

FUNCTIONAL SERVICING REPORT

FOR

146 MOUNTSHANNON DRIVE
RICHCRAFT GROUP OF COMPANIES

CITY OF OTTAWA

PROJECT NO.: 09-396

MARCH 2010 – REV 1
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**FUNCTIONAL SERVICING REPORT
FOR
146 MOUNTSHANNON DRIVE
RICHCRAFT GROUP OF COMPANIES**

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1.0 INTRODUCTION

The Richcraft Group of Companies retained David Schaeffer Engineering Ltd., DSEL, to prepare a Functional Servicing Study in support of their application for re-zoning.

The subject land is located at 146 Mountshannon Drive in the former municipality of Barrhaven. As illustrated in **Figure 1**, Fallowfield Road is to the North, Woodroffe Avenue is to the East, Longfields Drive is to the South, and the existing CN rail line is to the West. The subject property is undeveloped, while the adjacent lands are developed residential to the North and South. A park, “Mulligan Park” is to the north east and an elementary school, “St. Luke Catholic School,” is to the East. The subject property measures **2.4ha** and is currently zoned, “R3Z [1193]”.

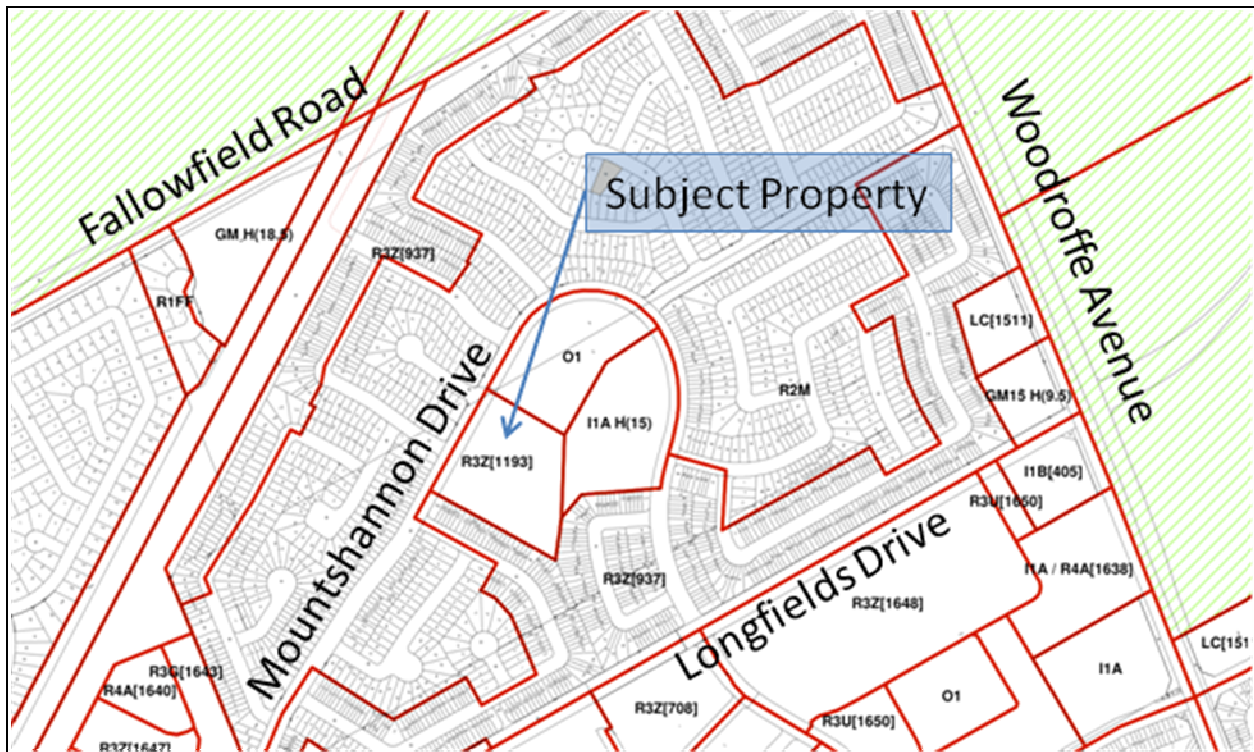


Figure 1: Site Location

M. David Blakely Architect Inc prepared a site plan for the proposed development. A reduction of the proposed site plan is appended to this report. The proposed site plan **210 units** and associated parking.

The objective of this study is to demonstrate the adequacy of the existing services to support the re-zoning application.

1.1 Existing Conditions

The subject property is vacant and is generally grassed covered. The Paterson Group was retained by Richcraft to carry out a geotechnical investigation. The geotechnical investigation described the terrain as being slightly undulating and containing small amounts of sod and construction debris. The grade differential on the site was measured to be approximately 0.6m, with an average grade of approximately 91.5m.

Existing water, storm, and sanitary infrastructure is illustrated on ***Drawing 1 – Existing Conditions***.

1.2 Summary of Pre-consultation

The City of Ottawa was contacted prior to detailed design of the site for pre-consultation. The following summarizes the discussions relevant to site servicing.

1.2.1 City of Ottawa, November 24, 2009

In attendance;

- Colin White, City of Ottawa
- Jacek Taracha, City of Ottawa
- Louise Sweet Lindsay, City of Ottawa
- Kevin Yemm, Richcraft Group of Companies
- Nelson Edwards
- Mary Ecker
- Stephen J. Pichette, DSEL

Kevin Yemm described the proposed development and compared it to the existing “Port Rush development and indicated that the proposed plan will require a zoning amendment. Mr. Yemm indicated that the proposed plan will contain 210 ‘stacked townhouse’ units.

Wastewater flow rate calculations were discussed. Mr. Taracha indicated that he would search the file for calculation sheets for the existing sewers. City staff indicated that capacity of the existing storm and water services will need to be reviewed.

1.3 Required Permits / Approvals

The following summarizes the required permits and approvals required for site servicing.

City of Ottawa

- Zoning amendment application
- Site plan control

Ministry of Environment

- Stormwater Management

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report.

- **Sewer Design Guidelines,**
City of Ottawa, November 2004.
(City Standards)
- **Stormwater Planning and Design Manual,**
Ministry of the Environment, March 2003.
(SWMP Design Manual)
- **Ottawa Design Guidelines – Water Distribution**
City of Ottawa, July 2010
(Water Supply Guidelines)
- **City of Ottawa Official Plan**
City of Ottawa, adopted by Council 2003.
(Official Plan)
- **Grade and Servicing Control Guidelines**
City of Ottawa, May 14, 2004
(Infill Guidelines)
- **Fire Underwriters Survey, 1999**
(FUS)
- **Geotechnical Investigation**
Paterson Group, July 5, 2004
(Geotechnical Study)

- **Stormwater Management Report**
 Stantec Consulting Ltd., April 21, 2005
(SWM Report)
- **City of Nepean Design Guidelines Longfield / Davidson Heights**
 Erion Associates, Stanley Consulting Group Ltd., Ainley Graham and Associates,
 February 1998
(MSS)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject lands are located within the City of Ottawa BARR pressure zone. Potable water is delivered to the site from the Barrhaven Reservoir and Barrhaven Pumping Station. As illustrated on **Drawing 1 – Existing Conditions**, there exist a 406mm diameter watermain on Mounshannon Drive.

The subject property is zoned “R3Z [1193]” where this zoning allows for the construction of townhouses. **Table 1** summarizes the anticipated water supply demand and boundary conditions for the existing zoning based on the RMO water design guidelines.

Table 1
Water Demand and Boundary Conditions
Existing Conditions

Design Parameter	Anticipated Demand ¹ (L/min)	Boundary Condition ² (m H ₂ O / kPa)
Average Daily Demand	74.2	N/A
Max Day + Fire Flow	8,007	36.4 / 357.1
Peak Hour	400.4	35.2 / 345.3
1) Water demand calculation Water Supply Guidelines . See Appendix A for detailed calculations. 2) Boundary conditions supplied by the City of Ottawa. Assumed ground elevation 92.0m. See Appendix A		

3.2 Water Supply Servicing Design

The water supply servicing of the subject lands will be designed according to the **Water Supply Guidelines** as summarized in **Table 2**.

Table 2
Water Supply Design Criteria

Design Parameter	Value
Townhouse	2.7p/unit
Average Apartment	1.8p/unit
Average Water Demand Rate per Person	350L/p/day
Maximum Daily Demand	Per Water Supply Guidelines
Maximum Hourly	Per Water Supply Guidelines
Fire Flow	Estimated as per Fire Underwriter's Survey 1999.
Minimum Watermain Size	150mm diameter
Service Lateral Size	19mm/50mm dia Soft Copper Type 'K'
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During Peak Hourly Demand operating pressure must remain within	275kPa and 690kPa
During fire flow operating pressure must not drop below	140kPa

Table 3 summarizes the anticipated water supply demand and boundary conditions for the proposed development based on the RMOC water design guidelines.

Table 3
Water Demand and Boundary Conditions
Existing Conditions

Design Parameter	Anticipated Demand ¹ (L/min)	Boundary Condition ² (m H ₂ O / kPa)
Average Daily Demand	84.4	N/A
Max Day + Fire Flow	8,704	36.3 / 356.1
Peak Hour	456	35.1 / 344.3
1) Water demand calculation per Water Supply Guidelines . See Appendix A for detailed calculations. 2) Boundary conditions supplied by the City of Ottawa. Assumed ground elevation 92.0m. See Appendix A .		

Fire flow requirements are to be determined in accordance with Local Guidelines (**FUS**), City of Ottawa Guidelines, and the Ontario Building Code. The FUS indicates that the provision for Fire Flow should not exceed 45,000L/min nor be less than 2,000L/min. If buildings are contiguous, such as multi-block dwellings, a minimum of 8,000 L/min is recommended by the **FUS**. The City of Ottawa typically recommends a fire flow rate of 7,500L/min for residential properties.

3.3 Water Supply Conclusion

The proposed re-zoning of the subject property results in an increase in water supply demand.

Anticipated water demand under existing and proposed conditions were submitted to the City of Ottawa for establishing boundary conditions considering the existing and proposed zoning.

As demonstrated in **Tables 2 and 3**, there is a negligible difference in the anticipated pressures during periods of peak hour and fire flow. The recommended pressure range is respected under all conditions.

As indicated by the City the maximum pressure is estimated to be 59 PSI which is less than 80 PSI. A pressure check at completion of construction is recommended to determine if pressure control is required.

City of Ottawa completed fire hydrant testing in 2007. The testing indicated that water supply is available between 8,080L/min and 8,510L/min. Therefore supply is available per FUS recommendations for multi-block dwellings.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject property lies within the Barrhaven Trunk catchment where wastewater is conveyed to the West Rideau collector on Merivale Road and is ultimately treated at ROPEC prior to being released into the Ottawa River.

Wastewater generated by the proposed development will be directed to the existing 250mm diameter sanitary sewer on Mounshannon Drive. Separate storm and sanitary services were installed circa 1993 as such it is anticipated that no cross-connections were made and that the sewers are in good condition. Therefore, it is expected that extraneous flows are within the anticipated allowance per **City Guidelines**.

Wastewater from the subject location along Mounshannon Drive is conveyed to the existing 900mm diameter Barrhaven Trunk via Daventry Crescent.

Based on existing zoning the estimated peak wastewater discharge, including an allowance for extraneous flows, is **4.49L/s**. Detailed calculations are included in **Appendix B**.

4.2 Wastewater Design

Table 4 summarizes the **City Standards** employed in the design of the proposed wastewater sewer system.

Table 4
Wastewater Design Criteria

Design Parameter	Value
Average Apartment	1.8p/unit
Peak Wastewater Generation per Person	350L/p/d
Peaking Factor Applied	Harmon's Equation $P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000} \right)^{1/2}} \right) \times K$
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Service Lateral Size	135mm dia PVC SDR 28 with a minimum slope of 1.0%
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Additional Considerations	Sewers servicing less than 10 residential connections to have a minimum gradient of 0.65% Where expected depth of flow is less than 1/3 pipe diameter, calculate actual flowing velocity and increase slope as required to achieve 0.6m/s.
<i>Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, November 2004.</i>	

It was estimated that the proposed development, including allowances for infiltration and inflow, will generate a peak wastewater flow of **6.32L/s**.

A calculation sheet review the capacity of the downstream areas was created based on sanitary sewer drainage areas obtained from the City of Ottawa Information Centre. As demonstrated on the attached sanitary sewer calculation sheet located in **Appendix B**, the existing sewers along Mountshannon Drive, Daventry Crescent, and the service easement have sufficient capacity to convey the anticipated peak wastewater flow rate from the proposed development.

4.3 Wastewater Servicing Conclusion

The proposed zoning changes results in an anticipated increase in peak wastewater flow rate of **1.83L/s**.

The existing sanitary sewer infrastructure from the development to the Barrhaven Trunk has sufficient capacity to convey the additional flow.

The proposed wastewater design conforms to all relevant City guidelines and Policies.

5.0 STORMWATER MANAGEMENT

5.1 Model Selection

SWMHYMO was selected to analyze the surface hydrology for the existing and proposed conditions. This model was chosen specifically to quantify surface storage and rate and volume of spill from one catchment to another in the post-development condition.

Several storms were simulated, the following results of the following storms are presented for the pre and post development conditions:

- 4hour - 5 year Chicago
- 4hour - 100 year Chicago

Appendix C includes a model schematic for the existing and proposed conditions.

The post-development storm sewers were sized employing the Rational Method and Manning's Equation per City Guidelines. Refer to **Appendix C** for calculation sheet.

5.2 Model Assumptions

The following assumptions were made in the development of the post-development hydrologic model:

- Catch basin equipped with Hydrovex inlet control devices controlling flow to 3.6L/s.
- Storage predicted by DUALHYD command. Assuming that flow rate does not vary greatly between 0m depth and 0.25m depth.
- Volume of storage estimated per site grading.
- Areas draining toward proposed street assumed to have 100% directly connected impervious area. Rear yard drainage assumed to have roof leaders directed to grassed areas, ie no direct connection between impervious and pervious area to the outlet.
- Employed CALIB STANDHYD command and measured length of pervious and impervious flow path from the hydraulically most remote point for each catchment.
- Employed Horton's infiltration for soil loss, per City guidelines.
- Measured % impervious areas directly.

5.3 Existing Infrastructure

The subject lands are within the Barrhaven Creek watershed. Stormwater released from the proposed development will be conveyed by the existing major and minor stormwater system to the existing stormwater management facility located southwest of the Prince of Wales Drive / Waterbridge Drive intersection. This facility provides quality treatment prior to discharging treated stormwater to the Rideau River.

A previous stormwater management plan for the subject area was prepared by Stantec Consulting Ltd., in their report titled, "Mountshannon Drive – Stormwater Management Report, November 28, 2003" and was based on the design guidelines established by the City of Nepean for the Longfields Davison Heights subdivision, 1997.

The underlying principle for stormwater management in the Longfield / Davidson-Heights Subdivision is to restrict flow entering the minor system to **64L/s/ha**, while a major storm drainage system was established to convey storm events in excess of the minor system capacity. **Table 5** summarizes the pre-development flow rate per existing conditions as well as the target flow rate per the **MSS**.

The existing system was designed to direct stormwater runoff during major storm events from the proposed development area along the existing municipal right-of-way to SWM ID 222 located at Block 77, also referred to as Mulligan Park. The existing storage area was designed to accommodate 15,100m³ of storage.

Table 5
Stormwater Existing Conditions and SWM Target

Storm Event	Existing Conditions (L/s)	Post-Development Target to Minor System (L/s)
5-year	54.0	155.4
100-year	132.0	N/A

5.4 Proposed Infrastructure

Table 6 summarizes the relevant **City Standards** employed in the design of the proposed storm sewer system referred to as the minor system.

Table 6
Storm Sewer Design Criteria

Design Parameter	Value
Intensity Duration Frequency Curve (IDF) 5-year storm event. A = 998.071 B = 6.053 C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Minimum Time of Concentration	10 minutes
Rational Method	$Q = CiA$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250mm diameter
Minimum Manning's 'n'	0.013
Service Lateral Size	100mm dia PVC SDR 28 with a minimum slope of 1.0%
Minimum Depth of Cover	2.0m from crown of sewer to grade
Minimum Full Flowing Velocity	0.8m/s
Maximum Full Flowing Velocity	3.0m/s
Additional Considerations	Storm sewer maintenance holes serving sewers 900mm diameter and less shall be constructed with 300mm deep sumps. Maintenance holes for storm sewers greater than 900mm must be benched.
<i>Extracted from Sections 5 and 6 of the City of Ottawa Sewer Design Guidelines, November 2004.</i>	

Table 7 summarizes the results of the post-development hydraulic model as described in **Sections 5.1 and 5.2**.

Table 7
Stormwater Post-development Conditions

Storm Event	Peak Uncontrolled Release (L/s)	Peak Release to Minor System (L/s)	Total to Minor System (L/s)	Peak Overland to Storage (L/s)	Estimated Volume Attenuated (m ³)
5-year	51	61	112	121	330
100-year	94	61	155	962	330

5.5 Hydraulic Grade Line Analysis

Stantec Consulting Ltd prepared an update to the Longfield / Davidson-Heights model on August 12, 2002. A reproduction of the letter report is included in Appendix C. The updated model provided a starting hydraulic grade line elevation of 90.27m at the site location during a 100-year storm event.

5.6 Stormwater Management Conclusions

The internal storm sewer infrastructure will be designed in accordance with the **City Guidelines**. Catch basin will be equipped with inlet control devices to ensure that the specified unit rate of **64L/s/ha** is met.

The proposed stormwater design conforms to all relevant City guidelines and Policies.

6.0 SITE GRADING

The Paterson Group was retained by Richcraft to carry out a geotechnical investigation. The geotechnical investigation described the terrain as being slightly undulating and containing small amounts of sod and construction debris. The grade differential on the site was measured to be approximately 0.6m.

Groundwater was encountered between 2.1m and 3.2m below the surface. Measurements were taken on June 28, 2004.

The geotechnical study concluded that the allowable bearing pressures will be subjected to potential post construction total and differential settlements of 25 and 15 mm, respectively provided that finished grades are approximately 1.0m above existing.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosions losses is exaggerated during construction where the vegetation has been removed and the top layer of soil become agitated.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Plan construction at proper time to avoid flooding.

Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers.
- Clean and change filter cloth to catch at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

Richcraft Group of Companies are applying for a zoning amendment in support of their development that consists of 22 townhouses and 160 apartment units in a stacked townhouse style development.

DSEL was retained to review the adequacy of the existing servicing to support the zoning amendment.

The proposed zoning amendment results in an anticipated population greater than the existing zoning. As expected the predicted peak water demand and wastewater discharge increases from the existing land use.

Anticipated water demand under existing and proposed conditions were submitted to the City of Ottawa for establishing boundary conditions. There is a negligible difference in the anticipated pressures during periods of peak hour and fire flow. The recommended pressure range is respected under all conditions.

A sanitary sewer calculation sheet was created for the existing infrastructure from the subject land to the Barrhaven Trunk sewer. As indicated in **Section 4.3** it was determined that the existing sewers have sufficient capacity to accommodate the proposed development.

The proposed stormwater management system meets the objectives established by the City of Nepean for the Longfields Davison Heights subdivision, 1997.

Based on the analysis presented, it was determined that the existing infrastructure is sufficient to support the proposed development by Richcraft Group of Companies.

FUNCTIONAL SERVICING REPORT
146 MOUNTSHANNON DRIVE
RICHCRAFT GROUP OF COMPANIES

Prepared by,
David Schaeffer Engineering Ltd.

Per: Adam D. Fobert, P.Eng.

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APPENDIX A

Water Supply Analysis

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010



Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7	113	305
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Total Domestic Demand	305	106.8	74.2	384.4	267.0	576.6	400.4

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Commercial floor space	2.5 L/m ² /d		0.00	0.0	0.0	0.0	0.0	0.0
Hospitals	900 L/bed/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			0.0	0.0	0.0	0.0	0.0	0.0
Total Demand			106.8	74.2	384.4	267.0	576.6	400.4

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010



Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7	22	59
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	160	288

	Pop	Avg. Daily		Max Day		Peak Hour	
		m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Total Domestic Demand	347	121.6	84.4	437.7	304.0	656.6	456.0

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily		Max Day		Peak Hour	
			m ³ /d	L/min	m ³ /d	L/min	m ³ /d	L/min
Commercial floor space	2.5 L/m ² /d		0.00	0.0	0.0	0.0	0.0	0.0
Hospitals	900 L/bed/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Total I/CI Demand			0.0	0.0	0.0	0.0	0.0	0.0
Total Demand			121.6	84.4	437.7	304.0	656.6	456.0

Adam Fobert

From: Hall, James [James.Hall@ottawa.ca]
Sent: Thursday, March 25, 2010 1:21 PM
To: Adam Fobert
Subject: FW: Boundary Condition Request for 146 Mountshannon Drive
Attachments: 146_Mount_Shannon_20100322.pdf

As discussed.

Jim

Jim Hall
Project Manager, Infrastructure Approvals
Planning and Growth Management Department
City of Ottawa
Phone: 613-580-2424 Ext. 27508

-----Original Message-----

From: Cole, Bruce
Sent: March 24, 2010 3:26 PM
To: Hall, James
Subject: RE: Boundary Condition Request for 146 Mountshannon Drive

I repeated the boundary condition request for 146 Mountshannon Drive. The results for the two conditions are very similar.

The following are boundary conditions, HGL, for hydraulic analysis at the intersection of Sutcliffe Terrace and Mount Shannon Drive (see the attached PDF).

Condition 1

Max Day + FF = 128.4 m with a fire flow of 129 l/s

Peak_Hour = 127.2 m

Condition 2

Max Day + FF = 128.3 m with a fire flow of 140 l/s

Peak_Hour = 127.1 m

Max Pressure Check = the maximum pressure is estimated to be 59 PSI which is less than 80 PSI. A pressure check at completion of construction is recommended to determine if pressure control is required.

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Bruce Cole P. Eng.
Infrastructure Assessment Engineer - Watermains

City of Ottawa
Infrastructure Services Department
tel.: (613)-580-2424, ext. 20065
e-mail: Bruce.Cole@ottawa.ca

From: Hall, James
Sent: March 24, 2010 9:11 AM
To: Cole, Bruce
Subject: FW: Boundary Condition Request for 146 Mountshannon Drive

Hi Bruce,

Could you please comment on Adam's inquiry below? Please call me to discuss, if required.

Thanks,

Jim Hall
Project Manager, Infrastructure Approvals
Planning and Growth Management Department
City of Ottawa
Phone: 613-580-2424 Ext. 27508

-----Original Message-----

From: Adam Fobert [<mailto:afobert@dsel.ca>]
Sent: March 23, 2010 2:28 PM
To: Hall, James
Subject: RE: Boundary Condition Request for 146 Mountshannon Drive

Hi Jim,

I just left you a voice mail regarding the boundary condition results.

A couple of comments. It's not clear to me what flow conditions Bruce is using for his simulated results, is this based water demand for the existing zoning? What I was hoping for were two sets of results for the two conditions that I listed below. Would Bruce be able to use these values for the subject property?

Please call to discuss.

Adam Fobert, P.Eng.
Senior Design Engineer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.231
fax: (613) 836-7183
email: afobert@DSEL.ca

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From: Hall, James [<mailto:James.Hall@ottawa.ca>]
Sent: Tuesday, March 23, 2010 8:54 AM

To: Adam Fobert
Subject: FW: Boundary Condition Request for 146 Mountshannon Drive

Hi Adam,

Please find the below boundary condition as requested.

Regards,
Jim

-----Original Message-----

From: Cole, Bruce
Sent: March 23, 2010 8:14 AM
To: Hall, James
Cc: Rampersad, Curtis
Subject: RE: Boundary Condition Request for 146 Mountshannon Drive

The following are boundary conditions, HGL, for hydraulic analysis at the intersection of Sutcliffe Terrace and Mount Shannon Drive (see attached PDF for location).

Max Day + FF = 128.3 m assumed a fire flow of 140 l/s

Peak_Hour = 127.1 m

Max Pressure Check = 131 m, the estimated ground elevation is 92.0 m, the maximum pressure is estimated to be 55 PSI which is less than 80 PSI. A pressure check at completion of construction is recommended to determine if pressure control is required.

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Bruce Cole P. Eng.
Infrastructure Assessment Engineer - Watermains
City of Ottawa
Infrastructure Services Department
tel.: (613)-580-2424, ext. 20065
e-mail: Bruce.Cole@ottawa.ca

-----Original Message-----

From: Adam Fobert [mailto:afobert@dsel.ca]
Sent: March 17, 2010 3:02 PM
To: White, Colin; Taracha, Jacek; Julien, Louis
Subject: Boundary Condition Request

Hello,

I am looking for watermain boundary conditions for the subject property located at 146 Mountshannon Drive as illustrated on the attached pdf.

Thank you for your help.

Condition 1:
Avg. Day: 94.8 L/min
Peak Hour: 521.7 L/min

Max. Day + Fire Flow: 7,737.1 L/min

Condition 2:

Avg. Day: 157.5 L/min

Peak Hour: 866.3 L/min

Max. Day + Fire Flow: 8,393.8 L/min

Adam Fobert, P.Eng.
Senior Design Engineer

DSEL

david schaeffer engineering ltd.

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.231

fax: (613) 836-7183

email: afobert@DSEL.ca

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Adam Fobert

From: Crowder, Murray [Murray.Crowder@ottawa.ca]
Sent: Friday, February 05, 2010 8:27 AM
To: Adam Fobert
Subject: RE: 146 Mounshannon Drive
Attachments: Mountshannon & Bonita.pdf

Company: DSEL_David Schaeffer Engineering Ltd.
Tel: (613) 836-0856 ext.231
Fax: (613) 836-7183
Location: Mountshannon @ Bonita
Request_dt: 10-02-05-08:21:27
Email: afobert@DSEL.ca

Inspection Date	Flow Hydrant	Residual Hydrant	Pressure (psi)			Flow (igpm)	
			Static	Dynamic	Pitot	actual	@ 20 psi
2007/08/24	6416050	6416049	52	>44	36	840	1777
2007/08/24	6416051	6416050	52	>44	40	886	1873

From: Adam Fobert [mailto:afobert@dssel.ca]
Sent: February 03, 2010 11:52 AM
To: Crowder, Murray
Subject: 146 Mounshannon Drive

Hello Murray,

Would you kindly be able to send me any fire hydrant testing results in the vicinity of 146 Mountshannon Drive? The site is located in Barrhaven west of west of Woodroffe.

Thank you.

Adam Fobert, P.Eng.
Senior Design Engineer

DSEL

david schaeffer engineering ltd.

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.231

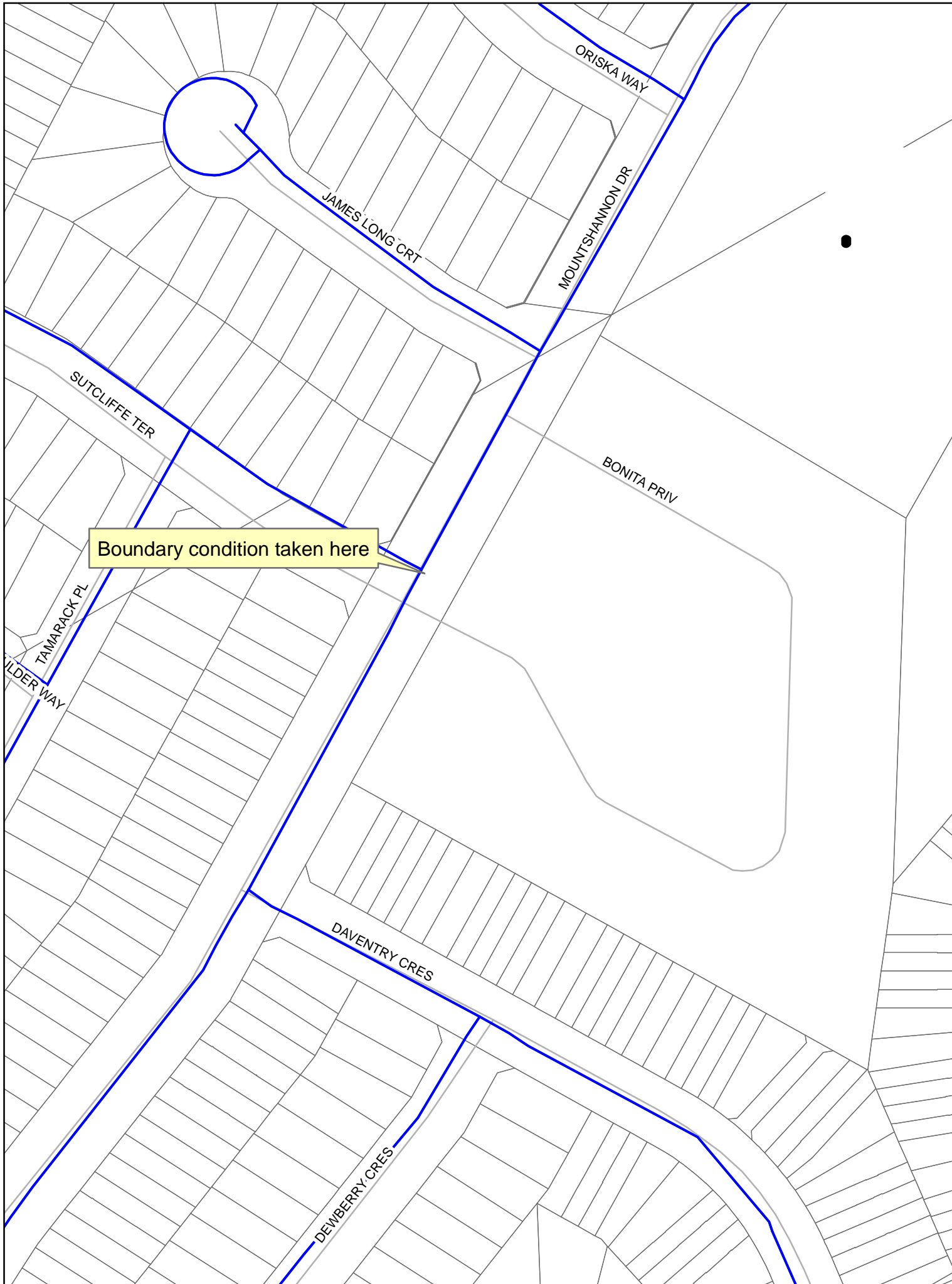
fax: (613) 836-7183

email: afobert@DSEL.ca

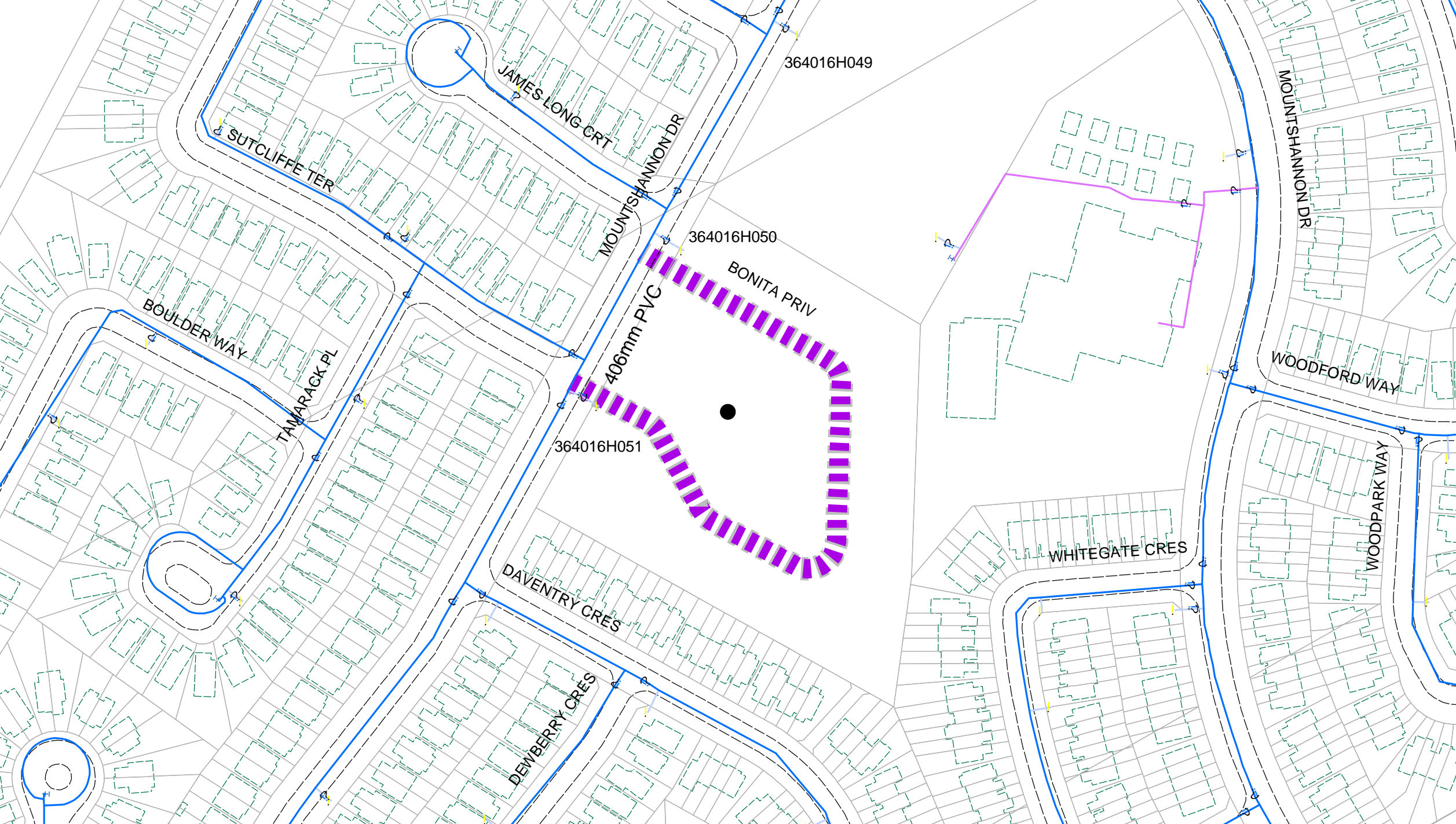
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Boundary condition taken here



364016H049

364016H050

364016H051

JAMES LONG CRT

MOUNTSHANNON DR

SUTCLIFFE TER

BOULDER WAY

TAMARACK PL

DAVENTRY CRES

DEWBERRY CRES

BONITA PRIV

406mm PVC

WHITEGATE CRES

MOUNTSHANNON DR

WOODFORD WAY

WOODPARK WAY

APPENDIX B

Wastewater Analysis

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004



Site Area 2.430 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.68 L/s

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7	87	235
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop 235

Average Domestic Flow 0.95 L/s

Peaking Factor 4

Peak Domestic Flow 3.81 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5 L/m ² /d		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow 0.00**

Peak I/C/I Flow 0.00

* assuming a 12 hour commercial operation

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

Total Estimated Average Dry Weather Flow Rate	0.95 L/s
Total Estimated Peak Dry Weather Flow Rate	3.81 L/s
Total Estimated Peak Wet Weather Flow Rate	4.49 L/s

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004



Site Area 2.430 ha

Extraneous Flow Allowances

Infiltration / Inflow 0.68 L/s

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7	22	60
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	160	288
Total Pop			348

Average Domestic Flow 1.41 L/s

Peaking Factor 4.00

Peak Domestic Flow 5.64 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5 L/m ² /d		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.00

* assuming a 12 hour commercial operation

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

Total Estimated Average Dry Weather Flow Rate	1.41 L/s
Total Estimated Peak Dry Weather Flow Rate	5.64 L/s
Total Estimated Peak Wet Weather Flow Rate	6.32 L/s

SANITARY SEWER CALCULATION SHEET

PROJECT: **Richcraft - Mountshannon**
 LOCATION:
 FILE REF: **09-396**
 DATE: **9-May-11**

DESIGN PARAMETERS

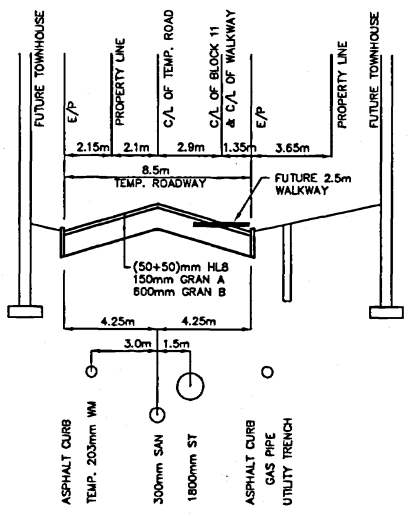
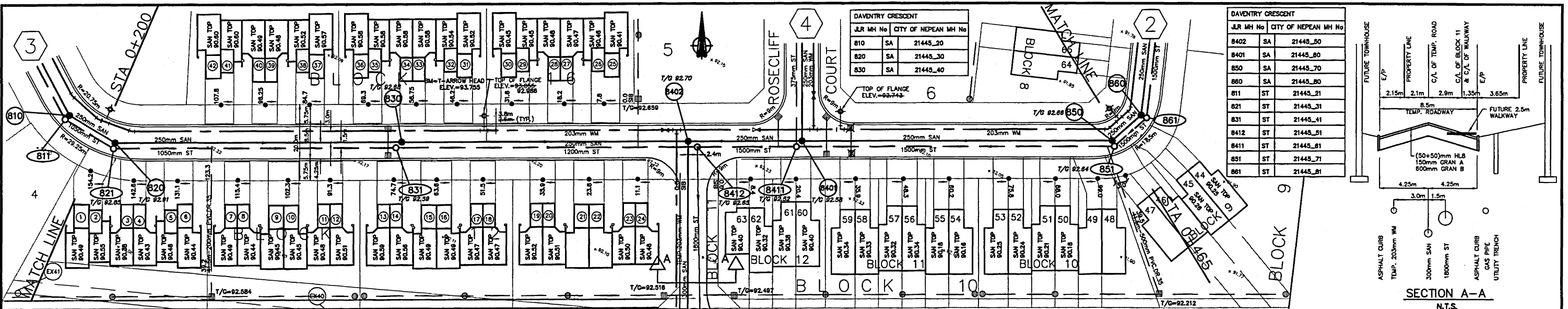
Avg. Daily Flow Res. 350 L/p/d
 Avg. Daily Flow Comm. 50,000 L/ha/d
 Avg. Daily Flow Instit. 50,000 L/ha/d
 Avg. Daily Flow Indust. 35,000 L/ha/d

Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0
 Peak Fact. Comm. 1.5
 Peak Fact. Instit. 1.5
 Peak Fact. Indust. per MOE graph

Infiltration / Inflow 0.28 L/s/ha
 Min. Pipe Velocity 0.60 m/s full flowing
 Max. Pipe Velocity 3.00 m/s full flowing
 Mannings N 0.013



Location			Residential Area and Population						Commercial		Institutional		Industrial		Infiltration				Pipe Data									
Street	Up	Down	Area	Proposed	Pop.	Cumulative	Peak	Q _{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q _{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	A _{hydraulic}	R	Velocity	Q _{cap}	Q / Q full	
			(ha)	Units		(ha)	Pop.	(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m ²)	(m)	(m/s)	(L/s)	(-)	
On site	1	2	0.538	40	92.0	0.538	92.0	4.00	1.49			0.00			0.00	0.0	0.538	0.538	0.151	1.64	200	0.65	54.0	0.031	0.050	0.84	26.4	0.06
On site	2	3	0.000	0	0.0	0.538	92.0	4.00	1.49			0.00			0.00	0.0	0.000	0.538	0.151	1.64	200	0.65	22.0	0.031	0.050	0.84	26.4	0.06
On site	7	3	0.387	32	74.0	0.387	74.0	4.00	1.20			0.00			0.0	0.387	0.387	0.108	1.31	200	0.65	59.0	0.031	0.050	0.84	26.4	0.05	
On site	3	4	0.000	0	0.0	0.925	166.0	4.00	2.69			0.00			0.0	0.000	0.925	0.259	2.95	200	0.65	47.0	0.031	0.050	0.84	26.4	0.11	
On site	5	4	0.452	40	92.0	0.452	92.0	4.00	1.49			0.00			0.0	0.452	0.452	0.127	1.62	200	0.65	54.0	0.031	0.050	0.84	26.4	0.06	
On site	4	6	0.000	0	0.0	1.377	258.0	4.00	4.18			0.00			0.0	0.000	1.377	0.386	4.57	200	0.65	23.0	0.031	0.050	0.84	26.4	0.17	
On site	7	8	0.356	32	74.0	0.356	74.0	4.00	1.20			0.00			0.0	0.356	0.356	0.100	1.30	200	0.65	69.0	0.031	0.050	0.84	26.4	0.05	
On site	8	6	0.247	16	37.0	0.603	111.0	4.00	1.80			0.00			0.0	0.247	0.603	0.169	1.97	200	0.65	62.0	0.031	0.050	0.84	26.4	0.07	
On site	6	EX 100	0.028	0	0.0	2.008	369.0	4.00	5.98			0.00			0.0	0.028	2.008	0.562	6.54	200	0.65	51.0	0.031	0.050	0.84	26.4	0.25	
Mountshannon Dr.	James Long Ct.	EX 400	1.48		92.0	1.480	92.0	4.00	1.49			0.00			0.0	1.480	1.480	0.414	1.91									
Mountshannon Dr.	9	EX 400	0.093	3	8.0	0.093	8.0	4.00	0.13			0.00			0.0	0.093	0.093	0.026	0.16	200	0.65	18.5	0.031	0.050	0.84	26.4	0.01	
Mountshannon Dr.	EX 400	EX 100	0.42	11	30.0	1.993	130.0	4.00	2.11			0.00			0.0	0.420	1.993	0.558	2.66	250	0.88	85.0	0.049	0.063	1.14	55.8	0.05	
Mountshannon Dr.	Sutcliffe Terr.	EX 100	6.05		334	6.050	334.0	4.00	5.41			0.00			0.0	6.050	6.050	1.694	7.11									
Mountshannon Dr.	EX 100	EX 600	0.705	8	54	10.756	887.0	3.83	13.77			0.00			0.0	0.705	10.756	3.012	16.78	250	0.88	85.0	0.049	0.063	1.14	55.8	0.30	
Daventry Cres.	600	890	1.46		127	12.22	1014	3.80	15.59			0.00			0.0	1.460	12.216	3.420	19.01	250	0.33	88.6	0.049	0.063	0.70	34.2	0.56	
Daventry Cres.	890	880	3.89		308	16.11	1322	3.72	19.91			0.00			0.0	3.890	16.106	4.510	24.42	250	0.28	79.2	0.049	0.063	0.64	31.5	0.78	
Daventry Cres.	880	870	0.33		28	16.44	1350	3.71	20.30			0.00			0.0	0.330	16.436	4.602	24.90	250	0.24	31.7	0.049	0.063	0.59	29.1	0.85	
Daventry Cres.	870	860	0.80		95	17.24	1445	3.69	21.61			0.00			0.0	0.800	17.236	4.826	26.43	250	0.28	92.9	0.049	0.063	0.64	31.5	0.84	
Daventry Cres.	860	850	0.09		7	17.33	1452	3.69	21.70			0.00			0.0	0.090	17.326	4.851	26.55	250	0.51	10.0	0.049	0.063	0.87	42.5	0.63	
Daventry Cres.	850	8411	0.51		49	17.84	1501	3.68	22.37			0.00			0.0	0.510	17.836	4.994	27.37	300	0.32	80.5	0.071	0.075	0.77	54.7	0.50	
Daventry Cres.	8411	8402	1.31		86	19.15	1587	3.66	23.54			0.00			0.0	1.310	19.146	5.361	28.90	300	0.32	29.7	0.071	0.075	0.77	54.7	0.53	
Service Easement	8402	8414	7.60		593	26.75	2180	3.56	31.41			0.00			0.0	7.600	26.746	7.489	38.90	300	0.49	57.0	0.071	0.075	0.96	67.7	0.57	



DAVENTRY CRESCENT

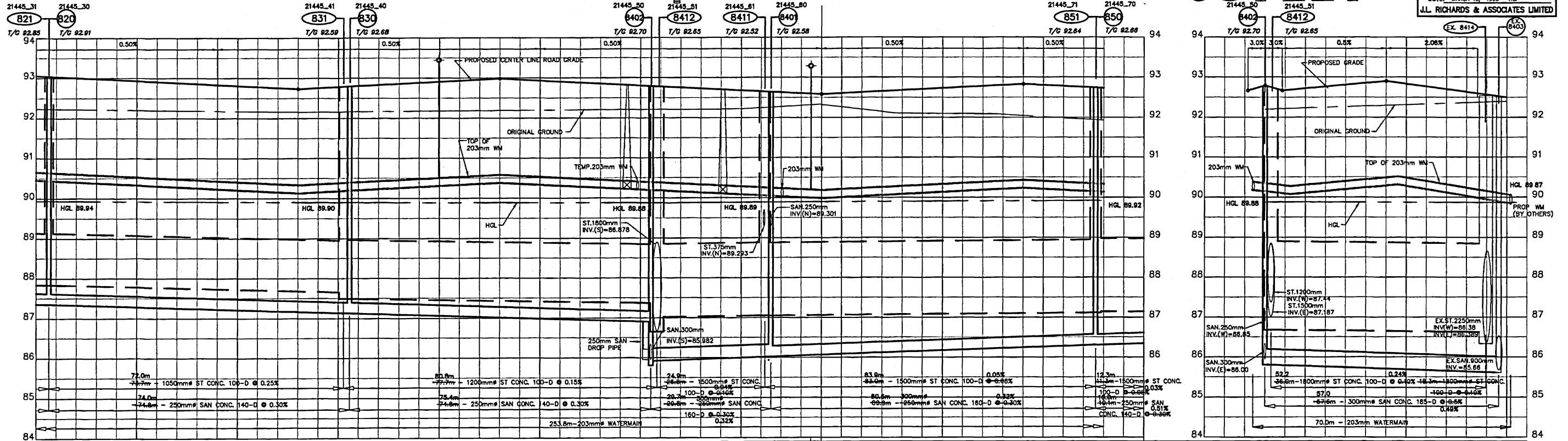
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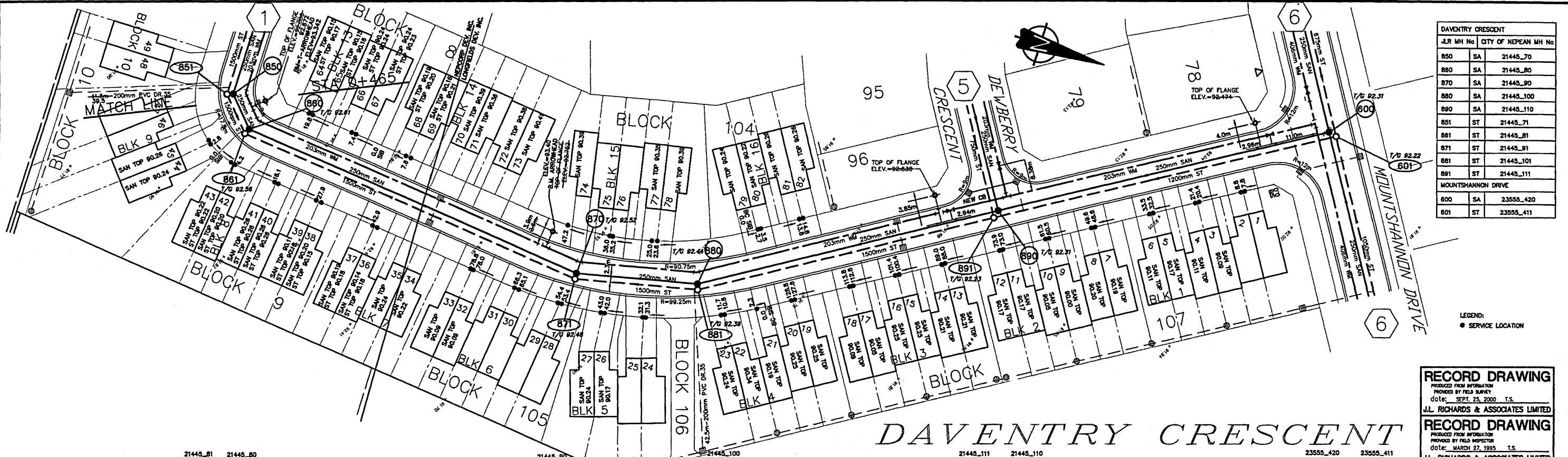
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DAVENTRY CRESCENT

OUTLET



C.L. ROAD ELEVATION	W.M. TOP ELEVATION	STORM INVERT	SANITARY INVERT	C.L. ROAD CHAINAGE
92.66	90.57	87.88	87.27	0+207.600
92.80	90.57	87.88	87.27	0+210.000
92.94	90.57	87.88	87.27	0+212.400
93.08	90.57	87.88	87.27	0+214.800
93.22	90.57	87.88	87.27	0+217.200
93.36	90.57	87.88	87.27	0+219.600
93.50	90.57	87.88	87.27	0+222.000
93.64	90.57	87.88	87.27	0+224.400
93.78	90.57	87.88	87.27	0+226.800
93.92	90.57	87.88	87.27	0+229.200
94.06	90.57	87.88	87.27	0+231.600
94.20	90.57	87.88	87.27	0+234.000
94.34	90.57	87.88	87.27	0+236.400
94.48	90.57	87.88	87.27	0+238.800
94.62	90.57	87.88	87.27	0+241.200
94.76	90.57	87.88	87.27	0+243.600
94.90	90.57	87.88	87.27	0+246.000
95.04	90.57	87.88	87.27	0+248.400
95.18	90.57	87.88	87.27	0+250.800
95.32	90.57	87.88	87.27	0+253.200
95.46	90.57	87.88	87.27	0+255.600
95.60	90.57	87.88	87.27	0+258.000
95.74	90.57	87.88	87.27	0+260.400
95.88	90.57	87.88	87.27	0+262.800
96.02	90.57	87.88	87.27	0+265.200
96.16	90.57	87.88	87.27	0+267.600
96.30	90.57	87.88	87.27	0+270.000
96.44	90.57	87.88	87.27	0+272.400
96.58	90.57	87.88	87.27	0+274.800
96.72	90.57	87.88	87.27	0+277.200
96.86	90.57	87.88	87.27	0+279.600
97.00	90.57	87.88	87.27	0+282.000
97.14	90.57	87.88	87.27	0+284.400
97.28	90.57	87.88	87.27	0+286.800
97.42	90.57	87.88	87.27	0+289.200
97.56	90.57	87.88	87.27	0+291.600
97.70	90.57	87.88	87.27	0+294.000
97.84	90.57	87.88	87.27	0+296.400
97.98	90.57	87.88	87.27	0+298.800
98.12	90.57	87.88	87.27	0+301.200
98.26	90.57	87.88	87.27	0+303.600
98.40	90.57	87.88	87.27	0+306.000
98.54	90.57	87.88	87.27	0+308.400
98.68	90.57	87.88	87.27	0+310.800
98.82	90.57	87.88	87.27	0+313.200
98.96	90.57	87.88	87.27	0+315.600
99.10	90.57	87.88	87.27	0+318.000
99.24	90.57	87.88	87.27	0+320.400
99.38	90.57	87.88	87.27	0+322.800
99.52	90.57	87.88	87.27	0+325.200
99.66	90.57	87.88	87.27	0+327.600
99.80	90.57	87.88	87.27	0+330.000
99.94	90.57	87.88	87.27	0+332.400
100.08	90.57	87.88	87.27	0+334.800
100.22	90.57	87.88	87.27	0+337.200
100.36	90.57	87.88	87.27	0+339.600
100.50	90.57	87.88	87.27	0+342.000
100.64	90.57	87.88	87.27	0+344.400
100.78	90.57	87.88	87.27	0+346.800
100.92	90.57	87.88	87.27	0+349.200
101.06	90.57	87.88	87.27	0+351.600
101.20	90.57	87.88	87.27	0+354.000
101.34	90.57	87.88	87.27	0+356.400
101.48	90.57	87.88	87.27	0+358.800
101.62	90.57	87.88	87.27	0+361.200
101.76	90.57	87.88	87.27	0+363.600
101.90	90.57	87.88	87.27	0+366.000
102.04	90.57	87.88	87.27	0+368.400
102.18	90.57	87.88	87.27	0+370.800
102.32	90.57	87.88	87.27	0+373.200
102.46	90.57	87.88	87.27	0+375.600
102.60	90.57	87.88	87.27	0+378.000
102.74	90.57	87.88	87.27	0+380.400
102.88	90.57	87.88	87.27	0+382.800
103.02	90.57	87.88	87.27	0+385.200
103.16	90.57	87.88	87.27	0+387.600
103.30	90.57	87.88	87.27	0+390.000
103.44	90.57	87.88	87.27	0+392.400
103.58	90.57	87.88	87.27	0+394.800
103.72	90.57	87.88	87.27	0+397.200
103.86	90.57	87.88	87.27	0+399.600
104.00	90.57	87.88	87.27	0+402.000
104.14	90.57	87.88	87.27	0+404.400
104.28	90.57	87.88	87.27	0+406.800
104.42	90.57	87.88	87.27	0+409.200
104.56	90.57	87.88	87.27	0+411.600
104.70	90.57	87.88	87.27	0+414.000
104.84	90.57	87.88	87.27	0+416.400
104.98	90.57	87.88	87.27	0+418.800
105.12	90.57	87.88	87.27	0+421.200
105.26	90.57	87.88	87.27	0+423.600
105.40	90.57	87.88	87.27	0+426.000
105.54	90.57	87.88	87.27	0+428.400
105.68	90.57	87.88	87.27	0+430.800
105.82	90.57	87.88	87.27	0+433.200
105.96	90.57	87.88	87.27	0+435.600
106.10	90.57	87.88	87.27	0+438.000
106.24	90.57	87.88	87.27	0+440.400
106.38	90.57	87.88	87.27	0+442.800
106.52	90.57	87.88	87.27	0+445.200
106.66	90.57	87.88	87.27	0+447.600
106.80	90.57	87.88	87.27	0+450.000
106.94	90.57	87.88	87.27	0+452.400
107.08	90.57	87.88	87.27	0+454.800
107.22	90.57	87.88	87.27	0+457.200
107.36	90.57	87.88	87.27	0+459.600
107.50	90.57	87.88	87.27	0+462.000
107.64	90.57	87.88	87.27	0+464.400
107.78	90.57	87.88	87.27	0+466.800
107.92	90.57	87.88	87.27	0+469.200
108.06	90.57	87.88	87.27	0+471.600
108.20	90.57	87.88	87.27	0+474.000
108.34	90.57	87.88	87.27	0+476.400
108.48	90.57	87.88	87.27	0+478.800
108.62	90.57	87.88	87.27	0+481.200
108.76	90.57	87.88	87.27	0+483.600
108.90	90.57	87.88	87.27	0+486.000
109.04	90.57	87.88	87.27	0+488.400
109.18	90.57	87.88	87.27	0+490.800
109.32	90.57	87.88	87.27	0+493.200
109.46	90.57	87.88	87.27	0+495.600
109.60	90.57	87.88	87.27	0+498.000
109.74	90.57	87.88	87.27	0+500.400
109.88	90.57	87.88	87.27	0+502.800
110.02	90.57	87.88	87.27	0+505.200
110.16	90.57	87.88	87.27	0+507.600
110.30	90.57	87.88	87.27	0+510.000
110.44	90.57	87.88	87.27	0+512.400
110.58	90.57	87.88	87.27	0+514.800
110.72	90.57	87.88	87.27	0+517.200
110.86	90.57	87.88	87.27	0+519.600
111.00	90.57	87.88	87.27	0+522.000
111.14	90.57	87.88	87.27	0+524.400
111.28	90.57	87.88	87.27	0+526.800
111.42	90.57	87.88	87.27	0+529.200
111.56	90.57	87.88	87.27	0+531.600
111.70	90.57	87.88	87.27	0+534.000
111.84	90.57	87.88	87.27	0+536.400
111.98	90.57	87.88	87.27	0+538.800
112.12	90.57	87.88	87.27	0+541.200
112.26	90.57	87.88	87.27	0+543.600
112.40	90.57	87.88	87.27	0+546.000
112.54	90.57	87.88	87.27	0+548.400
112.68	90.57	87.88	87.27	0+550.800
112.82	90.57	87.88	87.27	0+553.200
112.96	90.57	87.88	87.27	0+555.600
113.10	90.57	87.88	87.27	0+558.000
113.24	90.57	87.88	87.27	0+560.400
113.38	90.57	87.88	87.27	0+562.800
113.52	90.57	87.88	87.27	0+565.200
113.66	90.57	87.88	87.27	0+567.600
113.80	90.57	87.88	87.27	0+570.000
113.94	90.57	87.88	87.27	0+572.400
114.08	90.57	87.88	87.27	0+574.800
114.22	90.57	87.88	87.27	0+577.200
114.36	90.57	87.88	87.27	0+579.600
114.50	90.57	87.88	87.27	0+582.000
114.64	90.57	87.88	87.27	0+584.400
114.78	90.57	87.88	87.27	0+586.800
114.92	90.57	87.88	87.27	0+589.200
115.06	90.57	87.88	87.27	0+591.600
115.20	90.57	87.88	87.27	0+594.000
115.34	90.57	87.88	87.27	0+596.400
115.48	90.57	87.88	87.27	0+598.800
115.62	90.57	87.88	87.27	0+601.200
115.76	90.57	87.88	87.27	0+603.600
115.90	90.57	87.88	87.27	0+606.000
116.04	90.57	87.88	87.27	0+608.400
116.18	90.57	87.88	87.27	0+610.800
116.32	90.57	87.88	87.27	0+613.200
116.46	90.57	87.88	87.27	0+615.600
116.60				



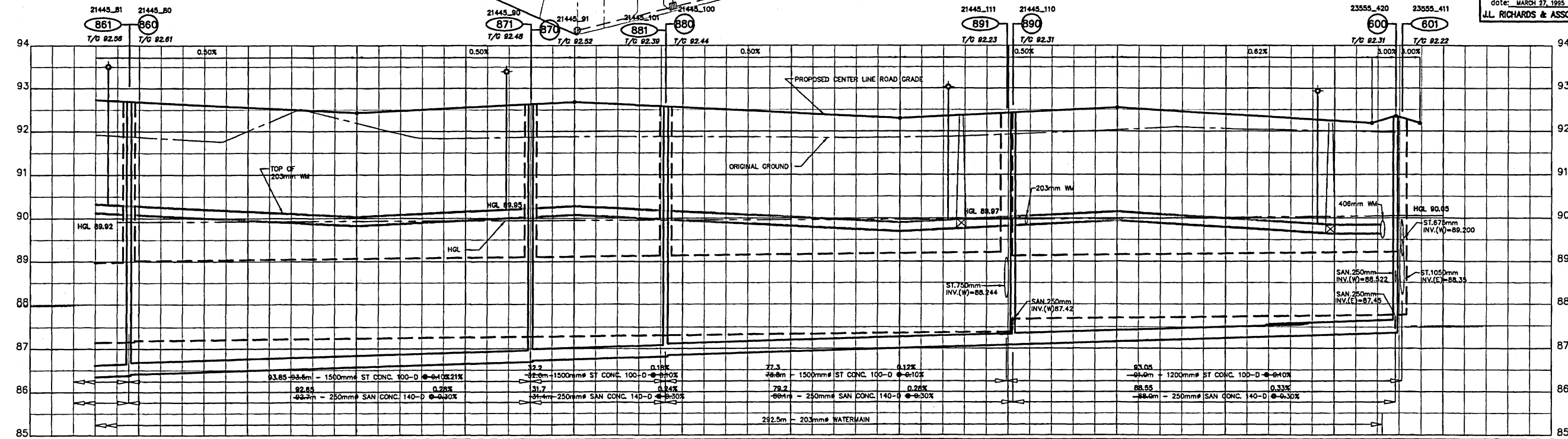
DAVENTRY CRESCENT		
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850	SA	21445_70
850	SA	21445_80
870	SA	21445_90
880	SA	21445_100
890	SA	21445_110
851	ST	21445_71
861	ST	21445_81
871	ST	21445_91
881	ST	21445_101
891	ST	21445_111
600	SA	23555_420
601	ST	23555_411

LEGEND:
● SERVICE LOCATION

RECORD DRAWING
PRODUCED FROM INFORMATION PROVIDED BY FIELD SURVEY
date: SEPT. 25, 2000 T.S.
J.L. RICHARDS & ASSOCIATES LIMITED

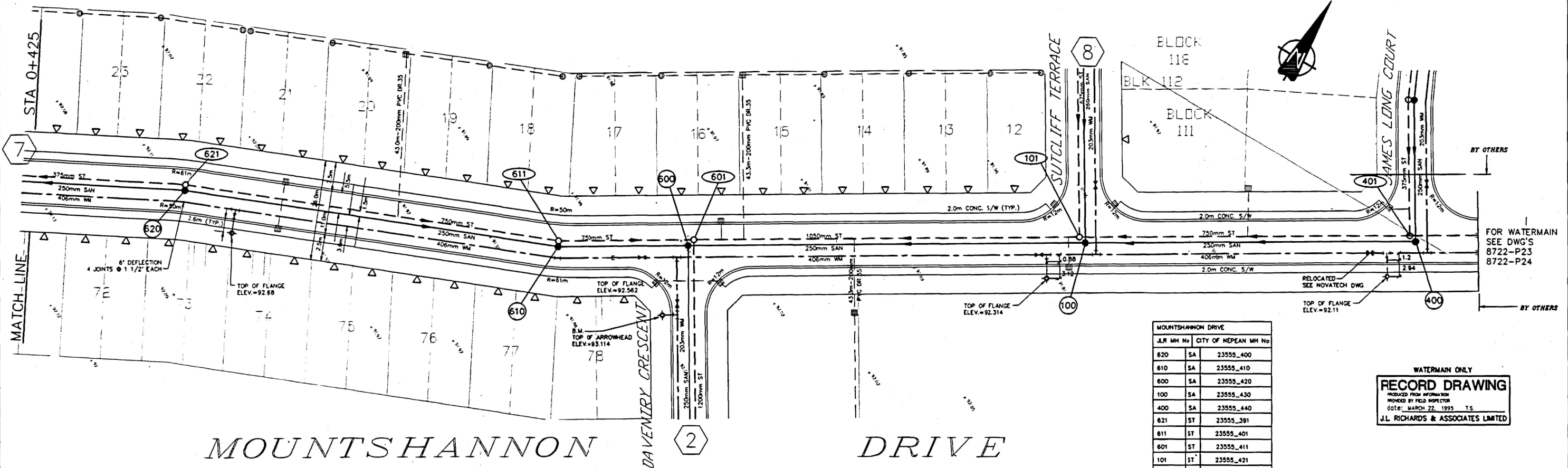
RECORD DRAWING
PRODUCED FROM INFORMATION PROVIDED BY FIELD INSPECTOR
date: MARCH 27, 1995 T.S.
J.L. RICHARDS & ASSOCIATES LIMITED

DAVENTRY CRESCENT



C.L. ROAD CHAINAGE	C.L. ROAD ELEVATION	W.M. TOP ELEVATION	STORM INVERT	SANITARY INVERT	C.L. ROAD ELEVATION	W.M. TOP ELEVATION	STORM INVERT	SANITARY INVERT	C.L. ROAD ELEVATION	W.M. TOP ELEVATION	STORM INVERT	SANITARY INVERT	C.L. ROAD CHAINAGE
0+485	92.26	90.320	87.206	86.405	92.26	90.320	87.206	86.405	0+485	92.26	90.320	87.206	86.405
0+487.9	92.26	90.320	87.206	86.405	92.26	90.320	87.206	86.405	0+487.9	92.26	90.320	87.206	86.405
0+497.8	92.26	90.320	87.206	86.405	92.26	90.320	87.206	86.405	0+497.8	92.26	90.320	87.206	86.405
0+500	92.26	90.320	87.206	86.405	92.26	90.320	87.206	86.405	0+500	92.26	90.320	87.206	86.405
0+508.3	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+508.3	92.27	90.320	87.206	86.405
0+521.7	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+521.7	92.27	90.320	87.206	86.405
0+525	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+525	92.27	90.320	87.206	86.405
0+528.2	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+528.2	92.27	90.320	87.206	86.405
0+540	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+540	92.27	90.320	87.206	86.405
0+544.3	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+544.3	92.27	90.320	87.206	86.405
0+550	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+550	92.27	90.320	87.206	86.405
0+555.4	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+555.4	92.27	90.320	87.206	86.405
0+558.8	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+558.8	92.27	90.320	87.206	86.405
0+566.8	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+566.8	92.27	90.320	87.206	86.405
0+568.8	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+568.8	92.27	90.320	87.206	86.405
0+575	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+575	92.27	90.320	87.206	86.405
0+577.8	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+577.8	92.27	90.320	87.206	86.405
0+587.0	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+587.0	92.27	90.320	87.206	86.405
0+592.0	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+592.0	92.27	90.320	87.206	86.405
0+600	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+600	92.27	90.320	87.206	86.405
0+615.3	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+615.3	92.27	90.320	87.206	86.405
0+625	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+625	92.27	90.320	87.206	86.405
0+634.1	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+634.1	92.27	90.320	87.206	86.405
0+641	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+641	92.27	90.320	87.206	86.405
0+650	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+650	92.27	90.320	87.206	86.405
0+652.7	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+652.7	92.27	90.320	87.206	86.405
0+661.0	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+661.0	92.27	90.320	87.206	86.405
0+664.10	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+664.10	92.27	90.320	87.206	86.405
0+674.800	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+674.800	92.27	90.320	87.206	86.405
0+678.100	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+678.100	92.27	90.320	87.206	86.405
0+685.3	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+685.3	92.27	90.320	87.206	86.405
0+700	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+700	92.27	90.320	87.206	86.405
0+702.9	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+702.9	92.27	90.320	87.206	86.405
0+715	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+715	92.27	90.320	87.206	86.405
0+725	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+725	92.27	90.320	87.206	86.405
0+730	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+730	92.27	90.320	87.206	86.405
0+746.10	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+746.10	92.27	90.320	87.206	86.405
0+748.10	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+748.10	92.27	90.320	87.206	86.405
0+753.7	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+753.7	92.27	90.320	87.206	86.405
0+758.80	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+758.80	92.27	90.320	87.206	86.405
0+760.10	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+760.10	92.27	90.320	87.206	86.405
0+765.100	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+765.100	92.27	90.320	87.206	86.405
0+768.80	92.27	90.320	87.206	86.405	92.27	90.320	87.206	86.405	0+768.80	92.27	90.320	87.206	86.405

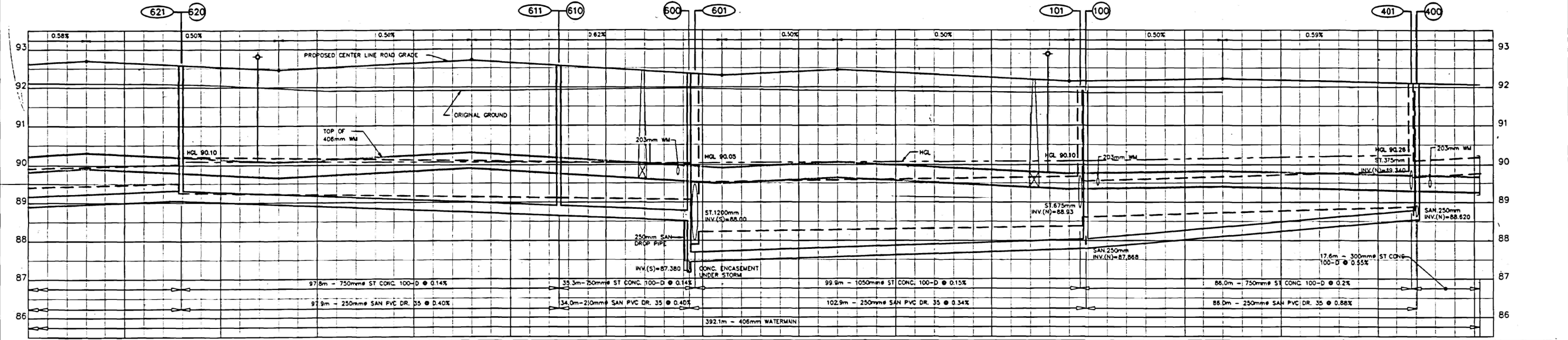
		LONGFIELDS DEVELOPMENTS INC. NEPCORP DEVELOPMENTS INC. LONGFIELDS CITY OF NEPEAN DAVENTRY CRESCENT STA. 0+465 TO STA. 0+800	CONTRACT NO. 11753 11754 DRAWING NO. 2



JLR MH No	CITY OF NEPEAN MH No
620	SA 23555_400
610	SA 23555_410
600	SA 23555_420
100	SA 23555_430
400	SA 23555_440
621	ST 23555_391
611	ST 23555_401
601	ST 23555_411
101	ST 23555_421
401	ST 23555_431

WATERMAIN ONLY
RECORD DRAWING
 PRODUCED FROM INFORMATION PROVIDED BY FIELD INSPECTOR
 DATE: MARCH 22, 1995 T.S.
 J.L. RICHARDS & ASSOCIATES LIMITED

MOUNTSHANNON DRIVE



STATION	C.L. ROAD ELEVATION	W.M. TOP ELEVATION	STORM INVERT	SANITARY INVERT	C.L. ROAD CHAINAGE
0+425	92.612				
0+430	92.700				
0+440	92.750				
0+450	92.850				
0+460	92.925				
0+470	92.975				
0+480	93.000				
0+490	93.025				
0+500	93.050				
0+510	93.075				
0+520	93.100				
0+530	93.125				
0+540	93.150				
0+550	93.175				
0+560	93.200				
0+570	93.225				
0+580	93.250				
0+590	93.275				
0+600	93.300				
0+610	93.325				
0+620	93.350				
0+630	93.375				
0+640	93.400				
0+650	93.425				
0+660	93.450				
0+670	93.475				
0+680	93.500				
0+690	93.525				
0+700	93.550				
0+710	93.575				
0+720	93.600				
0+730	93.625				

J.L. Richards & Associates Limited
 Consulting Engineers, Architect & Planners
 OTTAWA, KINGSTON, SUDBURY, CANADA

NO.	DATE	BY	REVISION
5	JAN. 95	W.Z.	AS RECORDED INFO ADDED
4	04/10/93	W.Z.	ISSUED FOR CONSTRUCTION (STAGE 1)
3	06/09/93	W.Z.	AS PER RMOC
2	AUG. 93	W.Z.	ISSUED FOR M.O.E. APPROVAL
1	MAR. 93	W.Z.	ISSUED FOR PRELIMINARY APPROVAL

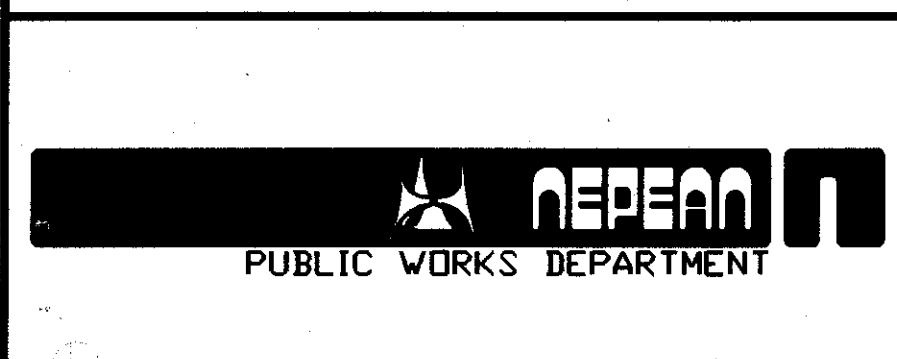
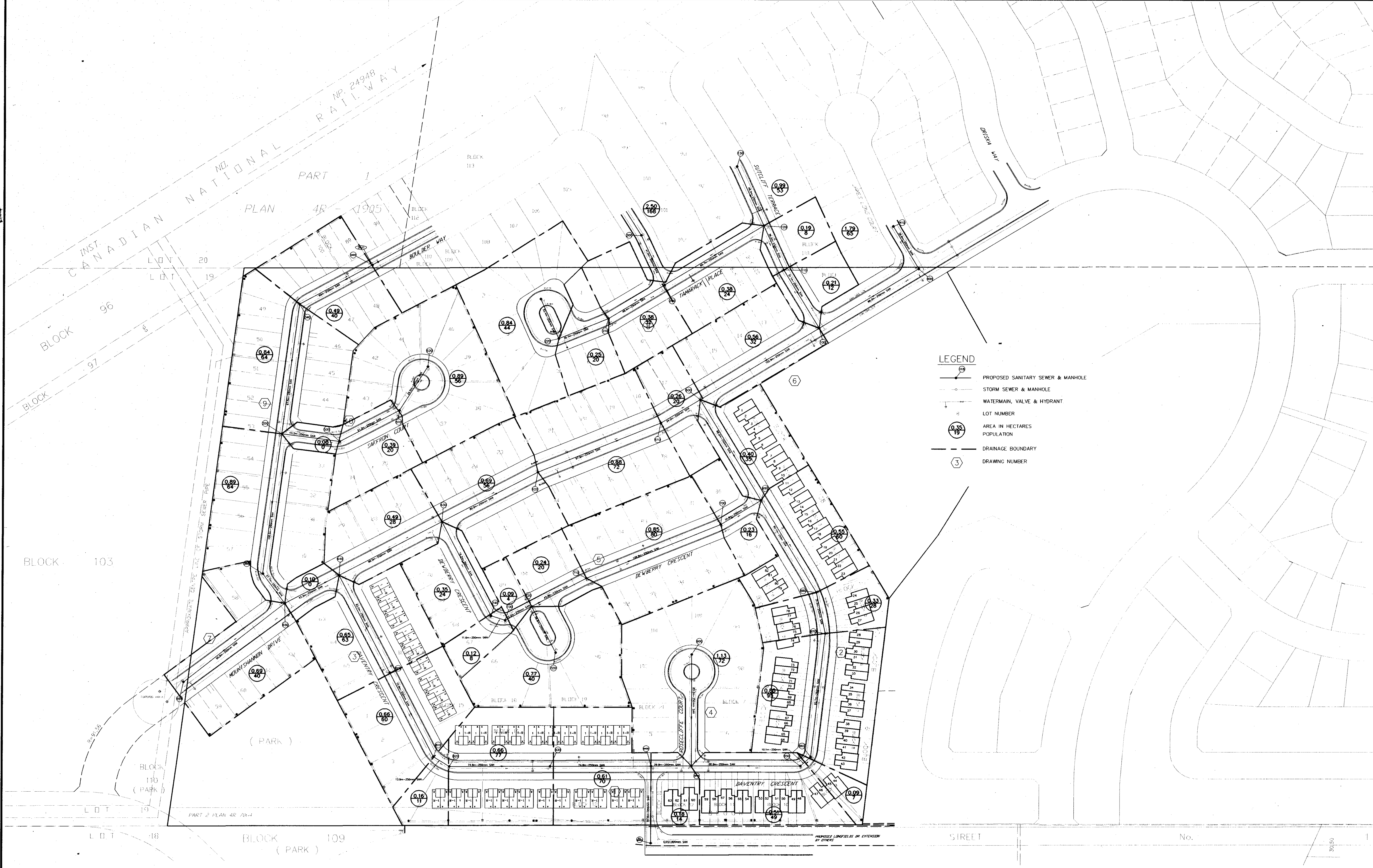
DRAWN BY T.S. DATE MAR.1993
 DESIGN BY W.Z. DATE MAR.1993
 CHECKED BY J.G.C. DATE MAR.1993
 APPROVED BY _____ DATE _____

SCALE
 HOR. 1:500
 VERT. 1:50

LONGFIELDS DEVELOPMENTS INC.
 NEPCORP DEVELOPMENTS INC.
LONGFIELDS
 CITY OF NEPEAN
 MOUNTSHANNON DRIVE
 STA. 0+410 TO STA. 0+725

CONTRACT NO.
11753
11754

DRAWING NO.
6



J.L. Richards & Associates Limited
 Consulting Engineers, Architect & Planners
 OTTAWA KINGSTON SUDBURY, CANADA.

22-733
 DSK

NO.	DATE	BY	REVISION

NO.	DATE	BY	REVISION
3	16/09/93	W.Z.	AS PER RMOC
2	AUG. 93	W.Z.	ISSUED FOR M.O.E. APPROVAL
1	MAR. 93	W.Z.	ISSUED FOR PRELIMINARY APPROVAL

DRAWN BY T.S. DATE JAN 93
 DESIGN BY W.Z. DATE JAN 93
 CHECKED BY J.G.C. DATE
 APPROVED BY DATE
 SCALE 1:1250
 SURVEY DATA

LONGFIELDS DEVELOPMENTS INC.
 NEPCORP DEVELOPMENTS INC.
LONGFIELDS
 CITY OF NEPEAN
 SANITARY DRAINAGE PLAN

CONTRACT NO. 11753
 11754
 DRAWING NO. D-SA

APPENDIX C

Stormwater Analysis

```

00001> 2      Metric units
00002> *#*****
00003> *# Project Name: [Richcraft]      Project Number: [396]
00004> *# Date      : 2011-05-09
00005> *# Modeller  : [adf]
00006> *# Company   : David Schaeffer Engineering Ltd.
00007> *# License # : 4488477
00008> *#*****
00009> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[1]
00010> [C:\SWM_PRG\STMPFILES\CH4H002x.stm"]
00011> *%-----|
00012> READ STORM  STORM_FILENAME=["STORM.001"]
00013> *%-----|
00014> DEFAULT VALUES  ICASEdef=[1], read and print values
00015> DEFVAL_FILENAME=["C:\SWM_PRG\STMPFILES\ottawa.val"]
00016> *%-----|
00017> * Existing undeveloped property is sloped at 0.36% and is mostly vegetated
00018> * with Fallow. Soils are predominately silty clays or Hydrologic soil class C.
00019> * Tc approximately 60min as estimated per Airport Method
00020> *#*****
00021> DESIGN NASHYD  ID=[1] NHYD=["EX"], DT=[10]min, AREA=[2.428] (ha),
00022> EWF=[0] (cms), CN/C=[91], TP=[0.64]hrs,
00023> RAINFALL=[ , , , ] (mm/hr), END=1
00024> *%-----|
00025> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[2]
00026> [C:\SWM_PRG\STMPFILES\CH4H005x.stm"]
00027> *%-----|
00028> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[3]
00029> [C:\SWM_PRG\STMPFILES\CH4H100x.stm"]
00030> *%-----|
00031> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[4]
00032> [C:\SWM_PRG\STMPFILES\SC24002x.stm"]
00033> *%-----|
00034> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[5]
00035> [C:\SWM_PRG\STMPFILES\SC24005x.stm"]
00036> *%-----|
00037> START      TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[6]
00038> [C:\SWM_PRG\STMPFILES\SC24100x.stm"]
00039> *%-----|
00040> FINISH
00041>
00042>
00043>
00044>
00045>
00046>
00047>
00048>
00049>
00050>
00051>

```

```

00001>-----
00002>
00003> SSSSS W W M M H H Y Y M M OOO          999 999 -----
00004> S W W M M M H H Y Y M M O O          9 9 9 9
00005> SSSSS W W W M M M H H H H Y M M O O ## 9 9 9 9 Ver. 4.02
00006> S W W M M M H H Y M M O O          9999 9999 July 1999
00007> SSSSS W W M M H H Y M M OOO          9 9 -----
00008>          StormWater Management HYdrologic Model          999 999 -----
00009>
00010>-----
00011> ***** SWMHYMO-99 Ver.4.02 *****
00012> ***** A single event and continuous hydrologic simulation model *****
00013> ***** based on the principles of HYMO and its successors *****
00014> ***** OTTHYMO-83 and OTTHYMO-89. *****
00015> *****
00016> ***** Distributed by: J.F. Sabourin and Associates Inc. *****
00017> ***** Ottawa, Ontario: (613) 727-5199 *****
00018> ***** Gatineau, Quebec: (819) 243-6858 *****
00019> ***** E-Mail: swmhymo@fsa.com *****
00020> *****
00021>-----
00022>
00023> ***** Licensed user: David Schaeffer Engineering Ltd. *****
00024> ***** Stittsville SERIAL#4488477 *****
00025> *****
00026>-----
00027>
00028> ***** PROGRAM ARRAY DIMENSIONS *****
00029> ***** Maximum value for ID numbers : 10 *****
00030> ***** Max. number of rainfall points: 15000 *****
00031> ***** Max. number of flow points : 15000 *****
00032> *****
00033>-----
00034>
00035> *** DESCRIPTION SUMMARY TABLE HEADERS (units depend on METOUT in START) ***
00036> *** ID: Hydrograph Identification numbers, (1-10). ***
00037> *** NHYD: Hydrograph reference numbers, (6 digits or characters). ***
00038> *** AREA: Drainage area associated with hydrograph, (ac.) or (ha.). ***
00039> *** QPEAK: Peak flow of simulated hydrograph, (ft3/s) or (m3/s). ***
00040> *** TpeakDate_hh:mm is the date and time of the peak flow. ***
00041> *** R.V.: Runoff Volume of simulated hydrograph, (in) or (mm). ***
00042> *** R.C.: Runoff Coefficient of simulated hydrograph, (ratio). ***
00043> *** *: see WARNING or NOTE message printed at end of run. ***
00044> *** **: see ERROR message printed at end of run. ***
00045> ***
00046>-----
00047>
00048>-----
00049> :-----
00050>-----
00051>-----
00052>-----
00053> ***** S U M M A R Y O U T P U T *****
00054> *****
00055> * DATE: 2011-05-09 TIME: 13:01:36 RUN COUNTER: 000654 *
00056> *****
00057> * Input filename: C:\SWM_PRG\09-396\396_Pre.dat *
00058> * Output filename: C:\SWM_PRG\09-396\396_Pre.out *
00059> * Summary filename: C:\SWM_PRG\09-396\396_Pre.sum *
00060> * User comments: *
00061> * 1: *
00062> * 2: *
00063> * 3: *
00064>-----
00065>-----
00066>-----
00067>-----
00068> # Project Name: [Richcraft] Project Number: [396]
00069> # Date : 2011-05-09
00070> # Modeller : [adf]
00071> # Company : David Schaeffer Engineering Ltd.
00072> # License # : 4488477
00073> *****
00074> RUN:COMMAND#
00075> 001:0001-----
00076> START
00077> [TZERO = .00 hrs on 0]
00078> [METOUT= 2 (1=imperial, 2=metric output)]
00079> [NSTORM= 1 ]
00080> [NRUN = 1 ]
00081> 001:0002-----
00082> READ STORM
00083> File name = STORM.001
00084> Comment = 2 years Chicago Storm 4 Hours step 10 min, City of Ottawa
00085> [SDT=10.00:SDUR= 4.00:POT= 33.89]
00086> 001:0003-----
00087> DEFAULT VALUES
00088> File name = C:\SWM_PRG\STMFILES\ottawa.val
00089> ICASEdv = 1 (read and print data)
00090> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00091> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00092> Horton's infiltration equation parameters:
00093> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00094> Parameters for PERVIOUS surfaces in STANDHYD:
00095> [IAPER= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00096> Parameters for IMPERVIOUS surfaces in STANDHYD:
00097> [IAimp= .80 mm] [CLI= 1.50] [MNI= .013]
00098> Parameters used in NASHYD:
00099> [Ia= 1.50 mm] [N= 3.00]
00100> 001:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00101> DESIGN NASHYD 01:EX 2.43 .032 No_date 2:00 8.96 .264
00102> [CN= 75.0: N= 3.00]
00103> [Tp= .64:DT=10.00]
00104> ** END OF RUN : 1
00105>-----
00106>-----
00107>-----
00108>-----
00109>-----
00110>-----
00111>-----
00112> RUN:COMMAND#
00113> 002:0001-----
00114> START
00115> [TZERO = .00 hrs on 0]
00116> [METOUT= 2 (1=imperial, 2=metric output)]
00117> [NSTORM= 1 ]
00118> [NRUN = 2 ]
00119> *****
00120> # Project Name: [Richcraft] Project Number: [396]
00121> # Date : 2011-05-09
00122> # Modeller : [adf]
00123> # Company : David Schaeffer Engineering Ltd.
00124> # License # : 4488477
00125> *****
00126> 002:0002-----
00127> READ STORM
00128> File name = STORM.001
00129> Comment = 5 years Chicago Storm 4 Hours step 10 min, City of Ottawa

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00130> [SDT=10.00:SDUR= 4.00:POT= 45.17]
00131> 002:0003-----
00132> DEFAULT VALUES
00133> File name = C:\SWM_PRG\STMFILES\ottawa.val
00134> ICASEdv = 1 (read and print data)
00135> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00136> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00137> Horton's infiltration equation parameters:
00138> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00139> Parameters for PERVIOUS surfaces in STANDHYD:
00140> [IAPER= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00141> Parameters for IMPERVIOUS surfaces in STANDHYD:
00142> [IAimp= .80 mm] [CLI= 1.50] [MNI= .013]
00143> Parameters used in NASHYD:
00144> [Ia= 1.50 mm] [N= 3.00]
00145> 002:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00146> DESIGN NASHYD 01:EX 2.43 .054 No_date 2:00 14.86 .329
00147> [CN= 75.0: N= 3.00]
00148> [Tp= .64:DT=10.00]
00149> ** END OF RUN : 2
00150>-----
00151>-----
00152>-----
00153>-----
00154>-----
00155>-----
00156>-----
00157> RUN:COMMAND#
00158> 003:0001-----
00159> START
00160> [TZERO = .00 hrs on 0]
00161> [METOUT= 2 (1=imperial, 2=metric output)]
00162> [NSTORM= 1 ]
00163> [NRUN = 3 ]
00164> *****
00165> # Project Name: [Richcraft] Project Number: [396]
00166> # Date : 2011-05-09
00167> # Modeller : [adf]
00168> # Company : David Schaeffer Engineering Ltd.
00169> # License # : 4488477
00170> *****
00171> 003:0002-----
00172> READ STORM
00173> File name = STORM.001
00174> Comment = 100 years Chicago Storm 4 Hours step 10 min, City of Ottawa
00175> [SDT=10.00:SDUR= 4.00:POT= 76.00]
00176> 003:0003-----
00177> DEFAULT VALUES
00178> File name = C:\SWM_PRG\STMFILES\ottawa.val
00179> ICASEdv = 1 (read and print data)
00180> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00181> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00182> Horton's infiltration equation parameters:
00183> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00184> Parameters for PERVIOUS surfaces in STANDHYD:
00185> [IAPER= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00186> Parameters for IMPERVIOUS surfaces in STANDHYD:
00187> [IAimp= .80 mm] [CLI= 1.50] [MNI= .013]
00188> Parameters used in NASHYD:
00189> [Ia= 1.50 mm] [N= 3.00]
00190> 003:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00191> DESIGN NASHYD 01:EX 2.43 .132 No_date 2:00 34.87 .459
00192> [CN= 75.0: N= 3.00]
00193> [Tp= .64:DT=10.00]
00194> ** END OF RUN : 3
00195>-----
00196>-----
00197>-----
00198>-----
00199>-----
00200>-----
00201>-----
00202>-----
00203> RUN:COMMAND#
00204> 004:0001-----
00205> START
00206> [TZERO = .00 hrs on 0]
00207> [METOUT= 2 (1=imperial, 2=metric output)]
00208> [NSTORM= 1 ]
00209> [NRUN = 4 ]
00210> *****
00211> # Project Name: [Richcraft] Project Number: [396]
00212> # Date : 2011-05-09
00213> # Modeller : [adf]
00214> # Company : David Schaeffer Engineering Ltd.
00215> # License # : 4488477
00216> *****
00217> 004:0002-----
00218> READ STORM
00219> File name = STORM.001
00220> Comment = 2 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottaw
00221> [SDT=10.00:SDUR= 24.00:POT= 48.46]
00222> 004:0003-----
00223> DEFAULT VALUES
00224> File name = C:\SWM_PRG\STMFILES\ottawa.val
00225> ICASEdv = 1 (read and print data)
00226> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00227> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00228> Horton's infiltration equation parameters:
00229> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00230> Parameters for PERVIOUS surfaces in STANDHYD:
00231> [IAPER= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00232> Parameters for IMPERVIOUS surfaces in STANDHYD:
00233> [IAimp= .80 mm] [CLI= 1.50] [MNI= .013]
00234> Parameters used in NASHYD:
00235> [Ia= 1.50 mm] [N= 3.00]
00236> 004:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00237> DESIGN NASHYD 01:EX 2.43 .044 No_date 12:30 16.75 .346
00238> [CN= 75.0: N= 3.00]
00239> [Tp= .64:DT=10.00]
00240> ** END OF RUN : 4
00241>-----
00242>-----
00243>-----
00244>-----
00245>-----
00246>-----
00247> RUN:COMMAND#
00248> 005:0001-----
00249> START
00250> [TZERO = .00 hrs on 0]
00251> [METOUT= 2 (1=imperial, 2=metric output)]
00252> [NSTORM= 1 ]
00253> [NRUN = 5 ]
00254> *****
00255> # Project Name: [Richcraft] Project Number: [396]
00256> # Date : 2011-05-09
00257> # Modeller : [adf]
00258> # Company : David Schaeffer Engineering Ltd.

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00259> # License # : 4488477
00260> #*****
00261> 005:0002-----
00262> READ STORM
00263> Filename = STORM.001
00264> Comment = 5 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00265> [SDT=10.00:SDUR= 24.00:PTOT= 64.11]
00266> 005:0003-----
00267> DEFAULT VALUES
00268> Filename = C:\SWM_PRG\STMFILES\ottawa.val
00269> ICASEdv = 1 (read and print data)
00270> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00271> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00272> Horton's infiltration equation parameters:
00273> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00274> Parameters for PERVIOUS surfaces in STANDHYD:
00275> [Iaper= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00276> Parameters for IMPERVIOUS surfaces in STANDHYD:
00277> [Iaimp= .80 mm] [CLI= 1.50] [MNI= .013]
00278> Parameters used in NASHYD:
00279> [Ia= 1.50 mm] [N= 3.00]
00280> 005:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00281> DESIGN NASHYD 01:EX 2.43 .071 No_date 12:30 26.61 .415
00282> [CN= 75.0: N= 3.00]
00283> [Tp= .64:DT=10.00]
00284> ** END OF RUN : 5
00285>
00286> *****
00287>
00288>
00289>
00290>
00291> RUN:COMMAND#
00292> 006:0001-----
00293> START
00294>
00295> [TZERO = .00 hrs on 0]
00296> [METOUT= 2 (1=imperial, 2=metric output)]
00297> [NSTORM= 1]
00298> [NRUN = 6]
00299> #*****
00300> # Project Name: [Richcraft] Project Number: [396]
00301> # Date : 2011-05-09
00302> # Modeller : [adf]
00303> # Company : David Schaeffer Engineering Ltd.
00304> # License # : 4488477
00305> #*****
00306> 006:0002-----
00307> READ STORM
00308> Filename = STORM.001
00309> Comment = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ott
00310> [SDT=10.00:SDUR= 24.00:PTOT= 106.73]
00311> 006:0003-----
00312> DEFAULT VALUES
00313> Filename = C:\SWM_PRG\STMFILES\ottawa.val
00314> ICASEdv = 1 (read and print data)
00315> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00316> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00317> Horton's infiltration equation parameters:
00318> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 /hr] [F= .00 mm]
00319> Parameters for PERVIOUS surfaces in STANDHYD:
00320> [Iaper= 1.50 mm] [LGP=25.00 m] [MNP= .250]
00321> Parameters for IMPERVIOUS surfaces in STANDHYD:
00322> [Iaimp= .80 mm] [CLI= 1.50] [MNI= .013]
00323> Parameters used in NASHYD:
00324> [Ia= 1.50 mm] [N= 3.00]
00325> 006:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00326> DESIGN NASHYD 01:EX 2.43 .159 No_date 12:30 58.31 .546
00327> [CN= 75.0: N= 3.00]
00328> [Tp= .64:DT=10.00]
00329> 006:0002-----
00330> FINISH
00331>
00332> *****
00333> WARNINGS / ERRORS / NOTES
00334>
00335> Simulation ended on 2011-05-09 at 13:01:37
00336> *****
00337>
00338>

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00001> 2 Metric units
00002> *#*****
00003> *# Project Name: [Richcraft] Project Number: [396]
00004> *# Date : 2011-05-09
00005> *# Modeller : [adef]
00006> *# Company : David Schaeffer Engineering Ltd.
00007> *# License # : 4488477
00008> *#*****
00009> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[1]
00010> DEFVAL_FILENAME=[C:\NSWM_PFG\STMFILS\CHH002x.atm]
00011> *#*****
00012> READ STORM STORM_FILENAME=[*STORM.001*]
00013> *#*****
00014> DEFAULT VALUES ICASEdef=[1], read and print values
00015> DEFVAL_FILENAME=[C:\NSWM_PFG\STMFILS\ottawa.val]
00016> *#*****
00017> * THE FOLLOWING AREAS DIRECT FLOW TO MOUNTSHANNON UNATTENUATED
00018> * AREA ID 118 AND 119
00019> *#*****
00020> CALIB STANDHYD ID=[1] NHYD=["118"], DT=[1] (min), AREA=[0.118] (ha),
00021> XIMP=[0.70], TIMP=[0.75], DWF=[0] (cms), LOSS=[1],
00022> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00023> DCAY=[4.14] (/hr), F=[0] (mm),
00024> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00025> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00026> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00027> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00028> RAINFALL=[ , , , ] (mm/hr), END=-1
00029> *#*****
00030> CALIB STANDHYD ID=[2] NHYD=["119"], DT=[1] (min), AREA=[0.081] (ha),
00031> XIMP=[0.70], TIMP=[0.75], DWF=[0] (cms), LOSS=[1],
00032> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00033> DCAY=[4.14] (/hr), F=[0] (mm),
00034> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00035> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00036> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00037> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00038> RAINFALL=[ , , , ] (mm/hr), END=-1
00039> *#*****
00040> ADD HYD IDsum=[9], NHYD=["UNCN"], IDs to add=[1 2]
00041> *#*****
00042> * THE FOLLOWING AREAS DIRECT FLOW TO THE MINOR SYSTEM WITH INLET CONTROLS
00043> * ASSUMING ALL CB'S ARE EQUIPPED WITH A HYDROVEX 75SVHV-1 (3.6L/s)
00044> *#*****
00045> CALIB STANDHYD ID=[1] NHYD=["110"], DT=[1] (min), AREA=[0.25] (ha),
00046> XIMP=[0.24], TIMP=[0.47], DWF=[0] (cms), LOSS=[1],
00047> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00048> DCAY=[4.14] (/hr), F=[0] (mm),
00049> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00050> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00051> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00052> LGI=[120] (m), MNI=[0.013], SCI=[0] (min),
00053> RAINFALL=[ , , , ] (mm/hr), END=-1
00054> *#*****
00055> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036] (cms), NINLET=[1],
00056> MAJID=[2], MajNHYD=["Mg110"],
00057> MINID=[3], MinNHYD=["Mn110"],
00058> TMJSTO=[1.6] (cu-m)
00059> *#*****
00060> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00061> HYD_COMMENT=["*"]
00062> *#*****
00063> CALIB STANDHYD ID=[1] NHYD=["111"], DT=[1] (min), AREA=[0.03] (ha),
00064> XIMP=[0.01], TIMP=[0.28], DWF=[0] (cms), LOSS=[1],
00065> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00066> DCAY=[4.14] (/hr), F=[0] (mm),
00067> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00068> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00069> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00070> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00071> RAINFALL=[ , , , ] (mm/hr), END=-1
00072> *#*****
00073> ADD HYD IDsum=[8], NHYD=["*"], IDs to add=[1 2]
00074> *#*****
00075> COMPUTE DUALHYD IDin=[8], CINLET=[0.0036] (cms), NINLET=[1],
00076> MAJID=[2], MajNHYD=["Mg111"],
00077> MINID=[3], MinNHYD=["Mn111"],
00078> TMJSTO=[1.9] (cu-m)
00079> *#*****
00080> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00081> HYD_COMMENT=["*"]
00082> *#*****
00083> CALIB STANDHYD ID=[1] NHYD=["117"], DT=[1] (min), AREA=[0.15] (ha),
00084> XIMP=[0.01], TIMP=[0.46], DWF=[0] (cms), LOSS=[1],
00085> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00086> DCAY=[4.14] (/hr), F=[0] (mm),
00087> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00088> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00089> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00090> LGI=[70] (m), MNI=[0.013], SCI=[0] (min),
00091> RAINFALL=[ , , , ] (mm/hr), END=-1
00092> *#*****
00093> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036] (cms), NINLET=[1],
00094> MAJID=[2], MajNHYD=["Mg117"],
00095> MINID=[3], MinNHYD=["Mn117"],
00096> TMJSTO=[0.8] (cu-m)
00097> *#*****
00098> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00099> HYD_COMMENT=["*"]
00100> *#*****
00101> CALIB STANDHYD ID=[1] NHYD=["107"], DT=[1] (min), AREA=[0.12] (ha),
00102> XIMP=[0.74], TIMP=[0.74], DWF=[0] (cms), LOSS=[1],
00103> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00104> DCAY=[4.14] (/hr), F=[0] (mm),
00105> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00106> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00107> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00108> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00109> RAINFALL=[ , , , ] (mm/hr), END=-1
00110> *#*****
00111> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036] (cms), NINLET=[1],
00112> MAJID=[2], MajNHYD=["Mg107"],
00113> MINID=[3], MinNHYD=["Mn107"],
00114> TMJSTO=[20.9] (cu-m)
00115> *#*****
00116> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00117> HYD_COMMENT=["*"]
00118> *#*****
00119> CALIB STANDHYD ID=[1] NHYD=["108"], DT=[1] (min), AREA=[0.10] (ha),
00120> XIMP=[0.87], TIMP=[0.87], DWF=[0] (cms), LOSS=[1],
00121> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00122> DCAY=[4.14] (/hr), F=[0] (mm),
00123> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00124> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00125> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00126> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00127> RAINFALL=[ , , , ] (mm/hr), END=-1
00128> *#*****
00129> ADD HYD IDsum=[8], NHYD=["*"], IDs to add=[1 2]

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00130> *#*****
00131> COMPUTE DUALHYD IDin=[8], CINLET=[0.0036] (cms), NINLET=[1],
00132> MAJID=[2], MajNHYD=["Mg108"],
00133> MINID=[3], MinNHYD=["Mn108"],
00134> TMJSTO=[17.3] (cu-m)
00135> *#*****
00136> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00137> HYD_COMMENT=["*"]
00138> *#*****
00139> CALIB STANDHYD ID=[1] NHYD=["109"], DT=[1] (min), AREA=[0.05] (ha),
00140> XIMP=[0.78], TIMP=[0.78], DWF=[0] (cms), LOSS=[1],
00141> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00142> DCAY=[4.14] (/hr), F=[0] (mm),
00143> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00144> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00145> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00146> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00147> RAINFALL=[ , , , ] (mm/hr), END=-1
00148> *#*****
00149> ADD HYD IDsum=[8], NHYD=["*"], IDs to add=[1 2]
00150> *#*****
00151> COMPUTE DUALHYD IDin=[8], CINLET=[0.0036] (cms), NINLET=[1],
00152> MAJID=[2], MajNHYD=["Mg109"],
00153> MINID=[3], MinNHYD=["Mn109"],
00154> TMJSTO=[13.8] (cu-m)
00155> *#*****
00156> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00157> HYD_COMMENT=["*"]
00158> *#*****
00159> CALIB STANDHYD ID=[1] NHYD=["116"], DT=[1] (min), AREA=[0.15] (ha),
00160> XIMP=[0.31], TIMP=[0.62], DWF=[0] (cms), LOSS=[1],
00161> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00162> DCAY=[4.14] (/hr), F=[0] (mm),
00163> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00164> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00165> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00166> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00167> RAINFALL=[ , , , ] (mm/hr), END=-1
00168> *#*****
00169> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036] (cms), NINLET=[1],
00170> MAJID=[4], MajNHYD=["Mg116"],
00171> MINID=[3], MinNHYD=["Mn116"],
00172> TMJSTO=[1.9] (cu-m)
00173> *#*****
00174> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00175> HYD_COMMENT=["*"]
00176> *#*****
00177> CALIB STANDHYD ID=[1] NHYD=["115"], DT=[1] (min), AREA=[0.13] (ha),
00178> XIMP=[0.82], TIMP=[0.82], DWF=[0] (cms), LOSS=[1],
00179> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00180> DCAY=[4.14] (/hr), F=[0] (mm),
00181> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00182> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00183> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00184> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00185> RAINFALL=[ , , , ] (mm/hr), END=-1
00186> *#*****
00187> ADD HYD IDsum=[8], NHYD=["*"], IDs to add=[1 2 4]
00188> *#*****
00189> COMPUTE DUALHYD IDin=[8], CINLET=[0.0036] (cms), NINLET=[1],
00190> MAJID=[2], MajNHYD=["Mg115"],
00191> MINID=[3], MinNHYD=["Mn115"],
00192> TMJSTO=[52.2] (cu-m)
00193> *#*****
00194> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00195> HYD_COMMENT=["*"]
00196> *#*****
00197> CALIB STANDHYD ID=[1] NHYD=["114"], DT=[1] (min), AREA=[0.17] (ha),
00198> XIMP=[0.83], TIMP=[0.83], DWF=[0] (cms), LOSS=[1],
00199> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00200> DCAY=[4.14] (/hr), F=[0] (mm),
00201> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00202> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00203> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00204> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00205> RAINFALL=[ , , , ] (mm/hr), END=-1
00206> *#*****
00207> ADD HYD IDsum=[3], NHYD=["*"], IDs to add=[1 2]
00208> *#*****
00209> COMPUTE DUALHYD IDin=[3], CINLET=[0.0036] (cms), NINLET=[1],
00210> MAJID=[8], MajNHYD=["Mg114"],
00211> MINID=[1], MinNHYD=["Mn114"],
00212> TMJSTO=[62] (cu-m)
00213> *#*****
00214> SAVE HYD ID=[1], # OF PCYCLES=[1], ICASEsh=[1]
00215> HYD_COMMENT=["*"]
00216> *#*****
00217> CALIB STANDHYD ID=[1] NHYD=["101"], DT=[1] (min), AREA=[0.12] (ha),
00218> XIMP=[0.74], TIMP=[0.74], DWF=[0] (cms), LOSS=[1],
00219> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00220> DCAY=[4.14] (/hr), F=[0] (mm),
00221> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00222> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00223> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00224> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00225> RAINFALL=[ , , , ] (mm/hr), END=-1
00226> *#*****
00227> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036] (cms), NINLET=[1],
00228> MAJID=[2], MajNHYD=["Mg101"],
00229> MINID=[3], MinNHYD=["Mn101"],
00230> TMJSTO=[21.1] (cu-m)
00231> *#*****
00232> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00233> HYD_COMMENT=["*"]
00234> *#*****
00235> CALIB STANDHYD ID=[1] NHYD=["102"], DT=[1] (min), AREA=[0.11] (ha),
00236> XIMP=[0.85], TIMP=[0.85], DWF=[0] (cms), LOSS=[1],
00237> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00238> DCAY=[4.14] (/hr), F=[0] (mm),
00239> Pervious surfaces: IAPER=[1.50] (mm), SLPP=[1.5] (%),
00240> LGP=[10] (m), MNP=[0.25], SCP=[0] (min),
00241> Impervious surfaces: IAimp=[0.8] (mm), SLPI=[1.5] (%),
00242> LGI=[10] (m), MNI=[0.013], SCI=[0] (min),
00243> RAINFALL=[ , , , ] (mm/hr), END=-1
00244> *#*****
00245> ADD HYD IDsum=[7], NHYD=["*"], IDs to add=[1 2]
00246> *#*****
00247> COMPUTE DUALHYD IDin=[7], CINLET=[0.0036] (cms), NINLET=[1],
00248> MAJID=[2], MajNHYD=["Mg102"],
00249> MINID=[3], MinNHYD=["Mn102"],
00250> TMJSTO=[12.1] (cu-m)
00251> *#*****
00252> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00253> HYD_COMMENT=["*"]
00254> *#*****
00255> CALIB STANDHYD ID=[1] NHYD=["104"], DT=[1] (min), AREA=[0.15] (ha),
00256> XIMP=[0.34], TIMP=[0.68], DWF=[0] (cms), LOSS=[1],
00257> Horton: Fo=[76.20] (mm/hr), Fc=[13.20] (mm/hr),
00258> DCAY=[4.14] (/hr), F=[0] (mm),

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00259> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00260> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00261> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00262> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00263> RAINFALL=[ , , , ](mm/hr), END=-1
00264> *%-----|
00265> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036](cms), NINLET=[1],
00266> MAJID=[4], MAJNHVD=["Mg104"],
00267> MINID=[3], MinNHVD=["Mn104"],
00268> TMAJSTO=[1.2](cu-m)
00269> *%-----|
00270> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00271> HYD_COMMENT=[""]
00272> *%-----|
00273> CALIB STANDHYD ID=[1] NHVD=["105"], DT=[1](min), AREA=[0.05](ha),
00274> XIMP=[0.91], TIMP=[0.91], DWF=[0](cms), LOSS=[1],
00275> Horton: Fo=[76.20](mm/hr), Fc=[13.20](mm/hr),
00276> DCAY=[4.14](/hr), F=[0](mm),
00277> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00278> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00279> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00280> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00281> RAINFALL=[ , , , ](mm/hr), END=-1
00282> *%-----|
00283> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036](cms), NINLET=[1],
00284> MAJID=[5], MAJNHVD=["Mg105"],
00285> MINID=[3], MinNHVD=["Mn105"],
00286> TMAJSTO=[11.3](cu-m)
00287> *%-----|
00288> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00289> HYD_COMMENT=[""]
00290> *%-----|
00291> CALIB STANDHYD ID=[1] NHVD=["103"], DT=[1](min), AREA=[0.21](ha),
00292> XIMP=[0.86], TIMP=[0.86], DWF=[0](cms), LOSS=[1],
00293> Horton: Fo=[76.20](mm/hr), Fc=[13.20](mm/hr),
00294> DCAY=[4.14](/hr), F=[0](mm),
00295> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00296> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00297> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00298> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00299> RAINFALL=[ , , , ](mm/hr), END=-1
00300> *%-----|
00301> ADD HYD IDsum=[7], NHVD=[""], IDs to add=[1 2 4 5]
00302> *%-----|
00303> COMPUTE DUALHYD IDin=[7], CINLET=[0.0036](cms), NINLET=[1],
00304> MAJID=[2], MAJNHVD=["Mg103"],
00305> MINID=[3], MinNHVD=["Mn103"],
00306> TMAJSTO=[55.9](cu-m)
00307> *%-----|
00308> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00309> HYD_COMMENT=[""]
00310> *%-----|
00311> CALIB STANDHYD ID=[1] NHVD=["112"], DT=[1](min), AREA=[0.19](ha),
00312> XIMP=[0.85], TIMP=[0.85], DWF=[0](cms), LOSS=[1],
00313> Horton: Fo=[76.20](mm/hr), Fc=[13.20](mm/hr),
00314> DCAY=[4.14](/hr), F=[0](mm),
00315> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00316> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00317> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00318> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00319> RAINFALL=[ , , , ](mm/hr), END=-1
00320> *%-----|
00321> ADD HYD IDsum=[4], NHVD=[""], IDs to add=[1 2]
00322> *%-----|
00323> COMPUTE DUALHYD IDin=[4], CINLET=[0.0036](cms), NINLET=[1],
00324> MAJID=[7], MAJNHVD=["Mg111"],
00325> MINID=[3], MinNHVD=["Mn112"],
00326> TMAJSTO=[64.9](cu-m)
00327> *%-----|
00328> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00329> HYD_COMMENT=[""]
00330> *%-----|
00331> CALIB STANDHYD ID=[1] NHVD=["106"], DT=[1](min), AREA=[0.10](ha),
00332> XIMP=[0.74], TIMP=[0.74], DWF=[0](cms), LOSS=[1],
00333> Horton: Fo=[76.20](mm/hr), Fc=[13.20](mm/hr),
00334> DCAY=[4.14](/hr), F=[0](mm),
00335> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00336> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00337> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00338> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00339> RAINFALL=[ , , , ](mm/hr), END=-1
00340> *%-----|
00341> COMPUTE DUALHYD IDin=[1], CINLET=[0.0036](cms), NINLET=[1],
00342> MAJID=[6], MAJNHVD=["Mg106"],
00343> MINID=[3], MinNHVD=["Mn106"],
00344> TMAJSTO=[0.3](cu-m)
00345> *%-----|
00346> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00347> HYD_COMMENT=[""]
00348> *%-----|
00349> CALIB STANDHYD ID=[1] NHVD=["113"], DT=[1](min), AREA=[0.13](ha),
00350> XIMP=[0.56], TIMP=[0.56], DWF=[0](cms), LOSS=[1],
00351> Horton: Fo=[76.20](mm/hr), Fc=[13.20](mm/hr),
00352> DCAY=[4.14](/hr), F=[0](mm),
00353> Pervious surfaces: IAPER=[1.50](mm), SLPP=[1.5](%)
00354> LGP=[10](m), MNP=[0.25], SCP=[0](min),
00355> Impervious surfaces: IAimp=[0.8](mm), SLPI=[1.5](%)
00356> LGI=[10](m), MNI=[0.013], SCI=[0](min),
00357> RAINFALL=[ , , , ](mm/hr), END=-1
00358> *%-----|
00359> ADD HYD IDsum=[5], NHVD=[""], IDs to add=[1 6 7 8]
00360> *%-----|
00361> COMPUTE DUALHYD IDin=[5], CINLET=[0.0036](cms), NINLET=[1],
00362> MAJID=[2], MAJNHVD=["Mg111"],
00363> MINID=[3], MinNHVD=["Mn113"],
00364> TMAJSTO=[1](cu-m)
00365> *%-----|
00366> SAVE HYD ID=[3], # OF PCYCLES=[1], ICASEsh=[1]
00367> HYD_COMMENT=[""]
00368> *%-----|
00369> READ HYD ID=[1], NHVD=["mn101"],
00370> HYD_FILENAME=["H-Mn101.003"]
00371> *%-----|
00372> READ HYD ID=[2], NHVD=["mn102"],
00373> HYD_FILENAME=["H-Mn102.003"]
00374> *%-----|
00375> READ HYD ID=[3], NHVD=["mn103"],
00376> HYD_FILENAME=["H-Mn103.003"]
00377> *%-----|
00378> READ HYD ID=[4], NHVD=["mn104"],
00379> HYD_FILENAME=["H-Mn104.003"]
00380> *%-----|
00381> READ HYD ID=[5], NHVD=["mn105"],
00382> HYD_FILENAME=["H-Mn105.003"]
00383> *%-----|
00384> READ HYD ID=[6], NHVD=["mn106"],
00385> HYD_FILENAME=["H-Mn106.003"]
00386> *%-----|
00387> READ HYD ID=[7], NHVD=["mn107"],

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00388> HYD_FILENAME=["H-Mn107.003"]
00389> *%-----|
00390> READ HYD ID=[8], NHVD=["mn108"],
00391> HYD_FILENAME=["H-Mn108.003"]
00392> *%-----|
00393> ADD HYD IDsum=[9], NHVD=["mn1"], IDs to add=[1 2 3 4 5 6 7 8]
00394> *%-----|
00395> READ HYD ID=[1], NHVD=["mn109"],
00396> HYD_FILENAME=["H-Mn109.003"]
00397> *%-----|
00398> READ HYD ID=[2], NHVD=["mn110"],
00399> HYD_FILENAME=["H-Mn110.003"]
04000> *%-----|
04001> READ HYD ID=[3], NHVD=["mn111"],
04002> HYD_FILENAME=["H-Mn111.003"]
04003> *%-----|
04004> READ HYD ID=[4], NHVD=["mn112"],
04005> HYD_FILENAME=["H-Mn112.003"]
04006> *%-----|
04007> READ HYD ID=[5], NHVD=["mn113"],
04008> HYD_FILENAME=["H-Mn113.003"]
04009> *%-----|
04010> READ HYD ID=[6], NHVD=["mn114"],
04011> HYD_FILENAME=["H-Mn114.003"]
04012> *%-----|
04013> READ HYD ID=[7], NHVD=["mn115"],
04014> HYD_FILENAME=["H-Mn115.003"]
04015> *%-----|
04016> ADD HYD IDsum=[8], NHVD=["mn2"], IDs to add=[1 2 3 4 5 6 7 9]
04017> *%-----|
04018> READ HYD ID=[1], NHVD=["mn116"],
04019> HYD_FILENAME=["H-Mn116.003"]
04020> *%-----|
04021> READ HYD ID=[2], NHVD=["mn117"],
04022> HYD_FILENAME=["H-Mn117.003"]
04023> *%-----|
04024> ADD HYD IDsum=[9], NHVD=["Mn_TOT"], IDs to add=[1 2 8]
04025> *%-----|
04026> *%-----|
04027> *%-----|
04028> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[2]
04029> ["C:\SWM_PRC\STMFILES\CH4H005x.stm"]
04030> *%-----|
04031> START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[3]
04032> ["C:\SWM_PRC\STMFILES\CH4H100x.stm"]
04033> FINISH
04034>
04035>
04036>
04037>

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00259> 001:0036-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00260> ADD HYD 01:11:14 .17 .032 No_date 1:20 28.33 n/a
00261> [DT= 1.00] SUM= 02:Mg115 .00 .000 No_date 0:00 .00 n/a
00262> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00263> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00264> COMPUTE DUALHYD 03: .17 .032 No_date 1:20 28.33 n/a
00265> Major System / 08:Mg114 .00 .000 No_date 0:00 .00 n/a
00266> Minor System \ 01:Mn114 .17 .004 No_date 1:01 28.38 n/a
00267> (MjSysSto=.2369E+02, TotOvfVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00268> 001:0038-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00269> SAVE HYD 01:Mn114 .17 .004 No_date 1:01 28.38 n/a
00270> fname :C:\SWM_PRG\09-396\H-Mn114.001
00271> remark:HYD_COMMENT(="")
00272> 001:0039-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00273> CALIB STANDHYD 01:10:12 .12 .021 No_date 1:20 25.81 .762
00274> [XIMP=.74:TIMP=.74]
00275> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00276> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00277> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00278> 001:0040-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00279> COMPUTE DUALHYD 01:10:12 .12 .021 No_date 1:20 25.81 n/a
00280> Major System / 02:Mg101 .00 .000 No_date 0:00 .00 n/a
00281> Minor System \ 03:Mn101 .12 .004 No_date 1:01 25.94 n/a
00282> (MjSysSto=.1249E+02, TotOvfVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00283> 001:0041-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00284> SAVE HYD 03:Mn101 .12 .004 No_date 1:01 25.94 n/a
00285> fname :C:\SWM_PRG\09-396\H-Mn101.001
00286> remark:HYD_COMMENT(="")
00287> 001:0042-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00288> CALIB STANDHYD 01:10:12 .11 .021 No_date 1:20 28.89 .853
00289> [XIMP=.85:TIMP=.85]
00290> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00291> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00292> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00293> 001:0043-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00294> ADD HYD 01:10:12 .11 .021 No_date 1:20 28.89 n/a
00295> + 02:Mg101 .00 .000 No_date 0:00 .00 n/a
00296> [DT= 1.00] SUM= 07: .11 .021 No_date 1:20 28.89 n/a
00297> 001:0044-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00298> COMPUTE DUALHYD 07: .11 .021 No_date 1:20 28.89 n/a
00299> Major System / 02:Mg102 .00 .000 No_date 1:20 28.89 n/a
00300> Minor System \ 03:Mn102 .11 .004 No_date 1:01 28.95 n/a
00301> (MjSysSto=.1210E+02, TotOvfVol=.6706E+00, N-Ovf= 1, TotDurOvf= 0 hrs
00302> 001:0045-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00303> SAVE HYD 03:Mn102 .11 .004 No_date 1:01 28.95 n/a
00304> fname :C:\SWM_PRG\09-396\H-Mn102.001
00305> remark:HYD_COMMENT(="")
00306> 001:0046-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00307> CALIB STANDHYD 01:10:14 .15 .026 No_date 1:20 20.14 .594
00308> [XIMP=.34:TIMP=.68]
00309> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00310> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00311> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00312> 001:0047-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00313> COMPUTE DUALHYD 01:10:14 .15 .026 No_date 1:20 20.14 n/a
00314> Major System / 04:Mg104 .07 .023 No_date 1:20 20.14 n/a
00315> Minor System \ 03:Mn104 .08 .004 No_date 1:11 20.30 n/a
00316> (MjSysSto=.1200E+01, TotOvfVol=.1478E+02, N-Ovf= 1, TotDurOvf= 0 hrs
00317> 001:0048-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00318> SAVE HYD 03:Mn104 .08 .004 No_date 1:11 20.30 n/a
00319> fname :C:\SWM_PRG\09-396\H-Mn104.001
00320> remark:HYD_COMMENT(="")
00321> 001:0049-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00322> CALIB STANDHYD 01:10:15 .05 .010 No_date 1:20 30.57 .902
00323> [XIMP=.91:TIMP=.91]
00324> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00325> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00326> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00327> 001:0050-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00328> COMPUTE DUALHYD 01:10:15 .05 .010 No_date 1:20 30.57 n/a
00329> Major System / 05:Mg105 .00 .000 No_date 0:00 .00 n/a
00330> Minor System \ 03:Mn105 .05 .004 No_date 1:11 30.59 n/a
00331> (MjSysSto=.3685E+01, TotOvfVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00332> 001:0051-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00333> SAVE HYD 03:Mn105 .05 .004 No_date 1:11 30.59 n/a
00334> fname :C:\SWM_PRG\09-396\H-Mn105.001
00335> remark:HYD_COMMENT(="")
00336> 001:0052-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00337> CALIB STANDHYD 01:11:03 .21 .040 No_date 1:20 29.17 .861
00338> [XIMP=.86:TIMP=.86]
00339> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00340> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00341> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00342> 001:0053-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00343> ADD HYD 01:11:03 .21 .040 No_date 1:20 29.17 n/a
00344> + 02:Mg102 .00 .003 No_date 1:28 28.89 n/a
00345> + 04:Mg104 .07 .023 No_date 1:20 20.14 n/a
00346> + 05:Mg105 .00 .000 No_date 0:00 .00 n/a
00347> [DT= 1.00] SUM= 07: .29 .063 No_date 1:20 26.85 n/a
00348> 001:0054-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00349> COMPUTE DUALHYD 07: .29 .063 No_date 1:20 26.85 n/a
00350> Major System / 02:Mg103 .00 .000 No_date 0:00 .00 n/a
00351> Minor System \ 03:Mn103 .29 .004 No_date 0:52 26.88 n/a
00352> (MjSysSto=.4825E+02, TotOvfVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00353> 001:0055-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00354> SAVE HYD 03:Mn103 .29 .004 No_date 0:52 26.88 n/a
00355> fname :C:\SWM_PRG\09-396\H-Mn103.001
00356> remark:HYD_COMMENT(="")
00357> 001:0056-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00358> CALIB STANDHYD 01:11:12 .19 .036 No_date 1:20 28.89 .853
00359> [XIMP=.85:TIMP=.85]
00360> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00361> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00362> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00363> 001:0057-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00364> ADD HYD 01:11:12 .19 .036 No_date 1:20 28.89 n/a
00365> + 02:Mg103 .00 .000 No_date 0:00 .00 n/a
00366> [DT= 1.00] SUM= 04: .19 .036 No_date 1:20 28.89 n/a
00367> 001:0058-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00368> COMPUTE DUALHYD 04: .19 .036 No_date 1:20 28.89 n/a
00369> Major System / 07:Mg112 .00 .000 No_date 0:00 .00 n/a
00370> Minor System \ 03:Mn112 .19 .004 No_date 1:01 29.00 n/a
00371> (MjSysSto=.2827E+02, TotOvfVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00372> 001:0059-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00373> SAVE HYD 03:Mn112 .19 .004 No_date 1:01 29.00 n/a
00374> fname :C:\SWM_PRG\09-396\H-Mn112.001
00375> remark:HYD_COMMENT(="")
00376> 001:0060-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00377> CALIB STANDHYD 01:10:16 .10 .017 No_date 1:20 25.81 .762
00378> [XIMP=.74:TIMP=.74]
00379> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00380> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00381> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00382> 001:0061-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00383> COMPUTE DUALHYD 01:10:16 .10 .017 No_date 1:20 25.81 n/a
00384> Major System / 06:Mg106 .03 .014 No_date 1:20 25.81 n/a
00385> Minor System \ 03:Mn106 .07 .004 No_date 1:02 25.86 n/a
00386> (MjSysSto=.3000E+00, TotOvfVol=.9015E+01, N-Ovf= 1, TotDurOvf= 0 hrs
00387> 001:0062-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00388> SAVE HYD 03:Mn106 .07 .004 No_date 1:02 25.86 n/a
00389> fname :C:\SWM_PRG\09-396\H-Mn106.001
00390> remark:HYD_COMMENT(="")
00391> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00392> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00393> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00394> CALIB STANDHYD 01:11:13 .13 .019 No_date 1:20 20.77 .613
00395> [XIMP=.56:TIMP=.56]
00396> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00397> [Impervious area: IAp= 1.50:SLFP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00398> [Impervious area: IAp= .80:SLFP=1.50:LGI= 10.:MNI=.013:SCI= .0]
00399> 001:0064-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00400> ADD HYD 01:11:13 .13 .019 No_date 1:20 20.77 n/a
00401> + 06:Mg106 .03 .014 No_date 1:20 25.81 n/a
00402> + 07:Mg112 .00 .000 No_date 0:00 .00 n/a
00403> + 08:Mg114 .00 .000 No_date 0:00 .00 n/a
00404> [DT= 1.00] SUM= 05: .16 .033 No_date 1:20 21.84 n/a
00405> COMPUTE DUALHYD 05: .16 .033 No_date 1:20 21.84 n/a
00406> Major System / 02:Mg113 .08 .029 No_date 1:20 21.84 n/a
00407> Minor System \ 03:Mn113 .08 .004 No_date 1:03 21.91 n/a
00408> (MjSysSto=.1000E+01, TotOvfVol=.1849E+02, N-Ovf= 1, TotDurOvf= 0 hrs
00409> 001:0066-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00410> SAVE HYD 03:Mn113 .08 .004 No_date 1:03 21.91 n/a
00411> fname :C:\SWM_PRG\09-396\H-Mn113.001
00412> remark:HYD_COMMENT(="")
00413> 001:0067-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00414> READ HYD 01:m1101 .08 .004 No_date 0:51 64.37 n/a
00415> File name = C:\SWM_PRG\09-396\H-Mn101.003
00416> Comment = HYD_COMMENT(="")
00417> 001:0068-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00418> READ HYD 02:m1102 .06 .004 No_date 0:51 67.72 n/a
00419> File name = C:\SWM_PRG\09-396\H-Mn102.003
00420> Comment = HYD_COMMENT(="")
00421> 001:0069-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00422> READ HYD 03:m1103 .15 .004 No_date 0:31 65.97 n/a
00423> File name = C:\SWM_PRG\09-396\H-Mn103.003
00424> Comment = HYD_COMMENT(="")
00425> 001:0070-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00426> READ HYD 04:m1104 .04 .004 No_date 1:01 57.81 n/a
00427> File name = C:\SWM_PRG\09-396\H-Mn104.003
00428> Comment = HYD_COMMENT(="")
00429> 001:0071-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00430> READ HYD 05:m1105 .04 .004 No_date 1:01 71.54 n/a
00431> File name = C:\SWM_PRG\09-396\H-Mn105.003
00432> Comment = HYD_COMMENT(="")
00433> 001:0072-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00434> READ HYD 06:m1106 .04 .004 No_date 1:01 64.29 n/a
00435> File name = C:\SWM_PRG\09-396\H-Mn106.003
00436> Comment = HYD_COMMENT(="")
00437> 001:0073-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00438> READ HYD 07:m1107 .08 .004 No_date 0:51 64.34 n/a
00439> File name = C:\SWM_PRG\09-396\H-Mn107.003
00440> Comment = HYD_COMMENT(="")
00441> 001:0074-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00442> READ HYD 08:m1108 .08 .004 No_date 0:51 68.26 n/a
00443> File name = C:\SWM_PRG\09-396\H-Mn108.003
00444> Comment = HYD_COMMENT(="")
00445> 001:0075-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00446> ADD HYD 01:m1101 .08 .004 No_date 0:51 64.37 n/a
00447> + 02:m1102 .06 .004 No_date 0:51 67.72 n/a
00448> + 03:m1103 .15 .004 No_date 0:31 65.97 n/a
00449> + 04:m1104 .04 .004 No_date 1:01 57.81 n/a
00450> + 05:m1105 .04 .004 No_date 1:01 71.54 n/a
00451> + 06:m1106 .04 .004 No_date 1:01 64.29 n/a
00452> + 07:m1107 .08 .004 No_date 0:51 64.34 n/a
00453> + 08:m1108 .08 .004 No_date 0:51 68.26 n/a
00454> [DT= 1.00] SUM= 58 .029 No_date 1:01 65.65 n/a
00455> 001:0076-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00456> READ HYD 01:m1109 .05 .004 No_date 1:01 67.21 n/a
00457> File name = C:\SWM_PRG\09-396\H-Mn109.003
00458> Comment = HYD_COMMENT(="")
00459> 001:0077-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00460> READ HYD 02:m1110 .05 .004 No_date 1:02 49.45 n/a
00461> File name = C:\SWM_PRG\09-396\H-Mn110.003
00462> Comment = HYD_COMMENT(="")
00463> 001:0078-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00464> READ HYD 03:m1111 .03 .004 No_date 1:06 48.32 n/a
00465> File name = C:\SWM_PRG\09-396\H-Mn111.003
00466> Comment = HYD_COMMENT(="")
00467> 001:0079-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00468> READ HYD 04:m1112 .16 .004 No_date 0:41 67.20 n/a
00469> File name = C:\SWM_PRG\09-396\H-Mn112.003
00470> Comment = HYD_COMMENT(="")
00471> 001:0080-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00472> READ HYD 05:m1113 .05 .004 No_date 1:01 64.65 n/a
00473> File name = C:\SWM_PRG\09-396\H-Mn113.003
00474> Comment = HYD_COMMENT(="")
00475> 001:0081-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00476> READ HYD 06:m1114 .15 .004 No_date 0:41 65.63 n/a
00477> File name = C:\SWM_PRG\09-396\H-Mn114.003
00478> Comment = HYD_COMMENT(="")
00479> 001:0082-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00480> READ HYD 07:m1115 .14 .004 No_date 0:51 63.27 n/a
00481> File name = C:\SWM_PRG\09-396\H-Mn115.003
00482> Comment = HYD_COMMENT(="")
00483> 001:0083-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00484> ADD HYD 01:m1109 .05 .004 No_date 1:01 67.21 n/a
00485> + 02:m1110 .05 .004 No_date 1:02 49.45 n/a
00486> + 03:m1111 .03 .004 No_date 1:06 48.32 n/a
00487> + 04:m1112 .16 .004 No_date 0:41 67.20 n/a
00488> + 05:m1113 .05 .004 No_date 1:01 64.65 n/a
00489> + 06:m1114 .15 .004 No_date 0:41 65.63 n/a
00490> + 07:m1115 .14 .004 No_date 0:51 63.27 n/a
00491> + 09:m11 .58 .029 No_date 1:01 65.65 n/a
00492> [DT= 1.00] SUM= 08:m12 1.20 .054 No_date 1:06 64.49 n/a
00493> 001:0084-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00494> READ HYD 01:m1116 .04 .004 No_date 1:01 55.49 n/a
00495> File name = C:\SWM_PRG\09-396\H-Mn116.003
00496> Comment = HYD_COMMENT(="")
00497> 001:0085-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00498> READ HYD 02:m1117 .03 .004 No_date 1:04 47.01 n/a
00499> File name = C:\SWM_PRG\09-396\H-Mn117.003
00500> Comment = HYD_COMMENT(="")
00501> 001:0086-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
00502> ADD HYD 01:m1116 .04 .004 No_date 1:01 55.49 n/a
00503> + 02:m1117 .03 .004 No_date 1:04 47.01 n/a
00504> + 08:m12 1.20 .054 No_date 1:06 64.49 n/a
00505> [DT= 1.00] SUM= 09:m12 TOT 1.28 .061 No_date 1:06 63.71 n/a
00506> ** END OF RUN : 1
00507> *****
00508>
00509>
00510>
00511>
00512>
00513> RUN:COMMAND#
00514> 002:0001-----
00515> START
00516> [TZERO = .00 hrs on 0]

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00517> [METOUT= 2 (1=imperial, 2=metric output)]
00518> [NSTORM= 1]
00519> [NRUN 2]
00520> *****
00521> # Project Name: [Richcraft] Project Number: [396]
00522> # Date : 2011-05-09
00523> # Modeller : [ad]
00524> # Company : David Schaeffer Engineering Ltd.
00525> # License # : 4498477
00526> *****
00527> 002:0002-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00528> READ STORM
00529> File name = STORM.001
00530> Comment = 5 years Chicago Storm 4 Hours step 10 min, City of Ottawa
00531> [SUT=10.00:SDUR= 4.00:PTOT= 45.17]
00532> 002:0003-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00533> DEFAULT VALUES
00534> File name = C:\SWM_PRG\STMFILES\Ottawa.val
00535> ICASEdv = 1 (read and print data)
00536> FileTitle= File comment: [City of Ottawa Sewer Design Guidelines]
00537> THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00538> [F= 76.20 mm/hr] [F=13.20 mm/h] [DCAY= 2.00 /hr] [F= .00 mm]
00539> Parameters for PEROUVIOUS surfaces in STANDHYD:
00540> [Iaper= 1.50 mm] [LGP=25.00 mm] [MNP=.250]
00541> Parameters for IMPERVIOUS surfaces in STANDHYD:
00542> [IAimp= .80 mm] [CLI= 1.50] [MNI=.013]
00543> Parameters used in NASHDY:
00544> [Ia= 1.50 mm] [N= 2.00]
00545> 00546> 002:0004-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00547> CALIB STANDHYD 01:118 .12 .030 No_date 1:20 35.25 .781
00548> [XIMP=.70:TIMP=.75]
00549> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00550> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00551> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00552> 002:0005-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00553> CALIB STANDHYD 02:119 .08 .021 No_date 1:20 35.25 .781
00554> [XIMP=.70:TIMP=.75]
00555> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00556> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00557> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00558> 002:0006-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00559> ADD HYD 01:118 .12 .030 No_date 1:20 35.25 n/a
00560> + 02:119 .08 .021 No_date 1:20 35.25 n/a
00561> [DT= 1.00] SUM= 09:UNCN .20 .051 No_date 1:20 35.25 n/a
00562> 002:0007-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00563> CALIB STANDHYD 01:110 .25 .048 No_date 1:20 23.58 .522
00564> [XIMP=.24:TIMP=.47]
00565> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00566> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00567> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 120.:MNI=.013:SCI= .0]
00568> 002:0008-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00569> COMPUTE DUALHYD 01:110 .25 .048 No_date 1:20 23.58 n/a
00570> Major System / 02:Mg110 .16 .044 No_date 1:20 23.58 n/a
00571> Minor System \ 03:Mn110 .09 .004 No_date 1:05 23.62 n/a
00572> [MjSysSto=.1600E+01, TotOvVol=.3849E+02, N-Ovf= 1, TotDurOvf= 1 hrs
00573> 002:0009-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00574> SAVE HYD 03:Mn110 .09 .004 No_date 1:05 23.62 n/a
00575> fname :C:\SWM_PRG\09-396\H-Mn110.002
00576> remark:HYD_COMMENT[ ]
00577> 002:0010-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00578> CALIB STANDHYD 01:111 .03 .006 No_date 1:20 16.64 .368
00579> [XIMP=.01:TIMP=.28]
00580> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00581> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00582> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00583> 002:0011-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00584> ADD HYD 01:111 .03 .006 No_date 1:20 16.64 n/a
00585> + 02:Mg110 .16 .044 No_date 1:20 23.58 n/a
00586> [DT= 1.00] SUM= 08: .19 .050 No_date 1:20 22.50 n/a
00587> 002:0012-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00588> COMPUTE DUALHYD 08: .19 .050 No_date 1:20 22.50 n/a
00589> Major System / 02:Mg111 .15 .046 No_date 1:20 22.50 n/a
00590> Minor System \ 03:Mn111 .04 .004 No_date 1:14 22.55 n/a
00591> [MjSysSto=.1900E+01, TotOvVol=.3463E+02, N-Ovf= 1, TotDurOvf= 0 hrs
00592> 002:0013-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00593> SAVE HYD 03:Mn111 .04 .004 No_date 1:14 22.55 n/a
00594> fname :C:\SWM_PRG\09-396\H-Mn111.002
00595> remark:HYD_COMMENT[ ]
00596> 002:0014-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00597> CALIB STANDHYD 01:117 .15 .031 No_date 1:21 20.61 .456
00598> [XIMP=.01:TIMP=.46]
00599> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00600> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00601> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00602> 002:0015-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00603> COMPUTE DUALHYD 01:117 .15 .031 No_date 1:21 20.61 n/a
00604> Major System / 02:Mg117 .10 .027 No_date 1:21 20.61 n/a
00605> Minor System \ 03:Mn117 .05 .004 No_date 1:12 20.88 n/a
00606> [MjSysSto=.8000E+00, TotOvVol=.2107E+02, N-Ovf= 1, TotDurOvf= 0 hrs
00607> 002:0016-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00608> SAVE HYD 03:Mn117 .05 .004 No_date 1:12 20.88 n/a
00609> fname :C:\SWM_PRG\09-396\H-Mn117.002
00610> remark:HYD_COMMENT[ ]
00611> 002:0017-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00612> CALIB STANDHYD 01:107 .12 .030 No_date 1:20 35.78 .792
00613> [XIMP=.74:TIMP=.74]
00614> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00615> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00616> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00617> 002:0018-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00618> COMPUTE DUALHYD 01:107 .12 .030 No_date 1:20 35.78 n/a
00619> Major System / 02:Mg107 .10 .030 No_date 1:19 35.78 n/a
00620> Minor System \ 03:Mn107 .12 .004 No_date 1:01 35.90 n/a
00621> [MjSysSto=.2090E+02, TotOvVol=.9462E+01, N-Ovf= 1, TotDurOvf= 0 hrs
00622> 002:0019-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00623> SAVE HYD 03:Mn107 .12 .004 No_date 1:01 35.90 n/a
00624> fname :C:\SWM_PRG\09-396\H-Mn107.002
00625> remark:HYD_COMMENT[ ]
00626> 002:0020-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00627> CALIB STANDHYD 01:108 .10 .027 No_date 1:20 40.07 .887
00628> [XIMP=.87:TIMP=.87]
00629> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00630> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00631> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00632> 002:0021-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00633> ADD HYD 01:108 .10 .027 No_date 1:20 40.07 n/a
00634> + 02:Mg107 .10 .001 No_date 1:39 35.78 n/a
00635> [DT= 1.00] SUM= 08: .10 .027 No_date 1:20 40.06 n/a
00636> 002:0022-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00637> COMPUTE DUALHYD 08: .10 .027 No_date 1:20 40.06 n/a
00638> Major System / 02:Mg108 .10 .005 No_date 1:29 40.06 n/a
00639> Minor System \ 03:Mn108 .10 .004 No_date 1:01 40.15 n/a
00640> [MjSysSto=.1730E+02, TotOvVol=.1219E+01, N-Ovf= 1, TotDurOvf= 0 hrs
00641> 002:0023-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00642> SAVE HYD 03:Mn108 .10 .004 No_date 1:01 40.15 n/a
00643> fname :C:\SWM_PRG\09-396\H-Mn108.002
00644> remark:HYD_COMMENT[ ]
00645> 002:0024-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.

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00646> CALIB STANDHYD 01:109 .05 .013 No_date 1:20 37.10 .821
00647> [XIMP=.78:TIMP=.78]
00648> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00649> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00650> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00651> 002:0025-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00652> ADD HYD 01:109 .05 .013 No_date 1:20 37.10 n/a
00653> + 02:Mg108 .00 .005 No_date 1:29 40.06 n/a
00654> [DT= 1.00] SUM= 08: .05 .013 No_date 1:20 37.27 n/a
00655> 002:0026-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00656> COMPUTE DUALHYD 08: .05 .013 No_date 1:20 37.27 n/a
00657> Major System / 02:Mg109 .00 .000 No_date 0:00 .00 n/a
00658> Minor System \ 03:Mn109 .05 .004 No_date 1:11 37.50 n/a
00659> [MjSysSto=.6398E+01, TotOvVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00660> 002:0027-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00661> SAVE HYD 03:Mn109 .05 .004 No_date 1:11 37.50 n/a
00662> fname :C:\SWM_PRG\09-396\H-Mn109.002
00663> remark:HYD_COMMENT[ ]
00664> 002:0028-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00665> CALIB STANDHYD 01:116 .15 .037 No_date 1:20 27.71 .614
00666> [XIMP=.31:TIMP=.62]
00667> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00668> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00669> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00670> 002:0029-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00671> COMPUTE DUALHYD 01:116 .15 .037 No_date 1:20 27.71 n/a
00672> Major System / 04:Mg116 .08 .034 No_date 1:20 27.71 n/a
00673> Minor System \ 03:Mn116 .07 .004 No_date 1:10 27.75 n/a
00674> [MjSysSto=.1900E+01, TotOvVol=.2322E+02, N-Ovf= 1, TotDurOvf= 0 hrs
00675> 002:0030-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00676> SAVE HYD 03:Mn116 .07 .004 No_date 1:10 27.75 n/a
00677> fname :C:\SWM_PRG\09-396\H-Mn116.002
00678> remark:HYD_COMMENT[ ]
00679> 002:0031-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00680> CALIB STANDHYD 01:115 .13 .034 No_date 1:20 38.42 .851
00681> [XIMP=.82:TIMP=.82]
00682> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00683> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00684> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00685> 002:0032-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00686> ADD HYD 01:115 .13 .034 No_date 0:00 .00 n/a
00687> + 02:Mg109 .00 .000 No_date 0:00 .00 n/a
00688> + 04:Mg116 .08 .034 No_date 1:20 27.71 n/a
00689> [DT= 1.00] SUM= 08: .21 .068 No_date 1:20 34.22 n/a
00690> 002:0033-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00691> COMPUTE DUALHYD 08: .21 .068 No_date 1:20 34.22 n/a
00692> Major System / 02:Mg115 .00 .000 No_date 0:00 .00 n/a
00693> Minor System \ 03:Mn115 .21 .004 No_date 1:01 34.30 n/a
00694> [MjSysSto=.4858E+02, TotOvVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00695> 002:0034-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00696> SAVE HYD 03:Mn115 .21 .004 No_date 1:01 34.30 n/a
00697> fname :C:\SWM_PRG\09-396\H-Mn115.002
00698> remark:HYD_COMMENT[ ]
00699> 002:0035-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00700> CALIB STANDHYD 01:114 .17 .045 No_date 1:20 38.75 .858
00701> [XIMP=.83:TIMP=.83]
00702> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00703> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00704> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00705> 002:0036-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00706> ADD HYD 01:114 .17 .045 No_date 1:20 38.75 n/a
00707> + 02:Mg115 .00 .000 No_date 0:00 .00 n/a
00708> [DT= 1.00] SUM= 03: .17 .045 No_date 1:20 38.75 n/a
00709> 002:0037-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00710> COMPUTE DUALHYD 03: .17 .045 No_date 1:20 38.75 n/a
00711> Major System / 03:Mg114 .00 .000 No_date 0:00 .00 n/a
00712> Minor System \ 01:Mn114 .17 .004 No_date 0:52 38.83 n/a
00713> [MjSysSto=.3670E+02, TotOvVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00714> 002:0038-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00715> SAVE HYD 01:Mn114 .17 .004 No_date 0:52 38.83 n/a
00716> fname :C:\SWM_PRG\09-396\H-Mn114.002
00717> remark:HYD_COMMENT[ ]
00718> 002:0039-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00719> CALIB STANDHYD 01:101 .12 .030 No_date 1:20 35.78 .792
00720> [XIMP=.74:TIMP=.74]
00721> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00722> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00723> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00724> 002:0040-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00725> COMPUTE DUALHYD 01:101 .12 .030 No_date 1:20 35.78 n/a
00726> Major System / 02:Mg101 .00 .000 No_date 0:00 .00 n/a
00727> Minor System \ 03:Mn101 .12 .004 No_date 1:01 35.82 n/a
00728> [MjSysSto=.2099E+02, TotOvVol=.0000E+00, N-Ovf= 0, TotDurOvf= 0 hrs
00729> 002:0041-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00730> SAVE HYD 03:Mn101 .12 .004 No_date 1:01 35.82 n/a
00731> fname :C:\SWM_PRG\09-396\H-Mn101.002
00732> remark:HYD_COMMENT[ ]
00733> 002:0042-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00734> CALIB STANDHYD 01:102 .11 .030 No_date 1:20 39.41 .873
00735> [XIMP=.85:TIMP=.85]
00736> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00737> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00738> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00739> 002:0043-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00740> ADD HYD 01:102 .11 .030 No_date 1:20 39.41 n/a
00741> + 02:Mg101 .00 .000 No_date 0:00 .00 n/a
00742> [DT= 1.00] SUM= 07: .11 .030 No_date 1:20 39.41 n/a
00743> 002:0044-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00744> COMPUTE DUALHYD 07: .11 .030 No_date 1:20 39.41 n/a
00745> Major System / 02:Mg102 .02 .026 No_date 1:20 39.41 n/a
00746> Minor System \ 03:Mn102 .09 .004 No_date 1:01 39.56 n/a
00747> [MjSysSto=.1210E+02, TotOvVol=.8630E+01, N-Ovf= 1, TotDurOvf= 0 hrs
00748> 002:0045-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00749> SAVE HYD 03:Mn102 .09 .004 No_date 1:01 39.56 n/a
00750> fname :C:\SWM_PRG\09-396\H-Mn102.002
00751> remark:HYD_COMMENT[ ]
00752> 002:0046-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00753> CALIB STANDHYD 01:104 .15 .039 No_date 1:20 29.82 .660
00754> [XIMP=.34:TIMP=.68]
00755> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00756> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00757> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00758> 002:0047-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00759> COMPUTE DUALHYD 01:104 .15 .039 No_date 1:20 29.82 n/a
00760> Major System / 04:Mg104 .09 .035 No_date 1:20 29.82 n/a
00761> Minor System \ 03:Mn104 .06 .004 No_date 1:03 29.89 n/a
00762> [MjSysSto=.1200E+01, TotOvVol=.2588E+02, N-Ovf= 1, TotDurOvf= 1 hrs
00763> 002:0048-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00764> SAVE HYD 03:Mn104 .06 .004 No_date 1:03 29.89 n/a
00765> fname :C:\SWM_PRG\09-396\H-Mn104.002
00766> remark:HYD_COMMENT[ ]
00767> 002:0049-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00768> CALIB STANDHYD 01:105 .05 .014 No_date 1:20 41.39 .916
00769> [XIMP=.91:TIMP=.91]
00770> [Horton parameters: F= 76.20:Fc= 13.20:DCAY=4.14: F= .00]
00771> [Pervious area: Iaper= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP= .0]
00772> [Impervious area: IAimp= .80:SLPI=1.50:LGI= 10.:MNI=.013:SCI= .0]
00773> 002:0050-----ID:NHYD-----AREA-----PEAK-TpeakDate_hh:mm-----R.V.-R.C.
00774> COMPUTE DUALHYD 01:105 .05 .014 No_date 1:20 41.39 n/a

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00775> Major System / 05:Mg105 .00 .000 No_date 0:00 .00 n/a
00776> Minor System / 03:Mn105 .05 .004 No_date 1:11 41.59 n/a
00777> [MjSysSto=.645E+01, TotOvfVol=.000E+00, N-Ovf=- 0, TotDurOvf=. 0 hrs
00778> 002:0051-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00779> SAVE HYD 03:Mn105 .05 .004 No_date 1:11 41.59 n/a
00780> fname :C:\SWM_PRG\09-396\H-Mn105.002
00781> remark:HYD_COMMENT=("")
00782> 002:0052-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00783> CALIB STANDHYD 01:103 .21 .057 No_date 1:20 39.74 .880
00784> [XIMP=.86;TIMP=.86]
00785> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
00786> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
00787> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
00788> 002:0053-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00789> ADD HYD 01:103 .21 .057 No_date 1:20 39.74 n/a
00790> + 02:Mg102 .02 .026 No_date 1:20 39.41 n/a
00791> + 04:Mg104 .09 .035 No_date 1:20 29.82 n/a
00792> + 05:Mg105 .00 .000 No_date 0:00 .00 n/a
00793> [DT= 1.00] SUM= 07: .32 .118 No_date 1:20 37.02 n/a
00794> 002:0054-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00795> COMPUTE DUALHYD 07: .32 .118 No_date 1:20 37.02 n/a
00796> Major System / 02:Mg103 .08 .058 No_date 1:21 37.02 n/a
00797> Minor System / 03:Mn103 .24 .004 No_date 0:51 37.02 n/a
00798> [MjSysSto=.559E+02, TotOvfVol=.287E+02, N-Ovf=- 1, TotDurOvf=. 1 hrs
00799> 002:0055-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00800> SAVE HYD 03:Mn103 .24 .004 No_date 0:51 37.02 n/a
00801> fname :C:\SWM_PRG\09-396\H-Mn103.002
00802> remark:HYD_COMMENT=("")
00803> 002:0056-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00804> CALIB STANDHYD 01:112 .19 .051 No_date 1:20 39.41 .873
00805> [XIMP=.85;TIMP=.85]
00806> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
00807> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
00808> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
00809> 002:0057-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00810> ADD HYD 01:112 .19 .051 No_date 1:20 39.41 n/a
00811> + 02:Mg103 .08 .058 No_date 1:21 37.02 n/a
00812> [DT= 1.00] SUM= 04: .27 .082 No_date 1:21 38.72 n/a
00813> 002:0058-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00814> COMPUTE DUALHYD 04: .27 .082 No_date 1:21 38.72 n/a
00815> Major System / 07:Mg112 .02 .013 No_date 1:35 38.72 n/a
00816> Minor System / 03:Mn112 .25 .004 No_date 0:51 38.72 n/a
00817> [MjSysSto=.649E+02, TotOvfVol=.723E+01, N-Ovf=- 1, TotDurOvf=. 0 hrs
00818> 002:0059-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00819> SAVE HYD 03:Mn112 .25 .004 No_date 0:51 38.72 n/a
00820> fname :C:\SWM_PRG\09-396\H-Mn112.002
00821> remark:HYD_COMMENT=("")
00822> 002:0060-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00823> CALIB STANDHYD 01:106 .10 .025 No_date 1:20 35.78 .792
00824> [XIMP=.74;TIMP=.74]
00825> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
00826> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
00827> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
00828> 002:0061-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00829> COMPUTE DUALHYD 01:106 .10 .025 No_date 1:20 35.78 n/a
00830> Major System / 06:Mg106 .04 .022 No_date 1:20 35.78 n/a
00831> Minor System / 03:Mn106 .06 .004 No_date 1:01 35.78 n/a
00832> [MjSysSto=.300E+00, TotOvfVol=.157E+02, N-Ovf=- 1, TotDurOvf=. 1 hrs
00833> 002:0062-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00834> SAVE HYD 03:Mn106 .06 .004 No_date 1:01 35.78 n/a
00835> fname :C:\SWM_PRG\09-396\H-Mn106.002
00836> remark:HYD_COMMENT=("")
00837> 002:0063-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00838> CALIB STANDHYD 01:113 .13 .030 No_date 1:20 29.83 .661
00839> [XIMP=.56;TIMP=.56]
00840> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
00841> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
00842> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
00843> 002:0064-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00844> ADD HYD 01:113 .13 .030 No_date 1:20 29.83 n/a
00845> + 06:Mg106 .04 .022 No_date 1:20 35.78 n/a
00846> + 07:Mg112 .02 .013 No_date 1:35 38.72 n/a
00847> + 18:Mg114 .00 .000 No_date 0:00 .00 n/a
00848> [DT= 1.00] SUM= 05: .19 .051 No_date 1:20 32.05 n/a
00849> 002:0065-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00850> COMPUTE DUALHYD 05: .19 .051 No_date 1:20 32.05 n/a
00851> Major System / 02:Mg113 .12 .048 No_date 1:20 32.05 n/a
00852> Minor System / 03:Mn113 .07 .004 No_date 1:01 32.21 n/a
00853> [MjSysSto=.100E+01, TotOvfVol=.400E+02, N-Ovf=- 1, TotDurOvf=. 1 hrs
00854> 002:0066-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00855> SAVE HYD 03:Mn113 .07 .004 No_date 1:01 32.21 n/a
00856> fname :C:\SWM_PRG\09-396\H-Mn113.002
00857> remark:HYD_COMMENT=("")
00858> 002:0067-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00859> READ HYD 04:04m104 .04 .004 No_date 0:51 64.37 n/a
00860> Filename = C:\SWM_PRG\09-396\H-Mn101.003
00861> Comment = HYD_COMMENT=("")
00862> 002:0068-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00863> READ HYD 02:12m102 .06 .004 No_date 0:51 67.72 n/a
00864> Filename = C:\SWM_PRG\09-396\H-Mn102.003
00865> Comment = HYD_COMMENT=("")
00866> 002:0069-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00867> READ HYD 03:m1103 .15 .004 No_date 0:31 65.97 n/a
00868> Filename = C:\SWM_PRG\09-396\H-Mn103.003
00869> Comment = HYD_COMMENT=("")
00870> 002:0070-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00871> READ HYD 04:m1104 .04 .004 No_date 1:01 57.81 n/a
00872> Filename = C:\SWM_PRG\09-396\H-Mn104.003
00873> Comment = HYD_COMMENT=("")
00874> 002:0071-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00875> READ HYD 05:m1105 .04 .004 No_date 1:01 71.54 n/a
00876> Filename = C:\SWM_PRG\09-396\H-Mn105.003
00877> Comment = HYD_COMMENT=("")
00878> 002:0072-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00879> READ HYD 06:m1106 .04 .004 No_date 1:01 64.29 n/a
00880> Filename = C:\SWM_PRG\09-396\H-Mn106.003
00881> Comment = HYD_COMMENT=("")
00882> 002:0073-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00883> READ HYD 07:m1107 .08 .004 No_date 0:51 64.34 n/a
00884> Filename = C:\SWM_PRG\09-396\H-Mn107.003
00885> Comment = HYD_COMMENT=("")
00886> 002:0074-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00887> READ HYD 08:m1108 .07 .004 No_date 0:51 68.26 n/a
00888> Filename = C:\SWM_PRG\09-396\H-Mn108.003
00889> Comment = HYD_COMMENT=("")
00890> 002:0075-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00891> ADD HYD 01:m1101 .08 .004 No_date 0:51 64.37 n/a
00892> + 02:m1102 .06 .004 No_date 0:51 67.72 n/a
00893> + 03:m1103 .15 .004 No_date 0:31 65.97 n/a
00894> + 04:m1104 .04 .004 No_date 1:01 57.81 n/a
00895> + 05:m1105 .04 .004 No_date 1:01 71.54 n/a
00896> + 06:m1106 .04 .004 No_date 1:01 64.29 n/a
00897> + 07:m1107 .08 .004 No_date 0:51 64.34 n/a
00898> + 08:m1108 .07 .004 No_date 0:51 68.26 n/a
00899> [DT= 1.00] SUM= 09:m11 .58 .029 No_date 1:01 65.65 n/a
00900> 002:0076-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00901> READ HYD 01:m1109 .05 .004 No_date 1:01 67.21 n/a
00902> Filename = C:\SWM_PRG\09-396\H-Mn109.003
00903> Comment = HYD_COMMENT=("")

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00904> 002:0077-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00905> READ HYD 02:m1110 .05 .004 No_date 1:02 49.45 n/a
00906> Filename = C:\SWM_PRG\09-396\H-Mn110.003
00907> Comment = HYD_COMMENT=("")
00908> 002:0078-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00909> READ HYD 03:m1111 .03 .004 No_date 1:06 48.32 n/a
00910> Filename = C:\SWM_PRG\09-396\H-Mn111.003
00911> Comment = HYD_COMMENT=("")
00912> 002:0079-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00913> READ HYD 04:m1112 .16 .004 No_date 0:41 67.20 n/a
00914> Filename = C:\SWM_PRG\09-396\H-Mn112.003
00915> Comment = HYD_COMMENT=("")
00916> 002:0080-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00917> READ HYD 05:m1113 .05 .004 No_date 1:01 64.65 n/a
00918> Filename = C:\SWM_PRG\09-396\H-Mn113.003
00919> Comment = HYD_COMMENT=("")
00920> 002:0081-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00921> READ HYD 06:m1114 .15 .004 No_date 0:41 65.63 n/a
00922> Filename = C:\SWM_PRG\09-396\H-Mn114.003
00923> Comment = HYD_COMMENT=("")
00924> 002:0082-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00925> READ HYD 07:m1115 .14 .004 No_date 0:51 63.27 n/a
00926> Filename = C:\SWM_PRG\09-396\H-Mn115.003
00927> Comment = HYD_COMMENT=("")
00928> 002:0083-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00929> ADD HYD 01:m1109 .05 .004 No_date 1:01 67.21 n/a
00930> + 02:m1110 .05 .004 No_date 1:02 49.45 n/a
00931> + 03:m1111 .03 .004 No_date 1:06 48.32 n/a
00932> + 04:m1112 .16 .004 No_date 0:41 67.20 n/a
00933> + 05:m1113 .05 .004 No_date 1:01 64.65 n/a
00934> + 06:m1114 .15 .004 No_date 0:41 65.63 n/a
00935> + 07:m1115 .14 .004 No_date 0:51 63.27 n/a
00936> + 09:m11 .58 .029 No_date 1:01 65.65 n/a
00937> [DT= 1.00] SUM= 08:m12 1.20 .054 No_date 1:06 64.49 n/a
00938> 002:0084-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00939> READ HYD 01:m1116 .04 .004 No_date 1:01 55.49 n/a
00940> Filename = C:\SWM_PRG\09-396\H-Mn116.003
00941> Comment = HYD_COMMENT=("")
00942> 002:0085-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00943> READ HYD 02:m1117 .03 .004 No_date 1:04 47.01 n/a
00944> Filename = C:\SWM_PRG\09-396\H-Mn117.003
00945> Comment = HYD_COMMENT=("")
00946> 002:0086-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00947> ADD HYD 01:m1116 .04 .004 No_date 1:01 55.49 n/a
00948> + 02:m1117 .03 .004 No_date 1:04 47.01 n/a
00949> + 08:m12 1.20 .054 No_date 1:06 64.49 n/a
00950> [DT= 1.00] SUM= 09:M1_TOT 1.28 .061 No_date 1:06 63.71 n/a
00951> ** END OF RUN : 2
00952>
00953> *****
00954>
00955>
00956>
00957>
00958>
00959> RUN:COMMENT#
00960> 003:0001-----
00961> START
00962> [TZERO = .00 hrs on 0]
00963> [METCUT = 2 (1=Imperial, 2=metric output)]
00964> [NSTORM= 1]
00965> [NRUN = 3]
00966> # *****
00967> # Project Name: [Richcraft] Project Number: [396]
00968> # Date : 2011-05-09
00969> # Modeller : [aef]
00970> # Company : David Schaeffer Engineering Ltd.
00971> # License # : 4488477
00972> # *****
00973> 003:0002-----
00974> READ STORM
00975> File name = STORM.001
00976> Comment = 100 years Chicago Storm 4 Hours step 10 min, City of Ottawa
00977> [SDT=100:SDUR= 4.00:PTOT= 76.00]
00978> 003:0003-----
00979> DEFAULT VALUES
00980> Filename = C:\SWM_PRG\STMPFILES\ottawa.val
00981> [ICASEdv = 1 (read and print data)]
00982> FileTitle = [aef]
00983> The FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00984> Horton's infiltration equation parameters:
00985> [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 2.00 (hr) [F=.00 mm]
00986> Parameters for Pervious surfaces in STANDHYD:
00987> [IAPER= 1.50 mm] [LGP=25.00 m] [MNP=.250]
00988> Parameters for IMPERVIOUS surfaces in STANDHYD:
00989> [IAimp=.80 mm] [CLI= 1.50] [MNI=.013]
00990> Parameters used in NASHYD:
00991> [Ia= 1.50 mm] [N= 3.00]
00992> 003:0004-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00993> CALIB STANDHYD 01:118 .12 .056 No_date 1:20 63.91 .841
00994> [XIMP=.70;TIMP=.75]
00995> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
00996> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 11.:MNP=.250:SCP=.0]
00997> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
00998> 003:0005-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
00999> CALIB STANDHYD 02:119 .08 .038 No_date 1:20 63.91 .841
01000> [XIMP=.70;TIMP=.75]
01001> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
01002> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
01003> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
01004> 003:0006-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01005> ADD HYD 01:118 .12 .056 No_date 1:20 63.91 n/a
01006> + 02:119 .08 .038 No_date 1:20 63.91 n/a
01007> [DT= 1.00] SUM= 09:UNCN .20 .094 No_date 1:20 63.91 n/a
01008> 003:0007-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01009> CALIB STANDHYD 01:110 .25 .103 No_date 1:20 49.37 .650
01010> [XIMP=.24;TIMP=.47]
01011> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
01012> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
01013> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
01014> 003:0008-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01015> COMPUTE DUALHYD 01:110 .25 .103 No_date 1:20 49.37 n/a
01016> Major System / 02:Mg110 .19 .099 No_date 1:20 49.37 n/a
01017> Minor System / 03:Mn110 .06 .004 No_date 1:02 49.50 n/a
01018> [MjSysSto=.160E+01, TotOvfVol=.958E+02, N-Ovf=- 1, TotDurOvf=. 1 hrs
01019> 003:0009-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01020> SAVE HYD 03:Mn110 .06 .004 No_date 1:02 49.50 n/a
01021> fname :C:\SWM_PRG\09-396\H-Mn110.003
01022> remark:HYD_COMMENT=("")
01023> 003:0010-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01024> CALIB STANDHYD 01:111 .03 .013 No_date 1:20 40.74 .536
01025> [XIMP=.01;TIMP=.28]
01026> [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14: F=.00]
01027> [Pervious area: IAPER= 1.50:SLPP=1.50:LGP= 10.:MNP=.250:SCP=.0]
01028> [Impervious area: IAimp=.80:SLPI=1.50:LGI= 10.:MNI=.013:SCI=.0]
01029> 003:0011-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R-V.-R.-C.
01030> ADD HYD 01:111 .03 .013 No_date 1:20 40.74 n/a
01031> + 02:Mg110 .19 .099 No_date 1:20 49.37 n/a
01032> [DT= 1.00] SUM= 08: .22 .112 No_date 1:20 48.21 n/a

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01033> 003:0012-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01034> COMPUTE DUALHYD 08: .22 .112 No_date 1:20 48.21 n/a
01035> Major System / 02:Mg111 .20 .109 No_date 1:20 48.21 n/a
01036> Minor System \ 03:Mn111 .03 .004 No_date 1:07 48.92 n/a
01037> [MjSysSto=.1900E+01, TotOvfVol=.9463E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01038> 003:0013-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01039> SAVE HYD 03:Mn111 .03 .004 No_date 1:07 48.92 n/a
01040> fname :C:\SWM_PRC\09-396\H-Mn111.003
01041> remark:HYD_COMMENT[""]
01042> 003:0014-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01043> CALIB STANDHYD 01:117 .15 .064 No_date 1:20 46.80 .616
01044> [XIMP=.01;TIMP=.46]
01045> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01046> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01047> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 70.;MNI=.013;SCI= .0]
01048> 003:0015-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01049> COMPUTE DUALHYD 01:117 .15 .064 No_date 1:20 46.80 n/a
01050> Major System / 02:Mg117 .12 .060 No_date 1:20 46.80 n/a
01051> Minor System \ 03:Mn117 .03 .004 No_date 1:04 46.92 n/a
01052> [MjSysSto=.8000E+00, TotOvfVol=.5429E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01053> 003:0016-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01054> SAVE HYD 03:Mn117 .03 .004 No_date 1:04 46.92 n/a
01055> fname :C:\SWM_PRC\09-396\H-Mn117.003
01056> remark:HYD_COMMENT[""]
01057> 003:0017-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01058> CALIB STANDHYD 01:107 .12 .056 No_date 1:20 64.17 .844
01059> [XIMP=.74;TIMP=.74]
01060> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01061> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01062> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01063> 003:0018-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01064> COMPUTE DUALHYD 01:107 .12 .056 No_date 1:20 64.17 n/a
01065> Major System / 02:Mg107 .04 .053 No_date 1:20 64.17 n/a
01066> Minor System \ 03:Mn107 .08 .004 No_date 0:51 64.32 n/a
01067> [MjSysSto=.2090E+02, TotOvfVol=.2584E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01068> 003:0019-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01069> SAVE HYD 03:Mn107 .08 .004 No_date 0:51 64.32 n/a
01070> fname :C:\SWM_PRC\09-396\H-Mn107.003
01071> remark:HYD_COMMENT[""]
01072> 003:0020-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01073> CALIB STANDHYD 01:108 .10 .048 No_date 1:20 69.68 .917
01074> [XIMP=.87;TIMP=.87]
01075> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01076> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01077> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01078> 003:0021-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01079> ADD HYD 01:108 .10 .048 No_date 1:20 69.68 n/a
01080> + 02:Mg107 .04 .053 No_date 1:20 64.17 n/a
01081> [DT= 1.00] SUM= .08 .14 .101 No_date 1:20 68.10 n/a
01082> 003:0022-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01083> COMPUTE DUALHYD 08: .14 .101 No_date 1:20 68.10 n/a
01084> Major System / 02:Mg108 .07 .097 No_date 1:20 68.10 n/a
01085> Minor System \ 03:Mn108 .07 .004 No_date 0:51 68.27 n/a
01086> [MjSysSto=.1730E+02, TotOvfVol=.4834E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01087> 003:0023-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01088> SAVE HYD 03:Mn108 .07 .004 No_date 0:51 68.27 n/a
01089> fname :C:\SWM_PRC\09-396\H-Mn108.003
01090> remark:HYD_COMMENT[""]
01091> 003:0024-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01092> CALIB STANDHYD 01:109 .05 .024 No_date 1:20 65.87 .867
01093> [XIMP=.78;TIMP=.78]
01094> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01095> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01096> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01097> 003:0025-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01098> ADD HYD 01:109 .05 .024 No_date 1:20 65.87 n/a
01099> + 02:Mg108 .12 .121 No_date 1:20 68.10 n/a
01100> [DT= 1.00] SUM= .08 .12 .121 No_date 1:20 67.18 n/a
01101> 003:0026-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01102> COMPUTE DUALHYD 08: .12 .121 No_date 1:20 67.18 n/a
01103> Major System / 02:Mg109 .07 .117 No_date 1:20 67.18 n/a
01104> Minor System \ 03:Mn109 .05 .004 No_date 1:01 67.24 n/a
01105> [MjSysSto=.1390E+02, TotOvfVol=.4803E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01106> 003:0027-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01107> SAVE HYD 03:Mn109 .05 .004 No_date 1:01 67.24 n/a
01108> fname :C:\SWM_PRC\09-396\H-Mn109.003
01109> remark:HYD_COMMENT[""]
01110> 003:0028-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01111> CALIB STANDHYD 01:116 .15 .070 No_date 1:20 55.26 .727
01112> [XIMP=.31;TIMP=.62]
01113> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01114> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01115> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01116> 003:0029-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01117> COMPUTE DUALHYD 01:116 .15 .070 No_date 1:20 55.26 n/a
01118> Major System / 04:Mg116 .10 .066 No_date 1:20 55.26 n/a
01119> Minor System \ 03:Mn116 .05 .004 No_date 1:01 55.28 n/a
01120> [MjSysSto=.1900E+01, TotOvfVol=.5740E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01121> 003:0030-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01122> SAVE HYD 03:Mn116 .05 .004 No_date 1:01 55.28 n/a
01123> fname :C:\SWM_PRC\09-396\H-Mn116.003
01124> remark:HYD_COMMENT[""]
01125> 003:0031-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01126> CALIB STANDHYD 01:115 .13 .062 No_date 1:20 67.56 .889
01127> [XIMP=.82;TIMP=.82]
01128> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01129> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01130> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01131> 003:0032-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01132> ADD HYD 01:115 .13 .062 No_date 1:20 67.56 n/a
01133> + 02:Mg109 .07 .117 No_date 1:20 67.18 n/a
01134> + 04:Mg116 .10 .066 No_date 1:20 55.26 n/a
01135> [DT= 1.00] SUM= .08 .31 .246 No_date 1:20 63.29 n/a
01136> 003:0033-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01137> COMPUTE DUALHYD 08: .31 .246 No_date 1:20 63.29 n/a
01138> Major System / 02:Mg115 .17 .242 No_date 1:20 63.29 n/a
01139> Minor System \ 03:Mn115 .14 .004 No_date 0:51 63.31 n/a
01140> [MjSysSto=.5220E+02, TotOvfVol=.1077E+03, N-Ovf= 1, TotDurOvf= 1 hrs
01141> 003:0034-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01142> SAVE HYD 03:Mn115 .14 .004 No_date 0:51 63.31 n/a
01143> fname :C:\SWM_PRC\09-396\H-Mn115.003
01144> remark:HYD_COMMENT[""]
01145> 003:0035-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01146> CALIB STANDHYD 01:114 .17 .081 No_date 1:20 67.99 .895
01147> [XIMP=.83;TIMP=.83]
01148> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01149> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01150> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01151> 003:0036-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01152> ADD HYD 01:114 .17 .081 No_date 1:20 67.99 n/a
01153> + 02:Mg115 .17 .242 No_date 1:20 63.29 n/a
01154> [DT= 1.00] SUM= .03 .34 .323 No_date 1:20 65.64 n/a
01155> 003:0037-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01156> COMPUTE DUALHYD 03: .34 .323 No_date 1:20 65.64 n/a
01157> Major System / 08:Mg114 .19 .320 No_date 1:20 65.64 n/a
01158> Minor System \ 01:Mn114 .15 .004 No_date 0:41 65.66 n/a
01159> [MjSysSto=.6200E+02, TotOvfVol=.1227E+03, N-Ovf= 1, TotDurOvf= 1 hrs
01160> 003:0038-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01161> SAVE HYD 01:Mn114 .15 .004 No_date 0:41 65.66 n/a

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01162> fname :C:\SWM_PRC\09-396\H-Mn114.003
01163> remark:HYD_COMMENT[""]
01164> 003:0039-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01165> CALIB STANDHYD 01:101 .12 .056 No_date 1:20 64.17 .844
01166> [XIMP=.74;TIMP=.74]
01167> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01168> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01169> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01170> 003:0040-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01171> COMPUTE DUALHYD 01:101 .12 .056 No_date 1:20 64.17 n/a
01172> Major System / 02:Mg101 .04 .053 No_date 1:20 64.17 n/a
01173> Minor System \ 03:Mn101 .08 .004 No_date 0:51 64.34 n/a
01174> [MjSysSto=.2110E+02, TotOvfVol=.2564E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01175> 003:0041-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01176> SAVE HYD 03:Mn101 .08 .004 No_date 0:51 64.34 n/a
01177> fname :C:\SWM_PRC\09-396\H-Mn101.003
01178> remark:HYD_COMMENT[""]
01179> 003:0042-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01180> CALIB STANDHYD 01:102 .11 .053 No_date 1:20 68.84 .906
01181> [XIMP=.85;TIMP=.85]
01182> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01183> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01184> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01185> 003:0043-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01186> ADD HYD 01:102 .11 .053 No_date 1:20 68.84 n/a
01187> + 02:Mg101 .04 .053 No_date 1:20 64.17 n/a
01188> [DT= 1.00] SUM= .07 .15 .105 No_date 1:20 67.59 n/a
01189> 003:0044-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01190> COMPUTE DUALHYD 07: .15 .105 No_date 1:20 67.59 n/a
01191> Major System / 02:Mg102 .09 .102 No_date 1:20 67.59 n/a
01192> Minor System \ 03:Mn102 .06 .004 No_date 0:51 67.67 n/a
01193> [MjSysSto=.1210E+02, TotOvfVol=.5814E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01194> 003:0045-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01195> SAVE HYD 03:Mn102 .06 .004 No_date 0:51 67.67 n/a
01196> fname :C:\SWM_PRC\09-396\H-Mn102.003
01197> remark:HYD_COMMENT[""]
01198> 003:0046-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01199> CALIB STANDHYD 01:104 .15 .071 No_date 1:20 57.77 .760
01200> [XIMP=.34;TIMP=.68]
01201> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01202> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01203> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01204> 003:0047-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01205> COMPUTE DUALHYD 01:104 .15 .071 No_date 1:20 57.77 n/a
01206> Major System / 04:Mg104 .10 .067 No_date 1:20 57.77 n/a
01207> Minor System \ 03:Mn104 .05 .004 No_date 1:01 57.95 n/a
01208> [MjSysSto=.1200E+01, TotOvfVol=.6050E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01209> 003:0048-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01210> SAVE HYD 03:Mn104 .05 .004 No_date 1:01 57.95 n/a
01211> fname :C:\SWM_PRC\09-396\H-Mn104.003
01212> remark:HYD_COMMENT[""]
01213> 003:0049-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01214> CALIB STANDHYD 01:105 .05 .024 No_date 1:20 71.38 .939
01215> [XIMP=.91;TIMP=.91]
01216> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01217> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01218> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01219> 003:0050-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01220> COMPUTE DUALHYD 01:105 .05 .024 No_date 1:20 71.38 n/a
01221> Major System / 04:Mg105 .01 .021 No_date 1:20 71.38 n/a
01222> Minor System \ 03:Mn105 .04 .004 No_date 1:01 71.49 n/a
01223> [MjSysSto=.1130E+02, TotOvfVol=.4261E+01, N-Ovf= 1, TotDurOvf= 0 hrs
01224> 003:0051-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01225> SAVE HYD 03:Mn105 .04 .004 No_date 1:01 71.49 n/a
01226> fname :C:\SWM_PRC\09-396\H-Mn105.003
01227> remark:HYD_COMMENT[""]
01228> 003:0052-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01229> CALIB STANDHYD 01:103 .21 .101 No_date 1:20 69.26 .911
01230> [XIMP=.86;TIMP=.86]
01231> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01232> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01233> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01234> 003:0053-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01235> ADD HYD 01:103 .21 .101 No_date 1:20 69.26 n/a
01236> + 02:Mg102 .09 .102 No_date 1:20 67.59 n/a
01237> + 04:Mg104 .10 .067 No_date 1:20 57.77 n/a
01238> + 05:Mg105 .01 .021 No_date 1:20 71.38 n/a
01239> [DT= 1.00] SUM= .07 .41 .291 No_date 1:20 65.98 n/a
01240> 003:0054-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01241> COMPUTE DUALHYD 07: .41 .291 No_date 1:20 65.98 n/a
01242> Major System / 02:Mg103 .26 .288 No_date 1:20 65.98 n/a
01243> Minor System \ 03:Mn103 .15 .004 No_date 0:31 66.00 n/a
01244> [MjSysSto=.5590E+02, TotOvfVol=.1695E+03, N-Ovf= 1, TotDurOvf= 1 hrs
01245> 003:0055-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01246> SAVE HYD 03:Mn103 .15 .004 No_date 0:31 66.00 n/a
01247> fname :C:\SWM_PRC\09-396\H-Mn103.003
01248> remark:HYD_COMMENT[""]
01249> 003:0056-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01250> CALIB STANDHYD 01:112 .19 .091 No_date 1:20 68.84 .906
01251> [XIMP=.85;TIMP=.85]
01252> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01253> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01254> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01255> 003:0057-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01256> ADD HYD 01:112 .19 .091 No_date 1:20 68.84 n/a
01257> + 02:Mg103 .26 .288 No_date 1:20 65.98 n/a
01258> [DT= 1.00] SUM= .04 .45 .379 No_date 1:20 67.19 n/a
01259> 003:0058-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01260> COMPUTE DUALHYD 04: .45 .379 No_date 1:20 67.19 n/a
01261> Major System / 07:Mg112 .29 .375 No_date 1:20 67.19 n/a
01262> Minor System \ 03:Mn112 .16 .004 No_date 0:41 67.23 n/a
01263> [MjSysSto=.6490E+02, TotOvfVol=.1943E+03, N-Ovf= 1, TotDurOvf= 1 hrs
01264> 003:0059-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01265> SAVE HYD 03:Mn112 .16 .004 No_date 0:41 67.23 n/a
01266> fname :C:\SWM_PRC\09-396\H-Mn112.003
01267> remark:HYD_COMMENT[""]
01268> 003:0060-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01269> CALIB STANDHYD 01:106 .10 .047 No_date 1:20 64.17 .844
01270> [XIMP=.74;TIMP=.74]
01271> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01272> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01273> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01274> 003:0061-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01275> COMPUTE DUALHYD 01:106 .10 .047 No_date 1:20 64.17 n/a
01276> Major System / 06:Mg106 .06 .043 No_date 1:20 64.17 n/a
01277> Minor System \ 03:Mn106 .04 .004 No_date 1:01 64.19 n/a
01278> [MjSysSto=.3000E+00, TotOvfVol=.3668E+02, N-Ovf= 1, TotDurOvf= 1 hrs
01279> 003:0062-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01280> SAVE HYD 03:Mn106 .04 .004 No_date 1:01 64.19 n/a
01281> fname :C:\SWM_PRC\09-396\H-Mn106.003
01282> remark:HYD_COMMENT[""]
01283> 003:0063-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01284> CALIB STANDHYD 01:113 .13 .058 No_date 1:20 56.54 .744
01285> [XIMP=.56;TIMP=.56]
01286> [Horton parameters: Fo= 76.20;Fc= 13.20;DCAY=4.14; F= .00]
01287> [Pervious area: IAPER= 1.50;SLPP=1.50;LGP= 10.;MNP=.250;SCP= .0]
01288> [Impervious area: IAIMP=.80;SLPI=1.50;LGI= 10.;MNI=.013;SCI= .0]
01289> 003:0064-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01290> ADD HYD 01:113 .13 .058 No_date 1:20 56.54 n/a

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01291>      + 06:Mg106      .06      .043 No_date      1:20      64.17 n/a
01292>      + 07:Mg112      .29      .375 No_date      1:20      67.19 n/a
01293>      + 08:Mg114      .19      .320 No_date      1:20      65.64 n/a
01294> [DT= 1.00] SUM= 05:      .66      .797 No_date      1:20      64.41 n/a
01295> 003:0065-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01296> COMPUTE DUALHYD 05:      .66      .797 No_date      1:20      64.41 n/a
01297> Major System \ 02:Mg113      .62      .793 No_date      1:20      64.41 n/a
01298> Minor System \ 03:Mn113      .05      .004 No_date      1:01      64.59 n/a
01299> [MjSysSto=1000E+01, TotOvfVol=.396E+03, N-Ovf= 1, TotDurOvf= 1 hrs
01300> 003:0066-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01301> SAVE HYD 03:Mn113      .05      .004 No_date      1:01      64.59 n/a
01302> fname :C:\SWM_FRG\09-396\H-Mn113.003
01303> remark:HYD_COMMENT=("")
01304> 003:0067-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01305> READ HYD 01:mn101      .08      .004 No_date      0:51      64.37 n/a
01306> Filename = C:\SWM_FRG\09-396\H-Mn101.003
01307> Comment = HYD_COMMENT=("")
01308> 003:0068-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01309> READ HYD 02:mn102      .06      .004 No_date      0:51      67.72 n/a
01310> Filename = C:\SWM_FRG\09-396\H-Mn102.003
01311> Comment = HYD_COMMENT=("")
01312> 003:0069-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01313> READ HYD 03:mn103      .15      .004 No_date      0:31      66.02 n/a
01314> Filename = C:\SWM_FRG\09-396\H-Mn103.003
01315> Comment = HYD_COMMENT=("")
01316> 003:0070-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01317> READ HYD 04:mn104      .05      .004 No_date      1:01      57.92 n/a
01318> Filename = C:\SWM_FRG\09-396\H-Mn104.003
01319> Comment = HYD_COMMENT=("")
01320> 003:0071-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01321> READ HYD 05:mn105      .04      .004 No_date      1:01      71.54 n/a
01322> Filename = C:\SWM_FRG\09-396\H-Mn105.003
01323> Comment = HYD_COMMENT=("")
01324> 003:0072-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01325> READ HYD 06:mn106      .04      .004 No_date      1:01      64.26 n/a
01326> Filename = C:\SWM_FRG\09-396\H-Mn106.003
01327> Comment = HYD_COMMENT=("")
01328> 003:0073-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01329> READ HYD 07:mn107      .08      .004 No_date      0:51      64.34 n/a
01330> Filename = C:\SWM_FRG\09-396\H-Mn107.003
01331> Comment = HYD_COMMENT=("")
01332> 003:0074-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01333> READ HYD 08:mn108      .07      .004 No_date      0:51      68.26 n/a
01334> Filename = C:\SWM_FRG\09-396\H-Mn108.003
01335> Comment = HYD_COMMENT=("")
01336> 003:0075-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01337> ADD HYD 01:mn101      .08      .004 No_date      0:51      64.37 n/a
01338> + 02:mn102      .06      .004 No_date      0:51      67.72 n/a
01339> + 03:mn103      .15      .004 No_date      0:31      66.02 n/a
01340> + 04:mn104      .05      .004 No_date      1:01      57.92 n/a
01341> + 05:mn105      .04      .004 No_date      1:01      71.54 n/a
01342> + 06:mn106      .04      .004 No_date      1:01      64.26 n/a
01343> + 07:mn107      .08      .004 No_date      0:51      64.34 n/a
01344> + 08:mn108      .07      .004 No_date      0:51      68.26 n/a
01345> [DT= 1.00] SUM= 09:mn1      .57      .029 No_date      1:01      65.67 n/a
01346> 003:0076-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01347> READ HYD 01:mn109      .05      .004 No_date      1:01      67.21 n/a
01348> Filename = C:\SWM_FRG\09-396\H-Mn109.003
01349> Comment = HYD_COMMENT=("")
01350> 003:0077-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01351> READ HYD 02:mn110      .06      .004 No_date      1:02      49.52 n/a
01352> Filename = C:\SWM_FRG\09-396\H-Mn110.003
01353> Comment = HYD_COMMENT=("")
01354> 003:0078-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01355> READ HYD 03:mn111      .03      .004 No_date      1:07      48.81 n/a
01356> Filename = C:\SWM_FRG\09-396\H-Mn111.003
01357> Comment = HYD_COMMENT=("")
01358> 003:0079-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01359> READ HYD 04:mn112      .16      .004 No_date      0:41      67.25 n/a
01360> Filename = C:\SWM_FRG\09-396\H-Mn112.003
01361> Comment = HYD_COMMENT=("")
01362> 003:0080-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01363> READ HYD 05:mn113      .05      .004 No_date      1:01      64.65 n/a
01364> Filename = C:\SWM_FRG\09-396\H-Mn113.003
01365> Comment = HYD_COMMENT=("")
01366> 003:0081-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01367> READ HYD 06:mn114      .15      .004 No_date      0:41      65.67 n/a
01368> Filename = C:\SWM_FRG\09-396\H-Mn114.003
01369> Comment = HYD_COMMENT=("")
01370> 003:0082-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01371> READ HYD 07:mn115      .14      .004 No_date      0:51      63.31 n/a
01372> Filename = C:\SWM_FRG\09-396\H-Mn115.003
01373> Comment = HYD_COMMENT=("")
01374> 003:0083-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01375> ADD HYD 01:mn109      .05      .004 No_date      1:01      67.21 n/a
01376> + 02:mn110      .06      .004 No_date      1:02      49.52 n/a
01377> + 03:mn111      .03      .004 No_date      1:07      48.81 n/a
01378> + 04:mn112      .16      .004 No_date      0:41      67.25 n/a
01379> + 05:mn113      .05      .004 No_date      1:01      64.65 n/a
01380> + 06:mn114      .15      .004 No_date      0:41      65.67 n/a
01381> + 07:mn115      .14      .004 No_date      0:51      63.31 n/a
01382> + 09:mn1      .57      .029 No_date      1:01      65.67 n/a
01383> [DT= 1.00] SUM= 08:mn2      1.20      .054 No_date      1:07      64.49 n/a
01384> 003:0084-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01385> READ HYD 01:mn116      .05      .004 No_date      1:01      55.32 n/a
01386> Filename = C:\SWM_FRG\09-396\H-Mn116.003
01387> Comment = HYD_COMMENT=("")
01388> 003:0085-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01389> READ HYD 02:mn117      .03      .004 No_date      1:04      46.90 n/a
01390> Filename = C:\SWM_FRG\09-396\H-Mn117.003
01391> Comment = HYD_COMMENT=("")
01392> 003:0086-----ID:NHYD-----AREA-----QPEAK-TpeakDate_hh:mm-----R.V.-R.C.
01393> ADD HYD 01:mn116      .05      .004 No_date      1:01      55.32 n/a
01394> + 02:mn117      .03      .004 No_date      1:04      46.90 n/a
01395> + 08:mn2      1.20      .054 No_date      1:07      64.49 n/a
01396> [DT= 1.00] SUM= 09:MN_TOT      1.28      .061 No_date      1:07      63.70 n/a
01397> 003:0002-----
01398> FINISH
01399> -----
01400> -----
01401> WARNINGS / ERRORS / NOTES
01402> -----
01403> Simulation ended on 2011-05-10 at 16:28:37
01404> -----
01405> -----
01406> -----

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Storm Sewer Calculation Sheet
Richcraft - Mountshannon

Up	Down	Area (ha)	C (-)	Indiv AxC	Acc AxC	T _c (min)	I (mm/hr)	Q _{bldg} (L/s)	Q _{bldg_acc} (L/s)	Q (L/s)	Sewer Data								
											DIA (mm)	Slope (%)	Length (m)	A _{hydraulic} (m ²)	R (m)	Velocity (m/s)	Qcap (L/s)	Time Flow (min)	Q / Q full (-)
CB1	MAIN	0.12	0.72	0.09	0.09	10.0	104.2			25.0	250	1.00	1.5	0.049	0.063	1.21	59.5	0.0	0.42
CB2	MAIN	0.11	0.79	0.09	0.09	10.0	104.2			25.2	250	1.00	1.5	0.049	0.063	1.21	59.5	0.0	0.42
MH1	MH2	0.00	0.00	0.00	0.17	10.0	104.2			50.2	300	0.50	56	0.071	0.075	0.97	68.4	1.0	0.73
CB3	MAIN	0.21	0.80	0.17	0.17	10.0	104.2			48.6	250	1.50	17.5	0.049	0.063	1.48	72.8	0.2	0.67
CB4	MAIN	0.15	0.67	0.10	0.10	10.0	104.2			29.1	250	1.00	8	0.049	0.063	1.21	59.5	0.1	0.49
CB5	MAIN	0.05	0.84	0.04	0.04	10.0	104.2			12.2	250	1.00	6	0.049	0.063	1.21	59.5	0.1	0.20
CB6	MAIN	0.10	0.72	0.07	0.07	10.0	104.2			20.8	250	1.00	9	0.049	0.063	1.21	59.5	0.1	0.35
MH2	MH3	0.00	0.00	0.00	0.56	11.0	99.2			153.1	450	0.55	69	0.159	0.113	1.33	211.4	0.9	0.72
CB7	MAIN	0.12	0.72	0.09	0.09	10.0	104.2			25.0	250	1.00	1.5	0.049	0.063	1.21	59.5	0.0	0.42
CB8	MAIN	0.10	0.81	0.08	0.08	10.0	104.2			23.4	250	1.00	1.5	0.049	0.063	1.21	59.5	0.0	0.39
MH4	MH3	0.00	0.00	0.00	0.17	11.9	95.1			44.2	300	0.50	56.5	0.071	0.075	0.97	68.4	1.0	0.65
CB9	MAIN	0.05	0.74	0.04	0.04	10.0	104.2			10.7	250	1.00	6	0.049	0.063	1.21	59.5	0.1	0.18
MH3	MH5	0.00	0.00	0.00	0.76	12.9	91.0			192.2	450	0.80	23	0.159	0.113	1.60	255.0	0.2	0.75
CB10	MH6	0.25	0.53	0.13	0.13	10.0	104.2			38.3	250	1.00	12	0.049	0.063	1.21	59.5	0.2	0.64
CB11	MAIN	0.03	0.40	0.01	0.01	10.0	104.2			3.5	250	1.00	23	0.049	0.063	1.21	59.5	0.3	0.06
CB12	MAIN	0.19	0.79	0.15	0.15	10.0	104.2			43.4	250	1.00	1	0.049	0.063	1.21	59.5	0.0	0.73
CB13	MAIN	0.13	0.60	0.08	0.08	10.0	104.2			22.6	250	1.00	27.5	0.049	0.063	1.21	59.5	0.4	0.38
CB14	MAIN	0.17	0.78	0.13	0.13	10.0	104.2			38.4	250	1.00	1	0.049	0.063	1.21	59.5	0.0	0.65
MH6	MH7	0.00	0.00	0.00	0.51	10.4	102.1			143.3	450	0.50	85	0.159	0.113	1.27	201.6	1.1	0.71
CB15	MAIN	0.13	0.78	0.10	0.10	10.0	104.2			29.3	250	1.00	1	0.049	0.063	1.21	59.5	0.0	0.49
MH7	MH5	0.00	0.00	0.00	0.61	11.5	96.9			163.3	450	0.60	66.5	0.159	0.113	1.39	220.8	0.8	0.74
CB16	MAIN	0.15	0.63	0.09	0.09	10.0	104.2			27.4	250	1.00	15	0.049	0.063	1.21	59.5	0.2	0.46
CB17	MAIN	0.15	0.52	0.08	0.08	10.0	104.2			22.6	250	1.00	19.5	0.049	0.063	1.21	59.5	0.3	0.38
MH5	MH EX	0.00	0.00	0.00	1.54	13.1	90.2			385.9	600	0.75	51	0.283	0.150	1.88	531.7	0.5	0.73