  1  2.0    2.50    0.40  1.33  35.39 0.53    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601]   0201  3  2.0    8.23    1.15  1.37  36.45  n/a    0.000
*
    CHANNEL[ 2:  0201]    0501  1  2.0    8.23    1.09  1.37  36.45  n/a    0.000
```

```
*
   CHIC STORM                  10.0
   [ Ptot= 66.98 mm ]
*
 * CALIB STANDHYD       3031  1  2.0    4.43    0.82  1.33  40.01 0.60    0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.90  1.33  32.42  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.92  1.33  27.62  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    2.00  1.37  30.84  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.97  1.37  30.84  n/a    0.000
*
   CHIC STORM                  10.0
   [ Ptot= 66.98 mm ]
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.07  1.33  22.60 0.34    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    2.03  1.37  30.50  n/a    0.000
*
=====================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L                (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\6fe74dee-e
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\6fe74dee-e

DATE: 05-04-2021                           TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 50yr 4hr 10min Chicago (2050) **
  ************************************************

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

      START @  0.00 hrs
      --------------------
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
** CALIB NASHYD         3033  1  2.0    5.79    0.17  2.17  22.04 0.32    0.000
   [CN=68.5          ]
   [ N = 3.0:Tp 0.67]
*
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
** CALIB NASHYD         3032  1  2.0    4.06    0.25  1.60  25.76 0.37    0.000
   [CN=72.8          ]
   [ N = 3.0:Tp 0.27]
*
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
** CALIB STANDHYD       0301  1  2.0    5.73    0.83  1.33  38.84 0.56    0.000
```

```
   [I%=27.8:S%= 2.00]
*
   DUHYD                0401  1  2.0    5.73    0.83  1.33  38.84  n/a    0.000
      MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
      MINOR SYSTEM:     0401  3  2.0    5.73    0.83  1.33  38.84  n/a    0.000
*
   PIPE   [ 2:  0401]   0601  1  2.0    5.73    0.80  1.37  38.84  n/a    0.000
*
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
 * CALIB STANDHYD       0302  1  2.0    2.50    0.42  1.33  37.23 0.54    0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    1.18  1.37  38.35  n/a    0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    1.12  1.37  38.35  n/a    0.000
*
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
 * CALIB STANDHYD       3031  1  2.0    4.43    0.84  1.33  42.01 0.60    0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.93  1.33  34.24  n/a    0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.95  1.33  29.29  n/a    0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    2.06  1.37  32.60  n/a    0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    2.03  1.37  32.60  n/a    0.000
*
   CHIC STORM                  10.0
   [ Ptot= 69.53 mm ]
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.07  1.33  24.02 0.35    0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    2.09  1.37  32.25  n/a    0.000
*
=====================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L                (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\634f6a05-f
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\634f6a05-f

DATE: 05-04-2021                           TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 5yr 24hr 15min SCS (2010)     **
  ************************************************

  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                  15.0
```

```
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.15 12.90  24.91 0.33   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.24 12.40  28.94 0.39   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.62 12.27  42.58 0.57   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    0.62 12.27  42.58  n/a   0.000
       MAJOR SYSTEM:    0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:    0401  3  2.0    5.73    0.62 12.27  42.58  n/a   0.000
*
    PIPE   [ 2:  0401]  0601  1  2.0    5.73    0.60 12.27  42.58  n/a   0.000
*
    READ STORM                15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD      0302  1  2.0    2.50    0.28 12.23  40.81 0.55   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.23    0.88 12.27  42.04  n/a   0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.23    0.85 12.30  42.04  n/a   0.000
*
    READ STORM                15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 ** CALIB STANDHYD      3031  1  2.0    4.43    0.57 12.23  45.88 0.62   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    0.75 12.27  37.78  n/a   0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    0.80 12.27  32.56  n/a   0.000
*
    ADD [  0202+  0501] 0202  3  2.0   22.50    1.64 12.27  36.02  n/a   0.000
*
    CHANNEL[ 2:  0202]  0502  1  2.0   22.50    1.62 12.30  36.02  n/a   0.000
*
    READ STORM                15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\3bf87f6c-d7c6-43b1-ac37-
    remark: 5yr 24hr 15min SCS (2010)
*
 *  CALIB STANDHYD      0304  1  2.0    0.97    0.06 12.27  26.79 0.36   0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502] 0203  3  2.0   23.47    1.67 12.30  35.64  n/a   0.000
*
==============================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\b813833a-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\b813833a-d


DATE: 05-04-2021                           TIME: 05:34:14

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 5yr 24hr 15min SCS (2050)     **
  ************************************************

  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                15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.17 12.87  27.83 0.35   0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.27 12.40  32.17 0.41   0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.68 12.27  46.33 0.58   0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    0.68 12.27  46.33  n/a   0.000
       MAJOR SYSTEM:    0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
       MINOR SYSTEM:    0401  3  2.0    5.73    0.68 12.27  46.33  n/a   0.000
*
    PIPE   [ 2:  0401]  0601  1  2.0    5.73    0.65 12.27  46.33  n/a   0.000
*
    READ STORM                15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD      0302  1  2.0    2.50    0.31 12.23  44.40 0.56   0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.23    0.96 12.27  45.74  n/a   0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.23    0.93 12.30  45.74  n/a   0.000
*
    READ STORM                15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB STANDHYD      3031  1  2.0    4.43    0.62 12.23  49.76 0.63   0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    0.82 12.27  41.35  n/a   0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    0.88 12.27  35.87  n/a   0.000
*
```

```
   ADD [  0202+  0501]  0202  3  2.0   22.50    1.80 12.27  39.48  n/a   0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.78 12.30  39.48  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 79.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\e72500e7-9c5e-4072-817a-
   remark: 5yr 24hr 15min SCS (2050)
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.07 12.27  29.62 0.37   0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    1.84 12.30  39.07  n/a   0.000
*
=====================================================================================================
```

```
      V    V   I    SSSSS  U    U    A    L             (v 6.1.2001)
      V    V   I    SS     U    U   A A   L
       V  V    I     SS    U    U  AAAAA  L
       V  V    I      SS   U    U  A   A  L
        VV     I    SSSSS  UUUUU   A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8ae03bb2-f
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\8ae03bb2-f

DATE: 05-04-2021                          TIME: 05:34:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 5yr 4hr 10min Chicago (2010)  **
  **************************************************

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

     START @  0.00 hrs
     --------------------
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.07  2.23   9.11 0.21   0.000
   [CN=68.5          ]
   [ N = 3.0:Tp 0.67]
*
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.10  1.63  11.13 0.25   0.000
   [CN=72.8          ]
   [ N = 3.0:Tp 0.27]
*
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.43  1.33  20.70 0.47   0.000
   [I%=27.8:S%= 2.00]
*
   DUHYD                0401  1  2.0    5.73    0.43  1.33  20.70  n/a   0.000
      MAJOR SYSTEM:     0401  2  2.0    0.00    0.00  0.00   0.00  n/a   0.000
      MINOR SYSTEM:     0401  3  2.0    5.73    0.43  1.33  20.70  n/a   0.000
*
   PIPE    [ 2:  0401]  0601  1  2.0    5.73    0.41  1.37  20.70  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 ** CALIB STANDHYD      0302  1  2.0    2.50    0.22  1.33  19.95 0.45   0.000
   [I%=30.5:S%= 2.00]
*
   ADD [  0302+  0601]  0201  3  2.0    8.23    0.61  1.33  20.47  n/a   0.000
*
   CHANNEL[ 2:  0201]   0501  1  2.0    8.23    0.57  1.37  20.47  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 ** CALIB STANDHYD      3031  1  2.0    4.43    0.44  1.33  23.01 0.52   0.000
   [I%=35.0:S%= 2.00]
*
   ADD [  3031+  3032]  0202  3  2.0    8.48    0.48  1.33  17.33  n/a   0.000
*
   ADD [  0202+  3033]  0202  1  2.0   14.27    0.48  1.33  13.99  n/a   0.000
*
   ADD [  0202+  0501]  0202  3  2.0   22.50    1.03  1.37  16.36  n/a   0.000
*
   CHANNEL[ 2:  0202]   0502  1  2.0   22.50    1.04  1.37  16.36  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 44.09 mm ]
*
 * CALIB STANDHYD       0304  1  2.0    0.97    0.04  1.33  11.31 0.26   0.000
   [I%=12.9:S%= 2.00]
*
   ADD [  0304+  0502]  0203  3  2.0   23.47    1.07  1.37  16.15  n/a   0.000
*
=====================================================================================================
```

```
      V    V   I    SSSSS  U    U    A    L             (v 6.1.2001)
      V    V   I    SS     U    U   A A   L
       V  V    I     SS    U    U  AAAAA  L
       V  V    I      SS   U    U  A   A  L
        VV     I    SSSSS  UUUUU   A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\79610289-c
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\79610289-c

DATE: 05-04-2021                          TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 5yr 4hr 10min Chicago (2050)  **
  **************************************************

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

     START @  0.00 hrs
     --------------------
   CHIC STORM                 10.0
   [ Ptot= 46.41 mm ]
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.07  2.23  10.13 0.22   0.000
   [CN=68.5          ]
   [ N = 3.0:Tp 0.67]
*
   CHIC STORM                 10.0
   [ Ptot= 46.41 mm ]
*
```

```
 ** CALIB NASHYD        3032  1  2.0    4.06    0.11  1.63  12.29 0.26    0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    CHIC STORM                10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.46  1.33  22.24 0.48    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    0.46  1.33  22.24  n/a    0.000
       MAJOR SYSTEM:    0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:    0401  3  2.0    5.73    0.46  1.33  22.24  n/a    0.000
*
    PIPE    [ 2:  0401] 0601  1  2.0    5.73    0.43  1.37  22.24  n/a    0.000
*
    CHIC STORM                10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB STANDHYD      0302  1  2.0    2.50    0.23  1.33  21.41 0.46    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.23    0.64  1.33  21.99  n/a    0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.23    0.60  1.37  21.98  n/a    0.000
*
    CHIC STORM                10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB STANDHYD      3031  1  2.0    4.43    0.46  1.33  24.64 0.53    0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    0.50  1.33  18.74  n/a    0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    0.50  1.33  15.24  n/a    0.000
*
    ADD [  0202+  0501] 0202  3  2.0   22.50    1.08  1.37  17.71  n/a    0.000
*
    CHANNEL[ 2:  0202]  0502  1  2.0   22.50    1.08  1.37  17.71  n/a    0.000
*
    CHIC STORM                10.0
    [ Ptot= 46.41 mm ]
*
  * CALIB STANDHYD      0304  1  2.0    0.97    0.04  1.33  12.32 0.27    0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502] 0203  3  2.0   23.47    1.11  1.37  17.48  n/a    0.000
*
==========================================================================================================

       V    V   I    SSSSS  U   U    A    L               (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\4b86eb24-2
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\bc02864a-fabc-46fa-ba70-c6bb43779d00\4b86eb24-2

DATE: 05-04-2021                           TIME: 05:34:14

USER:

COMMENTS: ____________________________________________________________

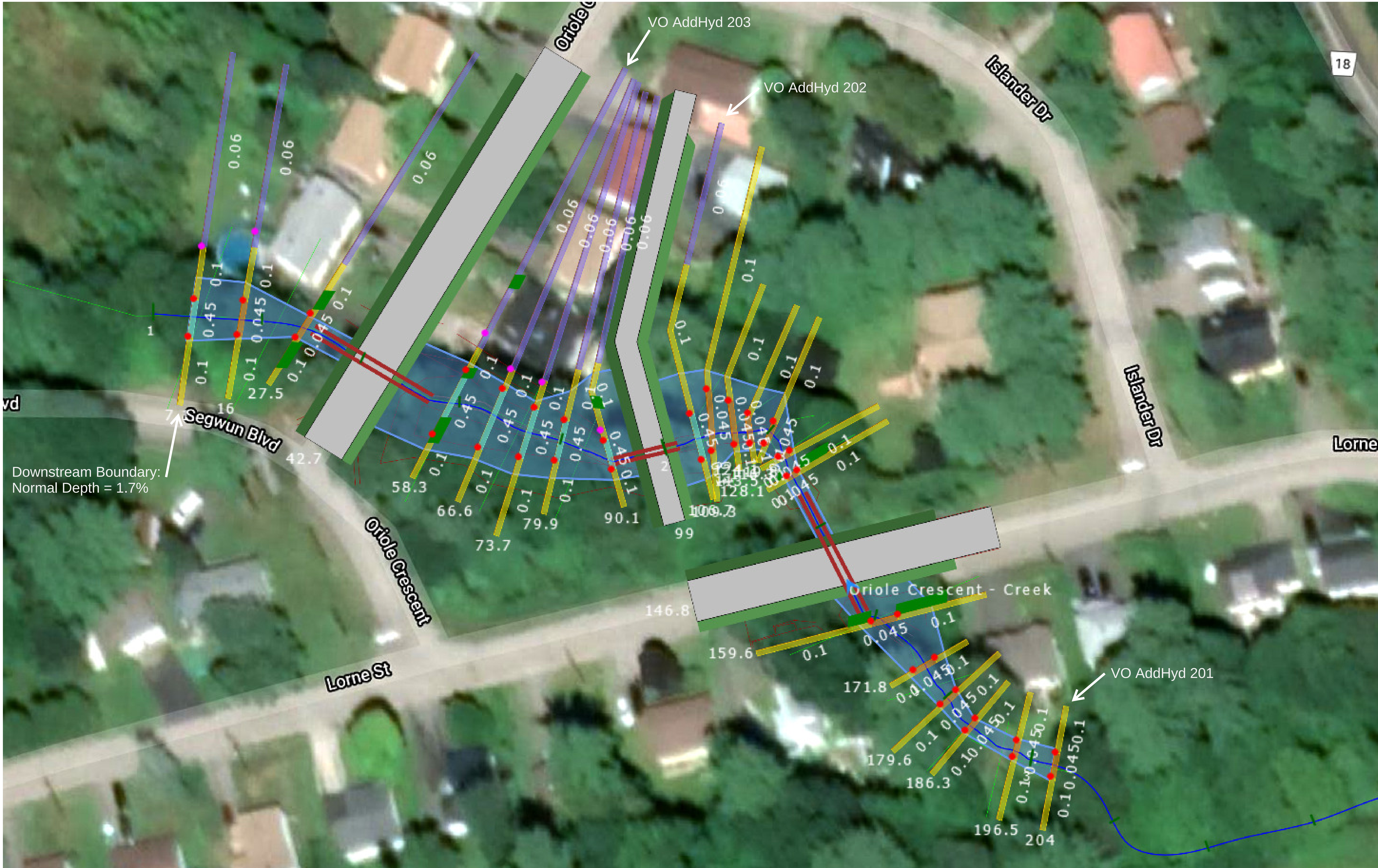
  ************************************************
  ** SIMULATION : Timmins                       **
```

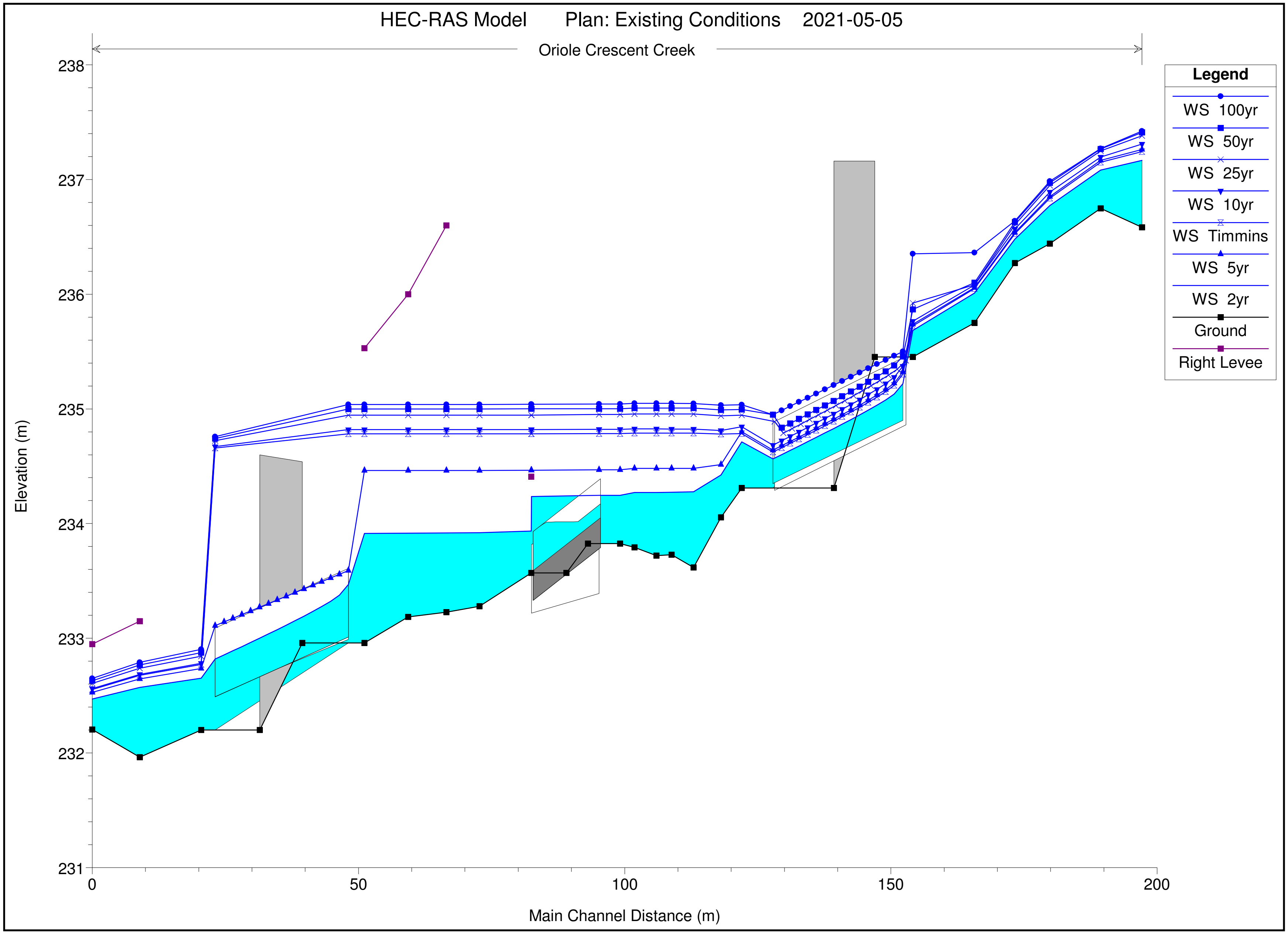
```
  ************************************************

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

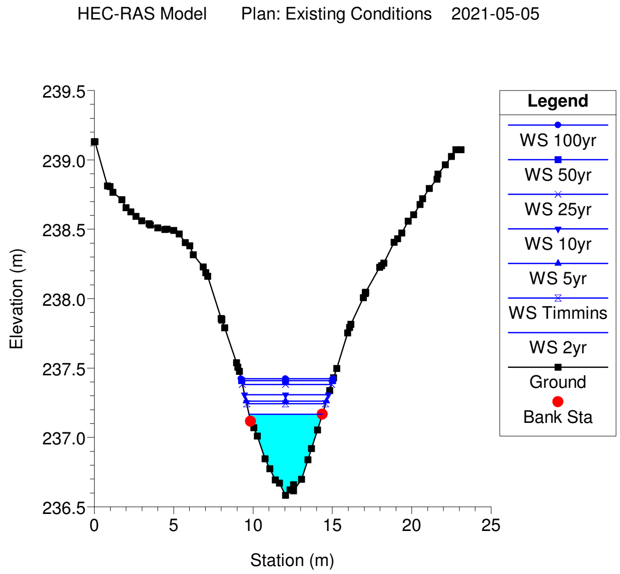
      START @  0.00 hrs
      --------------------
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
 ** CALIB NASHYD        3033  1  2.0    5.79    0.38  7.37 104.45 0.58    0.000
    [CN=68.5         ]
    [ N = 3.0:Tp 0.67]
*
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
 ** CALIB NASHYD        3032  1  2.0    4.06    0.36  7.03 113.85 0.63    0.000
    [CN=72.8         ]
    [ N = 3.0:Tp 0.27]
*
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
 ** CALIB STANDHYD      0301  1  2.0    5.73    0.56  7.00 134.78 0.74    0.000
    [I%=27.8:S%= 2.00]
*
    DUHYD               0401  1  2.0    5.73    0.56  7.00 134.78  n/a    0.000
       MAJOR SYSTEM:    0401  2  2.0    0.00    0.00  0.00   0.00  n/a    0.000
       MINOR SYSTEM:    0401  3  2.0    5.73    0.56  7.00 134.78  n/a    0.000
*
    PIPE    [ 2:  0401] 0601  1  2.0    5.73    0.56  7.00 134.78  n/a    0.000
*
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
 ** CALIB STANDHYD      0302  1  2.0    2.50    0.24  7.00 130.19 0.72    0.000
    [I%=30.5:S%= 2.00]
*
    ADD [  0302+  0601] 0201  3  2.0    8.23    0.80  7.00 133.39  n/a    0.000
*
    CHANNEL[ 2:  0201]  0501  1  2.0    8.23    0.79  7.00 133.38  n/a    0.000
*
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
 ** CALIB STANDHYD      3031  1  2.0    4.43    0.45  7.00 139.89 0.77    0.000
    [I%=35.0:S%= 2.00]
*
    ADD [  3031+  3032] 0202  3  2.0    8.48    0.81  7.00 127.44  n/a    0.000
*
    ADD [  0202+  3033] 0202  1  2.0   14.27    1.14  7.00 118.11  n/a    0.000
*
    ADD [  0202+  0501] 0202  3  2.0   22.50    1.93  7.00 123.70  n/a    0.000
*
    CHANNEL[ 2:  0202]  0502  1  2.0   22.50    1.93  7.03 123.70  n/a    0.000
*
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\247ff696-f278-4249-912f-3e1ac05bebec\753cc3e2-682d-4bb1-93a2-
    remark: Timmins
*
  * CALIB STANDHYD      0304  1  2.0    0.97    0.08  7.00 103.45 0.57    0.000
    [I%=12.9:S%= 2.00]
*
    ADD [  0304+  0502] 0203  3  2.0   23.47    2.00  7.03 122.86  n/a    0.000
*
 FINISH

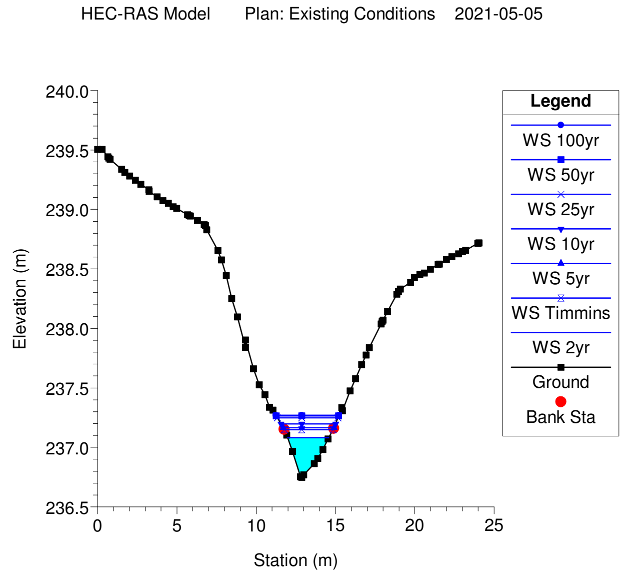
==========================================================================================================
```

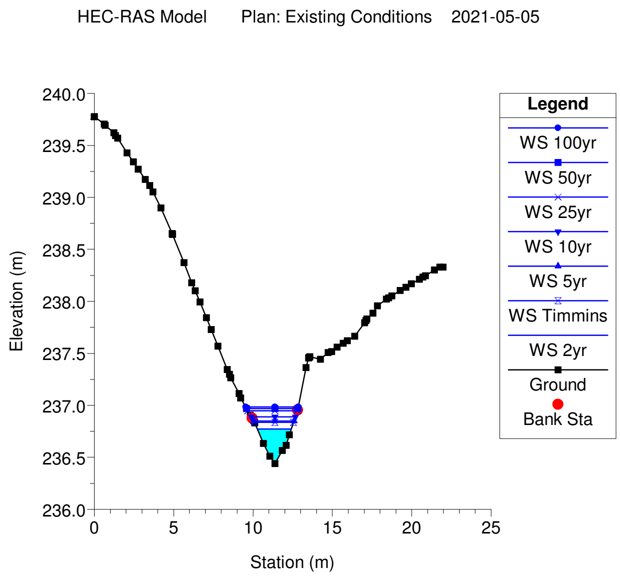

VO AddHyd 203
VO AddHyd 202
VO AddHyd 201
Downstream Boundary:
Normal Depth = 1.7%
Oriole Crescent - Creek
Segwun Blvd
Oriole Crescent
Lorne St
Islander Dr
18
1
7
16
27.5
42.7
58.3
66.6
73.7
79.9
90.1
99
128.1
146.8
159.6
171.8
179.6
186.3
196.5
204

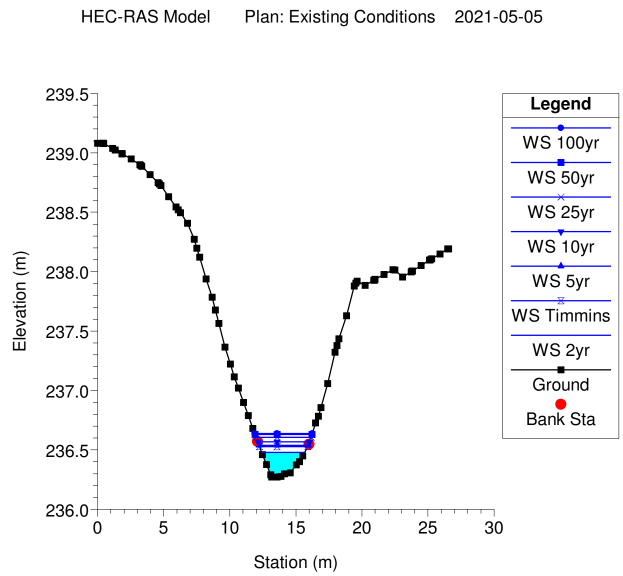


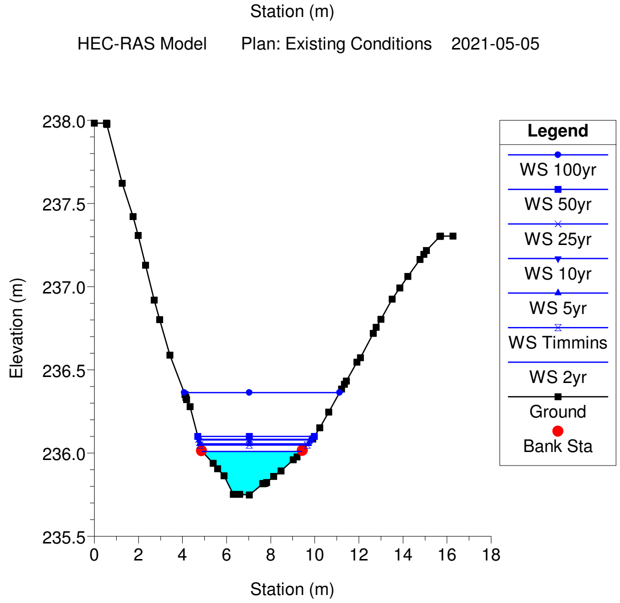
HEC-RAS Model Plan: Existing Conditions 2021-05-05
Oriole Crescent Creek
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS Timmins
WS 5yr
WS 2yr
Ground
Right Levee
Elevation (m)
238
237
236
235
234
233
232
231
0
50
100
150
200
Main Channel Distance (m)


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
239.5
239.0
238.5
238.0
237.5
237.0
236.5
0 5 10 15 20 25
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
240.0
239.5
239.0
238.5
238.0
237.5
237.0
236.5
0 5 10 15 20 25
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
240.0
239.5
239.0
238.5
238.0
237.5
237.0
236.5
236.0
0 5 10 15 20 25
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
239.5
239.0
238.5
238.0
237.5
237.0
236.5
236.0
0 5 10 15 20 25 30
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
238.0
237.5
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236.5
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235.5
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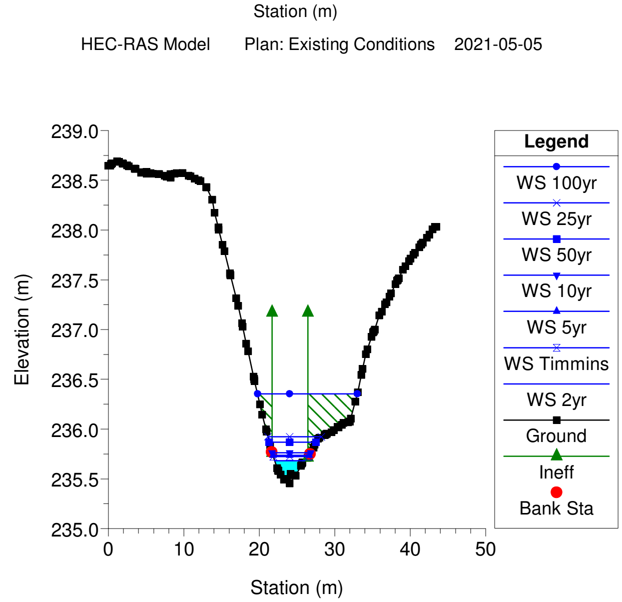
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
239.0
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235.5
235.0
0 10 20 30 40 50
Legend
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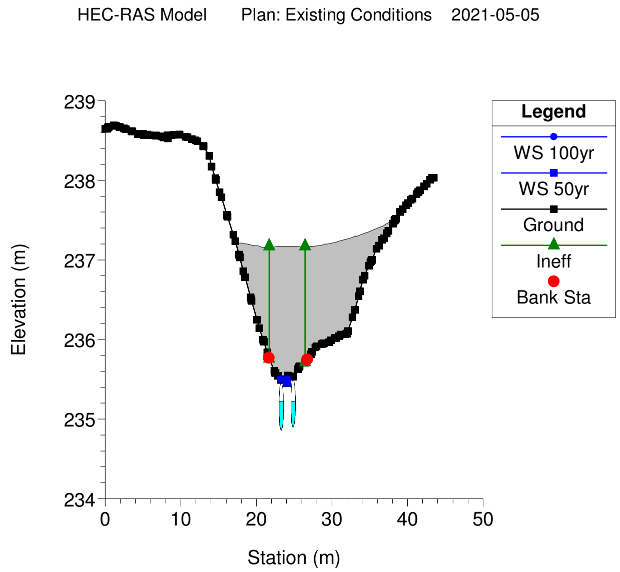
WS 25yr
WS 50yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Ineff
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
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238
237
236
235
234
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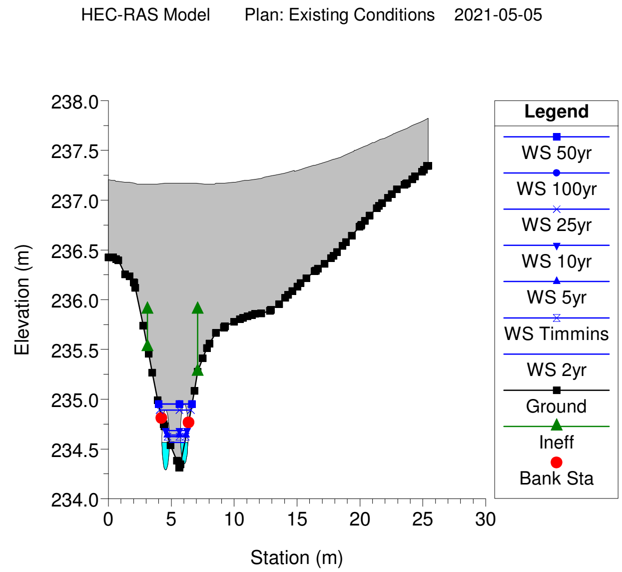
10
20
30
40
50


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 50yr
WS 100yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
238.0
237.5
237.0
236.5
236.0
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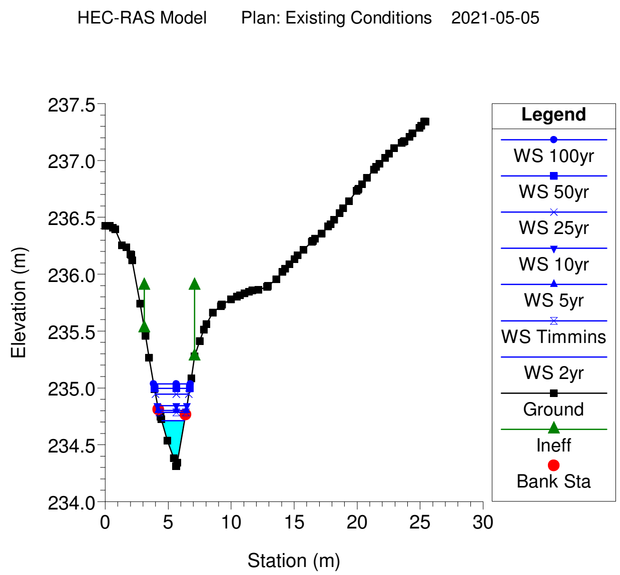
235.0
234.5
234.0
0
5
10
15
20
25
30


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS Timmins
WS 2yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
237.5
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5
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15
20
25
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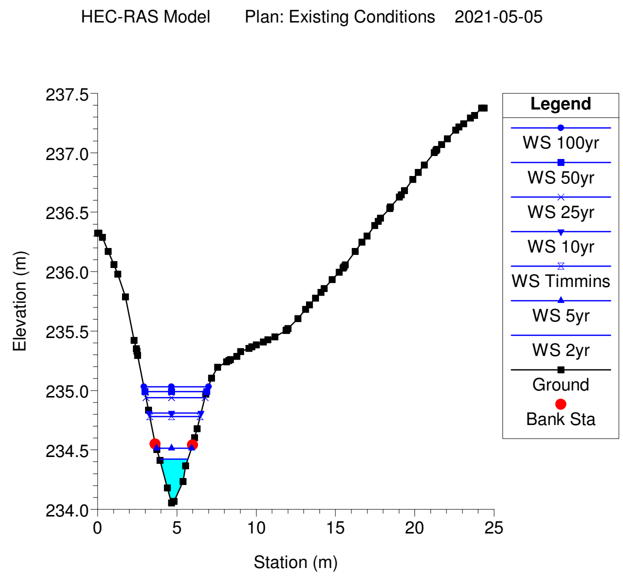
HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS Timmins
WS 5yr
WS 2yr
Ground
Bank Sta
Elevation (m)
Station (m)
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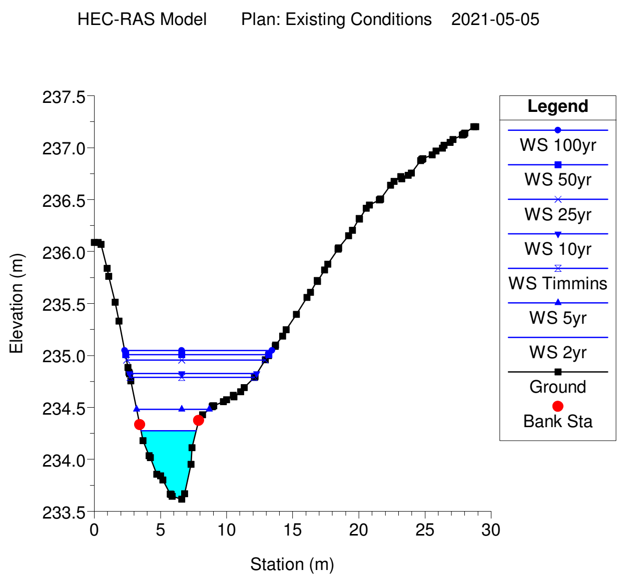
234.0
0
5
10
15
20
25


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS Timmins
WS 5yr
WS 2yr
Ground
Bank Sta
Elevation (m)
Station (m)
237.5
237.0
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236.0
235.5
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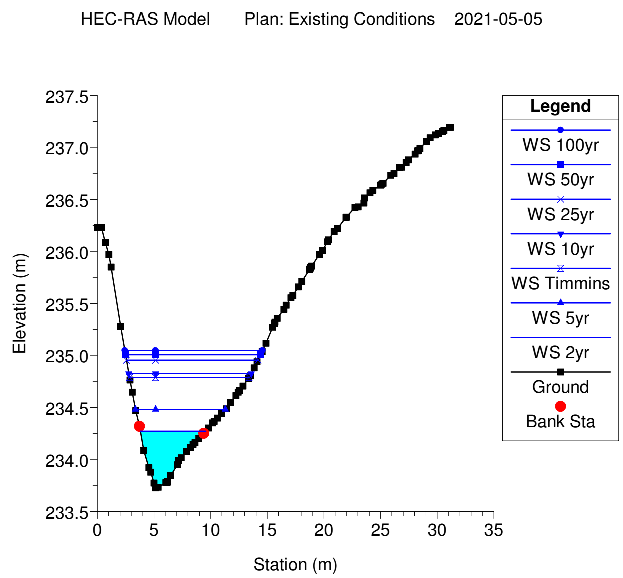
234.0
233.5
0
5
10
15
20
25
30


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS Timmins
WS 5yr
WS 2yr
Ground
Bank Sta
Elevation (m)
Station (m)
237.5
237.0
236.5
236.0
235.5
235.0
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233.5
0
5
10
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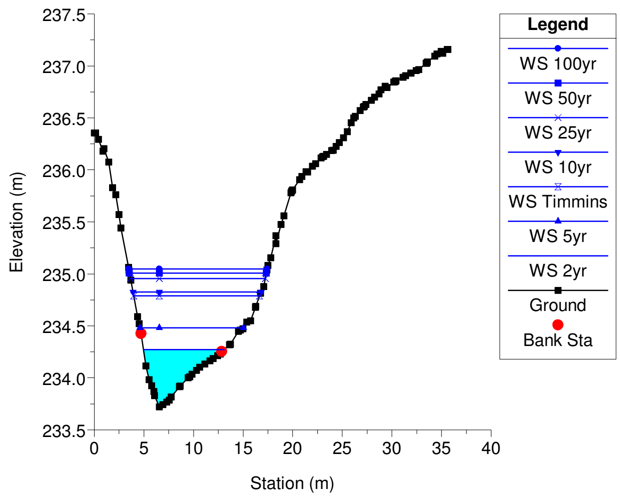
20
25
30
35

HEC-RAS Model Plan: Existing Conditions 2021-05-05



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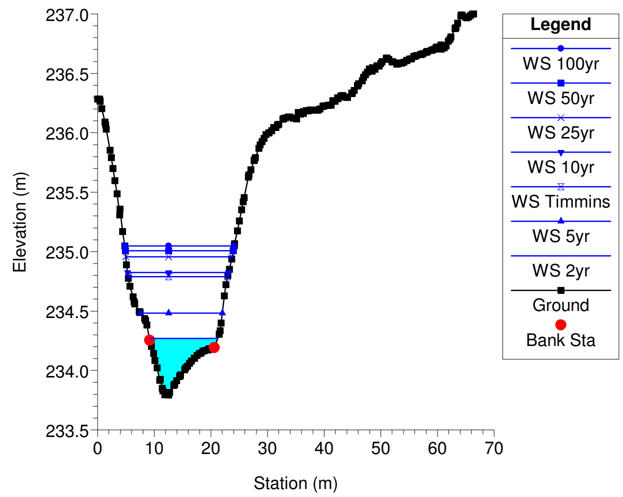

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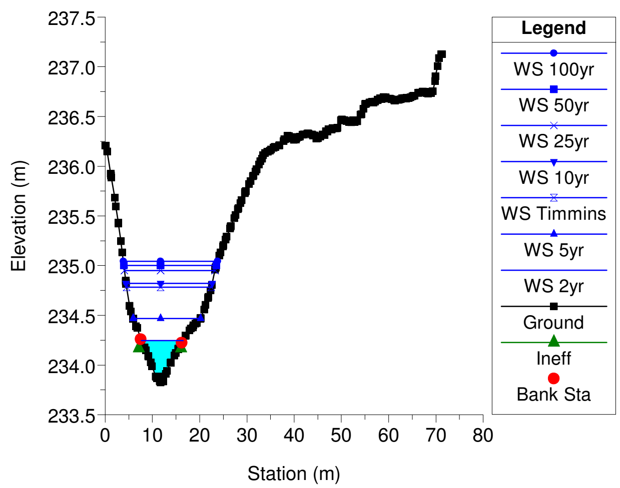
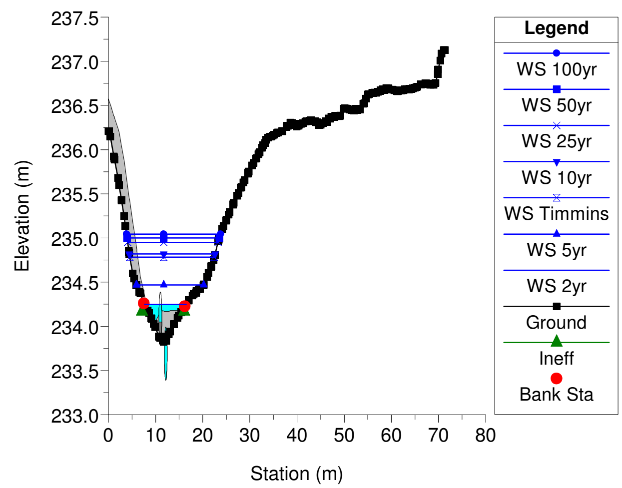
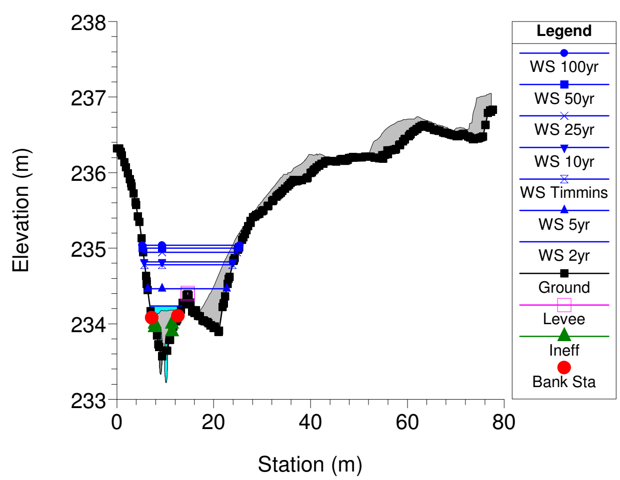


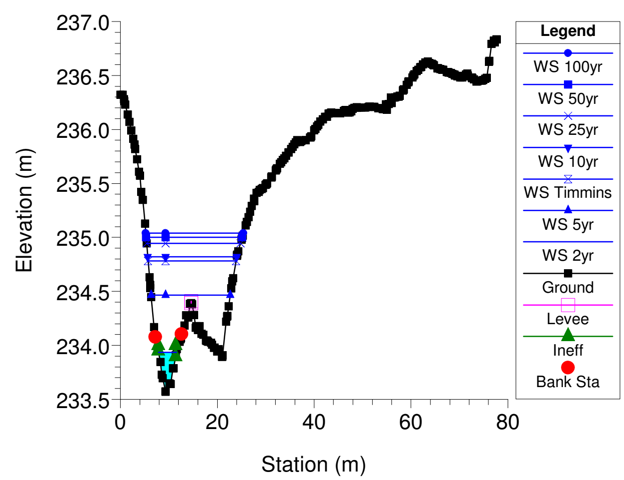
HEC-RAS Model Plan: Existing Conditions 2021-05-05



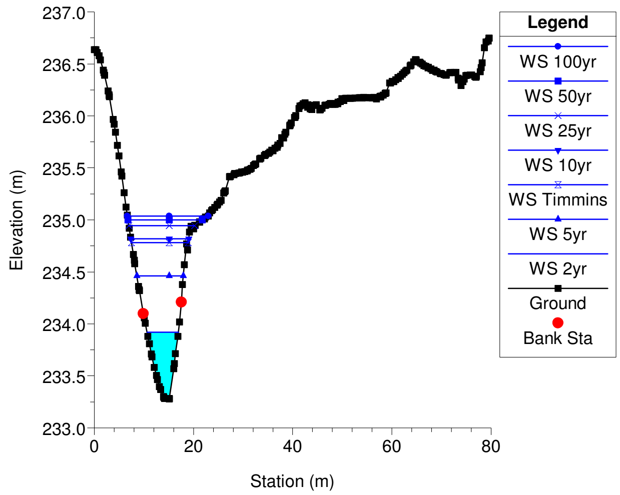
HEC-RAS Model Plan: Existing Conditions 2021-05-05



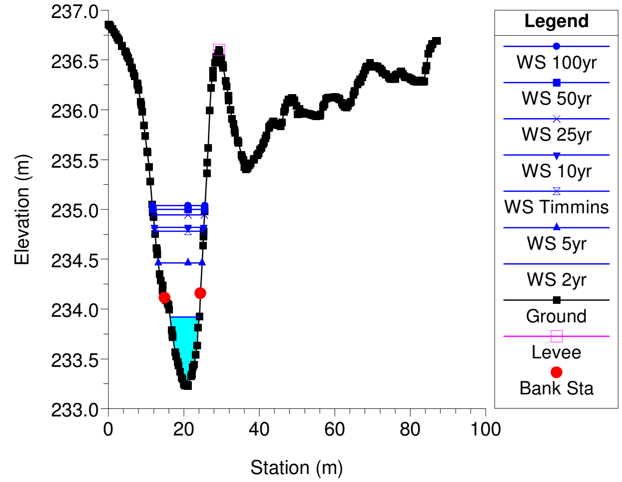
HEC-RAS Model Plan: Existing Conditions 2021-05-05



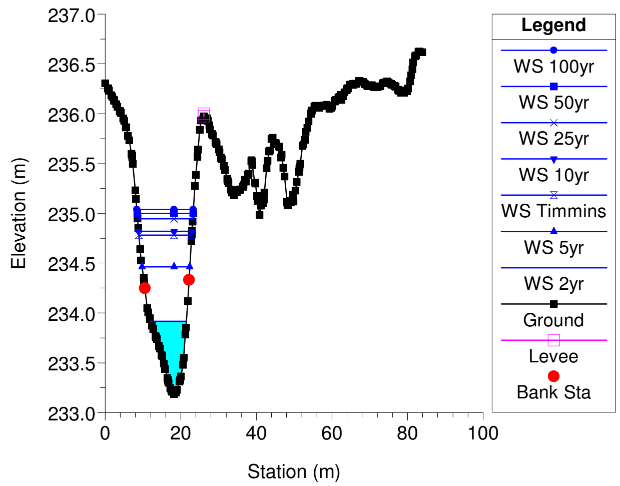
HEC-RAS Model Plan: Existing Conditions 2021-05-05



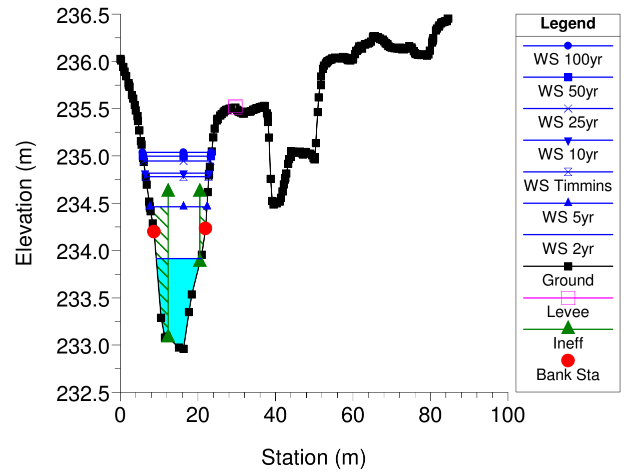
HEC-RAS Model Plan: Existing Conditions 2021-05-05



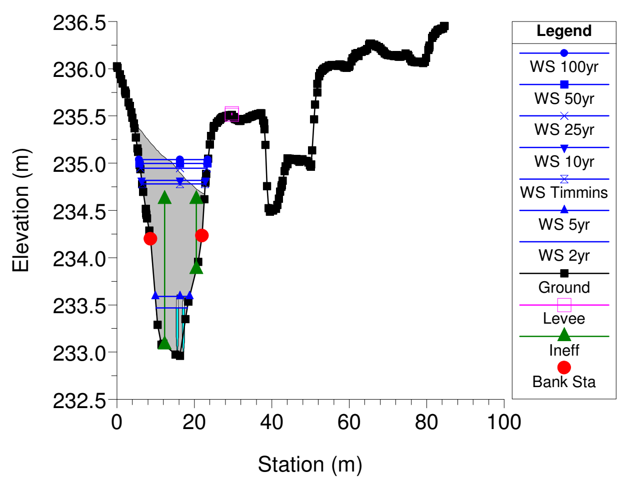
HEC-RAS Model Plan: Existing Conditions 2021-05-05



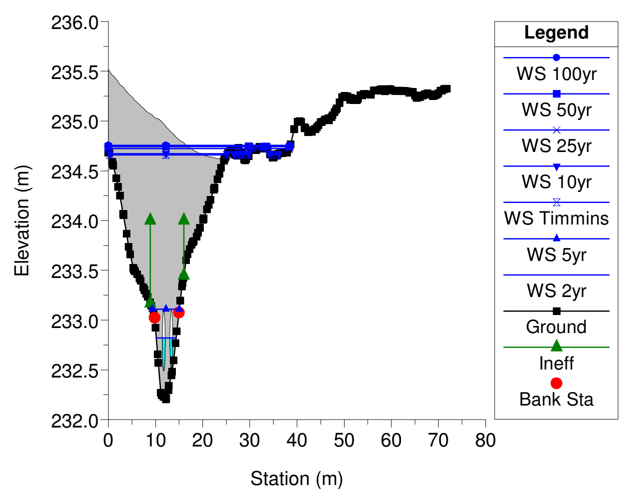
HEC-RAS Model Plan: Existing Conditions 2021-05-05



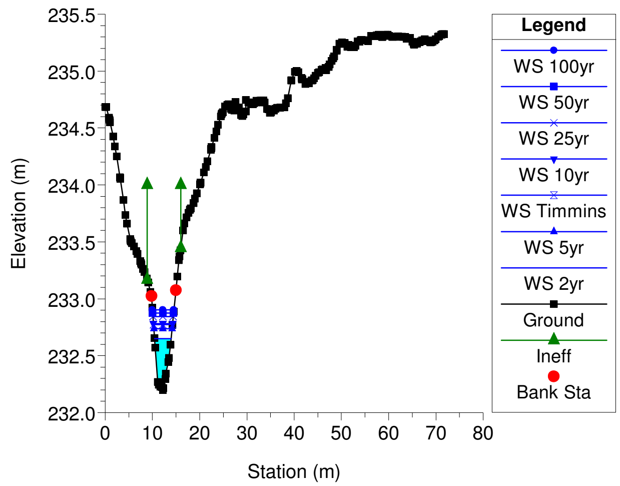
HEC-RAS Model Plan: Existing Conditions 2021-05-05



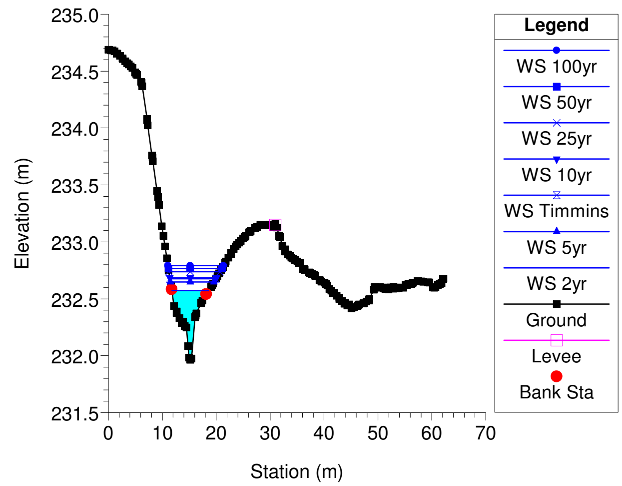
HEC-RAS Model Plan: Existing Conditions 2021-05-05



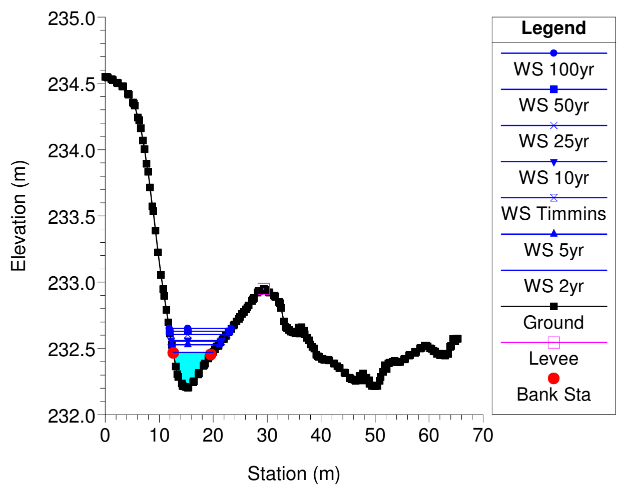
HEC-RAS Model Plan: Existing Conditions 2021-05-05



HEC-RAS Model Plan: Existing Conditions 2021-05-05



HEC-RAS Model Plan: Existing Conditions 2021-05-05



HEC-RAS Plan: Existing Conditions River: Oriole Crescent Reach: Creek

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Creek	204	2yr	0.53	236.58	237.17		237.17	0.000961	0.33	1.60	4.61	0.18
Creek	204	5yr	0.87	236.58	237.26		237.27	0.001159	0.43	2.06	5.06	0.21
Creek	204	10yr	1.08	236.58	237.31		237.32	0.001281	0.48	2.30	5.28	0.22
Creek	204	25yr	1.45	236.58	237.38		237.40	0.001442	0.56	2.70	5.62	0.24
Creek	204	50yr	1.61	236.58	237.41		237.43	0.001502	0.59	2.86	5.75	0.25
Creek	204	100yr	1.69	236.58	237.42		237.44	0.001529	0.61	2.93	5.81	0.25
Creek	204	Timmins	0.80	236.58	237.24		237.25	0.001114	0.41	1.96	4.97	0.20
Creek	196.5	2yr	0.53	236.75	237.08		237.15	0.024846	1.11	0.48	2.59	0.82
Creek	196.5	5yr	0.87	236.75	237.17		237.24	0.022262	1.21	0.72	3.21	0.81
Creek	196.5	10yr	1.08	236.75	237.20	237.17	237.29	0.022582	1.33	0.82	3.43	0.83
Creek	196.5	25yr	1.45	236.75	237.25	237.22	237.36	0.021837	1.48	1.01	3.82	0.84
Creek	196.5	50yr	1.61	236.75	237.27	237.24	237.39	0.022506	1.55	1.08	3.94	0.86
Creek	196.5	100yr	1.69	236.75	237.27	237.25	237.40	0.023607	1.60	1.10	3.97	0.89
Creek	196.5	Timmins	0.80	236.75	237.15		237.22	0.023122	1.19	0.67	3.07	0.82
Creek	186.3	2yr	0.53	236.44	236.77	236.77	236.87	0.036858	1.34	0.40	2.14	1.00
Creek	186.3	5yr	0.87	236.44	236.85	236.85	236.97	0.035999	1.52	0.58	2.54	1.02
Creek	186.3	10yr	1.08	236.44	236.89	236.89	237.02	0.034697	1.59	0.68	2.79	1.01
Creek	186.3	25yr	1.45	236.44	236.95	236.95	237.10	0.032439	1.71	0.86	3.14	1.01
Creek	186.3	50yr	1.61	236.44	236.97	236.97	237.13	0.031605	1.77	0.93	3.24	1.00
Creek	186.3	100yr	1.69	236.44	236.99	236.99	237.14	0.029788	1.77	0.97	3.32	0.98
Creek	186.3	Timmins	0.80	236.44	236.84	236.84	236.95	0.035111	1.47	0.54	2.46	1.00
Creek	179.6	2yr	0.53	236.27	236.48	236.48	236.55	0.038913	1.17	0.46	3.26	1.00
Creek	179.6	5yr	0.87	236.27	236.54	236.54	236.63	0.036438	1.32	0.66	3.74	1.00
Creek	179.6	10yr	1.08	236.27	236.57	236.57	236.67	0.034363	1.40	0.78	3.94	1.00
Creek	179.6	25yr	1.45	236.27	236.60	236.60	236.73	0.035412	1.58	0.93	4.16	1.04
Creek	179.6	50yr	1.61	236.27	236.63	236.63	236.76	0.031344	1.59	1.03	4.31	0.99
Creek	179.6	100yr	1.69	236.27	236.64	236.64	236.77	0.030505	1.60	1.07	4.36	0.99
Creek	179.6	Timmins	0.80	236.27	236.53	236.53	236.61	0.036366	1.29	0.62	3.65	1.00
Creek	171.8	2yr	0.53	235.75	236.01	235.96	236.04	0.016603	0.80	0.67	4.50	0.66
Creek	171.8	5yr	0.87	235.75	236.06		236.11	0.017938	0.99	0.89	4.93	0.72
Creek	171.8	10yr	1.08	235.75	236.08		236.14	0.018954	1.10	1.01	5.13	0.75
Creek	171.8	25yr	1.45	235.75	236.08	236.08	236.19	0.032279	1.44	1.02	5.16	0.98
Creek	171.8	50yr	1.61	235.75	236.10	236.10	236.21	0.030290	1.48	1.12	5.29	0.97
Creek	171.8	100yr	1.69	235.75	236.36		236.39	0.002588	0.71	2.73	7.05	0.32
Creek	171.8	Timmins	0.80	235.75	236.05		236.09	0.017035	0.94	0.85	4.86	0.70
Creek	159.6	2yr	0.53	235.45	235.68	235.68	235.74	0.040424	1.09	0.49	3.98	0.99
Creek	159.6	5yr	0.87	235.45	235.74	235.74	235.81	0.035789	1.21	0.73	4.82	0.97
Creek	159.6	10yr	1.08	235.45	235.76	235.76	235.85	0.033184	1.27	0.85	5.14	0.96
Creek	159.6	25yr	1.45	235.45	235.92	235.80	235.96	0.007184	0.90	1.61	7.06	0.50
Creek	159.6	50yr	1.61	235.45	235.87	235.81	235.94	0.016025	1.20	1.34	6.18	0.72
Creek	159.6	100yr	1.69	235.45	236.35	235.82	236.36	0.000630	0.46	3.65	13.22	0.17
Creek	159.6	Timmins	0.80	235.45	235.72	235.72	235.80	0.039300	1.20	0.66	4.65	1.01
Creek	146.8		Culvert									
Creek	128.1	2yr	0.53	234.31	234.71	234.71	234.82	0.037157	1.42	0.38	1.80	0.99
Creek	128.1	5yr	0.87	234.31	234.80	234.80	234.93	0.034978	1.58	0.55	2.19	0.99
Creek	128.1	10yr	1.08	234.31	234.84	234.84	234.99	0.032599	1.68	0.65	2.33	0.98
Creek	128.1	25yr	1.45	234.31	234.95	234.91	235.09	0.021832	1.67	0.90	2.64	0.84
Creek	128.1	50yr	1.61	234.31	235.00	234.93	235.13	0.017993	1.64	1.04	2.79	0.78
Creek	128.1	100yr	1.69	234.31	235.04	234.94	235.16	0.014699	1.57	1.15	2.92	0.72
Creek	128.1	Timmins	0.80	234.31	234.79	234.78	234.91	0.035004	1.54	0.52	2.11	0.99
Creek	124.1	2yr	0.53	234.05	234.42	234.42	234.53	0.037474	1.43	0.37	1.78	1.00
Creek	124.1	5yr	0.87	234.05	234.51	234.51	234.64	0.035725	1.57	0.56	2.22	1.00
Creek	124.1	10yr	1.08	234.05	234.81		234.85	0.003829	0.85	1.38	3.28	0.37
Creek	124.1	25yr	1.45	234.05	234.94		234.98	0.003229	0.90	1.83	3.72	0.35
Creek	124.1	50yr	1.61	234.05	234.99		235.03	0.003057	0.92	2.02	3.91	0.35
Creek	124.1	100yr	1.69	234.05	235.03		235.07	0.002748	0.91	2.19	4.08	0.33
Creek	124.1	Timmins	0.80	234.05	234.78		234.80	0.002549	0.67	1.28	3.17	0.30
Creek	119.8	2yr	0.53	233.62	234.28		234.28	0.000672	0.31	1.75	4.18	0.15
Creek	119.8	5yr	0.87	233.62	234.48		234.49	0.000489	0.33	2.70	5.49	0.14
Creek	119.8	10yr	1.08	233.62	234.82		234.83	0.000149	0.25	5.40	9.63	0.08
Creek	119.8	25yr	1.45	233.62	234.96		234.96	0.000163	0.28	6.71	10.46	0.09
Creek	119.8	50yr	1.61	233.62	235.01		235.01	0.000168	0.29	7.26	10.84	0.09
Creek	119.8	100yr	1.69	233.62	235.05		235.05	0.000161	0.29	7.71	11.15	0.09
Creek	119.8	Timmins	0.80	233.62	234.79		234.79	0.000093	0.19	5.05	9.38	0.06

HEC-RAS Plan: Existing Conditions River: Oriole Crescent Reach: Creek (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Creek	116.3	2yr	0.53	233.73	234.27		234.28	0.001076	0.32	1.67	5.78	0.19
Creek	116.3	5yr	0.87	233.73	234.48		234.49	0.000482	0.30	3.10	7.94	0.14
Creek	116.3	10yr	1.08	233.73	234.82		234.83	0.000117	0.21	6.33	10.80	0.07
Creek	116.3	25yr	1.45	233.73	234.96		234.96	0.000124	0.24	7.79	11.61	0.08
Creek	116.3	50yr	1.61	233.73	235.01		235.01	0.000126	0.25	8.40	11.92	0.08
Creek	116.3	100yr	1.69	233.73	235.05		235.05	0.000120	0.25	8.89	12.17	0.08
Creek	116.3	Timmins	0.80	233.73	234.79		234.79	0.000074	0.16	5.94	10.55	0.06
Creek	113.5	2yr	0.53	233.72	234.27		234.27	0.000638	0.24	2.23	8.11	0.14
Creek	113.5	5yr	0.87	233.72	234.48		234.48	0.000269	0.22	4.17	10.45	0.10
Creek	113.5	10yr	1.08	233.72	234.83		234.83	0.000063	0.15	8.24	12.92	0.05
Creek	113.5	25yr	1.45	233.72	234.96		234.96	0.000067	0.17	9.98	13.60	0.06
Creek	113.5	50yr	1.61	233.72	235.01		235.01	0.000069	0.18	10.68	13.81	0.06
Creek	113.5	100yr	1.69	233.72	235.05		235.05	0.000065	0.18	11.26	13.97	0.06
Creek	113.5	Timmins	0.80	233.72	234.79		234.79	0.000040	0.12	7.77	12.69	0.04
Creek	109.3	2yr	0.53	233.79	234.27		234.27	0.000499	0.19	2.79	12.07	0.12
Creek	109.3	5yr	0.87	233.79	234.48		234.48	0.000162	0.17	5.56	14.43	0.08
Creek	109.3	10yr	1.08	233.79	234.83		234.83	0.000035	0.11	11.18	17.83	0.04
Creek	109.3	25yr	1.45	233.79	234.96		234.96	0.000037	0.13	13.58	18.75	0.04
Creek	109.3	50yr	1.61	233.79	235.01		235.01	0.000037	0.13	14.55	19.07	0.04
Creek	109.3	100yr	1.69	233.79	235.05		235.05	0.000036	0.13	15.34	19.32	0.04
Creek	109.3	Timmins	0.80	233.79	234.79		234.79	0.000022	0.09	10.53	17.55	0.03
Creek	106.7	2yr	0.99	233.82	234.25	234.09	234.26	0.004061	0.52	1.92	8.85	0.35
Creek	106.7	5yr	1.64	233.82	234.47	234.16	234.48	0.001052	0.41	4.43	14.28	0.20
Creek	106.7	10yr	2.04	233.82	234.82	234.20	234.82	0.000191	0.26	10.23	18.20	0.09
Creek	106.7	25yr	2.69	233.82	234.95	234.24	234.96	0.000191	0.29	12.66	19.15	0.10
Creek	106.7	50yr	3.07	233.82	235.00	234.26	235.01	0.000204	0.31	13.64	19.57	0.10
Creek	106.7	100yr	3.41	233.82	235.04	234.28	235.05	0.000216	0.33	14.44	19.93	0.10
Creek	106.7	Timmins	1.93	233.82	234.78	234.17	234.79	0.000206	0.26	9.56	17.91	0.10
Creek	99		Culvert									
Creek	90.1	2yr	0.99	233.57	233.94	233.91	234.02	0.024862	1.26	0.79	3.68	0.86
Creek	90.1	5yr	1.64	233.57	234.47	234.00	234.47	0.000483	0.36	7.06	16.35	0.14
Creek	90.1	10yr	2.04	233.57	234.82	234.05	234.82	0.000135	0.26	13.23	18.38	0.08
Creek	90.1	25yr	2.69	233.57	234.95	234.10	234.95	0.000152	0.29	15.60	19.39	0.09
Creek	90.1	50yr	3.07	233.57	235.00	234.14	235.00	0.000166	0.32	16.67	19.84	0.09
Creek	90.1	100yr	3.41	233.57	235.04	234.16	235.04	0.000180	0.34	17.46	20.18	0.10
Creek	90.1	Timmins	1.93	233.57	234.78	234.04	234.79	0.000141	0.25	12.54	18.16	0.08
Creek	79.9	2yr	0.99	233.28	233.92		233.93	0.001103	0.39	2.53	6.33	0.20
Creek	79.9	5yr	1.64	233.28	234.46		234.47	0.000163	0.25	6.81	9.36	0.09
Creek	79.9	10yr	2.04	233.28	234.82		234.82	0.000075	0.21	10.54	11.70	0.06
Creek	79.9	25yr	2.69	233.28	234.95		234.95	0.000094	0.25	12.07	13.23	0.07
Creek	79.9	50yr	3.07	233.28	235.00		235.00	0.000106	0.28	12.83	14.96	0.08
Creek	79.9	100yr	3.41	233.28	235.04		235.04	0.000118	0.30	13.44	16.29	0.08
Creek	79.9	Timmins	1.93	233.28	234.78		234.78	0.000076	0.21	10.10	11.48	0.06
Creek	73.7	2yr	0.99	233.23	233.92	233.49	233.92	0.000479	0.28	3.52	7.78	0.13
Creek	73.7	5yr	1.64	233.23	234.46	233.57	234.46	0.000090	0.19	8.87	11.57	0.06
Creek	73.7	10yr	2.04	233.23	234.82	233.60	234.82	0.000044	0.17	13.28	13.09	0.05
Creek	73.7	25yr	2.69	233.23	234.95	233.66	234.95	0.000055	0.20	14.96	13.60	0.05
Creek	73.7	50yr	3.07	233.23	235.00	233.68	235.00	0.000063	0.22	15.69	13.79	0.06
Creek	73.7	100yr	3.41	233.23	235.04	233.70	235.04	0.000071	0.24	16.24	13.93	0.06
Creek	73.7	Timmins	1.93	233.23	234.78	233.59	234.78	0.000044	0.16	12.79	12.94	0.05
Creek	66.6	2yr	0.99	233.19	233.92	233.46	233.92	0.000396	0.25	4.02	9.45	0.12
Creek	66.6	5yr	1.64	233.19	234.46	233.52	234.46	0.000068	0.16	10.17	12.62	0.06
Creek	66.6	10yr	2.04	233.19	234.82	233.56	234.82	0.000032	0.14	14.96	14.15	0.04
Creek	66.6	25yr	2.69	233.19	234.95	233.61	234.95	0.000041	0.17	16.77	14.60	0.05
Creek	66.6	50yr	3.07	233.19	235.00	233.64	235.00	0.000046	0.19	17.56	14.81	0.05
Creek	66.6	100yr	3.41	233.19	235.04	233.67	235.04	0.000052	0.20	18.15	14.96	0.05
Creek	66.6	Timmins	1.93	233.19	234.78	233.55	234.78	0.000032	0.14	14.43	14.00	0.04
Creek	58.3	2yr	1.02	232.96	233.91	233.18	233.92	0.000122	0.19	5.47	11.47	0.07
Creek	58.3	5yr	1.67	232.96	234.46	233.26	234.46	0.000045	0.17	9.96	14.77	0.05
Creek	58.3	10yr	2.10	232.96	234.82	233.29	234.82	0.000016	0.11	20.07	16.49	0.03
Creek	58.3	25yr	2.78	232.96	234.95	233.35	234.95	0.000020	0.13	22.18	17.24	0.03
Creek	58.3	50yr	3.17	232.96	235.00	233.38	235.00	0.000024	0.15	23.12	17.58	0.04
Creek	58.3	100yr	3.53	232.96	235.04	233.40	235.04	0.000027	0.16	23.82	17.81	0.04
Creek	58.3	Timmins	2.00	232.96	234.78	233.28	234.78	0.000015	0.11	19.45	16.25	0.03

HEC-RAS Plan: Existing Conditions River: Oriole Crescent Reach: Creek (Continued)

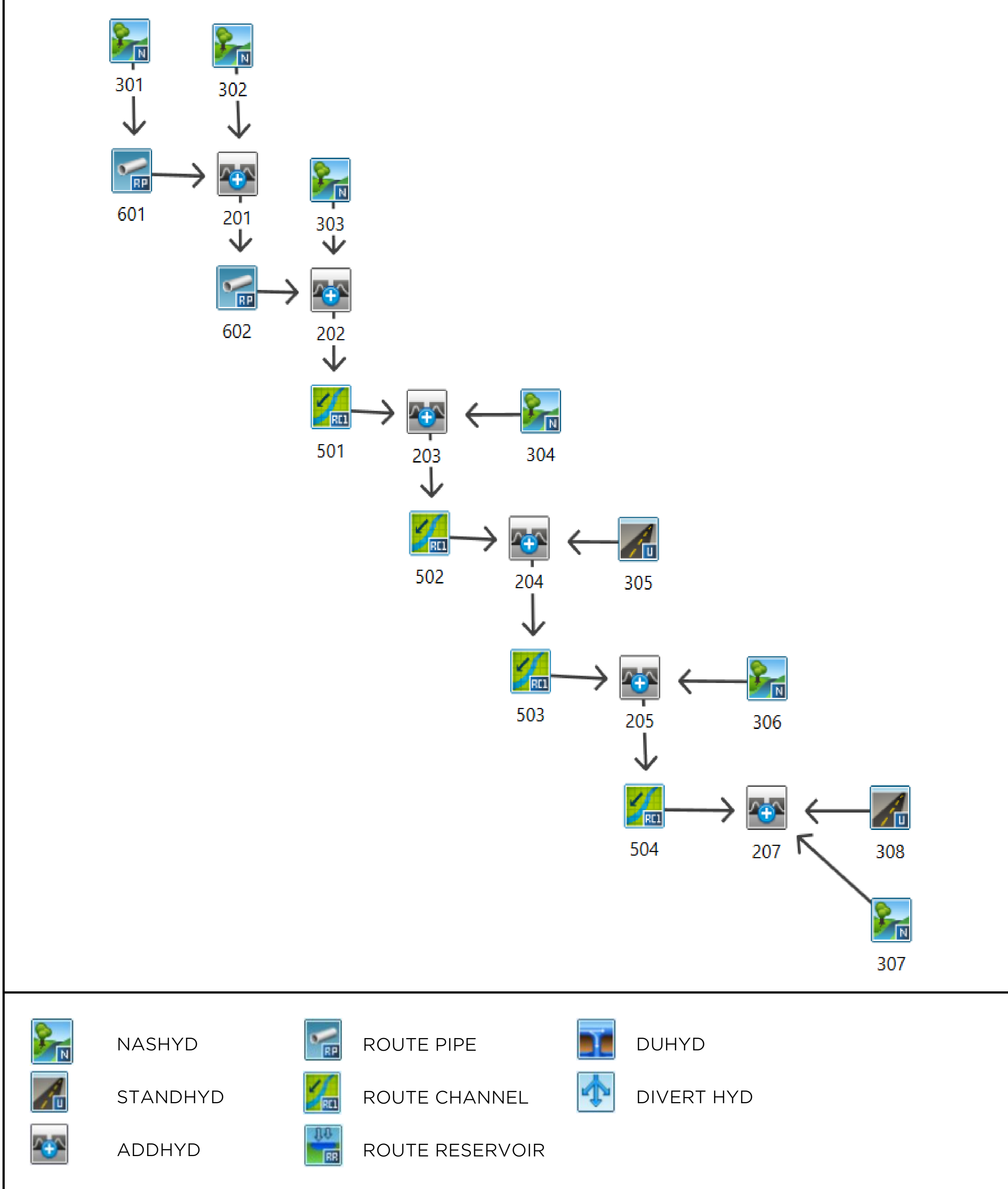
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Creek	42.7		Culvert									
Creek	27.5	2yr	1.02	232.20	232.65	232.54	232.70	0.010283	0.97	1.04	3.51	0.57
Creek	27.5	5yr	1.67	232.20	232.74	232.64	232.81	0.013249	1.23	1.36	3.88	0.66
Creek	27.5	10yr	2.10	232.20	232.78	232.69	232.88	0.014735	1.36	1.54	4.07	0.71
Creek	27.5	25yr	2.78	232.20	232.84	232.76	232.97	0.016670	1.54	1.80	4.30	0.76
Creek	27.5	50yr	3.17	232.20	232.88	232.80	233.01	0.017649	1.63	1.94	4.42	0.79
Creek	27.5	100yr	3.53	232.20	232.90	232.83	233.05	0.018542	1.71	2.06	4.54	0.81
Creek	27.5	Timmins	2.00	232.20	232.77	232.67	232.86	0.014443	1.33	1.50	4.04	0.70
Creek	16	2yr	1.02	231.96	232.57	232.42	232.59	0.005367	0.63	1.61	6.79	0.40
Creek	16	5yr	1.67	231.96	232.65	232.50	232.68	0.006079	0.80	2.16	8.08	0.45
Creek	16	10yr	2.10	231.96	232.69	232.54	232.73	0.006488	0.89	2.49	8.68	0.47
Creek	16	25yr	2.78	231.96	232.74	232.59	232.79	0.007023	1.02	2.98	9.51	0.50
Creek	16	50yr	3.17	231.96	232.77	232.62	232.82	0.007293	1.08	3.24	9.94	0.52
Creek	16	100yr	3.53	231.96	232.79	232.65	232.85	0.007526	1.14	3.49	10.32	0.53
Creek	16	Timmins	2.00	231.96	232.68	232.54	232.71	0.006437	0.87	2.41	8.54	0.47
Creek	7.1	2yr	1.02	232.20	232.47	232.43	232.51	0.016552	0.87	1.17	7.37	0.68
Creek	7.1	5yr	1.67	232.20	232.53	232.48	232.59	0.016563	1.06	1.64	8.78	0.71
Creek	7.1	10yr	2.10	232.20	232.56	232.52	232.63	0.016558	1.16	1.93	9.39	0.73
Creek	7.1	25yr	2.78	232.20	232.61	232.56	232.69	0.016557	1.29	2.38	10.53	0.75
Creek	7.1	50yr	3.17	232.20	232.63	232.58	232.72	0.016558	1.35	2.63	11.08	0.76
Creek	7.1	100yr	3.53	232.20	232.65	232.61	232.75	0.016558	1.41	2.87	11.54	0.76
Creek	7.1	Timmins	2.00	232.20	232.55	232.51	232.62	0.016560	1.13	1.86	9.24	0.72

HEC-RAS Plan: Existing Conditions   River: Oriole Crescent   Reach: Creek

Reach	River Sta	Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m)	(m/s)	(m/s)
Creek	146.8 Culvert #1	2yr	235.48	235.68	235.37	235.46	237.16	0.24		0.97	1.59	2.68
Creek	146.8 Culvert #2	2yr	235.48	235.68	235.38	235.49	237.16	0.29		0.97	1.69	2.92
Creek	146.8 Culvert #1	5yr	235.70	235.74	235.53	235.69	237.16	0.41		0.93	1.95	3.06
Creek	146.8 Culvert #2	5yr	235.70	235.74	235.56	235.71	237.16	0.46		0.93	2.05	3.16
Creek	146.8 Culvert #1	10yr	235.84	235.76	235.66	235.83	237.16	0.52		0.92	2.18	3.22
Creek	146.8 Culvert #2	10yr	235.84	235.76	235.65	235.85	237.16	0.56		0.92	2.28	3.31
Creek	146.8 Culvert #1	25yr	235.97	235.92	235.75	235.97	237.16	0.62		0.98	2.41	3.34
Creek	146.8 Culvert #2	25yr	235.97	235.92	235.96	236.32	237.16	0.84		0.98	3.04	2.96
Creek	146.8 Culvert #1	50yr	235.94	235.87	235.96	236.29	237.16	0.80		0.87	2.93	2.83
Creek	146.8 Culvert #2	50yr	235.94	235.87	235.93	236.26	237.16	0.81		0.87	2.96	2.86
Creek	146.8 Culvert #1	100yr	236.36	236.35	236.01	236.36	237.16	0.84		1.32	2.98	2.98
Creek	146.8 Culvert #2	100yr	236.36	236.35	235.98	236.37	237.16	0.85		1.32	2.99	2.99
Creek	146.8 Culvert #1	Timmins	235.65	235.72	235.50	235.64	237.16	0.38		0.94	1.87	2.99
Creek	146.8 Culvert #2	Timmins	235.65	235.72	235.50	235.66	237.16	0.42		0.94	1.96	3.10
Creek	99 Culvert #1	2yr	234.26	234.25	234.08	234.26	234.04	0.46	0.45	0.31	1.62	1.62
Creek	99 Culvert #2	2yr	234.26	234.25	234.28	234.29	234.04	0.08	0.45	0.31	1.11	0.49
Creek	99 Culvert #1	5yr	234.48	234.47	233.66	234.48	234.04	0.09	1.52	0.00	0.32	0.32
Creek	99 Culvert #2	5yr	234.48	234.47	234.17	234.47	234.04	0.02	1.52	0.00	0.15	0.15
Creek	99 Culvert #1	10yr	234.82	234.82	233.54	234.82	234.04	0.03	1.99	0.00	0.11	0.11
Creek	99 Culvert #2	10yr	234.82	234.82	234.13	234.82	234.04	0.01	1.99	0.00	0.08	0.08
Creek	99 Culvert #1	25yr	234.96	234.95	233.63	234.95	234.04	0.07	2.59	0.01	0.25	0.25
Creek	99 Culvert #2	25yr	234.96	234.95	234.19	234.96	234.04	0.03	2.59	0.01	0.19	0.19
Creek	99 Culvert #1	50yr	235.01	235.00	233.57	235.01	234.04	0.04	3.01	0.00	0.15	0.15
Creek	99 Culvert #2	50yr	235.01	235.00	234.15	235.01	234.04	0.02	3.01	0.00	0.12	0.12
Creek	99 Culvert #1	100yr	235.05	235.04	233.59	235.05	234.04	0.05	3.34	0.00	0.18	0.18
Creek	99 Culvert #2	100yr	235.05	235.04	234.16	235.05	234.04	0.02	3.34	0.00	0.14	0.14
Creek	99 Culvert #1	Timmins	234.79	234.78	233.57	234.79	234.04	0.04	1.87	0.00	0.16	0.16
Creek	99 Culvert #2	Timmins	234.79	234.78	234.15	234.79	234.04	0.02	1.87	0.00	0.11	0.11
Creek	42.7 Culvert #1	2yr	233.92	233.91	233.75	233.93	234.68	0.52		1.26	2.19	3.06
Creek	42.7 Culvert #2	2yr	233.92	233.91	233.74	233.90	234.68	0.49		1.26	2.12	3.10
Creek	42.7 Culvert #1	5yr	234.46	234.46	234.13	234.51	234.68	0.86		1.72	3.06	3.06
Creek	42.7 Culvert #2	5yr	234.46	234.46	234.08	234.41	234.68	0.81		1.72	2.95	3.45
Creek	42.7 Culvert #1	10yr	234.82	234.82	234.26	234.82	234.68	0.96	0.18	2.04	3.38	3.38
Creek	42.7 Culvert #2	10yr	234.82	234.82	234.29	234.82	234.68	0.96	0.18	2.04	3.40	3.40
Creek	42.7 Culvert #1	25yr	234.95	234.95	234.32	234.95	234.68	0.99	0.79	2.10	3.50	3.50
Creek	42.7 Culvert #2	25yr	234.95	234.95	234.35	234.95	234.68	1.00	0.79	2.10	3.52	3.52
Creek	42.7 Culvert #1	50yr	235.00	235.00	234.34	235.00	234.68	1.00	1.15	2.12	3.55	3.55
Creek	42.7 Culvert #2	50yr	235.00	235.00	234.37	235.00	234.68	1.01	1.15	2.12	3.57	3.57
Creek	42.7 Culvert #1	100yr	235.04	235.04	234.36	235.04	234.68	1.01	1.48	2.14	3.59	3.59
Creek	42.7 Culvert #2	100yr	235.04	235.04	234.39	235.04	234.68	1.02	1.48	2.14	3.61	3.61
Creek	42.7 Culvert #1	Timmins	234.78	234.78	234.25	234.78	234.68	0.94	0.11	2.01	3.34	3.34
Creek	42.7 Culvert #2	Timmins	234.78	234.78	234.28	234.78	234.68	0.95	0.11	2.01	3.36	3.36

Appendix F:
Musquash Road Analysis

Musquash Road Drainage Area



TATHAM ENGINEERING

PROJECT	Town of Gravenhurst Master Storm Sewer Report	FILE	220536
		DATE	May 2021
SUBJECT	Musquash Road Drainage Area Plan	NAME	AMT
		PAGE	2 OF 58

Musquash Road Drainage Area

PARAMETER	DESCRIPTION	CATCHMENT ID							
		301	302	303	304	305	306	307	308
TYPE	Hydrograph Type	NasHYD	NasHYD	NasHYD	NasHYD	StandHYD	NasHYD	NasHYD	StandHYD
AREA	Catchment Area (ha)	7.80	0.96	0.54	1.29	0.35	1.40	2.55	11.27
TIMP	Total Impervious Area (%)	10.3%	15.6%	16.7%	17.1%	45.7%	15.7%	11.8%	21.4%
XIMP	Directly Connected Impervious Area (%)	-	-	-	-	37.1%	-	-	15.1%
LOSS	Modified SCS CN Method	72.4	71.6	70.4	71.7	67.9	72.4	67.5	69.4
IA	Initial Abstraction (mm)	6.95	6.25	7.07	6.43	7.05	6.09	7.78	6.42
TP	Time to Peak (hr)	0.76	0.05	0.05	0.08	-	0.24	0.31	-
SLPP	Average Slope Pervious Area (%)	-	-	-	-	2.0%	-	-	2.0%
LGP	Overland Flow Length Pervious Area (m)	-	-	-	-	40	-	-	40
MNP	Manning's Roughness Coefficient (Pervious)	-	-	-	-	0.25	-	-	0.25
DPSI	Depression Storage Impervious Area (mm)	-	-	-	-	2.00	-	-	2.00
SLPI	Average Slope Impervious Area (%)	-	-	-	-	2.0%	-	-	1.1%
LGI	Impervious Overland Flow Length (m)	-	-	-	-	48.3	-	-	274.1
MNI	Manning's Roughness Coefficient (Impervious	-	-	-	-	0.013	-	-	0.013

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	301
Catchment Area (ha):	7.80
Impervious %:	10%

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

Soil Symbol		**Bl**											
Soil Series		Bondhead											
Hydrologic Soils Group		B											
Soil Texture		Loam or Silt Loam											
Runoff Coefficient Type		2											
Area (ha)		7.80											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.80	100	0.95									
Gravel	3	2.06	89	0.27									
Woodland	10	4.35	60	0.25									
Pasture/Lawns	5	0.59	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		72.44											
Average C		0.33											
Average IA		6.95											

Time to Peak Calculations

Max. Catchment Elev. (m):	237.68
Min. Catchment Elev. (m):	233.30
Catchment Length (m):	602.45
Catchment Slope (%):	0.73%
Method: Airport Method	
Time of Concentration (mins)	68.65

Summary

Catchment CN:	72.4
Catchment C:	0.33
Catchment IA (mm):	6.95
Time of Concentration (hrs):	1.14
Catchment Time to Peak (hrs):	0.76
Catchment Time Step (mins):	9.15

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	302
Catchment Area (ha):	0.96
Impervious %:	16%

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

Soil Symbol		BI												
Soil Series		Bondhead												
Hydrologic Soils Group		B												
Soil Texture		Loam or Silt Loam												
Runoff Coefficient Type		2												
Area (ha)		0.96												
Percentage of Catchment		100%												
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.15	100	0.95									
Gravel	3	0.05	89	0.33									
Woodland	10	0.35	60	0.30									
Pasture/Lawns	5	0.41	69	0.35									
Meadows	8		65	0.33									
Cultivated	7		74	0.45									
Waterbody	12		50	0.05									
Average CN		71.60											
Average C		0.42											
Average IA		6.25											

Time to Peak Calculations

Max. Catchment Elev. (m):	239.88
Min. Catchment Elev. (m):	233.13
Catchment Length (m):	110.47
Catchment Slope (%):	6.11%
Method: Bransby-Williams Formula	
Time of Concentration (mins)	4.40

Summary

Catchment CN:	71.6
Catchment C:	0.42
Catchment IA (mm):	6.25
Time of Concentration (hrs):	0.07
Catchment Time to Peak (hrs):	0.05
Catchment Time Step (mins):	0.59

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	303
Catchment Area (ha):	0.54
Impervious %:	17%

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

Soil Symbol		**BI**												
Soil Series		Bondhead												
Hydrologic Soils Group		B												
Soil Texture		Loam or Silt Loam												
Runoff Coefficient Type		2												
Area (ha)		0.54												
Percentage of Catchment		100%												
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.09	100	0.95									
Gravel	3	0.03	89	0.38									
Woodland	10	0.29	60	0.35									
Pasture/Lawns	5	0.13	69	0.40									
Meadows	8		65	0.38									
Cultivated	7		74	0.65									
Waterbody	12		50	0.05									
Average CN		70.44											
Average C		0.46											
Average IA		7.07											

Time to Peak Calculations

Max. Catchment Elev. (m):	248.14
Min. Catchment Elev. (m):	230.58
Catchment Length (m):	121.10
Catchment Slope (%):	14.50%
Method: Bransby-Williams Formula	
Time of Concentration (mins)	4.30

Summary

Catchment CN:	70.4
Catchment C:	0.46
Catchment IA (mm):	7.07
Time of Concentration (hrs):	0.07
Catchment Time to Peak (hrs):	0.05
Catchment Time Step (mins):	0.57

Visual OTTHYMO Model Parameter Calculations (NasHYD)

TATHAM ENGINEERING

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario,
MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	304
Catchment Area (ha):	1.29
Impervious %:	17%

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

Soil Symbol		**Bl**											
Soil Series		Bondhead											
Hydrologic Soils Group		B											
Soil Texture		Loam or Silt Loam											
Runoff Coefficient Type		2											
Area (ha)		1.29											
Percentage of Catchment		100%											
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.22	100	0.95									
Gravel	3	0.07	89	0.33									
Woodland	10	0.53	60	0.30									
Pasture/Lawns	5	0.47	69	0.35									
Meadows	8		65	0.33									
Cultivated	7		74	0.45									
Waterbody	12		50	0.05									
Average CN		71.67											
Average C		0.43											
Average IA		6.43											

Time to Peak Calculations

Max. Catchment Elev. (m):	240.74
Min. Catchment Elev. (m):	229.26
Catchment Length (m):	185.80
Catchment Slope (%):	6.18%
Method: Bransby-Williams Formula	
Time of Concentration (mins)	7.17

Summary

Catchment CN:	71.7
Catchment C:	0.43
Catchment IA (mm):	6.43
Time of Concentration (hrs):	0.12
Catchment Time to Peak (hrs):	0.08
Catchment Time Step (mins):	0.96

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 26, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	305
Catchment Area (ha):	0.35
Impervious %:	46%
Pervious Area (ha):	0.19

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**BI**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		0.19							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	0.03	89						
Woodland	10	0.09	60						
Pasture/Lawns	5	0.07	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		67.89							
Average IA		7.05							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	67.9
Catchment IA (mm):	7.05

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	306
Catchment Area (ha):	1.40
Impervious %:	16%

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

Soil Symbol		**BI**												
Soil Series		Bondhead												
Hydrologic Soils Group		B												
Soil Texture		Loam or Silt Loam												
Runoff Coefficient Type		2												
Area (ha)		1.40												
Percentage of Catchment		100%												
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.22	100	0.95									
Gravel	3	0.11	89	0.27									
Woodland	10	0.48	60	0.25									
Pasture/Lawns	5	0.59	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		72.36											
Average C		0.37											
Average IA		6.09											

Time to Peak Calculations

Max. Catchment Elev. (m):	239.47
Min. Catchment Elev. (m):	227.91
Catchment Length (m):	236.04
Catchment Slope (%):	4.90%
Method: Airport Method	
Time of Concentration (mins)	21.53

Summary

Catchment CN:	72.4
Catchment C:	0.37
Catchment IA (mm):	6.09
Time of Concentration (hrs):	0.36
Catchment Time to Peak (hrs):	0.24
Catchment Time Step (mins):	2.87

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (NasHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 25, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	307
Catchment Area (ha):	2.55
Impervious %:	12%

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

Soil Symbol		**BI**												
Soil Series		Bondhead												
Hydrologic Soils Group		B												
Soil Texture		Loam or Silt Loam												
Runoff Coefficient Type		2												
Area (ha)		2.55												
Percentage of Catchment		100%												
Land Cover Category	**IA**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**	**A (ha)**	**CN**	**C**
Impervious	2	0.30	100	0.95									
Gravel	3	0.08	89	0.27									
Woodland	10	1.63	60	0.25									
Pasture/Lawns	5	0.54	69	0.28									
Meadows	8		65	0.27									
Cultivated	7		74	0.35									
Waterbody	12		50	0.05									
Average CN		67.52											
Average C		0.34											
Average IA		7.78											

Time to Peak Calculations

Max. Catchment Elev. (m):	236.29
Min. Catchment Elev. (m):	225.94
Catchment Length (m):	287.42
Catchment Slope (%):	3.60%
Method: Airport Method	
Time of Concentration (mins)	27.55

Summary

Catchment CN:	67.5
Catchment C:	0.34
Catchment IA (mm):	7.78
Time of Concentration (hrs):	0.46
Catchment Time to Peak (hrs):	0.31
Catchment Time Step (mins):	3.67

TATHAM ENGINEERING

Visual OTTHYMO Model Parameter Calculations (StandHYD)

Project Details

Gravenhurst Drainage Issues	220536

Prepared By

Andrew Trevers	Feb 26, 2021

Data Sources

Detailed Soil Survey Reports for Ontario, MTO Drainage Management Manual (1997)

Pre-Development Condition

Watershed:	Not within CA
Catchment ID:	308
Catchment Area (ha):	11.27
Impervious %:	21%
Pervious Area (ha):	8.86

Average Curve Number (CN) and Initial Abstraction (IA) for Pervious Area

Soil Symbol		**Bl**							
Soil Series		Bondhead							
Hydrologic Soils Group		B							
Soil Texture		Loam or Silt Loam							
Runoff Coefficient Type		2							
Area (ha)		8.86							
Percentage of Catchment		100%							
Land Cover Category	**IA**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**	**A (ha)**	**CN**
Impervious	2		100						
Gravel	3	1.58	89						
Woodland	10	3.15	60						
Pasture/Lawns	5	4.13	69						
Meadows	8		65						
Cultivated	7		74						
Waterbody	12		50						
Average CN		69.37							
Average IA		6.42							

Notes

CN and IA values have been calculated for the pervious area of the catchment only.

Summary

Catchment CN:	69.4
Catchment IA (mm):	6.42

```
=========================================================================================================
      V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
      V    V   I    SS     U    U   A A   L
       V  V    I     SS    U    U  AAAAA  L
       V  V    I       SS  U    U  A   A  L
        VV     I    SSSSS  UUUUU  A    A  LLLLL

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

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

Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
Output filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\871c5942-d
Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\871c5942-d

DATE: 05-20-2021   TIME: 02:42:12

USER:

COMMENTS: ____

```
*************************************************
** SIMULATION : 100yr 24hr 15min SCS (2010)   **
*************************************************
```

```
--------------------
|    READ STORM    |    Filename: C:\Users\ATrevers\AppD
|                  |              ata\Local\Temp\
|                  |              f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb
| Ptotal=124.80 mm |    Comments: 100yr 24hr 15min SCS
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	6.50	2.25	12.75	17.97	19.00	2.25
0.50	1.37	6.75	2.25	13.00	9.24	19.25	2.25
0.75	1.37	7.00	2.25	13.25	9.24	19.50	2.25
1.00	1.37	7.25	2.25	13.50	6.74	19.75	2.25
1.25	1.37	7.50	2.75	13.75	6.74	20.00	2.25
1.50	1.37	7.75	2.75	14.00	5.24	20.25	2.25
1.75	1.37	8.00	2.75	14.25	5.24	20.50	1.50
2.00	1.37	8.25	2.75	14.50	3.74	20.75	1.50
2.25	1.37	8.50	3.24	14.75	3.74	21.00	1.50
2.50	1.62	8.75	3.24	15.00	3.74	21.25	1.50
2.75	1.62	9.00	3.49	15.25	3.74	21.50	1.50
3.00	1.62	9.25	3.49	15.50	3.74	21.75	1.50
3.25	1.62	9.50	3.99	15.75	3.74	22.00	1.50
3.50	1.62	9.75	3.99	16.00	3.74	22.25	1.50
3.75	1.62	10.00	4.49	16.25	3.74	22.50	1.50
4.00	1.62	10.25	4.49	16.50	2.25	22.75	1.50
4.25	1.62	10.50	5.74	16.75	2.25	23.00	1.50
4.50	2.00	10.75	5.74	17.00	2.25	23.25	1.50
4.75	2.00	11.00	7.74	17.25	2.25	23.50	1.50
5.00	2.00	11.25	7.74	17.50	2.25	23.75	1.50
5.25	2.00	11.50	11.98	17.75	2.25	24.00	1.50
5.50	2.00	11.75	11.98	18.00	2.25	24.25	1.50
5.75	2.00	12.00	36.94	18.25	2.25		
6.00	2.00	12.25	152.76	18.50	2.25		
6.25	2.00	12.50	17.97	18.75	2.25		

```
--------------------
| CALIB            |
| NASHYD  (  0301)|   Area    (ha)=   7.80   Curve Number   (CN)= 72.4
|ID= 1 DT= 2.0 min |   Ia      (mm)=   6.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.76
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50

2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
    Unit Hyd Qpeak  (cms)=   0.392

    PEAK FLOW       (cms)=   0.505 (i)
    TIME TO PEAK    (hrs)=  12.967
    RUNOFF VOLUME    (mm)=  64.694
    TOTAL RAINFALL   (mm)= 124.799
    RUNOFF COEFFICIENT   =   0.518

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

-------------------------------------------------------------------------------
--------------------
| ROUTEPIPE( 0601)|      PIPE Number      =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)= 400.00
| DT=  2.0 min     |     Length       (m)=  34.40
--------------------     Slope      (m/m)=  0.020
                         Manning n        =  0.024

    **** WARNING: MINIMUM PIPE SIZE REQUIRED =   616.07   (mm)FOR FREE FLOW.
                  THIS SIZE WAS USED IN THE ROUTING.
                  THE CAPACITY OF THIS PIPE  =     0.50  (cms)

    <----------------- TRAVEL TIME TABLE -------------------->
      DEPTH       VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
       (m)       (cu.m.)      (cms)       (m/s)         min
      0.03     .207E+00       0.0          0.45         1.27
      0.06     .575E+00       0.0          0.70         0.82
      0.10     .104E+01       0.0          0.90         0.63
      0.13     .157E+01       0.0          1.07         0.53
      0.16     .215E+01       0.1          1.22         0.47
      0.19     .278E+01       0.1          1.35         0.42
      0.23     .343E+01       0.1          1.47         0.39
      0.26     .410E+01       0.2          1.57         0.37
      0.29     .478E+01       0.2          1.65         0.35
      0.32     .547E+01       0.3          1.73         0.33
      0.36     .615E+01       0.3          1.79         0.32
      0.39     .683E+01       0.4          1.85         0.31
      0.42     .748E+01       0.4          1.89         0.30
      0.45     .810E+01       0.5          1.92         0.30
      0.49     .868E+01       0.5          1.93         0.30
      0.52     .922E+01       0.5          1.93         0.30
      0.55     .968E+01       0.5          1.91         0.30
      0.58     .100E+02       0.5          1.86         0.31
      0.62     .103E+02       0.5          1.69         0.34
                                  <---- hydrograph ---->   <-pipe / channel->
                           AREA    QPEAK   TPEAK   R.V.    MAX DEPTH  MAX VEL
                           (ha)    (cms)   (hrs)   (mm)       (m)      (m/s)
  INFLOW : ID= 2 (  0301)  7.80     0.50   12.97  64.69       0.51      1.93
  OUTFLOW: ID= 1 (  0601)  7.80     0.50   12.97  64.69       0.50      1.93


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--------------------
| CALIB              |
| NASHYD   (  0302)|   Area    (ha)=   0.96   Curve Number   (CN)= 71.6
|ID= 1 DT= 2.0 min |   Ia      (mm)=   6.25   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

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

                             ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
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0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50

2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50

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            5.633    2.00 |11.700   11.98 |17.767    2.25 | 23.83    1.50
            5.667    2.00 |11.733   11.98 |17.800    2.25 | 23.87    1.50
            5.700    2.00 |11.767   24.49 |17.833    2.25 | 23.90    1.50
            5.733    2.00 |11.800   36.94 |17.867    2.25 | 23.93    1.50
            5.767    2.00 |11.833   36.94 |17.900    2.25 | 23.97    1.50
            5.800    2.00 |11.867   36.94 |17.933    2.25 | 24.00    1.50
            5.833    2.00 |11.900   36.94 |17.967    2.25 | 24.03    1.50
            5.867    2.00 |11.933   36.94 |18.000    2.25 | 24.07    1.50
            5.900    2.00 |11.967   36.94 |18.033    2.25 | 24.10    1.50
            5.933    2.00 |12.000   37.10 |18.067    2.25 | 24.13    1.50
            5.967    2.00 |12.033  152.76 |18.100    2.25 | 24.17    1.50
            6.000    2.00 |12.067  152.76 |18.133    2.25 | 24.20    1.50
            6.033    2.00 |12.100  152.76 |18.167    2.25 | 24.23    1.50
            6.067    2.00 |12.133  152.76 |18.200    2.25 | 24.27    0.75

     Unit Hyd Qpeak  (cms)=   0.733

     PEAK FLOW       (cms)=   0.253 (i)
     TIME TO PEAK    (hrs)=  12.233
     RUNOFF VOLUME    (mm)=  63.351
     TOTAL RAINFALL   (mm)= 124.799
     RUNOFF COEFFICIENT   =   0.508

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

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

--------------------
| ADD HYD  (  0201)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0302):    0.96   0.253    12.23     63.35
      + ID2= 2 (  0601):    7.80   0.505    12.97     64.69
        ===============================================
        ID = 3 (  0201):    8.76   0.522    12.97     64.55

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0602)|     PIPE Number     =    1.00
| IN= 2---> OUT= 1 |     Diameter     (mm)= 450.00
| DT=  2.0 min     |     Length        (m)=  43.90
--------------------     Slope       (m/m)=  0.007
                         Manning n       =  0.024

     **** WARNING: MINIMUM PIPE SIZE REQUIRED =   759.79   (mm)FOR FREE FLOW.
                   THIS SIZE WAS USED IN THE ROUTING.
                   THE CAPACITY OF THIS PIPE  =     0.52  (cms)

     <----------------- TRAVEL TIME TABLE ------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
        0.04     .402E+00      0.0          0.31        2.39
        0.08     .112E+01      0.0          0.48        1.53
        0.12     .202E+01      0.0          0.61        1.19
        0.16     .305E+01      0.1          0.73        1.00
        0.20     .418E+01      0.1          0.83        0.88
        0.24     .539E+01      0.1          0.92        0.80
        0.28     .666E+01      0.2          1.00        0.73
        0.32     .796E+01      0.2          1.07        0.69
        0.36     .929E+01      0.2          1.13        0.65
        0.40     .106E+02      0.3          1.18        0.62
        0.44     .119E+02      0.3          1.22        0.60
        0.48     .132E+02      0.4          1.26        0.58
        0.52     .145E+02      0.4          1.28        0.57
        0.56     .157E+02      0.5          1.30        0.56
        0.60     .169E+02      0.5          1.31        0.56
        0.64     .179E+02      0.5          1.31        0.56
        0.68     .188E+02      0.6          1.30        0.56
        0.72     .195E+02      0.6          1.26        0.58
        0.76     .199E+02      0.5          1.15        0.63
                                  <---- hydrograph ---->    <-pipe / channel->
                            AREA    QPEAK   TPEAK   R.V.    MAX DEPTH   MAX VEL
                            (ha)    (cms)   (hrs)   (mm)       (m)       (m/s)
   INFLOW : ID= 2 (  0201)  8.76    0.52    12.97  64.55      0.62        1.31
   OUTFLOW: ID= 1 (  0602)  8.76    0.52    13.00  64.55      0.62        1.31


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0303)|   Area     (ha)=    0.54   Curve Number   (CN)= 70.4
|ID= 1 DT= 2.0 min |   Ia       (mm)=    7.07   # of Linear Res.(N)= 3.00
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--------------------   U.H. Tp(hrs)=   0.05

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

                          ---- TRANSFORMED HYETOGRAPH ----
           TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
            hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
          0.033     0.00 | 6.100     2.00 |12.167  152.76 | 18.23     2.25
          0.067     0.00 | 6.133     2.00 |12.200  152.76 | 18.27     2.25
          0.100     0.00 | 6.167     2.00 |12.233  152.76 | 18.30     2.25
          0.133     0.00 | 6.200     2.00 |12.267   85.16 | 18.33     2.25
          0.167     0.00 | 6.233     2.00 |12.300   17.97 | 18.37     2.25
          0.200     0.00 | 6.267     2.12 |12.333   17.97 | 18.40     2.25
          0.233     0.00 | 6.300     2.25 |12.367   17.97 | 18.43     2.25
          0.267     0.69 | 6.333     2.25 |12.400   17.97 | 18.47     2.25
          0.300     1.37 | 6.367     2.25 |12.433   17.97 | 18.50     2.25
          0.333     1.37 | 6.400     2.25 |12.467   17.97 | 18.53     2.25
          0.367     1.37 | 6.433     2.25 |12.500   17.97 | 18.57     2.25
          0.400     1.37 | 6.467     2.25 |12.533   17.97 | 18.60     2.25
          0.433     1.37 | 6.500     2.25 |12.567   17.97 | 18.63     2.25
          0.467     1.37 | 6.533     2.25 |12.600   17.97 | 18.67     2.25
          0.500     1.37 | 6.567     2.25 |12.633   17.97 | 18.70     2.25
          0.533     1.37 | 6.600     2.25 |12.667   17.97 | 18.73     2.25
          0.567     1.37 | 6.633     2.25 |12.700   17.97 | 18.77     2.25
          0.600     1.37 | 6.667     2.25 |12.733   17.97 | 18.80     2.25
          0.633     1.37 | 6.700     2.25 |12.767   13.59 | 18.83     2.25
          0.667     1.37 | 6.733     2.25 |12.800    9.24 | 18.87     2.25
          0.700     1.37 | 6.767     2.25 |12.833    9.24 | 18.90     2.25
          0.733     1.37 | 6.800     2.25 |12.867    9.24 | 18.93     2.25
          0.767     1.37 | 6.833     2.25 |12.900    9.24 | 18.97     2.25
          0.800     1.37 | 6.867     2.25 |12.933    9.24 | 19.00     2.25
          0.833     1.37 | 6.900     2.25 |12.967    9.24 | 19.03     2.25
          0.867     1.37 | 6.933     2.25 |13.000    9.24 | 19.07     2.25
          0.900     1.37 | 6.967     2.25 |13.033    9.24 | 19.10     2.25
          0.933     1.37 | 7.000     2.25 |13.067    9.24 | 19.13     2.25
          0.967     1.37 | 7.033     2.25 |13.100    9.24 | 19.17     2.25
          1.000     1.37 | 7.067     2.25 |13.133    9.24 | 19.20     2.25
          1.033     1.37 | 7.100     2.25 |13.167    9.24 | 19.23     2.25
          1.067     1.37 | 7.133     2.25 |13.200    9.24 | 19.27     2.25
          1.100     1.37 | 7.167     2.25 |13.233    9.24 | 19.30     2.25
          1.133     1.37 | 7.200     2.25 |13.267    7.98 | 19.33     2.25
          1.167     1.37 | 7.233     2.25 |13.300    6.74 | 19.37     2.25
          1.200     1.37 | 7.267     2.50 |13.333    6.74 | 19.40     2.25
          1.233     1.37 | 7.300     2.75 |13.367    6.74 | 19.43     2.25
          1.267     1.37 | 7.333     2.75 |13.400    6.74 | 19.47     2.25
          1.300     1.37 | 7.367     2.75 |13.433    6.74 | 19.50     2.25
          1.333     1.37 | 7.400     2.75 |13.467    6.74 | 19.53     2.25
          1.367     1.37 | 7.433     2.75 |13.500    6.74 | 19.57     2.25
          1.400     1.37 | 7.467     2.75 |13.533    6.74 | 19.60     2.25
          1.433     1.37 | 7.500     2.75 |13.567    6.74 | 19.63     2.25
          1.467     1.37 | 7.533     2.75 |13.600    6.74 | 19.67     2.25
          1.500     1.37 | 7.567     2.75 |13.633    6.74 | 19.70     2.25
          1.533     1.37 | 7.600     2.75 |13.667    6.74 | 19.73     2.25
          1.567     1.37 | 7.633     2.75 |13.700    6.74 | 19.77     2.25
          1.600     1.37 | 7.667     2.75 |13.733    6.74 | 19.80     2.25
          1.633     1.37 | 7.700     2.75 |13.767    5.99 | 19.83     2.25
          1.667     1.37 | 7.733     2.75 |13.800    5.24 | 19.87     2.25
          1.700     1.37 | 7.767     2.75 |13.833    5.24 | 19.90     2.25
          1.733     1.37 | 7.800     2.75 |13.867    5.24 | 19.93     2.25
          1.767     1.37 | 7.833     2.75 |13.900    5.24 | 19.97     2.25
          1.800     1.37 | 7.867     2.75 |13.933    5.24 | 20.00     2.25
          1.833     1.37 | 7.900     2.75 |13.967    5.24 | 20.03     2.25
          1.867     1.37 | 7.933     2.75 |14.000    5.24 | 20.07     2.25
          1.900     1.37 | 7.967     2.75 |14.033    5.24 | 20.10     2.25
          1.933     1.37 | 8.000     2.75 |14.067    5.24 | 20.13     2.25
          1.967     1.37 | 8.033     2.75 |14.100    5.24 | 20.17     2.25
          2.000     1.37 | 8.067     2.75 |14.133    5.24 | 20.20     2.25
          2.033     1.37 | 8.100     2.75 |14.167    5.24 | 20.23     2.25
          2.067     1.37 | 8.133     2.75 |14.200    5.24 | 20.27     1.87
          2.100     1.37 | 8.167     2.75 |14.233    5.24 | 20.30     1.50
          2.133     1.37 | 8.200     2.75 |14.267    4.49 | 20.33     1.50
          2.167     1.37 | 8.233     2.75 |14.300    3.74 | 20.37     1.50
          2.200     1.37 | 8.267     3.00 |14.333    3.74 | 20.40     1.50
          2.233     1.37 | 8.300     3.24 |14.367    3.74 | 20.43     1.50
          2.267     1.50 | 8.333     3.24 |14.400    3.74 | 20.47     1.50
          2.300     1.62 | 8.367     3.24 |14.433    3.74 | 20.50     1.50
          2.333     1.62 | 8.400     3.24 |14.467    3.74 | 20.53     1.50
          2.367     1.62 | 8.433     3.24 |14.500    3.74 | 20.57     1.50
          2.400     1.62 | 8.467     3.24 |14.533    3.74 | 20.60     1.50
          2.433     1.62 | 8.500     3.24 |14.567    3.74 | 20.63     1.50
          2.467     1.62 | 8.533     3.24 |14.600    3.74 | 20.67     1.50
          2.500     1.62 | 8.567     3.24 |14.633    3.74 | 20.70     1.50
          2.533     1.62 | 8.600     3.24 |14.667    3.74 | 20.73     1.50
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2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
Unit Hyd Qpeak  (cms)=   0.413

PEAK FLOW       (cms)=   0.137 (i)
TIME TO PEAK    (hrs)=  12.233
RUNOFF VOLUME    (mm)=  61.023
TOTAL RAINFALL   (mm)= 124.799
RUNOFF COEFFICIENT   =   0.489

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

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--------------------
| ADD HYD  (  0202)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0303):      0.54   0.137    12.23    61.02
     + ID2= 2 (  0602):      8.76   0.522    13.00    64.55
       ===================================================
       ID = 3 (  0202):      9.30   0.531    13.00    64.34

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

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--------------------
| ROUTE CHN(  0501)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  2.00
--------------------
```

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	231.94	0.0500	
0.12	231.94	0.0500	
0.99	231.64	0.0500	
1.70	231.36	0.0500	
4.33	230.53	0.0500	
6.65	230.00	0.0500	
7.36	229.97	0.0500	
8.06	229.90	0.0500	
10.18	229.62	0.0500 /0.0330	Main Channel
10.89	229.53	0.0330	Main Channel
11.60	229.50	0.0330	Main Channel
12.31	229.54	0.0330	Main Channel
12.74	229.60	0.0330 /0.0500	Main Channel
14.71	229.84	0.0500	
16.95	229.99	0.0500	
17.26	230.00	0.0500	
22.21	230.00	0.0500	
22.91	230.04	0.0500	
26.12	230.45	0.0500	
26.90	230.50	0.0500	

<--------------------- TRAVEL TIME TABLE --------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.05	229.55	.249E+01	0.0	0.22	4.20
0.10	229.60	.779E+01	0.1	0.36	2.53
0.15	229.65	.159E+02	0.1	0.51	1.78
0.20	229.71	.264E+02	0.3	0.62	1.47
0.26	229.76	.394E+02	0.5	0.70	1.30
0.31	229.81	.548E+02	0.8	0.77	1.18
0.36	229.86	.727E+02	1.1	0.82	1.11
0.42	229.92	.940E+02	1.5	0.86	1.06

0.47	229.97	.119E+03	1.9	0.89	1.02
0.52	230.02	.156E+03	2.4	0.84	1.08
0.58	230.08	.204E+03	3.2	0.86	1.05
0.63	230.13	.254E+03	4.2	0.90	1.01
0.68	230.18	.306E+03	5.3	0.95	0.96
0.73	230.24	.360E+03	6.6	1.00	0.91
0.79	230.29	.415E+03	7.9	1.04	0.87
0.84	230.34	.472E+03	9.4	1.09	0.83
0.89	230.40	.532E+03	11.1	1.14	0.80
0.95	230.45	.593E+03	12.9	1.18	0.77
1.00	230.50	.656E+03	14.7	1.22	0.75

	AREA	<---- hydrograph ----> QPEAK	TPEAK	R.V.	<-pipe / channel-> MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (0202)	9.30	0.53	13.00	64.34	0.26	0.71
OUTFLOW: ID= 1 (0501)	9.30	0.53	13.00	64.34	0.26	0.71

| CALIB |
| NASHYD (0304) | Area (ha)= 1.29 Curve Number (CN)= 71.7
| ID= 1 DT= 2.0 min | Ia (mm)= 6.43 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.08

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50

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 4.533    2.00 |10.600    5.74 |16.667    2.25 | 22.73    1.50
 4.567    2.00 |10.633    5.74 |16.700    2.25 | 22.77    1.50
 4.600    2.00 |10.667    5.74 |16.733    2.25 | 22.80    1.50
 4.633    2.00 |10.700    5.74 |16.767    2.25 | 22.83    1.50
 4.667    2.00 |10.733    5.74 |16.800    2.25 | 22.87    1.50
 4.700    2.00 |10.767    6.74 |16.833    2.25 | 22.90    1.50
 4.733    2.00 |10.800    7.74 |16.867    2.25 | 22.93    1.50
 4.767    2.00 |10.833    7.74 |16.900    2.25 | 22.97    1.50
 4.800    2.00 |10.867    7.74 |16.933    2.25 | 23.00    1.50
 4.833    2.00 |10.900    7.74 |16.967    2.25 | 23.03    1.50
 4.867    2.00 |10.933    7.74 |17.000    2.25 | 23.07    1.50
 4.900    2.00 |10.967    7.74 |17.033    2.25 | 23.10    1.50
 4.933    2.00 |11.000    7.74 |17.067    2.25 | 23.13    1.50
 4.967    2.00 |11.033    7.74 |17.100    2.25 | 23.17    1.50
 5.000    2.00 |11.067    7.74 |17.133    2.25 | 23.20    1.50
 5.033    2.00 |11.100    7.74 |17.167    2.25 | 23.23    1.50
 5.067    2.00 |11.133    7.74 |17.200    2.25 | 23.27    1.50
 5.100    2.00 |11.167    7.74 |17.233    2.25 | 23.30    1.50
 5.133    2.00 |11.200    7.74 |17.267    2.25 | 23.33    1.50
 5.167    2.00 |11.233    7.74 |17.300    2.25 | 23.37    1.50
 5.200    2.00 |11.267    9.86 |17.333    2.25 | 23.40    1.50
 5.233    2.00 |11.300   11.98 |17.367    2.25 | 23.43    1.50
 5.267    2.00 |11.333   11.98 |17.400    2.25 | 23.47    1.50
 5.300    2.00 |11.367   11.98 |17.433    2.25 | 23.50    1.50
 5.333    2.00 |11.400   11.98 |17.467    2.25 | 23.53    1.50
 5.367    2.00 |11.433   11.98 |17.500    2.25 | 23.57    1.50
 5.400    2.00 |11.467   11.98 |17.533    2.25 | 23.60    1.50
 5.433    2.00 |11.500   11.98 |17.567    2.25 | 23.63    1.50
 5.467    2.00 |11.533   11.98 |17.600    2.25 | 23.67    1.50
 5.500    2.00 |11.567   11.98 |17.633    2.25 | 23.70    1.50
 5.533    2.00 |11.600   11.98 |17.667    2.25 | 23.73    1.50
 5.567    2.00 |11.633   11.98 |17.700    2.25 | 23.77    1.50
 5.600    2.00 |11.667   11.98 |17.733    2.25 | 23.80    1.50
 5.633    2.00 |11.700   11.98 |17.767    2.25 | 23.83    1.50
 5.667    2.00 |11.733   11.98 |17.800    2.25 | 23.87    1.50
 5.700    2.00 |11.767   24.49 |17.833    2.25 | 23.90    1.50
 5.733    2.00 |11.800   36.94 |17.867    2.25 | 23.93    1.50
 5.767    2.00 |11.833   36.94 |17.900    2.25 | 23.97    1.50
 5.800    2.00 |11.867   36.94 |17.933    2.25 | 24.00    1.50
 5.833    2.00 |11.900   36.94 |17.967    2.25 | 24.03    1.50
 5.867    2.00 |11.933   36.94 |18.000    2.25 | 24.07    1.50
 5.900    2.00 |11.967   36.94 |18.033    2.25 | 24.10    1.50
 5.933    2.00 |12.000   37.10 |18.067    2.25 | 24.13    1.50
 5.967    2.00 |12.033  152.76 |18.100    2.25 | 24.17    1.50
 6.000    2.00 |12.067  152.76 |18.133    2.25 | 24.20    1.50
 6.033    2.00 |12.100  152.76 |18.167    2.25 | 24.23    1.50
 6.067    2.00 |12.133  152.76 |18.200    2.25 | 24.27    0.75

     Unit Hyd Qpeak  (cms)=   0.616

     PEAK FLOW       (cms)=   0.315 (i)
     TIME TO PEAK    (hrs)=  12.233
     RUNOFF VOLUME    (mm)=  63.966
     TOTAL RAINFALL   (mm)= 124.799
     RUNOFF COEFFICIENT   =   0.513

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

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--------------------
| ADD HYD  (  0203)|
|   1 +  2 =  3    |          AREA     QPEAK    TPEAK      R.V.
--------------------          (ha)     (cms)    (hrs)      (mm)
        ID1= 1 (  0304):      1.29    0.315    12.23     63.97
      + ID2= 2 (  0501):      9.30    0.531    13.00     64.34
        ==================================================
        ID = 3 (  0203):     10.59    0.836    12.27     64.30

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0502)|
| IN= 2---> OUT= 1 |      Routing time step (min)'=  2.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00         232.00        0.0500
                   1.27         231.99        0.0500
                   1.99         231.85        0.0500
                   6.11         230.44        0.0500
                   7.58         229.97        0.0500
                   8.31         229.85        0.0500
                  11.25         229.77        0.0500
                  14.89         229.90        0.0500
                  17.02         229.85        0.0500
                  20.49         229.70        0.0500
                  23.19         229.54    0.0500 /0.0330  Main Channel
                  23.95         229.50        0.0330      Main Channel
                  32.05         229.50        0.0330      Main Channel
                  33.27         229.54    0.0330 /0.0500  Main Channel
                  39.13         229.83        0.0500
                  41.96         229.99        0.0500
                  46.35         230.00        0.0500
                  52.21         230.47        0.0500
                  55.30         230.65        0.0500
                  55.79         230.65        0.0500

      <--------------------- TRAVEL TIME TABLE --------------------->
       DEPTH     ELEV      VOLUME     FLOW RATE     VELOCITY     TRAV.TIME
        (m)       (m)     (cu.m.)       (cms)         (m/s)        (min)
       0.04    229.54    .659E+01        0.1          0.29         1.06
       0.10    229.60    .186E+02        0.5          0.53         0.58
       0.16    229.66    .329E+02        1.2          0.70         0.44
       0.22    229.72    .496E+02        2.2          0.83         0.37
       0.27    229.77    .689E+02        3.5          0.93         0.33
       0.33    229.83    .929E+02        4.9          0.99         0.31
       0.39    229.89    .124E+03        6.9          1.03         0.30
       0.45    229.95    .159E+03        9.3          1.09         0.28
       0.51    230.01    .196E+03       11.9          1.13         0.27
       0.56    230.06    .239E+03       15.4          1.20         0.26
       0.62    230.12    .282E+03       19.3          1.27         0.24
       0.68    230.18    .326E+03       23.6          1.34         0.23
       0.74    230.24    .372E+03       28.4          1.42         0.22
       0.80    230.30    .418E+03       33.5          1.49         0.21
       0.85    230.35    .466E+03       39.0          1.56         0.20
       0.91    230.41    .514E+03       44.9          1.62         0.19
       0.97    230.47    .563E+03       51.2          1.69         0.18
       1.03    230.53    .614E+03       57.8          1.75         0.18
       1.09    230.59    .666E+03       64.7          1.81         0.17

                                      <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK    R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)    (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0203)    10.59     0.84   12.27   64.30     0.12       0.59
   OUTFLOW: ID= 1 (  0502)    10.59     0.84   12.27   64.30     0.12       0.59


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--------------------
| CALIB            |
| STANDHYD (  0305)|   Area     (ha)=   0.35
|ID= 1 DT= 2.0 min |   Total Imp(%)=  45.70   Dir. Conn.(%)=  37.10
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area      (ha)=       0.16         0.19
     Dep. Storage      (mm)=       2.00         7.05
     Average Slope      (%)=       7.80         2.00
     Length             (m)=      48.30        40.00
     Mannings n           =       0.013        0.250

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


                             ---- TRANSFORMED HYETOGRAPH ----
            TIME     RAIN |  TIME     RAIN |'  TIME     RAIN |  TIME     RAIN
             hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
           0.033     0.00 | 6.100     2.00 |12.167   152.76 | 18.23     2.25
           0.067     0.00 | 6.133     2.00 |12.200   152.76 | 18.27     2.25
           0.100     0.00 | 6.167     2.00 |12.233   152.76 | 18.30     2.25
           0.133     0.00 | 6.200     2.00 |12.267    85.16 | 18.33     2.25
           0.167     0.00 | 6.233     2.00 |12.300    17.97 | 18.37     2.25
           0.200     0.00 | 6.267     2.12 |12.333    17.97 | 18.40     2.25
           0.233     0.00 | 6.300     2.25 |12.367    17.97 | 18.43     2.25
           0.267     0.69 | 6.333     2.25 |12.400    17.97 | 18.47     2.25
           0.300     1.37 | 6.367     2.25 |12.433    17.97 | 18.50     2.25
           0.333     1.37 | 6.400     2.25 |12.467    17.97 | 18.53     2.25
           0.367     1.37 | 6.433     2.25 |12.500    17.97 | 18.57     2.25
           0.400     1.37 | 6.467     2.25 |12.533    17.97 | 18.60     2.25
           0.433     1.37 | 6.500     2.25 |12.567    17.97 | 18.63     2.25
           0.467     1.37 | 6.533     2.25 |12.600    17.97 | 18.67     2.25
           0.500     1.37 | 6.567     2.25 |12.633    17.97 | 18.70     2.25
           0.533     1.37 | 6.600     2.25 |12.667    17.97 | 18.73     2.25
           0.567     1.37 | 6.633     2.25 |12.700    17.97 | 18.77     2.25
           0.600     1.37 | 6.667     2.25 |12.733    17.97 | 18.80     2.25
           0.633     1.37 | 6.700     2.25 |12.767    13.59 | 18.83     2.25
           0.667     1.37 | 6.733     2.25 |12.800     9.24 | 18.87     2.25
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0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
Max.Eff.Inten.(mm/hr)=     152.76       106.73
          over (min)         5.00         8.00
Storage Coeff.  (min)=       0.75 (ii)    7.69 (ii)
Unit Hyd. Tpeak (min)=       4.00         8.00
Unit Hyd. peak  (cms)=       0.54         0.14
```

```
                                                            *TOTALS*
     PEAK FLOW        (cms)=       0.06          0.04         0.097 (iii)
     TIME TO PEAK     (hrs)=      12.23         12.27         12.23
     RUNOFF VOLUME     (mm)=     122.80         63.37         85.41
     TOTAL RAINFALL    (mm)=     124.80        124.80        124.80
     RUNOFF COEFFICIENT   =        0.98          0.51          0.68

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  67.9    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0305):     0.35   0.097    12.23    85.41
      + ID2= 2 (  0502):    10.59   0.839    12.27    64.30
        ==================================================
        ID = 3 (  0204):    10.94   0.931    12.27    64.97

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

--------------------
| ROUTE CHN(  0503)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  2.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                  0.00         229.17        0.0500
                  5.67         229.11        0.0500      Main Channel
                 10.49         229.15        0.0500
                 13.45         229.13        0.0500
                 18.93         229.01        0.0500
                 20.52         229.00        0.0500
                 37.49         229.00        0.0500
                 38.20         229.02        0.0500
                 49.94         229.48        0.0500
                 51.64         229.53        0.0500
                 57.01         229.72        0.0500
                 60.12         229.82        0.0500
                 62.24         229.85        0.0500
                 67.48         229.98        0.0500
                 73.98         230.01        0.0500
                 78.79         230.15        0.0500
                 85.58         230.48        0.0500
                 86.28         230.60        0.0500
                 87.28         230.97        0.0500
                 87.80         231.10        0.0500

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH    ELEV      VOLUME     FLOW RATE     VELOCITY    TRAV.TIME
        (m)      (m)     (cu.m.)       (cms)        (m/s)        (min)
       0.01    229.01    .459E+01       0.0          0.07         7.55
       0.02    229.02    .951E+01       0.0          0.11         4.82
       0.03    229.03    .146E+02       0.1          0.14         3.69
       0.03    229.03    .199E+02       0.1          0.17         3.07
       0.04    229.04    .254E+02       0.2          0.19         2.66
       0.05    229.05    .310E+02       0.2          0.22         2.38
       0.06    229.06    .368E+02       0.3          0.24         2.16
       0.07    229.07    .427E+02       0.4          0.26         1.99
       0.08    229.08    .488E+02       0.4          0.28         1.85
       0.08    229.08    .550E+02       0.5          0.29         1.74
       0.09    229.09    .614E+02       0.6          0.31         1.64
       0.10    229.10    .680E+02       0.7          0.33         1.56
       0.11    229.11    .747E+02       0.8          0.34         1.49
       0.12    229.12    .831E+02       1.0          0.36         1.42
       0.13    229.13    .924E+02       1.1          0.37         1.37
       0.14    229.14    .103E+03       1.3          0.37         1.37
       0.15    229.15    .114E+03       1.4          0.38         1.34
       0.16    229.16    .127E+03       1.6          0.40         1.29
       0.17    229.17    .139E+03       1.9          0.41         1.24

                                     <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0204)    10.94     0.93   12.27  64.97      0.12      0.35
  OUTFLOW: ID= 1 (  0503)    10.94     0.92   12.27  64.97      0.12      0.35
```

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--------------------
| CALIB            |
| NASHYD   (  0306)|   Area    (ha)=   1.40   Curve Number   (CN)= 72.4
|ID= 1 DT= 2.0 min |   Ia      (mm)=   6.09   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.24

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


                            ---- TRANSFORMED HYETOGRAPH ----
               TIME     RAIN |  TIME     RAIN |'  TIME    RAIN |  TIME     RAIN
                hrs    mm/hr |   hrs    mm/hr |'   hrs   mm/hr |   hrs    mm/hr
              0.033     0.00 | 6.100     2.00 |12.167  152.76 | 18.23     2.25
              0.067     0.00 | 6.133     2.00 |12.200  152.76 | 18.27     2.25
              0.100     0.00 | 6.167     2.00 |12.233  152.76 | 18.30     2.25
              0.133     0.00 | 6.200     2.00 |12.267   85.16 | 18.33     2.25
              0.167     0.00 | 6.233     2.00 |12.300   17.97 | 18.37     2.25
              0.200     0.00 | 6.267     2.12 |12.333   17.97 | 18.40     2.25
              0.233     0.00 | 6.300     2.25 |12.367   17.97 | 18.43     2.25
              0.267     0.69 | 6.333     2.25 |12.400   17.97 | 18.47     2.25
              0.300     1.37 | 6.367     2.25 |12.433   17.97 | 18.50     2.25
              0.333     1.37 | 6.400     2.25 |12.467   17.97 | 18.53     2.25
              0.367     1.37 | 6.433     2.25 |12.500   17.97 | 18.57     2.25
              0.400     1.37 | 6.467     2.25 |12.533   17.97 | 18.60     2.25
              0.433     1.37 | 6.500     2.25 |12.567   17.97 | 18.63     2.25
              0.467     1.37 | 6.533     2.25 |12.600   17.97 | 18.67     2.25
              0.500     1.37 | 6.567     2.25 |12.633   17.97 | 18.70     2.25
              0.533     1.37 | 6.600     2.25 |12.667   17.97 | 18.73     2.25
              0.567     1.37 | 6.633     2.25 |12.700   17.97 | 18.77     2.25
              0.600     1.37 | 6.667     2.25 |12.733   17.97 | 18.80     2.25
              0.633     1.37 | 6.700     2.25 |12.767   13.59 | 18.83     2.25
              0.667     1.37 | 6.733     2.25 |12.800    9.24 | 18.87     2.25
              0.700     1.37 | 6.767     2.25 |12.833    9.24 | 18.90     2.25
              0.733     1.37 | 6.800     2.25 |12.867    9.24 | 18.93     2.25
              0.767     1.37 | 6.833     2.25 |12.900    9.24 | 18.97     2.25
              0.800     1.37 | 6.867     2.25 |12.933    9.24 | 19.00     2.25
              0.833     1.37 | 6.900     2.25 |12.967    9.24 | 19.03     2.25
              0.867     1.37 | 6.933     2.25 |13.000    9.24 | 19.07     2.25
              0.900     1.37 | 6.967     2.25 |13.033    9.24 | 19.10     2.25
              0.933     1.37 | 7.000     2.25 |13.067    9.24 | 19.13     2.25
              0.967     1.37 | 7.033     2.25 |13.100    9.24 | 19.17     2.25
              1.000     1.37 | 7.067     2.25 |13.133    9.24 | 19.20     2.25
              1.033     1.37 | 7.100     2.25 |13.167    9.24 | 19.23     2.25
              1.067     1.37 | 7.133     2.25 |13.200    9.24 | 19.27     2.25
              1.100     1.37 | 7.167     2.25 |13.233    9.24 | 19.30     2.25
              1.133     1.37 | 7.200     2.25 |13.267    7.98 | 19.33     2.25
              1.167     1.37 | 7.233     2.25 |13.300    6.74 | 19.37     2.25
              1.200     1.37 | 7.267     2.50 |13.333    6.74 | 19.40     2.25
              1.233     1.37 | 7.300     2.75 |13.367    6.74 | 19.43     2.25
              1.267     1.37 | 7.333     2.75 |13.400    6.74 | 19.47     2.25
              1.300     1.37 | 7.367     2.75 |13.433    6.74 | 19.50     2.25
              1.333     1.37 | 7.400     2.75 |13.467    6.74 | 19.53     2.25
              1.367     1.37 | 7.433     2.75 |13.500    6.74 | 19.57     2.25
              1.400     1.37 | 7.467     2.75 |13.533    6.74 | 19.60     2.25
              1.433     1.37 | 7.500     2.75 |13.567    6.74 | 19.63     2.25
              1.467     1.37 | 7.533     2.75 |13.600    6.74 | 19.67     2.25
              1.500     1.37 | 7.567     2.75 |13.633    6.74 | 19.70     2.25
              1.533     1.37 | 7.600     2.75 |13.667    6.74 | 19.73     2.25
              1.567     1.37 | 7.633     2.75 |13.700    6.74 | 19.77     2.25
              1.600     1.37 | 7.667     2.75 |13.733    6.74 | 19.80     2.25
              1.633     1.37 | 7.700     2.75 |13.767    5.99 | 19.83     2.25
              1.667     1.37 | 7.733     2.75 |13.800    5.24 | 19.87     2.25
              1.700     1.37 | 7.767     2.75 |13.833    5.24 | 19.90     2.25
              1.733     1.37 | 7.800     2.75 |13.867    5.24 | 19.93     2.25
              1.767     1.37 | 7.833     2.75 |13.900    5.24 | 19.97     2.25
              1.800     1.37 | 7.867     2.75 |13.933    5.24 | 20.00     2.25
              1.833     1.37 | 7.900     2.75 |13.967    5.24 | 20.03     2.25
              1.867     1.37 | 7.933     2.75 |14.000    5.24 | 20.07     2.25
              1.900     1.37 | 7.967     2.75 |14.033    5.24 | 20.10     2.25
              1.933     1.37 | 8.000     2.75 |14.067    5.24 | 20.13     2.25
              1.967     1.37 | 8.033     2.75 |14.100    5.24 | 20.17     2.25
              2.000     1.37 | 8.067     2.75 |14.133    5.24 | 20.20     2.25
              2.033     1.37 | 8.100     2.75 |14.167    5.24 | 20.23     2.25
              2.067     1.37 | 8.133     2.75 |14.200    5.24 | 20.27     1.87
              2.100     1.37 | 8.167     2.75 |14.233    5.24 | 20.30     1.50
              2.133     1.37 | 8.200     2.75 |14.267    4.49 | 20.33     1.50
              2.167     1.37 | 8.233     2.75 |14.300    3.74 | 20.37     1.50
              2.200     1.37 | 8.267     3.00 |14.333    3.74 | 20.40     1.50
              2.233     1.37 | 8.300     3.24 |14.367    3.74 | 20.43     1.50
              2.267     1.50 | 8.333     3.24 |14.400    3.74 | 20.47     1.50
              2.300     1.62 | 8.367     3.24 |14.433    3.74 | 20.50     1.50
```

2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50
4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

```
    Unit Hyd Qpeak  (cms)=   0.223

    PEAK FLOW       (cms)=   0.210 (i)
    TIME TO PEAK    (hrs)=  12.367
    RUNOFF VOLUME    (mm)=  65.378
    TOTAL RAINFALL   (mm)= 124.799
    RUNOFF COEFFICIENT   =   0.524

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

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| ADD HYD  (  0205)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0306):       1.40   0.210    12.37    65.38
     + ID2= 2 (  0503):      10.94   0.922    12.27    64.97
       ===============================================
       ID = 3 (  0205):      12.34   1.095    12.27    65.02

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ROUTE CHN(  0504)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  2.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation      Manning
                   0.00         229.15       0.0500
                   2.81         228.99       0.0500      Main Channel
                   5.31         228.48       0.0500
                   5.92         228.49       0.0500
                   9.03         227.99       0.0500
                  12.10         227.84       0.0500
                  13.80         227.77       0.0500
                  18.00         227.64       0.0500
                  22.29         227.63       0.0500
                  25.36         227.72       0.0500
                  29.25         227.86       0.0500
                  31.86         228.00       0.0500
                  35.07         228.00       0.0500
                  35.48         228.02       0.0500
                  39.37         228.00       0.0500
                  43.25         228.42       0.0500
                  44.67         228.50       0.0500
                  57.26         228.50       0.0500
                  79.03         228.50       0.0500
                  84.75         228.40       0.0500

      <--------------------- TRAVEL TIME TABLE --------------------->
       DEPTH    ELEV      VOLUME     FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (m)      (cu.m.)      (cms)        (m/s)       (min)
       0.04   227.67     .918E+01       0.0          0.26        3.32
```

0.08	227.71	.248E+02	0.2	0.40	2.14
0.12	227.75	.454E+02	0.5	0.51	1.67
0.16	227.79	.707E+02	0.8	0.61	1.40
0.19	227.82	.100E+03	1.4	0.70	1.22
0.23	227.86	.134E+03	2.1	0.79	1.08
0.27	227.90	.170E+03	2.9	0.88	0.97
0.31	227.94	.210E+03	3.9	0.96	0.89
0.35	227.98	.253E+03	5.1	1.04	0.82
0.39	228.02	.302E+03	5.7	0.97	0.88
0.43	228.06	.363E+03	7.5	1.05	0.81
0.47	228.10	.426E+03	9.6	1.15	0.74
0.51	228.14	.490E+03	12.0	1.25	0.68
0.54	228.17	.556E+03	14.6	1.34	0.64
0.58	228.21	.622E+03	17.4	1.43	0.60
0.62	228.25	.690E+03	20.4	1.51	0.56
0.66	228.29	.759E+03	23.6	1.59	0.54
0.70	228.33	.829E+03	27.0	1.67	0.51
0.74	228.37	.900E+03	30.7	1.75	0.49

	AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0205)	12.34	1.10	12.27	65.02	0.17	0.65
OUTFLOW: ID= 1 (0504)	12.34	1.09	12.30	65.02	0.17	0.65

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| CALIB              |
| NASHYD   (  0307)|   Area     (ha)=   2.55   Curve Number   (CN)= 67.5
|ID= 1 DT= 2.0 min |   Ia       (mm)=   7.78   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.31
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50
2.833	1.62	8.900	3.49	14.967	3.74	21.03	1.50
2.867	1.62	8.933	3.49	15.000	3.74	21.07	1.50
2.900	1.62	8.967	3.49	15.033	3.74	21.10	1.50
2.933	1.62	9.000	3.49	15.067	3.74	21.13	1.50
2.967	1.62	9.033	3.49	15.100	3.74	21.17	1.50
3.000	1.62	9.067	3.49	15.133	3.74	21.20	1.50
3.033	1.62	9.100	3.49	15.167	3.74	21.23	1.50
3.067	1.62	9.133	3.49	15.200	3.74	21.27	1.50
3.100	1.62	9.167	3.49	15.233	3.74	21.30	1.50
3.133	1.62	9.200	3.49	15.267	3.74	21.33	1.50
3.167	1.62	9.233	3.49	15.300	3.74	21.37	1.50
3.200	1.62	9.267	3.74	15.333	3.74	21.40	1.50
3.233	1.62	9.300	3.99	15.367	3.74	21.43	1.50
3.267	1.62	9.333	3.99	15.400	3.74	21.47	1.50
3.300	1.62	9.367	3.99	15.433	3.74	21.50	1.50
3.333	1.62	9.400	3.99	15.467	3.74	21.53	1.50
3.367	1.62	9.433	3.99	15.500	3.74	21.57	1.50
3.400	1.62	9.467	3.99	15.533	3.74	21.60	1.50
3.433	1.62	9.500	3.99	15.567	3.74	21.63	1.50
3.467	1.62	9.533	3.99	15.600	3.74	21.67	1.50
3.500	1.62	9.567	3.99	15.633	3.74	21.70	1.50
3.533	1.62	9.600	3.99	15.667	3.74	21.73	1.50
3.567	1.62	9.633	3.99	15.700	3.74	21.77	1.50
3.600	1.62	9.667	3.99	15.733	3.74	21.80	1.50
3.633	1.62	9.700	3.99	15.767	3.74	21.83	1.50
3.667	1.62	9.733	3.99	15.800	3.74	21.87	1.50
3.700	1.62	9.767	4.24	15.833	3.74	21.90	1.50
3.733	1.62	9.800	4.49	15.867	3.74	21.93	1.50
3.767	1.62	9.833	4.49	15.900	3.74	21.97	1.50
3.800	1.62	9.867	4.49	15.933	3.74	22.00	1.50
3.833	1.62	9.900	4.49	15.967	3.74	22.03	1.50
3.867	1.62	9.933	4.49	16.000	3.74	22.07	1.50
3.900	1.62	9.967	4.49	16.033	3.74	22.10	1.50
3.933	1.62	10.000	4.49	16.067	3.74	22.13	1.50
3.967	1.62	10.033	4.49	16.100	3.74	22.17	1.50
4.000	1.62	10.067	4.49	16.133	3.74	22.20	1.50
4.033	1.62	10.100	4.49	16.167	3.74	22.23	1.50
4.067	1.62	10.133	4.49	16.200	3.74	22.27	1.50
4.100	1.62	10.167	4.49	16.233	3.74	22.30	1.50
4.133	1.62	10.200	4.49	16.267	2.99	22.33	1.50
4.167	1.62	10.233	4.49	16.300	2.25	22.37	1.50
4.200	1.62	10.267	5.12	16.333	2.25	22.40	1.50
4.233	1.62	10.300	5.74	16.367	2.25	22.43	1.50
4.267	1.81	10.333	5.74	16.400	2.25	22.47	1.50

4.300	2.00	10.367	5.74	16.433	2.25	22.50	1.50
4.333	2.00	10.400	5.74	16.467	2.25	22.53	1.50
4.367	2.00	10.433	5.74	16.500	2.25	22.57	1.50
4.400	2.00	10.467	5.74	16.533	2.25	22.60	1.50
4.433	2.00	10.500	5.74	16.567	2.25	22.63	1.50
4.467	2.00	10.533	5.74	16.600	2.25	22.67	1.50
4.500	2.00	10.567	5.74	16.633	2.25	22.70	1.50
4.533	2.00	10.600	5.74	16.667	2.25	22.73	1.50
4.567	2.00	10.633	5.74	16.700	2.25	22.77	1.50
4.600	2.00	10.667	5.74	16.733	2.25	22.80	1.50
4.633	2.00	10.700	5.74	16.767	2.25	22.83	1.50
4.667	2.00	10.733	5.74	16.800	2.25	22.87	1.50
4.700	2.00	10.767	6.74	16.833	2.25	22.90	1.50
4.733	2.00	10.800	7.74	16.867	2.25	22.93	1.50
4.767	2.00	10.833	7.74	16.900	2.25	22.97	1.50
4.800	2.00	10.867	7.74	16.933	2.25	23.00	1.50
4.833	2.00	10.900	7.74	16.967	2.25	23.03	1.50
4.867	2.00	10.933	7.74	17.000	2.25	23.07	1.50
4.900	2.00	10.967	7.74	17.033	2.25	23.10	1.50
4.933	2.00	11.000	7.74	17.067	2.25	23.13	1.50
4.967	2.00	11.033	7.74	17.100	2.25	23.17	1.50
5.000	2.00	11.067	7.74	17.133	2.25	23.20	1.50
5.033	2.00	11.100	7.74	17.167	2.25	23.23	1.50
5.067	2.00	11.133	7.74	17.200	2.25	23.27	1.50
5.100	2.00	11.167	7.74	17.233	2.25	23.30	1.50
5.133	2.00	11.200	7.74	17.267	2.25	23.33	1.50
5.167	2.00	11.233	7.74	17.300	2.25	23.37	1.50
5.200	2.00	11.267	9.86	17.333	2.25	23.40	1.50
5.233	2.00	11.300	11.98	17.367	2.25	23.43	1.50
5.267	2.00	11.333	11.98	17.400	2.25	23.47	1.50
5.300	2.00	11.367	11.98	17.433	2.25	23.50	1.50
5.333	2.00	11.400	11.98	17.467	2.25	23.53	1.50
5.367	2.00	11.433	11.98	17.500	2.25	23.57	1.50
5.400	2.00	11.467	11.98	17.533	2.25	23.60	1.50
5.433	2.00	11.500	11.98	17.567	2.25	23.63	1.50
5.467	2.00	11.533	11.98	17.600	2.25	23.67	1.50
5.500	2.00	11.567	11.98	17.633	2.25	23.70	1.50
5.533	2.00	11.600	11.98	17.667	2.25	23.73	1.50
5.567	2.00	11.633	11.98	17.700	2.25	23.77	1.50
5.600	2.00	11.667	11.98	17.733	2.25	23.80	1.50
5.633	2.00	11.700	11.98	17.767	2.25	23.83	1.50
5.667	2.00	11.733	11.98	17.800	2.25	23.87	1.50
5.700	2.00	11.767	24.49	17.833	2.25	23.90	1.50
5.733	2.00	11.800	36.94	17.867	2.25	23.93	1.50
5.767	2.00	11.833	36.94	17.900	2.25	23.97	1.50
5.800	2.00	11.867	36.94	17.933	2.25	24.00	1.50
5.833	2.00	11.900	36.94	17.967	2.25	24.03	1.50
5.867	2.00	11.933	36.94	18.000	2.25	24.07	1.50
5.900	2.00	11.967	36.94	18.033	2.25	24.10	1.50
5.933	2.00	12.000	37.10	18.067	2.25	24.13	1.50
5.967	2.00	12.033	152.76	18.100	2.25	24.17	1.50
6.000	2.00	12.067	152.76	18.133	2.25	24.20	1.50
6.033	2.00	12.100	152.76	18.167	2.25	24.23	1.50
6.067	2.00	12.133	152.76	18.200	2.25	24.27	0.75

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Unit Hyd Qpeak  (cms)=   0.314

PEAK FLOW       (cms)=   0.277 (i)
TIME TO PEAK    (hrs)=  12.467
RUNOFF VOLUME    (mm)=  57.218
TOTAL RAINFALL   (mm)= 124.799
RUNOFF COEFFICIENT   =   0.458

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

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------------------------------------------------------------------------------
--------------------
| CALIB             |
| STANDHYD (  0308)|   Area    (ha)=  11.27
|ID= 1 DT= 2.0 min |   Total Imp(%)=  21.40   Dir. Conn.(%)=  15.10
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     2.41         8.86
     Dep. Storage     (mm)=     2.00         6.42
     Average Slope     (%)=     1.10         2.00
     Length            (m)=   274.10        40.00
     Mannings n          =     0.013        0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.033	0.00	6.100	2.00	12.167	152.76	18.23	2.25
0.067	0.00	6.133	2.00	12.200	152.76	18.27	2.25
0.100	0.00	6.167	2.00	12.233	152.76	18.30	2.25
0.133	0.00	6.200	2.00	12.267	85.16	18.33	2.25
0.167	0.00	6.233	2.00	12.300	17.97	18.37	2.25
0.200	0.00	6.267	2.12	12.333	17.97	18.40	2.25
0.233	0.00	6.300	2.25	12.367	17.97	18.43	2.25
0.267	0.69	6.333	2.25	12.400	17.97	18.47	2.25
0.300	1.37	6.367	2.25	12.433	17.97	18.50	2.25
0.333	1.37	6.400	2.25	12.467	17.97	18.53	2.25
0.367	1.37	6.433	2.25	12.500	17.97	18.57	2.25
0.400	1.37	6.467	2.25	12.533	17.97	18.60	2.25
0.433	1.37	6.500	2.25	12.567	17.97	18.63	2.25
0.467	1.37	6.533	2.25	12.600	17.97	18.67	2.25
0.500	1.37	6.567	2.25	12.633	17.97	18.70	2.25
0.533	1.37	6.600	2.25	12.667	17.97	18.73	2.25
0.567	1.37	6.633	2.25	12.700	17.97	18.77	2.25
0.600	1.37	6.667	2.25	12.733	17.97	18.80	2.25
0.633	1.37	6.700	2.25	12.767	13.59	18.83	2.25
0.667	1.37	6.733	2.25	12.800	9.24	18.87	2.25
0.700	1.37	6.767	2.25	12.833	9.24	18.90	2.25
0.733	1.37	6.800	2.25	12.867	9.24	18.93	2.25
0.767	1.37	6.833	2.25	12.900	9.24	18.97	2.25
0.800	1.37	6.867	2.25	12.933	9.24	19.00	2.25
0.833	1.37	6.900	2.25	12.967	9.24	19.03	2.25
0.867	1.37	6.933	2.25	13.000	9.24	19.07	2.25
0.900	1.37	6.967	2.25	13.033	9.24	19.10	2.25
0.933	1.37	7.000	2.25	13.067	9.24	19.13	2.25
0.967	1.37	7.033	2.25	13.100	9.24	19.17	2.25
1.000	1.37	7.067	2.25	13.133	9.24	19.20	2.25
1.033	1.37	7.100	2.25	13.167	9.24	19.23	2.25
1.067	1.37	7.133	2.25	13.200	9.24	19.27	2.25
1.100	1.37	7.167	2.25	13.233	9.24	19.30	2.25
1.133	1.37	7.200	2.25	13.267	7.98	19.33	2.25
1.167	1.37	7.233	2.25	13.300	6.74	19.37	2.25
1.200	1.37	7.267	2.50	13.333	6.74	19.40	2.25
1.233	1.37	7.300	2.75	13.367	6.74	19.43	2.25
1.267	1.37	7.333	2.75	13.400	6.74	19.47	2.25
1.300	1.37	7.367	2.75	13.433	6.74	19.50	2.25
1.333	1.37	7.400	2.75	13.467	6.74	19.53	2.25
1.367	1.37	7.433	2.75	13.500	6.74	19.57	2.25
1.400	1.37	7.467	2.75	13.533	6.74	19.60	2.25
1.433	1.37	7.500	2.75	13.567	6.74	19.63	2.25
1.467	1.37	7.533	2.75	13.600	6.74	19.67	2.25
1.500	1.37	7.567	2.75	13.633	6.74	19.70	2.25
1.533	1.37	7.600	2.75	13.667	6.74	19.73	2.25
1.567	1.37	7.633	2.75	13.700	6.74	19.77	2.25
1.600	1.37	7.667	2.75	13.733	6.74	19.80	2.25
1.633	1.37	7.700	2.75	13.767	5.99	19.83	2.25
1.667	1.37	7.733	2.75	13.800	5.24	19.87	2.25
1.700	1.37	7.767	2.75	13.833	5.24	19.90	2.25
1.733	1.37	7.800	2.75	13.867	5.24	19.93	2.25
1.767	1.37	7.833	2.75	13.900	5.24	19.97	2.25
1.800	1.37	7.867	2.75	13.933	5.24	20.00	2.25
1.833	1.37	7.900	2.75	13.967	5.24	20.03	2.25
1.867	1.37	7.933	2.75	14.000	5.24	20.07	2.25
1.900	1.37	7.967	2.75	14.033	5.24	20.10	2.25
1.933	1.37	8.000	2.75	14.067	5.24	20.13	2.25
1.967	1.37	8.033	2.75	14.100	5.24	20.17	2.25
2.000	1.37	8.067	2.75	14.133	5.24	20.20	2.25
2.033	1.37	8.100	2.75	14.167	5.24	20.23	2.25
2.067	1.37	8.133	2.75	14.200	5.24	20.27	1.87
2.100	1.37	8.167	2.75	14.233	5.24	20.30	1.50
2.133	1.37	8.200	2.75	14.267	4.49	20.33	1.50
2.167	1.37	8.233	2.75	14.300	3.74	20.37	1.50
2.200	1.37	8.267	3.00	14.333	3.74	20.40	1.50
2.233	1.37	8.300	3.24	14.367	3.74	20.43	1.50
2.267	1.50	8.333	3.24	14.400	3.74	20.47	1.50
2.300	1.62	8.367	3.24	14.433	3.74	20.50	1.50
2.333	1.62	8.400	3.24	14.467	3.74	20.53	1.50
2.367	1.62	8.433	3.24	14.500	3.74	20.57	1.50
2.400	1.62	8.467	3.24	14.533	3.74	20.60	1.50
2.433	1.62	8.500	3.24	14.567	3.74	20.63	1.50
2.467	1.62	8.533	3.24	14.600	3.74	20.67	1.50
2.500	1.62	8.567	3.24	14.633	3.74	20.70	1.50
2.533	1.62	8.600	3.24	14.667	3.74	20.73	1.50
2.567	1.62	8.633	3.24	14.700	3.74	20.77	1.50
2.600	1.62	8.667	3.24	14.733	3.74	20.80	1.50
2.633	1.62	8.700	3.24	14.767	3.74	20.83	1.50
2.667	1.62	8.733	3.24	14.800	3.74	20.87	1.50
2.700	1.62	8.767	3.37	14.833	3.74	20.90	1.50
2.733	1.62	8.800	3.49	14.867	3.74	20.93	1.50
2.767	1.62	8.833	3.49	14.900	3.74	20.97	1.50
2.800	1.62	8.867	3.49	14.933	3.74	21.00	1.50

```
  2.833    1.62 | 8.900    3.49 |14.967    3.74 | 21.03    1.50
  2.867    1.62 | 8.933    3.49 |15.000    3.74 | 21.07    1.50
  2.900    1.62 | 8.967    3.49 |15.033    3.74 | 21.10    1.50
  2.933    1.62 | 9.000    3.49 |15.067    3.74 | 21.13    1.50
  2.967    1.62 | 9.033    3.49 |15.100    3.74 | 21.17    1.50
  3.000    1.62 | 9.067    3.49 |15.133    3.74 | 21.20    1.50
  3.033    1.62 | 9.100    3.49 |15.167    3.74 | 21.23    1.50
  3.067    1.62 | 9.133    3.49 |15.200    3.74 | 21.27    1.50
  3.100    1.62 | 9.167    3.49 |15.233    3.74 | 21.30    1.50
  3.133    1.62 | 9.200    3.49 |15.267    3.74 | 21.33    1.50
  3.167    1.62 | 9.233    3.49 |15.300    3.74 | 21.37    1.50
  3.200    1.62 | 9.267    3.74 |15.333    3.74 | 21.40    1.50
  3.233    1.62 | 9.300    3.99 |15.367    3.74 | 21.43    1.50
  3.267    1.62 | 9.333    3.99 |15.400    3.74 | 21.47    1.50
  3.300    1.62 | 9.367    3.99 |15.433    3.74 | 21.50    1.50
  3.333    1.62 | 9.400    3.99 |15.467    3.74 | 21.53    1.50
  3.367    1.62 | 9.433    3.99 |15.500    3.74 | 21.57    1.50
  3.400    1.62 | 9.467    3.99 |15.533    3.74 | 21.60    1.50
  3.433    1.62 | 9.500    3.99 |15.567    3.74 | 21.63    1.50
  3.467    1.62 | 9.533    3.99 |15.600    3.74 | 21.67    1.50
  3.500    1.62 | 9.567    3.99 |15.633    3.74 | 21.70    1.50
  3.533    1.62 | 9.600    3.99 |15.667    3.74 | 21.73    1.50
  3.567    1.62 | 9.633    3.99 |15.700    3.74 | 21.77    1.50
  3.600    1.62 | 9.667    3.99 |15.733    3.74 | 21.80    1.50
  3.633    1.62 | 9.700    3.99 |15.767    3.74 | 21.83    1.50
  3.667    1.62 | 9.733    3.99 |15.800    3.74 | 21.87    1.50
  3.700    1.62 | 9.767    4.24 |15.833    3.74 | 21.90    1.50
  3.733    1.62 | 9.800    4.49 |15.867    3.74 | 21.93    1.50
  3.767    1.62 | 9.833    4.49 |15.900    3.74 | 21.97    1.50
  3.800    1.62 | 9.867    4.49 |15.933    3.74 | 22.00    1.50
  3.833    1.62 | 9.900    4.49 |15.967    3.74 | 22.03    1.50
  3.867    1.62 | 9.933    4.49 |16.000    3.74 | 22.07    1.50
  3.900    1.62 | 9.967    4.49 |16.033    3.74 | 22.10    1.50
  3.933    1.62 |10.000    4.49 |16.067    3.74 | 22.13    1.50
  3.967    1.62 |10.033    4.49 |16.100    3.74 | 22.17    1.50
  4.000    1.62 |10.067    4.49 |16.133    3.74 | 22.20    1.50
  4.033    1.62 |10.100    4.49 |16.167    3.74 | 22.23    1.50
  4.067    1.62 |10.133    4.49 |16.200    3.74 | 22.27    1.50
  4.100    1.62 |10.167    4.49 |16.233    3.74 | 22.30    1.50
  4.133    1.62 |10.200    4.49 |16.267    2.99 | 22.33    1.50
  4.167    1.62 |10.233    4.49 |16.300    2.25 | 22.37    1.50
  4.200    1.62 |10.267    5.12 |16.333    2.25 | 22.40    1.50
  4.233    1.62 |10.300    5.74 |16.367    2.25 | 22.43    1.50
  4.267    1.81 |10.333    5.74 |16.400    2.25 | 22.47    1.50
  4.300    2.00 |10.367    5.74 |16.433    2.25 | 22.50    1.50
  4.333    2.00 |10.400    5.74 |16.467    2.25 | 22.53    1.50
  4.367    2.00 |10.433    5.74 |16.500    2.25 | 22.57    1.50
  4.400    2.00 |10.467    5.74 |16.533    2.25 | 22.60    1.50
  4.433    2.00 |10.500    5.74 |16.567    2.25 | 22.63    1.50
  4.467    2.00 |10.533    5.74 |16.600    2.25 | 22.67    1.50
  4.500    2.00 |10.567    5.74 |16.633    2.25 | 22.70    1.50
  4.533    2.00 |10.600    5.74 |16.667    2.25 | 22.73    1.50
  4.567    2.00 |10.633    5.74 |16.700    2.25 | 22.77    1.50
  4.600    2.00 |10.667    5.74 |16.733    2.25 | 22.80    1.50
  4.633    2.00 |10.700    5.74 |16.767    2.25 | 22.83    1.50
  4.667    2.00 |10.733    5.74 |16.800    2.25 | 22.87    1.50
  4.700    2.00 |10.767    6.74 |16.833    2.25 | 22.90    1.50
  4.733    2.00 |10.800    7.74 |16.867    2.25 | 22.93    1.50
  4.767    2.00 |10.833    7.74 |16.900    2.25 | 22.97    1.50
  4.800    2.00 |10.867    7.74 |16.933    2.25 | 23.00    1.50
  4.833    2.00 |10.900    7.74 |16.967    2.25 | 23.03    1.50
  4.867    2.00 |10.933    7.74 |17.000    2.25 | 23.07    1.50
  4.900    2.00 |10.967    7.74 |17.033    2.25 | 23.10    1.50
  4.933    2.00 |11.000    7.74 |17.067    2.25 | 23.13    1.50
  4.967    2.00 |11.033    7.74 |17.100    2.25 | 23.17    1.50
  5.000    2.00 |11.067    7.74 |17.133    2.25 | 23.20    1.50
  5.033    2.00 |11.100    7.74 |17.167    2.25 | 23.23    1.50
  5.067    2.00 |11.133    7.74 |17.200    2.25 | 23.27    1.50
  5.100    2.00 |11.167    7.74 |17.233    2.25 | 23.30    1.50
  5.133    2.00 |11.200    7.74 |17.267    2.25 | 23.33    1.50
  5.167    2.00 |11.233    7.74 |17.300    2.25 | 23.37    1.50
  5.200    2.00 |11.267    9.86 |17.333    2.25 | 23.40    1.50
  5.233    2.00 |11.300   11.98 |17.367    2.25 | 23.43    1.50
  5.267    2.00 |11.333   11.98 |17.400    2.25 | 23.47    1.50
  5.300    2.00 |11.367   11.98 |17.433    2.25 | 23.50    1.50
  5.333    2.00 |11.400   11.98 |17.467    2.25 | 23.53    1.50
  5.367    2.00 |11.433   11.98 |17.500    2.25 | 23.57    1.50
  5.400    2.00 |11.467   11.98 |17.533    2.25 | 23.60    1.50
  5.433    2.00 |11.500   11.98 |17.567    2.25 | 23.63    1.50
  5.467    2.00 |11.533   11.98 |17.600    2.25 | 23.67    1.50
  5.500    2.00 |11.567   11.98 |17.633    2.25 | 23.70    1.50
  5.533    2.00 |11.600   11.98 |17.667    2.25 | 23.73    1.50
  5.567    2.00 |11.633   11.98 |17.700    2.25 | 23.77    1.50
  5.600    2.00 |11.667   11.98 |17.733    2.25 | 23.80    1.50
  5.633    2.00 |11.700   11.98 |17.767    2.25 | 23.83    1.50
  5.667    2.00 |11.733   11.98 |17.800    2.25 | 23.87    1.50
  5.700    2.00 |11.767   24.49 |17.833    2.25 | 23.90    1.50
  5.733    2.00 |11.800   36.94 |17.867    2.25 | 23.93    1.50
  5.767    2.00 |11.833   36.94 |17.900    2.25 | 23.97    1.50
  5.800    2.00 |11.867   36.94 |17.933    2.25 | 24.00    1.50
  5.833    2.00 |11.900   36.94 |17.967    2.25 | 24.03    1.50
  5.867    2.00 |11.933   36.94 |18.000    2.25 | 24.07    1.50
  5.900    2.00 |11.967   36.94 |18.033    2.25 | 24.10    1.50
  5.933    2.00 |12.000   37.10 |18.067    2.25 | 24.13    1.50
  5.967    2.00 |12.033  152.76 |18.100    2.25 | 24.17    1.50
  6.000    2.00 |12.067  152.76 |18.133    2.25 | 24.20    1.50
  6.033    2.00 |12.100  152.76 |18.167    2.25 | 24.23    1.50
  6.067    2.00 |12.133  152.76 |18.200    2.25 | 24.27    0.75

     Max.Eff.Inten.(mm/hr)=     152.76        99.63
                over (min)        5.00        12.00
     Storage Coeff.  (min)=       3.84 (ii)   10.91 (ii)
     Unit Hyd. Tpeak (min)=       4.00        12.00
     Unit Hyd. peak  (cms)=       0.29         0.10
                                                           *TOTALS*
     PEAK FLOW       (cms)=       0.70         1.63          2.145 (iii)
     TIME TO PEAK    (hrs)=      12.23        12.33         12.27
     RUNOFF VOLUME    (mm)=     122.80        63.48         72.44
     TOTAL RAINFALL   (mm)=     124.80       124.80        124.80
     RUNOFF COEFFICIENT   =       0.98         0.51          0.58

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
              CN* =  69.4    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

--------------------
| ADD HYD  (  0207)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0307):     2.55    0.277    12.47    57.22
      + ID2= 2 (  0308):    11.27    2.145    12.27    72.44
        ===============================================
        ID = 3 (  0207):    13.82    2.340    12.27    69.63

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

--------------------
| ADD HYD  (  0207)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0207):    13.82    2.340    12.27    69.63
      + ID2= 2 (  0504):    12.34    1.089    12.30    65.02
        ===============================================
        ID = 1 (  0207):    26.16    3.404    12.27    67.45

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

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\871c5942-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\871c5942-d

DATE: 05-20-2021                          TIME: 02:42:12

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 100yr 24hr 15min SCS (2010)    **
  **************************************************

  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                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 ** CALIB NASHYD          0301  1  2.0    7.80    0.50 12.97  64.69 0.52   0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.50 12.97  64.69  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB NASHYD          0302  1  2.0    0.96    0.25 12.23  63.35 0.51   0.000
    [CN=71.6        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.52 12.97  64.55  n/a   0.000
*
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.52 13.00  64.55  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB NASHYD          0303  1  2.0    0.54    0.14 12.23  61.02 0.49   0.000
    [CN=70.4        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.53 13.00  64.34  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.53 13.00  64.34  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB NASHYD          0304  1  2.0    1.29    0.32 12.23  63.97 0.51   0.000
    [CN=71.7        ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.84 12.27  64.30  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.84 12.27  64.30  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB STANDHYD        0305  1  2.0    0.35    0.10 12.23  85.41 0.68   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.93 12.27  64.97  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.92 12.27  64.97  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB NASHYD          0306  1  2.0    1.40    0.21 12.37  65.38 0.52   0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    1.10 12.27  65.02  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    1.09 12.30  65.02  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB NASHYD          0307  1  2.0    2.55    0.28 12.47  57.22 0.46   0.000
    [CN=67.5        ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                  15.0
    [ Ptot=124.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3f370feb-12ee-48f1-8cd0-
    remark: 100yr 24hr 15min SCS
*
 *  CALIB STANDHYD        0308  1  2.0   11.27    2.14 12.27  72.44 0.58   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    2.34 12.27  69.63  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    3.40 12.27  67.45  n/a   0.000
*
==================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\da2910ae-a
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\da2910ae-a

DATE: 05-20-2021                          TIME: 02:42:15

USER:
```

```
COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 24hr 15min SCS (2050)   **
  ************************************************

  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                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD          0301  1  2.0    7.80    0.54 12.97  68.54 0.53   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.54 12.97  68.54  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0302  1  2.0    0.96    0.27 12.23  67.11 0.52   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.55 12.97  68.38  n/a   0.000
*
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.55 13.00  68.38  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0303  1  2.0    0.54    0.15 12.23  64.72 0.50   0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.56 12.97  68.17  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.56 13.00  68.17  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0304  1  2.0    1.29    0.33 12.23  67.77 0.52   0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.89 12.27  68.12  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.89 12.27  68.12  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0305  1  2.0    0.35    0.10 12.23  89.57 0.69   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.99 12.27  68.81  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.98 12.27  68.81  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0306  1  2.0    1.40    0.22 12.37  69.23 0.53   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
```

```
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    1.16 12.27  68.86  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    1.15 12.30  68.85  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0307  1  2.0    2.55    0.29 12.47  60.79 0.47   0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                  15.0
    [ Ptot=129.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\990e148b-a4c7-42aa-aeec-
    remark: 100yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0308  1  2.0   11.27    2.28 12.27  76.37 0.59   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    2.48 12.27  73.50  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    3.62 12.27  71.31  n/a   0.000
*
=====================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO    TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O     T      T    H   H   Y Y   MM MM  O   O
       O   O     T      T    H   H    Y    M   M  O   O
        OOO      T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\5e677c0b-3
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\5e677c0b-3

DATE: 05-20-2021                           TIME: 02:42:12

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 100yr 4hr 10min Chicago (2010 **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 73.73 mm ]
*
 ** CALIB NASHYD          0301  1  2.0    7.80    0.26  2.30  27.26 0.37   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.26  2.30  27.26  n/a   0.000
*
    CHIC STORM                  10.0
    [ Ptot= 73.73 mm ]
*
 *  CALIB NASHYD          0302  1  2.0    0.96    0.16  1.33  26.76 0.36   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
```

```
*
   ADD [  0302+  0601]  0201  3  2.0    8.76    0.28  2.27  27.20  n/a    0.000
*
   PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.28  2.27  27.20  n/a    0.000
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB NASHYD         0303  1  2.0    0.54    0.09  1.33  25.33 0.34    0.000
   [CN=70.4          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0303+  0602]  0202  3  2.0    9.30    0.28  2.27  27.10  n/a    0.000
*
   CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.28  2.30  27.10  n/a    0.000
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB NASHYD         0304  1  2.0    1.29    0.18  1.37  26.98 0.37    0.000
   [CN=71.7          ]
   [ N = 3.0:Tp 0.08]
*
   ADD [  0304+  0501]  0203  3  2.0   10.59    0.42  1.37  27.08  n/a    0.000
*
   CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.43  1.37  27.08  n/a    0.000
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB STANDHYD       0305  1  2.0    0.35    0.08  1.33  43.40 0.59    0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]  0204  3  2.0   10.94    0.50  1.37  27.60  n/a    0.000
*
   CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.47  1.37  27.60  n/a    0.000
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB NASHYD         0306  1  2.0    1.40    0.10  1.57  27.82 0.38    0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]  0205  3  2.0   12.34    0.54  1.40  27.63  n/a    0.000
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.53  1.40  27.63  n/a    0.000
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB NASHYD         0307  1  2.0    2.55    0.13  1.67  23.11 0.31    0.000
   [CN=67.5          ]
   [ N = 3.0:Tp 0.31]
*
   CHIC STORM                     10.0
   [ Ptot= 73.73 mm ]
*
 * CALIB STANDHYD       0308  1  2.0   11.27    1.09  1.37  33.58 0.46    0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]  0207  3  2.0   13.82    1.14  1.37  31.65  n/a    0.000
*
   ADD [  0207+  0504]  0207  1  2.0   26.16    1.61  1.40  29.75  n/a    0.000
*
=====================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\cfb6c0ee-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\cfb6c0ee-d


DATE: 05-20-2021                           TIME: 02:42:14

USER:


COMMENTS: ____________________________________________________________


  **************************************************
  ** SIMULATION : 100yr 4hr 10min Chicago (2050 **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
 ** CALIB NASHYD         0301  1  2.0    7.80    0.27  2.30  28.82 0.38    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.27  2.30  28.82  n/a    0.000
*
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB NASHYD         0302  1  2.0    0.96    0.17  1.33  28.28 0.37    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.29  2.27  28.76  n/a    0.000
*
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.29  2.27  28.76  n/a    0.000
*
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB NASHYD         0303  1  2.0    0.54    0.09  1.33  26.80 0.35    0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.30  2.27  28.65  n/a    0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.30  2.30  28.65  n/a    0.000
*
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB NASHYD         0304  1  2.0    1.29    0.19  1.37  28.52 0.37    0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.44  1.37  28.63  n/a    0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.45  1.37  28.63  n/a    0.000
*
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB STANDHYD       0305  1  2.0    0.35    0.08  1.33  45.24 0.59    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.52  1.37  29.16  n/a    0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.49  1.37  29.16  n/a    0.000
*
    CHIC STORM                     10.0
    [ Ptot= 76.11 mm ]
*
  * CALIB NASHYD         0306  1  2.0    1.40    0.11  1.57  29.39 0.39    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.57  1.40  29.19  n/a    0.000
```

```
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.56  1.40  29.19  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 76.11 mm ]
*
 * CALIB NASHYD         0307  1  2.0    2.55    0.14  1.67  24.49 0.32   0.000
   [CN=67.5          ]
   [ N = 3.0:Tp 0.31]
*
   CHIC STORM                 10.0
   [ Ptot= 76.11 mm ]
*
 * CALIB STANDHYD       0308  1  2.0   11.27    1.13  1.37  35.24 0.46   0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]  0207  3  2.0   13.82    1.18  1.37  33.25  n/a   0.000
*
   ADD [  0207+  0504]  0207  1  2.0   26.16    1.68  1.40  31.34  n/a   0.000
*
=============================================================================================================
```

```
       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO    TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O     T      T    H   H   Y Y   MM MM  O   O
       O   O     T      T    H   H    Y    M   M  O   O
        OOO      T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\f4b52d54-2
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\f4b52d54-2

DATE: 05-20-2021                           TIME: 02:42:13

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 10yr 24hr 15min SCS (2010)      **
  **************************************************

  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                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
** CALIB NASHYD         0301  1  2.0    7.80    0.27 12.97  35.81 0.41   0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.76]
*
   PIPE    [ 2:  0301]  0601  1  2.0    7.80    0.27 13.00  35.81  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB NASHYD         0302  1  2.0    0.96    0.14 12.23  35.10 0.41   0.000
   [CN=71.6          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0302+  0601]  0201  3  2.0    8.76    0.28 13.00  35.73  n/a   0.000
```

```
*
   PIPE    [ 2:  0201]  0602  1  2.0    8.76    0.28 12.97  35.73  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB NASHYD         0303  1  2.0    0.54    0.08 12.23  33.42 0.39   0.000
   [CN=70.4          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0303+  0602]  0202  3  2.0    9.30    0.29 12.97  35.60  n/a   0.000
*
   CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.29 13.00  35.60  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB NASHYD         0304  1  2.0    1.29    0.17 12.23  35.42 0.41   0.000
   [CN=71.7          ]
   [ N = 3.0:Tp 0.08]
*
   ADD [  0304+  0501]  0203  3  2.0   10.59    0.46 12.27  35.57  n/a   0.000
*
   CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.46 12.27  35.57  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB STANDHYD       0305  1  2.0    0.35    0.06 12.23  53.35 0.62   0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]  0204  3  2.0   10.94    0.51 12.27  36.14  n/a   0.000
*
   CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.51 12.27  36.14  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB NASHYD         0306  1  2.0    1.40    0.11 12.37  36.41 0.42   0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]  0205  3  2.0   12.34    0.60 12.27  36.17  n/a   0.000
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.60 12.30  36.17  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB NASHYD         0307  1  2.0    2.55    0.15 12.47  30.76 0.36   0.000
   [CN=67.5          ]
   [ N = 3.0:Tp 0.31]
*
   READ STORM                 15.0
   [ Ptot= 86.40 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\cb5e7e4e-5ac0-49eb-8c3b-
   remark: 10yr 24hr 15min SCS
*
 * CALIB STANDHYD       0308  1  2.0   11.27    1.12 12.27  42.59 0.49   0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]  0207  3  2.0   13.82    1.22 12.27  40.41  n/a   0.000
*
   ADD [  0207+  0504]  0207  1  2.0   26.16    1.80 12.30  38.41  n/a   0.000
*
=============================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL
```

```
        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d3c67e3e-e
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d3c67e3e-e

DATE: 05-20-2021                           TIME: 02:42:15

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 10yr 24hr 15min SCS (2050)    **
  ************************************************

  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                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.32 12.97  40.92 0.44    0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.32 12.97  40.92  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0302  1  2.0     0.96    0.16 12.23  40.10 0.43    0.000
    [CN=71.6         ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.33 12.97  40.83  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.33 12.97  40.83  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0303  1  2.0     0.54    0.09 12.23  38.28 0.41    0.000
    [CN=70.4         ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.33 12.97  40.68  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.33 13.00  40.68  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0304  1  2.0     1.29    0.20 12.23  40.46 0.43    0.000
    [CN=71.7         ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0    10.59    0.52 12.27  40.66  n/a    0.000
*
    CHANNEL[ 2:  0203]    0502  1  2.0    10.59    0.53 12.27  40.66  n/a    0.000
*
```

```
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0305  1  2.0     0.35    0.06 12.23  59.17 0.63    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]   0204  3  2.0    10.94    0.59 12.27  41.25  n/a    0.000
*
    CHANNEL[ 2:  0204]    0503  1  2.0    10.94    0.58 12.27  41.25  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0306  1  2.0     1.40    0.13 12.37  41.54 0.44    0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]   0205  3  2.0    12.34    0.69 12.27  41.28  n/a    0.000
*
    CHANNEL[ 2:  0205]    0504  1  2.0    12.34    0.69 12.30  41.28  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0307  1  2.0     2.55    0.17 12.47  35.39 0.38    0.000
    [CN=67.5         ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                 15.0
    [ Ptot= 93.60 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\3c27f347-d388-4f4e-9917-
    remark: 10yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    1.28 12.27  47.92 0.51    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]   0207  3  2.0    13.82    1.39 12.27  45.61  n/a    0.000
*
    ADD [  0207+  0504]   0207  1  2.0    26.16    2.07 12.30  43.57  n/a    0.000
*
==========================================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\e1f22075-4
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\e1f22075-4

DATE: 05-20-2021                           TIME: 02:42:12

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 10yr 4hr 10min Chicago (2010) **
  ************************************************
```

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.13  2.33  13.86 0.27    0.000
    [CN=72.4            ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.13  2.33  13.86  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 ** CALIB NASHYD          0302  1  2.0     0.96    0.08  1.33  13.69 0.27    0.000
    [CN=71.6            ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.14  2.33  13.84  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.14  2.33  13.84  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB NASHYD          0303  1  2.0     0.54    0.04  1.33  12.74 0.25    0.000
    [CN=70.4            ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.14  2.33  13.78  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.14  2.33  13.78  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB NASHYD          0304  1  2.0     1.29    0.09  1.37  13.78 0.27    0.000
    [CN=71.7            ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0    10.59    0.20  1.37  13.78  n/a    0.000
*
    CHANNEL[ 2:  0203]    0502  1  2.0    10.59    0.19  1.37  13.78  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB STANDHYD        0305  1  2.0     0.35    0.05  1.33  26.82 0.52    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]   0204  3  2.0    10.94    0.23  1.37  14.20  n/a    0.000
*
    CHANNEL[ 2:  0204]    0503  1  2.0    10.94    0.22  1.40  14.20  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB NASHYD          0306  1  2.0     1.40    0.05  1.57  14.32 0.28    0.000
    [CN=72.4            ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]   0205  3  2.0    12.34    0.25  1.40  14.21  n/a    0.000
*
    CHANNEL[ 2:  0205]    0504  1  2.0    12.34    0.25  1.43  14.21  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB NASHYD          0307  1  2.0     2.55    0.06  1.70  11.36 0.22    0.000
    [CN=67.5            ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                   10.0
    [ Ptot= 51.17 mm ]
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    0.58  1.33  19.08 0.37    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]   0207  3  2.0    13.82    0.59  1.33  17.66  n/a    0.000
*
    ADD [  0207+  0504]   0207  1  2.0    26.16    0.76  1.37  16.03  n/a    0.000
```

```
*
=====================================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\0f25ffd5-f
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\0f25ffd5-f

DATE: 05-20-2021                           TIME: 02:42:13

USER:

COMMENTS: ____________________________________________________________

  *************************************************
  ** SIMULATION : 10yr 4hr 10min Chicago (2050) **
  *************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                   10.0
    [ Ptot= 53.64 mm ]
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.14  2.33  15.19 0.28    0.000
    [CN=72.4            ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.14  2.33  15.19  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 53.64 mm ]
*
 ** CALIB NASHYD          0302  1  2.0     0.96    0.09  1.33  14.99 0.28    0.000
    [CN=71.6            ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.15  2.33  15.17  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.15  2.33  15.17  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 53.64 mm ]
*
 *  CALIB NASHYD          0303  1  2.0     0.54    0.04  1.33  13.98 0.26    0.000
    [CN=70.4            ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.15  2.33  15.10  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.15  2.37  15.10  n/a    0.000
*
    CHIC STORM                   10.0
    [ Ptot= 53.64 mm ]
*
 *  CALIB NASHYD          0304  1  2.0     1.29    0.09  1.37  15.08 0.28    0.000
    [CN=71.7            ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0    10.59    0.22  1.37  15.10  n/a    0.000
*
```

```
   CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.21  1.37  15.10  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 53.64 mm ]
*
 * CALIB STANDHYD       0305  1  2.0    0.35    0.05  1.33  28.55 0.53   0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]  0204  3  2.0   10.94    0.25  1.37  15.53  n/a   0.000
*
   CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.24  1.40  15.53  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 53.64 mm ]
*
 * CALIB NASHYD         0306  1  2.0    1.40    0.05  1.57  15.66 0.29   0.000
   [CN=72.4         ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]  0205  3  2.0   12.34    0.27  1.40  15.54  n/a   0.000
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.26  1.43  15.54  n/a   0.000
*
   CHIC STORM                 10.0
   [ Ptot= 53.64 mm ]
*
 * CALIB NASHYD         0307  1  2.0    2.55    0.06  1.70  12.51 0.23   0.000
   [CN=67.5         ]
   [ N = 3.0:Tp 0.31]
*
   CHIC STORM                 10.0
   [ Ptot= 53.64 mm ]
*
 * CALIB STANDHYD       0308  1  2.0   11.27    0.60  1.33  20.55 0.38   0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]  0207  3  2.0   13.82    0.62  1.33  19.07  n/a   0.000
*
   ADD [  0207+  0504]  0207  1  2.0   26.16    0.81  1.37  17.40  n/a   0.000
*
==========================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\f25a61fb-6
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\f25a61fb-6

DATE: 05-20-2021                           TIME: 02:42:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 25yr 24hr 15min SCS (2010)    **
  ************************************************

  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                 15.0
```

```
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
** CALIB NASHYD         0301  1  2.0    7.80    0.37 12.97  47.98 0.46   0.000
   [CN=72.4         ]
   [ N = 3.0:Tp 0.76]
*
   PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.37 12.97  47.98  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB NASHYD         0302  1  2.0    0.96    0.19 12.23  47.00 0.46   0.000
   [CN=71.6         ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0302+  0601]  0201  3  2.0    8.76    0.38 12.97  47.87  n/a   0.000
*
   PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.38 12.97  47.87  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB NASHYD         0303  1  2.0    0.54    0.10 12.23  45.02 0.44   0.000
   [CN=70.4         ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0303+  0602]  0202  3  2.0    9.30    0.39 12.97  47.71  n/a   0.000
*
   CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.39 13.00  47.71  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB NASHYD         0304  1  2.0    1.29    0.23 12.23  47.44 0.46   0.000
   [CN=71.7         ]
   [ N = 3.0:Tp 0.08]
*
   ADD [  0304+  0501]  0203  3  2.0   10.59    0.62 12.27  47.67  n/a   0.000
*
   CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.62 12.27  47.67  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB STANDHYD       0305  1  2.0    0.35    0.07 12.23  67.08 0.65   0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]  0204  3  2.0   10.94    0.69 12.27  48.29  n/a   0.000
*
   CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.68 12.27  48.29  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB NASHYD         0306  1  2.0    1.40    0.15 12.37  48.62 0.47   0.000
   [CN=72.4         ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]  0205  3  2.0   12.34    0.80 12.27  48.33  n/a   0.000
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.80 12.30  48.33  n/a   0.000
*
   READ STORM                 15.0
   [ Ptot=103.20 mm ]
   fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
   remark: 25yr 24hr 15min SCS
*
 * CALIB NASHYD         0307  1  2.0    2.55    0.20 12.47  41.82 0.41   0.000
   [CN=67.5         ]
   [ N = 3.0:Tp 0.31]
*
   READ STORM                 15.0
```

```
    [ Ptot=103.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7ebfe8d3-bb81-4905-820c-
    remark : 25yr 24hr 15min SCS
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    1.50 12.27  55.24 0.54    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0    13.82    1.63 12.27  52.77  n/a    0.000
*
    ADD [  0207+  0504]  0207  1  2.0    26.16    2.43 12.30  50.68  n/a    0.000
*
=====================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\5c358c57-a
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\5c358c57-a

DATE: 05-20-2021                          TIME: 02:42:14

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 25yr 24hr 15min SCS (2050)    **
  ************************************************

  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                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.40 12.97  51.60 0.48    0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.40 12.97  51.60  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0302  1  2.0     0.96    0.20 12.23  50.54 0.47    0.000
    [CN=71.6        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0     8.76    0.41 12.97  51.49  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.41 12.97  51.49  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0303  1  2.0     0.54    0.11 12.23  48.48 0.45    0.000
    [CN=70.4        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0     9.30    0.42 12.97  51.31  n/a    0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0     9.30    0.42 13.00  51.31  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0304  1  2.0     1.29    0.25 12.23  51.02 0.47    0.000
    [CN=71.7        ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0    10.59    0.66 12.27  51.28  n/a    0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0    10.59    0.66 12.27  51.28  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0305  1  2.0     0.35    0.08 12.23  71.09 0.66    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0    10.94    0.74 12.27  51.91  n/a    0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0    10.94    0.73 12.27  51.91  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0306  1  2.0     1.40    0.17 12.37  52.26 0.48    0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0    12.34    0.87 12.27  51.95  n/a    0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0    12.34    0.87 12.30  51.95  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD          0307  1  2.0     2.55    0.22 12.47  45.14 0.42    0.000
    [CN=67.5        ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                  15.0
    [ Ptot=108.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\56c8263b-f98d-4d8f-b3d7-
    remark: 25yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    1.70 12.27  58.99 0.55    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0    13.82    1.85 12.27  56.43  n/a    0.000
*
    ADD [  0207+  0504]  0207  1  2.0    26.16    2.69 12.27  54.32  n/a    0.000
*
=====================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d0f694d0-b
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d0f694d0-b

DATE: 05-20-2021                          TIME: 02:42:12

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 25yr 4hr 10min Chicago (2010) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
 ** CALIB NASHYD           0301  1  2.0    7.80    0.18  2.33  18.96 0.31    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]    0601  1  2.0    7.80    0.18  2.33  18.96  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB NASHYD           0302  1  2.0    0.96    0.11  1.33  18.66 0.31    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0    8.76    0.19  2.30  18.93  n/a    0.000
*
    PIPE   [ 2:  0201]    0602  1  2.0    8.76    0.19  2.33  18.93  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB NASHYD           0303  1  2.0    0.54    0.06  1.33  17.51 0.29    0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0    9.30    0.19  2.33  18.84  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0    9.30    0.19  2.33  18.84  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB NASHYD           0304  1  2.0    1.29    0.12  1.37  18.80 0.31    0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0   10.59    0.29  1.37  18.84  n/a    0.000
*
    CHANNEL[ 2:  0203]    0502  1  2.0   10.59    0.28  1.37  18.84  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB STANDHYD         0305  1  2.0    0.35    0.06  1.33  33.34 0.55    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]   0204  3  2.0   10.94    0.33  1.37  19.30  n/a    0.000
*
    CHANNEL[ 2:  0204]    0503  1  2.0   10.94    0.31  1.40  19.30  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB NASHYD           0306  1  2.0    1.40    0.07  1.57  19.46 0.32    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
```

```
    ADD [  0306+  0503]   0205  3  2.0   12.34    0.36  1.40  19.32  n/a    0.000
*
    CHANNEL[ 2:  0205]    0504  1  2.0   12.34    0.35  1.43  19.32  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB NASHYD           0307  1  2.0    2.55    0.08  1.70  15.78 0.26    0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                  10.0
    [ Ptot= 60.31 mm ]
*
  * CALIB STANDHYD         0308  1  2.0   11.27    0.75  1.33  24.68 0.41    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]   0207  3  2.0   13.82    0.78  1.37  23.04  n/a    0.000
*
    ADD [  0207+  0504]   0207  1  2.0   26.16    1.06  1.37  21.29  n/a    0.000
*
==================================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO    TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O     T      T    H   H   Y Y   MM MM  O   O
      O   O     T      T    H   H    Y    M   M  O   O
       OOO      T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\ef9f7f52-0
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\ef9f7f52-0

DATE: 05-20-2021                          TIME: 02:42:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 25yr 4hr 10min Chicago (2050) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 62.67 mm ]
*
 ** CALIB NASHYD           0301  1  2.0    7.80    0.19  2.33  20.35 0.32    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]    0601  1  2.0    7.80    0.19  2.33  20.35  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 62.67 mm ]
*
  * CALIB NASHYD           0302  1  2.0    0.96    0.12  1.33  20.02 0.32    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0    8.76    0.20  2.33  20.32  n/a    0.000
*
    PIPE   [ 2:  0201]    0602  1  2.0    8.76    0.20  2.33  20.32  n/a    0.000
*
```

```
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB NASHYD        0303  1  2.0    0.54    0.06  1.33  18.82 0.30    0.000
   [CN=70.4          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0303+  0602]  0202  3  2.0    9.30    0.21  2.33  20.23  n/a    0.000
*
   CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.21  2.33  20.23  n/a    0.000
*
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB NASHYD        0304  1  2.0    1.29    0.13  1.37  20.17 0.32    0.000
   [CN=71.7          ]
   [ N = 3.0:Tp 0.08]
*
   ADD [  0304+  0501]  0203  3  2.0   10.59    0.30  1.37  20.22  n/a    0.000
*
   CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.30  1.37  20.22  n/a    0.000
*
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB STANDHYD      0305  1  2.0    0.35    0.06  1.33  35.06 0.56    0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]  0204  3  2.0   10.94    0.35  1.37  20.70  n/a    0.000
*
   CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.33  1.40  20.70  n/a    0.000
*
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB NASHYD        0306  1  2.0    1.40    0.07  1.57  20.87 0.33    0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]  0205  3  2.0   12.34    0.39  1.40  20.72  n/a    0.000
*
   CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.37  1.43  20.72  n/a    0.000
*
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB NASHYD        0307  1  2.0    2.55    0.09  1.70  17.00 0.27    0.000
   [CN=67.5          ]
   [ N = 3.0:Tp 0.31]
*
   CHIC STORM                   10.0
   [ Ptot= 62.67 mm ]
*
 * CALIB STANDHYD      0308  1  2.0   11.27    0.78  1.37  26.19 0.42    0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]  0207  3  2.0   13.82    0.81  1.37  24.50  n/a    0.000
*
   ADD [  0207+  0504]  0207  1  2.0   26.16    1.11  1.37  22.71  n/a    0.000
*
=================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\fb03d59d-9
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\fb03d59d-9
```

```
DATE: 05-20-2021                          TIME: 02:42:13

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 2yr 24hr 15min SCS (2010)     **
  ************************************************

  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                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
    remark: 2yr 24hr 15min SCS
*
 ** CALIB NASHYD         0301  1  2.0    7.80    0.12 13.00  16.05 0.29   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]  0601  1  2.0    7.80    0.12 13.00  16.05  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
    remark: 2yr 24hr 15min SCS
*
 ** CALIB NASHYD         0302  1  2.0    0.96    0.06 12.23  15.82 0.29   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.12 13.00  16.02  n/a   0.000
*
    PIPE    [ 2:  0201]  0602  1  2.0    8.76    0.12 13.00  16.02  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
    remark: 2yr 24hr 15min SCS
*
 ** CALIB NASHYD         0303  1  2.0    0.54    0.03 12.23  14.78 0.27   0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.13 13.00  15.95  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.13 13.03  15.95  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
    remark: 2yr 24hr 15min SCS
*
 ** CALIB NASHYD         0304  1  2.0    1.29    0.08 12.27  15.93 0.29   0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.20 12.27  15.95  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.20 12.27  15.95  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
    remark: 2yr 24hr 15min SCS
*
 *  CALIB STANDHYD       0305  1  2.0    0.35    0.03 12.23  29.65 0.54   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.22 12.27  16.39  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.22 12.30  16.39  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 55.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
```

```
   remark: 2yr 24hr 15min SCS
 *
  *  CALIB NASHYD        0306  1  2.0    1.40    0.05 12.40  16.52 0.30   0.000
     [CN=72.4          ]
     [ N = 3.0:Tp 0.24]
 *
     ADD [  0306+  0503]  0205  3  2.0   12.34    0.26 12.30  16.40  n/a   0.000
 *
     CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.25 12.33  16.40  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 55.20 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
     remark: 2yr 24hr 15min SCS
 *
  *  CALIB NASHYD        0307  1  2.0    2.55    0.06 12.47  13.25 0.24   0.000
     [CN=67.5          ]
     [ N = 3.0:Tp 0.31]
 *
     READ STORM                   15.0
     [ Ptot= 55.20 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\4191ab3c-e3b0-4021-8d90-
     remark: 2yr 24hr 15min SCS
 *
  *  CALIB STANDHYD      0308  1  2.0   11.27    0.46 12.30  21.50 0.39   0.000
     [I%=15.1:S%= 2.00]
 *
     ADD [  0307+  0308]  0207  3  2.0   13.82    0.51 12.30  19.98  n/a   0.000
 *
     ADD [  0207+  0504]  0207  1  2.0   26.16    0.76 12.30  18.29  n/a   0.000
 *
=========================================================================================================

     V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
     V    V   I    SS     U    U   A A   L
      V  V    I     SS    U    U  AAAAA  L
      V  V    I      SS   U    U  A   A  L
       VV     I    SSSSS  UUUUU   A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
```



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7304ae59-8
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7304ae59-8

DATE: 05-20-2021                          TIME: 02:42:14

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 2yr 24hr 15min SCS (2050)     **
  ************************************************

  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                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
 **  CALIB NASHYD        0301  1  2.0    7.80    0.15 13.00  20.19 0.32   0.000
     [CN=72.4          ]
     [ N = 3.0:Tp 0.76]
 *
     PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.15 13.00  20.19  n/a   0.000
```

```
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
 **  CALIB NASHYD        0302  1  2.0    0.96    0.08 12.23  19.86 0.32   0.000
     [CN=71.6          ]
     [ N = 3.0:Tp 0.05]
 *
     ADD [  0302+  0601]  0201  3  2.0    8.76    0.16 13.00  20.16  n/a   0.000
 *
     PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.16 13.00  20.16  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB NASHYD        0303  1  2.0    0.54    0.04 12.23  18.67 0.30   0.000
     [CN=70.4          ]
     [ N = 3.0:Tp 0.05]
 *
     ADD [  0303+  0602]  0202  3  2.0    9.30    0.16 13.00  20.07  n/a   0.000
 *
     CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.16 13.03  20.07  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB NASHYD        0304  1  2.0    1.29    0.10 12.27  20.01 0.32   0.000
     [CN=71.7          ]
     [ N = 3.0:Tp 0.08]
 *
     ADD [  0304+  0501]  0203  3  2.0   10.59    0.25 12.27  20.06  n/a   0.000
 *
     CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.25 12.27  20.06  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB STANDHYD      0305  1  2.0    0.35    0.04 12.23  34.86 0.56   0.000
     [I%=37.1:S%= 2.00]
 *
     ADD [  0305+  0502]  0204  3  2.0   10.94    0.29 12.27  20.54  n/a   0.000
 *
     CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.27 12.27  20.54  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB NASHYD        0306  1  2.0    1.40    0.06 12.40  20.70 0.33   0.000
     [CN=72.4          ]
     [ N = 3.0:Tp 0.24]
 *
     ADD [  0306+  0503]  0205  3  2.0   12.34    0.33 12.30  20.55  n/a   0.000
 *
     CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.33 12.30  20.55  n/a   0.000
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB NASHYD        0307  1  2.0    2.55    0.08 12.47  16.86 0.27   0.000
     [CN=67.5          ]
     [ N = 3.0:Tp 0.31]
 *
     READ STORM                   15.0
     [ Ptot= 62.40 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\98db5e63-c9bf-4a28-9e75-
     remark: 2yr 24hr 15min SCS (2050)
 *
  *  CALIB STANDHYD      0308  1  2.0   11.27    0.60 12.30  26.02 0.42   0.000
     [I%=15.1:S%= 2.00]
 *
     ADD [  0307+  0308]  0207  3  2.0   13.82    0.66 12.30  24.33  n/a   0.000
 *
```

```
   ADD [  0207+  0504]  0207  1  2.0   26.16    0.98 12.30  22.55  n/a   0.000
*
===================================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\34261bf5-4
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\34261bf5-4

DATE: 05-20-2021                          TIME: 02:42:11

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 2yr 4hr 10min Chicago (2010)  **
  ************************************************

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

      START @  0.00 hrs
      --------------------
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD           0301  1  2.0    7.80    0.05  2.43   5.46 0.17   0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.76]
*
   PIPE    [ 2:  0301]     0601  1  2.0    7.80    0.05  2.43   5.46  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD           0302  1  2.0    0.96    0.03  1.33   5.49 0.17   0.000
   [CN=71.6          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0302+  0601]     0201  3  2.0    8.76    0.05  2.37   5.46  n/a   0.000
*
   PIPE    [ 2:  0201]     0602  1  2.0    8.76    0.05  2.40   5.46  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD           0303  1  2.0    0.54    0.01  1.33   4.95 0.15   0.000
   [CN=70.4          ]
   [ N = 3.0:Tp 0.05]
*
   ADD [  0303+  0602]     0202  3  2.0    9.30    0.05  2.37   5.43  n/a   0.000
*
   CHANNEL[ 2:  0202]      0501  1  2.0    9.30    0.05  2.43   5.43  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 ** CALIB NASHYD           0304  1  2.0    1.29    0.03  1.37   5.50 0.17   0.000
   [CN=71.7          ]
   [ N = 3.0:Tp 0.08]
*
   ADD [  0304+  0501]     0203  3  2.0   10.59    0.06  1.37   5.44  n/a   0.000
```

```
*
   CHANNEL[ 2:  0203]      0502  1  2.0   10.59    0.06  1.40   5.44  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 * CALIB STANDHYD          0305  1  2.0    0.35    0.03  1.33  14.86 0.45   0.000
   [I%=37.1:S%= 2.00]
*
   ADD [  0305+  0502]     0204  3  2.0   10.94    0.08  1.37   5.74  n/a   0.000
*
   CHANNEL[ 2:  0204]      0503  1  2.0   10.94    0.07  1.43   5.74  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 * CALIB NASHYD            0306  1  2.0    1.40    0.02  1.60   5.79 0.18   0.000
   [CN=72.4          ]
   [ N = 3.0:Tp 0.24]
*
   ADD [  0306+  0503]     0205  3  2.0   12.34    0.08  1.43   5.75  n/a   0.000
*
   CHANNEL[ 2:  0205]      0504  1  2.0   12.34    0.08  1.50   5.75  n/a   0.000
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 * CALIB NASHYD            0307  1  2.0    2.55    0.02  1.73   4.26 0.13   0.000
   [CN=67.5          ]
   [ N = 3.0:Tp 0.31]
*
   CHIC STORM                       10.0
   [ Ptot= 32.84 mm ]
*
 * CALIB STANDHYD          0308  1  2.0   11.27    0.30  1.37   9.36 0.28   0.000
   [I%=15.1:S%= 2.00]
*
   ADD [  0307+  0308]     0207  3  2.0   13.82    0.31  1.37   8.42  n/a   0.000
*
   ADD [  0207+  0504]     0207  1  2.0   26.16    0.35  1.37   7.16  n/a   0.000
*
===================================================================================================

      V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\ccf9c83e-c
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\ccf9c83e-c

DATE: 05-20-2021                          TIME: 02:42:13

USER:

COMMENTS: ____________________________________________________________

  ************************************************
  ** SIMULATION : 2yr 4hr 10min Chicago (2050)  **
  ************************************************

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

      START @  0.00 hrs
      --------------------
```

```
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.06  2.43    6.44 0.18    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.06  2.43    6.44  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD          0302  1  2.0     0.96    0.03  1.33    6.45 0.18    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.06  2.37    6.44  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.06  2.40    6.44  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD          0303  1  2.0     0.54    0.02  1.33    5.85 0.17    0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.06  2.37    6.41  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.06  2.43    6.41  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 ** CALIB NASHYD          0304  1  2.0     1.29    0.03  1.37    6.46 0.18    0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0    10.59    0.08  1.37    6.42  n/a    0.000
*
    CHANNEL[ 2:  0203]    0502  1  2.0    10.59    0.08  1.40    6.42  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 *  CALIB STANDHYD        0305  1  2.0     0.35    0.03  1.33   16.39 0.46    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]   0204  3  2.0    10.94    0.09  1.37    6.74  n/a    0.000
*
    CHANNEL[ 2:  0204]    0503  1  2.0    10.94    0.08  1.40    6.74  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 *  CALIB NASHYD          0306  1  2.0     1.40    0.02  1.60    6.79 0.19    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]   0205  3  2.0    12.34    0.10  1.43    6.74  n/a    0.000
*
    CHANNEL[ 2:  0205]    0504  1  2.0    12.34    0.09  1.50    6.74  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 *  CALIB NASHYD          0307  1  2.0     2.55    0.02  1.73    5.07 0.14    0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                  10.0
    [ Ptot= 35.36 mm ]
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    0.32  1.37   10.55 0.30    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]   0207  3  2.0    13.82    0.32  1.37    9.54  n/a    0.000
*
    ADD [  0207+  0504]   0207  1  2.0    26.16    0.38  1.37    8.22  n/a    0.000
*
=============================================================================================================


       V    V   I    SSSSS  U   U    A    L            (v 6.1.2001)
```

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

       OOO    TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O     T      T    H   H   Y Y   MM MM  O   O
      O   O     T      T    H   H    Y    M   M  O   O
       OOO      T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d7195539-0
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d7195539-0


DATE: 05-20-2021                          TIME: 02:42:13

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 50yr 24hr 15min SCS (2010)    **
  ************************************************

  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                  15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.43 12.97   55.28 0.49    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.43 12.97   55.28  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB NASHYD          0302  1  2.0     0.96    0.22 12.23   54.14 0.48    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.44 12.97   55.15  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.44 12.97   55.15  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB NASHYD          0303  1  2.0     0.54    0.12 12.23   52.00 0.46    0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.45 12.97   54.97  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.45 13.00   54.97  n/a    0.000
*
    READ STORM                  15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB NASHYD          0304  1  2.0     1.29    0.27 12.23   54.65 0.48    0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
```

```
*
    ADD [  0304+  0501]  0203  3  2.0    10.59    0.71 12.27  54.93  n/a    0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0    10.59    0.71 12.27  54.93  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB STANDHYD        0305  1  2.0     0.35    0.08 12.23  75.14 0.67    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0    10.94    0.79 12.27  55.58  n/a    0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0    10.94    0.78 12.27  55.58  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB NASHYD          0306  1  2.0     1.40    0.18 12.37  55.94 0.50    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0    12.34    0.93 12.27  55.62  n/a    0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0    12.34    0.93 12.30  55.62  n/a    0.000
*
    READ STORM                 15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB NASHYD          0307  1  2.0     2.55    0.23 12.47  48.52 0.43    0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                 15.0
    [ Ptot=112.80 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\e2d6eeb5-e033-4b98-b6fd-
    remark: 50yr 24hr 15min SCS
*
 *  CALIB STANDHYD        0308  1  2.0    11.27    1.82 12.27  62.77 0.56    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0    13.82    1.99 12.27  60.14  n/a    0.000
*
    ADD [  0207+  0504]  0207  1  2.0    26.16    2.89 12.27  58.01  n/a    0.000
*
=====================================================================================================

       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                   *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\27a9d092-d
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\27a9d092-d


DATE: 05-20-2021                          TIME: 02:42:14

USER:


COMMENTS: ____________________________________________________________
```

```
   ************************************************
   ** SIMULATION : 50yr 24hr 15min SCS (2050)    **
   ************************************************

   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                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
 **  CALIB NASHYD          0301  1  2.0     7.80    0.47 12.97  60.89 0.51    0.000
     [CN=72.4          ]
     [ N = 3.0:Tp 0.76]
*
     PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.47 12.97  60.89  n/a    0.000
*
     READ STORM                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
  *  CALIB NASHYD          0302  1  2.0     0.96    0.24 12.23  59.63 0.50    0.000
     [CN=71.6          ]
     [ N = 3.0:Tp 0.05]
*
     ADD [  0302+  0601]  0201  3  2.0     8.76    0.49 12.97  60.76  n/a    0.000
*
     PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.49 12.97  60.76  n/a    0.000
*
     READ STORM                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
  *  CALIB NASHYD          0303  1  2.0     0.54    0.13 12.23  57.38 0.48    0.000
     [CN=70.4          ]
     [ N = 3.0:Tp 0.05]
*
     ADD [  0303+  0602]  0202  3  2.0     9.30    0.50 12.97  60.56  n/a    0.000
*
     CHANNEL[ 2:  0202]   0501  1  2.0     9.30    0.50 13.00  60.56  n/a    0.000
*
     READ STORM                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
  *  CALIB NASHYD          0304  1  2.0     1.29    0.30 12.23  60.21 0.50    0.000
     [CN=71.7          ]
     [ N = 3.0:Tp 0.08]
*
     ADD [  0304+  0501]  0203  3  2.0    10.59    0.79 12.27  60.52  n/a    0.000
*
     CHANNEL[ 2:  0203]   0502  1  2.0    10.59    0.79 12.27  60.52  n/a    0.000
*
     READ STORM                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
  *  CALIB STANDHYD        0305  1  2.0     0.35    0.09 12.23  81.28 0.68    0.000
     [I%=37.1:S%= 2.00]
*
     ADD [  0305+  0502]  0204  3  2.0    10.94    0.88 12.27  61.18  n/a    0.000
*
     CHANNEL[ 2:  0204]   0503  1  2.0    10.94    0.87 12.27  61.18  n/a    0.000
*
     READ STORM                 15.0
     [ Ptot=120.00 mm ]
     fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
     remark: 50yr 24hr 15min SCS (2050)
*
  *  CALIB NASHYD          0306  1  2.0     1.40    0.20 12.37  61.57 0.51    0.000
     [CN=72.4          ]
     [ N = 3.0:Tp 0.24]
*
     ADD [  0306+  0503]  0205  3  2.0    12.34    1.03 12.27  61.22  n/a    0.000
*
     CHANNEL[ 2:  0205]   0504  1  2.0    12.34    1.02 12.30  61.22  n/a    0.000
```

```
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
    remark: 50yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD        0307  1  2.0    2.55    0.26 12.47  53.70 0.45   0.000
    [CN=67.5        ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                 15.0
    [ Ptot=120.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\26d59738-8a6a-43bc-847b-
    remark: 50yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD      0308  1  2.0   11.27    2.01 12.27  68.54 0.57   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    2.20 12.27  65.80  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    3.20 12.27  63.64  n/a   0.000
*
==========================================================================================================


       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7147ee84-5
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7147ee84-5


DATE: 05-20-2021                          TIME: 02:42:12

USER:


COMMENTS: ____________________________________________________________


  **************************************************
  ** SIMULATION : 50yr 4hr 10min Chicago (2010) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 ** CALIB NASHYD        0301  1  2.0    7.80    0.22  2.30  22.97 0.34   0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.22  2.30  22.97  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB NASHYD        0302  1  2.0    0.96    0.14  1.33  22.58 0.34   0.000
    [CN=71.6        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.23  2.30  22.93  n/a   0.000
*
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.23  2.30  22.93  n/a   0.000
```

```
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB NASHYD        0303  1  2.0    0.54    0.07  1.33  21.28 0.32   0.000
    [CN=70.4        ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.24  2.30  22.83  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.24  2.33  22.83  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB NASHYD        0304  1  2.0    1.29    0.15  1.37  22.76 0.34   0.000
    [CN=71.7        ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.35  1.37  22.83  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.36  1.37  22.83  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB STANDHYD      0305  1  2.0    0.35    0.07  1.33  38.27 0.57   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.42  1.37  23.32  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.39  1.40  23.32  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB NASHYD        0306  1  2.0    1.40    0.09  1.57  23.51 0.35   0.000
    [CN=72.4        ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.45  1.40  23.34  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.44  1.40  23.34  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB NASHYD        0307  1  2.0    2.55    0.11  1.67  19.31 0.29   0.000
    [CN=67.5        ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                 10.0
    [ Ptot= 66.98 mm ]
*
 *  CALIB STANDHYD      0308  1  2.0   11.27    0.94  1.37  29.01 0.43   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    0.98  1.37  27.22  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    1.35  1.40  25.39  n/a   0.000
*
==========================================================================================================


       V    V   I    SSSSS  U    U    A    L              (v 6.1.2001)
       V    V   I    SS     U    U   A A   L
        V  V    I     SS    U    U  AAAAA  L
        V  V    I      SS   U    U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
```


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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d47416f4-a
```

```
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\d47416f4-a

DATE: 05-20-2021                          TIME: 02:42:14

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 50yr 4hr 10min Chicago (2050) **
  **************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
 ** CALIB NASHYD        0301  1  2.0    7.80    0.23  2.30  24.57 0.35   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]  0601  1  2.0    7.80    0.23  2.30  24.57  n/a   0.000
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB NASHYD        0302  1  2.0    0.96    0.14  1.33  24.14 0.35   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.25  2.30  24.52  n/a   0.000
*
    PIPE    [ 2:  0201]  0602  1  2.0    8.76    0.25  2.30  24.52  n/a   0.000
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB NASHYD        0303  1  2.0    0.54    0.08  1.33  22.79 0.33   0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.25  2.30  24.42  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.25  2.33  24.42  n/a   0.000
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB NASHYD        0304  1  2.0    1.29    0.16  1.37  24.33 0.35   0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.37  1.37  24.41  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.37  1.37  24.41  n/a   0.000
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB STANDHYD      0305  1  2.0    0.35    0.07  1.33  40.20 0.58   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.44  1.37  24.92  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.41  1.40  24.92  n/a   0.000
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB NASHYD        0306  1  2.0    1.40    0.09  1.57  25.11 0.36   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.47  1.40  24.94  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.47  1.40  24.94  n/a   0.000
*
    CHIC STORM                   10.0
```

```
    [ Ptot= 69.53 mm ]
*
  * CALIB NASHYD        0307  1  2.0    2.55    0.11  1.67  20.72 0.30   0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                   10.0
    [ Ptot= 69.53 mm ]
*
  * CALIB STANDHYD      0308  1  2.0   11.27    0.97  1.37  30.72 0.44   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    1.02  1.37  28.88  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    1.42  1.40  27.02  n/a   0.000
*
===========================================================================================================

      V    V   I    SSSSS  U   U    A    L            (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\62e2bce8-c
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\62e2bce8-c

DATE: 05-20-2021                          TIME: 02:42:12

USER:

COMMENTS: ____________________________________________________________

  **************************************************
  ** SIMULATION : 5yr 24hr 15min SCS (2010)      **
  **************************************************

  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                   15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 ** CALIB NASHYD        0301  1  2.0    7.80    0.21 13.00  27.69 0.37   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]  0601  1  2.0    7.80    0.21 13.00  27.69  n/a   0.000
*
    READ STORM                   15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
  * CALIB NASHYD        0302  1  2.0    0.96    0.11 12.23  27.18 0.37   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.22 13.00  27.64  n/a   0.000
*
    PIPE    [ 2:  0201]  0602  1  2.0    8.76    0.22 13.00  27.64  n/a   0.000
*
    READ STORM                   15.0
```

```
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB NASHYD        0303  1  2.0    0.54    0.06 12.23  25.74 0.35   0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.22 13.00  27.53  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.22 13.00  27.53  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB NASHYD        0304  1  2.0    1.29    0.13 12.27  27.41 0.37   0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.35 12.27  27.51  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.35 12.27  27.51  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB STANDHYD      0305  1  2.0    0.35    0.05 12.23  43.91 0.59   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.39 12.27  28.04  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.38 12.27  28.04  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB NASHYD        0306  1  2.0    1.40    0.09 12.40  28.25 0.38   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.46 12.30  28.06  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.46 12.30  28.06  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB NASHYD        0307  1  2.0    2.55    0.11 12.47  23.49 0.32   0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                  15.0
    [ Ptot= 74.40 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\7155929e-fe14-48d8-b3d3-
    remark: 5yr 24hr 15min SCS
*
 *  CALIB STANDHYD      0308  1  2.0   11.27    0.83 12.27  34.04 0.46   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    0.90 12.27  32.10  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    1.35 12.30  30.19  n/a   0.000
*
=========================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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



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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\c85b2a53-8
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\c85b2a53-8


DATE: 05-20-2021                           TIME: 02:42:14

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 5yr 24hr 15min SCS (2050)     **
  ************************************************

  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                  15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 ** CALIB NASHYD        0301  1  2.0    7.80    0.24 12.97  30.87 0.39   0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.24 13.00  30.87  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD        0302  1  2.0    0.96    0.12 12.23  30.29 0.38   0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.24 13.00  30.81  n/a   0.000
*
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.24 13.00  30.81  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD        0303  1  2.0    0.54    0.07 12.23  28.74 0.36   0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.25 13.00  30.69  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.25 13.00  30.69  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD        0304  1  2.0    1.29    0.15 12.27  30.55 0.39   0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.39 12.27  30.67  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.39 12.27  30.67  n/a   0.000
*
    READ STORM                  15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
```

```
*
 *  CALIB STANDHYD       0305  1  2.0    0.35    0.05 12.23  47.64 0.60   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.44 12.27  31.21  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.43 12.27  31.21  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD         0306  1  2.0    1.40    0.10 12.37  31.45 0.40   0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.51 12.30  31.24  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.51 12.30  31.24  n/a   0.000
*
    READ STORM                 15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB NASHYD         0307  1  2.0    2.55    0.12 12.47  26.33 0.33   0.000
    [CN=67.5         ]
    [ N = 3.0:Tp 0.31]
*
    READ STORM                 15.0
    [ Ptot= 79.20 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\2c2f14f1-2d42-44de-83aa-
    remark: 5yr 24hr 15min SCS (2050)
*
 *  CALIB STANDHYD       0308  1  2.0   11.27    0.92 12.27  37.41 0.47   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    1.00 12.27  35.36  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    1.50 12.30  33.42  n/a   0.000
*
==========================================================================================================


       V    V   I    SSSSS  U   U    A    L              (v 6.1.2001)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\fe378381-8
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\fe378381-8


DATE: 05-20-2021                          TIME: 02:42:12

USER:


COMMENTS: ____________________________________________________________


  **************************************************
  ** SIMULATION : 5yr 4hr 10min Chicago (2010)  **
  **************************************************

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

      START @  0.00 hrs
```

```
      --------------------
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD         0301  1  2.0    7.80    0.09  2.37  10.30 0.23   0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]  0601  1  2.0    7.80    0.09  2.37  10.30  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD         0302  1  2.0    0.96    0.06  1.33  10.21 0.23   0.000
    [CN=71.6         ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.10  2.33  10.29  n/a   0.000
*
    PIPE    [ 2:  0201]  0602  1  2.0    8.76    0.10  2.37  10.29  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD         0303  1  2.0    0.54    0.03  1.33   9.42 0.21   0.000
    [CN=70.4         ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.10  2.33  10.24  n/a   0.000
*
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.10  2.37  10.24  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 ** CALIB NASHYD         0304  1  2.0    1.29    0.06  1.37  10.26 0.23   0.000
    [CN=71.7         ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.14  1.37  10.24  n/a   0.000
*
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.14  1.40  10.24  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 *  CALIB STANDHYD       0305  1  2.0    0.35    0.04  1.33  22.00 0.50   0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.16  1.37  10.62  n/a   0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.15  1.40  10.62  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 *  CALIB NASHYD         0306  1  2.0    1.40    0.04  1.60  10.71 0.24   0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.17  1.40  10.63  n/a   0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.17  1.43  10.63  n/a   0.000
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 *  CALIB NASHYD         0307  1  2.0    2.55    0.04  1.70   8.31 0.19   0.000
    [CN=67.5         ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                 10.0
    [ Ptot= 44.09 mm ]
*
 *  CALIB STANDHYD       0308  1  2.0   11.27    0.46  1.33  15.07 0.34   0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0   13.82    0.47  1.33  13.82  n/a   0.000
*
    ADD [  0207+  0504]  0207  1  2.0   26.16    0.56  1.37  12.31  n/a   0.000
*
==========================================================================================================
```

```
      V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                ***** S U M M A R Y   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7be2f387-7
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\7be2f387-7


DATE: 05-20-2021                           TIME: 02:42:13

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : 5yr 4hr 10min Chicago (2050)  **
  ************************************************

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

      START @  0.00 hrs
      --------------------
    CHIC STORM                  10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB NASHYD          0301  1  2.0     7.80    0.10  2.37  11.43 0.25    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.76]
*
    PIPE    [ 2:  0301]   0601  1  2.0     7.80    0.10  2.37  11.43  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB NASHYD          0302  1  2.0     0.96    0.06  1.33  11.32 0.24    0.000
    [CN=71.6          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0302+  0601]   0201  3  2.0     8.76    0.11  2.33  11.41  n/a    0.000
*
    PIPE    [ 2:  0201]   0602  1  2.0     8.76    0.11  2.37  11.41  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB NASHYD          0303  1  2.0     0.54    0.03  1.33  10.47 0.23    0.000
    [CN=70.4          ]
    [ N = 3.0:Tp 0.05]
*
    ADD [  0303+  0602]   0202  3  2.0     9.30    0.11  2.33  11.36  n/a    0.000
*
    CHANNEL[ 2:  0202]    0501  1  2.0     9.30    0.11  2.37  11.36  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 46.41 mm ]
*
 ** CALIB NASHYD          0304  1  2.0     1.29    0.07  1.37  11.38 0.25    0.000
    [CN=71.7          ]
    [ N = 3.0:Tp 0.08]
*
    ADD [  0304+  0501]   0203  3  2.0    10.59    0.16  1.37  11.36  n/a    0.000
*
    CHANNEL[ 2:  0203]    0502  1  2.0    10.59    0.15  1.40  11.36  n/a    0.000
*
    CHIC STORM                  10.0
    [ Ptot= 46.41 mm ]
```

```
*
 *  CALIB STANDHYD       0305  1  2.0     0.35    0.04  1.33  23.56 0.51    0.000
    [I%=37.1:S%= 2.00]
*
    ADD [  0305+  0502]  0204  3  2.0    10.94    0.18  1.37  11.75  n/a    0.000
*
    CHANNEL[ 2:  0204]   0503  1  2.0    10.94    0.17  1.40  11.75  n/a    0.000
*
    CHIC STORM                 10.0
    [ Ptot= 46.41 mm ]
*
 *  CALIB NASHYD         0306  1  2.0     1.40    0.04  1.60  11.85 0.26    0.000
    [CN=72.4          ]
    [ N = 3.0:Tp 0.24]
*
    ADD [  0306+  0503]  0205  3  2.0    12.34    0.19  1.40  11.76  n/a    0.000
*
    CHANNEL[ 2:  0205]   0504  1  2.0    12.34    0.19  1.43  11.76  n/a    0.000
*
    CHIC STORM                 10.0
    [ Ptot= 46.41 mm ]
*
 *  CALIB NASHYD         0307  1  2.0     2.55    0.05  1.70   9.27 0.20    0.000
    [CN=67.5          ]
    [ N = 3.0:Tp 0.31]
*
    CHIC STORM                 10.0
    [ Ptot= 46.41 mm ]
*
 *  CALIB STANDHYD       0308  1  2.0    11.27    0.48  1.33  16.35 0.35    0.000
    [I%=15.1:S%= 2.00]
*
    ADD [  0307+  0308]  0207  3  2.0    13.82    0.49  1.33  15.05  n/a    0.000
*
    ADD [  0207+  0504]  0207  1  2.0    26.16    0.60  1.37  13.50  n/a    0.000
*
=============================================================================================================


      V    V   I    SSSSS  U   U    A    L             (v 6.1.2001)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO     TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                ***** S U M M A R Y   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.1\VO2\voin.dat
  Output  filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\8bf62935-6
  Summary filename: C:\Users\ATrevers\AppData\Local\Civica\VH5\79805b87-747d-4f5f-9a6c-4c38b09dab09\8bf62935-6


DATE: 05-20-2021                           TIME: 02:42:15

USER:


COMMENTS: ____________________________________________________________


  ************************************************
  ** SIMULATION : Timmins                       **
  ************************************************

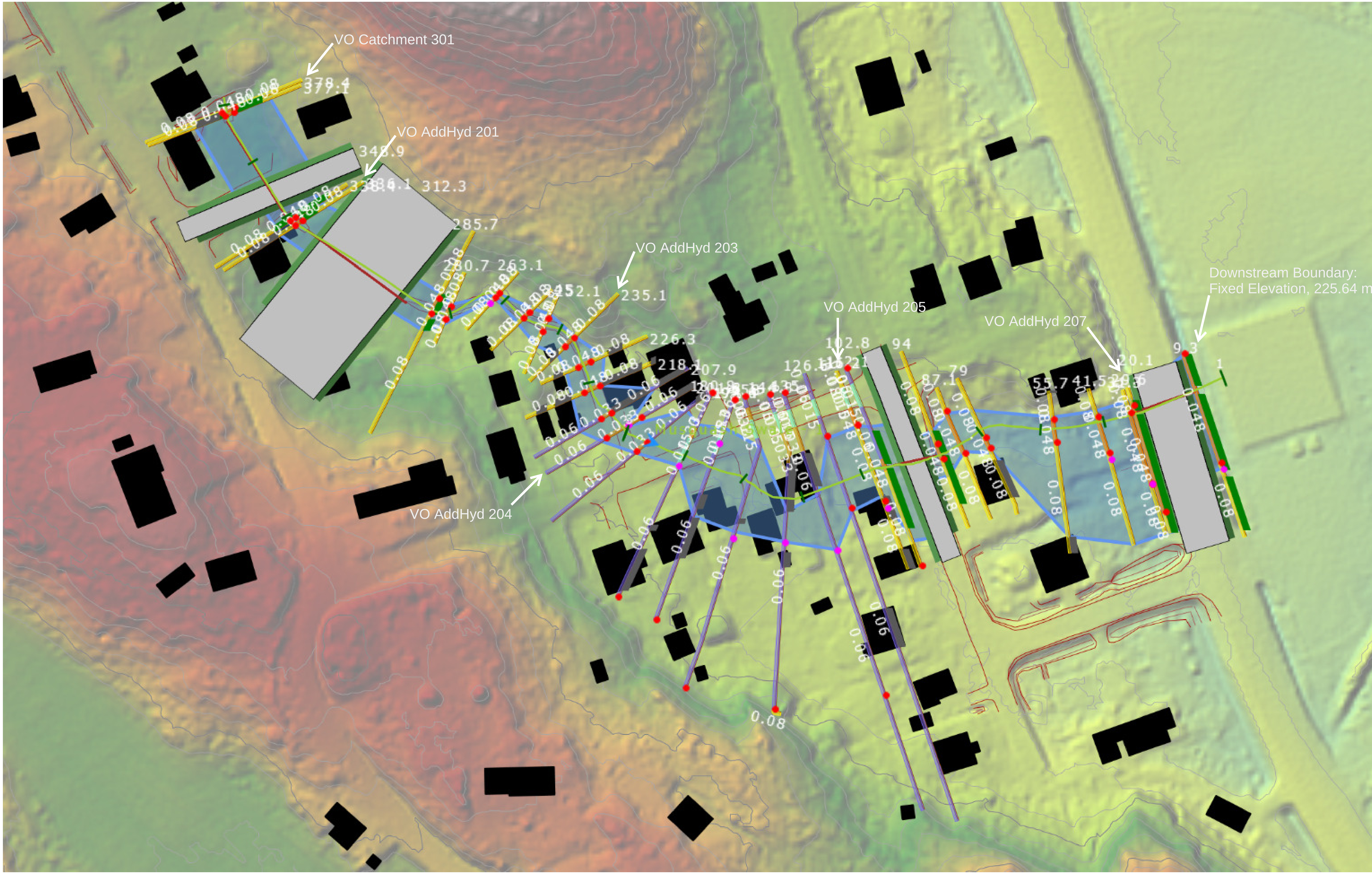
  W/E COMMAND              HYD ID   DT     AREA  ' Qpeak Tpeak   R.V. R.C.    Qbase
                                   min      ha   '  cms   hrs     mm           cms

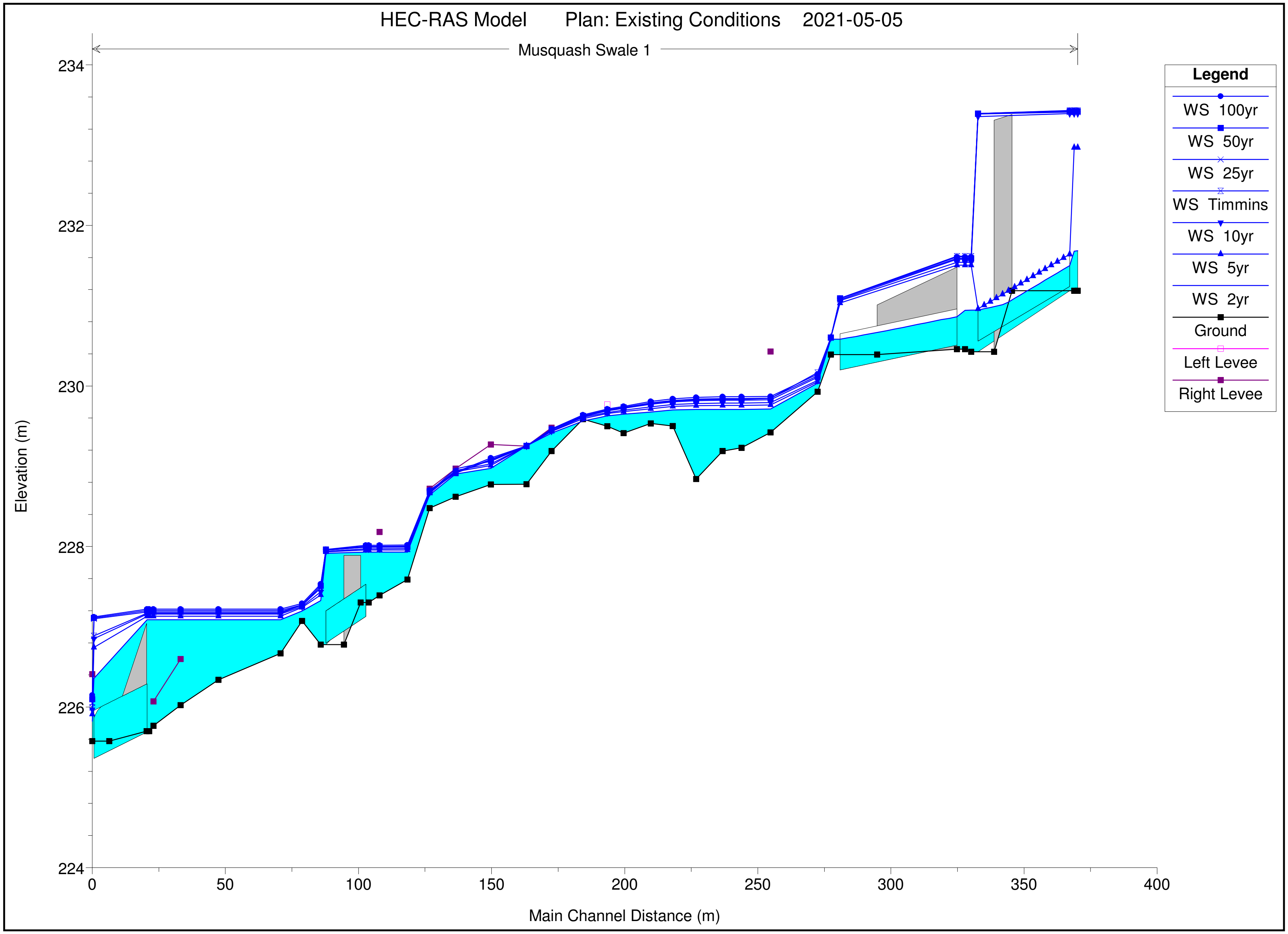
      START @  0.00 hrs
      --------------------
    READ STORM                  60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
*
```

```
 ** CALIB NASHYD        0301  1  2.0    7.80    0.52  7.47 111.83 0.62   0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.76]
 *
    PIPE   [ 2:  0301]   0601  1  2.0    7.80    0.52  7.47 111.83  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB NASHYD        0302  1  2.0    0.96    0.09  7.00 109.57 0.61   0.000
    [CN=71.6         ]
    [ N = 3.0:Tp 0.05]
 *
    ADD [  0302+  0601]  0201  3  2.0    8.76    0.56  7.47 111.59  n/a   0.000
 *
    PIPE   [ 2:  0201]   0602  1  2.0    8.76    0.56  7.50 111.59  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB NASHYD        0303  1  2.0    0.54    0.05  7.00 106.53 0.59   0.000
    [CN=70.4         ]
    [ N = 3.0:Tp 0.05]
 *
    ADD [  0303+  0602]  0202  3  2.0    9.30    0.58  7.50 111.29  n/a   0.000
 *
    CHANNEL[ 2:  0202]   0501  1  2.0    9.30    0.58  7.50 111.29  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB NASHYD        0304  1  2.0    1.29    0.12  7.00 110.68 0.61   0.000
    [CN=71.7         ]
    [ N = 3.0:Tp 0.08]
 *
    ADD [  0304+  0501]  0203  3  2.0   10.59    0.68  7.00 111.22  n/a   0.000
 *
    CHANNEL[ 2:  0203]   0502  1  2.0   10.59    0.68  7.03 111.22  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB STANDHYD      0305  1  2.0    0.35    0.03  7.00 135.47 0.75   0.000
    [I%=37.1:S%= 2.00]
 *
    ADD [  0305+  0502]  0204  3  2.0   10.94    0.71  7.00 111.99  n/a   0.000
 *
    CHANNEL[ 2:  0204]   0503  1  2.0   10.94    0.71  7.03 111.99  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB NASHYD        0306  1  2.0    1.40    0.12  7.03 112.58 0.62   0.000
    [CN=72.4         ]
    [ N = 3.0:Tp 0.24]
 *
    ADD [  0306+  0503]  0205  3  2.0   12.34    0.84  7.03 112.06  n/a   0.000
 *
    CHANNEL[ 2:  0205]   0504  1  2.0   12.34    0.83  7.03 112.06  n/a   0.000
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
  * CALIB NASHYD        0307  1  2.0    2.55    0.20  7.07 101.53 0.56   0.000
    [CN=67.5         ]
    [ N = 3.0:Tp 0.31]
 *
    READ STORM                 60.0
    [ Ptot=181.00 mm ]
    fname : C:\Users\ATrevers\AppData\Local\Temp\f9120818-5bb7-47b4-9517-1295e5f6bdb5\95abe3de-85ee-45d0-90f7-
    remark: Timmins
 *
```

```
  * CALIB STANDHYD      0308  1  2.0   11.27    1.00  7.00 120.37 0.67   0.000
    [I%=15.1:S%= 2.00]
 *
    ADD [  0307+  0308]  0207  3  2.0   13.82    1.20  7.00 116.89  n/a   0.000
 *
    ADD [  0207+  0504]  0207  1  2.0   26.16    2.03  7.03 114.61  n/a   0.000
 *
 FINISH

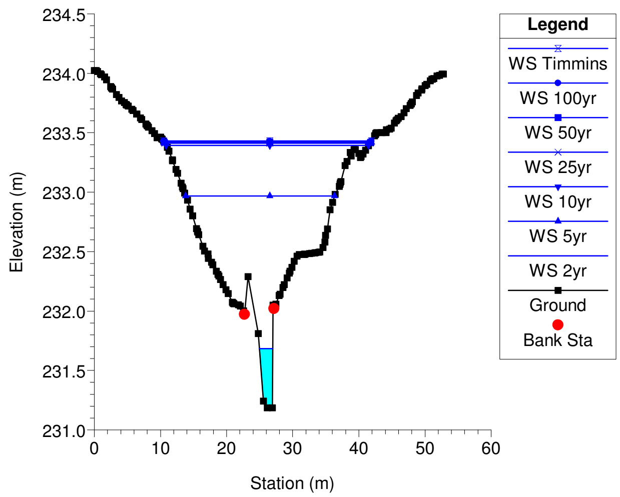
=========================================================================================================
```


VO Catchment 301
VO AddHyd 201
VO AddHyd 203
VO AddHyd 204
VO AddHyd 205
VO AddHyd 207
Downstream Boundary:
Fixed Elevation, 225.64 m

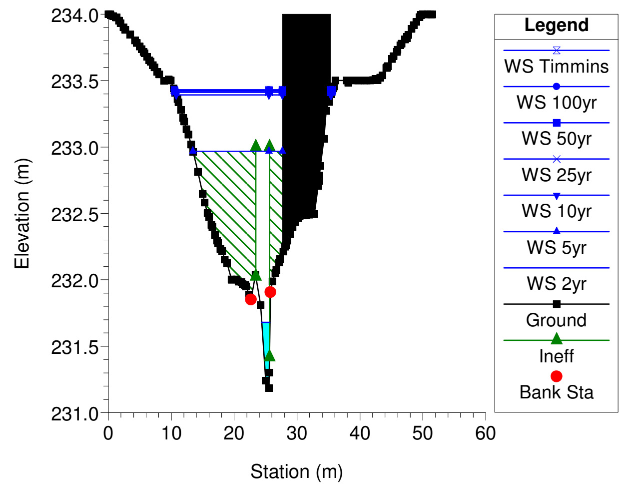


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Musquash Swale 1
Elevation (m)
Main Channel Distance (m)
234
232
230
228
226
224
0
50
100
150
200
250
300
350
400
Legend
WS 100yr
WS 50yr
WS 25yr
WS Timmins
WS 10yr
WS 5yr
WS 2yr
Ground
Left Levee
Right Levee

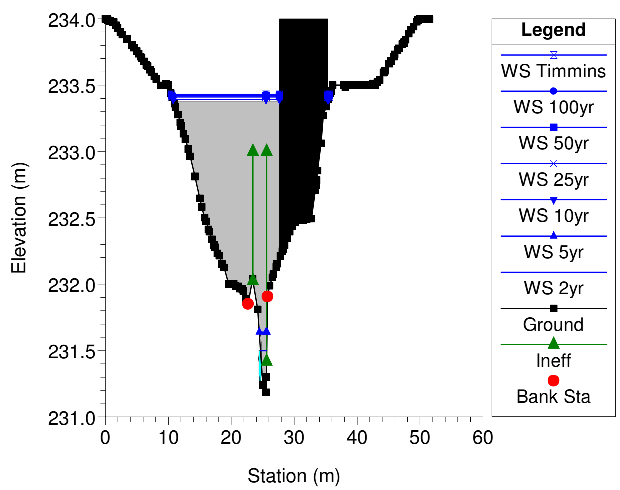
HEC-RAS Model Plan: Existing Conditions 2021-05-05



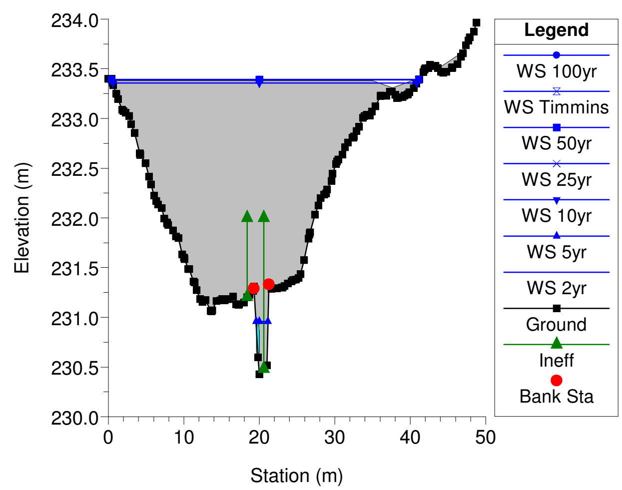
HEC-RAS Model Plan: Existing Conditions 2021-05-05



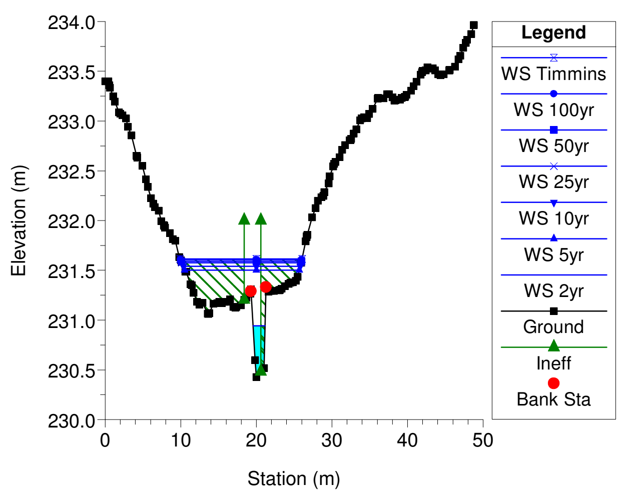
HEC-RAS Model Plan: Existing Conditions 2021-05-05



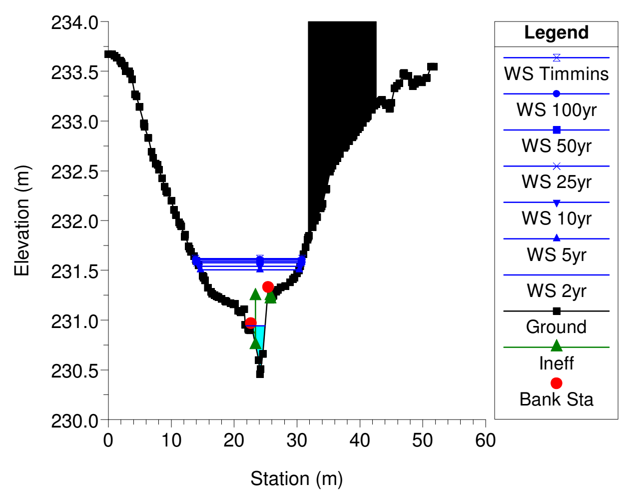
HEC-RAS Model Plan: Existing Conditions 2021-05-05

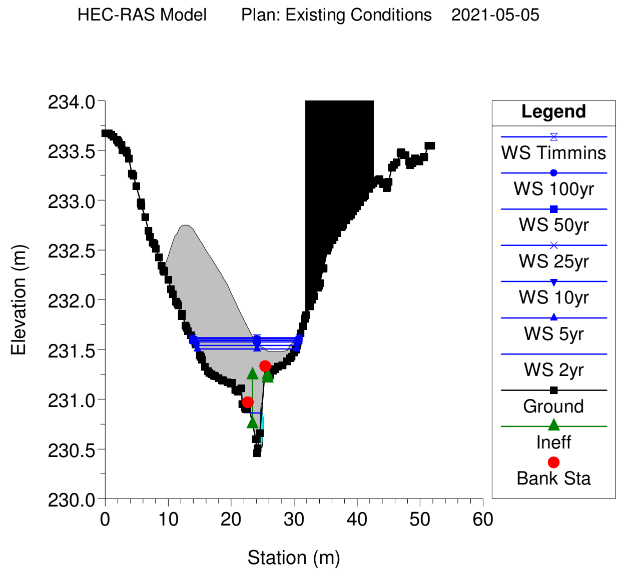


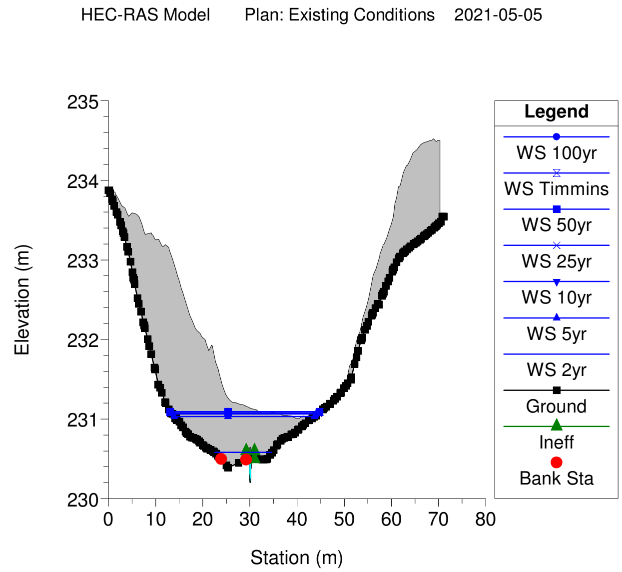
HEC-RAS Model Plan: Existing Conditions 2021-05-05

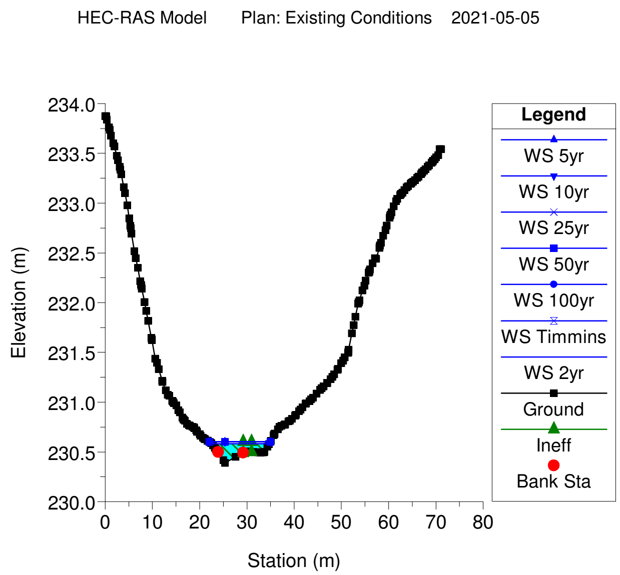


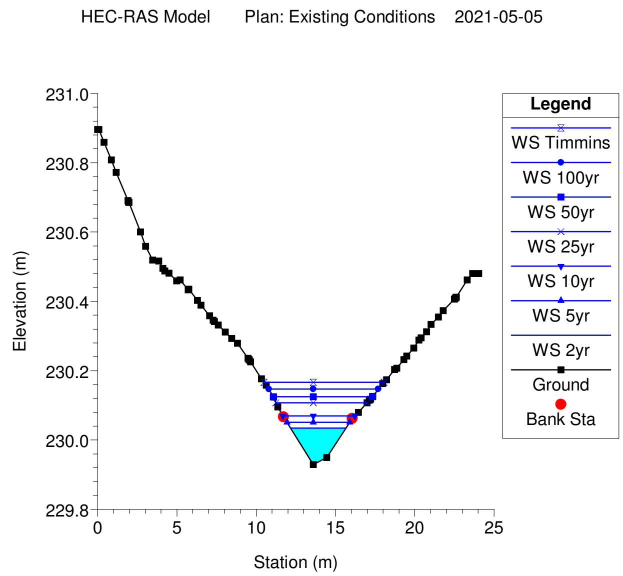
HEC-RAS Model Plan: Existing Conditions 2021-05-05

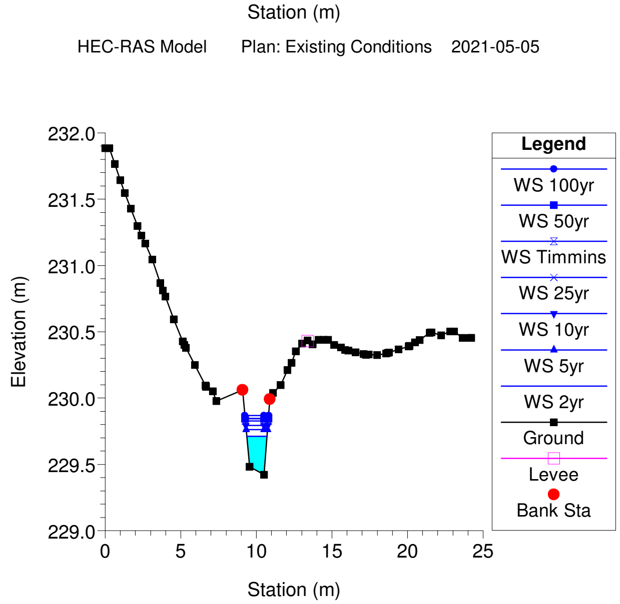


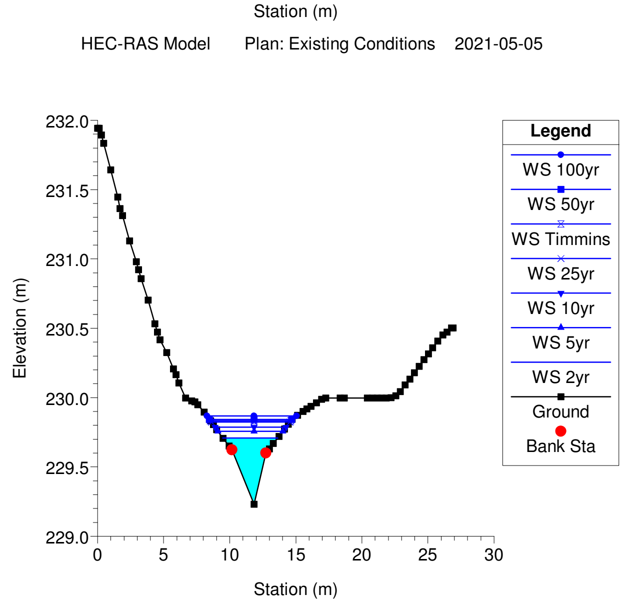

HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS 2yr
Ground
Ineff
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS 100yr
WS Timmins
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS 2yr
Ground
Ineff
Bank Sta

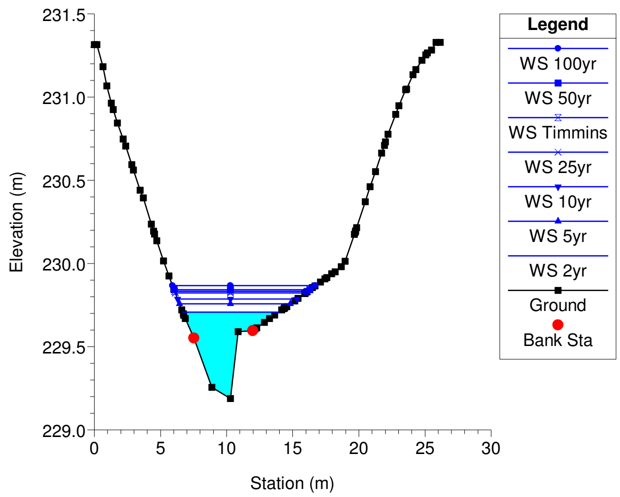

HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS 5yr
WS 10yr
WS 25yr
WS 50yr
WS 100yr
WS Timmins
WS 2yr
Ground
Ineff
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS Timmins
WS 100yr
WS 50yr
WS 25yr
WS 10yr
WS 5yr
WS 2yr
Ground
Bank Sta

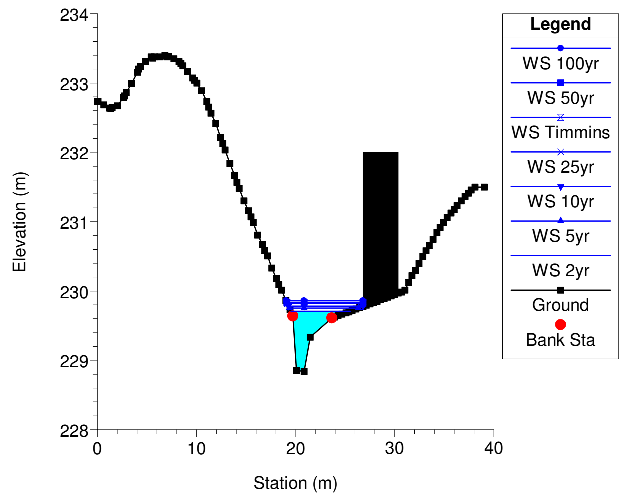

HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS 100yr
WS 50yr
WS Timmins
WS 25yr
WS 10yr
WS 5yr
WS 2yr
Ground
Levee
Bank Sta


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Elevation (m)
Station (m)
Legend
WS 100yr
WS 50yr
WS Timmins
WS 25yr
WS 10yr
WS 5yr
WS 2yr
Ground
Bank Sta

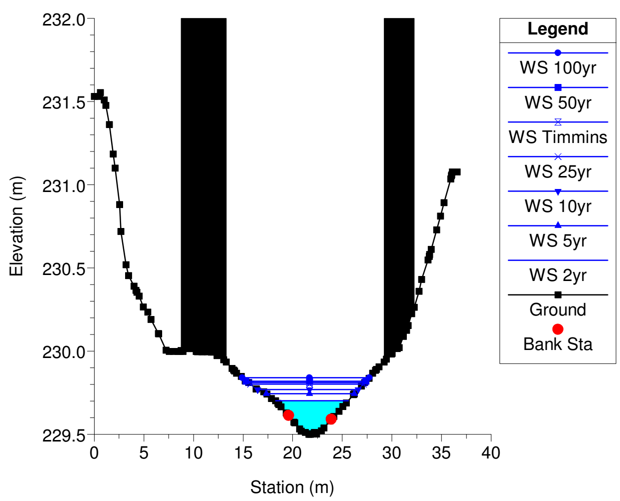
HEC-RAS Model Plan: Existing Conditions 2021-05-05



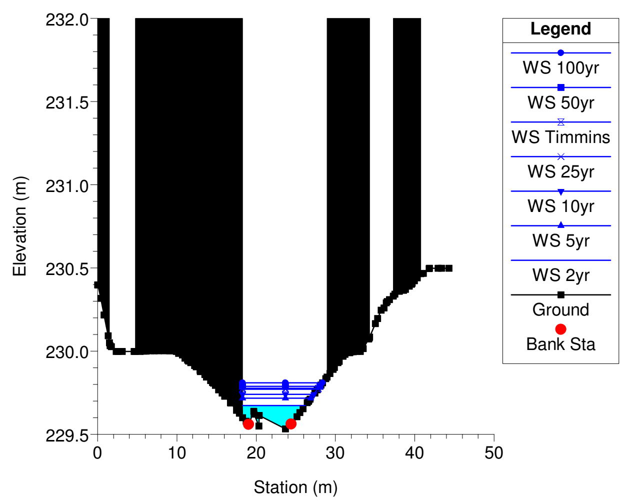
HEC-RAS Model Plan: Existing Conditions 2021-05-05



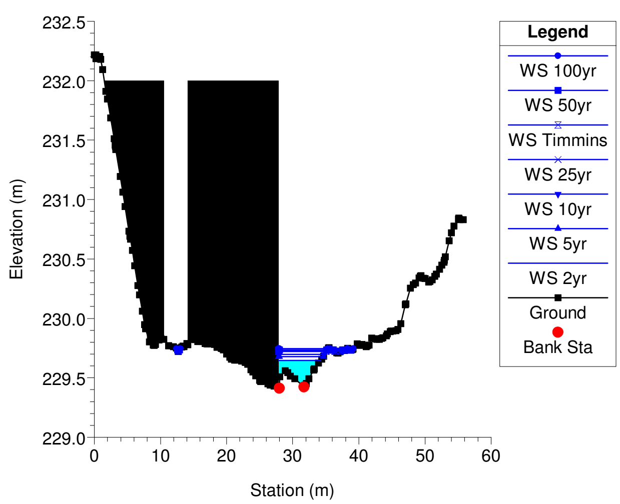
HEC-RAS Model Plan: Existing Conditions 2021-05-05



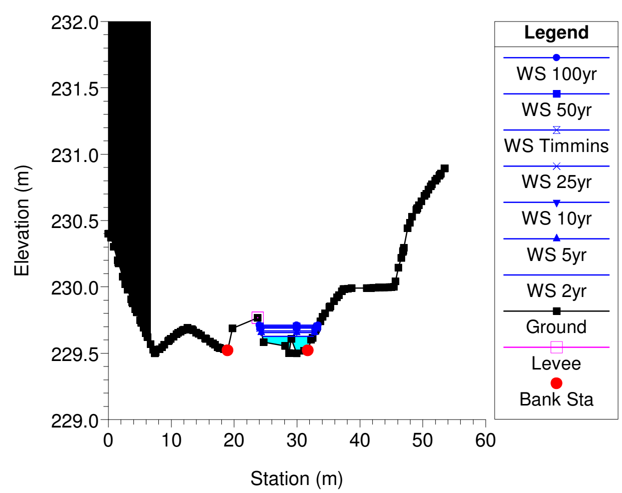
HEC-RAS Model Plan: Existing Conditions 2021-05-05



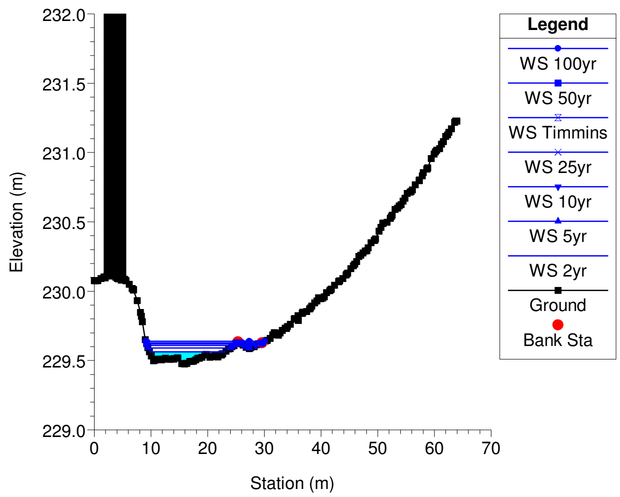
HEC-RAS Model Plan: Existing Conditions 2021-05-05



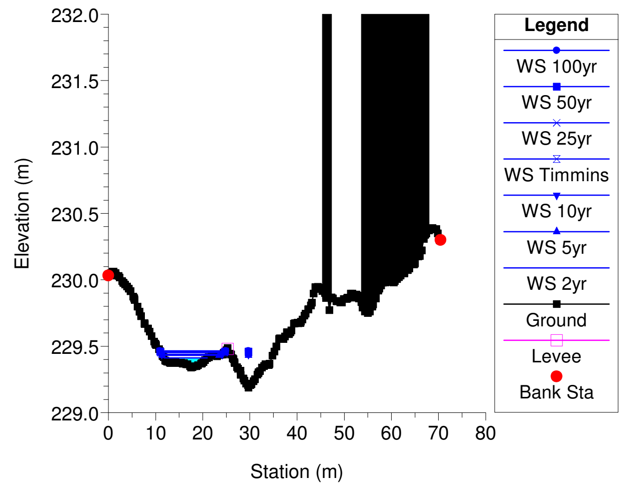
HEC-RAS Model Plan: Existing Conditions 2021-05-05



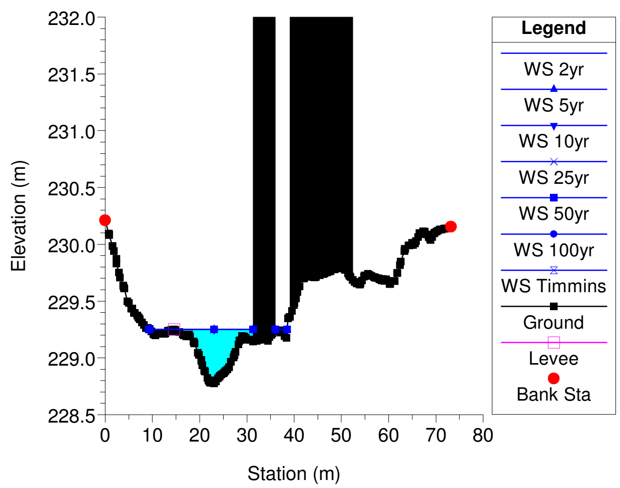
HEC-RAS Model Plan: Existing Conditions 2021-05-05



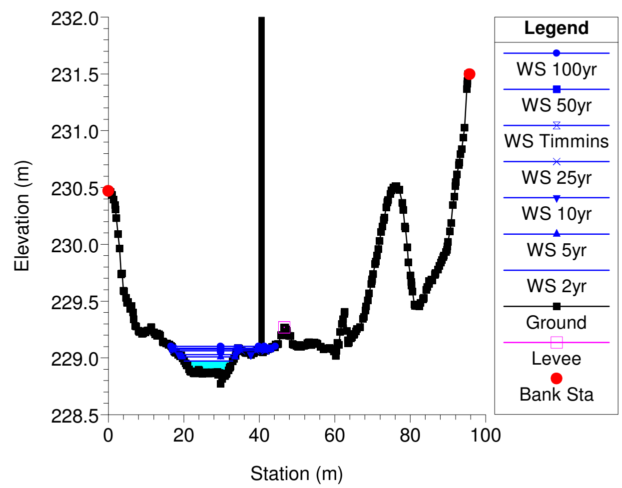
HEC-RAS Model Plan: Existing Conditions 2021-05-05



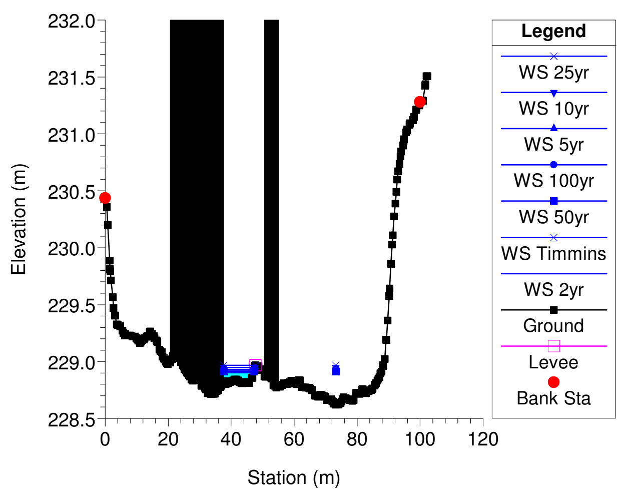
HEC-RAS Model Plan: Existing Conditions 2021-05-05



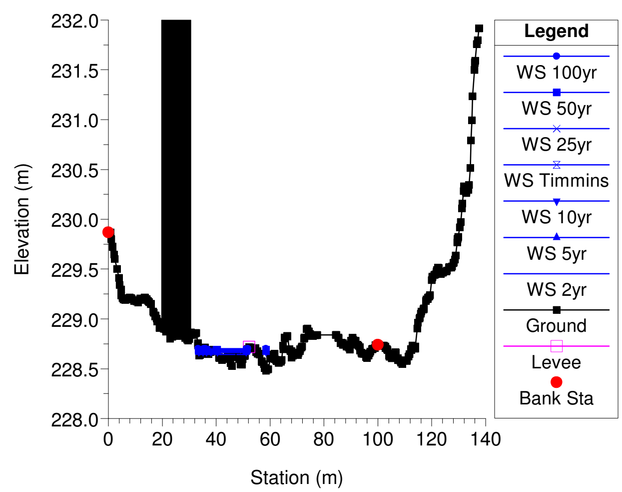
HEC-RAS Model Plan: Existing Conditions 2021-05-05



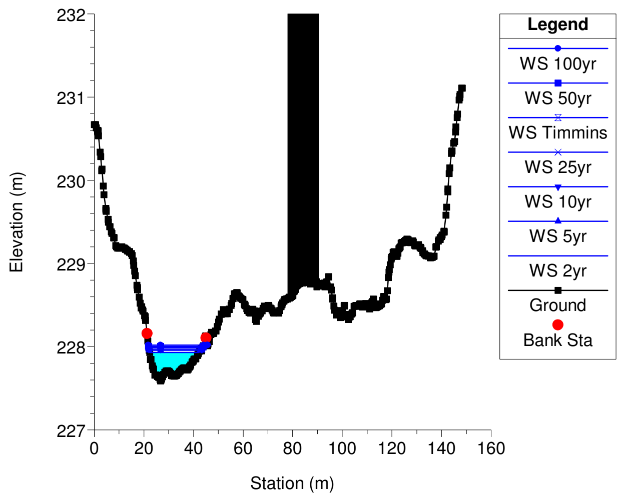
HEC-RAS Model Plan: Existing Conditions 2021-05-05



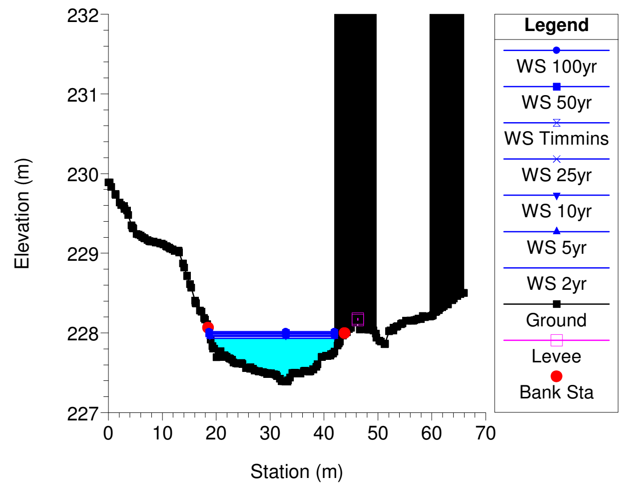
HEC-RAS Model Plan: Existing Conditions 2021-05-05



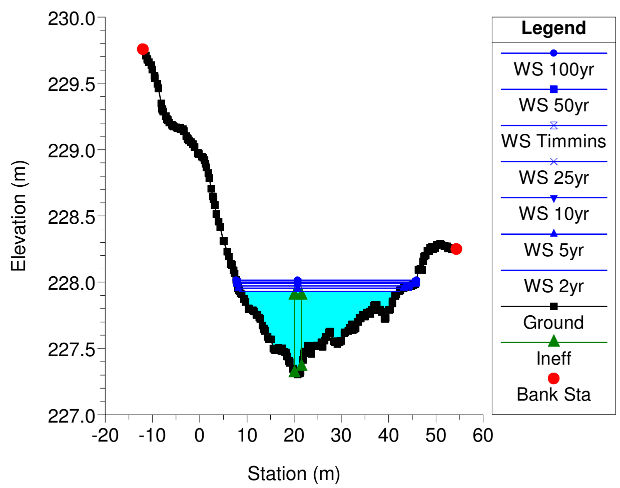
HEC-RAS Model Plan: Existing Conditions 2021-05-05



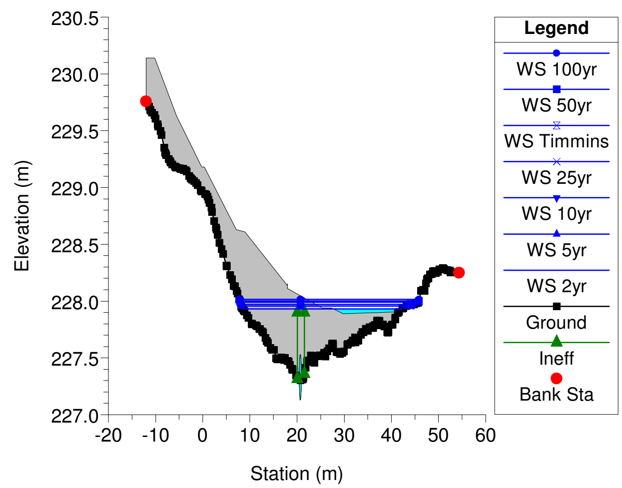
HEC-RAS Model Plan: Existing Conditions 2021-05-05



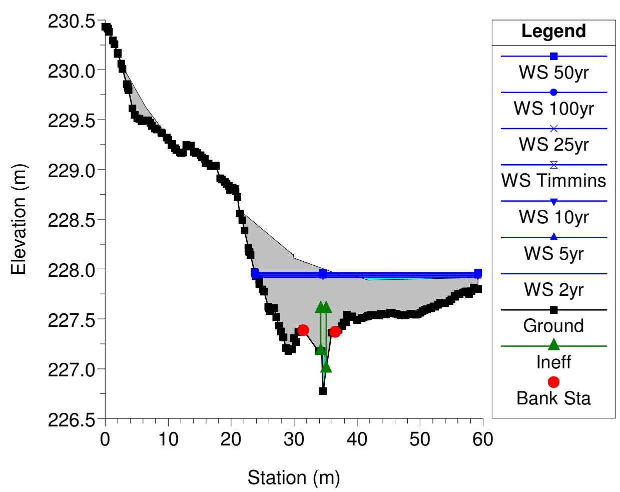
HEC-RAS Model Plan: Existing Conditions 2021-05-05



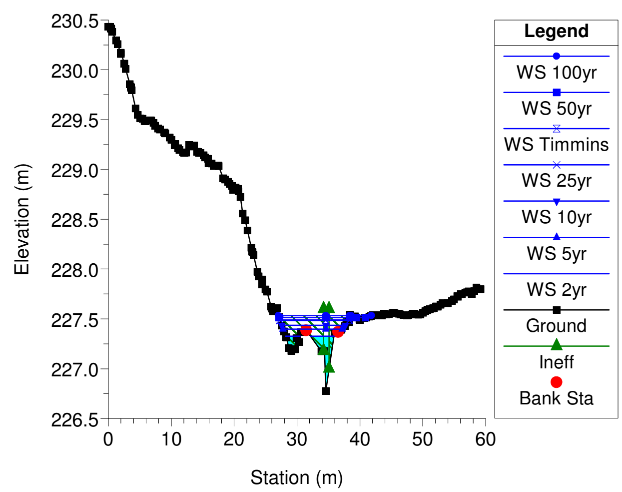
HEC-RAS Model Plan: Existing Conditions 2021-05-05



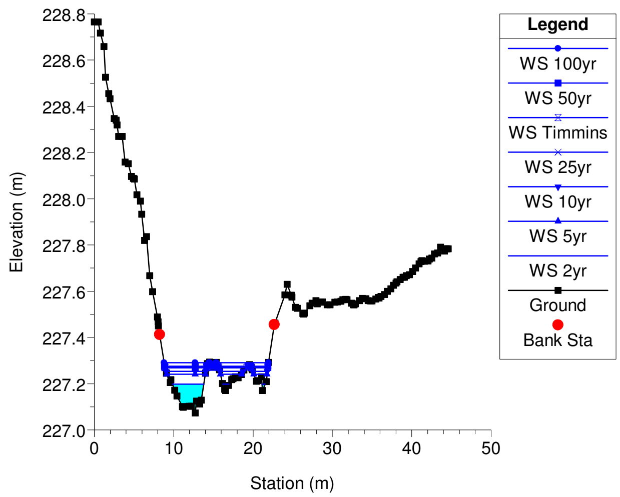
HEC-RAS Model Plan: Existing Conditions 2021-05-05



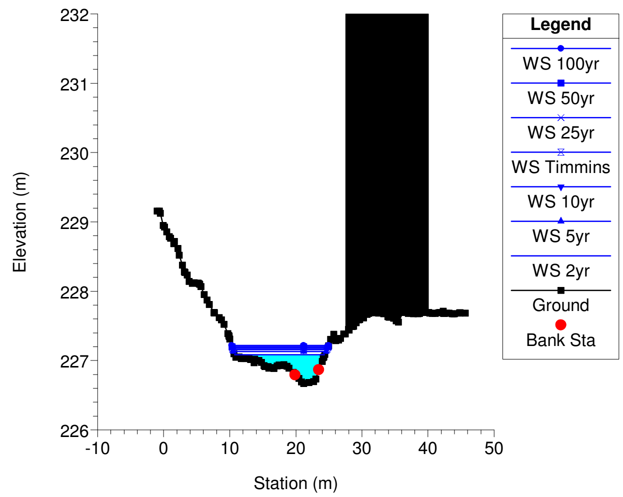
HEC-RAS Model Plan: Existing Conditions 2021-05-05



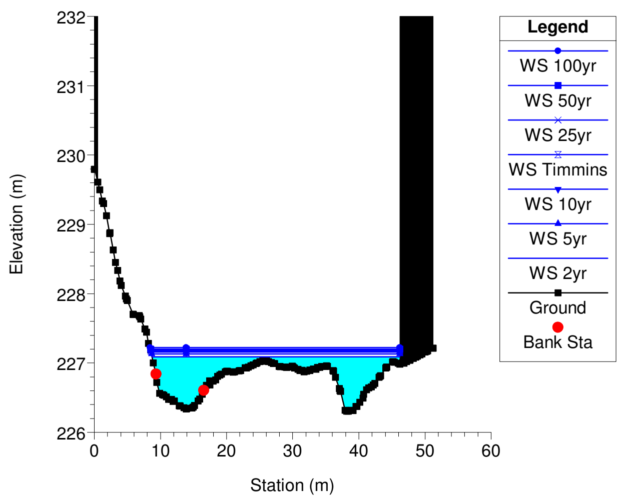
HEC-RAS Model Plan: Existing Conditions 2021-05-05



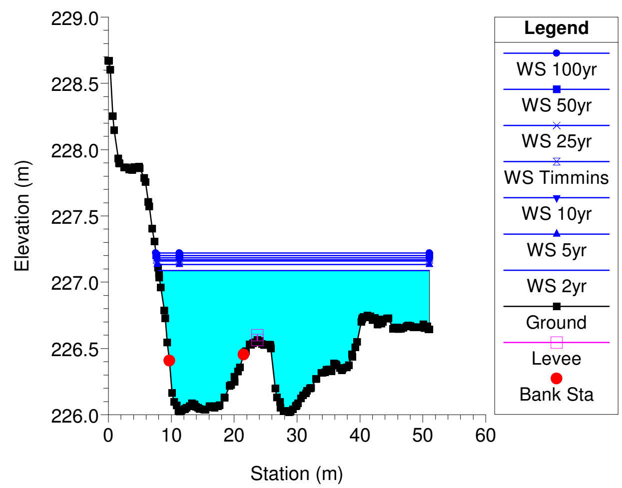
HEC-RAS Model Plan: Existing Conditions 2021-05-05



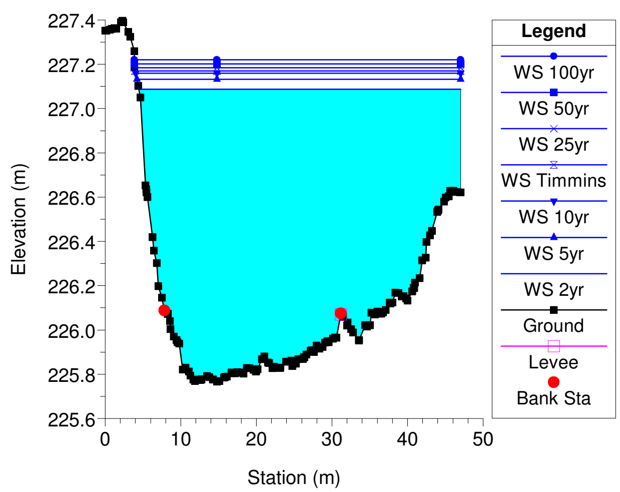
HEC-RAS Model Plan: Existing Conditions 2021-05-05



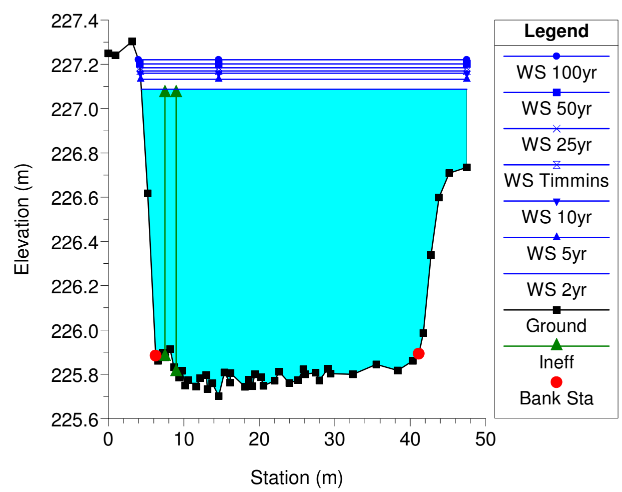
HEC-RAS Model Plan: Existing Conditions 2021-05-05

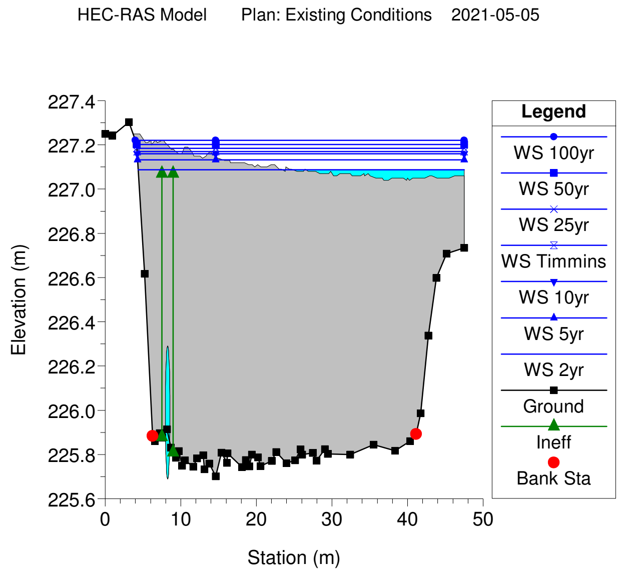


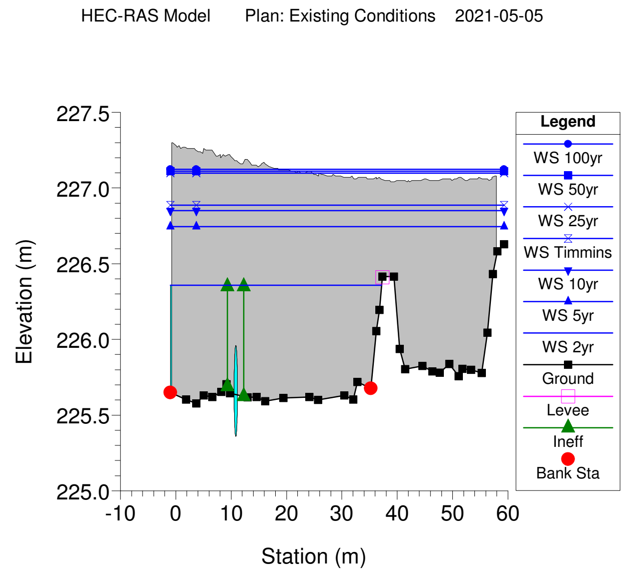
HEC-RAS Model Plan: Existing Conditions 2021-05-05

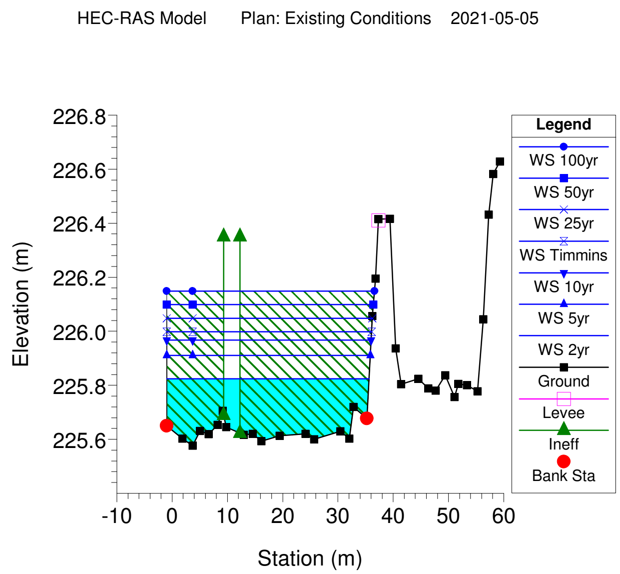


HEC-RAS Model Plan: Existing Conditions 2021-05-05




HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS Timmins
WS 10yr
WS 5yr
WS 2yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS Timmins
WS 10yr
WS 5yr
WS 2yr
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)


HEC-RAS Model Plan: Existing Conditions 2021-05-05
Legend
WS 100yr
WS 50yr
WS 25yr
WS Timmins
WS 10yr
WS 5yr
WS 2yr
Ground
Levee
Ineff
Bank Sta
Elevation (m)
Station (m)

HEC-RAS Plan: Existing Conditions River: Musquash Swale Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	378.4	2yr	0.12	231.19	231.69		231.69	0.000236	0.15	0.81	2.03	0.07
1	378.4	5yr	0.21	231.19	232.97		232.97	0.000001	0.02	15.63	22.51	0.01
1	378.4	10yr	0.28	231.19	233.39		233.39	0.000001	0.02	26.53	30.62	0.00
1	378.4	25yr	0.37	231.19	233.41		233.41	0.000001	0.02	27.12	31.07	0.01
1	378.4	50yr	0.43	231.19	233.42		233.42	0.000001	0.03	27.38	31.26	0.01
1	378.4	100yr	0.51	231.19	233.43		233.43	0.000002	0.03	27.64	31.44	0.01
1	378.4	Timmins	0.52	231.19	233.43		233.43	0.000002	0.03	27.71	31.48	0.01
1	377.1	2yr	0.12	231.19	231.68	231.37	231.68	0.001102	0.29	0.42	1.33	0.16
1	377.1	5yr	0.21	231.19	232.97	231.44	232.97	0.000009	0.07	3.04	14.24	0.02
1	377.1	10yr	0.28	231.19	233.39	231.47	233.39	0.000001	0.02	18.69	17.00	0.01
1	377.1	25yr	0.37	231.19	233.41	231.53	233.41	0.000002	0.03	19.01	17.27	0.01
1	377.1	50yr	0.43	231.19	233.42	231.55	233.42	0.000002	0.04	19.16	17.39	0.01
1	377.1	100yr	0.51	231.19	233.43	231.59	233.43	0.000003	0.04	19.30	17.51	0.01
1	377.1	Timmins	0.52	231.19	233.43	231.59	233.43	0.000003	0.04	19.34	17.54	0.01
1	348.9		Culvert									
1	338.4	2yr	0.12	230.43	230.94	230.60	230.95	0.000871	0.29	0.41	1.57	0.15
1	338.4	5yr	0.21	230.43	231.50	230.67	231.50	0.000140	0.18	1.33	15.17	0.06
1	338.4	10yr	0.28	230.43	231.54	230.71	231.54	0.000203	0.22	1.41	15.49	0.08
1	338.4	25yr	0.37	230.43	231.58	230.76	231.58	0.000315	0.28	1.49	15.79	0.10
1	338.4	50yr	0.43	230.43	231.59	230.79	231.60	0.000400	0.32	1.52	15.91	0.11
1	338.4	100yr	0.51	230.43	231.61	230.82	231.61	0.000514	0.37	1.56	16.06	0.12
1	338.4	Timmins	0.52	230.43	231.62	230.83	231.62	0.000521	0.38	1.57	16.13	0.12
1	336.1	2yr	0.12	230.46	230.94	230.70	230.95	0.001105	0.28	0.44	2.87	0.17
1	336.1	5yr	0.22	230.46	231.50	230.75	231.50	0.000022	0.07	5.25	15.69	0.03
1	336.1	10yr	0.29	230.46	231.54	230.78	231.54	0.000029	0.08	5.85	16.09	0.03
1	336.1	25yr	0.39	230.46	231.58	230.82	231.58	0.000041	0.10	6.44	16.53	0.04
1	336.1	50yr	0.45	230.46	231.59	230.84	231.59	0.000050	0.12	6.68	16.71	0.04
1	336.1	100yr	0.52	230.46	231.61	230.87	231.61	0.000062	0.13	6.97	16.91	0.05
1	336.1	Timmins	0.56	230.46	231.62	230.88	231.62	0.000068	0.14	7.10	17.00	0.05
1	312.3		Culvert									
1	285.7	2yr	0.12	230.39	230.58	230.58	230.62	0.118819	1.45	0.15	12.10	1.54
1	285.7	5yr	0.22	230.39	230.60	230.60	230.60	0.001038	0.20	1.48	12.91	0.16
1	285.7	10yr	0.29	230.39	230.60	230.60	230.61	0.001774	0.26	1.48	12.91	0.21
1	285.7	25yr	0.39	230.39	230.60	230.60	230.61	0.003237	0.35	1.48	12.91	0.28
1	285.7	50yr	0.45	230.39	230.60	230.60	230.61	0.004325	0.40	1.48	12.91	0.32
1	285.7	100yr	0.52	230.39	230.60	230.60	230.61	0.005951	0.47	1.48	12.91	0.38
1	285.7	Timmins	0.56	230.39	230.60	230.60	230.61	0.006825	0.51	1.48	12.91	0.40
1	280.7	2yr	0.13	229.93	230.03	230.03	230.05	0.036739	0.61	0.21	3.50	0.80
1	280.7	5yr	0.22	229.93	230.05	230.05	230.09	0.057112	0.83	0.27	3.96	1.01
1	280.7	10yr	0.29	229.93	230.07	230.07	230.11	0.047089	0.84	0.35	4.52	0.95
1	280.7	25yr	0.39	229.93	230.11		230.14	0.023107	0.76	0.54	5.75	0.71
1	280.7	50yr	0.45	229.93	230.12		230.15	0.018847	0.75	0.65	6.25	0.65
1	280.7	100yr	0.53	229.93	230.15		230.17	0.015225	0.75	0.79	6.91	0.60
1	280.7	Timmins	0.58	229.93	230.17		230.19	0.011960	0.72	0.93	7.55	0.54
1	263.1	2yr	0.13	229.42	229.71	229.57	229.72	0.003872	0.42	0.30	1.34	0.29
1	263.1	5yr	0.22	229.42	229.76	229.62	229.78	0.006652	0.61	0.37	1.42	0.38
1	263.1	10yr	0.29	229.42	229.79	229.65	229.82	0.008309	0.71	0.41	1.46	0.43
1	263.1	25yr	0.39	229.42	229.83	229.69	229.86	0.010761	0.85	0.46	1.52	0.49
1	263.1	50yr	0.45	229.42	229.85	229.72	229.89	0.012115	0.92	0.49	1.54	0.52
1	263.1	100yr	0.53	229.42	229.87	229.75	229.92	0.013811	1.01	0.53	1.58	0.56
1	263.1	Timmins	0.58	229.42	229.84	229.76	229.92	0.020465	1.19	0.49	1.54	0.68
1	252.1	2yr	0.13	229.23	229.71		229.71	0.000369	0.17	0.81	4.15	0.10
1	252.1	5yr	0.22	229.23	229.76		229.76	0.000648	0.25	1.03	4.93	0.14
1	252.1	10yr	0.29	229.23	229.79		229.79	0.000803	0.29	1.18	5.36	0.15
1	252.1	25yr	0.39	229.23	229.82		229.83	0.001015	0.35	1.39	5.93	0.18
1	252.1	50yr	0.45	229.23	229.84		229.85	0.001120	0.38	1.51	6.25	0.19
1	252.1	100yr	0.53	229.23	229.87		229.87	0.001247	0.42	1.67	6.77	0.20
1	252.1	Timmins	0.58	229.23	229.83		229.85	0.002014	0.50	1.46	6.11	0.25
1	245	2yr	0.13	229.19	229.71		229.71	0.000085	0.09	1.58	7.26	0.05
1	245	5yr	0.22	229.19	229.76		229.76	0.000158	0.13	1.97	8.39	0.07
1	245	10yr	0.29	229.19	229.79		229.79	0.000201	0.16	2.22	9.03	0.08
1	245	25yr	0.39	229.19	229.82		229.82	0.000262	0.19	2.57	9.83	0.09
1	245	50yr	0.45	229.19	229.84		229.84	0.000293	0.20	2.77	10.27	0.10
1	245	100yr	0.53	229.19	229.87		229.87	0.000330	0.22	3.02	10.80	0.10

HEC-RAS Plan: Existing Conditions River: Musquash Swale Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	245	Timmins	0.58	229.19	229.83		229.84	0.000525	0.27	2.67	10.07	0.13
1	235.1	2yr	0.20	228.84	229.71		229.71	0.000113	0.11	1.82	5.97	0.06
1	235.1	5yr	0.35	228.84	229.75		229.76	0.000241	0.18	2.12	6.97	0.08
1	235.1	10yr	0.46	228.84	229.78		229.78	0.000336	0.22	2.32	7.51	0.10
1	235.1	25yr	0.61	228.84	229.82		229.82	0.000473	0.27	2.59	7.63	0.12
1	235.1	50yr	0.71	228.84	229.84		229.84	0.000554	0.30	2.74	7.69	0.13
1	235.1	100yr	0.84	228.84	229.86		229.86	0.000659	0.34	2.91	7.76	0.14
1	235.1	Timmins	0.68	228.84	229.83		229.83	0.000539	0.29	2.67	7.66	0.13
1	226.3	2yr	0.20	229.50	229.70		229.70	0.001816	0.27	0.86	7.33	0.21
1	226.3	5yr	0.35	229.50	229.74		229.75	0.002341	0.35	1.21	8.86	0.25
1	226.3	10yr	0.46	229.50	229.77		229.78	0.002612	0.40	1.45	10.15	0.27
1	226.3	25yr	0.61	229.50	229.80		229.81	0.002846	0.46	1.80	11.36	0.28
1	226.3	50yr	0.71	229.50	229.82		229.83	0.002948	0.49	2.01	12.14	0.29
1	226.3	100yr	0.84	229.50	229.84		229.85	0.003058	0.52	2.27	12.81	0.30
1	226.3	Timmins	0.68	229.50	229.81		229.82	0.003058	0.49	1.91	11.67	0.30
1	218.1	2yr	0.20	229.53	229.67		229.68	0.005306	0.32	0.71	7.91	0.33
1	218.1	5yr	0.35	229.53	229.72		229.72	0.004784	0.39	1.06	8.59	0.33
1	218.1	10yr	0.46	229.53	229.74		229.75	0.004746	0.43	1.27	9.00	0.34
1	218.1	25yr	0.61	229.53	229.77		229.78	0.004722	0.48	1.56	9.47	0.35
1	218.1	50yr	0.71	229.53	229.79		229.80	0.004712	0.51	1.72	9.75	0.35
1	218.1	100yr	0.84	229.53	229.81		229.82	0.004787	0.54	1.92	10.07	0.36
1	218.1	Timmins	0.68	229.53	229.78		229.79	0.005258	0.52	1.61	9.56	0.37
1	207.9	2yr	0.22	229.41	229.65		229.65	0.001594	0.33	0.84	6.37	0.28
1	207.9	5yr	0.39	229.41	229.68		229.69	0.002472	0.47	1.05	6.76	0.36
1	207.9	10yr	0.51	229.41	229.70		229.71	0.003040	0.56	1.17	6.93	0.40
1	207.9	25yr	0.69	229.41	229.72		229.74	0.003655	0.66	1.35	7.86	0.45
1	207.9	50yr	0.79	229.41	229.73		229.76	0.003999	0.72	1.45	9.39	0.47
1	207.9	100yr	0.93	229.41	229.75		229.77	0.004542	0.79	1.59	11.49	0.51
1	207.9	Timmins	0.71	229.41	229.72		229.74	0.003752	0.68	1.37	8.13	0.46
1	201.8	2yr	0.22	229.50	229.63	229.59	229.64	0.004828	0.38	0.61	8.12	0.44
1	201.8	5yr	0.39	229.50	229.66	229.62	229.67	0.005308	0.49	0.84	8.47	0.48
1	201.8	10yr	0.51	229.50	229.67	229.63	229.68	0.006274	0.57	0.95	8.63	0.53
1	201.8	25yr	0.69	229.50	229.69	229.64	229.71	0.006539	0.64	1.13	8.97	0.56
1	201.8	50yr	0.79	229.50	229.70	229.66	229.72	0.006761	0.69	1.23	9.16	0.57
1	201.8	100yr	0.93	229.50	229.71	229.67	229.74	0.007187	0.74	1.34	9.36	0.60
1	201.8	Timmins	0.71	229.50	229.69	229.65	229.71	0.006643	0.66	1.16	9.01	0.56
1	192.6	2yr	0.22	229.59	229.56		229.57	0.023211		0.66	13.38	0.00
1	192.6	5yr	0.39	229.59	229.59		229.60	0.017862	0.06	1.03	14.88	0.46
1	192.6	10yr	0.51	229.59	229.61		229.62	0.015063	0.19	1.32	17.39	0.57
1	192.6	25yr	0.69	229.59	229.62		229.63	0.017588	0.28	1.52	18.50	0.66
1	192.6	50yr	0.79	229.59	229.63		229.64	0.017989	0.30	1.67	19.90	0.68
1	192.6	100yr	0.93	229.59	229.64		229.65	0.017023	0.38	1.90	20.97	0.70
1	192.6	Timmins	0.71	229.59	229.62		229.63	0.016615	0.28	1.60	19.18	0.64
1	180.8	2yr	0.22	229.19	229.41	229.41	229.43	0.010185	0.59	0.38	9.21	0.94
1	180.8	5yr	0.39	229.19	229.43	229.43	229.46	0.013419	0.67	0.58	12.06	0.97
1	180.8	10yr	0.51	229.19	229.44	229.44	229.47	0.016150	0.77	0.67	12.85	1.07
1	180.8	25yr	0.69	229.19	229.45	229.45	229.49	0.013578	0.81	0.85	13.42	1.03
1	180.8	50yr	0.79	229.19	229.46	229.46	229.50	0.013133	0.84	0.94	13.71	1.03
1	180.8	100yr	0.93	229.19	229.47	229.47	229.51	0.013426	0.90	1.03	14.00	1.05
1	180.8	Timmins	0.71	229.19	229.45	229.45	229.49	0.014711	0.84	0.85	13.42	1.07
1	171.4	2yr	0.22	228.77	229.25	229.25	229.25	0.000093	0.06	3.84	24.51	0.05
1	171.4	5yr	0.39	228.77	229.25	229.25	229.25	0.000286	0.10	3.84	24.51	0.08
1	171.4	10yr	0.51	228.77	229.25	229.25	229.25	0.000487	0.13	3.84	24.51	0.11
1	171.4	25yr	0.69	228.77	229.25	229.25	229.25	0.000868	0.18	3.84	24.51	0.14
1	171.4	50yr	0.79	228.77	229.25	229.25	229.25	0.001161	0.21	3.84	24.51	0.17
1	171.4	100yr	0.93	228.77	229.25	229.25	229.26	0.001597	0.24	3.84	24.51	0.20
1	171.4	Timmins	0.71	228.77	229.25	229.25	229.25	0.000941	0.19	3.84	24.51	0.15
1	158	2yr	0.22	228.77	228.97	228.90	228.98	0.002731	0.18	1.23	12.92	0.19
1	158	5yr	0.39	228.77	229.01	228.92	229.01	0.003189	0.23	1.70	14.03	0.21
1	158	10yr	0.51	228.77	229.03	228.93	229.03	0.003514	0.26	2.01	15.21	0.22
1	158	25yr	0.69	228.77	229.06	228.94	229.07	0.003936	0.26	2.60	20.53	0.24
1	158	50yr	0.79	228.77	229.09	228.94	229.09	0.003624	0.25	3.11	24.30	0.23
1	158	100yr	0.93	228.77	229.10	228.96	229.11	0.003534	0.26	3.56	26.14	0.23
1	158	Timmins	0.71	228.77	229.08	228.94	229.08	0.003415	0.24	2.92	23.12	0.22

HEC-RAS Plan: Existing Conditions River: Musquash Swale Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	144.8	2yr	0.22	228.62	228.90	228.87	228.91	0.011113	0.31	0.72	9.47	0.36
1	144.8	5yr	0.39	228.62	228.93	228.88	228.94	0.011777	0.39	1.00	9.70	0.39
1	144.8	10yr	0.51	228.62	228.95	228.89	228.96	0.012606	0.44	1.15	9.83	0.41
1	144.8	25yr	0.69	228.62	228.97	228.90	228.98	0.013301	0.50	1.36	10.06	0.44
1	144.8	50yr	0.79	228.62	228.91	228.91	228.96	0.084452	0.95	0.84	9.57	1.02
1	144.8	100yr	0.93	228.62	228.93	228.93	228.97	0.078826	0.98	0.94	9.66	1.01
1	144.8	Timmins	0.71	228.62	228.91	228.91	228.95	0.068445	0.85	0.84	9.57	0.92
1	135	2yr	0.22	228.48	228.64	228.64	228.66	0.086739	0.56	0.40	10.12	0.91
1	135	5yr	0.39	228.48	228.66	228.66	228.68	0.084241	0.64	0.62	12.91	0.93
1	135	10yr	0.51	228.48	228.67	228.67	228.70	0.084833	0.69	0.74	13.84	0.95
1	135	25yr	0.69	228.48	228.68	228.68	228.71	0.095060	0.78	0.88	14.85	1.02
1	135	50yr	0.79	228.48	228.69	228.69	228.72	0.091410	0.77	1.03	17.07	1.00
1	135	100yr	0.93	228.48	228.70	228.70	228.73	0.080751	0.78	1.19	17.76	0.96
1	135	Timmins	0.71	228.48	228.68	228.68	228.72	0.102990	0.81	0.88	14.85	1.06
1	126.6	2yr	0.22	227.59	227.93		227.93	0.000085	0.05	4.15	19.92	0.04
1	126.6	5yr	0.39	227.59	227.96		227.96	0.000187	0.08	4.67	20.84	0.06
1	126.6	10yr	0.51	227.59	227.97		227.97	0.000261	0.10	5.02	21.40	0.07
1	126.6	25yr	0.69	227.59	227.99		227.99	0.000364	0.13	5.45	21.84	0.08
1	126.6	50yr	0.79	227.59	228.00		228.00	0.000427	0.14	5.69	22.08	0.09
1	126.6	100yr	0.93	227.59	228.02		228.02	0.000500	0.15	6.00	22.46	0.10
1	126.6	Timmins	0.71	227.59	227.99		228.00	0.000385	0.13	5.49	21.87	0.08
1	116.2	2yr	0.22	227.39	227.93	227.51	227.93	0.000020	0.03	8.07	22.98	0.01
1	116.2	5yr	0.39	227.39	227.96	227.53	227.96	0.000050	0.05	8.65	23.06	0.02
1	116.2	10yr	0.51	227.39	227.97	227.54	227.97	0.000074	0.06	9.02	23.12	0.03
1	116.2	25yr	0.69	227.39	227.99	227.56	227.99	0.000113	0.07	9.47	23.18	0.04
1	116.2	50yr	0.79	227.39	228.00	227.57	228.00	0.000138	0.08	9.71	23.22	0.04
1	116.2	100yr	0.93	227.39	228.02	227.57	228.02	0.000172	0.09	10.03	23.26	0.05
1	116.2	Timmins	0.71	227.39	227.99	227.57	227.99	0.000120	0.07	9.51	23.19	0.04
1	112.1	2yr	0.26	227.30	227.93	227.47	227.93	0.000012	0.03	10.09	33.75	0.02
1	112.1	5yr	0.46	227.30	227.96	227.54	227.96	0.000029	0.04	10.95	35.03	0.02
1	112.1	10yr	0.60	227.30	227.97	227.58	227.97	0.000044	0.05	11.52	36.39	0.03
1	112.1	25yr	0.80	227.30	227.99	227.64	227.99	0.000069	0.07	12.23	37.79	0.04
1	112.1	50yr	0.93	227.30	228.00	227.67	228.00	0.000084	0.07	12.63	38.01	0.04
1	112.1	100yr	1.09	227.30	228.02	227.71	228.02	0.000104	0.08	13.15	38.16	0.05
1	112.1	Timmins	0.84	227.30	227.99	227.65	227.99	0.000074	0.07	12.30	37.84	0.04
1	102.8		Culvert									
1	94	2yr	0.26	226.78	227.33	227.15	227.36	0.008357	0.80	0.33	6.13	0.42
1	94	5yr	0.46	226.78	227.40	227.26	227.47	0.014013	1.17	0.39	9.42	0.57
1	94	10yr	0.60	226.78	227.44	227.32	227.54	0.018182	1.41	0.42	10.12	0.65
1	94	25yr	0.80	226.78	227.48	227.40	227.63	0.023714	1.71	0.47	11.02	0.76
1	94	50yr	0.93	226.78	227.51	227.44	227.69	0.026668	1.88	0.49	12.59	0.81
1	94	100yr	1.09	226.78	227.53	227.49	227.76	0.032605	2.13	0.51	14.54	0.90
1	94	Timmins	0.84	226.78	227.49	227.41	227.65	0.024841	1.77	0.47	11.05	0.78
1	87.1	2yr	0.26	227.07	227.20	227.20	227.23	0.063640	0.82	0.32	5.14	1.05
1	87.1	5yr	0.46	227.07	227.24	227.24	227.27	0.045196	0.73	0.62	9.18	0.90
1	87.1	10yr	0.60	227.07	227.25	227.25	227.29	0.046448	0.80	0.75	9.85	0.93
1	87.1	25yr	0.80	227.07	227.27	227.27	227.31	0.051992	0.90	0.89	10.80	1.00
1	87.1	50yr	0.93	227.07	227.27	227.27	227.32	0.057786	0.96	0.97	11.47	1.05
1	87.1	100yr	1.09	227.07	227.29	227.29	227.34	0.051456	0.94	1.16	12.97	1.00
1	87.1	Timmins	0.84	227.07	227.27	227.27	227.31	0.051089	0.90	0.93	11.06	0.99
1	79	2yr	0.26	226.67	227.09		227.09	0.000206	0.15	2.62	13.63	0.08
1	79	5yr	0.46	226.67	227.13		227.13	0.000367	0.22	3.25	14.02	0.11
1	79	10yr	0.60	226.67	227.16		227.16	0.000470	0.26	3.62	14.23	0.13
1	79	25yr	0.80	226.67	227.18		227.19	0.000660	0.32	3.99	14.43	0.15
1	79	50yr	0.93	226.67	227.20		227.21	0.000752	0.35	4.24	14.56	0.16
1	79	100yr	1.09	226.67	227.22		227.23	0.000878	0.39	4.51	14.70	0.17
1	79	Timmins	0.84	226.67	227.17		227.17	0.000829	0.35	3.77	14.31	0.17
1	55.7	2yr	0.26	226.34	227.09		227.09	0.000006	0.04	12.39	37.48	0.01
1	55.7	5yr	0.46	226.34	227.13		227.13	0.000013	0.06	14.11	37.56	0.02
1	55.7	10yr	0.60	226.34	227.16		227.16	0.000018	0.07	15.10	37.61	0.03
1	55.7	25yr	0.80	226.34	227.19		227.19	0.000027	0.09	16.07	37.66	0.03
1	55.7	50yr	0.93	226.34	227.20		227.20	0.000032	0.10	16.71	37.71	0.04
1	55.7	100yr	1.09	226.34	227.22		227.22	0.000039	0.11	17.42	37.78	0.04
1	55.7	Timmins	0.84	226.34	227.17		227.17	0.000032	0.09	15.51	37.63	0.04

HEC-RAS Plan: Existing Conditions River: Musquash Swale Reach: 1 (Continued)

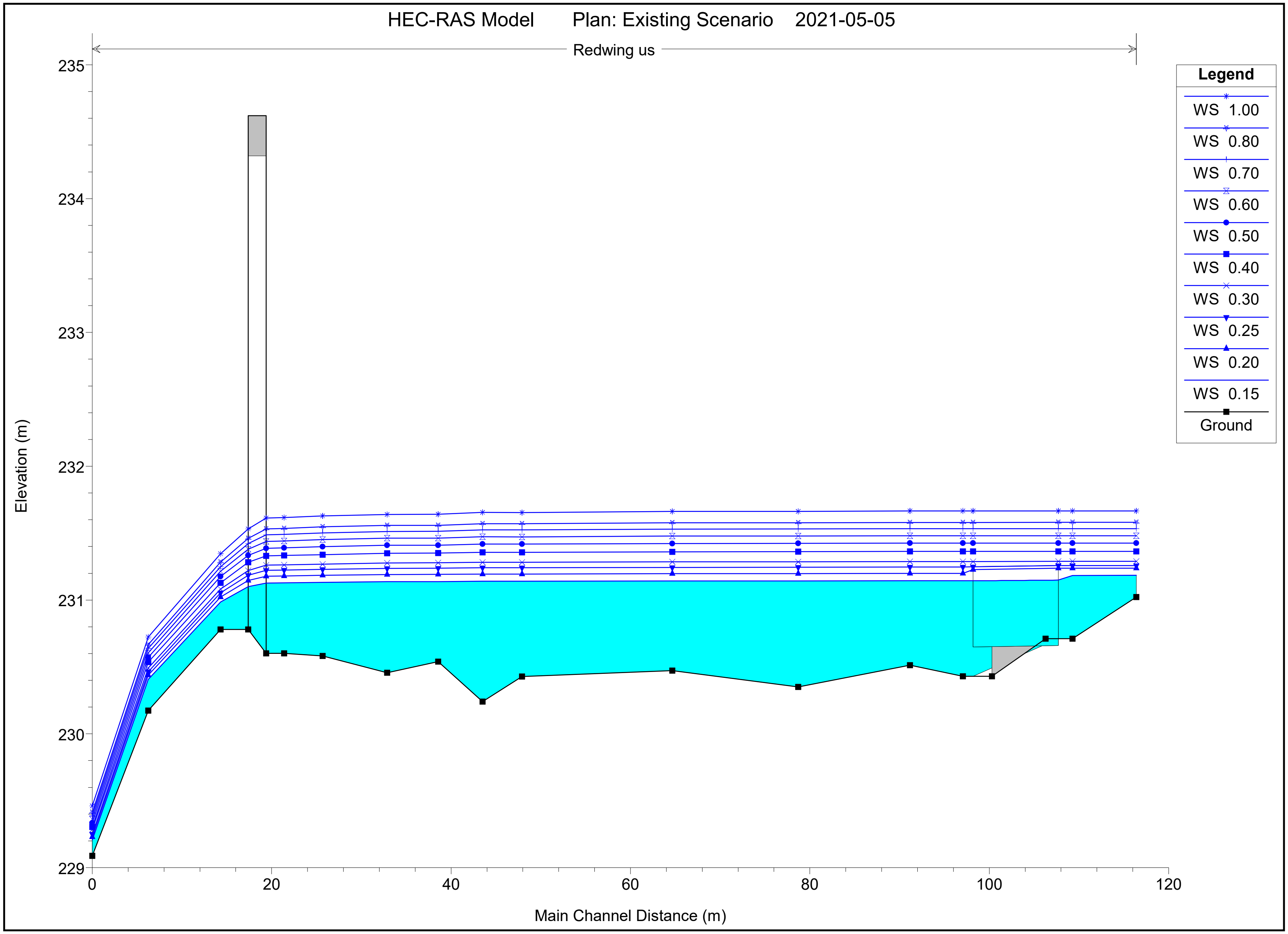
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
1	41.5	2yr	0.26	226.02	227.09	226.10	227.09	0.000000	0.01	30.53	43.12	0.00
1	41.5	5yr	0.46	226.02	227.13	226.13	227.13	0.000001	0.02	32.51	43.27	0.01
1	41.5	10yr	0.60	226.02	227.16	226.14	227.16	0.000002	0.03	33.66	43.34	0.01
1	41.5	25yr	0.80	226.02	227.19	226.16	227.19	0.000003	0.04	34.77	43.42	0.01
1	41.5	50yr	0.93	226.02	227.20	226.17	227.20	0.000003	0.04	35.52	43.47	0.01
1	41.5	100yr	1.09	226.02	227.22	226.18	227.22	0.000004	0.05	36.33	43.52	0.01
1	41.5	Timmins	0.84	226.02	227.17	226.17	227.17	0.000003	0.04	34.13	43.37	0.01
1	31.3	2yr	0.76	225.77	227.09	225.88	227.09	0.000001	0.02	44.23	42.60	0.01
1	31.3	5yr	1.35	225.77	227.13	225.91	227.13	0.000002	0.04	46.19	42.87	0.01
1	31.3	10yr	1.80	225.77	227.16	225.92	227.16	0.000004	0.05	47.32	43.02	0.01
1	31.3	25yr	2.43	225.77	227.18	225.95	227.18	0.000006	0.06	48.42	43.18	0.02
1	31.3	50yr	2.89	225.77	227.20	225.97	227.20	0.000008	0.07	49.16	43.19	0.02
1	31.3	100yr	3.40	225.77	227.22	225.98	227.22	0.000011	0.08	49.97	43.19	0.02
1	31.3	Timmins	2.03	225.77	227.17	225.94	227.17	0.000005	0.05	47.79	43.09	0.01
1	29.6	2yr	0.76	225.70	227.09	226.17	227.09	0.000000	0.02	49.66	43.15	0.00
1	29.6	5yr	1.35	225.70	227.13	226.31	227.13	0.000001	0.03	51.64	43.23	0.01
1	29.6	10yr	1.80	225.70	227.16	226.40	227.16	0.000002	0.04	52.78	43.28	0.01
1	29.6	25yr	2.43	225.70	227.18	226.52	227.18	0.000004	0.05	53.89	43.32	0.01
1	29.6	50yr	2.89	225.70	227.20	226.60	227.20	0.000005	0.06	54.63	43.35	0.02
1	29.6	100yr	3.40	225.70	227.22	226.68	227.22	0.000006	0.07	55.44	43.53	0.02
1	29.6	Timmins	2.03	225.70	227.17	226.44	227.17	0.000003	0.04	53.25	43.30	0.01
1	20.1		Culvert									
1	9.3	2yr	0.76	225.58	225.82	225.82	225.92	0.041492	1.38	0.55	36.62	1.02
1	9.3	5yr	1.35	225.58	225.91	225.91	226.05	0.036019	1.66	0.81	36.86	1.02
1	9.3	10yr	1.80	225.58	225.97	225.97	226.14	0.034331	1.83	0.98	37.01	1.02
1	9.3	25yr	2.43	225.58	226.05	226.05	226.25	0.030029	1.99	1.22	37.23	0.99
1	9.3	50yr	2.89	225.58	226.10	226.10	226.32	0.028734	2.10	1.38	37.42	0.99
1	9.3	100yr	3.40	225.58	226.15	226.15	226.40	0.028160	2.23	1.53	37.62	1.00
1	9.3	Timmins	2.03	225.58	226.00	226.00	226.18	0.032368	1.89	1.07	37.09	1.01

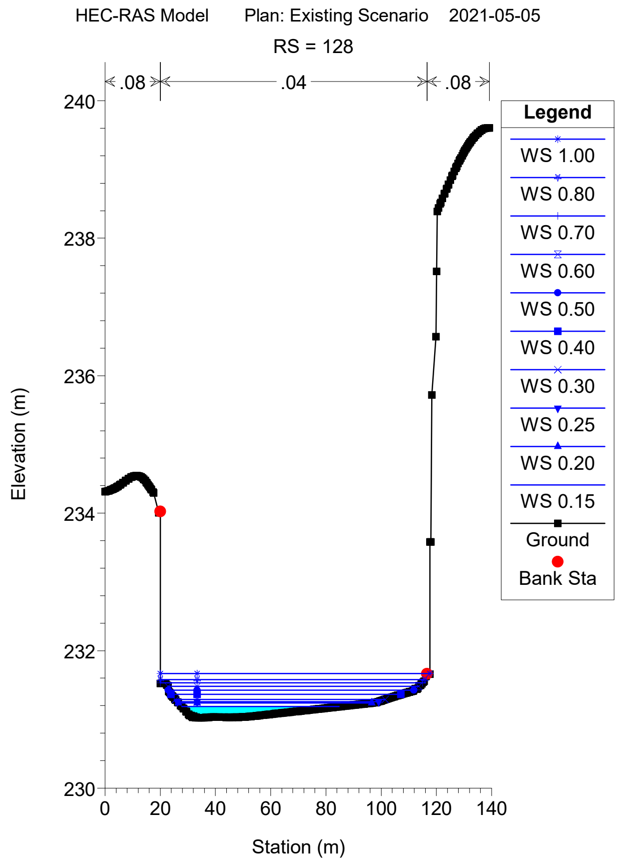
HEC-RAS Plan: Existing Conditions River: Musquash Swale Reach: 1

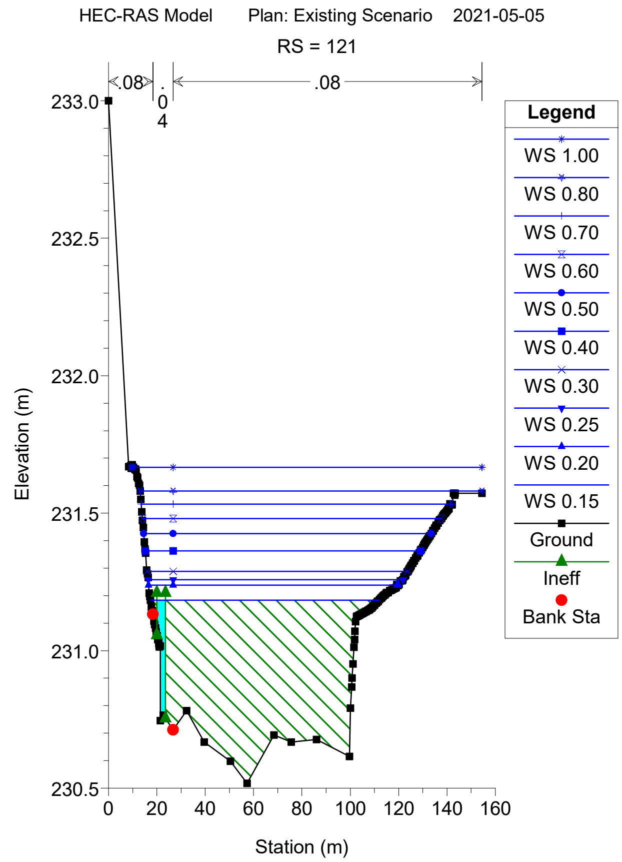
Reach	River Sta	Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
			(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m)	(m/s)	(m/s)
1	348.9 Culvert #1	2yr	231.68	231.68	231.65	231.68	233.38	0.12		0.74	1.38	0.96
1	348.9 Culvert #1	5yr	232.97	232.97	231.96	232.97	233.38	0.21		1.47	1.67	1.67
1	348.9 Culvert #1	10yr	233.39	233.39	232.32	233.39	233.38	0.24	0.04	1.85	1.88	1.88
1	348.9 Culvert #1	25yr	233.41	233.41	233.03	233.41	233.38	0.24	0.14	1.84	1.87	1.87
1	348.9 Culvert #1	50yr	233.42	233.42	233.39	233.42	233.38	0.23	0.20	1.83	1.87	1.87
1	348.9 Culvert #1	100yr	233.43	233.43	233.41	233.43	233.38	0.23	0.27	1.82	1.86	1.86
1	348.9 Culvert #1	Timmins	233.43	233.43	233.41	233.43	233.38	0.23	0.29	1.82	1.86	1.86
1	312.3 Culvert #1	2yr	230.95	230.94	230.90	230.95	231.48	0.12		0.36	0.93	0.86
1	312.3 Culvert #1	5yr	231.50	231.50	231.10	231.50	231.48	0.20	0.02	0.90	1.26	1.34
1	312.3 Culvert #1	10yr	231.54	231.54	231.33	231.54	231.48	0.20	0.08	0.94	1.29	1.36
1	312.3 Culvert #1	25yr	231.58	231.58	231.53	231.58	231.48	0.21	0.18	0.97	1.31	1.39
1	312.3 Culvert #1	50yr	231.59	231.59	231.55	231.59	231.48	0.21	0.23	0.99	1.32	1.40
1	312.3 Culvert #1	100yr	231.61	231.61	231.58	231.61	231.48	0.21	0.30	1.01	1.33	1.41
1	312.3 Culvert #1	Timmins	231.62	231.62	231.60	231.62	231.48	0.21	0.34	1.01	1.34	1.42
1	102.8 Culvert #1	2yr	227.93	227.93	227.92	227.93	227.90	0.18	0.08	0.60	1.46	1.46
1	102.8 Culvert #1	5yr	227.96	227.96	227.95	227.96	227.90	0.18	0.29	0.56	1.40	1.40
1	102.8 Culvert #1	10yr	227.97	227.97	227.96	227.97	227.90	0.17	0.44	0.54	1.37	1.37
1	102.8 Culvert #1	25yr	227.99	227.99	227.99	227.99	227.90	0.16	0.65	0.51	1.24	1.24
1	102.8 Culvert #1	50yr	228.00	228.00	227.99	228.00	227.90	0.14	0.79	0.49	1.15	1.15
1	102.8 Culvert #1	100yr	228.02	228.02	228.00	228.02	227.90	0.13	0.96	0.48	1.04	1.04
1	102.8 Culvert #1	Timmins	227.99	227.99	227.99	227.99	227.90	0.15	0.68	0.50	1.22	1.22
1	20.1 Culvert #1	2yr	227.09	227.09	226.70	227.09	227.07	0.62	0.15	1.26	2.20	2.43
1	20.1 Culvert #1	5yr	227.13	227.13	227.11	227.13	227.07	0.63	0.71	1.22	2.24	2.33
1	20.1 Culvert #1	10yr	227.16	227.16	227.14	227.16	227.07	0.63	1.20	1.19	2.22	2.22
1	20.1 Culvert #1	25yr	227.18	227.18	227.17	227.18	227.07	0.61	1.79	1.14	2.17	2.17
1	20.1 Culvert #1	50yr	227.20	227.20	227.18	227.20	227.07	0.60	2.24	1.10	2.14	2.14
1	20.1 Culvert #1	100yr	227.22	227.22	227.20	227.22	227.07	0.59	2.79	1.07	2.07	2.07
1	20.1 Culvert #1	Timmins	227.17	227.17	227.15	227.17	227.07	0.62	1.43	1.17	2.20	2.20

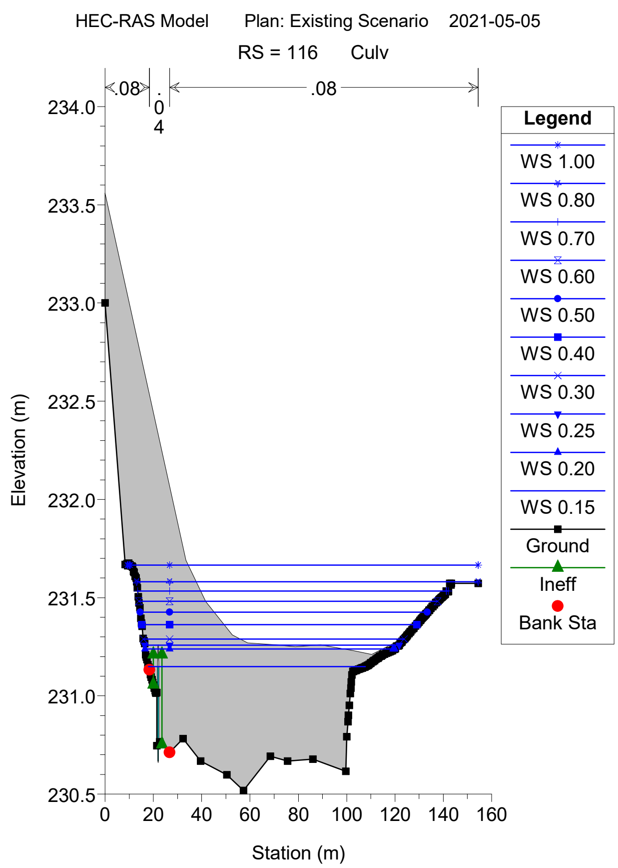
Appendix G:
Redwing Drive Analysis

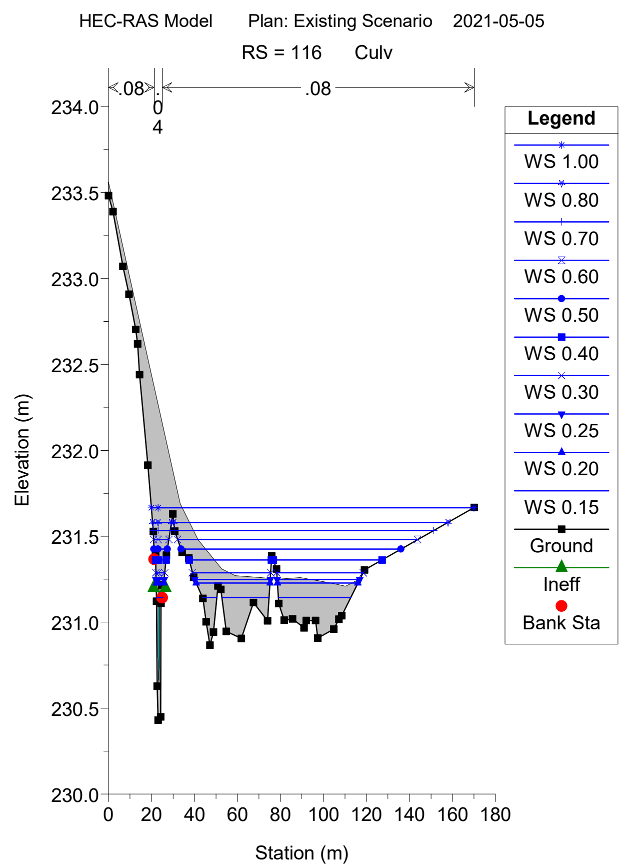

Redwing Dr
Redwing Dr
Redwing - us
0.04
0.08
128
121
116
103
90
76
50
44
37
30
26
16
11
1

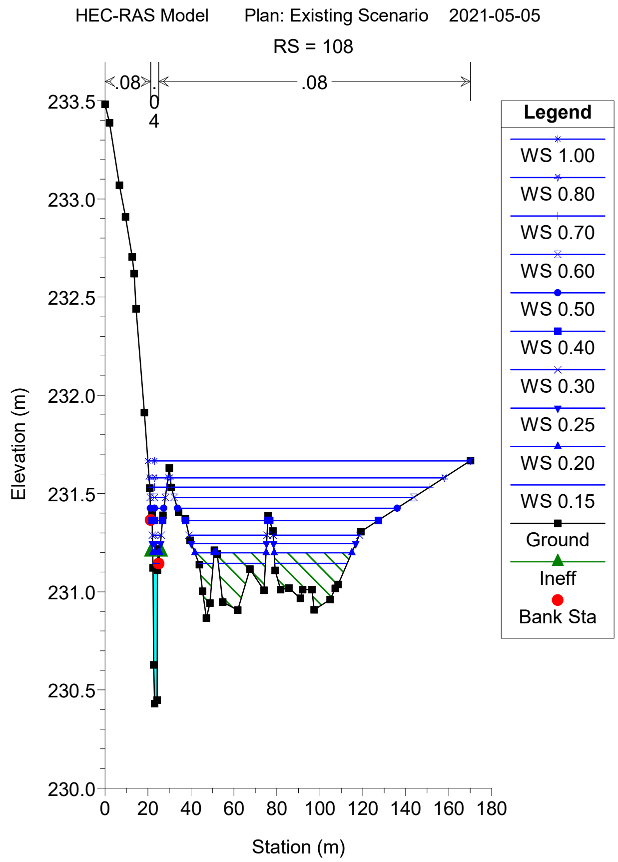

HEC-RAS Model Plan: Existing Scenario 2021-05-05
Redwing us
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Elevation (m)
235
234
233
232
231
230
229
0
20
40
60
80
100
120
Main Channel Distance (m)

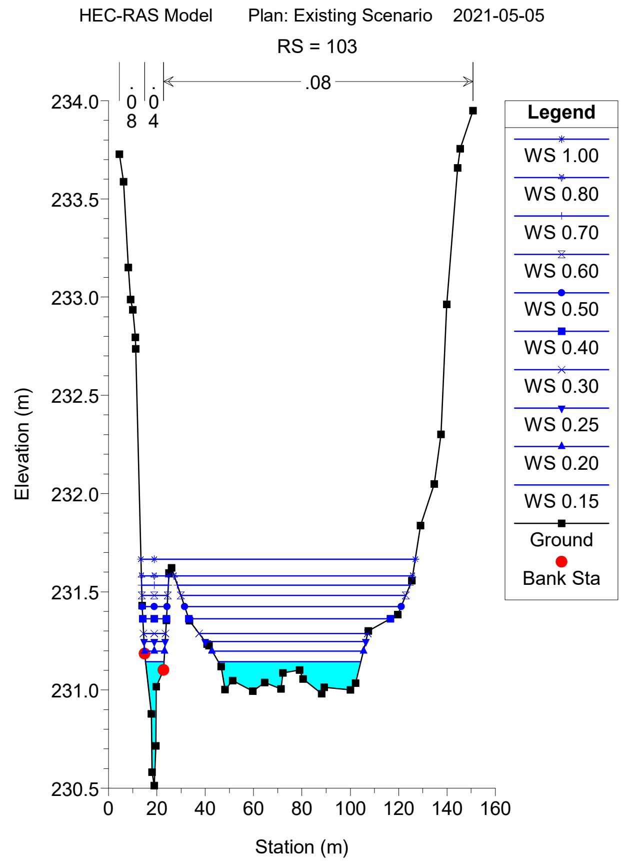

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 128
.08
.04
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta
Elevation (m)
Station (m)
240
238
236
234
232
230
0 20 40 60 80 100 120 140

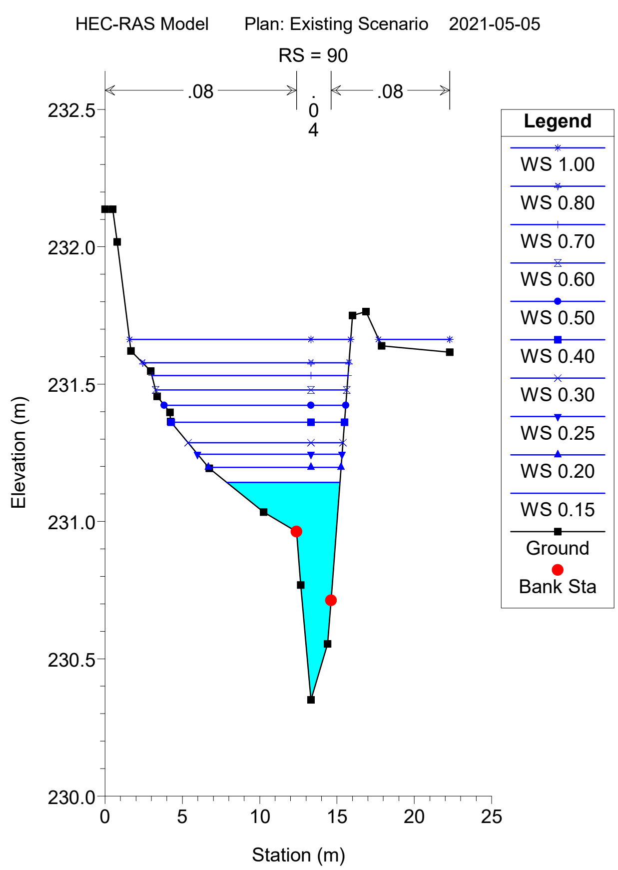

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 121
.08
.
0
4
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
233.0
232.5
232.0
231.5
231.0
230.5
0 20 40 60 80 100 120 140 160

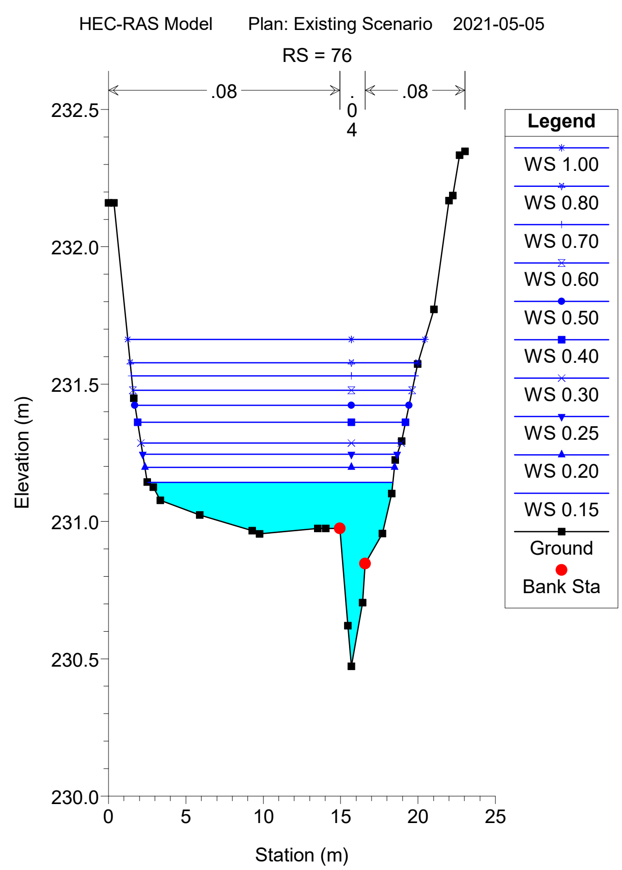

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 116 Culv
.08
.
0
4
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
234.0
233.5
233.0
232.5
232.0
231.5
231.0
230.5
0 20 40 60 80 100 120 140 160

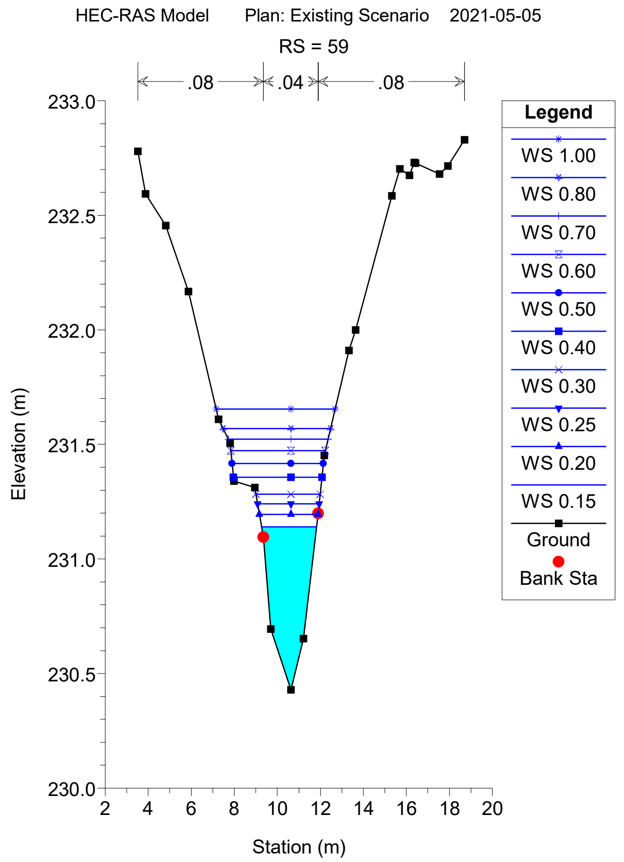

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 116 Culv
.08
.
0
4
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
234.0
233.5
233.0
232.5
232.0
231.5
231.0
230.5
230.0
0 20 40 60 80 100 120 140 160 180

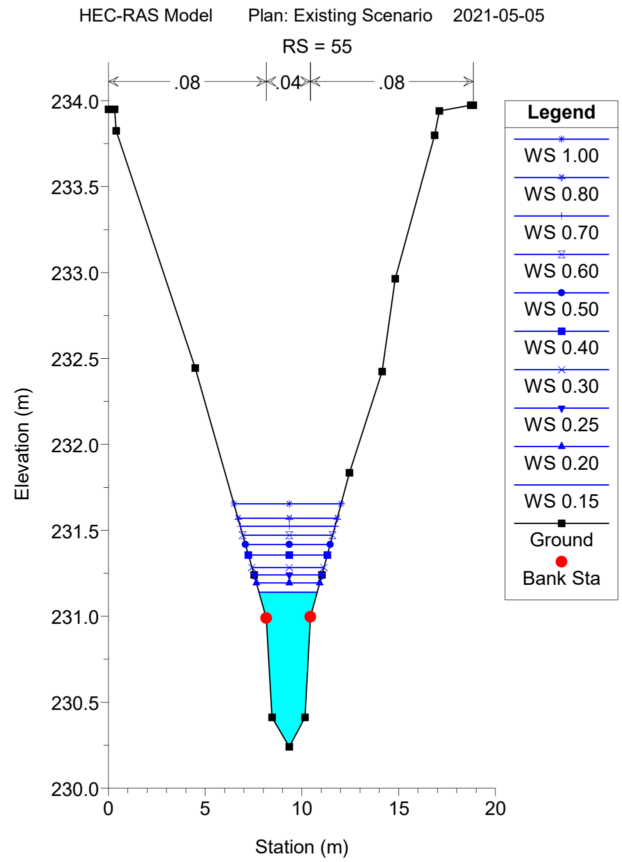

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 108
.08
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Ineff
Bank Sta

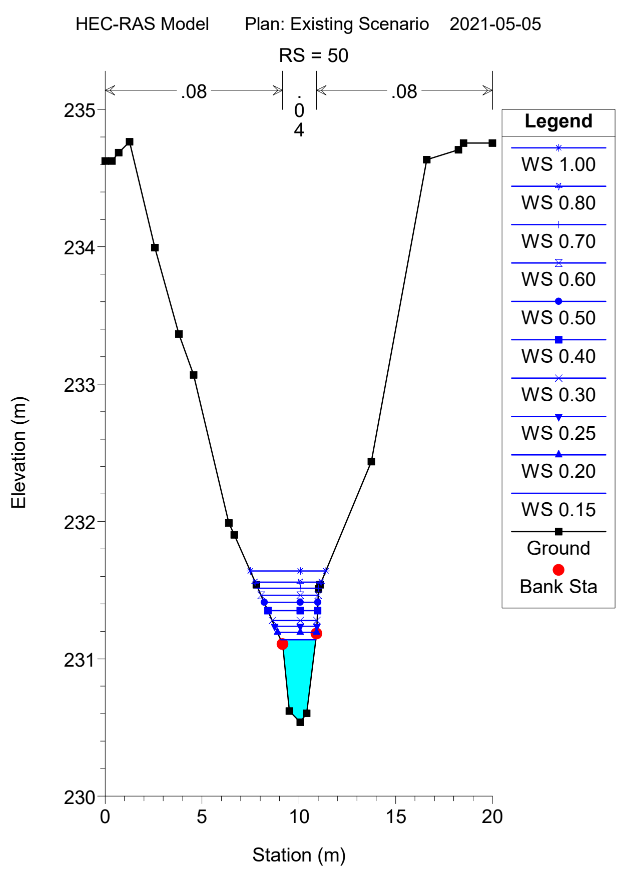

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 103
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta

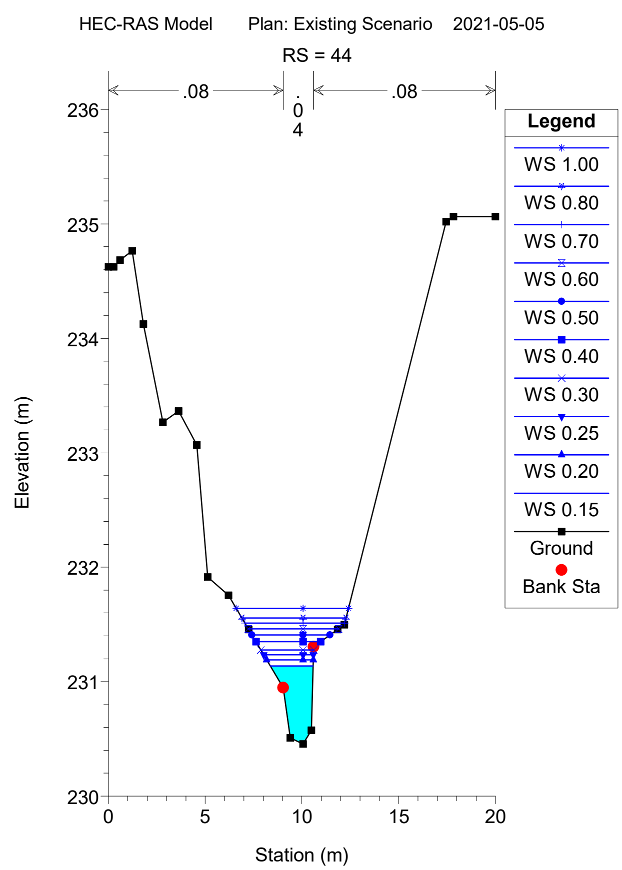

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 90
.08
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta

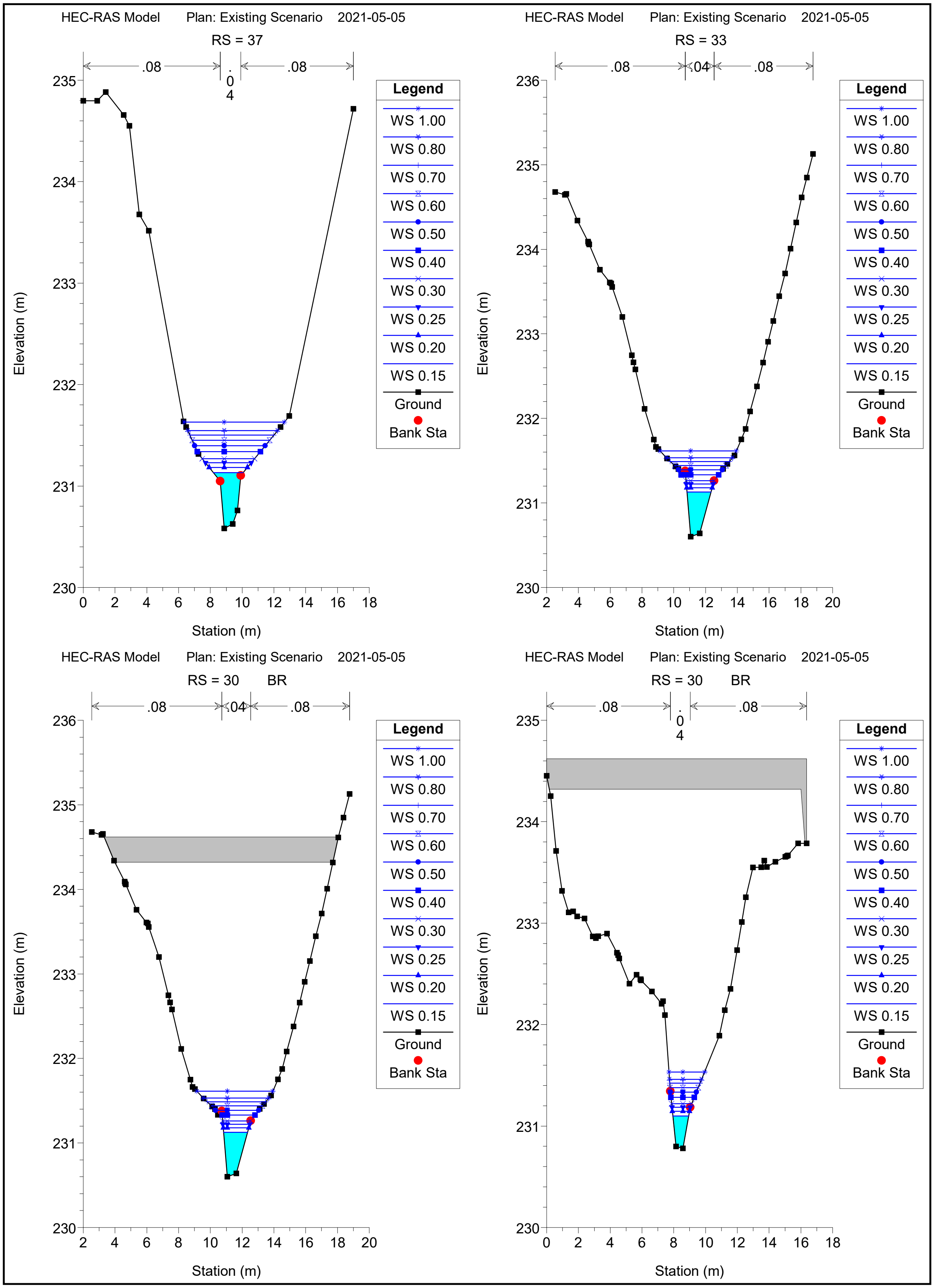

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 76
.08
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta

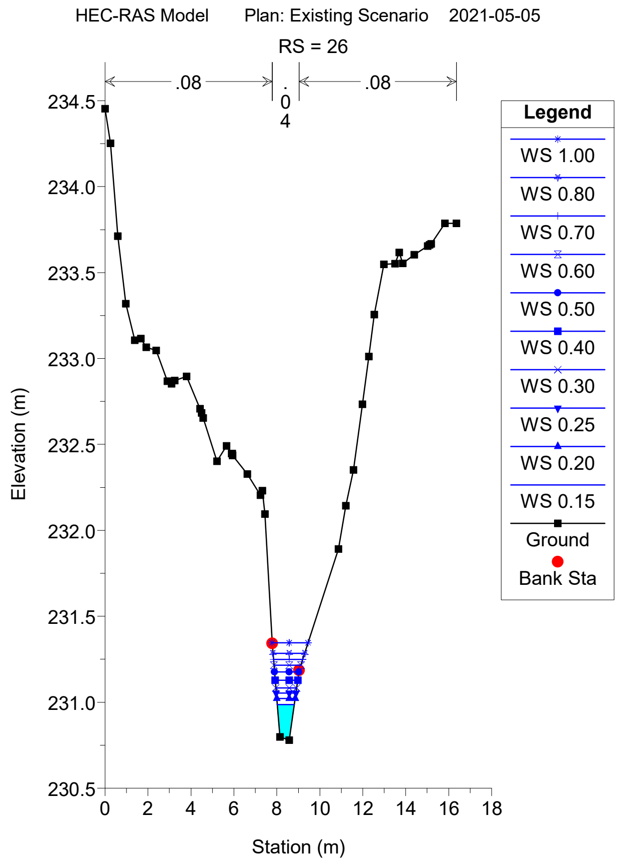

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 59
.08
.04
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta

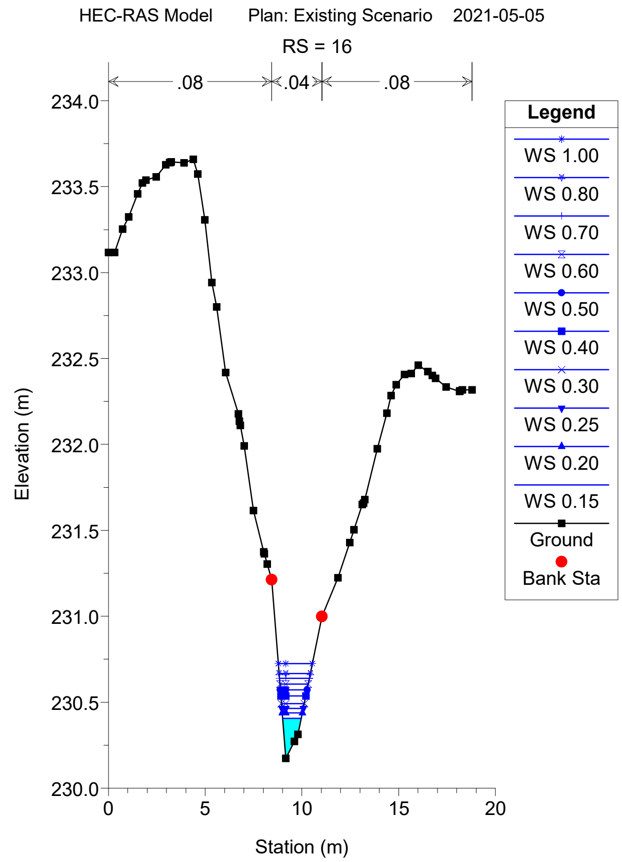

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 55
.08
.04
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta

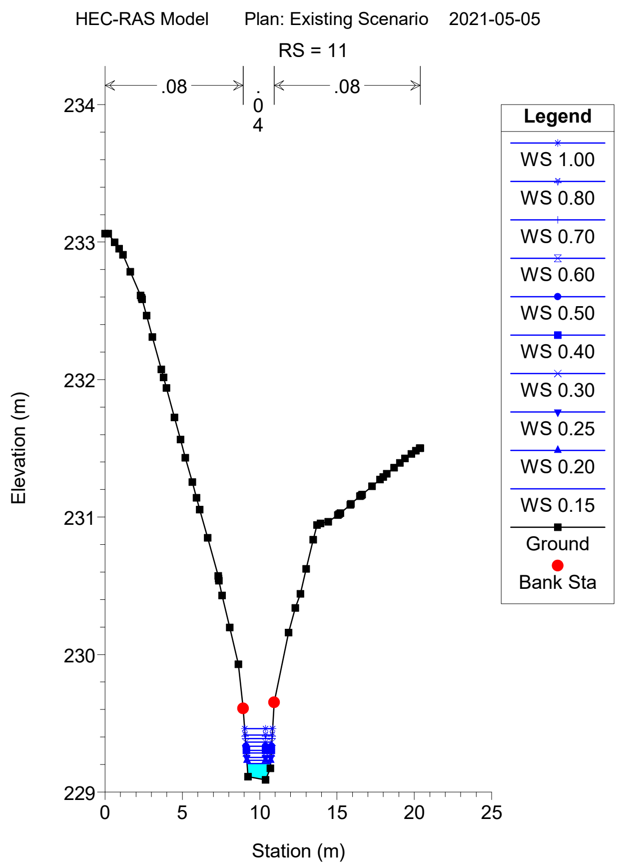

HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 50
.08
.04
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta


HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 44
.08
.04
.08
Elevation (m)
Station (m)
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta


HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 37
.08
.04
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta
Elevation (m)
Station (m)
HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 33
.08
.04
.08
Elevation (m)
Station (m)
HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 30 BR
.08
.04
.08
Elevation (m)
Station (m)
HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 30 BR
.08
.04
.08
Elevation (m)
Station (m)


HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 26
.08
.04
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta
Elevation (m)
234.5
234.0
233.5
233.0
232.5
232.0
231.5
231.0
230.5
0 2 4 6 8 10 12 14 16 18
Station (m)


HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 16
.08
.04
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta
Elevation (m)
234.0
233.5
233.0
232.5
232.0
231.5
231.0
230.5
230.0
0 5 10 15 20
Station (m)


HEC-RAS Model Plan: Existing Scenario 2021-05-05
RS = 11
.08
.04
.08
Legend
WS 1.00
WS 0.80
WS 0.70
WS 0.60
WS 0.50
WS 0.40
WS 0.30
WS 0.25
WS 0.20
WS 0.15
Ground
Bank Sta
Elevation (m)
234
233
232
231
230
229
0 5 10 15 20 25
Station (m)

HEC-RAS Plan: Exist River: Redwing Reach: us

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
us	128	0.15	0.15	231.02	231.19		231.19	0.000022	0.03	5.85	57.01	0.03
us	128	0.20	0.20	231.02	231.24		231.24	0.000011	0.02	9.21	69.99	0.02
us	128	0.25	0.25	231.02	231.26		231.26	0.000012	0.02	10.60	72.94	0.02
us	128	0.30	0.30	231.02	231.29		231.29	0.000009	0.02	12.88	75.98	0.02
us	128	0.40	0.40	231.02	231.36		231.36	0.000005	0.02	18.79	83.21	0.01
us	128	0.50	0.50	231.02	231.43		231.43	0.000004	0.02	24.17	88.87	0.01
us	128	0.60	0.60	231.02	231.48		231.48	0.000003	0.02	29.18	90.82	0.01
us	128	0.70	0.70	231.02	231.53		231.53	0.000003	0.02	34.02	95.05	0.01
us	128	0.80	0.80	231.02	231.58		231.58	0.000002	0.02	38.51	95.83	0.01
us	128	1.00	1.00	231.02	231.67		231.67	0.000002	0.02	46.79	97.68	0.01
us	121	0.15	0.15	230.71	231.18	230.84	231.18	0.000150	0.14	1.11	94.53	0.08
us	121	0.20	0.20	230.71	231.24	230.85	231.24	0.000000	0.01	47.92	103.06	0.00
us	121	0.25	0.25	230.71	231.26	230.87	231.26	0.000000	0.01	49.94	105.26	0.00
us	121	0.30	0.30	230.71	231.29	230.88	231.29	0.000000	0.01	53.20	107.88	0.00
us	121	0.40	0.40	230.71	231.36	230.91	231.36	0.000001	0.01	61.43	113.78	0.01
us	121	0.50	0.50	230.71	231.43	230.94	231.43	0.000001	0.01	68.67	118.84	0.01
us	121	0.60	0.60	230.71	231.48	230.96	231.48	0.000001	0.01	75.41	123.59	0.01
us	121	0.70	0.70	230.71	231.53	230.98	231.53	0.000001	0.02	82.01	128.41	0.01
us	121	0.80	0.80	230.71	231.58	231.03	231.58	0.000001	0.02	88.18	141.27	0.01
us	121	1.00	1.00	230.71	231.67	231.07	231.67	0.000001	0.02	100.41	144.23	0.01
us	116		Culvert									
us	108	0.15	0.15	230.43	231.14	230.55	231.14	0.000074	0.12	1.27	64.58	0.05
us	108	0.20	0.20	230.43	231.20	230.57	231.20	0.000114	0.14	1.42	71.58	0.06
us	108	0.25	0.25	230.43	231.25	230.59	231.25	0.000007	0.04	17.39	77.20	0.02
us	108	0.30	0.30	230.43	231.29	230.61	231.29	0.000007	0.04	20.70	80.78	0.02
us	108	0.40	0.40	230.43	231.36	230.64	231.36	0.000006	0.04	27.16	93.75	0.01
us	108	0.50	0.50	230.43	231.43	230.68	231.43	0.000006	0.04	33.49	108.64	0.02
us	108	0.60	0.60	230.43	231.48	230.70	231.48	0.000005	0.04	39.83	118.81	0.01
us	108	0.70	0.70	230.43	231.53	230.73	231.53	0.000005	0.04	46.29	128.34	0.01
us	108	0.80	0.80	230.43	231.58	230.75	231.58	0.000005	0.04	52.52	136.30	0.01
us	108	1.00	1.00	230.43	231.67	230.80	231.67	0.000004	0.04	64.85	150.09	0.01
us	103	0.15	0.15	230.51	231.14		231.14	0.000021	0.04	8.11	66.56	0.03
us	103	0.20	0.20	230.51	231.20		231.20	0.000013	0.04	11.88	70.96	0.02
us	103	0.25	0.25	230.51	231.25		231.25	0.000010	0.03	15.35	75.10	0.02
us	103	0.30	0.30	230.51	231.29		231.29	0.000008	0.03	18.58	78.87	0.02
us	103	0.40	0.40	230.51	231.36		231.36	0.000007	0.04	24.98	93.20	0.02
us	103	0.50	0.50	230.51	231.43		231.43	0.000006	0.04	31.03	99.93	0.02
us	103	0.60	0.60	230.51	231.48		231.48	0.000005	0.04	36.70	103.70	0.02
us	103	0.70	0.70	230.51	231.53		231.53	0.000005	0.04	42.22	107.23	0.02
us	103	0.80	0.80	230.51	231.58		231.58	0.000004	0.04	47.34	109.91	0.01
us	103	1.00	1.00	230.51	231.67		231.67	0.000004	0.04	56.98	113.46	0.01
us	90	0.15	0.15	230.35	231.14		231.14	0.000042	0.11	1.88	7.34	0.04
us	90	0.20	0.20	230.35	231.20		231.20	0.000052	0.12	2.31	8.58	0.05
us	90	0.25	0.25	230.35	231.24		231.25	0.000059	0.14	2.74	9.34	0.05
us	90	0.30	0.30	230.35	231.29		231.29	0.000065	0.15	3.14	10.01	0.06
us	90	0.40	0.40	230.35	231.36		231.36	0.000074	0.17	3.93	11.21	0.06
us	90	0.50	0.50	230.35	231.42		231.42	0.000081	0.19	4.64	11.73	0.07
us	90	0.60	0.60	230.35	231.48		231.48	0.000087	0.21	5.31	12.37	0.07
us	90	0.70	0.70	230.35	231.53		231.53	0.000091	0.22	5.96	12.67	0.07
us	90	0.80	0.80	230.35	231.58		231.58	0.000096	0.23	6.57	13.34	0.07
us	90	1.00	1.00	230.35	231.66		231.67	0.000101	0.25	7.93	18.90	0.08
us	76	0.15	0.15	230.47	231.14		231.14	0.000070	0.12	2.86	15.83	0.05
us	76	0.20	0.20	230.47	231.20		231.20	0.000064	0.12	3.73	16.13	0.05
us	76	0.25	0.25	230.47	231.24		231.24	0.000061	0.12	4.50	16.44	0.05
us	76	0.30	0.30	230.47	231.29		231.29	0.000060	0.13	5.20	16.82	0.05
us	76	0.40	0.40	230.47	231.36		231.36	0.000058	0.14	6.47	17.32	0.05
us	76	0.50	0.50	230.47	231.42		231.42	0.000058	0.14	7.56	17.72	0.05
us	76	0.60	0.60	230.47	231.48		231.48	0.000059	0.15	8.55	18.05	0.05
us	76	0.70	0.70	230.47	231.53		231.53	0.000059	0.16	9.50	18.33	0.05
us	76	0.80	0.80	230.47	231.58		231.58	0.000059	0.16	10.37	18.59	0.06
us	76	1.00	1.00	230.47	231.66		231.66	0.000061	0.18	11.99	19.20	0.06
us	59	0.15	0.15	230.43	231.14		231.14	0.000100	0.13	1.13	2.56	0.06
us	59	0.20	0.20	230.43	231.19		231.20	0.000127	0.16	1.27	2.73	0.07
us	59	0.25	0.25	230.43	231.24		231.24	0.000146	0.18	1.40	2.87	0.08
us	59	0.30	0.30	230.43	231.28		231.28	0.000164	0.20	1.53	2.99	0.08
us	59	0.40	0.40	230.43	231.36		231.36	0.000195	0.24	1.78	4.11	0.09
us	59	0.50	0.50	230.43	231.42		231.42	0.000222	0.27	2.04	4.25	0.10

HEC-RAS Plan: Exist River: Redwing Reach: us (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
us	59	0.60	0.60	230.43	231.47		231.48	0.000245	0.30	2.27	4.39	0.11
us	59	0.70	0.70	230.43	231.52		231.53	0.000264	0.32	2.50	4.65	0.11
us	59	0.80	0.80	230.43	231.57		231.58	0.000284	0.34	2.73	5.00	0.12
us	59	1.00	1.00	230.43	231.65		231.66	0.000314	0.39	3.17	5.53	0.13
us	55	0.15	0.15	230.24	231.14		231.14	0.000030	0.09	1.70	3.02	0.03
us	55	0.20	0.20	230.24	231.19		231.20	0.000042	0.11	1.87	3.28	0.04
us	55	0.25	0.25	230.24	231.24		231.24	0.000053	0.13	2.03	3.51	0.05
us	55	0.30	0.30	230.24	231.28		231.28	0.000064	0.15	2.18	3.72	0.05
us	55	0.40	0.40	230.24	231.36		231.36	0.000084	0.18	2.46	4.08	0.06
us	55	0.50	0.50	230.24	231.42		231.42	0.000105	0.21	2.72	4.38	0.07
us	55	0.60	0.60	230.24	231.47		231.48	0.000123	0.24	2.97	4.65	0.07
us	55	0.70	0.70	230.24	231.52		231.53	0.000140	0.26	3.22	4.90	0.08
us	55	0.80	0.80	230.24	231.57		231.57	0.000157	0.28	3.45	5.13	0.08
us	55	1.00	1.00	230.24	231.65		231.66	0.000187	0.33	3.90	5.55	0.09
us	50	0.15	0.15	230.54	231.14		231.14	0.000310	0.21	0.72	1.80	0.10
us	50	0.20	0.20	230.54	231.19		231.19	0.000381	0.25	0.82	2.01	0.12
us	50	0.25	0.25	230.54	231.24		231.24	0.000432	0.28	0.92	2.17	0.12
us	50	0.30	0.30	230.54	231.28		231.28	0.000479	0.31	1.01	2.31	0.13
us	50	0.40	0.40	230.54	231.35		231.36	0.000556	0.36	1.19	2.56	0.15
us	50	0.50	0.50	230.54	231.41		231.42	0.000630	0.41	1.34	2.76	0.16
us	50	0.60	0.60	230.54	231.46		231.47	0.000694	0.45	1.50	2.95	0.17
us	50	0.70	0.70	230.54	231.51		231.53	0.000744	0.49	1.65	3.13	0.18
us	50	0.80	0.80	230.54	231.56		231.57	0.000794	0.52	1.80	3.41	0.18
us	50	1.00	1.00	230.54	231.64		231.66	0.000874	0.58	2.10	3.91	0.19
us	44	0.15	0.15	230.46	231.14		231.14	0.000161	0.17	0.94	2.21	0.07
us	44	0.20	0.20	230.46	231.19		231.19	0.000215	0.20	1.06	2.41	0.08
us	44	0.25	0.25	230.46	231.24		231.24	0.000266	0.24	1.18	2.57	0.09
us	44	0.30	0.30	230.46	231.28		231.28	0.000315	0.26	1.28	2.72	0.10
us	44	0.40	0.40	230.46	231.35		231.35	0.000395	0.31	1.50	3.34	0.11
us	44	0.50	0.50	230.46	231.41		231.41	0.000463	0.36	1.72	4.04	0.12
us	44	0.60	0.60	230.46	231.46		231.47	0.000519	0.39	1.95	4.66	0.13
us	44	0.70	0.70	230.46	231.51		231.52	0.000561	0.42	2.20	5.16	0.14
us	44	0.80	0.80	230.46	231.56		231.57	0.000597	0.45	2.43	5.38	0.15
us	44	1.00	1.00	230.46	231.64		231.65	0.000652	0.50	2.90	5.79	0.15
us	37	0.15	0.15	230.58	231.13		231.14	0.000629	0.28	0.55	1.87	0.14
us	37	0.20	0.20	230.58	231.18		231.19	0.000737	0.33	0.66	2.41	0.15
us	37	0.25	0.25	230.58	231.23		231.24	0.000819	0.37	0.78	2.88	0.16
us	37	0.30	0.30	230.58	231.27		231.28	0.000885	0.40	0.91	3.29	0.17
us	37	0.40	0.40	230.58	231.34		231.35	0.000962	0.45	1.16	3.97	0.18
us	37	0.50	0.50	230.58	231.40		231.41	0.001021	0.50	1.41	4.44	0.19
us	37	0.60	0.60	230.58	231.45		231.46	0.001059	0.53	1.66	4.87	0.20
us	37	0.70	0.70	230.58	231.50		231.51	0.001072	0.56	1.91	5.28	0.20
us	37	0.80	0.80	230.58	231.55		231.56	0.001086	0.58	2.16	5.64	0.20
us	37	1.00	1.00	230.58	231.63		231.64	0.001093	0.62	2.65	6.31	0.21
us	33	0.15	0.15	230.60	231.13	230.80	231.13	0.000785	0.29	0.52	1.51	0.16
us	33	0.20	0.20	230.60	231.18	230.83	231.19	0.000955	0.33	0.60	1.61	0.17
us	33	0.25	0.25	230.60	231.22	230.86	231.23	0.001100	0.37	0.68	1.69	0.19
us	33	0.30	0.30	230.60	231.26	230.89	231.27	0.001231	0.40	0.74	1.77	0.20
us	33	0.40	0.40	230.60	231.33	230.93	231.34	0.001362	0.46	0.88	2.09	0.21
us	33	0.50	0.50	230.60	231.39	230.98	231.40	0.001485	0.51	1.02	2.75	0.22
us	33	0.60	0.60	230.60	231.44	231.01	231.46	0.001546	0.55	1.17	3.22	0.23
us	33	0.70	0.70	230.60	231.49	231.05	231.51	0.001569	0.59	1.34	3.72	0.24
us	33	0.80	0.80	230.60	231.53	231.08	231.55	0.001593	0.62	1.52	4.16	0.24
us	33	1.00	1.00	230.60	231.62	231.14	231.64	0.001594	0.67	1.88	4.81	0.25
us	30		Bridge									
us	26	0.15	0.15	230.78	230.99	230.99	231.06	0.038646	1.23	0.12	0.80	1.00
us	26	0.20	0.20	230.78	231.02	231.02	231.11	0.037266	1.31	0.15	0.86	1.00
us	26	0.25	0.25	230.78	231.05	231.05	231.15	0.036713	1.39	0.18	0.92	1.00
us	26	0.30	0.30	230.78	231.08	231.08	231.19	0.036153	1.45	0.21	0.97	1.00
us	26	0.40	0.40	230.78	231.13	231.13	231.25	0.037520	1.58	0.25	1.05	1.03
us	26	0.50	0.50	230.78	231.18	231.18	231.31	0.035343	1.63	0.31	1.14	1.01
us	26	0.60	0.60	230.78	231.22	231.22	231.36	0.033573	1.70	0.35	1.25	0.99
us	26	0.70	0.70	230.78	231.25	231.25	231.41	0.032914	1.78	0.40	1.36	0.99
us	26	0.80	0.80	230.78	231.28	231.28	231.45	0.031354	1.83	0.45	1.48	0.98
us	26	1.00	1.00	230.78	231.35	231.35	231.53	0.029949	1.94	0.54	1.68	0.97
us	16	0.15	0.15	230.17	230.41	230.41	230.47	0.037160	1.14	0.13	0.97	1.00

HEC-RAS Plan: Exist   River: Redwing   Reach: us (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
us	16	0.20	0.20	230.17	230.44	230.44	230.52	0.035966	1.23	0.16	1.05	1.00
us	16	0.25	0.25	230.17	230.46	230.46	230.55	0.035906	1.31	0.19	1.12	1.01
us	16	0.30	0.30	230.17	230.49	230.49	230.58	0.034309	1.35	0.22	1.18	1.00
us	16	0.40	0.40	230.17	230.54	230.54	230.64	0.033260	1.44	0.28	1.29	1.00
us	16	0.50	0.50	230.17	230.57	230.57	230.69	0.033456	1.54	0.33	1.38	1.01
us	16	0.60	0.60	230.17	230.61	230.61	230.74	0.033058	1.60	0.37	1.47	1.01
us	16	0.70	0.70	230.17	230.64	230.64	230.78	0.032268	1.65	0.42	1.55	1.01
us	16	0.80	0.80	230.17	230.67	230.67	230.82	0.031780	1.70	0.47	1.62	1.01
us	16	1.00	1.00	230.17	230.72	230.72	230.88	0.030123	1.77	0.57	1.77	1.00
us	11	0.15	0.15	229.09	229.21	229.21	229.26	0.040406	1.02	0.15	1.52	1.05
us	11	0.20	0.20	229.09	229.23	229.23	229.29	0.036063	1.09	0.18	1.54	1.01
us	11	0.25	0.25	229.09	229.25	229.25	229.32	0.033866	1.16	0.22	1.57	1.00
us	11	0.30	0.30	229.09	229.28	229.28	229.35	0.025189	1.12	0.27	1.60	0.88
us	11	0.40	0.40	229.09	229.30	229.30	229.39	0.032005	1.34	0.30	1.63	1.00
us	11	0.50	0.50	229.09	229.33	229.33	229.44	0.031528	1.44	0.35	1.66	1.00
us	11	0.60	0.60	229.09	229.36	229.36	229.48	0.030803	1.51	0.40	1.69	1.00
us	11	0.70	0.70	229.09	229.39	229.39	229.52	0.030605	1.59	0.44	1.72	1.00
us	11	0.80	0.80	229.09	229.41	229.41	229.55	0.030095	1.65	0.49	1.75	1.00
us	11	1.00	1.00	229.09	229.46	229.46	229.62	0.029647	1.76	0.57	1.80	1.00

HEC-RAS Plan: Exist River: Redwing Reach: us

Reach	River Sta		Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
				(m)	(m)	(m)	(m)	(m)	(m3/s)	(m3/s)	(m)	(m/s)	(m/s)
us	116	Culvert #1	0.15	231.18	231.18	231.02	231.18	231.21	0.15		0.04	0.61	0.60
us	116	Culvert #1	0.20	231.24	231.24	231.09	231.24	231.21	0.16	0.04	0.04	0.60	0.60
us	116	Culvert #1	0.25	231.26	231.26	231.16	231.26	231.21	0.09	0.16	0.01	0.32	0.32
us	116	Culvert #1	0.30	231.29	231.29	231.22	231.29	231.21	0.02	0.28	0.00	0.07	0.07
us	116	Culvert #1	0.40	231.36	231.36	231.33	231.36	231.21	0.01	0.42	0.00	0.04	0.04
us	116	Culvert #1	0.50	231.43	231.43	231.42	231.43	231.21	0.01	0.51	0.00	0.04	0.04
us	116	Culvert #1	0.60	231.48	231.48	231.48	231.48	231.21	0.01	0.62	0.00	0.04	0.04
us	116	Culvert #1	0.70	231.53	231.53	231.53	231.53	231.21	0.01	0.72	0.00	0.04	0.04
us	116	Culvert #1	0.80	231.58	231.58	231.58	231.58	231.21	0.01	0.72	0.00	0.04	0.04
us	116	Culvert #1	1.00	231.67	231.67	231.67	231.67	231.21	0.01	0.88	0.00	0.04	0.04

Appendix H: Proposed Storm Sewer Improvement Plans

110 55 0 110 220 330 440 METRES

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No.	REVISION DESCRIPTION	DATE
1.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

PROPOSED STORM SEWER IMPROVEMENTS PLAN

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: SEPT 2021	**PR-1**
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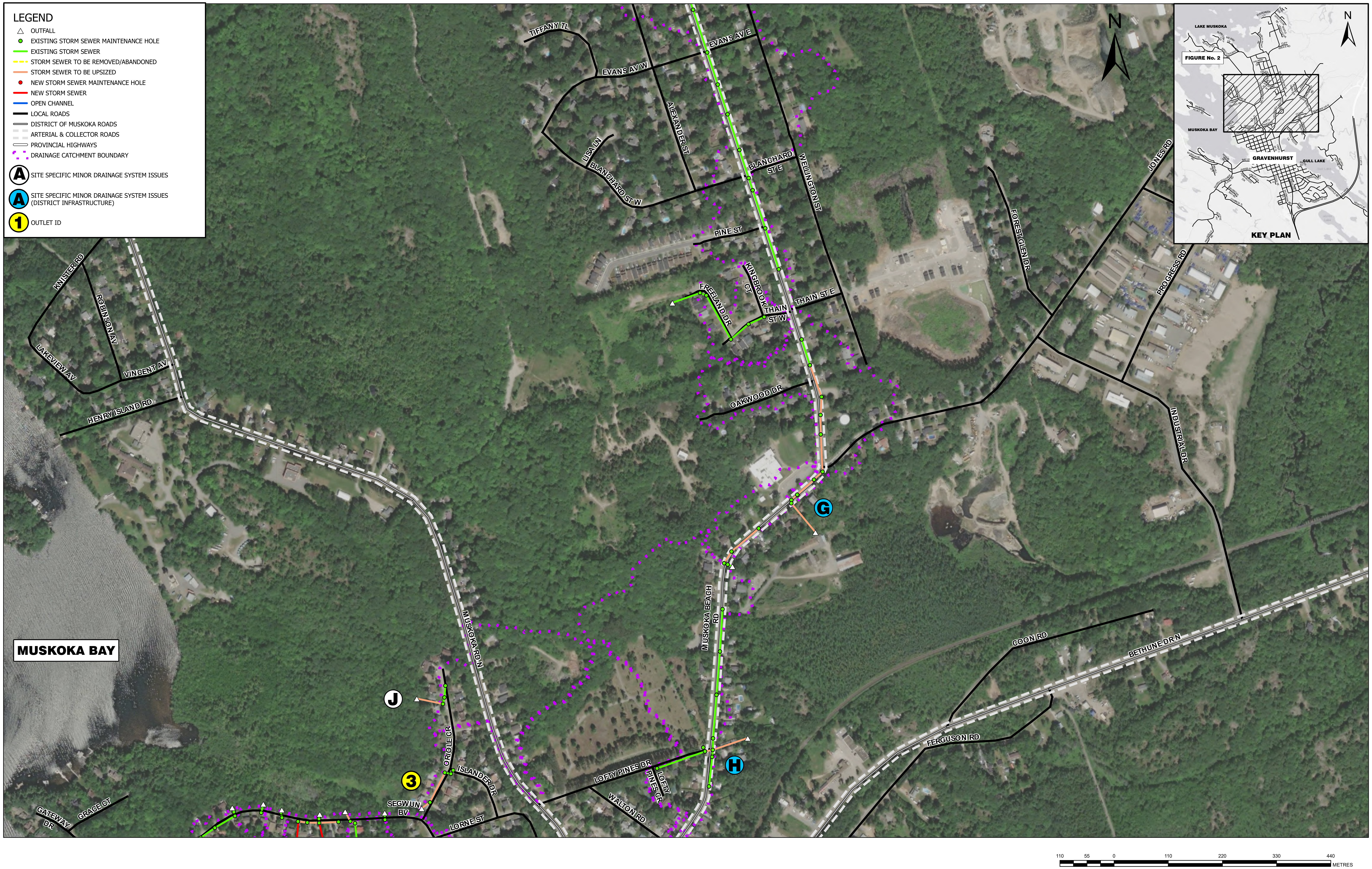

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No.	REVISION DESCRIPTION	DATE
1.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

PROPOSED STORM SEWER IMPROVEMENTS PLAN

DESIGN: DAM	FILE: 220536	DWG:
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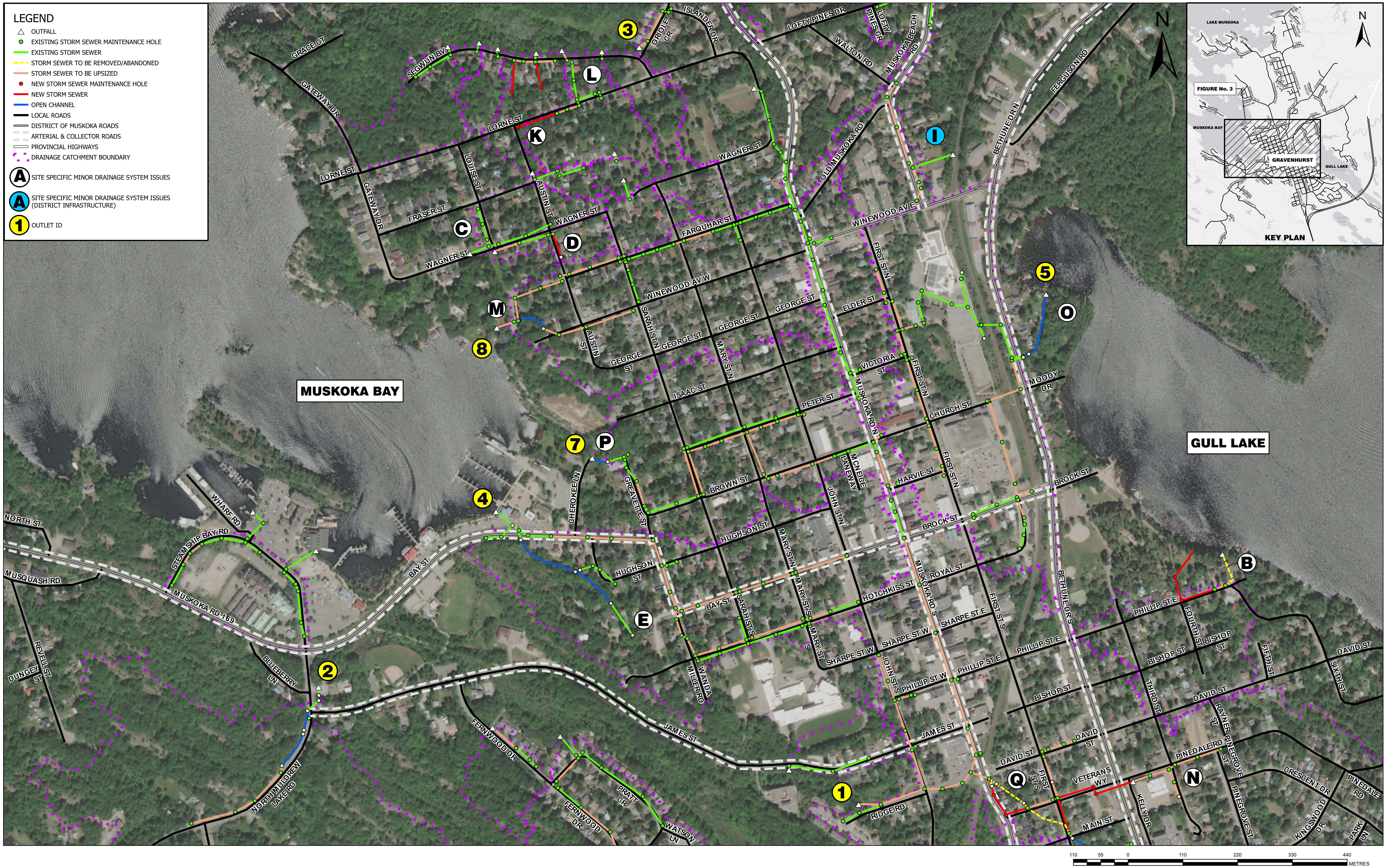

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No.	REVISION DESCRIPTION	DATE
1.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

PROPOSED STORM SEWER IMPROVEMENTS PLAN

TATHAM ENGINEERING

DESIGN: DAM	FILE: 220536	DWG:	
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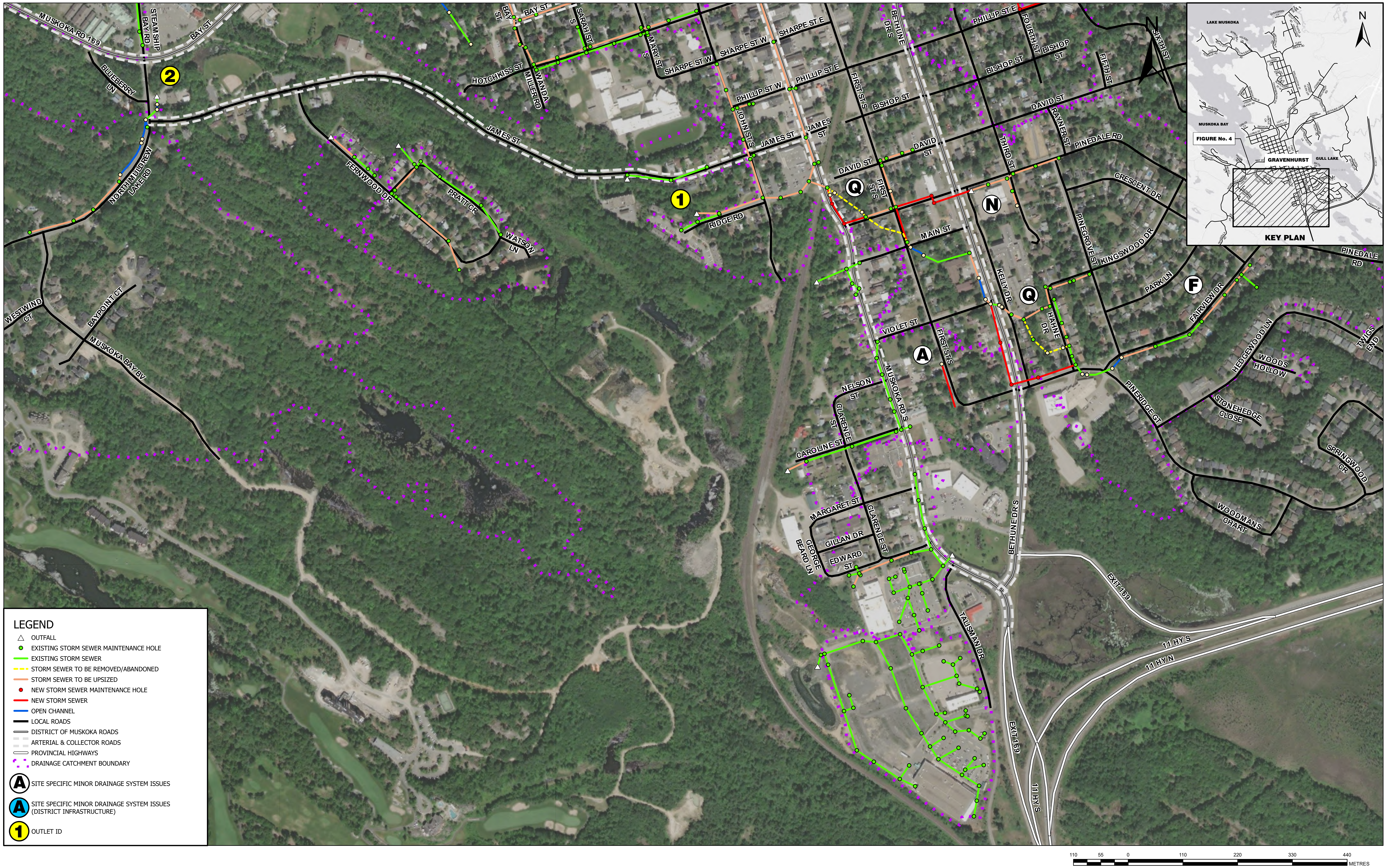

No.	REVISION DESCRIPTION	DATE
1.	MASTER STORM SEWER REPORT	OCT/21

ENGINEERS STAMP

TOWN OF GRAVENHURST
MASTER STORM SEWER REPORT

TATHAM ENGINEERING

PROPOSED STORM SEWER IMPROVEMENTS PLAN

DESIGN: DAM	FILE: 220536	DWG:
DRAWN: SD	DATE: SEPT 2021	PR-4
CHECK: DRT	SCALE: 1:3,500	

Appendix I: Preliminary Construction Cost Estimates

Gravenhurst Master Storm Sewer Report
Preliminary Construction Cost Estimate
August 2021

First Street South Storm Sewer Improvement
Project Location A

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	Outlet Installation				
1.01	Connect to Existing Structure	LS	-	-	$5,000
1.02	300 mm Dia. Storm Sewer	m	90	$325.00	$29,250
1.03	Reinstate Grassed Boulevard	m^2	200	$22.00	$4,400
1.04	Reinstate Existing Driveways	m^2	75	$55.00	$4,125
1.05	Ditch Cleanout	m	80	$100.00	$8,000
1.06	Ditch Reinstatement	m	80	$16.00	$1,280
				Subtotal: Outlet Installation	$50,775
				Construction Contingency (25%)	$12,694
				Engineering Design Fee (20%)	$10,155
				Contract Administration / Construction Inspection (10%)	$5,078
				Utilities / Services Relocation Cost (15%)	$7,616
				Total Preliminary Construction Cost Estimate	$86,318

Gravenhurst Master Storm Sewer Report
Preliminary Construction Cost Estimate
August 2021

Phillip Street East Storm Sewer Improvement
Project Location B (1:5-Year Capacity)

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	New Outlet				
1.01	Abandon Existing Outlet Sewer Through Private Property	LS	-	-	$5,000
1.02	Remove Existing Storm Sewer	m	23	$65.00	$1,508
1.03	Remove Existing Maintenance Holes	ea	1	$1,000.00	$1,000
1.04	Connect to Existing Structure	ea	1	5,000	$5,000
1.05	300 mm Dia. Storm Sewer	m	90	$325.00	$29,250
1.06	525 mm Dia. Storm Sewer	m	181	$475.00	$86,118
1.07	1200 mm Dia. Maintenance Hole	ea	3	$6,500.00	$19,500
1.08	Outlet Works	LS	-	-	$25,000
1.09	Reinstate Landscaped Areas	m^2	195	$22.00	$4,290
1.10	Reinstate Gravel Path	m^2	150	$55.00	$8,250
				Subtotal: New Outlet	$184,916
				Construction Contingency (25%)	$46,229
				Engineering Design Fee (20%)	$36,983
				Contract Administration / Construction Inspection (10%)	$18,492
				Utilities / Services Relocation Cost (15%)	$27,737
				Total Preliminary Construction Cost Estimate	$314,356

Note: Cost estimate based on completing storm sewer improvements as part of Phillip Street East reconstruction (excludes road reinstatement).

Gravenhurst Master Storm Sewer Report
Preliminary Construction Cost Estimate
August 2021

Phillip Street East Storm Sewer Improvement
Project Location B (1:100-Year Capacity)

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	New Outlet				
1.01	Abandon Existing Outlet Sewer Through Private Property	LS	-	-	$5,000
1.02	Remove Existing Storm Sewer	m	23	$65.00	$1,508
1.03	Remove Existing Maintenance Holes	ea	1	$1,000.00	$1,000
1.04	Connect to Existing Structure	ea	1	5,000	$5,000
1.05	375 mm Dia. Storm Sewer	m	90	$375.00	$33,750
1.06	675 mm Dia. Storm Sewer	m	181	$625.00	$113,313
1.07	1200 mm Dia. Maintenance Hole	ea	5	$6,500.00	$32,500
1.08	Outlet Works	LS	-	-	$27,500
1.09	Reinstate Landscaped Areas	m^2	195	$22.00	$4,290
1.10	Reinstate Gravel Path	m^2	150	$55.00	$8,250
				Subtotal: New Outlet	$232,111
				Construction Contingency (25%)	$58,028
				Engineering Design Fee (20%)	$46,422
				Contract Administration / Construction Inspection (10%)	$23,211
				Utilities / Services Relocation Cost (15%)	$34,817
				Total Preliminary Construction Cost Estimate	$394,588

Note: Cost estimate based on completing storm sewer improvements as part of Phillip Street East reconstruction (excludes road reinstatement).

Gravenhurst Master Storm Sewer Report

Preliminary Construction Cost Estimate

August 2021

Austin Street Catch Basin Connection

Project Location D

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	Catch Basin Connection				
1.01	Connect to Existing Structure	ea	1	5,000	$5,000
1.02	300 mm Dia. Storm Sewer	m	50	$325.00	$16,250
1.03	Reinstate Grassed Boulevard	m^2	114	$22.00	$2,508
1.04	Reinstate Existing Driveways	m^2	36	$55.00	$1,980
			Subtotal: Catch Basin Connection		$25,738
			Construction Contingency (25%)		$6,435
			Engineering Design Fee (20%)		$5,148
			Contract Administration / Construction Inspection (10%)		$2,574
			Utilities / Services Relocation Cost (15%)		$3,861
			Total Preliminary Construction Cost Estimate		$43,755

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Clairmont Road Culvert Crossing Improvement
Project Location E

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	Culvert Replacement				
1.01	Clearing and Grubbing	LS	-	-	$5,000
1.02	Remove Existing Culvert	m	78	$50.00	$3,875
1.03	Inlet Cleanout	LS	-	-	$5,000
1.04	450 mm Dia. Concrete Culvert	m	78	$325.00	$25,188
1.05	Concrete Headwall c/w Grate - 450 mm Dia.	ea	2	$10,500.00	$21,000
1.06	40 mm HL3 Surface Course Asphalt	m^2	24	$35.00	$840
1.07	Base Course Asphalt HL-4/8 (70 mm)	m^2	24	$25.00	$600
1.08	Granular 'A' (150 mm)	m^2	24	$12.00	$288
1.09	Granular 'B' (450 mm)	m^2	24	$24.00	$576
1.10	Reinstate Landscaped Areas	m^2	195	$22.00	$4,290
1.11	Landscaping	LS	-	-	$5,000
			Subtotal: Culvert Replacement		$71,657
			Construction Contingency (25%)		$17,914
			Engineering Design Fee (20%)		$14,331
			Contract Administration / Construction Inspection (10%)		$7,166
			Utilities / Services Relocation Cost (15%)		$10,748
			Total Preliminary Construction Cost Estimate		$121,816

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Oriole Crescent Storm Sewer Improvement

Project Location J

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	Outlet Improvement				
1.01	Remove Existing Storm Sewer	m	54	$65.00	$3,510
1.02	Connect to Existing Structure	ea	1	5,000	$5,000
1.03	450 mm Dia. Storm Sewer	m	54	$425.00	$22,950
1.04	Outlet Works	LS	-	-	$15,000
1.05	Reinstate Landscaped Areas	m^2	165	$22.00	$3,630
			Subtotal: Outlet Improvement		$50,090
			Construction Contingency (25%)		$12,523
			Engineering Design Fee (20%)		$10,018
			Contract Administration / Construction Inspection (10%)		$5,009
			Utilities / Services Relocation Cost (15%)		$7,514
			Total Preliminary Construction Cost Estimate		$85,153

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Abbey Lane Outlet Improvements
Project Location M

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	**Outlet Improvements**				
1.01	Remove Existing Culvert	m	46	$50.00	$2,300
1.02	Remove Catch Basin / Ditch Inlet	ea	1	$750.00	$750
1.03	40 mm HL3 Surface Course Asphalt	m^2	24	$35.00	$840
1.04	Base Course Asphalt HL-4/8 (70 mm)	m^2	24	$25.00	$600
1.05	Granular 'A' (150 mm)	m^2	24	$12.00	$288
1.06	Granular 'B' (450 mm)	m^2	24	$24.00	$576
1.07	Inlet Improvements (130 Abbey Lane)	LS	-	-	$10,000
1.08	Concrete Headwall c/w Grate - 900 mm Dia.	ea	1	$26,000.00	$26,000
1.09	600 mm x 600 mm Single Catchbasin & Lead	ea	4	4,500	$18,000
1.10	1500 mm Dia. Maintenance Hole (c/w Safety Platform and Drop Structure)	ea	2	$20,000.00	$40,000
1.11	900 mm Dia. Storm Sewer	m	70	$875.00	$61,250
1.12	Channel Improvements	m	65	$500.00	$32,500
1.13	Outlet Works	LS	-	-	$10,000
1.14	Reinstate Landscaped Areas	m^2	300	$22.00	$6,600
1.15	Landscaping	LS	-	-	$10,000
				Subtotal: Outlet Improvements	$219,704
				Construction Contingency (25%)	$54,926
				Engineering Design Fee (20%)	$43,941
				Contract Administration / Construction Inspection (10%)	$21,970
				Utilities / Services Relocation Cost (15%)	$32,956
				Total Preliminary Construction Cost Estimate	$373,497

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Ridge Road Drainage System Improvements

Project Locations N and Q

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Price	Estimated Amount
1	Storm Sewer Realignment (New Sewer) - Project Location N				
1.01	675 mm Dia. Storm Sewer	m	94	$625.00	$58,750
1.02	750 mm Dia. Storm Sewer	m	75	$700.00	$52,640
1.03	Connect to Existing Structure	ea	1	5,000	$5,000
1.04	1200 mm Dia. Maintenance Hole	ea	1	$6,500.00	$6,500
1.05	1500 mm Dia. Maintenance Hole	ea	1	$9,000.00	$9,000
	Subtotal: Storm Sewer Realignment (New Sewer)				$131,890
	Construction Contingency (25%)				$32,973
	Engineering Design Fee (20%)				$26,378
	Contract Administration / Construction Inspection (10%)				$13,189
	Utilities / Services Relocation Cost (15%)				$19,784
	Total Preliminary Construction Cost Estimate - Project Location N				$224,213
2	Storm Sewer Realignment (New Sewer) - Project Location Q				
2.01	Remove/Abandon Existing Storm Sewer	m	327	$65.00	$21,268
2.02	Remove/Abandon Existing Concrete Box Culvert	m	18	$2,000.00	$36,200
2.03	Remove/Abandon Existing Maintenance Holes	ea	6	$1,000.00	$6,000
2.04	Connect to Existing Structure	ea	5	5,000	$25,000
2.05	1050 mm Dia. Storm Sewer	m	303	$1,050.00	$317,625
2.06	1200 mm Dia. Storm Sewer	m	201	$1,250.00	$250,750
2.07	1500 mm Dia. Maintenance Hole	ea	3	$9,000.00	$27,000
2.08	1800 mm Dia. Maintenance Hole	ea	3	$13,000.00	$39,000
	Subtotal: Storm Sewer Realignment (New Sewer)				$722,843
	Construction Contingency (25%)				$180,711
	Engineering Design Fee (20%)				$144,569
	Contract Administration / Construction Inspection (10%)				$72,284
	Utilities / Services Relocation Cost (15%)				$108,426
	Total Preliminary Construction Cost Estimate - Project Location Q				$1,228,833
	Total Preliminary Construction Cost Estimate - Project Locations N and Q				$1,453,046

Note: Cost estimate based on completing storm sewer improvements as part of road reconstruction projects (excludes road reinstatement).

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Storm Sewer General Recommendations (Upsizing)

ID	Outlet	Length (m)	Description	Ex. Dia. (m)	Pr. Dia. (m)	Structure Costs	Replacement Sewer Cost	Contigencies	Replacement Cost	Proposed Sewer Cost	Contingencies	Upsizing Cost	Cost Difference
2002	1	35.9	CSP	0.400	0.675	$12,000	$13,460	$17,822	$43,282	$22,433	$24,103	$58,536	$15,255
2003	1	39.8	CSP	0.400	0.675	$12,000	$14,918	$18,843	$45,761	$24,864	$25,805	$62,668	$16,907
2004	1	15.4	CSP	0.400	0.525	$12,000	$5,784	$12,449	$30,233	$7,327	$13,529	$32,856	$2,622
2005	1	47.7	CSP	0.400	0.525	$12,000	$17,904	$20,933	$50,836	$22,678	$24,275	$58,952	$8,116
2006	1	49.5	CSP	0.300	0.525	$12,000	$16,088	$19,662	$47,750	$23,513	$24,859	$60,373	$12,623
2007	1	27.3	CSP	0.400	0.675	$12,000	$10,247	$15,573	$37,820	$17,079	$20,355	$49,434	$11,614
2008	1	31.0	CSP	0.400	0.675	$12,000	$11,611	$16,528	$40,139	$19,352	$21,946	$53,298	$13,159
2491	1	45.0	PVC	0.900	1.350	$18,500	$39,375	$40,513	$98,388	$67,500	$60,200	$146,200	$47,813
2492	1	93.2	PVC	0.900	1.350	$18,500	$81,576	$70,053	$170,130	$139,845	$110,842	$269,187	$99,057
2493	1	36.0	HDPE	0.750	1.200	$14,500	$25,171	$27,770	$67,441	$44,949	$41,614	$101,063	$33,622
2494	1	41.9	CSP	1.050	1.200	$18,500	$43,954	$43,718	$106,172	$52,326	$49,578	$120,405	$14,233
2495	1	27.2	CSP	1.050	1.200	$18,500	$28,539	$32,927	$79,966	$33,975	$36,733	$89,208	$9,241
2496	1	39.0	CSP	1.050	1.200	$18,500	$40,995	$41,647	$101,142	$48,804	$47,113	$114,416	$13,275
2500	1	12.2	CSP	0.900	1.050	$18,500	$10,707	$20,445	$49,653	$12,849	$21,944	$53,293	$3,641
2502	1	97.8	CSP	1.200	1.200	$25,000	$122,188	$103,031	$250,219	$122,188	$103,031	$250,219	$0
2503	1	54.0	CSP	0.825	1.200	$14,500	$41,820	$39,424	$95,744	$67,451	$57,366	$139,317	$43,574
2505	1	13.7	CSP	0.900	1.050	$18,500	$11,963	$21,324	$51,787	$14,356	$22,999	$55,855	$4,067
2515	1	21.7	PVC	0.900	0.450	$18,500	$18,955	$26,219	$63,674	$9,207	$19,395	$47,102	($16,572)
2516	1	18.7	PVC	0.900	0.450	$18,500	$16,378	$24,415	$59,293	$7,955	$18,519	$44,974	($14,319)
2517	1	23.2	PVC	0.900	0.900	$18,500	$20,320	$27,174	$65,994	$20,320	$27,174	$65,994	$0
2519	1	53.1	HDPE	0.900	0.900	$18,500	$46,505	$45,504	$110,509	$46,505	$45,504	$110,509	$0
2521	1	71.6	CONC	0.750	0.900	$14,500	$50,109	$45,226	$109,835	$62,636	$53,995	$131,131	$21,296
2522	1	72.6	CONC	0.750	0.750	$14,500	$50,792	$45,704	$110,996	$50,792	$45,704	$110,996	$0
2523	1	35.8	CONC	0.750	0.750	$14,500	$25,072	$27,700	$67,272	$25,072	$27,700	$67,272	$0
2524	1	70.6	CSP	0.375	0.600	$12,000	$26,490	$26,943	$65,434	$38,853	$35,597	$86,449	$21,016
2525	1	38.7	CSP	0.375	0.600	$12,000	$14,527	$18,569	$45,095	$21,306	$23,314	$56,620	$11,525
2526	1	14.3	CSP	0.375	0.525	$12,000	$5,372	$12,160	$29,532	$6,804	$13,163	$31,967	$2,435
2527	1	25.7	CSP	0.375	0.525	$12,000	$9,640	$15,148	$36,788	$12,210	$16,947	$41,158	$4,370
2528	1	2.3	PVC	0.375	0.375	$12,000	$879	$9,015	$21,894	$879	$9,015	$21,894	$0
2529	1	46.5	PVC	0.300	0.300	$12,000	$15,111	$18,978	$46,088	$15,111	$18,978	$46,088	$0
2530	1	36.9	PVC	0.300	0.300	$12,000	$11,976	$16,783	$40,760	$11,976	$16,783	$40,760	$0
2531	1	81.7	CONC	0.600	0.675	$12,000	$44,908	$39,835	$96,743	$51,031	$44,122	$107,153	$10,410
2532	1	41.6	CONC	0.450	0.675	$12,000	$17,690	$20,783	$50,473	$26,014	$26,610	$64,624	$14,152
2533	1	64.2	PVC	0.450	0.675	$12,000	$27,305	$27,513	$66,818	$40,154	$36,508	$88,661	$21,844
2534	1	40.4	PVC	0.450	0.675	$12,000	$17,189	$20,432	$49,622	$25,278	$26,095	$63,373	$13,751
2535	1	56.1	PVC	0.400	0.675	$12,000	$21,040	$23,128	$56,168	$35,067	$32,947	$80,014	$23,845
2536	1	36.7	CONC	0.675	1.200	$14,500	$22,938	$26,207	$63,645	$45,876	$42,263	$102,640	$38,995
2537	1	55.6	CONC	0.675	0.900	$14,500	$34,741	$34,469	$83,710	$48,638	$44,196	$107,334	$23,624
2538	1	102.8	CONC	0.675	0.900	$14,500	$64,239	$55,117	$133,856	$89,934	$73,104	$177,538	$43,682
2539	1	100.2	CONC	0.525	0.900	$12,000	$47,601	$41,721	$101,322	$87,686	$69,780	$169,467	$68,145
2540	1	102.2	CONC	0.450	0.525	$12,000	$43,422	$38,795	$94,217	$48,530	$42,371	$102,901	$8,684
2541	1	98.5	CONC	0.375	0.450	$12,000	$36,926	$34,248	$83,173	$41,849	$37,694	$91,543	$8,370
2542	1	56.2	CONC	0.300	0.300	$12,000	$18,264	$21,185	$51,448	$18,264	$21,185	$51,448	$0
2543	1	24.2	CONC	0.300	0.300	$12,000	$7,853	$13,897	$33,750	$7,853	$13,897	$33,750	$0

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Storm Sewer General Recommendations (Upsizing)

ID	Outlet	Length (m)	Description	Ex. Dia. (m)	Pr. Dia. (m)	Structure Costs	Replacement Sewer Cost	Contigencies	Replacement Cost	Proposed Sewer Cost	Contingencies	Upsizing Cost	Cost Difference
2545	1	51.1	CSP	0.300	1.200	$12,000	$16,615	$20,030	$48,645	$63,904	$53,133	$129,036	$80,391
2546	1	10.6	HDPE_RIBBED	0.300	1.200	$12,000	$3,440	$10,808	$26,248	$13,231	$17,662	$42,893	$16,645
2547	1	33.7	CSP	0.300	0.675	$12,000	$10,937	$16,056	$38,992	$21,032	$23,122	$56,154	$17,162
2548	1	54.3	CSP	0.375	0.675	$12,000	$20,355	$22,648	$55,003	$33,924	$32,147	$78,071	$23,069
2549	1	10.4	CSP	0.375	0.600	$12,000	$3,903	$11,132	$27,034	$5,724	$12,407	$30,131	$3,096
2550	1	13.1	CSP	0.375	0.600	$12,000	$4,902	$11,831	$28,733	$7,190	$13,433	$32,622	$3,889
2551	1	33.3	CSP	0.375	0.525	$12,000	$12,471	$17,130	$41,601	$15,797	$19,458	$47,254	$5,654
2552	1	22.0	CSP	0.375	0.525	$12,000	$8,262	$14,184	$34,446	$10,466	$15,726	$38,192	$3,746
2554	1	42.4	CSP	0.400	0.600	$12,000	$15,918	$19,543	$47,461	$23,347	$24,743	$60,090	$12,629
2555	1	16.7	STEEL	0.350	0.600	$12,000	$5,423	$12,196	$29,619	$9,177	$14,824	$36,001	$6,382
2556	1	40.3	STEEL	0.350	0.600	$12,000	$13,091	$17,564	$42,655	$22,155	$23,908	$58,063	$15,407
2557	1	10.4	PVC	0.250	0.600	$12,000	$3,113	$10,579	$25,691	$5,706	$12,394	$30,101	$4,409
2558	1	41.4	CONC	0.350	0.600	$12,000	$13,448	$17,814	$43,262	$22,758	$24,331	$59,089	$15,827
2559	1	8.2	PVC	0.250	0.600	$12,000	$2,449	$10,114	$24,563	$4,490	$11,543	$28,032	$3,469
2560	1	34.0	PVC	0.250	0.600	$12,000	$10,211	$15,548	$37,758	$18,720	$21,504	$52,224	$14,465
2561	1	18.5	CSP	0.400	0.450	$12,000	$6,952	$13,266	$32,219	$7,879	$13,915	$33,794	$1,576
2562	1	29.5	CSP	0.400	0.450	$12,000	$11,067	$16,147	$39,213	$12,542	$17,180	$41,722	$2,508
2563	1	50.1	CSP	0.300	0.300	$12,000	$16,296	$19,808	$48,104	$16,296	$19,808	$48,104	$0
2564	1	39.8	CSP	0.375	0.375	$12,000	$14,942	$18,859	$45,801	$14,942	$18,859	$45,801	$0
2565	1	10.6	HDPE	0.250	0.250	$12,000	$3,170	$10,619	$25,790	$3,170	$10,619	$25,790	$0
2566	1	9.3	PVC	0.300	0.450	$12,000	$3,031	$10,522	$25,553	$3,964	$11,175	$27,139	$1,586
2567	1	25.4	CSP	0.400	0.450	$12,000	$9,529	$15,070	$36,599	$10,799	$15,959	$38,759	$2,160
2568	1	8.0	PVC	0.375	0.375	$12,000	$3,003	$10,502	$25,504	$3,003	$10,502	$25,504	$0
2569	1	9.0	PE	0.450	0.450	$12,000	$3,840	$11,088	$26,928	$3,840	$11,088	$26,928	$0
2570	1	13.1	CONC	0.300	0.300	$12,000	$4,245	$11,372	$27,617	$4,245	$11,372	$27,617	$0
2280	2	17.0	CSP	0.600	0.600	$12,000	$27,969	$27,978	$67,948	$27,969	$27,978	$67,948	$0
2282	2	30.7	CSP	0.600	0.600	$12,000	$50,663	$43,864	$106,528	$50,663	$43,864	$106,528	$0
2284	2	8.1	CSP	0.600	0.750	$12,000	$4,430	$11,501	$27,930	$5,638	$12,346	$29,984	$2,054
2286	2	14.0	PVC	0.300	0.600	$12,000	$4,553	$11,587	$28,141	$7,706	$13,794	$33,499	$5,359
2287	2	76.7	PVC	0.300	0.600	$12,000	$24,929	$25,850	$62,780	$42,188	$37,931	$92,119	$29,340
2288	2	45.3	PVC	0.300	0.600	$12,000	$14,711	$18,698	$45,408	$24,895	$25,827	$62,722	$17,313
2289	2	91.5	PVC	0.300	0.600	$12,000	$29,725	$29,207	$70,932	$50,304	$43,612	$105,916	$34,984
2410	3	16.0	CONC	0.900	0.900	$18,500	$14,009	$22,756	$55,265	$14,009	$22,756	$55,265	$0
2411	3	60.3	CONC	0.825	0.825	$14,500	$46,753	$42,877	$104,131	$46,753	$42,877	$104,131	$0
2412	3	48.9	CONC	0.825	0.825	$14,500	$37,917	$36,692	$89,109	$37,917	$36,692	$89,109	$0
2413	3	21.5	CONC	0.825	0.825	$14,500	$16,669	$21,819	$52,988	$16,669	$21,819	$52,988	$0
2414	3	22.0	CONC	0.825	0.825	$14,500	$17,058	$22,090	$53,648	$17,058	$22,090	$53,648	$0
2415	3	33.5	CONC	0.825	0.825	$14,500	$25,963	$28,324	$68,788	$25,963	$28,324	$68,788	$0
2416	3	66.0	CONC	0.825	0.825	$14,500	$51,179	$45,975	$111,654	$51,179	$45,975	$111,654	$0
2417	3	25.4	CONC	0.825	0.825	$14,500	$19,670	$23,919	$58,088	$19,670	$23,919	$58,088	$0
2418	3	45.7	CONC	0.750	0.750	$14,500	$32,000	$32,550	$79,050	$32,000	$32,550	$79,050	$0
2419	3	35.3	CONC	0.750	0.750	$14,500	$24,711	$27,447	$66,658	$24,711	$27,447	$66,658	$0
2420	3	64.5	CONC	0.675	0.675	$14,500	$40,309	$38,367	$93,176	$40,309	$38,367	$93,176	$0
2421	3	30.1	CONC	0.675	0.675	$14,500	$18,831	$23,332	$56,663	$18,831	$23,332	$56,663	$0

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Storm Sewer General Recommendations (Upsizing)

ID	Outlet	Length (m)	Description	Ex. Dia. (m)	Pr. Dia. (m)	Structure Costs	Replacement Sewer Cost	Contigencies	Replacement Cost	Proposed Sewer Cost	Contingencies	Upsizing Cost	Cost Difference
2422	3	100.3	CONC	0.600	0.600	$12,000	$55,177	$47,024	$114,200	$55,177	$47,024	$114,200	$0
2423	3	46.0	CONC	0.450	0.450	$12,000	$19,553	$22,087	$53,640	$19,553	$22,087	$53,640	$0
2424	3	53.5	CONC	0.375	0.375	$12,000	$20,072	$22,450	$54,522	$20,072	$22,450	$54,522	$0
2425	3	9.7	CONC	0.375	0.375	$12,000	$3,624	$10,937	$26,561	$3,624	$10,937	$26,561	$0
2426	3	12.7	CONC	0.375	0.375	$12,000	$4,751	$11,726	$28,477	$4,751	$11,726	$28,477	$0
2427	3	36.8	CONC	0.300	0.300	$12,000	$11,962	$16,773	$40,735	$11,962	$16,773	$40,735	$0
2428	3	20.0	CONC	0.300	0.300	$12,000	$6,511	$12,958	$31,469	$6,511	$12,958	$31,469	$0
2119	4	20.8	CONC	0.900	0.900	$18,500	$18,215	$25,700	$62,415	$18,215	$25,700	$62,415	$0
2120	4	46.3	CONC	0.900	0.900	$18,500	$40,490	$41,293	$100,283	$40,490	$41,293	$100,283	$0
2121	4	73.5	CONC	0.675	0.750	$14,500	$45,934	$42,304	$102,738	$51,447	$46,163	$112,109	$9,371
2122	4	48.3	CONC	0.675	0.750	$14,500	$30,199	$31,289	$75,988	$33,823	$33,826	$82,148	$6,161
2123	4	83.3	CONC	0.675	0.750	$14,500	$52,081	$46,607	$113,188	$58,331	$50,982	$123,813	$10,625
2124	4	54.2	CONC	0.675	0.750	$14,500	$33,846	$33,842	$82,189	$37,908	$36,685	$89,093	$6,905
2125	4	55.3	CONC	0.675	0.750	$14,500	$34,572	$34,350	$83,422	$38,721	$37,254	$90,475	$7,053
2126	4	34.7	CONC	0.675	0.750	$14,500	$21,673	$25,321	$61,494	$24,274	$27,142	$65,916	$4,421
2127	4	22.5	CONC	0.525	0.600	$12,000	$10,684	$15,879	$38,563	$12,371	$17,060	$41,431	$2,868
2128	4	34.1	CONC	0.525	0.600	$12,000	$16,198	$19,738	$47,936	$18,755	$21,529	$52,284	$4,348
2129	4	13.1	CONC	0.450	0.525	$12,000	$5,552	$12,286	$29,838	$6,205	$12,743	$30,948	$1,110
2130	4	37.9	STEEL	0.375	0.525	$12,000	$14,213	$18,349	$44,561	$18,003	$21,002	$51,004	$6,443
2131	4	12.3	CSP	0.400	0.375	$12,000	$4,611	$11,627	$28,238	$4,611	$11,627	$28,238	$0
2132	4	46.0	CSP	0.375	0.300	$12,000	$17,264	$20,484	$49,748	$14,962	$18,873	$45,835	($3,913)
2133	4	60.4	CSP	0.375	0.300	$12,000	$22,664	$24,265	$58,929	$19,642	$22,150	$53,792	($5,137)
2134	4	58.6	CSP	0.375	0.300	$12,000	$21,989	$23,792	$57,781	$19,057	$21,740	$52,797	($4,984)
2135	4	55.7	CSP	0.375	0.300	$12,000	$20,903	$23,032	$55,936	$18,116	$21,081	$51,197	($4,738)
2136	4	14.4	CSP	0.300	0.300	$12,000	$4,665	$11,666	$28,331	$4,665	$11,666	$28,331	$0
2137	4	5.2	CSP	0.300	0.300	$12,000	$1,704	$9,593	$23,297	$1,704	$9,593	$23,297	$0
2138	4	32.0	CONC	0.300	0.300	$12,000	$10,412	$15,688	$38,100	$10,412	$15,688	$38,100	$0
2139	4	31.0	CONC	0.300	0.300	$12,000	$10,069	$15,448	$37,517	$10,069	$15,448	$37,517	$0
2143	4	77.5	CSP	0.400	0.400	$12,000	$29,062	$28,743	$69,806	$29,062	$28,743	$69,806	$0
2144	4	9.9	CONC	0.375	0.375	$12,000	$3,721	$11,005	$26,726	$3,721	$11,005	$26,726	$0
2145	4	21.5	CONC	0.375	0.375	$12,000	$8,070	$14,049	$34,119	$8,070	$14,049	$34,119	$0
2146	4	13.5	CONC	0.450	0.600	$12,000	$5,746	$12,422	$30,168	$7,436	$13,605	$33,041	$2,873
2147	4	34.5	CONC	0.450	0.600	$12,000	$14,652	$18,656	$45,308	$18,961	$21,673	$52,634	$7,326
2148	4	80.9	CONC	0.450	0.600	$12,000	$34,391	$32,474	$78,865	$44,506	$39,554	$96,060	$17,196
2149	4	7.8	CONC	0.375	0.450	$12,000	$2,911	$10,438	$25,349	$3,299	$10,709	$26,009	$660
2150	4	49.9	CONC	0.375	0.450	$12,000	$18,726	$21,508	$52,235	$21,223	$23,256	$56,479	$4,245
2151	4	62.1	CONC	0.375	0.450	$12,000	$23,288	$24,702	$59,989	$26,393	$26,875	$65,268	$5,279
2152	4	6.7	CONC	0.375	0.450	$12,000	$2,520	$10,164	$24,685	$2,856	$10,399	$25,256	$571
2153	4	108.1	CONC	0.375	0.450	$12,000	$40,541	$36,779	$89,319	$45,946	$40,562	$98,509	$9,189
2154	4	49.2	CSP	0.375	0.450	$12,000	$18,458	$21,321	$51,778	$20,919	$23,043	$55,962	$4,184
2155	4	58.3	CSP	0.375	0.450	$12,000	$21,875	$23,712	$57,587	$24,792	$25,754	$62,546	$4,958
2156	4	11.6	CSP	0.375	0.450	$12,000	$4,337	$11,436	$27,773	$4,915	$11,841	$28,756	$983
2157	4	108.9	CSP	0.375	0.450	$12,000	$40,850	$36,995	$89,845	$46,297	$40,808	$99,104	$9,259
2158	4	14.4	CSP	0.300	0.375	$12,000	$4,691	$11,684	$28,375	$5,413	$12,189	$29,602	$1,227

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2159	4	42.7	CSP	0.300	0.375	$12,000	$13,864	$18,104	$43,968	$15,996	$19,597	$47,594	$3,626
2160	4	59.3	CSP	0.300	0.300	$12,000	$19,270	$21,889	$53,159	$19,270	$21,889	$53,159	$0
2163	4	15.7	STEEL	0.875	0.875	$18,500	$12,186	$21,480	$52,166	$12,186	$21,480	$52,166	$0
2164	4	41.7	STEEL	0.675	0.675	$14,500	$26,093	$28,415	$69,007	$26,093	$28,415	$69,007	$0
2165	4	45.7	CSP	0.300	0.300	$12,000	$14,858	$18,801	$45,659	$14,858	$18,801	$45,659	$0
2166	4	4.0	CSP	0.300	0.300	$12,000	$1,289	$9,302	$22,591	$1,289	$9,302	$22,591	$0
2059	5	60.4	CONC	0.600	0.675	$12,000	$33,219	$31,653	$76,872	$37,749	$34,824	$84,573	$7,701
2060	5	68.6	CONC	0.450	0.675	$12,000	$29,141	$28,799	$69,940	$42,855	$38,399	$93,254	$23,313
2061	5	87.5	CONC	0.450	0.675	$12,000	$37,189	$34,432	$83,622	$54,690	$46,683	$113,373	$29,751
2062	5	87.8	CONC	0.450	0.600	$12,000	$37,296	$34,507	$83,804	$48,266	$42,186	$102,452	$18,648
2063	5	27.5	CONC	0.450	0.525	$12,000	$11,674	$16,572	$40,246	$13,047	$17,533	$42,580	$2,335
2064	5	5.5	CONC	0.450	0.375	$12,000	$2,328	$10,029	$24,357	$2,054	$9,838	$23,892	($466)
2065	5	37.8	STEEL	0.350	0.375	$12,000	$12,275	$16,992	$41,267	$14,163	$18,314	$44,478	$3,210
2066	5	13.5	STEEL	0.375	0.375	$12,000	$5,078	$11,955	$29,033	$5,078	$11,955	$29,033	$0
2067	5	21.1	STEEL	0.375	0.300	$12,000	$7,899	$13,930	$33,829	$6,846	$13,192	$32,038	($1,791)
2068	5	28.8	STEEL	0.375	0.300	$12,000	$10,796	$15,957	$38,753	$9,356	$14,949	$36,306	($2,447)
2069	5	22.3	HDPE	0.450	0.450	$12,000	$9,461	$15,023	$36,484	$9,461	$15,023	$36,484	$0
2070	5	71.9	HDPE	0.450	0.450	$12,000	$30,553	$29,787	$72,341	$30,553	$29,787	$72,341	$0
2071	5	37.3	HDPE	0.450	0.450	$12,000	$15,870	$19,509	$47,378	$15,870	$19,509	$47,378	$0
2073	5	44.0	HDPE	0.900	0.900	$18,500	$38,500	$39,900	$96,900	$38,500	$39,900	$96,900	$0
2074	5	32.7	HDPE	0.900	0.900	$18,500	$28,655	$33,009	$80,164	$28,655	$33,009	$80,164	$0
2075	5	66.1	HDPE	0.900	0.900	$18,500	$57,862	$53,453	$129,815	$57,862	$53,453	$129,815	$0
2076	5	24.6	CONC	0.600	0.600	$12,000	$13,521	$17,864	$43,385	$13,521	$17,864	$43,385	$0
2077	5	42.8	CONC	0.600	0.600	$12,000	$23,522	$24,865	$60,387	$23,522	$24,865	$60,387	$0
2078	5	17.3	HDPE	0.450	0.600	$12,000	$7,353	$13,547	$32,899	$9,515	$15,061	$36,576	$3,676
2079	5	27.8	CSP	0.450	0.600	$12,000	$11,815	$16,671	$40,486	$15,290	$19,103	$46,393	$5,908
2080	5	10.6	CSP	0.450	0.600	$12,000	$4,490	$11,543	$28,032	$5,810	$12,467	$30,277	$2,245
2081	5	49.7	CONC	0.450	0.600	$12,000	$21,102	$23,171	$56,273	$27,308	$27,516	$66,824	$10,551
2082	5	11.7	CONC	0.450	0.600	$12,000	$4,974	$11,882	$28,856	$6,437	$12,906	$31,343	$2,487
2083	5	63.6	CONC	0.450	0.600	$12,000	$27,033	$27,323	$66,356	$34,984	$32,889	$79,873	$13,516
2084	5	61.3	CONC	0.450	0.600	$12,000	$26,051	$26,636	$64,686	$33,713	$31,999	$77,712	$13,025
2085	5	14.9	STEEL	0.450	0.600	$12,000	$6,341	$12,838	$31,179	$8,205	$14,144	$34,349	$3,170
2086	5	48.6	STEEL	0.300	0.600	$12,000	$15,785	$19,449	$47,234	$26,712	$27,099	$65,811	$18,577
2087	5	36.8	STEEL	0.300	0.525	$12,000	$11,967	$16,777	$40,743	$17,490	$20,643	$50,132	$9,389
2088	5	19.3	STEEL	0.375	0.450	$12,000	$7,238	$13,466	$32,704	$8,203	$14,142	$34,344	$1,641
2089	5	3.1	CONC	0.200	0.200	$12,000	$776	$8,943	$21,719	$776	$8,943	$21,719	$0
2090	5	31.9	CONC	0.200	0.300	$12,000	$7,971	$13,980	$33,951	$10,362	$15,654	$38,016	$4,065
2091	5	42.8	CONC	0.450	0.375	$12,000	$18,173	$21,121	$51,294	$16,035	$19,625	$47,660	($3,635)
2092	5	51.6	CONC	0.300	0.300	$12,000	$16,774	$20,142	$48,916	$16,774	$20,142	$48,916	$0
2093	5	6.8	CONC	0.300	0.300	$12,000	$2,222	$9,955	$24,177	$2,222	$9,955	$24,177	$0
2094	5	28.5	CONC	0.450	0.450	$12,000	$12,113	$16,879	$40,991	$12,113	$16,879	$40,991	$0
2095	5	58.5	RIBBED_HDPE	0.900	0.900	$18,500	$51,202	$48,792	$118,494	$51,202	$48,792	$118,494	$0
2096	5	12.6	HDPE	0.450	0.450	$12,000	$5,345	$12,141	$29,486	$5,345	$12,141	$29,486	$0
2097	5	59.9	PVC	0.300	0.450	$12,000	$19,468	$22,028	$53,496	$25,458	$26,221	$63,679	$10,183

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2098	5	12.7	PVC	0.300	0.375	$12,000	$4,136	$11,295	$27,432	$4,773	$11,741	$28,513	$1,082
2099	5	20.4	PVC	0.300	0.375	$12,000	$6,624	$13,037	$31,661	$7,643	$13,750	$33,393	$1,732
2100	5	49.5	PVC	0.300	0.375	$12,000	$16,073	$19,651	$47,724	$18,546	$21,382	$51,928	$4,204
2101	5	7.4	CSP	0.300	0.300	$12,000	$2,412	$10,089	$24,501	$2,412	$10,089	$24,501	$0
2102	5	11.5	PVC	0.300	0.300	$12,000	$3,751	$11,025	$26,776	$3,751	$11,025	$26,776	$0
2254	6	9.8	PE	0.900	1.050	$18,500	$8,575	$18,953	$46,028	$10,290	$20,153	$48,943	$2,916
2255	6	32.1	PE	0.900	1.050	$18,500	$28,088	$32,611	$79,199	$33,705	$36,544	$88,749	$9,550
2256	6	49.5	PE	0.900	1.050	$18,500	$43,313	$43,269	$105,081	$51,975	$49,333	$119,808	$14,726
2257	6	44.0	PE	0.900	0.900	$18,500	$38,500	$39,900	$96,900	$38,500	$39,900	$96,900	$0
2258	6	29.7	PE	0.900	0.900	$18,500	$25,988	$31,141	$75,629	$25,988	$31,141	$75,629	$0
2259	6	35.0	PE	0.900	0.900	$18,500	$30,625	$34,388	$83,513	$30,625	$34,388	$83,513	$0
2260	6	36.8	PE	0.900	0.900	$18,500	$32,200	$35,490	$86,190	$32,200	$35,490	$86,190	$0
2261	6	65.5	PE	0.750	0.675	$14,500	$45,850	$42,245	$102,595	$40,938	$38,806	$94,244	($8,351)
2262	6	68.1	PE	0.825	0.675	$14,500	$52,778	$47,094	$114,372	$42,563	$39,944	$97,006	($17,366)
2263	6	59.0	PE	0.750	0.675	$14,500	$41,300	$39,060	$94,860	$36,875	$35,963	$87,338	($7,523)
2264	6	60.0	PE	0.750	0.675	$14,500	$42,000	$39,550	$96,050	$37,500	$36,400	$88,400	($7,650)
2265	6	51.2	PE	0.750	0.675	$14,500	$35,846	$35,242	$85,589	$32,006	$32,554	$79,060	($6,529)
2266	6	25.5	PE	0.750	0.675	$14,500	$17,850	$22,645	$54,995	$15,938	$21,306	$51,744	($3,251)
2267	6	78.0	PE	0.750	0.675	$14,500	$54,600	$48,370	$117,470	$48,750	$44,275	$107,525	($9,945)
2268	6	70.4	PE	0.750	0.675	$14,500	$49,280	$44,646	$108,426	$44,000	$40,950	$99,450	($8,976)
2269	6	91.3	PE	0.750	0.675	$14,500	$63,910	$54,887	$133,297	$57,063	$50,094	$121,656	($11,641)
2270	6	69.8	PE	0.750	0.675	$14,500	$48,860	$44,352	$107,712	$43,625	$40,688	$98,813	($8,900)
2271	6	64.3	PE	0.750	0.600	$14,500	$45,010	$41,657	$101,167	$35,365	$34,906	$84,771	($16,397)
2272	6	72.0	PE	0.750	0.600	$14,500	$50,400	$45,430	$110,330	$39,600	$37,870	$91,970	($18,360)
2273	6	62.8	PE	0.525	0.450	$12,000	$29,830	$29,281	$71,111	$26,690	$27,083	$65,773	($5,338)
2274	6	26.5	PE	0.450	0.375	$12,000	$11,263	$16,284	$39,546	$9,938	$15,356	$37,294	($2,253)
2275	6	82.0	PE	0.375	0.375	$12,000	$30,750	$29,925	$72,675	$30,750	$29,925	$72,675	$0
2276	6	87.1	PE	0.375	0.300	$12,000	$32,663	$31,264	$75,926	$28,308	$28,215	$68,523	($7,404)
2277	6	13.0	PE	0.300	0.525	$12,000	$8,450	$14,315	$34,765	$6,175	$12,723	$30,898	($3,868)
2278	6	93.7	PE	0.525	0.525	$12,000	$44,508	$39,555	$96,063	$44,508	$39,555	$96,063	$0
2211	7	34.2	HDPE	0.900	0.900	$18,500	$29,903	$33,882	$82,285	$29,903	$33,882	$82,285	$0
2212	7	5.9	HDPE	0.900	0.900	$18,500	$5,128	$16,540	$40,168	$5,128	$16,540	$40,168	$0
2213	7	16.4	HDPE	0.900	0.900	$18,500	$14,358	$23,001	$55,858	$14,358	$23,001	$55,858	$0
2214	7	34.3	HDPE	0.750	0.675	$14,500	$24,007	$26,955	$65,462	$21,435	$25,155	$61,090	($4,373)
2215	7	52.0	PVC	0.600	0.675	$12,000	$28,623	$28,436	$69,059	$32,526	$31,168	$75,695	$6,635
2216	7	15.5	PVC	0.600	0.600	$12,000	$8,531	$14,371	$34,902	$8,531	$14,371	$34,902	$0
2217	7	59.6	HDPE	0.600	0.600	$12,000	$32,771	$31,340	$76,111	$32,771	$31,340	$76,111	$0
2218	7	46.1	HDPE	0.600	0.600	$12,000	$25,340	$26,138	$63,477	$25,340	$26,138	$63,477	$0
2219	7	11.2	PVC	0.450	0.600	$12,000	$4,768	$11,738	$28,506	$6,170	$12,719	$30,890	$2,384
2220	7	91.2	CSP	0.400	0.600	$12,000	$34,212	$32,348	$78,560	$50,177	$43,524	$105,701	$27,141
2221	7	35.2	CSP	0.400	0.600	$12,000	$13,200	$17,640	$42,841	$19,361	$21,952	$53,313	$10,472
2222	7	34.9	CSP	0.300	0.600	$12,000	$11,358	$16,351	$39,709	$19,221	$21,855	$53,076	$13,368
2223	7	53.8	CSP	0.400	0.600	$12,000	$20,179	$22,525	$54,705	$29,596	$29,117	$70,713	$16,009
2224	7	30.0	CSP	0.400	0.525	$12,000	$11,255	$16,279	$39,534	$14,257	$18,380	$44,636	$5,102

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ID	Outlet	Length (m)	Description	Ex. Dia. (m)	Pr. Dia. (m)	Structure Costs	Replacement Sewer Cost	Contigencies	Replacement Cost	Proposed Sewer Cost	Contingencies	Upsizing Cost	Cost Difference
2225	7	34.7	CSP	0.400	0.525	$12,000	$13,016	$17,511	$42,528	$16,487	$19,941	$48,428	$5,901
2226	7	44.3	CSP	0.300	0.450	$12,000	$14,385	$18,470	$44,855	$18,812	$21,568	$52,380	$7,525
2227	7	11.7	CSP	0.300	0.375	$12,000	$3,811	$11,068	$26,879	$4,397	$11,478	$27,875	$997
2228	7	9.5	HDPE	0.600	0.600	$12,000	$5,242	$12,069	$29,311	$5,242	$12,069	$29,311	$0
2229	7	99.6	CSP	0.400	0.525	$12,000	$37,338	$34,537	$83,875	$47,295	$41,506	$100,801	$16,927
2230	7	7.4	CSP	0.400	0.450	$12,000	$2,766	$10,336	$25,103	$3,135	$10,595	$25,730	$627
2231	7	122.6	CSP	0.400	0.375	$12,000	$45,966	$40,576	$98,542	$45,966	$40,576	$98,542	$0
2232	7	65.2	CSP	0.300	0.300	$12,000	$21,181	$23,227	$56,408	$21,181	$23,227	$56,408	$0
2233	7	45.9	CSP	0.300	0.300	$12,000	$14,918	$18,842	$45,760	$14,918	$18,842	$45,760	$0
2234	7	91.4	CSP	0.375	0.600	$12,000	$34,256	$32,379	$78,636	$50,243	$43,570	$105,812	$27,177
2235	7	12.3	CSP	0.300	0.525	$12,000	$4,002	$11,202	$27,204	$5,850	$12,495	$30,344	$3,140
2236	7	18.8	CSP	0.300	0.525	$12,000	$6,123	$12,686	$30,809	$8,949	$14,664	$35,613	$4,804
2237	7	74.3	CSP	0.375	0.450	$12,000	$27,845	$27,891	$67,736	$31,558	$30,490	$74,048	$6,312
2238	7	47.4	CONC	0.300	0.450	$12,000	$15,404	$19,183	$46,587	$20,144	$22,501	$54,645	$8,058
2239	7	29.4	CONC	0.400	0.375	$12,000	$11,034	$16,124	$39,157	$11,034	$16,124	$39,157	$0
2240	7	53.2	CONC	0.400	0.375	$12,000	$19,944	$22,361	$54,305	$19,944	$22,361	$54,305	$0
2241	7	21.0	CONC	0.375	0.300	$12,000	$7,892	$13,925	$33,817	$6,840	$13,188	$32,028	($1,789)
2242	7	70.7	CONC	0.250	0.300	$12,000	$21,222	$23,255	$56,477	$22,990	$24,493	$59,483	$3,006
2243	7	20.0	CONC	0.250	0.300	$12,000	$6,000	$12,600	$30,600	$6,500	$12,950	$31,450	$850
2244	7	21.7	CONC	0.250	0.300	$12,000	$6,512	$12,958	$31,471	$7,055	$13,338	$32,393	$923
2304	8	36.4	CSP	0.600	0.675	$12,000	$20,004	$22,402	$54,406	$22,731	$24,312	$59,043	$4,637
2305	8	9.4	RIBBED_HDPE	0.550	0.675	$12,000	$4,478	$11,534	$28,012	$5,892	$12,524	$30,416	$2,404
2307	8	42.4	CSP	0.450	0.600	$12,000	$18,017	$21,012	$51,029	$23,316	$24,721	$60,037	$9,009
2308	8	56.7	CSP	0.350	0.600	$12,000	$18,417	$21,292	$51,709	$31,167	$30,217	$73,384	$21,675
2309	8	100.6	PVC	0.300	0.600	$12,000	$32,710	$31,297	$76,007	$55,356	$47,149	$114,505	$38,497
2310	8	47.1	CONC	0.375	0.675	$12,000	$17,668	$20,768	$50,436	$29,447	$29,013	$70,460	$20,024
2311	8	54.4	CONC	0.375	0.675	$12,000	$20,384	$22,669	$55,053	$33,974	$32,182	$78,155	$23,102
2312	8	46.4	CONC	0.375	0.675	$12,000	$17,391	$20,573	$49,964	$28,984	$28,689	$69,673	$19,709
2313	8	11.1	HDPE	0.450	0.675	$12,000	$4,700	$11,690	$28,389	$6,911	$13,238	$32,149	$3,760
2314	8	18.4	HDPE	0.450	0.675	$12,000	$7,828	$13,880	$33,708	$11,512	$16,458	$39,970	$6,262
2315	8	43.5	PVC	0.450	0.675	$12,000	$18,471	$21,330	$51,801	$27,164	$27,415	$66,578	$14,777
2316	8	61.5	PVC	0.450	0.675	$12,000	$26,132	$26,692	$64,824	$38,429	$35,300	$85,729	$20,905
2317	8	8.8	PVC	0.450	0.675	$12,000	$3,724	$11,007	$26,731	$5,477	$12,234	$29,711	$2,979
2318	8	10.1	PVC	0.450	0.675	$12,000	$4,310	$11,417	$27,728	$6,339	$12,837	$31,176	$3,448
2319	8	8.1	PVC	0.450	0.675	$12,000	$3,451	$10,816	$26,267	$5,076	$11,953	$29,029	$2,761
2320	8	30.8	PVC	0.450	0.450	$12,000	$13,085	$17,559	$42,644	$13,085	$17,559	$42,644	$0
2321	8	29.1	PVC	0.450	0.450	$12,000	$12,383	$17,068	$41,451	$12,383	$17,068	$41,451	$0
2322	8	34.5	PVC	0.450	0.450	$12,000	$14,671	$18,670	$45,341	$14,671	$18,670	$45,341	$0
2323	8	21.9	CSP	0.250	0.450	$12,000	$6,573	$13,001	$31,574	$9,311	$14,918	$36,229	$4,656
2324	8	61.7	PVC	0.300	0.450	$12,000	$20,040	$22,428	$54,468	$26,206	$26,744	$64,950	$10,482
2325	8	44.1	PVC	0.450	0.450	$12,000	$18,726	$21,508	$52,233	$18,726	$21,508	$52,233	$0
2326	8	13.5	PVC	0.450	0.450	$12,000	$5,727	$12,409	$30,136	$5,727	$12,409	$30,136	$0
2327	8	33.1	PVC	0.450	0.450	$12,000	$14,062	$18,244	$44,306	$14,062	$18,244	$44,306	$0
2328	8	30.1	PVC	0.450	0.300	$12,000	$12,796	$17,357	$42,154	$9,785	$15,250	$37,035	($5,119)

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2329	8	42.2	PVC	0.450	0.300	$12,000	$17,926	$20,948	$50,874	$13,708	$17,996	$43,704	($7,170)
2330	8	10.7	PVC	0.450	0.450	$12,000	$4,545	$11,582	$28,127	$4,545	$11,582	$28,127	$0
2331	8	2.3	PVC	0.450	0.450	$12,000	$997	$9,098	$22,094	$997	$9,098	$22,094	$0
2332	8	3.6	PVC	0.450	0.600	$12,000	$1,513	$9,459	$22,971	$1,957	$9,770	$23,728	$756
2333	8	17.0	PVC	0.450	0.600	$12,000	$7,237	$13,466	$32,703	$9,365	$14,956	$36,321	$3,618
2334	8	30.6	PVC	0.450	0.300	$12,000	$12,989	$17,492	$42,482	$9,933	$15,353	$37,286	($5,196)
2335	8	36.4	PVC	0.450	0.300	$12,000	$15,489	$19,242	$46,731	$11,844	$16,691	$40,535	($6,195)
2336	8	33.7	PVC	0.300	0.300	$12,000	$10,940	$16,058	$38,999	$10,940	$16,058	$38,999	$0
2010	Minor	54.2	CSP	0.375	0.450	$12,000	$20,340	$22,638	$54,977	$23,052	$24,536	$59,588	$4,610
2011	Minor	13.4	CONC	0.300	0.300	$12,000	$4,364	$11,455	$27,819	$4,364	$11,455	$27,819	$0
2012	Minor	24.0	CSP	0.300	0.300	$12,000	$7,803	$13,862	$33,666	$7,803	$13,862	$33,666	$0
2014	Minor	20.8	CONC	0.300	0.375	$12,000	$6,748	$13,124	$31,872	$7,787	$13,851	$33,637	$1,765
2015	Minor	67.3	CONC	0.300	0.375	$12,000	$21,883	$23,718	$57,601	$25,250	$26,075	$63,325	$5,723
2016	Minor	12.7	CONC	0.300	0.300	$12,000	$4,128	$11,289	$27,417	$4,128	$11,289	$27,417	$0
2017	Minor	8.6	PVC	0.200	0.300	$12,000	$2,144	$9,901	$24,045	$2,787	$10,351	$25,138	$1,093
2019	Minor	9.6	CONC	0.300	0.300	$12,000	$3,112	$10,578	$25,690	$3,112	$10,578	$25,690	$0
2020	Minor	8.5	PVC	0.300	0.300	$12,000	$2,772	$10,341	$25,113	$2,772	$10,341	$25,113	$0
2021	Minor	47.5	CONC	0.375	0.300	$12,000	$17,795	$20,856	$50,651	$15,422	$19,196	$46,618	($4,034)
2022	Minor	35.4	CONC	0.375	0.300	$12,000	$13,286	$17,700	$42,987	$11,515	$16,460	$39,975	($3,012)
2024	Minor	18.6	CONC	0.350	0.350	$12,000	$6,037	$12,626	$30,663	$6,037	$12,626	$30,663	$0
2026	Minor	6.4	CONC	0.525	0.525	$12,000	$3,059	$10,541	$25,600	$3,059	$10,541	$25,600	$0
2027	Minor	10.2	CONC	0.450	0.300	$12,000	$4,319	$11,423	$27,743	$3,303	$10,712	$26,015	($1,728)
2029	Minor	52.1	CSP	0.300	0.375	$12,000	$16,919	$20,243	$49,163	$19,522	$22,065	$53,588	$4,425
2030	Minor	60.0	CSP	0.300	0.300	$12,000	$19,505	$22,053	$53,558	$19,505	$22,053	$53,558	$0
2031	Minor	10.2	CSP	0.400	0.300	$12,000	$3,836	$11,085	$26,922	$3,325	$10,727	$26,052	($870)
2033	Minor	50.2	CONC	0.600	0.600	$12,000	$27,586	$27,710	$67,296	$27,586	$27,710	$67,296	$0
2034	Minor	7.4	CONC	0.600	0.600	$12,000	$4,078	$11,254	$27,332	$4,078	$11,254	$27,332	$0
2035	Minor	14.4	CONC	0.375	0.375	$12,000	$5,403	$12,182	$29,584	$5,403	$12,182	$29,584	$0
2036	Minor	49.0	CONC	0.375	0.375	$12,000	$18,366	$21,256	$51,622	$18,366	$21,256	$51,622	$0
2037	Minor	101.3	CONC	0.375	0.375	$12,000	$37,975	$34,982	$84,957	$37,975	$34,982	$84,957	$0
2038	Minor	70.9	PVC	0.300	0.300	$12,000	$23,035	$24,524	$59,559	$23,035	$24,524	$59,559	$0
2039	Minor	63.7	CONC	0.250	0.300	$12,000	$19,100	$21,770	$52,869	$20,691	$22,884	$55,575	$2,706
2040	Minor	9.2	CONC	0.300	0.300	$12,000	$2,989	$10,492	$25,481	$2,989	$10,492	$25,481	$0
2041	Minor	11.2	CONC	0.300	0.300	$12,000	$3,635	$10,945	$26,580	$3,635	$10,945	$26,580	$0
2042	Minor	61.0	CONC	0.300	0.300	$12,000	$19,832	$22,283	$54,115	$19,832	$22,283	$54,115	$0
2043	Minor	76.6	CONC	0.250	0.300	$12,000	$22,968	$24,478	$59,446	$24,882	$25,817	$62,699	$3,254
2044	Minor	62.0	CONC	0.250	0.300	$12,000	$18,613	$21,429	$52,042	$20,164	$22,515	$54,679	$2,637
2046	Minor	74.8	CSP	0.400	0.450	$12,000	$28,065	$28,046	$68,111	$31,807	$30,665	$74,472	$6,361
2047	Minor	23.2	CONC	0.300	0.450	$12,000	$7,531	$13,672	$33,203	$9,849	$15,294	$37,142	$3,939
2049	Minor	62.6	CSP	0.300	0.375	$12,000	$20,352	$22,646	$54,998	$23,483	$24,838	$60,320	$5,323
2050	Minor	36.4	CSP	0.300	0.300	$12,000	$11,824	$16,677	$40,502	$11,824	$16,677	$40,502	$0
2051	Minor	18.6	CSP	0.300	0.300	$12,000	$6,039	$12,628	$30,667	$6,039	$12,628	$30,667	$0
2053	Minor	42.5	CSP	0.250	0.250	$12,000	$12,761	$17,333	$42,094	$12,761	$17,333	$42,094	$0
2055	Minor	18.4	CSP	0.250	0.250	$12,000	$5,511	$12,257	$29,768	$5,511	$12,257	$29,768	$0

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2104	Minor	5.8	CONC	0.350	0.350	$12,000	$1,883	$9,718	$23,601	$1,883	$9,718	$23,601	$0
2105	Minor	8.6	CONC	0.250	0.250	$12,000	$2,579	$10,205	$24,784	$2,579	$10,205	$24,784	$0
2107	Minor	22.9	CONC	0.350	0.450	$12,000	$7,426	$13,598	$33,025	$9,711	$15,198	$36,909	$3,885
2108	Minor	10.4	CONC	0.350	0.450	$12,000	$3,384	$10,769	$26,153	$4,426	$11,498	$27,923	$1,770
2110	Minor	13.2	CSP	0.600	0.300	$12,000	$7,285	$13,500	$32,785	$4,305	$11,413	$27,718	($5,067)
2111	Minor	25.6	CSP	0.150	0.300	$12,000	$6,398	$12,878	$31,276	$8,317	$14,222	$34,539	$3,263
2112	Minor	21.6	HDPE	0.150	0.300	$12,000	$5,398	$12,178	$29,576	$7,017	$13,312	$32,329	$2,753
2113	Minor	37.7	CONC	0.375	0.300	$12,000	$14,145	$18,301	$44,446	$12,259	$16,981	$41,240	($3,206)
2114	Minor	9.2	CONC	0.375	0.300	$12,000	$3,436	$10,805	$26,241	$2,978	$10,484	$25,462	($779)
2115	Minor	12.6	CSP	0.525	0.300	$12,000	$5,965	$12,576	$30,541	$4,081	$11,257	$27,338	($3,202)
2168	Minor	70.7	PVC	0.900	0.900	$18,500	$61,880	$56,266	$136,646	$61,880	$56,266	$136,646	$0
2169	Minor	8.1	PVC	0.900	0.525	$18,500	$7,076	$17,903	$43,479	$3,841	$15,639	$37,980	($5,499)
2170	Minor	32.9	PVC	0.750	0.525	$14,500	$23,061	$26,293	$63,853	$15,648	$21,104	$51,252	($12,601)
2171	Minor	15.2	PVC	0.600	0.300	$12,000	$8,333	$14,233	$34,566	$4,924	$11,847	$28,771	($5,795)
2172	Minor	63.3	PVC	0.600	0.300	$12,000	$34,821	$32,774	$79,595	$20,576	$22,803	$55,379	($24,216)
2173	Minor	28.3	HDPE_RIBBED	0.300	0.300	$12,000	$9,196	$14,837	$36,034	$9,196	$14,837	$36,034	$0
2175	Minor	31.0	PVC	0.900	0.900	$18,500	$27,094	$31,915	$77,509	$27,094	$31,915	$77,509	$0
2176	Minor	44.9	PVC	0.800	0.750	$14,500	$31,429	$32,150	$78,079	$31,429	$32,150	$78,079	$0
2177	Minor	8.6	PVC	0.800	0.675	$14,500	$5,996	$14,347	$34,842	$5,353	$13,897	$33,750	($1,092)
2178	Minor	48.7	PVC	0.625	0.600	$14,500	$26,770	$28,889	$70,159	$26,770	$28,889	$70,159	$0
2179	Minor	41.2	PVC	0.600	0.600	$12,000	$22,680	$24,276	$58,957	$22,680	$24,276	$58,957	$0
2180	Minor	30.4	PVC	0.375	0.600	$12,000	$11,414	$16,390	$39,804	$16,741	$20,119	$48,860	$9,055
2181	Minor	25.9	PVC	0.375	0.450	$12,000	$9,712	$15,198	$36,910	$11,007	$16,105	$39,111	$2,201
2182	Minor	47.8	PVC	0.375	0.300	$12,000	$17,937	$20,956	$50,892	$15,545	$19,282	$46,827	($4,066)
2183	Minor	35.0	PVC	0.600	0.525	$12,000	$19,256	$21,879	$53,134	$16,630	$20,041	$48,671	($4,464)
2185	Minor	61.8	HDPE	0.300	0.300	$12,000	$20,098	$22,468	$54,566	$20,098	$22,468	$54,566	$0
2186	Minor	0.8	HDPE	0.375	0.375	$12,000	$306	$8,614	$20,920	$306	$8,614	$20,920	$0
2187	Minor	49.5	HDPE	0.300	0.300	$12,000	$16,079	$19,655	$47,734	$16,079	$19,655	$47,734	$0
2188	Minor	0.9	HDPE	0.300	0.300	$12,000	$293	$8,605	$20,897	$293	$8,605	$20,897	$0
2189	Minor	60.1	HDPE	0.300	0.300	$12,000	$19,519	$22,063	$53,581	$19,519	$22,063	$53,581	$0
2190	Minor	0.8	HDPE	0.300	0.300	$12,000	$269	$8,588	$20,857	$269	$8,588	$20,857	$0
2191	Minor	58.3	HDPE	0.300	0.300	$12,000	$18,959	$21,671	$52,631	$18,959	$21,671	$52,631	$0
2193	Minor	7.3	HDPE	0.300	0.300	$12,000	$2,357	$10,050	$24,407	$2,357	$10,050	$24,407	$0
2194	Minor	88.5	HDPE	0.300	0.300	$12,000	$28,778	$28,545	$69,323	$28,778	$28,545	$69,323	$0
2195	Minor	76.9	HDPE	0.300	0.300	$12,000	$24,995	$25,897	$62,892	$24,995	$25,897	$62,892	$0
2197	Minor	16.3	HDPE	0.300	0.300	$12,000	$5,293	$12,105	$29,398	$5,293	$12,105	$29,398	$0
2198	Minor	0.8	HDPE	0.300	0.300	$12,000	$262	$8,583	$20,845	$262	$8,583	$20,845	$0
2199	Minor	37.1	HDPE	0.300	0.300	$12,000	$12,062	$16,843	$40,905	$12,062	$16,843	$40,905	$0
2200	Minor	0.8	HDPE	0.300	0.300	$12,000	$269	$8,588	$20,857	$269	$8,588	$20,857	$0
2201	Minor	59.0	HDPE	0.300	0.300	$12,000	$19,187	$21,831	$53,018	$19,187	$21,831	$53,018	$0
2202	Minor	0.8	HDPE	0.300	0.300	$12,000	$269	$8,588	$20,857	$269	$8,588	$20,857	$0
2203	Minor	60.3	HDPE	0.300	0.300	$12,000	$19,592	$22,115	$53,707	$19,592	$22,115	$53,707	$0
2205	Minor	14.5	CSP	0.300	0.300	$12,000	$4,709	$11,696	$28,405	$4,709	$11,696	$28,405	$0
2206	Minor	48.4	CSP	0.300	0.300	$12,000	$15,737	$19,416	$47,153	$15,737	$19,416	$47,153	$0

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2207	Minor	10.3	CSP	0.300	0.300	$12,000	$3,343	$10,740	$26,082	$3,343	$10,740	$26,082	$0
2208	Minor	50.6	CSP	0.300	0.300	$12,000	$16,442	$19,910	$48,352	$16,442	$19,910	$48,352	$0
2246	Minor	40.5	HDPE	0.400	0.375	$12,000	$15,185	$19,029	$46,214	$15,185	$19,029	$46,214	$0
2247	Minor	14.0	PVC	0.450	0.300	$12,000	$5,939	$12,558	$30,497	$4,542	$11,579	$28,121	($2,376)
2248	Minor	32.5	PVC	0.450	0.300	$12,000	$13,830	$18,081	$43,912	$10,576	$15,803	$38,379	($5,532)
2249	Minor	32.2	PVC	0.450	0.300	$12,000	$13,682	$17,978	$43,660	$10,463	$15,724	$38,187	($5,473)
2250	Minor	19.9	HDPE	0.300	0.300	$12,000	$6,479	$12,935	$31,414	$6,479	$12,935	$31,414	$0
2251	Minor	57.1	CSP	0.300	0.300	$12,000	$18,551	$21,386	$51,937	$18,551	$21,386	$51,937	$0
2252	Minor	54.9	CSP	0.300	0.300	$12,000	$17,854	$20,898	$50,752	$17,854	$20,898	$50,752	$0
2292	Minor	59.4	PVC	0.450	0.450	$12,000	$25,245	$26,072	$63,317	$25,245	$26,072	$63,317	$0
2293	Minor	13.7	PVC	0.450	0.450	$12,000	$5,810	$12,467	$30,277	$5,810	$12,467	$30,277	$0
2294	Minor	102.3	PVC	0.450	0.450	$12,000	$43,488	$38,841	$94,329	$43,488	$38,841	$94,329	$0
2295	Minor	47.4	PVC	0.375	0.375	$12,000	$17,764	$20,835	$50,599	$17,764	$20,835	$50,599	$0
2296	Minor	35.1	PVC	0.375	0.375	$12,000	$13,171	$17,620	$42,790	$13,171	$17,620	$42,790	$0
2298	Minor	9.6	CONC	0.600	0.600	$12,000	$5,305	$12,113	$29,418	$5,305	$12,113	$29,418	$0
2299	Minor	8.5	UNKNOWN	0.400	0.525	$12,000	$3,193	$10,635	$25,828	$4,045	$11,231	$27,276	$1,448
2300	Minor	39.4	STEEL	0.200	0.300	$12,000	$9,845	$15,292	$37,137	$12,799	$17,359	$42,158	$5,021
2301	Minor	24.1	HDPE	0.150	0.300	$12,000	$12,026	$16,818	$40,843	$15,633	$19,343	$46,976	$6,133
2302	Minor	19.1	HDPE	0.150	0.300	$12,000	$9,556	$15,089	$36,645	$12,423	$17,096	$41,519	$4,874
2338	Minor	65.1	PE	0.450	0.450	$12,000	$27,672	$27,771	$67,443	$27,672	$27,771	$67,443	$0
2339	Minor	29.5	PE	0.450	0.450	$12,000	$12,538	$17,176	$41,714	$12,538	$17,176	$41,714	$0
2340	Minor	31.5	PE	0.300	0.300	$12,000	$10,238	$15,566	$37,804	$10,238	$15,566	$37,804	$0
2341	Minor	17.2	PE	0.300	0.300	$12,000	$5,590	$12,313	$29,903	$5,590	$12,313	$29,903	$0
2342	Minor	14.2	PE	0.300	0.300	$12,000	$4,615	$11,631	$28,246	$4,615	$11,631	$28,246	$0
2344	Minor	28.9	PVC	0.825	0.825	$14,500	$22,398	$25,828	$62,726	$22,398	$25,828	$62,726	$0
2345	Minor	41.1	PVC	0.900	0.900	$18,500	$35,955	$38,118	$92,573	$35,955	$38,118	$92,573	$0
2346	Minor	45.0	CONC	0.750	0.750	$14,500	$31,500	$32,200	$78,200	$31,500	$32,200	$78,200	$0
2347	Minor	58.0	CONC	0.750	0.750	$14,500	$40,631	$38,592	$93,722	$40,631	$38,592	$93,722	$0
2348	Minor	54.0	CONC	0.525	0.525	$12,000	$25,650	$26,355	$64,005	$25,650	$26,355	$64,005	$0
2349	Minor	34.4	CONC	0.525	0.525	$12,000	$16,335	$19,834	$48,169	$16,335	$19,834	$48,169	$0
2350	Minor	26.3	CONC	0.450	0.450	$12,000	$11,186	$16,230	$39,415	$11,186	$16,230	$39,415	$0
2352	Minor	19.6	CONC	0.450	0.450	$12,000	$8,330	$14,231	$34,561	$8,330	$14,231	$34,561	$0
2353	Minor	34.2	CONC	0.450	0.450	$12,000	$14,535	$18,575	$45,110	$14,535	$18,575	$45,110	$0
2354	Minor	29.1	PVC	0.250	0.250	$12,000	$8,730	$14,511	$35,241	$8,730	$14,511	$35,241	$0
2355	Minor	12.9	PVC	0.250	0.250	$12,000	$3,870	$11,109	$26,979	$3,870	$11,109	$26,979	$0
2356	Minor	40.8	PVC	0.650	0.525	$14,500	$22,435	$25,855	$62,790	$19,376	$23,713	$57,589	($5,201)
2357	Minor	42.3	PVC	0.450	0.525	$12,000	$17,989	$20,992	$50,981	$20,105	$22,473	$54,578	$3,598
2358	Minor	69.8	PVC	0.300	0.375	$12,000	$22,690	$24,283	$58,973	$26,181	$26,726	$64,907	$5,934
2359	Minor	21.0	PVC	0.300	0.300	$12,000	$6,823	$13,176	$32,000	$6,823	$13,176	$32,000	$0
2360	Minor	19.8	PVC	0.375	0.375	$12,000	$7,425	$13,598	$33,023	$7,425	$13,598	$33,023	$0
2361	Minor	36.0	PVC	0.250	0.250	$12,000	$10,800	$15,960	$38,760	$10,800	$15,960	$38,760	$0
2362	Minor	22.4	PVC	0.375	0.375	$12,000	$8,400	$14,280	$34,680	$8,400	$14,280	$34,680	$0
2363	Minor	36.5	PVC	0.375	0.375	$12,000	$13,688	$17,981	$43,669	$13,688	$17,981	$43,669	$0
2364	Minor	31.8	PVC	0.250	0.250	$12,000	$9,540	$15,078	$36,618	$9,540	$15,078	$36,618	$0

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2365	Minor	33.0	PVC	0.250	0.250	$12,000	$9,900	$15,330	$37,230	$9,900	$15,330	$37,230	$0
2366	Minor	4.4	PVC	0.250	0.250	$12,000	$1,320	$9,324	$22,644	$1,320	$9,324	$22,644	$0
2367	Minor	14.1	PVC	0.300	0.300	$12,000	$4,594	$11,616	$28,210	$4,594	$11,616	$28,210	$0
2369	Minor	4.2	PVC	0.250	0.250	$12,000	$1,250	$9,275	$22,526	$1,250	$9,275	$22,526	$0
2370	Minor	48.2	PVC	0.250	0.250	$12,000	$14,460	$18,522	$44,982	$14,460	$18,522	$44,982	$0
2371	Minor	28.9	PVC	0.250	0.300	$12,000	$8,660	$14,462	$35,123	$9,382	$14,967	$36,350	$1,227
2373	Minor	76.5	CSP	0.500	0.525	$12,000	$32,525	$31,168	$75,693	$36,352	$33,846	$82,198	$6,505
2374	Minor	6.5	PE	0.450	0.525	$12,000	$2,763	$10,334	$25,096	$3,088	$10,561	$25,649	$553
2375	Minor	16.0	PE	0.450	0.525	$12,000	$6,800	$13,160	$31,960	$7,600	$13,720	$33,320	$1,360
2376	Minor	45.7	PE	0.450	0.525	$12,000	$19,423	$21,996	$53,418	$21,708	$23,595	$57,303	$3,885
2377	Minor	23.0	PE	0.450	0.525	$12,000	$9,775	$15,243	$37,018	$10,925	$16,048	$38,973	$1,955
2378	Minor	76.0	PE	0.450	0.525	$12,000	$32,300	$31,010	$75,310	$36,100	$33,670	$81,770	$6,460
2379	Minor	39.5	PE	0.450	0.525	$12,000	$16,788	$20,151	$48,939	$18,763	$21,534	$52,296	$3,358
2380	Minor	37.3	PE	0.450	0.525	$12,000	$15,853	$19,497	$47,349	$17,718	$20,802	$50,520	$3,171
2381	Minor	67.0	PE	0.375	0.525	$12,000	$25,125	$25,988	$63,113	$31,825	$30,678	$74,503	$11,390
2382	Minor	54.7	PE	0.375	0.375	$12,000	$20,513	$22,759	$55,271	$20,513	$22,759	$55,271	$0
2384	Minor	10.0	PE	0.375	0.375	$12,000	$3,750	$11,025	$26,775	$3,750	$11,025	$26,775	$0
2385	Minor	6.8	PE	0.375	0.375	$12,000	$2,550	$10,185	$24,735	$2,550	$10,185	$24,735	$0
2386	Minor	34.0	PE	0.300	0.375	$12,000	$11,050	$16,135	$39,185	$12,750	$17,325	$42,075	$2,890
2387	Minor	72.5	PE	0.300	0.375	$12,000	$23,563	$24,894	$60,456	$27,188	$27,431	$66,619	$6,163
2389	Minor	75.1	CSP	0.375	0.750	$12,000	$28,151	$28,106	$68,257	$52,549	$45,184	$109,733	$41,476
2390	Minor	23.5	PE	0.375	0.375	$12,000	$8,813	$14,569	$35,381	$8,813	$14,569	$35,381	$0
2391	Minor	89.0	PE	0.300	0.300	$12,000	$28,925	$28,648	$69,573	$28,925	$28,648	$69,573	$0
2393	Minor	88.0	PE	0.900	0.900	$18,500	$77,000	$66,850	$162,350	$77,000	$66,850	$162,350	$0
2394	Minor	86.0	PE	0.300	0.300	$12,000	$27,950	$27,965	$67,915	$27,950	$27,965	$67,915	$0
2395	Minor	14.5	PE	0.300	0.300	$12,000	$4,713	$11,699	$28,411	$4,713	$11,699	$28,411	$0
2396	Minor	60.5	PE	0.300	0.300	$12,000	$19,663	$22,164	$53,826	$19,663	$22,164	$53,826	$0
2397	Minor	16.1	CSP	0.300	0.450	$12,000	$5,224	$12,057	$29,281	$6,832	$13,182	$32,014	$2,733
2398	Minor	103.2	PVC	0.375	0.300	$12,000	$38,712	$35,498	$86,210	$33,550	$31,885	$77,435	($8,775)
2399	Minor	8.7	PVC	0.300	0.300	$12,000	$2,826	$10,378	$25,204	$2,826	$10,378	$25,204	$0
2401	Minor	85.0	PE	0.525	0.525	$12,000	$40,375	$36,663	$89,038	$40,375	$36,663	$89,038	$0
2402	Minor	12.0	PE	0.525	0.525	$12,000	$5,700	$12,390	$30,090	$5,700	$12,390	$30,090	$0
2403	Minor	76.5	PE	0.375	0.525	$12,000	$28,688	$28,481	$69,169	$36,338	$33,836	$82,174	$13,005
2404	Minor	63.5	PE	0.300	0.525	$12,000	$20,638	$22,846	$55,484	$30,163	$29,514	$71,676	$16,193
2405	Minor	34.0	PE	0.300	0.375	$12,000	$11,050	$16,135	$39,185	$12,750	$17,325	$42,075	$2,890
2406	Minor	31.4	PE	0.300	0.525	$12,000	$10,205	$15,544	$37,749	$14,915	$18,841	$45,756	$8,007
2407	Minor	14.0	PE	0.300	0.450	$12,000	$4,550	$11,585	$28,135	$5,950	$12,565	$30,515	$2,380
2408	Minor	26.0	PE	0.300	0.375	$12,000	$8,450	$14,315	$34,765	$9,750	$15,225	$36,975	$2,210
2430	Minor	41.6	CONC	0.600	0.675	$12,000	$22,880	$24,416	$59,296	$26,000	$26,600	$64,600	$5,304
2431	Minor	97.0	CONC	0.600	0.600	$12,000	$53,350	$45,745	$111,095	$53,350	$45,745	$111,095	$0
2432	Minor	93.0	CONC	0.600	0.600	$12,000	$51,150	$44,205	$107,355	$51,150	$44,205	$107,355	$0
2433	Minor	11.0	CONC	0.600	0.600	$12,000	$6,050	$12,635	$30,685	$6,050	$12,635	$30,685	$0
2434	Minor	38.5	CONC	0.600	0.600	$12,000	$21,175	$23,223	$56,398	$21,175	$23,223	$56,398	$0
2435	Minor	25.5	CONC	0.525	0.525	$12,000	$12,113	$16,879	$40,991	$12,113	$16,879	$40,991	$0

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2436	Minor	52.5	CONC	0.300	0.300	$12,000	$17,063	$20,344	$49,406	$17,063	$20,344	$49,406	$0
2437	Minor	35.0	CONC	0.300	0.300	$12,000	$11,375	$16,363	$39,738	$11,375	$16,363	$39,738	$0
2438	Minor	33.0	CONC	0.300	0.300	$12,000	$10,725	$15,908	$38,633	$10,725	$15,908	$38,633	$0
2439	Minor	19.1	CONC	0.300	0.300	$12,000	$6,208	$12,745	$30,953	$6,208	$12,745	$30,953	$0
2441	Minor	23.0	CONC	1.050	1.050	$18,500	$24,150	$29,855	$72,505	$24,150	$29,855	$72,505	$0
2442	Minor	7.4	CONC	1.050	1.050	$18,500	$7,770	$18,389	$44,659	$7,770	$18,389	$44,659	$0
2443	Minor	81.1	CONC	0.900	0.900	$18,500	$70,963	$62,624	$152,086	$70,963	$62,624	$152,086	$0
2444	Minor	26.4	CONC	0.900	0.900	$18,500	$23,100	$29,120	$70,720	$23,100	$29,120	$70,720	$0
2445	Minor	51.0	CONC	0.825	0.825	$14,500	$39,525	$37,818	$91,843	$39,525	$37,818	$91,843	$0
2446	Minor	47.0	CONC	0.825	0.825	$14,500	$36,425	$35,648	$86,573	$36,425	$35,648	$86,573	$0
2447	Minor	69.6	CONC	0.750	0.750	$14,500	$48,720	$44,254	$107,474	$48,720	$44,254	$107,474	$0
2448	Minor	71.8	CONC	0.675	0.675	$14,500	$44,875	$41,563	$100,938	$44,875	$41,563	$100,938	$0
2449	Minor	24.4	CONC	0.525	0.525	$12,000	$11,590	$16,513	$40,103	$11,590	$16,513	$40,103	$0
2450	Minor	19.1	CONC	0.450	0.450	$12,000	$8,118	$14,082	$34,200	$8,118	$14,082	$34,200	$0
2451	Minor	23.1	CONC	0.750	0.750	$14,500	$16,170	$21,469	$52,139	$16,170	$21,469	$52,139	$0
2452	Minor	98.1	CONC	0.750	0.750	$14,500	$68,670	$58,219	$141,389	$68,670	$58,219	$141,389	$0
2453	Minor	85.3	CONC	0.600	0.600	$12,000	$46,915	$41,241	$100,156	$46,915	$41,241	$100,156	$0
2454	Minor	41.4	CONC	0.600	0.600	$12,000	$22,770	$24,339	$59,109	$22,770	$24,339	$59,109	$0
2455	Minor	63.6	CONC	0.525	0.525	$12,000	$30,210	$29,547	$71,757	$30,210	$29,547	$71,757	$0
2456	Minor	33.2	CONC	0.450	0.450	$12,000	$14,110	$18,277	$44,387	$14,110	$18,277	$44,387	$0
2457	Minor	60.5	CONC	0.750	0.750	$14,500	$42,350	$39,795	$96,645	$42,350	$39,795	$96,645	$0
2458	Minor	86.5	CONC	0.675	0.675	$14,500	$54,063	$47,994	$116,556	$54,063	$47,994	$116,556	$0
2459	Minor	60.5	CONC	0.600	0.600	$12,000	$33,275	$31,693	$76,968	$33,275	$31,693	$76,968	$0
2460	Minor	30.0	CONC	0.525	0.525	$12,000	$14,250	$18,375	$44,625	$14,250	$18,375	$44,625	$0
2461	Minor	30.8	CONC	0.525	0.525	$12,000	$14,630	$18,641	$45,271	$14,630	$18,641	$45,271	$0
2462	Minor	56.5	CONC	0.525	0.525	$12,000	$26,838	$27,186	$66,024	$26,838	$27,186	$66,024	$0
2463	Minor	44.6	PVC	0.375	0.375	$12,000	$16,725	$20,108	$48,833	$16,725	$20,108	$48,833	$0
2464	Minor	31.4	PVC	0.250	0.250	$12,000	$9,420	$14,994	$36,414	$9,420	$14,994	$36,414	$0
2465	Minor	31.5	PVC	0.250	0.250	$12,000	$9,450	$15,015	$36,465	$9,450	$15,015	$36,465	$0
2466	Minor	22.7	PVC	0.375	0.375	$12,000	$8,513	$14,359	$34,871	$8,513	$14,359	$34,871	$0
2467	Minor	34.8	PVC	0.300	0.300	$12,000	$11,310	$16,317	$39,627	$11,310	$16,317	$39,627	$0
2468	Minor	61.7	CONC	0.450	0.450	$12,000	$26,223	$26,756	$64,978	$26,223	$26,756	$64,978	$0
2469	Minor	25.0	PVC	0.375	0.375	$12,000	$9,375	$14,963	$36,338	$9,375	$14,963	$36,338	$0
2470	Minor	27.5	PVC	0.375	0.375	$12,000	$10,313	$15,619	$37,931	$10,313	$15,619	$37,931	$0
2471	Minor	27.7	PVC	0.375	0.375	$12,000	$10,388	$15,671	$38,059	$10,388	$15,671	$38,059	$0
2472	Minor	28.1	PVC	0.300	0.300	$12,000	$9,133	$14,793	$35,925	$9,133	$14,793	$35,925	$0
2473	Minor	12.6	PVC	0.250	0.250	$12,000	$3,780	$11,046	$26,826	$3,780	$11,046	$26,826	$0
2474	Minor	16.6	PVC	0.250	0.250	$12,000	$4,980	$11,886	$28,866	$4,980	$11,886	$28,866	$0
2475	Minor	37.6	PVC	0.250	0.250	$12,000	$11,280	$16,296	$39,576	$11,280	$16,296	$39,576	$0
2476	Minor	7.9	PVC	0.250	0.250	$12,000	$2,370	$10,059	$24,429	$2,370	$10,059	$24,429	$0
2477	Minor	19.3	PVC	0.300	0.300	$12,000	$6,273	$12,791	$31,063	$6,273	$12,791	$31,063	$0
2478	Minor	20.4	CONC	0.450	0.450	$12,000	$8,670	$14,469	$35,139	$8,670	$14,469	$35,139	$0
2479	Minor	25.5	PVC	0.250	0.250	$12,000	$7,650	$13,755	$33,405	$7,650	$13,755	$33,405	$0
2480	Minor	33.9	PVC	0.250	0.250	$12,000	$10,170	$15,519	$37,689	$10,170	$15,519	$37,689	$0

Gravenhurst Master Storm Sewer Report
Preliminary Construction Cost Estimate
October 2021

Storm Sewer General Recommendations (Upsizing)

ID	Outlet	Length (m)	Description	Ex. Dia. (m)	Pr. Dia. (m)	Structure Costs	Replacement Sewer Cost	Contigencies	Replacement Cost	Proposed Sewer Cost	Contingencies	Upsizing Cost	Cost Difference
2481	Minor	31.2	PVC	0.250	0.250	$12,000	$9,360	$14,952	$36,312	$9,360	$14,952	$36,312	$0
2482	Minor	46.0	PVC	0.250	0.250	$12,000	$13,800	$18,060	$43,860	$13,800	$18,060	$43,860	$0
2483	Minor	11.3	PVC	0.300	0.300	$12,000	$3,673	$10,971	$26,643	$3,673	$10,971	$26,643	$0
2484	Minor	29.1	PVC	0.250	0.250	$12,000	$8,730	$14,511	$35,241	$8,730	$14,511	$35,241	$0
2485	Minor	16.9	PVC	0.250	0.250	$12,000	$5,070	$11,949	$29,019	$5,070	$11,949	$29,019	$0
2486	Minor	45.0	PVC	0.250	0.250	$12,000	$13,500	$17,850	$43,350	$13,500	$17,850	$43,350	$0
2487	Minor	9.9	PVC	0.250	0.250	$12,000	$2,970	$10,479	$25,449	$2,970	$10,479	$25,449	$0
2488	Minor	38.8	PVC	0.250	0.250	$12,000	$11,640	$16,548	$40,188	$11,640	$16,548	$40,188	$0
2489	Minor	2.9	PVC	0.250	0.250	$12,000	$870	$9,009	$21,879	$870	$9,009	$21,879	$0
2109_1	Minor	38.6	HDPE	0.400	0.300	$12,000	$14,472	$18,530	$45,002	$12,542	$17,179	$41,722	($3,280)
2109_2	Minor	37.0	HDPE	0.400	0.375	$12,000	$13,882	$18,117	$43,999	$13,882	$18,117	$43,999	$0
2306_2	Minor	1.5	CSP	0.550	0.600	$12,000	$730	$8,911	$21,640	$845	$8,991	$21,836	$196
2509_1	Minor	22.1	CSP	0.600	0.750	$12,000	$12,174	$16,922	$41,095	$15,494	$19,246	$46,739	$5,644
2509_2	Minor	23.1	CSP	0.600	0.750	$12,000	$12,715	$17,301	$42,016	$16,183	$19,728	$47,912	$5,895
2510_1	Minor	26.6	CSP	0.600	0.750	$12,000	$14,620	$18,634	$45,253	$18,607	$21,425	$52,031	$6,778
2510_2	Minor	26.6	CSP	0.600	0.750	$12,000	$14,620	$18,634	$45,253	$18,607	$21,425	$52,031	$6,778
						$6,397,500	**$9,083,092**	**$10,836,414**	**$26,317,006**	**$10,057,032**	**$11,518,173**	**$27,972,705**	**$1,655,699**

Total Upsizing Construction Cost Increase $1,656,000