1095 NORTH TALBOT RESIDENTIAL DEVELOPMENT

CITY OF WINDSOR, ONTARIO

STORMWATER MANAGEMENT REPORT

PROJECT NO. 21-021

SUBMITTED FOR APPROVALS: MAY 14, 2021

REVISED: APRIL 22, 2022

REVISED: APRIL 26, 2022

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1. Introduction

Baird AE has been engaged to provide civil engineering design services in support of a conceptual plan for the proposed 1095 North Talbot residential development. The proposed development consists of two lots, with the municipal addresses of 1095 and 1185 on North Talbot Road. These lots are currently vacant with the exception of a residential property located at the Northeast corner of the 1185 lot. The proposed development has a total area of 2.93 Ha and shall consist of 34 single family detached lots with areas exceeding 500 m^2. This report is intended to define a stormwater management scheme for the proposed development, which shall meet the current approval criteria, as specified by the current Windsor Essex Region Stormwater Management Standards (WERSMS).

2. Pre-Development Conditions

The proposed development site is currently vacant, with some overgrowth dispersed through the two adjacent lots, 1095 and 1185 North Talbot Road. The lots are predominantly undeveloped, with the exception of the residential property at the North east corner of the 1185 lot. Any runoff from the existing lots is currently discharging via overland flow to the open ditches on North Talbot. However, it was confirmed through pre-consultation with the City of Windsor that both lots 1095 and 1185 were originally assessed to the 1200 mm diameter sewer constructed along the Southwood Lakes Boulevard alignment, located west of the site.

Figure 1: Existing Conditions

3. Allowable Release Rate

Lots 1095 and 1185 were both included in a drainage study, conducted by Dillon Consulting Limited in 2019, assessing the North Talbot Road Corridor from Howard Avenue easterly to the Highway 401 overpass east of the proposed development site. Through consultation with the City of Windsor and Dillon Consulting limited it was determined that the allowable release rate for the proposed development would be defined by the maximum allowable release rates from lots 1095 and 1185 identified in the North Talbot study. Furthermore, the release rates defined in the North Talbot study for lots 1095 and 1185 were 206 L/s and 201 L/s, respectively. Therefore, the total allowable release rate for the proposed development, including both lots, was determined to be 407 L/s.

Based on the additional consultation with City of Windsor, the proposed development lots 1 to 5 and 7 to 10 are allowed to sheet drain into Talbot Road. Hence, these area flows are deducted from the allowable rate. Calculations are provided below.

- Area of lots 1-5 & 7-10 = 0.414 ha
- Total Area of proposed development = 2.93 ha
- Allowable flow from total area = 407 l/s
- Flow from lots 1-5 & 7-10 = 0.414 x 407 / 2.93 = 57.5 l/s
  Hence allowable flow rate is = 407 l/s – 57.5 l/s = 349.5 l/s

4. Post Development Conditions

The proposed developed shall have a total area of 2.93 Ha and shall be subdivided into 34 residential lots with areas greater than 500 m^2 (2.07 Ha), a single lot dedicated to a dry pond stormwater management facility (0.105 Ha), and roads/boulevards (0.755 Ha). Drainage on the site shall be achieved via overland and twin inlet catch basins installed as depicted in Appendix A, with the total combined discharge from the site discharging to the existing 1200 mm diameter storm sewer constructed along the Southwood Lakes Boulevard alignment.

Based on discussion with City of Windsor, the drainage areas of lots 1-5 and lots 7-10 will sheet drain to Talbot Street. Hence, the area of 0.414 is deducted from the model.

The stormwater management scheme for the site was developed using PCSWMM Professional (Version 7.3.3095), applying a dynamic wave routing methodology to the site

analysis. The site was subdivided into six sub-catchments based on the grading and servicing designs for the site, for the purpose of analyzing the sites response to given storm events. Table 1, below, provides the sub-catchment parameters, applied to each sub-catchment in the model. Furthermore, a general layout of the model has been provided in Appendix B for reference.

Table 1: PCSWMM Sub-Catchment Parameters

Catchment ID	Area (ha)	Gradient %	Impervious %	Manning 'n' Imp	D-store Impervious (mm)	D-store pervious (mm)	Manning 'n' per
S1	0.479	1	60	0.013	2.5	7.5	0.15
S2	0.219	1	60	0.013	2.5	7.5	0.15
S3	0.447	1	60	0.013	2.5	7.5	0.15
S4	0.530	1	60	0.013	2.5	7.5	0.15
S5	0.720	1	60	0.013	2.5	7.5	0.15
S6	0.121	1	60	0.013	2.5	7.5	0.15
Proposed Development = 2.93 Ha							

According to the soil data provided by the Essex Regional Conservation Authority's (ERCA) interactive mapping tool the site consists of two different soil types, Figure 2 below depicts the stratification of the soil types across the surface of the site. The two soil types are Brookstone Clay Loam (shown in grey) and Brookstone Clay Sand (shown in yellow). Both soils are classified as Hydrologic Soil Group D in accordance with the WERSMS and both have very similar infiltration parameters, thus one soil type was used in the PCSWMM analysis of the site to account for infiltration in the stormwater management calculations and that type was selected to provide the most conservative estimate of infiltration in the analysis. The Horton method of infiltration estimation was applied in the PCSWMM model and the parameters for each soil type present on the site are as provided in Table 2 below.

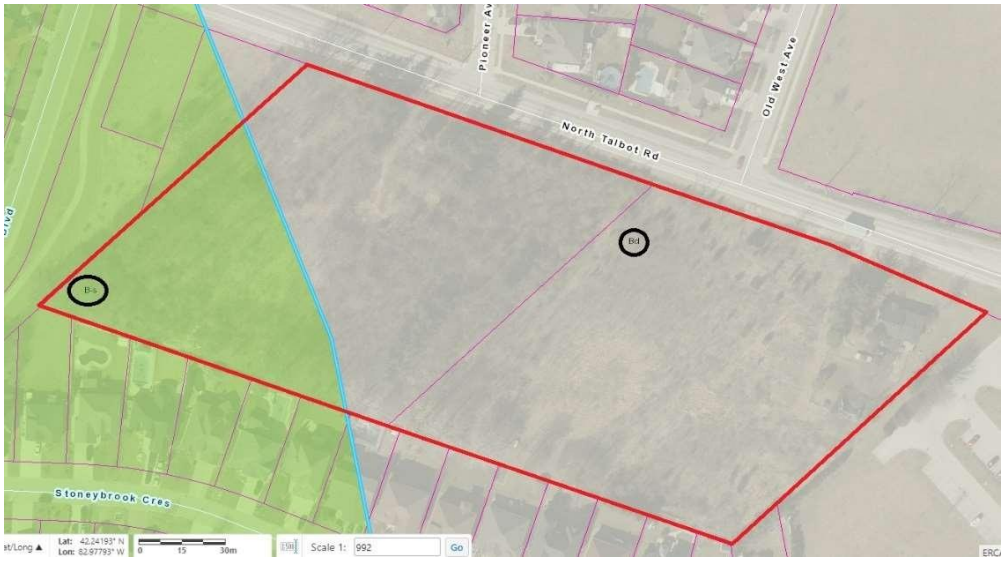

Figure 2: Site Soil Type Depiction

Table 2: Infiltration Parameters

Attribute		Brookstone Clay Loam Hydro Group (D)	Brookstone Clay Sand Hydro Group (C)
Horton's Infiltration	Max. Infil. Rate (normal) (mm/hr)	50	50
	Min. Infil. Rate (mm/hr)	0.5	0.5
	Decay constant (1/hr)	4	4
	Drying Time (days)	4	4

The soil type selected for application in the model was Brookstone Clay Loam and these parameters were applied to each sub-catchment included in the analysis. This data, along with much more, is presented in the model input/output summaries provided in Appendices C, D, and E to this report.

5. Stormwater Management

The stormwater management criteria for this development are based on the requirements of the City of Windsor and the WERSMS. The requirement includes:

- Restriction of the peak discharge from the site to the allowable release rate, defined in subsection 3 of this report, for storm events with depths up to and including the 100-year event.
- Storm water detention for site runoff in excess of the allowable release rate for a given

storm event.

- Water quality controls providing a “Normal Protection level’ as per MOE (2003) guidelines.

5.1. Storm Quantity Control

In accordance with the WERSMS stormwater quantity controls are to be provided for all given storm events with depths less than or equal to the 100-year event, with discharge from the site being restricted to a release rate agreed upon with the approval authority, in this case the City of Windsor. As such, of the design storm events prescribed in the WERSMS, those selected for further analysis were selected on the basis of having the largest impact on the site in terms of discharge and the resultant hydraulic grade-line within the limits of the site. Table 3, provided below, identifies

Table 3: Rainfall Intensities used for PCSWMM Modelling

Storm Event	Storm Duration	Rainfall Depth
Chicago 5-year	4 hours	49.50 mm
100-Year Chicago	4 hours	81.60 mm
100-Year SCS Type II	24 hours	108 mm
Urban Stress Test	24 hours	150 mm

The ultimate outlet for stormwater runoff from the site is the existing 1200 mm diameter storm sewer constructed along the Southwood Lakes Boulevard. The tailwater conditions at that outlet were included in the results of the drainage study discussed in Subsection 3 of this report, and as such these tailwater conditions were provided by Dillon Consulting Limited to be included in the model for this site. Tailwater data was applied for each storm event included in the PCSWMM analysis for this site, however the data has been omitted from this report due to the size of the input, although this data can be provided to reviewer upon request.

As noted in Subsection 3 of this report the allowable release rate for this site was estimated to be 407 L/s. Discharge from the site is restricted via a 362 mm diameter Tempest Device installed as depicted in Appendix A details attached. Furthermore, Table 4 below provides a summary of the uncontrolled peak discharge from the site for each given storm event and the controlled release rate to the existing 1200 mm sewer downstream of the orifice plate. Review of Table 4 confirms that the allowable release rate is not exceeded in neither the minor (5-year) nor the major (100-year & Urban Stress Test) storm events. It is worthwhile to note here that due to the tailwater condition at the outlet the peak discharge is met with a similar peak in tailwater elevation, resulting in controlled outflow being nearly equal to uncontrolled outflow, which is

evident in the results displayed in Table 4.

Table 4: Peak Discharges

Storm Event	Peak Inflow (m^3/s)	Controlled Outflow (m^3/s)
Chicago 5-year 4hr	0.634	0.271
100-Year Chicago 4hr	0.984	0.284
100-Year SCS Type II	0.394	0.351
Urban Stress Test	0.647	0.347

The stormwater detention scheme applied on this site is a combination of subsurface storage in pipes and drainage structures and surface storage in the form of a dry pond, located as depicted in Appendix A, and ponding on the road surface in the major storm events. Table 5 below provides a summary of the proposed dry pond stage storage breakdown.

Table 5: SWM Pond Stage Storage Calculations

Stage (m)	Elevation (m)	Storage (m^3)	Levels
0.00	188.34	0	Top of Grate
0.04	188.38	1.66	Top of Low Slope (0.5%) Contour
0.42	188.76	55	5- Year High Water Line
1.12	189.46	362	100-Year SCS Type II High Water Line
1.42	189.76	579	Urban Stress Test High Water Line
1.62	189.96	694	100-Year Chicago High Water Line
1.94	190.28	994.04	Top of Pond

Review of Table 5 shows that storage required for each storm event, with depths up to and including that of the Urban Stress test can be contained within the proposed dry pond. The critical event governing the size and shape of the pond is the 100-year 4-hour Chicago storm

event, as displayed in Table 5. The top elevation of the pond was set at 190.2 m to provide a 0.3 m freeboard from the top of the pond to the 100-year high water elevation.

5.2. Minor and Major storm events

Pipes were sized in PCSWMM to provide adequate drainage along with reducing the additional storage in the stormwater drainage system. A rational method analysis was used to verify that minimum pipe velocities could be satisfied by the pipes, as depicted on Sheet 9 of Appendix A. The PCSWMM model was used to assess the hydraulic grade-line across the site for both the minor and major storm events. The tables provided below summarize the hydraulic grade-line results at each node for each storm event, which is intended to convey that the hydraulic grade-line requirements of the WERSMS have been met. It is important to note here that the manhole and catch basin identifiers used here match those provided in the drawings in Appendix A.

Table 7: 100 – Year 24- hour SCS Type II Storm

STRUCTURE NAME	ROAD ELEVATION (m)	100 YEAR WL (m)	PONDING. DEPTH (m)	LOE (m)	FREE BOARD(m)
CB#1&2	189.710	-	0	190.4	-
CB#3&4	189.730	-	0	190.4	-
CB#5&6	189.710	-	0	190.4	-
CB#7&8	189.770	-	0	190.4	-
CB#9&10	189.720	-	0	190.4	-
CB#11&12	189.820	-	0	190.4	-
HP1	190.050	-	0	190.4	-
HP2	189.910	-	0	190.4	-
HP3	189.943	-	0	190.4	-
HP4	189.940	-	0	190.4	-
HP5	190.050	-	0	190.4	-
HP6	190.130	-	0	190.4	-
Dry Pond	-	189.460	1.12	190.4	0.94

Table 6: 5-year 4-hour Chicago Storm

STRUCTURE NAME	RIM ELEVATION (m)	5-YEAR WATER ELEVATION (m)	Ponding Depth (m)
MH#1	190.170	189.830	(0.34)
MH#2	189.826	189.830	0.00
MH#3	189.993	189.830	(0.16)
MH#4	190.330	189.830	(0.50)
MH#5	190.016	189.840	(0.17)
MH#6	189.957	189.830	(0.12)
MH#7-A	190.090	189.830	(0.26)
MH#7-B	190.150	189.780	(0.37)
Pond Basin	188.340	189.84	-
Dry Pond	190.28	189.76	(0.52)

*** CB nodes and road HP nodes excluded as PCSWMM model reports a depth of zero at these nodes during the minor storm event (as required by WERSMS)**

Table 7: 100 – Year 4- hour Chicago Storm

STRUCTURE NAME	ROAD ELEVATION (m)	100 YEAR WL (m)	PONDING. DEPTH (m)	LOE (m)	FREE BOARD(m)
CB#1&2	189.711	189.99	0.29	190.4	0.41
CB#3&4	189.730	189.99	0.26	190.4	0.41
CB#5&6	189.710	189.98	0.27	190.4	0.42
CB#7&8	189.763	189.99	0.22	190.4	0.41
CB#9&10	189.725	189.99	0.26	190.4	0.41
CB#11&12	189.818	190.01	0.19	190.4	0.39
HP1	190.052	190.05	0.00	190.4	0.35
HP2	189.907	189.99	0.08	190.4	0.41
HP3	189.943	189.99	0.04	190.4	0.41
HP4	189.900	189.98	0.08	190.4	0.41
HP5	190.053	190.05	0.00	190.4	0.35
HP6	190.127	190.13	0.00	190.4	0.27
Dry Pond	-	189.96		190.4	0.44

Table 8: Urban Stress Test Storm

STRUCTURE NAME	ROAD ELEVATION (m)	UST WL (m)	PONDING. DEPTH (m)	LOE (m)	FREE BOARD(m)
CB#1&2	189.711	189.830	0.11	190.4	0.57
CB#3&4	189.730	189.830	0.11	190.4	0.57
CB#5&6	189.710	189.760	0.05	190.4	0.64
CB#7&8	189.763	189.870	0.10	190.4	0.53
CB#9&10	189.725	189.840	0.11	190.4	0.56
CB#11&12	189.818	189.840	0.02	190.4	0.56
HP1	190.052	190.050	0.00	190.4	0.56
HP2	189.907	189.910	0.00	190.4	0.35
HP3	189.943	189.940	0.00	190.4	0.49
HP4	189.900	189.900	0.00	190.4	0.45
HP5	190.053	190.050	0.00	190.4	0.50
HP6	190.127	190.30	0.00	190.4	0.35
Dry Pond	-	189.760	1.46	-	0.64

5.3. SWM Findings

- Based on Section 5.2 for minor storm event, the water elevation for 5-year storm event is stored more than 0.3 m below the rim elevations of the manhole, consequently there is no surface ponding in the roadway.
- The ponding depth during the 100-year storm event is less than or equal to 0.3 m in the roadway.
- The proposed Lowest Opening Elevation (LOE) will be set 0.300m more than the water elevation on the road, as shown in Table 7.
- PCSWMM modelling input, output report and profiles are attached in Appendix C, D, and E of this report.

5.4. Water Quality, Erosion and Sediment Control

The water quality is addressed through a quality unit FD-5HC. The quality unit was sized with rainfall intensity stated in table 3.4.1.5 of WERSMSM and with fine particle size distribution. The quality unit treats 95.9% total runoff volume, while maintaining an overall removal efficiency of 75.1% and it satisfies the MECP and WERSMSM manuals.

The OGS unit is specifically sized only for the proposed subdivision and is installed upstream of the proposed connection to the existing 1200 mm storm sewer constructed along the Southwood Lakes Boulevard alignment. The details of the OGS quality unit are provided on Sheet 11 of Appendix A. The erosion and sediment control measures for the site will be included in tender documents, and will include the following:

- Silt fence is to be erected before grading begins on the property to protect downstream areas from migration of sediment in overland flow;
- Filter fabric will be placed over the drainage grates; and
- All disturbed areas will be stabilized by restoration of vegetative ground cover as soon as possible.

6. Functional Servicing Study

6.1. Storm Drainage Servicing

In consultation with the City of Windsor it was determined that the 1095 North Talbot Road was originally assessed to the 1200 mm diameter sewer constructed along the Soutwood Lakes Boulevard alignment and 1185 was assessed to the 1200 mm sewer along the North Talbot Road alignment, opposite the site. Furthermore, it was determined in pre-consultation with the City that the it would be acceptable to divert all drainage from the proposed development site to the 1200 mm sewer along Southwood Lakes Boulevard, as has been pursued herein.

6.2. Sanitary Drainage Servicing

In consultation with the City of Windsor it was determined that the site has been assessed to the existing 600 mm sanitary trunk sewer, constructed along the northern property line, of the site. The City confirmed connection to this sewer would be acceptable for the proposed development's sanitary drainage. Therefore, no further sanitary drainage study was conducted. A sanitary design sheet, detailing the sewer sizing for the proposed development is provided on Sheet 10 in Appendix A.

6.3. Potable Water Servicing

In pre-consultation with Enwin it was determined that there are 300 mm diameter water mains located along both the Southwood Lakes Boulevard and the North Talbot Road alignments. Proposed water servicing is as depicted in Appendix A and is pending further review from the Utility Authority.

7. Conclusion

Based on the above results, we have determined the following:

1. The proposed development is modelled using new ERCA SWMM guidelines and meets all standard criteria specified therein.
2. Water elevations for 5, 100 and Urban storm events satisfies the new ERCA SWMM guidelines.
3. The proposed subdivision did not have any adverse impacts on existing downstream developments.

All of which is respectfully submitted.

BAIRD AE INC.

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UNIT 102LEAMINGTON, ONTARIO N8H 2X8

Shurjeel Tunio, P. Eng.

Appendix A

Design Drawings

NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

LEGEND		
DESCRIPTION	EXISTING	NEW
STORM SEWER	— — — —	—·—·—·—
SANITARY SEWER	—·—·—·—	— — — —
WATER MAIN	— ⋯ — ⋯ —	— ⋯ — ⋯ —
STORM SERVICE		○ STM
SANITARY SERVICE		○ SAN
WATER SERVICE		○ WSV
FIRE HYDRANT & WATER VALVE	⊗	⊗
GAS MAIN		— GAS —
CATCH BASIN	⊠	⊠
CURB INLET		●
STORM MANHOLE	●	●
SANITARY MANHOLE	◒	◒
WATER VALVE	⊗	⊗
EP ELEVATIONS		180.XXX
STREET LIGHTS		☀

KEY PLAN
N.T.S

Sheet List Table	
Sheet Number	Sheet Title
--	TITLE PAGE
1	GRADING PLAN
2	OVERLAND FLOW ROUTE
3	SERVICING LAYOUT PLAN
4	STREET 'A' PLAN AND PROFILE 0+000 TO 0+170
5	STREET 'A' PLAN AND PROFILE 0+170 TO 0+310
6	STREET 'B' PLAN AND PROFILE 0+000 TO 0+108
7	STREET 'C' PLAN AND PROFILE 0+000 TO 0+105
8	POND PLAN AND PROFILE 0+000 TO 0+043
9	STORM DRAINAGE AREA PLAN
10	SANITARY DRAINAGE AREA PLAN
11	DETAILS 1
12	DETAILS 2

BENCH MARK

CITY OF WINDSOR BENCH MARK 1083 ELEVATION 191.32
M.B. 1185 NORTH OF TALBOT ROAD: THE PLATE IS LOCATED ON THE WEST WALL OF THE CHIMNEY, 0.09 METER FROM THE SOUTH WALL OF THE CHIMNEY AND 0.43 METER ABOVE GRADE.

SITE BENCH MARK #1 ELEVATION 190.79
TOP OF FIRE HYDRANT AT SOUTHWEST CORNER OF PARCEL.

SITE BENCH MARK #2 ELEVATION 191.22
TOP OF FIRE HYDRANT AT NORTHEAST CORNER OF NORTH TALBOT ROAD AND PIONEER AVENUE.

NOTE:
ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER: ######
ISSUED DATE: ######

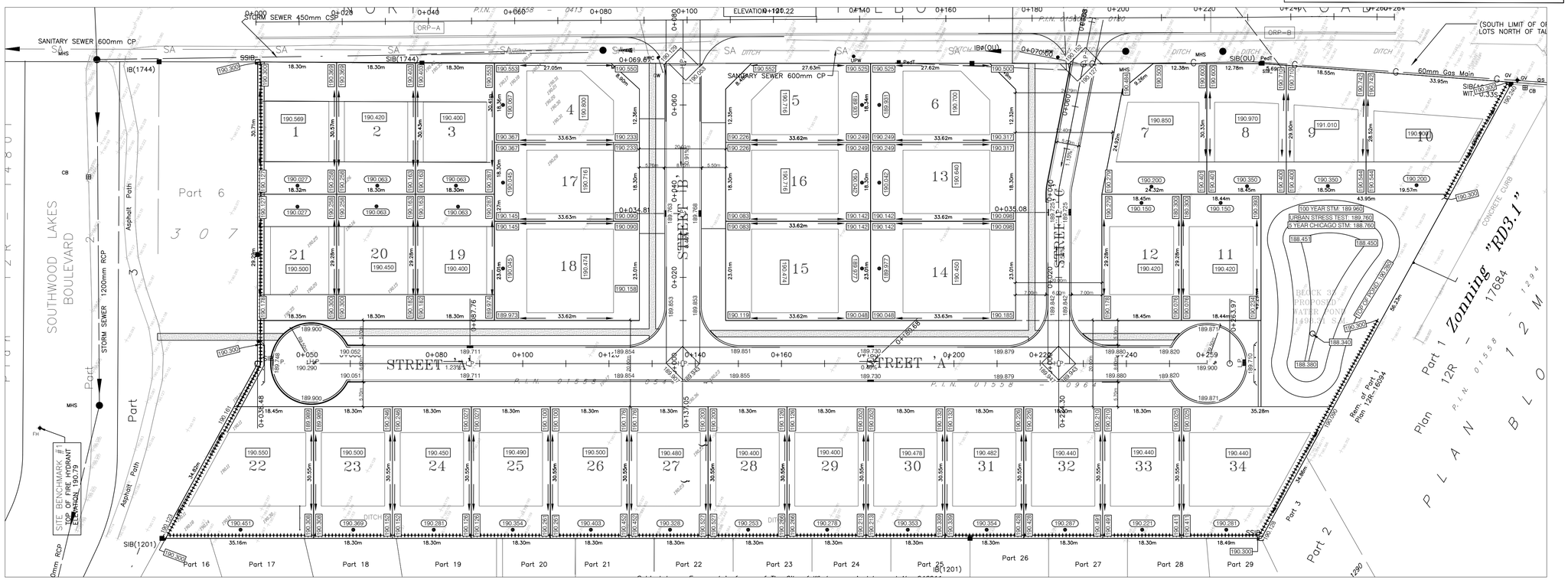
ATTENTION
CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE EXACT LOCATION AND PROTECTION OF EXISTING UTILITIES DURING CONSTRUCTION.

May/27/2022
1095 NORTH TALBOT ROAD GRADING PLAN.DWG

GRADING NOTES

⇨	OVER LAND FLOW DIRECTION
2.5%	PROPOSED SLOPE
186.563	PROPOSED ELEVATION
186.563	EDGE OF ASPHALT ELEVATIONS
+ 186.563	EXISTING ELEVATIONS
186.563	TOP OF BERM
186.563	BOTTOM OF SWALE

N



May/27/2022

1095 NORTH TALBOT ROAD DRAWING PLAN DWG

LICENSED PROFESSIONAL ENGINEER
S. TUNIO
100125071
PROVINCE OF ONTARIO
MAY 26, 2022

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
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22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
GRADING PLAN

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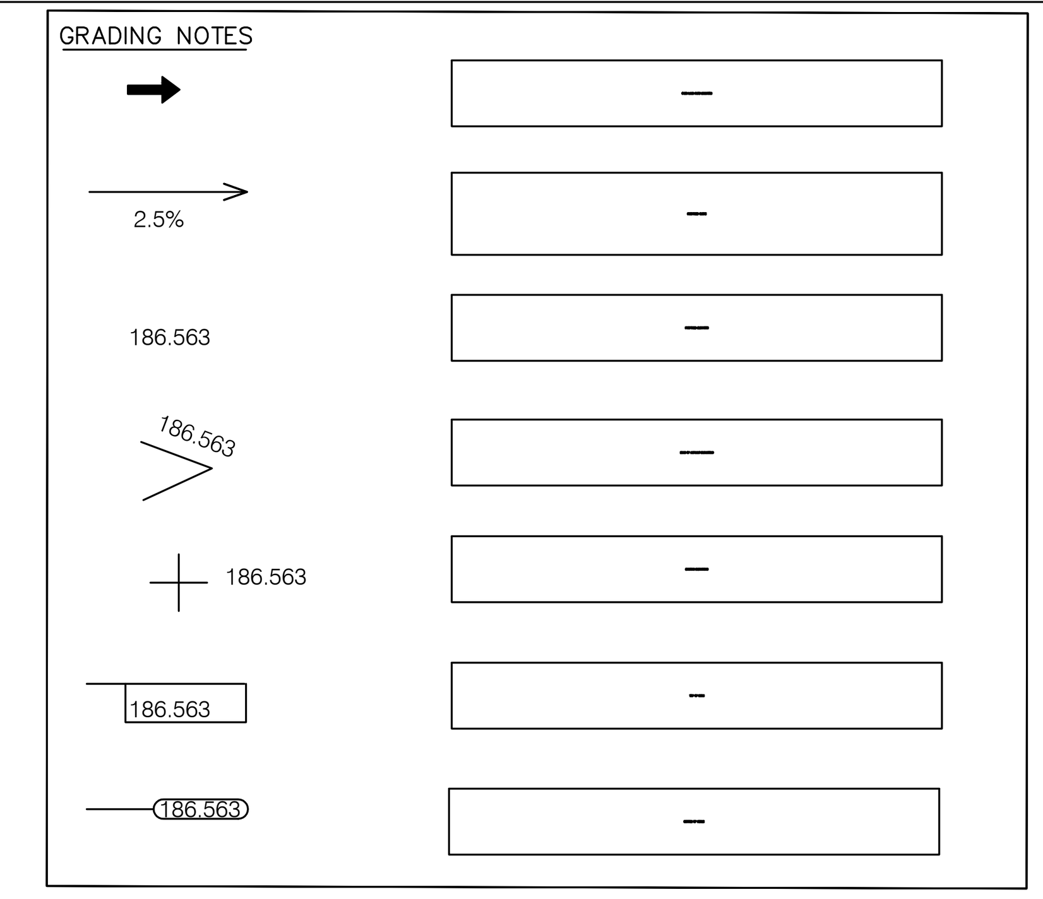
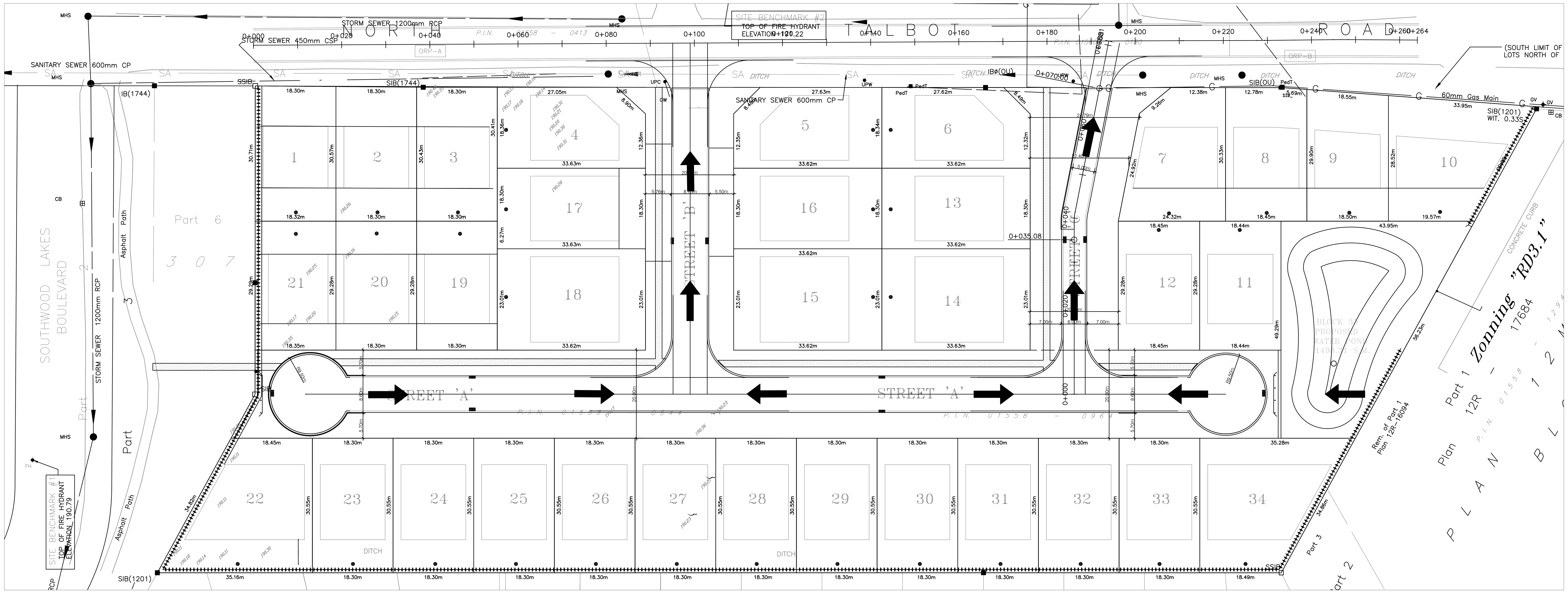
DRAWN BY: B.T.	SHEET NO: 1
CHECKED BY: S.T.	





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PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
OVERLAND FLOW ROUTE

DATE: MAY 27, 2022	PROJECT NO: 21-021
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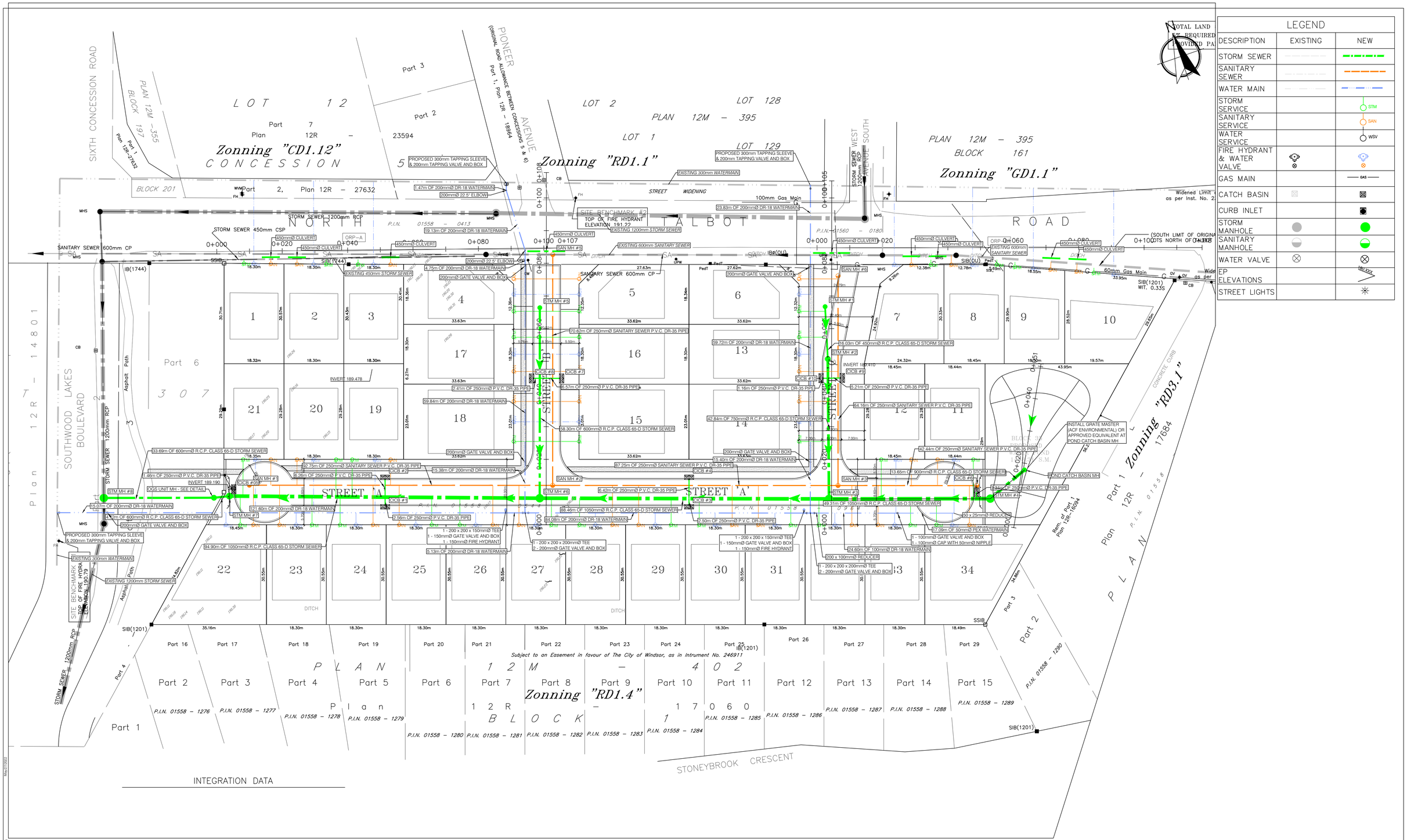
CHECKED BY: S.T.	



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PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
SERVICING LAYOUT PLAN

DATE: MAY 27, 2022	PROJECT NO: 21-021
SCALE: 1:500	
DRAWN BY: B.T.	SHEET NO: 3
CHECKED BY: S.T.	

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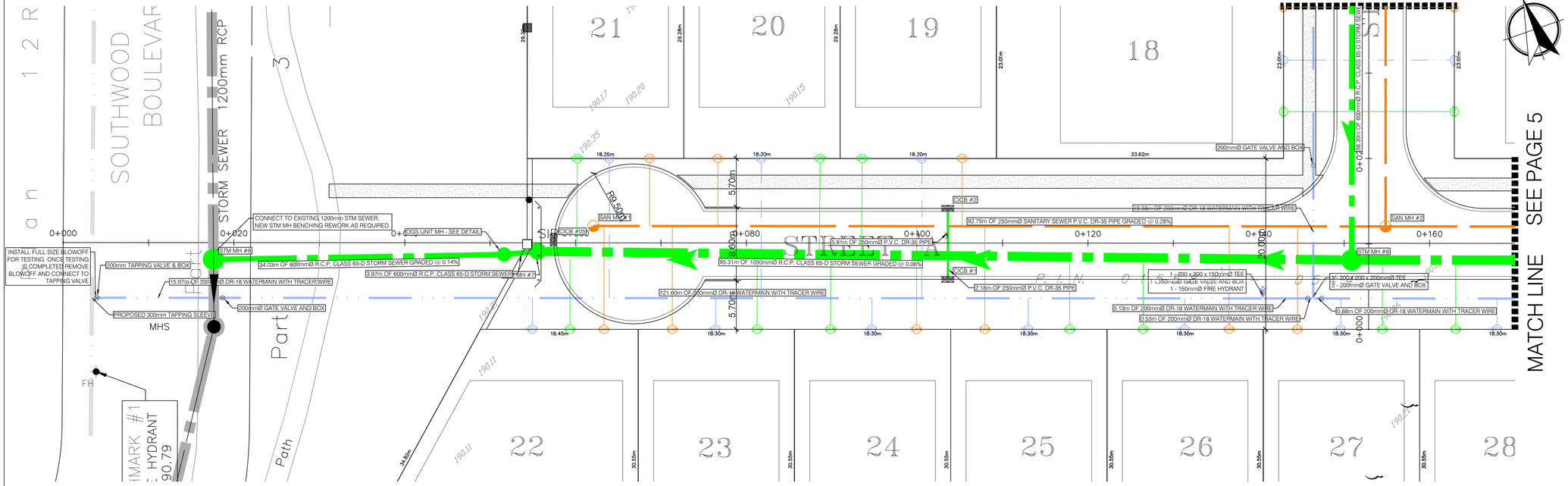
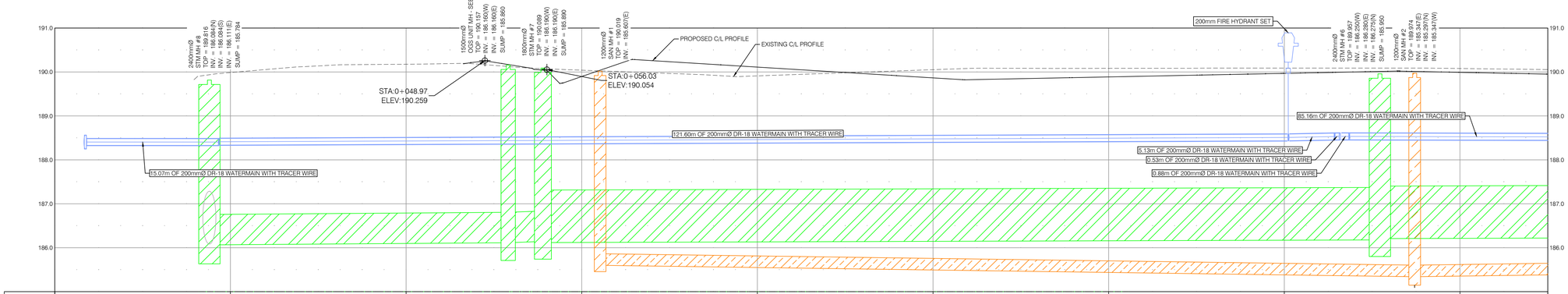


LEGEND		
DESCRIPTION	EXISTING	NEW
STORM SEWER		
SANITARY SEWER		
WATER MAIN		
STORM SERVICE		STM
SANITARY SERVICE		SAN
WATER SERVICE		WSV
FIRE HYDRANT & WATER VALVE		
GAS MAIN		GAS
CATCH BASIN		
CURB INLET		
STORM MANHOLE		
SANITARY MANHOLE		
WATER VALVE		
EP ELEVATIONS		XXX
STREET LIGHTS		



STATION	0+000	0+020	0+040	0+060	0+080	0+100	0+120	0+140	0+160	0+170
CENTER LINE OF ROAD				189.897	190.111	189.866	189.888	189.968	189.992	189.951
PROPOSED STORM SEWER INVERTS	186.111	34.03m OF 600mmØ R.C.P. CLASS 65-D STORM SEWER @ 0.14%		186.160 / 186.160	186.100 / 186.190	95.31m OF 1050mmØ R.C.P. CLASS 65-D STORM SEWER @ 0.06%			186.250 / 186.280	87.25m OF 1050mmØ R.C.P. CLASS 65-D STORM SEWER @ 0.07%	186.340
PROPOSED SANITARY SEWER INVERTS				185.607	92.75m OF 250mmØ SANITARY SEWER P.V.C. DR-35 PIPE @ 0.28%				185.347 / 185.347	87.25m OF 250mmØ SANITARY SEWER P.V.C. DR-35 PIPE @ 0.28%	185.590

May/27/2022

1095 NORTH TALBOT ROAD PLAN & PROFILES.DWG

LICENSED PROFESSIONAL ENGINEER
MAY 26, 2022
S. TUNIO
100125071
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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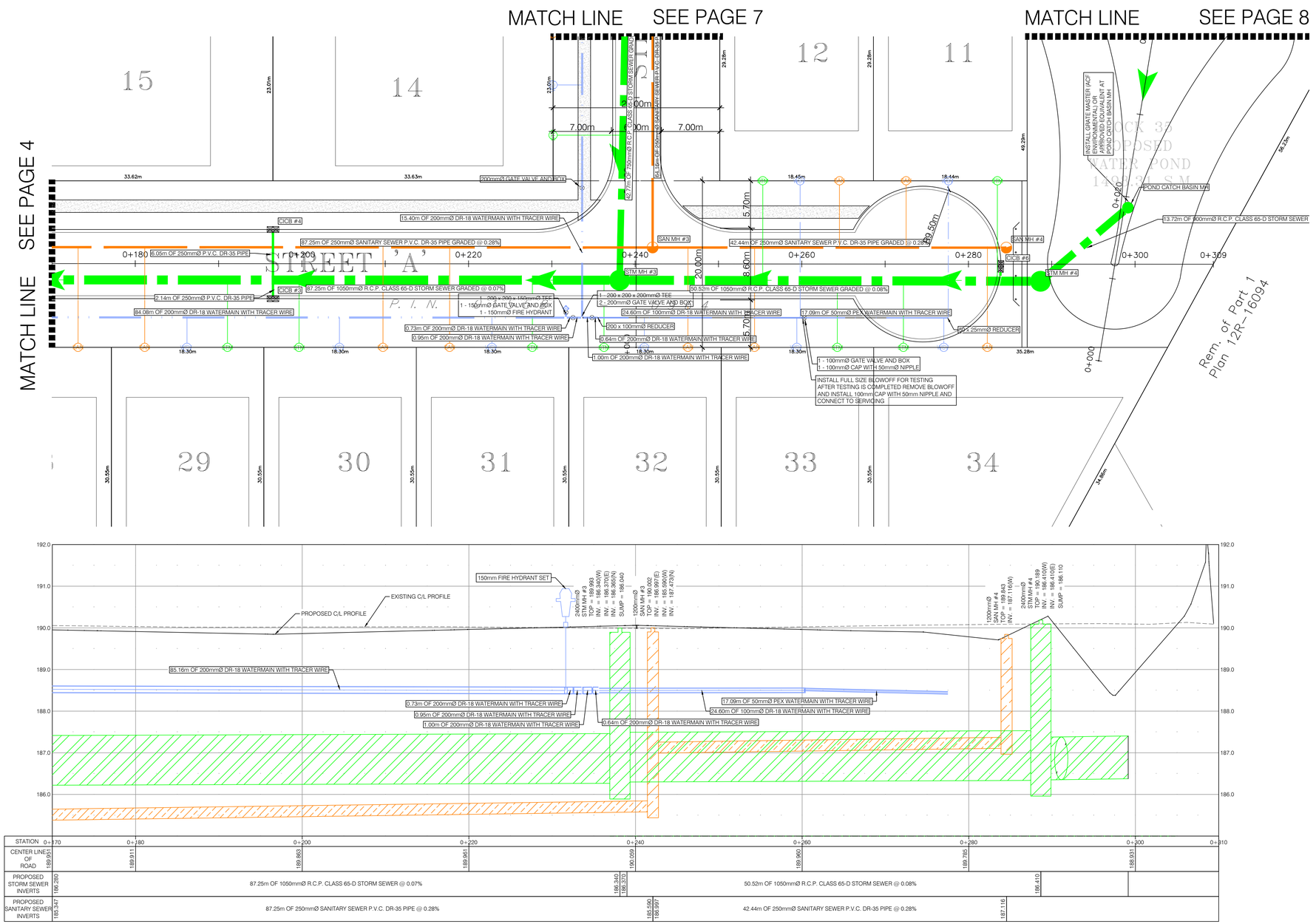
BAIRD|AE
architecture + engineering
27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8
1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
STREET 'A' PLAN AND PROFILE 0+000 TO 0+170

DATE: MAY 27, 2022
SCALE: HOR: 1:250 VER: 1:50
DRAWN BY: B.T.
CHECKED BY: S.T.
PROJECT NO: 21-021
SHEET NO: 4



STATION	0+170	0+180	0+200	0+220	0+240	0+260	0+280	0+300	0+310
CENTER LINE OF ROAD	189.051	189.911	189.863	189.941	190.099	189.990	189.765	188.931	
PROPOSED STORM SEWER INVERTS	186.280	87.25m OF 1050mmØ R.C.P. CLASS 65-D STORM SEWER @ 0.07%			186.340 / 186.370	50.52m OF 1050mmØ R.C.P. CLASS 65-D STORM SEWER @ 0.08%		186.410	
PROPOSED SANITARY SEWER INVERTS	185.347	87.25m OF 250mmØ SANITARY SEWER P.V.C. DR-35 PIPE @ 0.28%			185.590 / 185.997	42.44m OF 250mmØ SANITARY SEWER P.V.C. DR-35 PIPE @ 0.28%		187.116	

LEGEND

DESCRIPTION	EXISTING	NEW
STORM SEWER		
SANITARY SEWER		
WATER MAIN		
STORM SERVICE		STM
SANITARY SERVICE		SAN
WATER SERVICE		WSV
FIRE HYDRANT & WATER VALVE		
GAS MAIN		GAS
CATCH BASIN		
CURB INLET		
STORM MANHOLE		
SANITARY MANHOLE		
WATER VALVE		
EP ELEVATIONS		190.XXX
STREET LIGHTS		

LICENSED PROFESSIONAL ENGINEER
MAY 26 2022
S. TUNIO
100125071
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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BAIRD|AE architecture + engineering
27 PRINCESS STREET, SUITE #102 LEAMINGTON, ONTARIO N8H 2X8
1000 - 267 PELISSIER STREET, WINDSOR, ONTARIO N9A 4K4.

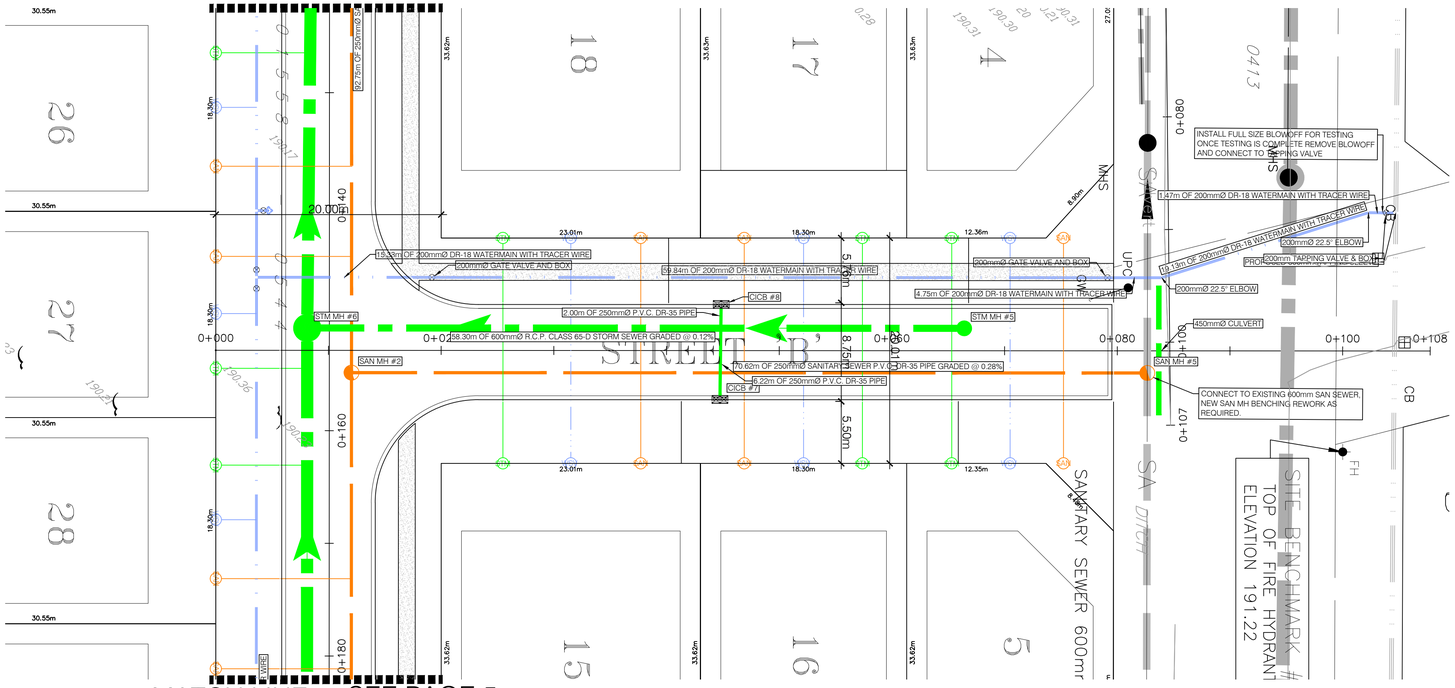
PROJECT TITLE: NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE: STREET 'A' PLAN AND PROFILE 0+170 TO 0+310

DATE: MAY 27, 2022
SCALE: HOR: 1:250 VER: 1:50
DRAWN BY: B.T.
CHECKED BY: S.T.
PROJECT NO: 21-021
SHEET NO: 5

May/27/2022
1095 NORTH TALBOT ROAD PLAN & PROFILES.DWG

MATCH LINE SEE PAGE 4



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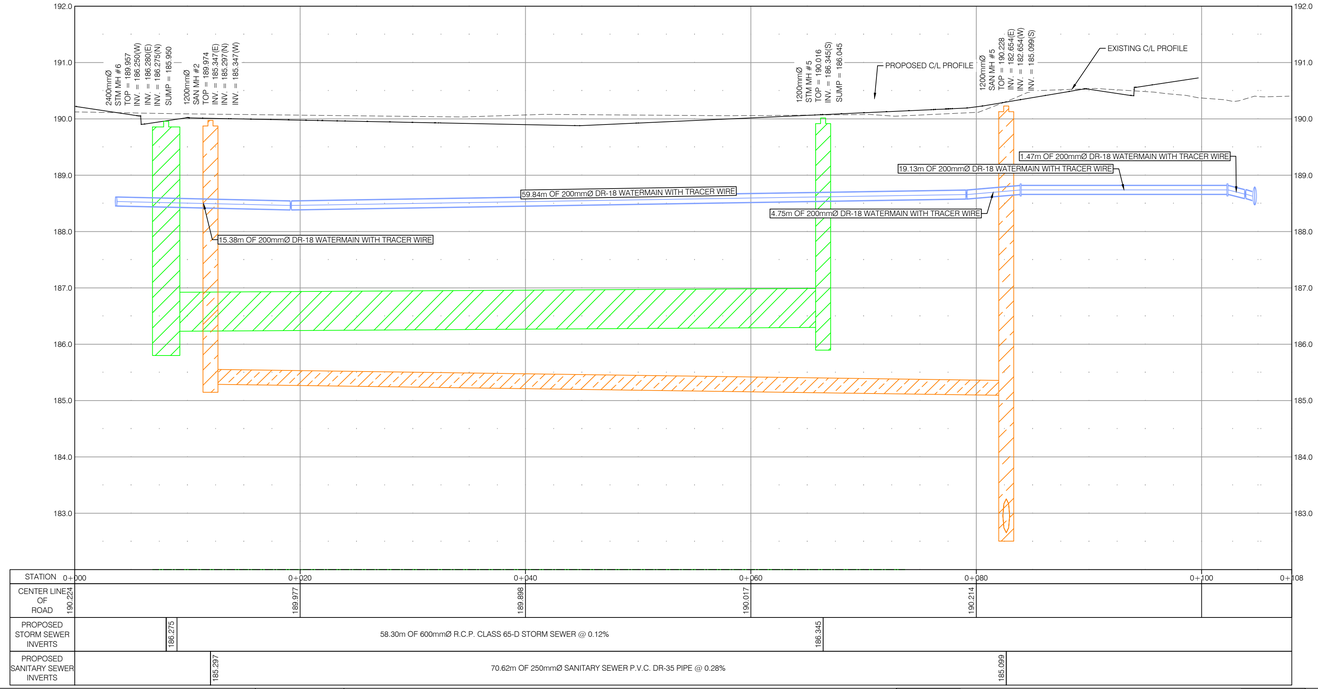

LEGEND		
DESCRIPTION	EXISTING	NEW
STORM SEWER		
SANITARY SEWER		
WATER MAIN		
STORM SERVICE		STM
SANITARY SERVICE		SAN
WATER SERVICE		WSV
FIRE HYDRANT & WATER VALVE		
GAS MAIN		GAS
CATCH BASIN		
CURB INLET		
STORM MANHOLE		
SANITARY MANHOLE		
WATER VALVE		
EP ELEVATIONS		
STREET LIGHTS		

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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BAIRD|AE architecture + engineering
27 PRINCESS STREET, SUITE #102 LEAMINGTON, ONTARIO N8H 2X8
1000 - 267 PELISSIER STREET, WINDSOR, ONTARIO N9A 4K4.

PROJECT TITLE: NORTH TALBOT DEVELOPMENT

1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE: STREET 'B' PLAN AND PROFILE 0+000 TO 0+108

DATE: MAY 27, 2022

SCALE: HOR: 1:250 VER: 1:50

DRAWN BY: B.T.

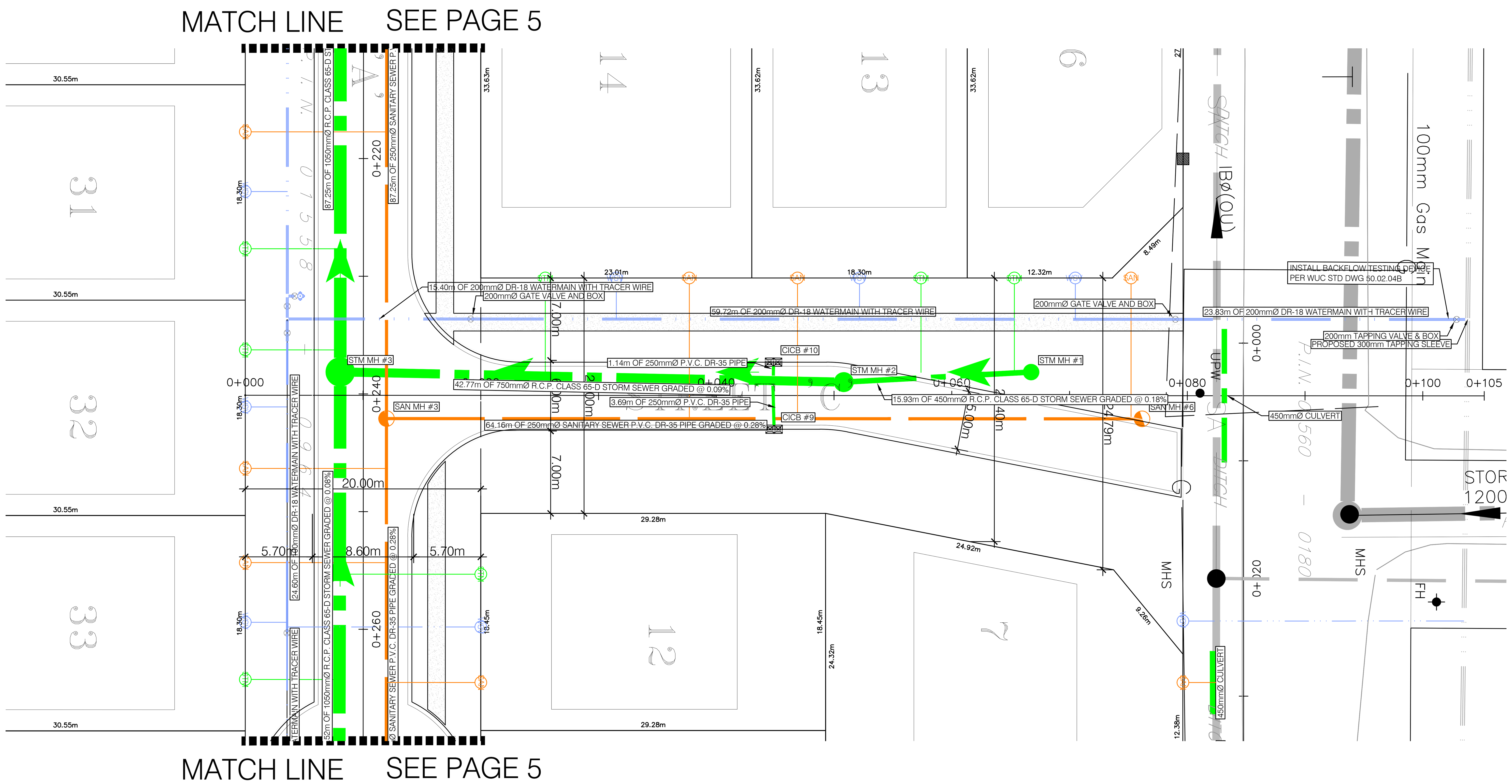
CHECKED BY: S.T.

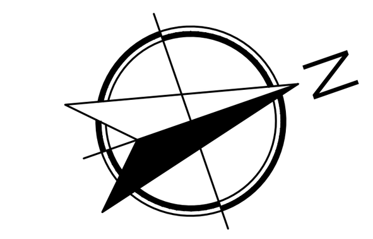
PROJECT NO: 21-021

SHEET NO: 6

May/27/2022

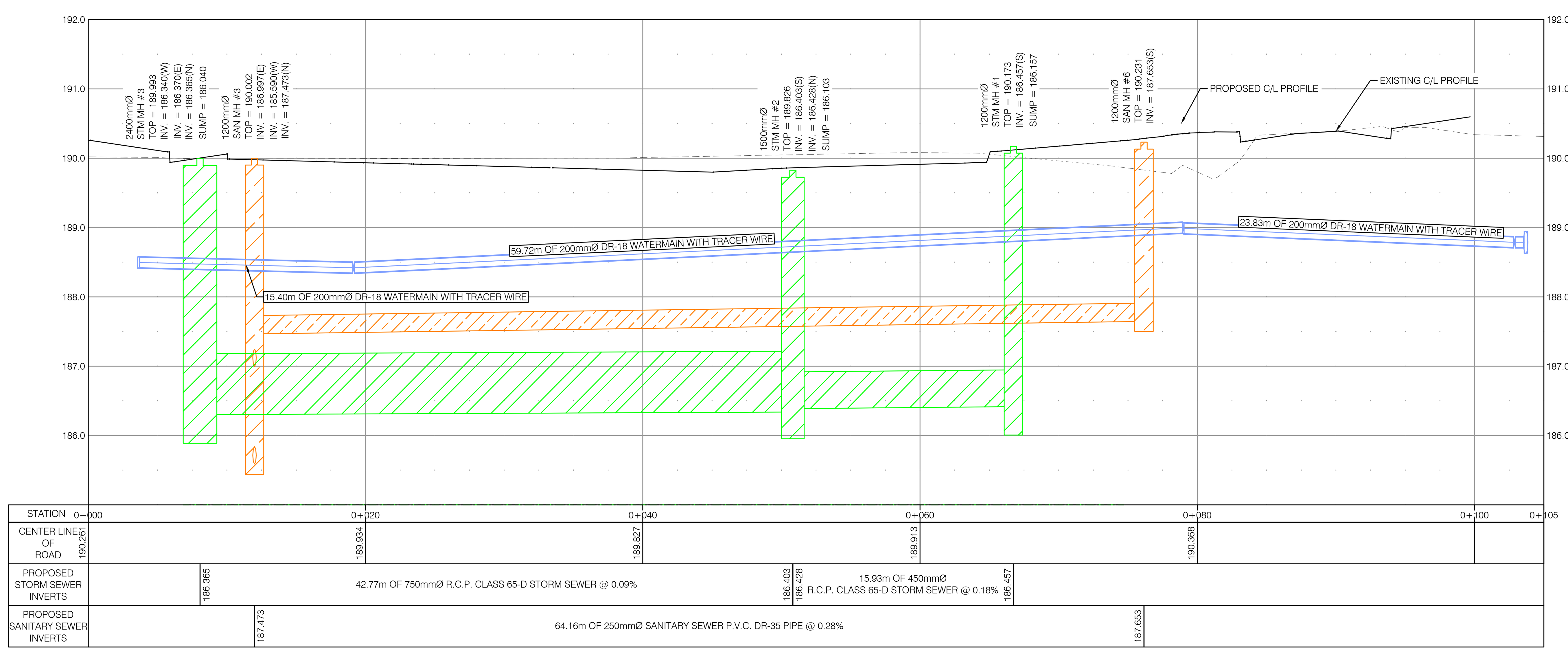
1095 NORTH TALBOT ROAD PLAN & PROFILES.DWG





LEGEND

DESCRIPTION	EXISTING	NEW
STORM SEWER		
SANITARY SEWER		
WATER MAIN		
STORM SERVICE		STM
SANITARY SERVICE		SAN
WATER SERVICE		WSV
FIRE HYDRANT & WATER VALVE		
GAS MAIN		GAS
CATCH BASIN		
CURB INLET		
STORM MANHOLE		
SANITARY MANHOLE		
WATER VALVE		
EP ELEVATIONS		180.XXX
STREET LIGHTS		



DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
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27/05/2022	REVISED AS PER CITY COMMENTS
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BAIRD | AE
architecture + engineering

27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8

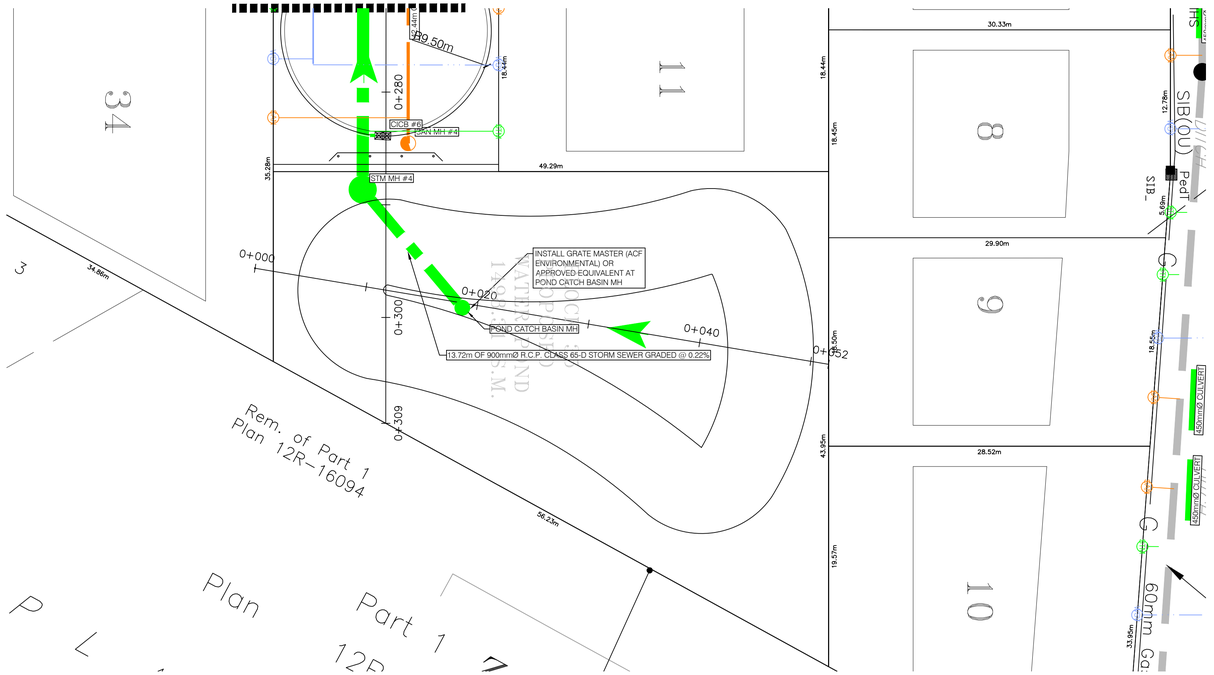
1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

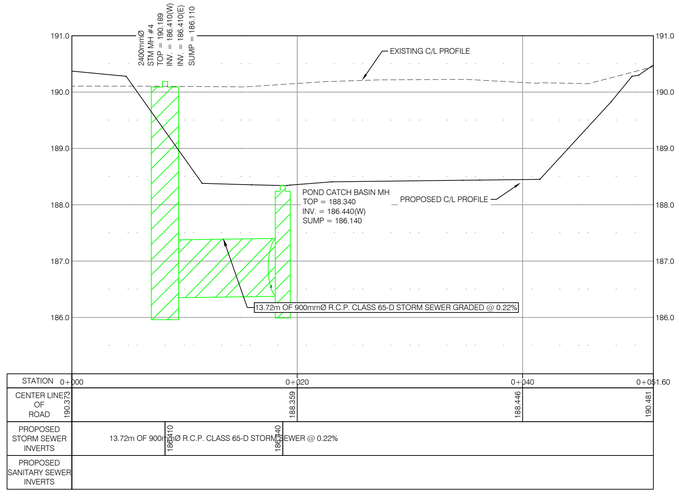
SHEET TITLE:
STREET 'C' PLAN AND PROFILE 0+000 TO 0+105

DATE: MAY 27, 2022	PROJECT NO: 21-021
SCALE: HOR: 1:250 VER: 1:50	
DRAWN BY: B.T.	SHEET NO: 7
CHECKED BY: S.T.	

MATCH LINE SEE PAGE 5



LEGEND		
DESCRIPTION	EXISTING	NEW
STORM SEWER		
SANITARY SEWER		
WATER MAIN		
STORM SERVICE		STM
SANITARY SERVICE		SAN
WATER SERVICE		WSV
FIRE HYDRANT & WATER VALVE		
GAS MAIN		GAS
CATCH BASIN		
CURB INLET		
STORM MANHOLE		
SANITARY MANHOLE		
WATER VALVE		
EP ELEVATIONS		180.XXX
STREET LIGHTS		



May/27/2022

1095 NORTH TALBOT ROAD PLAN & PROFILES DWG

LICENSED PROFESSIONAL ENGINEER
MAY 26,2022
S. TUNIO
100125071
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

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BAIRD|AE architecture + engineering

27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8

1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

PROJECT TITLE:
NORTH TALBOT DEVELOPMENT

1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
POND PLAN AND PROFILE 0+000 TO 0+043

DATE: MAY 27, 2022

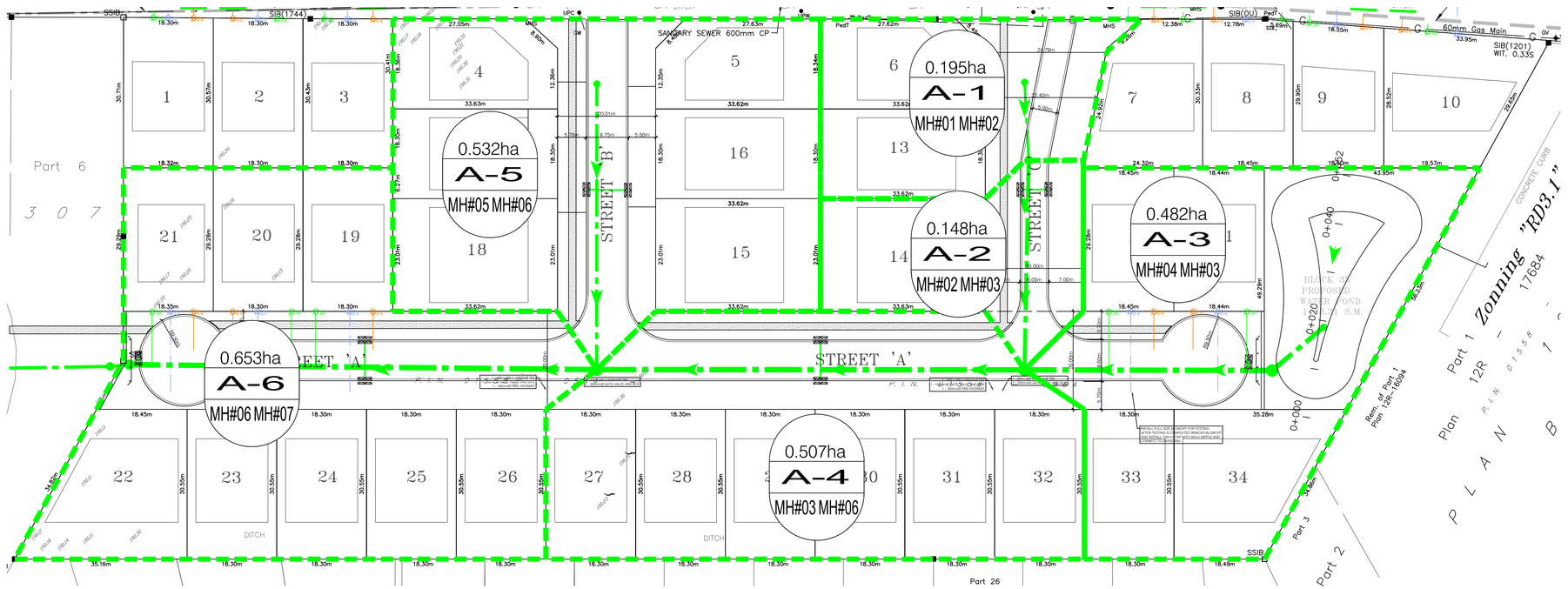
SCALE: HOR: 1:250 VER: 1:50

DRAWN BY: B.T.

CHECKED BY: S.T.

PROJECT NO: 21-021

SHEET NO: 8



1095 NORTH TALBOT ROAD

STORM SEWER DESIGN SHEET (5-YEAR EVENT, Computed Tc)

LOCATION				AREA (ha)				FLOW							SEWER DATA								PROFILE	
Area ID	Area Included	From Node	To Node	C= 0.20	C= 0.60	C= 0.80	C= 0.95	Indiv 2.78 AC	Accum 5 2.78AC	Time of Conc.	Design Storm	Rainfall Intensity	Peak Flow (L/sec)	Qtotal (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Flow Time (min)	Ratio Q/Q full	Upstream Elevation Invert (m)	Downstream Elevation Invert (m)
STREET 'C' MH#01 TO MH#02																								
A1	**RESIDENTIAL**	MH#01	MH#02		0.184			0.31	0.31	20.00	5	75.35	23.12	23.12	0.450	450	R.C.P.	0.18	15.96	120.9	0.76	0.35	19%	186.440	186.411
STREET 'C' MH#02 TO MH#03																								
A2	**RESIDENTIAL**	MH#02	MH#03		0.148			0.25	0.55	20.35	5	74.59	41.30	41.30	0.750	750	R.C.P.	0.18	42.39	472.1	1.07	0.66	9%	186.411	186.335
STREET 'A' MH POND TO MH#03																								
		POND	MH#04		0.000			0.00	0.00	20.00	5	75.35	0.00	0.00	0.900	900	R.C.P.	0.22	13.72	848.7	1.33	0.17	0%	186.440	186.410
A3	**RESIDENTIAL**	MH#04	MH#03		0.482			0.80	0.80	20.17	5	74.97	60.28	60.28	1.050	1050	R.C.P.	0.07	66.03	722.2	0.83	1.32	8%	186.410	186.364
STREET 'A' MH#03 TO MH#06																								
A4	**RESIDENTIAL**	MH#03	MH#06		0.507			0.85	2.20	21.49	5	72.22	159.17	159.17	1.050	1050	R.C.P.	0.07	87.25	722.2	0.83	1.74	22%	186.340	186.279
STREET 'B' MH#05 TO MH#06																								
A5	**RESIDENTIAL**	MH#05	MH#06		0.532			0.89	0.89	20.00	5	75.35	66.86	66.86	0.600	600	R.C.P.	0.12	58.30	212.6	0.75	1.29	31%	186.320	186.250
STREET 'A' MH#06 TO MH#07																								
A6	**RESIDENTIAL**	MH#06	MH#07		0.653			1.09	4.18	23.23	5	68.92	288.09	288.09	1.050	1050	R.C.P.	0.07	92.46	722.2	0.83	1.85	40%	186.250	186.185

Q = 2.78 AIR, where
Q= Peak Flow in Litres per Second (l/s)
A= Area in hectares (ha)
I= Rainfall Intensity (mm/hr)
R= Runoff Coefficient

1) Windsor Rainfall-Intensity Curve
2) Min Pipe Velocity = 0.76 m/s
3) Max pipe Velocity = 3.0 m/s
4) Tc =20 min (BASED ON 3.2.2.6 WERSMSM)

Intensity = I= a / (T+b)^c

A= 1259
B= 8.8
C= 0.838

BAIRD|AE architecture + engineering

Consultant:	**Baird AE - Architects & Engineers**
Date:	May 27, 2022
Design	BILL FUERTH
Project No:	**Dwg. Reference:** / **Stamped:**
21-021	1095 NORTH TALBOT / BFUERTH

May/27/2022

1095 NORTH TALBOT ROAD DRAINAGE AREA PLAN.DWG

LICENSED PROFESSIONAL ENGINEER
MAY 26,2022
S. TUNIO
100125071
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
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22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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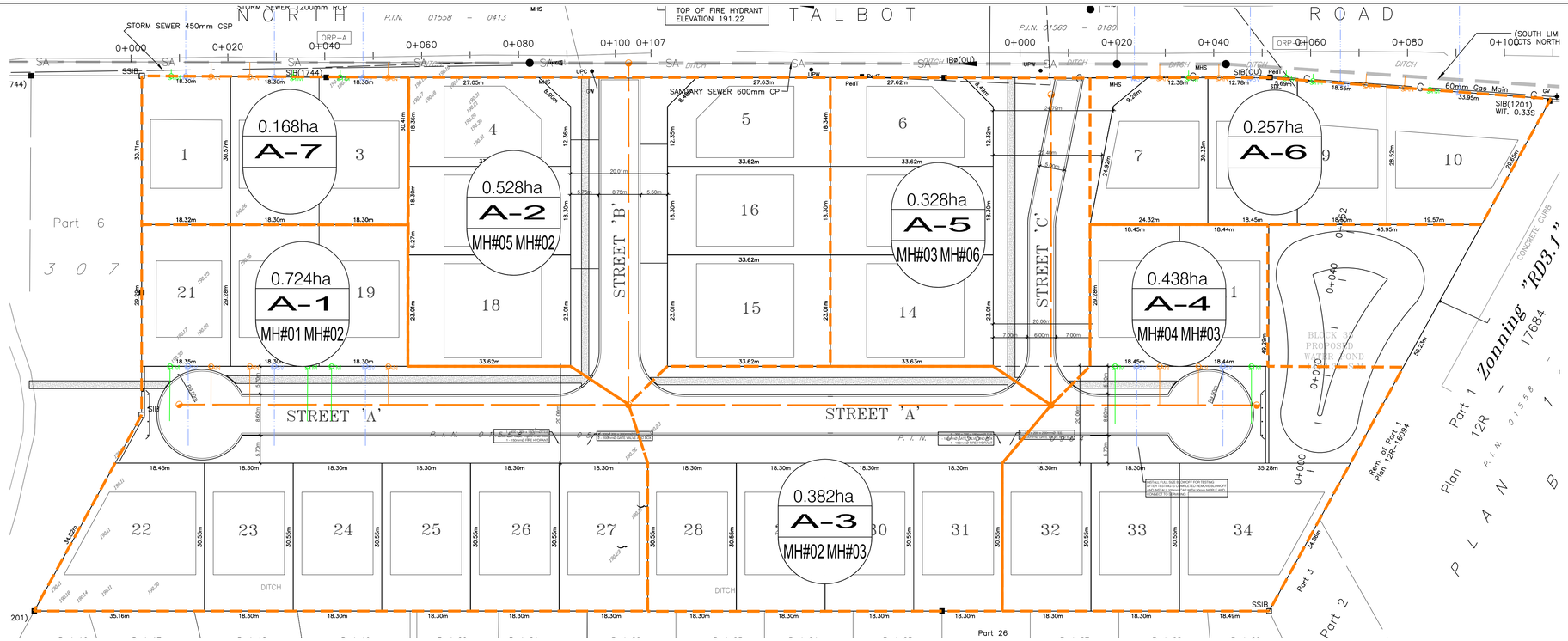
BAIRD|AE architecture + engineering
27 PRINCESS STREET, SUITE #102 LEAMINGTON, ONTARIO N8H 2X8
1000 - 267 PELISSIER STREET, WINDSOR, ONTARIO N9A 4K4

PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
STORM DRAINAGE AREA PLAN

DATE: MAY 27, 2022	PROJECT NO: 21-021
SCALE: 1:500	
DRAWN BY: B.T.	SHEET NO: 9
CHECKED BY: S.T.	



1095 North Talbot Street
SANITARY SEWER DESIGN SHEET (Ultimate D.A Design)

DESIGN CRITERIA FOR APARTMENTS

Residential = 50 persons/ha
Commercial= 74 persons/ha
Low Density = 3.13 PPU

AVERAGE DAILY PER CAPITA FLOW 363 L/cap/day
PEAK EXTRANEOUS FLOW 0.156 L/ha/s
ULTIMATE FLOW FACTOR 6 for population below 1000 persons
VELOCITY RANGE 0.75 m/s to 3 m/s
MINIMUM PIPE SIZE 200 mm

According To City Windsor development manual = 0.0042 L/s/cap = 0.0042x24x60x60 = 363 L/cap/day

Project : 21-021 1095 NORTH TALBOT STREET
Client :

LOCATION				DESIGN AREA SERVED (ha)		DESIGN POPULATION (PERSONS)		ULTIMATE FLOW FACTOR	MAXIMUM FLOW			SEWER DATA								PROFILE				
DEVELOPMENT	Area Included	From Node	To Node	INCREMENT	TOTAL	INCREMENT	TOTAL		INFILTRATION (L/s)	SEWAGE (L/S)	TOTAL SEWAGE AND INFILTRATION (L/s)	Dia. (m) Actual	Dia. (mm)	Type	Manning's "n"	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Ratio (%)	Upstream Elevation Invert (m)	Upstream Elevation Ground (m)	Downstream Elevation Invert (m)	Downstream Elevation Ground (m)	Average Cover (m)
SAN MH#1 TO MH#2																								
STREET 'A'	**A1**	SAN MH 1	SAN MH 2	0.724	0.724	36	36	6	0.113	0.91	1.03	0.250	250	PVC	0.013	0.28%	92.75	31.471	0.64	3.26	185.607		185.347		
SAN MH#4 TO MH#3																								
STREET 'A'	**A4**	SAN MH 4	SAN MH 3	0.438	0.438	22	22	6	0.068	0.55	0.62	0.250	250	PVC	0.013	0.28%	42.44	31.471	0.64	1.97	187.116		186.997		
SAN MH#6 TO MH#3																								
STREET 'C'	**A5**	SAN MH 6	SAN MH 3	0.328	0.328	16	16	6	0.051	0.41	0.46	0.250	250	PVC	0.013	0.28%	64.16	31.471	0.64	1.48	187.653		187.473		
SAN MH#3 TO MH#2																								
STREET 'A'	**A3**	SAN MH 3	SAN MH 2	0.382	1.148	19	57	6	0.179	1.45	1.63	0.250	250	PVC	0.013	0.28%	87.25	31.471	0.64	5.17	185.590		185.347		
SAN MH#2 TO MH#5																								
STREET 'B'	**A2**	SAN MH 2	SAN MH 5	0.528	2.400	26	120	6	0.374	3.03	3.40	0.250	250	PVC	0.013	0.28%	70.62	31.471	0.64	10.80	185.297		185.099		

BAIRD|AE architecture + engineering

Design By:	BILL FUERTH
PROJECT NO:	**Checked and Stamped:**
21-021	1095 NORTH TALBOT STREET — BILL FUERTH

May-27/2022

1095 NORTH TALBOT ROAD\DRAINAGE AREA PLAN.DWG

LICENSED PROFESSIONAL ENGINEER — MAY 26,2022 — S. TUNIO 100125071 — PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
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27/05/2022	REVISED AS PER CITY COMMENTS
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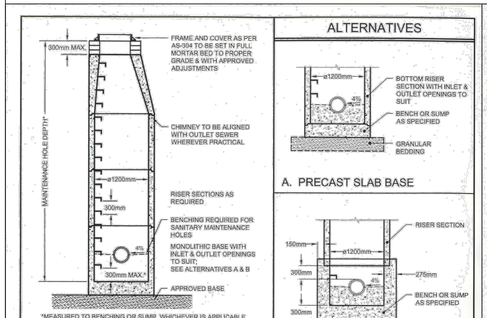
BAIRD|AE architecture + engineering
27 PRINCESS STREET, SUITE #102 LEAMINGTON, ONTARIO N8H 2X8
1000 - 267 PELISSIER STREET, WINDSOR, ONTARIO N9A 4K4.

PROJECT TITLE: NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR
SHEET TITLE: SANITARY DRAINAGE AREA PLAN

DATE: MAY 27, 2022
SCALE: 1:500
DRAWN BY: B.T.
CHECKED BY: S.T.
PROJECT NO: 21-021
SHEET NO: 10



SUMP DETAIL

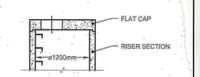
NOTES:

1. THE SUMP IS MEASURED FROM THE LOWEST INVERT.
2. COMPACTED GRANULAR 'A' BACKFILL SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm ALL AROUND THE MAINTENANCE HOLE.
3. PRECAST CONCRETE COMPONENTS SHALL BE ACCORDING TO OPSD 701 SERIES.
4. PIPE SUPPORT SHALL BE CLASS 'A' BEDDING TO FIRST PIPE JOINT BEYOND MANHOLE (RIGID PIPE) OR A FLEXIBLE JOINT WITHIN 900mm OF MANHOLE WALL (RIGID OR FLEXIBLE PIPE) WITH SEWER STONE BEDDING.
5. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH AS-305.

ALTERNATIVES

A. PRECAST SLAB BASE

B. CAST-IN-PLACE BASE



C. PRECAST FLAT CAP

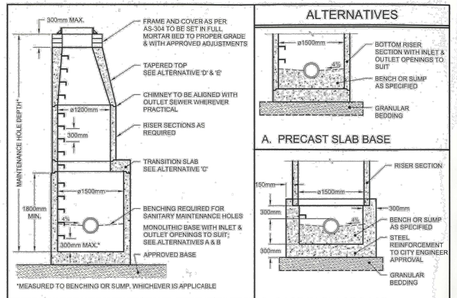
CITY OF WINDSOR
ENGINEERING DEPARTMENT

PRECAST MAINTENANCE HOLE
1200mm DIAMETER

DRAWN BY: N.B.	DATE: MARCH, 2017
REVISED: -	CHECKED BY: P.U.
CHECKED BY: M.C.	PASSED BY: M.W.

CITY ENGINEER

AS-314A



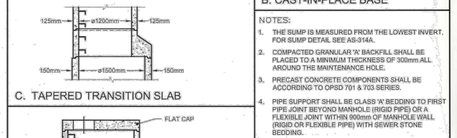
ALTERNATIVES

A. PRECAST SLAB BASE

B. CAST-IN-PLACE BASE

NOTES:

1. THE SUMP IS MEASURED FROM THE LOWEST INVERT. FOR SUMP DETAIL SEE AS-314A.
2. COMPACTED GRANULAR 'A' BACKFILL SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm ALL AROUND THE MAINTENANCE HOLE.
3. PRECAST CONCRETE COMPONENTS SHALL BE ACCORDING TO OPSD 701 & 703 SERIES.
4. PIPE SUPPORT SHALL BE CLASS 'A' BEDDING TO FIRST PIPE JOINT BEYOND MANHOLE (RIGID PIPE) OR A FLEXIBLE JOINT WITHIN 900mm OF MANHOLE WALL (RIGID OR FLEXIBLE PIPE) WITH SEWER STONE BEDDING.
5. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH AS-305.



C. TAPERED TRANSITION SLAB

D. 1500mm PRECAST FLAT CAP

E. 1200mm PRECAST FLAT CAP

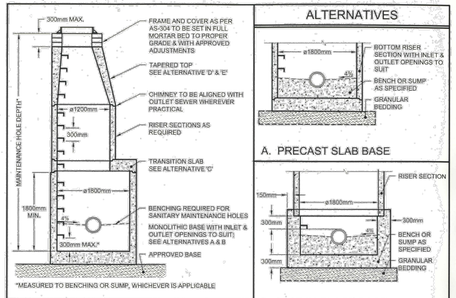
CITY OF WINDSOR
ENGINEERING DEPARTMENT

PRECAST MAINTENANCE HOLE
1500mm DIAMETER

DRAWN BY: N.B.	DATE: MARCH, 2017
REVISED: -	CHECKED BY: P.U.
CHECKED BY: M.C.	PASSED BY: M.W.

CITY ENGINEER

AS-314B



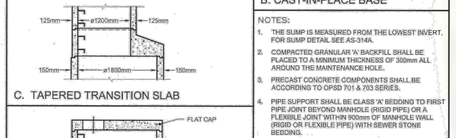
ALTERNATIVES

A. PRECAST SLAB BASE

B. CAST-IN-PLACE BASE

NOTES:

1. THE SUMP IS MEASURED FROM THE LOWEST INVERT. FOR SUMP DETAIL SEE AS-314A.
2. COMPACTED GRANULAR 'A' BACKFILL SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm ALL AROUND THE MAINTENANCE HOLE.
3. PRECAST CONCRETE COMPONENTS SHALL BE ACCORDING TO OPSD 701 & 703 SERIES.
4. PIPE SUPPORT SHALL BE CLASS 'A' BEDDING TO FIRST PIPE JOINT BEYOND MANHOLE (RIGID PIPE) OR A FLEXIBLE JOINT WITHIN 900mm OF MANHOLE WALL (RIGID OR FLEXIBLE PIPE) WITH SEWER STONE BEDDING.
5. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH AS-305.



C. TAPERED TRANSITION SLAB

D. 1800mm PRECAST FLAT CAP

E. 1200mm PRECAST FLAT CAP

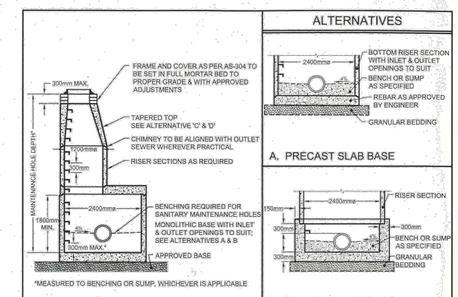
CITY OF WINDSOR
ENGINEERING DEPARTMENT

PRECAST MAINTENANCE HOLE
1800mm DIAMETER

DRAWN BY: N.B.	DATE: MARCH, 2017
REVISED: -	CHECKED BY: P.U.
CHECKED BY: M.C.	PASSED BY: M.W.

CITY ENGINEER

AS-314C



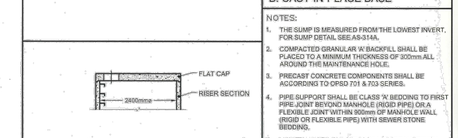
ALTERNATIVES

A. PRECAST SLAB BASE

B. CAST-IN-PLACE BASE

NOTES:

1. THE SUMP IS MEASURED FROM THE LOWEST INVERT. FOR SUMP DETAIL SEE AS-314A.
2. COMPACTED GRANULAR 'A' BACKFILL SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm ALL AROUND THE MAINTENANCE HOLE.
3. PRECAST CONCRETE COMPONENTS SHALL BE ACCORDING TO OPSD 701 & 703-SERIES.
4. PIPE SUPPORT SHALL BE CLASS 'A' BEDDING TO FIRST PIPE JOINT BEYOND MANHOLE (RIGID PIPE) OR A FLEXIBLE JOINT WITHIN 900mm OF MANHOLE WALL (RIGID OR FLEXIBLE PIPE) WITH SEWER STONE BEDDING.
5. MAINTENANCE HOLE STEPS IN ACCORDANCE WITH AS-308.



C. 2400mm PRECAST FLAT CAP

D. 1200mm PRECAST FLAT CAP

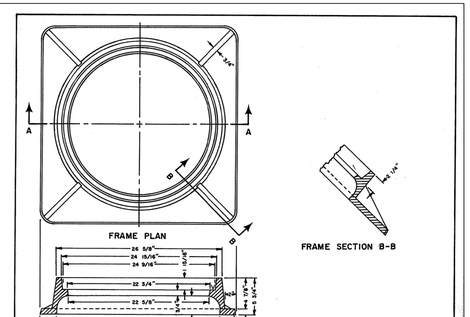
CITY OF WINDSOR
ENGINEERING DEPARTMENT

PRECAST MAINTENANCE HOLE
2400mm DIAMETER

DRAWN BY: S.S, N.B.	DATE: MARCH, 2017
REVISED: -	CHECKED BY: P.U.
CHECKED BY: M.C.	PASSED BY: M.W.

CITY ENGINEER

AS-314D



NOTES:

1. ALLOWABLE TOLERANCES: DIMENSIONS 12 IN. OR LESS — ± 1/8" DIMENSIONS OVER 12 IN UP TO AND INCLUDING 36 IN: — ± 1/4"
2. MARKING: THE INITIALS OR MARK OF THE MANUFACTURER ARE TO BE DISTINCTLY CAST IN RAISED LETTERS ON BOTH FRAME AND COVER.
3. CAST IRON TO CONFORM WITH A.S.T.M. SPECIFICATION A-48 CLASS 30 B.
4. THIS DESIGN CONFORMS TO THE M.E.A. MODEL NO. 331.

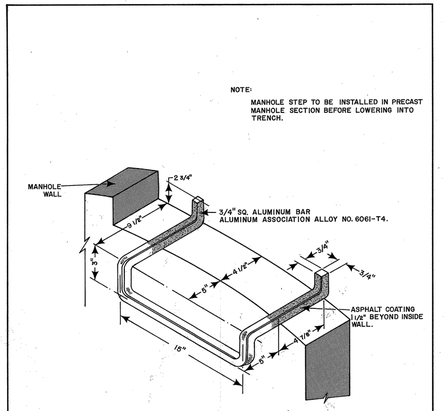
CITY OF WINDSOR
DEPARTMENT OF PUBLIC WORKS

MANHOLE FRAME & COVER
TYPE II

DRN BY: J.W.H.	DATE: 5/8/74
REVISION: -	CHK'D BY:
CH'KD BY:	PASSED BY:

COMMISSIONER OF WORKS

AS-304A



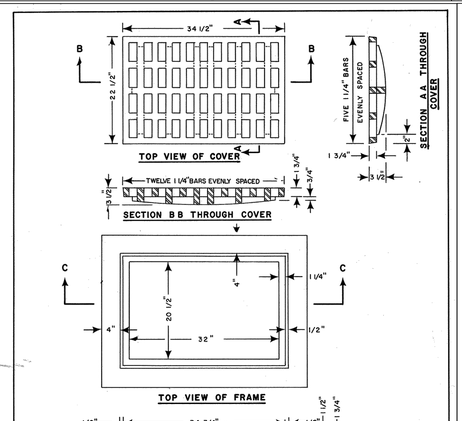
CITY OF WINDSOR
DEPARTMENT OF PUBLIC WORKS

DETAIL OF TYPICAL MANHOLE STEP

DR'N BY: E.STERGIOU	DATE: JUNE 9/1975
REVISION:	CH'KD BY:
CH'KD BY:	PASSED BY:

COMMISSIONER OF WORKS

AS-305



SCALE : 1" = 1'

CITY OF WINDSOR
DEPARTMENT OF PUBLIC WORKS

DOUBLE CATCH BASIN FRAME & COVER

DRAWN BY: D.L.H.	DATE: MARCH 1975
REVISION: MARCH 1975	CHECKED BY:
CHECKED BY:	PASSED BY:

COMMISSIONER OF WORKS

AS-302

May 3, 2021
Page 1 of 2

ADS OGS Sizing Summary

Project Name:	North Talbot Development
Consulting Engineer:	Baird AE
Location:	Windsor, ON
Sizing Completed By:	C. Neath
Email:	cody.neath@ads-pipe.com

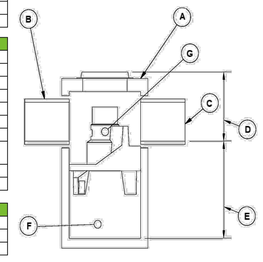
Treatment Requirements		
Treatment Goal:	Normal (MOE)	
Selected Parameters:	70% TSS	90% Volume
Selected Unit:	**FD-5HC**	

Site Details	
Site Area:	2.8 ha
% Impervious:	60%
Rational C:	0.66
Rainfall Station:	Windsor, ONT
Particle Size Distribution:	Fine
Peak Flowrate:	407 L/s

Summary of Results		
Model	TSS Removal	Volume Treated
FD-3HC	71.7%	92.7%
FD-5HC	75.1%	95.9%
FD-8HC	77.3%	99.7%
FD-9HC	81.6%	99.9%

FD-5HC Specification	
Unit Diameter (A):	1,500 mm
Inlet Pipe Diameter (B):	600 mm
Outlet Pipe Diameter (C):	600 mm
Height, T/G to Outlet Invert (D):	4190 mm
Height, Outlet Invert to Sump (E):	1,500 mm
Sediment Storage Capacity (F):	1.29 m³
Oil Storage Capacity (G):	1,135 L
Recommended Sediment Depth for Maintenance:	475 mm
Max. Pipe Diameter:	600 mm
Peak Flow Capacity:	566 L/s

Site Elevations:	
Rim Elevation:	190.35
Inlet Pipe Elevation:	186.16
Outlet Pipe Elevation:	186.16



Notes:

Removal efficiencies are based on NJDEP Test Protocols and independently verified.

All units supplied by ADS have numerous local, provincial, and international certifications (copies of which can be provided upon request). The design engineer is responsible for ensuring compliance with applicable regulations.

Page 2 of 2

Project Name:	North Talbot Development
Consulting Engineer:	Baird AE
Location:	Windsor, ON

Net Annual Removal Efficiency Summary: FD-5HC

Rainfall Intensity[1]	Fraction of Rainfall[1]	FD-5HC Removal Efficiency[2]	Weighted Net-Annual Removal Efficiency
mm/hr	%	%	%
3.00	13.2%	84.4%	11.1%
4.00	9.6%	82.2%	7.9%
5.00	7.5%	80.5%	6.0%
6.00	6.0%	79.2%	4.8%
7.00	4.8%	78.0%	3.7%
8.00	4.1%	77.1%	3.2%
9.00	3.6%	76.2%	2.7%
10.00	3.2%	75.5%	2.4%
11.00	2.8%	74.8%	2.1%
12.00	2.5%	74.2%	1.9%
15.00	6.6%	72.7%	4.8%
20.00	8.3%	70.8%	5.9%
25.00	5.8%	69.3%	4.0%
30.00	4.6%	68.2%	3.1%
35.00	3.8%	67.2%	2.6%
40.00	2.9%	66.4%	1.9%
45.00	2.4%	65.6%	1.6%
50.00	1.8%	65.0%	1.2%
65.00	6.6%	63.4%	4.2%
Total Net Annual Removal Efficiency:			75.1%
Total Runoff Volume Treated:			95.9%

Notes:

(1) Based on Windsor/Essex Region Stormwater Manual 2018, Table 3.4.1.5

(2) Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution

May/27/2022

1095 NORTH TALBOT ROAD DETAILS.DWG

LICENSED PROFESSIONAL ENGINEER
MAY 26, 2022
S. TUNIO
100125071
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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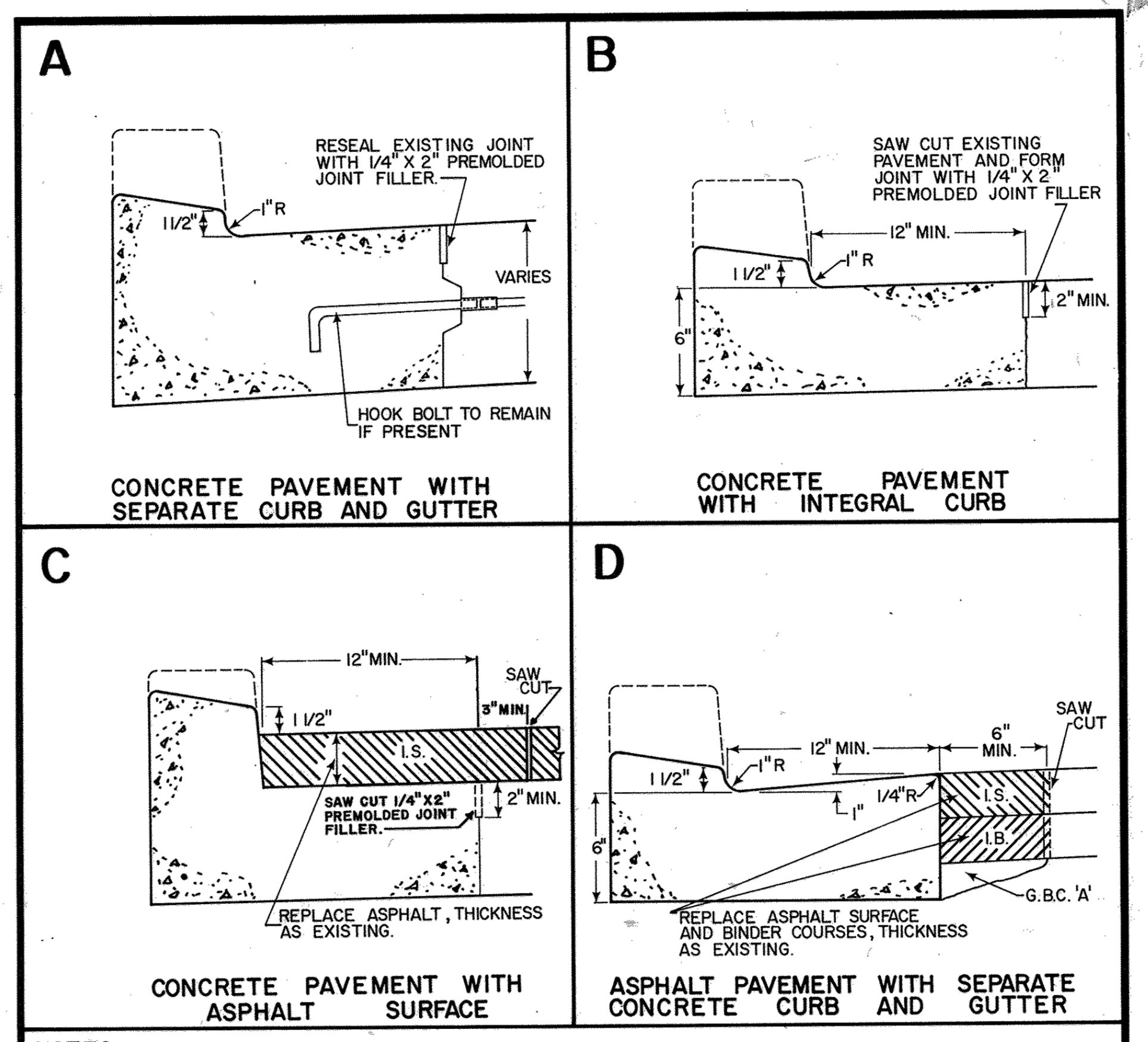
BAIRD|AE
architecture + engineering
27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8
1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

PROJECT TITLE:
NORTH TALBOT DEVELOPMENT
1095 NORTH TALBOT ROAD, WINDSOR

SHEET TITLE:
DETAILS 1

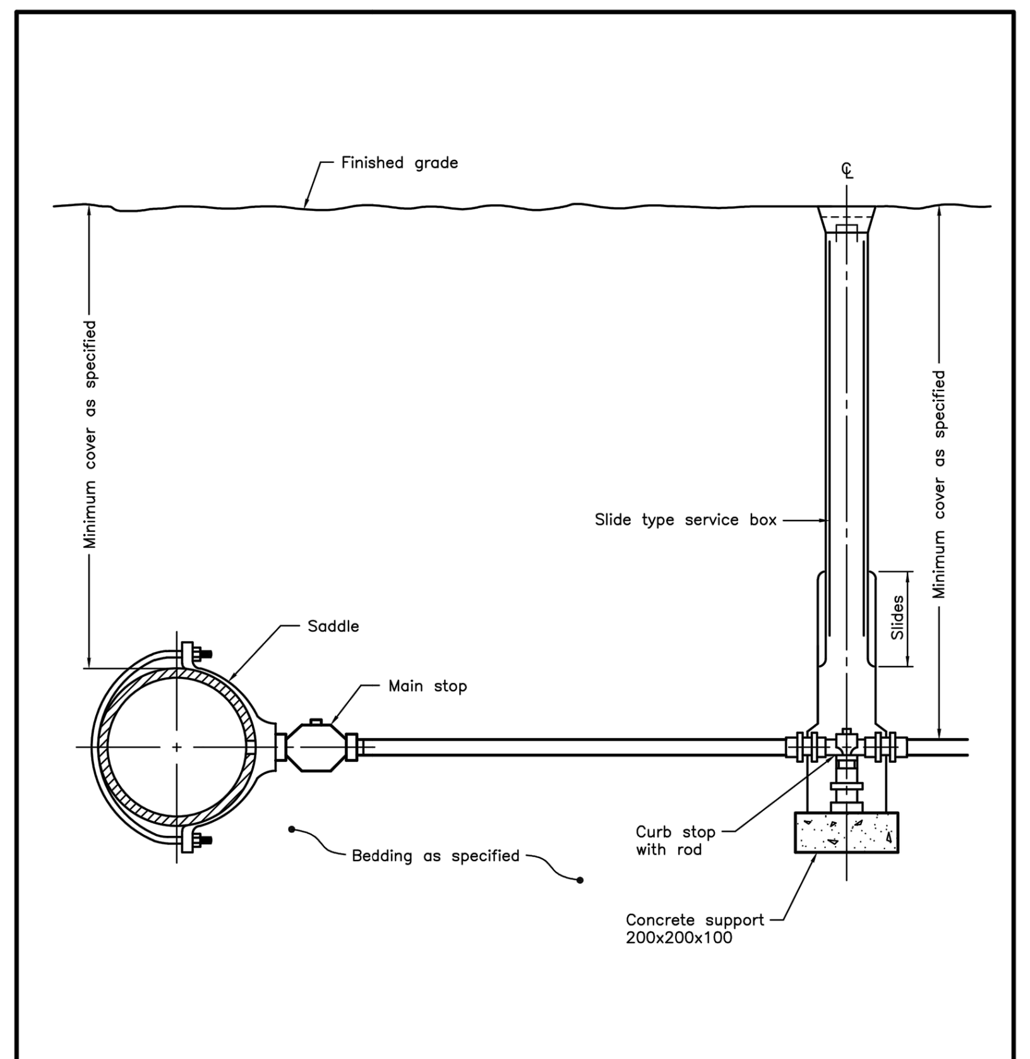
DATE: MAY 27, 2022	PROJECT NO: 21-021
SCALE: N.T.S.	
DRAWN BY: B.T.	SHEET NO: 11
CHECKED BY: S.T.	



NOTES:

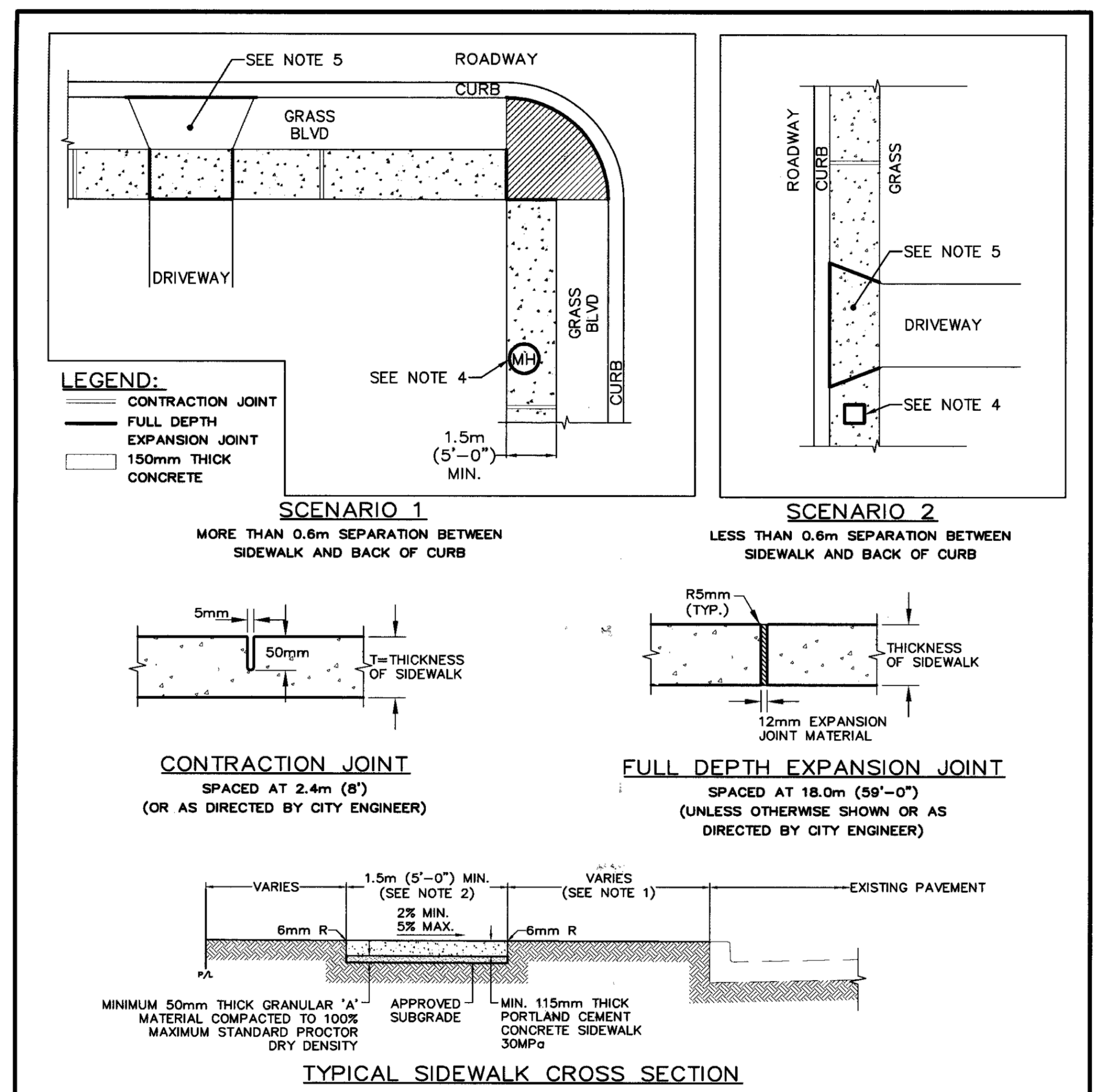
1.) SLOPE AND LENGTH OF DROPPED CURB TO BE DETERMINED BY THE ENGINEER.
2.) REMOVE EXISTING CURB AND GUTTER TO THE NEAREST JOINTS. REMOVE EXISTING ASPHALT AND GRANULAR BASE WHERE NECESSARY TO FORM GUTTER FACE.
3.) THICKNESS OF CONCRETE GUTTER IS TO BE THE SAME AS EXISTING ADJOINING GUTTER.
4.) CLEAN ALL FRACTURED FACES PRIOR TO PLACING OF CONCRETE.
5.) JOINT SPACING IN CONCRETE SHALL MATCH EXISTING. MAXIMUM SPACING IS 16 FT.
6.) ALL PREMOLDED JOINT FILLER TO CONFORM TO M.T.C. FORM 1308. EXCEPT AS OTHERWISE STATED, ALL JOINT FILLER TO BE 3/4" THICK AND FULL DEPTH.
7.) ALL WORK SHALL CONFORM TO CITY OF WINDSOR STANDARD SPECIFICATIONS S-4, S-5, S-9 AND S-10.
8.) CURB CUT TO BE CARRIED OUT AS ABOVE OR BY HORIZONTAL SAW CUTTING TO METHOD AS DIRECTED BY THE ENGINEER.

CITY OF WINDSOR DEPARTMENT OF PUBLIC WORKS	
CURB CUT REQUIREMENTS FOR VARIOUS PAVEMENTS	
DR'N BY : K.A.J.	DATE : 6 / 23 / 72
REVISION : JAN. 1976	CH'KD BY : R.M.L
CH'KD BY : [illegible]	PASSED BY : H.P.
[illegible] COMMISSIONER OF WORKS	AS- 216



NOTES:
A Couplings shall not be permitted unless the service length exceeds 20m between the main stop and curb stop.
B All water services shall be installed 90° to the longitudinal axis of the watermain.
C Backfill material within 500mm of service box shall be native or imported, as specified.
D All dimensions are in millimetres unless otherwise shown.

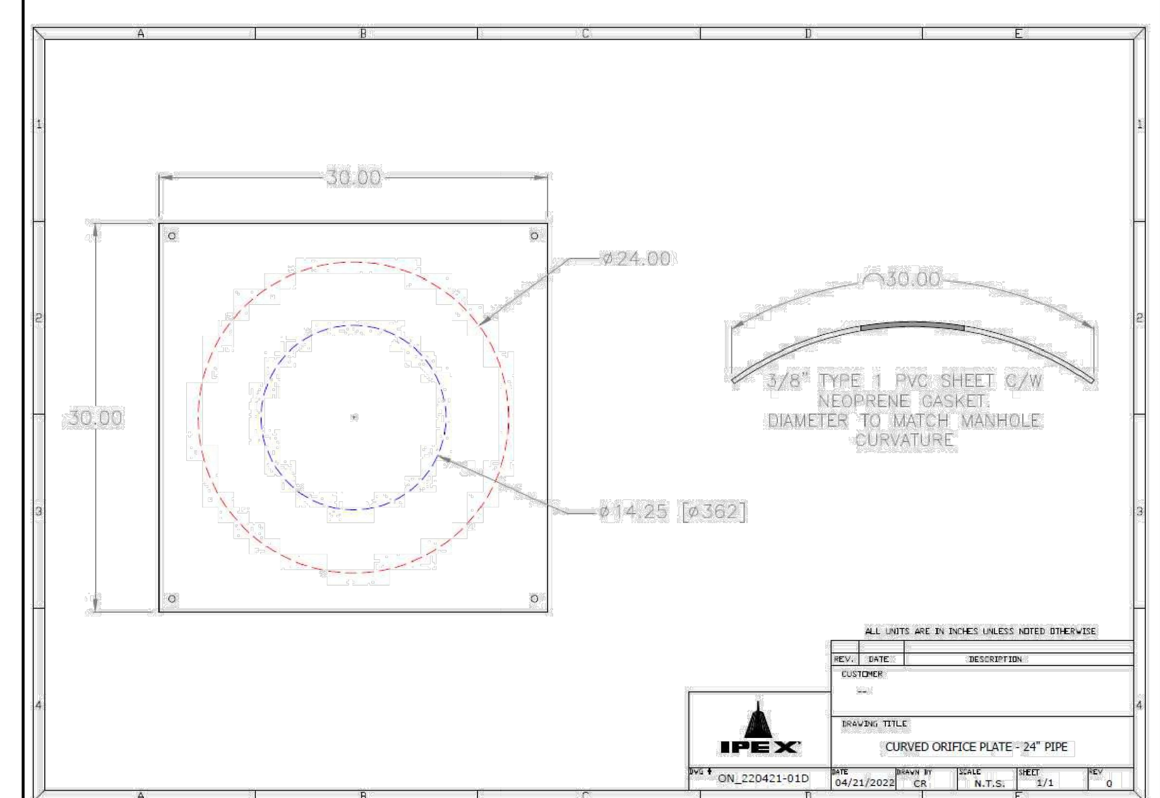
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
WATER SERVICE CONNECTION 32, 38, and 50mm DIAMETER SIZES	OPSD 1104.020	



GENERAL NOTES:
1. Unless sidewalk abuts the curb, the distance between sidewalk and back of curb must be 600mm minimum.
2. Any sidewalk width exceeding 3m must have a centered longitudinal contraction joint. Maximum spacing between longitudinal contraction joints to be 1.5m.
3. Expansion joints are required at all fixed objects (poles, hydrants, manholes, structures, etc) and change in sidewalk direction.
4. All manholes, boxes, valves, etc. to match finished grade of sidewalk.
5. To be read in conjunction with AS-222, AS-402, AS-404 and S-6.
6. All work within public right-of-way to be completed to City of Windsor Standards and to the satisfaction of the City Engineer.

CITY OF WINDSOR ENGINEERING DEPARTMENT	
RESIDENTIAL CONCRETE SIDEWALK	
DR'N BY: B.C., N.B.	DATE: APRIL, 2004
REVISION: APRIL, 2015	CH'KD BY: W.B.
CH'KD BY: P.J.U., M.C.	PASSED BY: T.M.
[illegible] CITY ENGINEER	AS-401

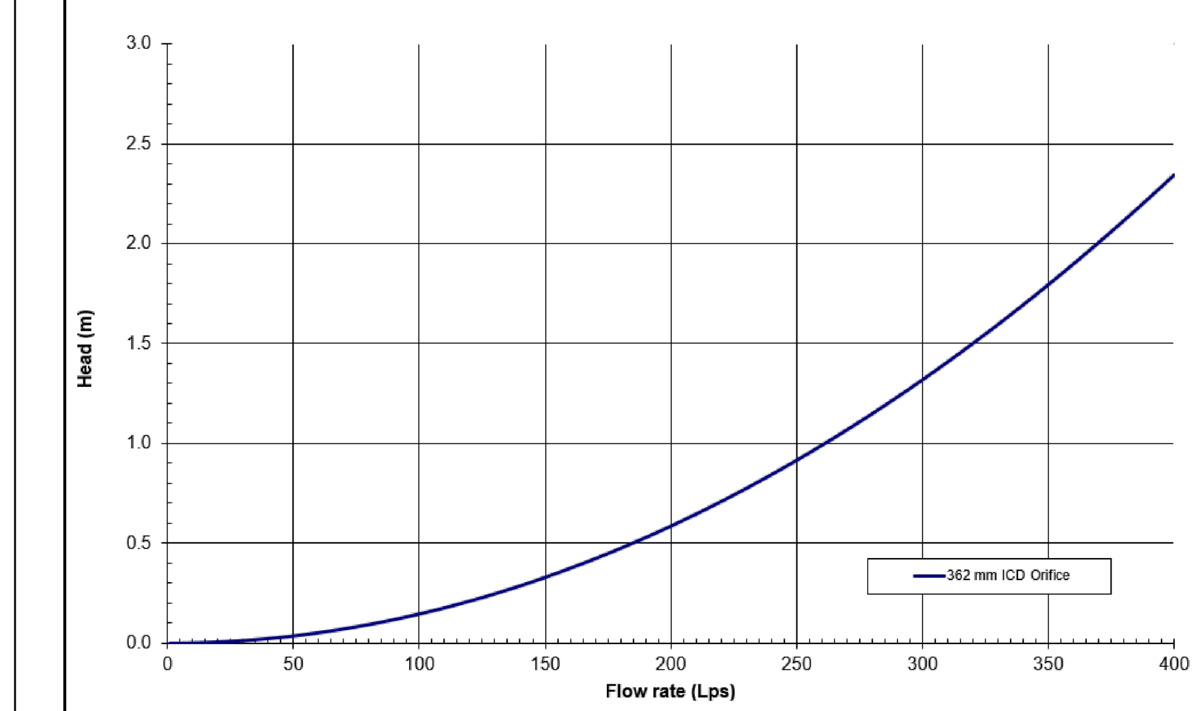
Plate ICD Rd Shop Drawing



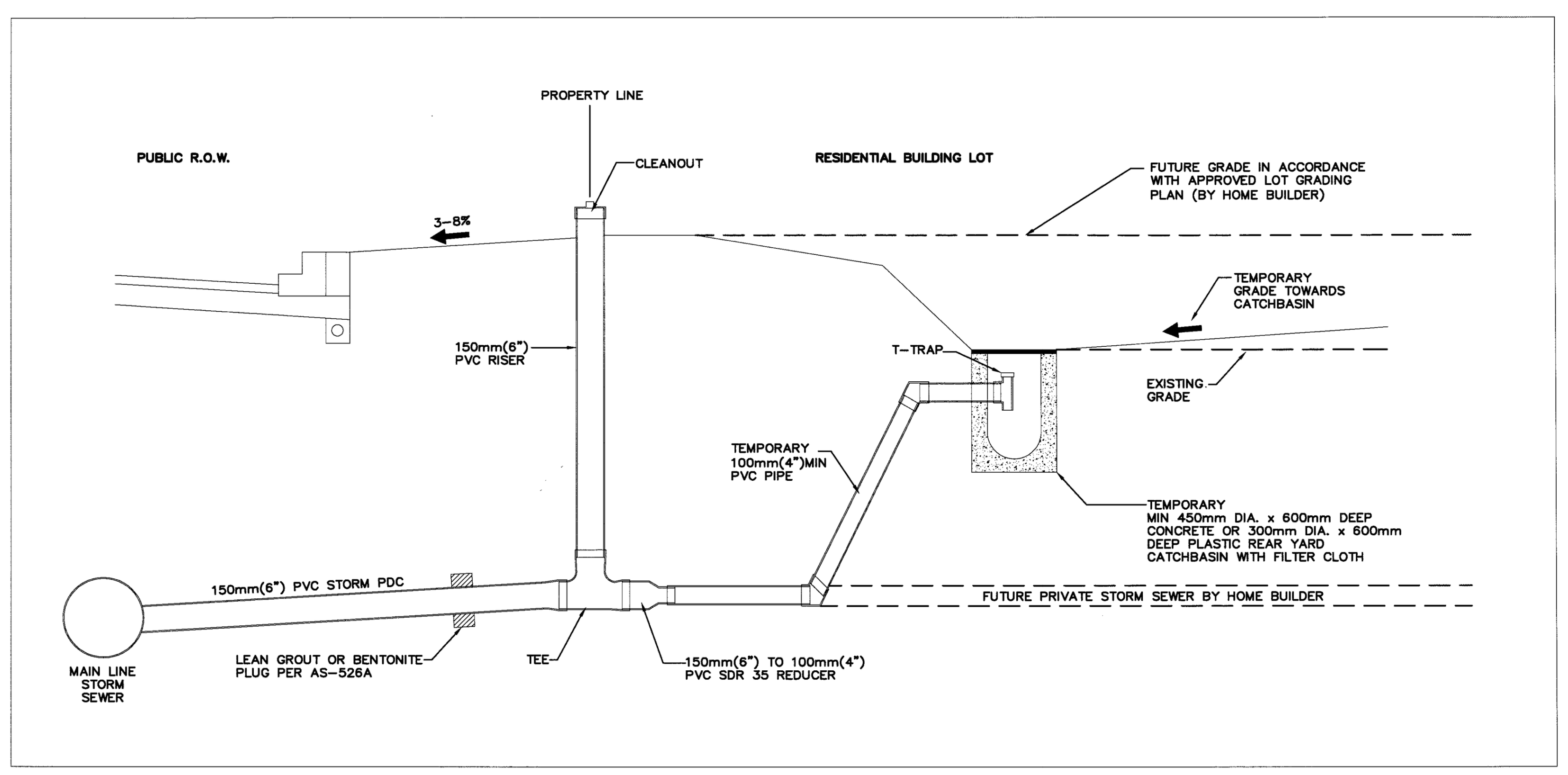
IPEX

Plate ICD Flow Curve

Orifice: 362 mm dia

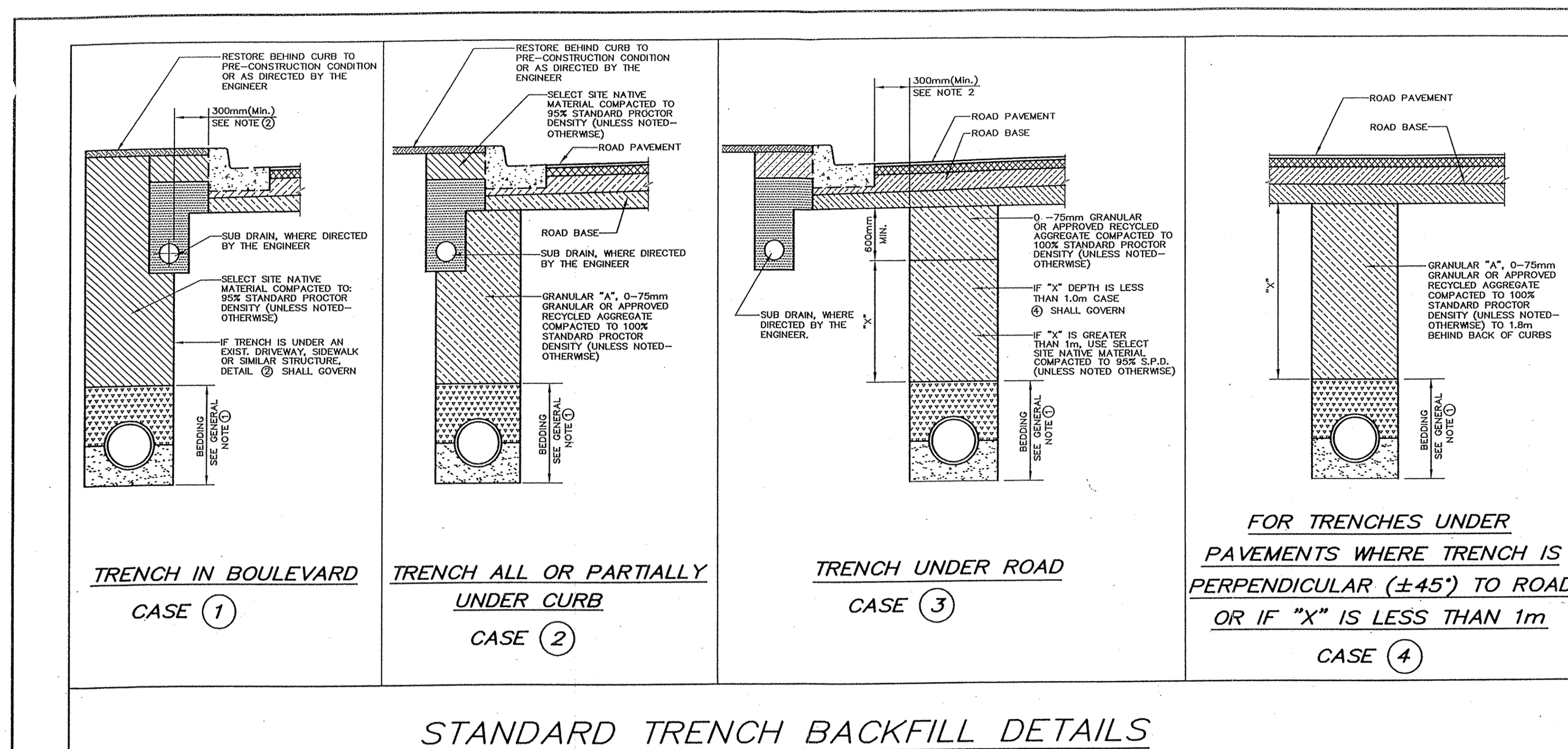


IPEX



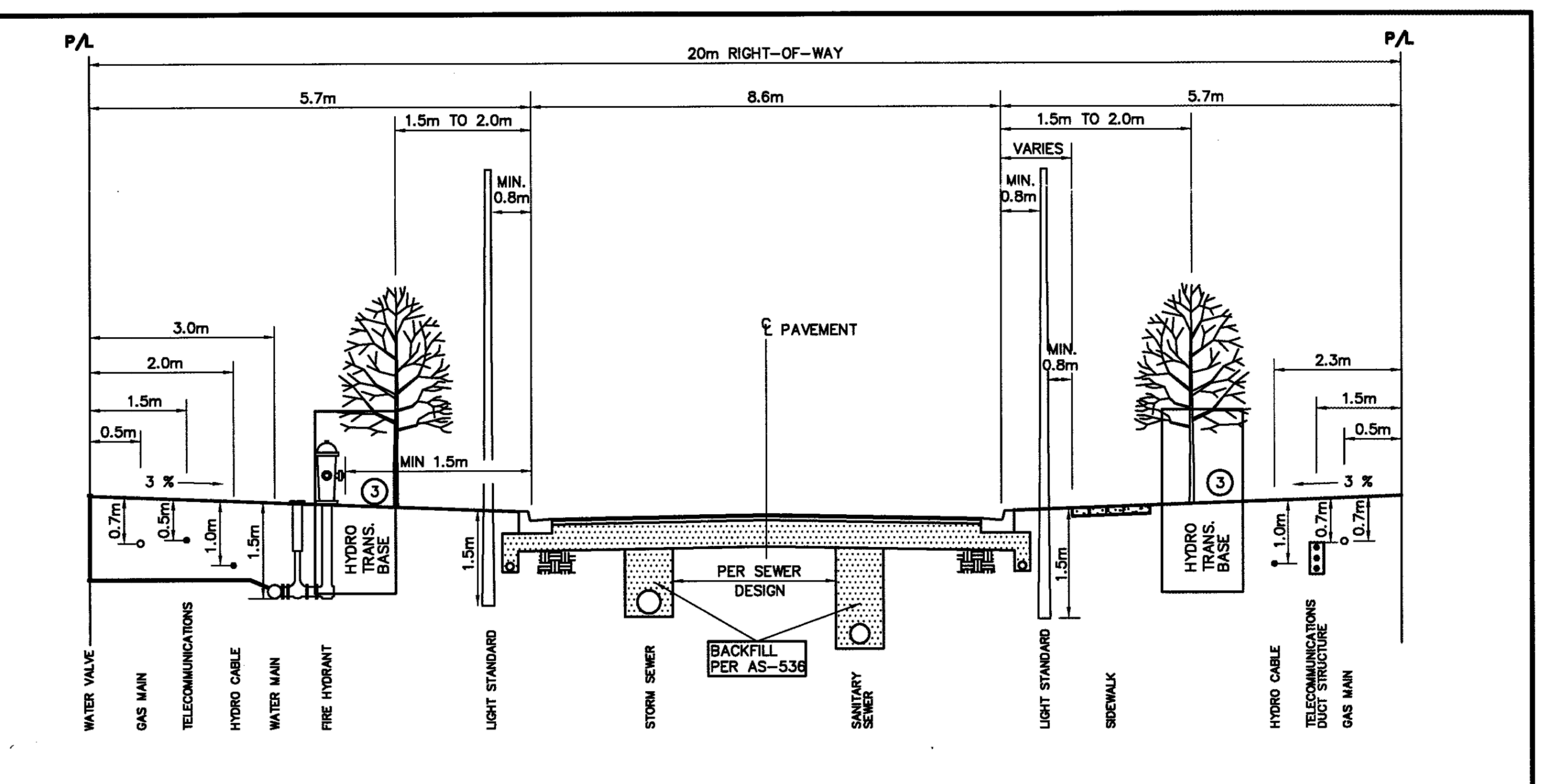
NOTES:
1. DEVELOPER IS TO CONSTRUCT TEMPORARY LOT DRAINAGE FOR EACH BUILDING LOT AS SHOWN ABOVE AT THE TIME OF SEWER CONSTRUCTION
2. HOME BUILDER TO CONNECT PRIVATE STORM SEWER TO EXISTING TEE AT THE PROPERTY LINE AND REMOVE TEMPORARY CATCHBASIN AND PIPES ON PRIVATE PROPERTY.
3. DETERMINATION OF WHETHER TEMPORARY LOT DRAINAGE IS REQUIRED SHALL BE AT THE DISCRETION OF THE CITY ENGINEER AND THE CHIEF BUILDING OFFICIAL.

CITY OF WINDSOR ENGINEERING DEPARTMENT	
TEMPORARY LOT DRAINAGE	
DR'N BY: J.L.	DATE: AUGUST, 2013
REVISION:	CH'KD BY: S.S.
CH'KD BY: PJU	PASSED BY:
[illegible] Oct 1/2013 CITY ENGINEER	AS-550



GENERAL NOTES:
① FOR SEWER AND PRIVATE SEWER CONNECTION CONSTRUCTION, ALL WORK TO BE IN ACCORDANCE WITH THE CITY OF WINDSOR STANDARD SPECIFICATIONS S-1 APPLIED TO ALL CASES ①, ②, ③ & ④ OF THIS STANDARD DRAWING.
② FOR ALL CASES, IF TRENCH WALL IS CLOSER THAN 300mm FROM THE BACK OF CURB (FUTURE OR EXISTING) OR EDGE OF PAVEMENT (FUTURE OR EXISTING), IN ANY DIRECTION, THEN CASE ② SHALL GOVERN.
③ FOR CASE ④, WHERE TRENCH CROSSES PERPENDICULAR TO ROADWAY (±45°) AND CROSSES UNDERNEATH AN EXISTING CURB, DRIVEWAY OR SIMILAR STRUCTURE, EXTEND GRANULAR BACKFILL TO 1.8m (MIN.) EITHER SIDE OF STRUCTURE.
④ THIS DETAIL ADDRESSES TRENCH BACKFILL ONLY. SURFACE RESTORATION SHALL BE AS OTHERWISE APPROVED BY THE COMMISSIONER OF WORKS.

CITY OF WINDSOR DEPARTMENT OF PUBLIC WORKS	
STANDARD TRENCH BACKFILL DETAILS	
DR'N BY: R.C.	DATE: OCTOBER, 2002
REVISION:	CH'KD BY:
CH'KD BY: [illegible]	PASSED BY: [illegible]
[illegible] COMMISSIONER OF WORKS	AS-536



NOTES:
1. IT IS NOTED THE ABOVE CROSS-SECTION IS MEANT TO BE A GUIDELINE ONLY AND CANNOT POSSIBLY APPLY IN EVERY INSTANCE. FOR EXAMPLE, NO PROVISION IS SHOWN FOR TELEPHONE MANHOLES AND IT IS THE RESPONSIBILITY OF THE DESIGN ENGINEER TO HAVE ALL UNDERGROUND LOCATIONS APPROVED BY THE UTILITY COMPANIES FOR EACH SUBDIVISION AS SET OUT IN THE CITY OF WINDSOR DEVELOPMENT MANUAL.
2. VERTICAL DIMENSIONS TO UTILITY PLANT ARE GUIDELINES ONLY AND SHOULD BE CONFIRMED WITH THE UTILITY COMPANIES BY THE DESIGN ENGINEER. THESE DIMENSIONS ARE SHOWN TO TOP OF FINAL GRADE, IT IS THEREFORE ESSENTIAL THAT GRADING BE COMPLETED TO OUTER EDGE OF RIGHT-OF-WAY BEFORE UTILITY INSTALLATION AND TO BE WITHIN ±15cm OF FINAL GRADE.
3. ABOVE GROUND TRANSFORMERS PEDESTALS TO BE LOCATED ON PLAN VIEWS BY ENGINEER. NO TWO (2) ABOVE GROUND UTILITIES ON THE SAME FRONTAGE.
4. ALL TELECOMMUNICATIONS TO BE IN JOINT USE TRENCH FOR NEW CONSTRUCTION
5. SIDEWALKS TO BE IN ACCORDANCE WITH AS-401 TO AS-404 AS APPLICABLE

CITY OF WINDSOR ENGINEERING DEPARTMENT	
STANDARD UTILITY CROSS-SECTION FOR 20m RIGHT-OF-WAY	
DR'N BY: N.S.	DATE: JANUARY, 1980
REVISION: JULY, 2013	CH'KD BY: S.S.
CH'KD BY: P.J.U.	PASSED BY:
[illegible] Oct 15/2013 CITY ENGINEER	AS-206D

May/27/2022

LICENSED PROFESSIONAL ENGINEER
MAY 26, 2022
S. TUNIO
100125071
[illegible]
PROVINCE OF ONTARIO

DATE: MAY 27, 2022

SHURJEEL TUNIO, P.ENG.

DATE	REVISIONS
05/14/2021	SUBMITTED FOR APPROVALS
06/29/2021	REVISED AS PER ENWIN COMMENTS
22/04/2022	REVISED AS PER ERCA COMMENTS
27/05/2022	REVISED AS PER CITY COMMENTS
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BAIRD | AE
architecture + engineering

27 PRINCESS STREET, SUITE #102
LEAMINGTON, ONTARIO
N8H 2X8

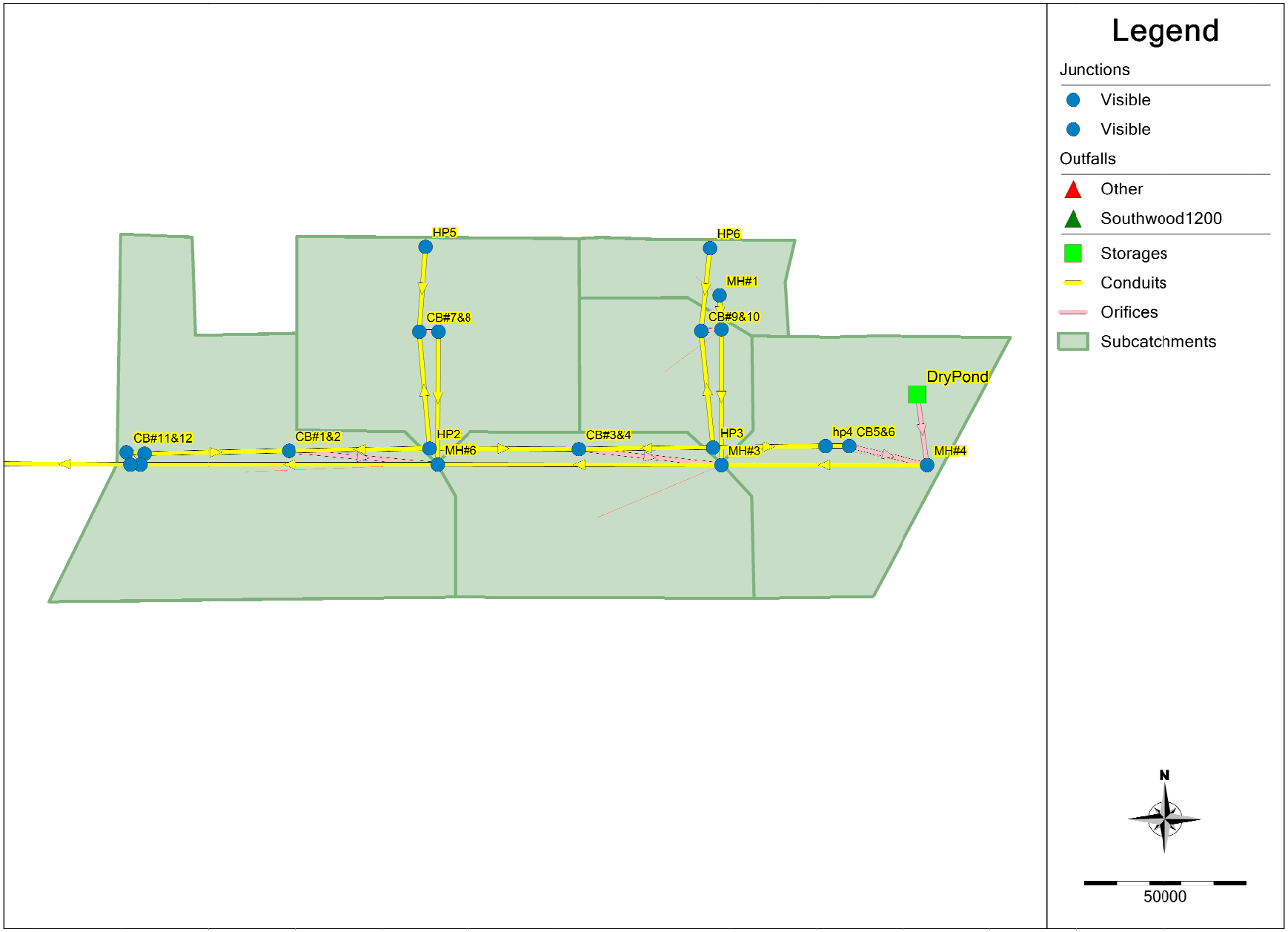
1000 - 267 PELISSIER STREET,
WINDSOR, ONTARIO
N9A 4K4.

PROJECT TITLE: NORTH TALBOT DEVELOPMENT 1095 NORTH TALBOT ROAD, WINDSOR	DATE: MAY 27, 2022	PROJECT NO: 21-021
	SCALE: N.T.S.	
SHEET TITLE: DETAILS 2	DRAWN BY: B.T.	SHEET NO: 12
	CHECKED BY: S.T.	

1095 NORTH TALBOT ROAD DETAILS.DWG

Appendix B

Model Layout


HP5
HP6
MH#1
CB#7&8
CB#9&10
DryPond
CB#11&12
CB#1&2
HP2
MH#6
CB#3&4
HP3
MH#3
hp4 CB5&6
MH#4
Legend
Junctions
Visible
Visible
Outfalls
Other
Southwood1200
Storages
Conduits
Orifices
Subcatchments
N
50000

Appendix C

5-Year Storm Event – Input/Output Summary

5 YEAR CHICAGO OUTPUT RESULTS

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
---------------------------------------------------------------


*************
Element Count
*************
Number of rain gages ...... 20
Number of subcatchments ... 6
Number of nodes ........... 22
Number of links ........... 26
Number of pollutants ...... 0
Number of land uses ....... 0


****************
Raingage Summary
****************
                                                  Data       Recording
Name                 Data Source                  Type       Interval
------------------------------------------------------------------------
100Year-10Min        100Yr-10Min                  INTENSITY   10 min.
100Year-15Min        100Yr-15Min                  INTENSITY   15 min.
100Year-20Min        100Yr-20Min                  INTENSITY   20 min.
100Year-30Min        100Yr-30Min                  INTENSITY   30 min.
100Year-5Min         100Yr-5Min                   INTENSITY    5 min.
5Year-10Min          5Yr-10Min                    INTENSITY   10 min.
5Year-15Min          5Yr-15Min                    INTENSITY   15 min.
5Year-20Min          5Yr-20Min                    INTENSITY   20 min.
5Year-30Min          5Yr-30Min                    INTENSITY   30 min.
5Year-5Min           5Yr-5Min                     INTENSITY    5 min.
SCSII-100-Yr         SCSII-100Yr                  INTENSITY  120 min.
SCSII-5-Year         SCSII-5-Year                 INTENSITY  120 min.
SCSII-RuralStress    SCSII-RST                    INTENSITY  120 min.
SCSII-Unit           SCSII-Unit                   INTENSITY  120 min.
UrbanStressTest      UrbanStressTest              INTENSITY   15 min.
WaterQualityStorm10MIN WaterQualityStorm-10MIN      INTENSITY   10 min.
WaterQualityStorm15MIN WaterQualityStorm-15MIN      INTENSITY   15 min.
WaterQualityStorm20MIN WaterQualityStorm-20MIN      INTENSITY   20 min.
WaterQualityStorm30MIN WaterQualityStorm-30MIN      INTENSITY   30 min.
WaterQualityStorm5MIN WaterQualityStorm-5MIN       INTENSITY    5 min.


********************
Subcatchment Summary
********************
Name                        Area     Width   %Imperv    %Slope Rain Gage            Outlet
-------------------------------------------------------------------------------------------------
S1                          0.48    110.00     60.00    1.0000 5Year-10Min          MH#4
S2                          0.22     75.00     60.00    1.0000 5Year-10Min          MH#2
S3                          0.45    100.00     60.00    1.0000 5Year-10Min          MH#3
S4                          0.53     90.00     60.00    1.0000 5Year-10Min          MH#5
S5                          0.72    120.00     60.00    1.0000 5Year-10Min          MH#6
S6                          0.12     75.00     60.00    1.0000 5Year-10Min          MH#1


************
Node Summary
************
                                      Invert      Max.    Ponded    External
Name                 Type              Elev.     Depth      Area    Inflow
------------------------------------------------------------------------
CB#1&2               JUNCTION          189.71      0.32       0.0
CB#11&12             JUNCTION          189.82      0.32       0.0
CB#3&4               JUNCTION          189.73      0.32       0.0
CB#7&8               JUNCTION          189.76      0.32       0.0
CB#9&10              JUNCTION          189.72      0.32       0.0
CB5&6                JUNCTION          189.71      0.32       0.0
HP1                  JUNCTION          190.05      0.32       0.0
HP2                  JUNCTION          189.91      0.32       0.0
HP3                  JUNCTION          189.94      0.32       0.0
hp4                  JUNCTION          189.90      0.32       0.0
HP5                  JUNCTION          190.05      0.32       0.0
HP6                  JUNCTION          190.13      0.36       0.0
MH#1                 JUNCTION          186.46      3.71       0.0
MH#2                 JUNCTION          186.40      3.42       0.0
MH#3                 JUNCTION          186.34      3.65       0.0
MH#4                 JUNCTION          186.41      3.92       0.0
MH#5                 JUNCTION          186.34      3.67       0.0
MH#6                 JUNCTION          186.25      3.71       0.0
MH#7-A               JUNCTION          186.19      3.90       1.0
MH#7-B               JUNCTION          186.16      3.99       0.0
Southwood1200        OUTFALL           186.09      0.63       0.0
DryPond              STORAGE           188.34      1.93       0.0


************
Link Summary
************
Name              From Node        To Node          Type            Length    %Slope Roughness
-------------------------------------------------------------------------------------------------
C1                MH#4             MH#3             CONDUIT           69.9    0.0643    0.0130
C10               HP6              CB#9&10          CONDUIT           35.0    1.1486    0.0130
C11               HP3              CB#3&4           CONDUIT           43.6    0.4883    0.0130
```

C12	HP2	CB#3&4	CONDUIT	43.6	0.4057	0.0130
C13	HP2	CB#7&8	CONDUIT	35.0	0.4114	0.0130
C14	HP5	CB#7&8	CONDUIT	35.0	0.8286	0.0130
C15	HP2	CB#1&2	CONDUIT	49.3	0.3977	0.0130
C16	HP1	CB#1&2	CONDUIT	29.0	1.1759	0.0130
C18	MH#1	MH#2	CONDUIT	16.0	0.1817	0.0130
C19	HP1	CB#11&12	CONDUIT	17.4	1.3449	0.0130
C2	MH#3	MH#6	CONDUIT	87.3	0.0745	0.0130
C3	MH#6	MH#7-A	CONDUIT	94.5	0.0370	0.0130
C4	MH#7-B	Southwood1200	CONDUIT	40.8	0.1202	0.0130
C5	MH#5	MH#6	CONDUIT	58.3	0.1201	0.0130
C6	MH#2	MH#3	CONDUIT	42.7	0.0890	0.0130
C7	hp4	CB5&6	CONDUIT	10.0	1.9003	0.0130
C8	HP3	hp4	CONDUIT	35.0	0.1229	0.0130
C9	HP3	CB#9&10	CONDUIT	35.0	0.6229	0.0130
CB1/2	CB#1&2	MH#6	ORIFICE			
CB3/4	CB#3&4	MH#3	ORIFICE			
CB7/8	CB#7&8	MH#5	ORIFICE			
CB9/10	CB#9&10	MH#2	ORIFICE			
OR1	CB#11&12	MH#7-A	ORIFICE			
OR6	MH#7-A	MH#7-B	ORIFICE			
OR7	DryPond	MH#4	ORIFICE			
orfice	CB5&6	DryPond	ORIFICE			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	1.05	0.87	0.26	1.05	1	0.69
C10	NTRoad	0.32	3.09	0.14	20.15	1	6.86
C11	NTRoad	0.32	3.09	0.14	20.15	1	4.48
C12	NTRoad	0.32	3.09	0.14	20.15	1	4.08
C13	NTRoad	0.32	3.09	0.14	20.15	1	4.11
C14	NTRoad	0.32	3.09	0.14	20.15	1	5.83
C15	NTRoad	0.32	3.09	0.14	20.15	1	4.04
C16	NTRoad	0.32	3.09	0.14	20.15	1	6.95
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.12
C19	NTRoad	0.32	3.09	0.14	20.15	1	7.43
C2	CIRCULAR	1.05	0.87	0.26	1.05	1	0.75
C3	CIRCULAR	1.05	0.87	0.26	1.05	1	0.53
C4	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C5	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C6	CIRCULAR	0.75	0.44	0.19	0.75	1	0.33
C7	NTRoad	0.32	3.09	0.14	20.15	1	8.83
C8	NTRoad	0.32	3.09	0.14	20.15	1	2.24
C9	NTRoad	0.32	3.09	0.14	20.15	1	5.05

****
Transect Summary
****

Transect NTRoad
Area:

0.0004	0.0015	0.0034	0.0060	0.0094
0.0136	0.0185	0.0242	0.0306	0.0378
0.0457	0.0544	0.0638	0.0740	0.0850
0.0967	0.1091	0.1224	0.1363	0.1511
0.1665	0.1828	0.1998	0.2178	0.2370
0.2571	0.2780	0.2999	0.3226	0.3461
0.3706	0.3959	0.4220	0.4491	0.4770
0.5058	0.5354	0.5660	0.5973	0.6296
0.6627	0.6967	0.7316	0.7673	0.8039
0.8414	0.8798	0.9190	0.9590	1.0000

Hrad:

0.0221	0.0441	0.0662	0.0882	0.1103
0.1324	0.1544	0.1765	0.1985	0.2206
0.2427	0.2647	0.2868	0.3088	0.3309
0.3530	0.3750	0.3971	0.4192	0.4412
0.4633	0.4853	0.5074	0.5208	0.5622
0.6007	0.6364	0.6694	0.6999	0.7280
0.7541	0.7781	0.8003	0.8207	0.8397
0.8571	0.8733	0.8882	0.9020	0.9147
0.9265	0.9374	0.9475	0.9569	0.9655
0.9735	0.9809	0.9878	0.9941	1.0000

Width:

0.0183	0.0365	0.0548	0.0730	0.0913
0.1095	0.1278	0.1460	0.1643	0.1825
0.2008	0.2190	0.2373	0.2555	0.2738
0.2920	0.3103	0.3285	0.3468	0.3650
0.3833	0.4015	0.4198	0.4540	0.4750
0.4960	0.5170	0.5380	0.5590	0.5800
0.6010	0.6220	0.6430	0.6640	0.6850
0.7060	0.7270	0.7480	0.7690	0.7900
0.8110	0.8320	0.8530	0.8740	0.8950
0.9160	0.9370	0.9580	0.9790	1.0000

Transect PondSpillway1
Area:

0.0005	0.0019	0.0043	0.0076	0.0119
0.0172	0.0234	0.0306	0.0387	0.0477

0.0578 0.0688 0.0807 0.0936 0.1074
0.1222 0.1380 0.1547 0.1724 0.1910
0.2104 0.2304 0.2510 0.2720 0.2935
0.3156 0.3382 0.3613 0.3849 0.4090
0.4337 0.4588 0.4845 0.5107 0.5374
0.5646 0.5924 0.6206 0.6494 0.6787
0.7085 0.7388 0.7697 0.8010 0.8329
0.8653 0.8982 0.9316 0.9655 1.0000
Hrad:
0.0174 0.0348 0.0522 0.0696 0.0870
0.1044 0.1218 0.1392 0.1566 0.1740
0.1914 0.2088 0.2262 0.2436 0.2610
0.2784 0.2958 0.3132 0.3306 0.3480
0.3710 0.3958 0.4203 0.4444 0.4682
0.4917 0.5149 0.5378 0.5605 0.5830
0.6052 0.6273 0.6492 0.6708 0.6924
0.7137 0.7349 0.7560 0.7769 0.7977
0.8184 0.8390 0.8594 0.8798 0.9000
0.9202 0.9403 0.9603 0.9802 1.0000
Width:
0.0275 0.0550 0.0825 0.1100 0.1375
0.1650 0.1926 0.2201 0.2476 0.2751
0.3026 0.3301 0.3576 0.3851 0.4126
0.4401 0.4676 0.4951 0.5227 0.5502
0.5687 0.5836 0.5984 0.6133 0.6282
0.6431 0.6579 0.6728 0.6877 0.7026
0.7174 0.7323 0.7472 0.7620 0.7769
0.7918 0.8067 0.8215 0.8364 0.8513
0.8661 0.8810 0.8959 0.9108 0.9256
0.9405 0.9554 0.9703 0.9851 1.0000

Transect PondSpillway2
Area:
0.0006 0.0023 0.0052 0.0092 0.0144
0.0207 0.0281 0.0367 0.0465 0.0574
0.0695 0.0827 0.0970 0.1125 0.1292
0.1470 0.1659 0.1860 0.2072 0.2291
0.2513 0.2736 0.2963 0.3191 0.3422
0.3656 0.3892 0.4131 0.4372 0.4615
0.4861 0.5109 0.5360 0.5613 0.5869
0.6127 0.6388 0.6651 0.6916 0.7185
0.7455 0.7728 0.8003 0.8281 0.8562
0.8844 0.9130 0.9417 0.9707 1.0000
Hrad:
0.0147 0.0295 0.0442 0.0590 0.0737
0.0885 0.1032 0.1179 0.1327 0.1474
0.1622 0.1769 0.1916 0.2064 0.2211
0.2359 0.2506 0.2654 0.2808 0.3069
0.3328 0.3584 0.3838 0.4090 0.4339
0.4586 0.4831 0.5074 0.5315 0.5553
0.5790 0.6026 0.6259 0.6491 0.6721
0.6949 0.7176 0.7401 0.7625 0.7848
0.8069 0.8288 0.8506 0.8723 0.8939
0.9154 0.9367 0.9579 0.9790 1.0000
Width:
0.0391 0.0781 0.1172 0.1563 0.1954
0.2344 0.2735 0.3126 0.3517 0.3907
0.4298 0.4689 0.5080 0.5470 0.5861
0.6252 0.6643 0.7033 0.7406 0.7489
0.7573 0.7657 0.7740 0.7824 0.7908
0.7991 0.8075 0.8159 0.8243 0.8326
0.8410 0.8494 0.8577 0.8661 0.8745
0.8828 0.8912 0.8996 0.9079 0.9163
0.9247 0.9330 0.9414 0.9498 0.9582
0.9665 0.9749 0.9833 0.9916 1.0000

Transect PondSpillway3
Area:
0.0005 0.0019 0.0043 0.0077 0.0120
0.0172 0.0234 0.0306 0.0387 0.0478
0.0579 0.0689 0.0808 0.0937 0.1076
0.1224 0.1382 0.1550 0.1727 0.1913
0.2109 0.2314 0.2525 0.2741 0.2961
0.3186 0.3416 0.3650 0.3889 0.4133
0.4382 0.4635 0.4893 0.5155 0.5423
0.5695 0.5972 0.6253 0.6540 0.6831
0.7126 0.7427 0.7732 0.8042 0.8356
0.8676 0.9000 0.9328 0.9662 1.0000
Hrad:
0.0170 0.0341 0.0511 0.0681 0.0851
0.1022 0.1192 0.1362 0.1532 0.1703
0.1873 0.2043 0.2213 0.2384 0.2554
0.2724 0.2894 0.3065 0.3235 0.3405
0.3575 0.3781 0.4034 0.4283 0.4529
0.4772 0.5012 0.5250 0.5484 0.5717
0.5946 0.6174 0.6400 0.6623 0.6845
0.7065 0.7283 0.7500 0.7715 0.7929
0.8141 0.8352 0.8562 0.8771 0.8978
0.9185 0.9390 0.9594 0.9798 1.0000
Width:
0.0281 0.0562 0.0843 0.1124 0.1405
0.1685 0.1966 0.2247 0.2528 0.2809
0.3090 0.3371 0.3652 0.3933 0.4214
0.4495 0.4776 0.5056 0.5337 0.5618
0.5899 0.6122 0.6260 0.6399 0.6537

```
            0.6676     0.6814     0.6953     0.7091     0.7230
            0.7368     0.7507     0.7645     0.7784     0.7922
            0.8061     0.8199     0.8338     0.8476     0.8615
            0.8753     0.8892     0.9030     0.9169     0.9307
            0.9446     0.9584     0.9723     0.9861     1.0000

  Transect Road
  Area:
            0.0005     0.0019     0.0043     0.0077     0.0120
            0.0173     0.0236     0.0308     0.0390     0.0481
            0.0582     0.0693     0.0813     0.0943     0.1083
            0.1232     0.1393     0.1563     0.1740     0.1922
            0.2109     0.2303     0.2502     0.2706     0.2916
            0.3132     0.3354     0.3581     0.3813     0.4052
            0.4296     0.4545     0.4800     0.5061     0.5328
            0.5600     0.5877     0.6161     0.6450     0.6744
            0.7045     0.7350     0.7662     0.7979     0.8302
            0.8630     0.8964     0.9304     0.9649     1.0000
  Hrad:
            0.0205     0.0410     0.0615     0.0820     0.1025
            0.1230     0.1435     0.1640     0.1845     0.2050
            0.2255     0.2460     0.2665     0.2870     0.3075
            0.3280     0.3441     0.3834     0.4208     0.4563
            0.4899     0.5219     0.5522     0.5811     0.6084
            0.6345     0.6592     0.6828     0.7052     0.7266
            0.7469     0.7663     0.7848     0.8024     0.8193
            0.8354     0.8508     0.8655     0.8795     0.8930
            0.9058     0.9181     0.9299     0.9413     0.9521
            0.9625     0.9724     0.9820     0.9912     1.0000
  Width:
            0.0272     0.0544     0.0816     0.1089     0.1361
            0.1633     0.1905     0.2177     0.2449     0.2721
            0.2994     0.3266     0.3538     0.3810     0.4082
            0.4354     0.4748     0.4907     0.5066     0.5225
            0.5385     0.5544     0.5703     0.5862     0.6021
            0.6180     0.6340     0.6499     0.6658     0.6817
            0.6976     0.7135     0.7294     0.7454     0.7613
            0.7772     0.7931     0.8090     0.8249     0.8408
            0.8568     0.8727     0.8886     0.9045     0.9204
            0.9363     0.9523     0.9682     0.9841     1.0000

  Transect Road2
  Area:
            0.0006     0.0023     0.0051     0.0091     0.0142
            0.0205     0.0279     0.0364     0.0461     0.0569
            0.0689     0.0820     0.0962     0.1116     0.1281
            0.1458     0.1646     0.1844     0.2044     0.2248
            0.2456     0.2667     0.2881     0.3100     0.3321
            0.3546     0.3775     0.4007     0.4243     0.4482
            0.4724     0.4971     0.5220     0.5473     0.5730
            0.5990     0.6254     0.6521     0.6792     0.7066
            0.7343     0.7625     0.7909     0.8197     0.8489
            0.8784     0.9083     0.9385     0.9691     1.0000
  Hrad:
            0.0167     0.0335     0.0502     0.0670     0.0837
            0.1004     0.1172     0.1339     0.1507     0.1674
            0.1841     0.2009     0.2176     0.2344     0.2511
            0.2678     0.2897     0.3213     0.3521     0.3820
            0.4111     0.4395     0.4671     0.4939     0.5201
            0.5456     0.5704     0.5946     0.6182     0.6411
            0.6635     0.6854     0.7067     0.7274     0.7477
            0.7675     0.7867     0.8056     0.8240     0.8419
            0.8594     0.8765     0.8932     0.9096     0.9255
            0.9411     0.9563     0.9712     0.9858     1.0000
  Width:
            0.0366     0.0732     0.1099     0.1465     0.1831
            0.2197     0.2563     0.2930     0.3296     0.3662
            0.4028     0.4394     0.4761     0.5127     0.5493
            0.5859     0.6282     0.6394     0.6507     0.6620
            0.6732     0.6845     0.6958     0.7070     0.7183
            0.7296     0.7408     0.7521     0.7634     0.7746
            0.7859     0.7972     0.8085     0.8197     0.8310
            0.8423     0.8535     0.8648     0.8761     0.8873
            0.8986     0.9099     0.9211     0.9324     0.9437
            0.9549     0.9662     0.9775     0.9887     1.0000


  ***********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  ***********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ YES
    Water Quality .......... NO
```

Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date 06/06/2018 10:30:00
Ending Date 06/08/2018 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:01:00
Dry Time Step 00:01:00
Routing Time Step ..... 2.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 4
Head Tolerance ..... 0.001500 m

**********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**********	---------	-------
Total Precipitation	0.124	49.478
Evaporation Loss	0.000	0.000
Infiltration Loss	0.016	6.379
Surface Runoff	0.105	41.627
Final Storage	0.004	1.500
Continuity Error (%)	-0.055	

**********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**********	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.105	1.047
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.056	0.555
External Outflow	0.147	1.471
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.002
Final Stored Volume	0.013	0.134
Continuity Error (%)	0.020	

****
Highest Continuity Errors
****
Node MH#2 (3.06%)
Node MH#5 (2.90%)
Node MH#6 (2.24%)
Node MH#3 (1.81%)
Node MH#7-A (1.80%)

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
Link OR6 (42)
Link C4 (19)
Link C18 (16)
Link C5 (16)
Link C1 (15)

****
Routing Time Step Summary
****
Minimum Time Step : 1.57 sec
Average Time Step : 2.00 sec
Maximum Time Step : 2.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.94
Percent Not Converging : 10.23
Time Step Frequencies :
2.000 - 1.516 sec : 100.00 %
1.516 - 1.149 sec : 0.00 %
1.149 - 0.871 sec : 0.00 %
0.871 - 0.660 sec : 0.00 %
0.660 - 0.500 sec : 0.00 %

****
Subcatchment Runoff Summary
****

	Total	Total	Total	Total	Imperv	Perv	Total	Total	Peak	Runoff

Subcatchment	Precip mm	Runon mm	Evap mm	Infil mm	Runoff mm	Runoff mm	Runoff mm	Runoff 10^6 ltr	Runoff CMS	Coeff
S1	49.48	0.00	0.00	6.36	28.21	13.44	41.65	0.20	0.13	0.842
S2	49.48	0.00	0.00	6.30	28.21	13.50	41.71	0.09	0.06	0.843
S3	49.48	0.00	0.00	6.36	28.21	13.44	41.64	0.19	0.12	0.842
S4	49.48	0.00	0.00	6.42	28.20	13.38	41.59	0.22	0.14	0.840
S5	49.48	0.00	0.00	6.42	28.20	13.38	41.58	0.30	0.18	0.840
S6	49.48	0.00	0.00	6.24	28.22	13.57	41.79	0.05	0.04	0.845

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
CB#1&2	JUNCTION	0.00	0.10	189.82	0 01:57	0.10
CB#11&12	JUNCTION	0.00	0.01	189.83	0 01:50	0.01
CB#3&4	JUNCTION	0.00	0.09	189.82	0 01:55	0.09
CB#7&8	JUNCTION	0.00	0.06	189.83	0 01:53	0.06
CB#9&10	JUNCTION	0.00	0.09	189.82	0 01:55	0.09
CB5&6	JUNCTION	0.00	0.05	189.76	0 02:17	0.05
HP1	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP2	JUNCTION	0.00	0.00	189.91	0 00:00	0.00
HP3	JUNCTION	0.00	0.00	189.94	0 00:00	0.00
hp4	JUNCTION	0.00	0.00	189.90	0 00:00	0.00
HP5	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP6	JUNCTION	0.00	0.00	190.13	0 00:00	0.00
MH#1	JUNCTION	0.87	3.38	189.83	0 01:50	3.38
MH#2	JUNCTION	0.92	3.43	189.83	0 01:50	3.43
MH#3	JUNCTION	0.98	3.49	189.83	0 01:50	3.49
MH#4	JUNCTION	0.91	3.42	189.83	0 01:50	3.42
MH#5	JUNCTION	0.98	3.49	189.84	0 01:50	3.49
MH#6	JUNCTION	1.07	3.58	189.83	0 01:50	3.58
MH#7-A	JUNCTION	1.13	3.64	189.83	0 01:50	3.64
MH#7-B	JUNCTION	1.14	3.62	189.78	0 01:30	3.61
Southwood1200	OUTFALL	1.22	3.75	189.84	0 01:30	3.75
DryPond	STORAGE	0.06	1.42	189.76	0 02:13	1.42

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
CB#1&2	JUNCTION	0.000	0.032	0 01:40	0	0.00939	-0.044	
CB#11&12	JUNCTION	0.000	0.000	0 01:48	0	3.99e-05	0.567	
CB#3&4	JUNCTION	0.000	0.025	0 01:40	0	0.00745	-0.045	
CB#7&8	JUNCTION	0.000	0.020	0 01:40	0	0.00305	-0.144	
CB#9&10	JUNCTION	0.000	0.025	0 01:40	0	0.00683	-0.046	
CB5&6	JUNCTION	0.000	0.000	0 01:54	0	0.000323	0.010	
HP1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP2	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP3	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
hp4	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP5	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP6	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
MH#1	JUNCTION	0.035	0.035	0 01:40	0.0506	0.0566	-0.049	
MH#2	JUNCTION	0.062	0.097	0 01:40	0.0915	0.188	3.156	
MH#3	JUNCTION	0.119	0.524	0 01:35	0.186	1.75	1.842	
MH#4	JUNCTION	0.128	0.631	0 01:35	0.199	1.38	0.519	
MH#5	JUNCTION	0.136	0.136	0 01:40	0.22	0.248	2.992	
MH#6	JUNCTION	0.184	0.349	0 01:33	0.299	2.11	2.291	
MH#7-A	JUNCTION	0.000	0.271	0 01:25	0	1.96	1.836	
MH#7-B	JUNCTION	0.000	0.271	0 01:25	0	2	0.415	
Southwood1200	OUTFALL	0.000	0.271	0 01:25	0	2.03	0.000	
DryPond	STORAGE	0.000	0.634	0 01:35	0	0.588	-1.753	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters

MH#1	JUNCTION	27.29	2.927	0.336
MH#2	JUNCTION	16.52	2.631	0.000
MH#3	JUNCTION	11.99	2.419	0.159
MH#4	JUNCTION	11.21	2.374	0.496
MH#5	JUNCTION	18.08	2.692	0.179
MH#6	JUNCTION	13.78	2.508	0.124
MH#7-A	JUNCTION	15.07	2.566	0.259
MH#7-B	JUNCTION	36.29	3.016	0.374

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CMS
DryPond	0.024	2	0	0	0.598	59	0 02:13	0.206

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Southwood1200	99.67	0.015	0.271	2.026
System	99.67	0.015	0.271	2.026

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.523	0 01:35	0.60	0.76	1.00
C10	CHANNEL	0.000	0 00:00	0.00	0.00	0.15
C11	CHANNEL	0.000	0 00:00	0.00	0.00	0.14
C12	CHANNEL	0.000	0 00:00	0.00	0.00	0.14
C13	CHANNEL	0.000	0 00:00	0.00	0.00	0.10
C14	CHANNEL	0.000	0 00:00	0.00	0.00	0.10
C15	CHANNEL	0.000	0 00:00	0.00	0.00	0.16
C16	CHANNEL	0.000	0 00:00	0.00	0.00	0.16
C18	CONDUIT	0.035	0 01:40	0.24	0.29	1.00
C19	CHANNEL	0.000	0 00:00	0.00	0.00	0.02
C2	CONDUIT	0.352	0 01:25	0.41	0.47	1.00
C3	CONDUIT	0.268	0 01:25	0.31	0.51	1.00
C4	CONDUIT	0.271	0 01:25	0.96	1.27	1.00
C5	CONDUIT	0.128	0 01:37	0.45	0.60	1.00
C6	CONDUIT	0.093	0 01:37	0.21	0.28	1.00
C7	CHANNEL	0.000	0 00:00	0.00	0.00	0.08
C8	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C9	CHANNEL	0.000	0 00:00	0.00	0.00	0.15
CB1/2	ORIFICE	0.032	0 01:40			
CB3/4	ORIFICE	0.025	0 01:40			
CB7/8	ORIFICE	0.020	0 01:40			
CB9/10	ORIFICE	0.025	0 01:40			
OR1	ORIFICE	0.000	0 01:48			
OR6	ORIFICE	0.271	0 01:25			1.00
OR7	ORIFICE	0.634	0 01:35			
orfice	ORIFICE	0.000	0 02:23			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C13	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C14	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C16	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C7	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	11.21	11.21	11.99	0.01	0.01
C18	27.28	27.28	28.91	0.01	0.02
C2	12.52	12.52	13.78	0.01	0.06
C3	14.28	14.28	15.07	0.01	0.33
C4	36.29	36.29	36.32	0.40	0.95
C5	25.33	25.33	29.08	0.01	0.06
C6	17.84	17.84	18.99	0.01	0.01

Analysis begun on: Thu May 26 16:52:30 2022
Analysis ended on: Thu May 26 16:52:32 2022
Total elapsed time: 00:00:02

5 YEAR CHICAGO INPUT RESULTS

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CMS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        YES
SKIP_STEADY_STATE    NO

START_DATE           06/06/2018
START_TIME           10:30:00
REPORT_START_DATE    06/06/2018
REPORT_START_TIME    10:30:00
END_DATE             06/08/2018
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         2
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              4

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
100Year-10Min    INTENSITY 0:10     1.0      TIMESERIES 100Yr-10Min
100Year-15Min    INTENSITY 0:15     1.0      TIMESERIES 100Yr-15Min
100Year-20Min    INTENSITY 0:20     1.0      TIMESERIES 100Yr-20Min
100Year-30Min    INTENSITY 0:30     1.0      TIMESERIES 100Yr-30Min
100Year-5Min     INTENSITY 0:05     1.0      TIMESERIES 100Yr-5Min
5Year-10Min      INTENSITY 0:10     1.0      TIMESERIES 5Yr-10Min
5Year-15Min      INTENSITY 0:15     1.0      TIMESERIES 5Yr-15Min
5Year-20Min      INTENSITY 0:20     1.0      TIMESERIES 5Yr-20Min
5Year-30Min      INTENSITY 0:30     1.0      TIMESERIES 5Yr-30Min
5Year-5Min       INTENSITY 0:05     1.0      TIMESERIES 5Yr-5Min
SCSII-100-Yr     INTENSITY 2:00     1.0      TIMESERIES SCSII-100Yr
SCSII-5-Year     INTENSITY 2:00     1.0      TIMESERIES SCSII-5-Year
SCSII-RuralStress INTENSITY 2:00     1.0      TIMESERIES SCSII-RST
SCSII-Unit       INTENSITY 2:00     1.0      TIMESERIES SCSII-Unit
UrbanStressTest  INTENSITY 0:15     1.0      TIMESERIES UrbanStressTest
WaterQualityStorm10MIN INTENSITY 0:10     1.0      TIMESERIES WaterQualityStorm-10MIN
WaterQualityStorm15MIN INTENSITY 0:15     1.0      TIMESERIES WaterQualityStorm-15MIN
WaterQualityStorm20MIN INTENSITY 0:20     1.0      TIMESERIES WaterQualityStorm-20MIN
WaterQualityStorm30MIN INTENSITY 0:30     1.0      TIMESERIES WaterQualityStorm-30MIN
WaterQualityStorm5MIN INTENSITY 0:05     1.0      TIMESERIES WaterQualityStorm-5MIN

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
S1               5Year-10Min      MH#4             0.479    60       110      1        0
S2               5Year-10Min      MH#2             0.2194   60       75       1        0
S3               5Year-10Min      MH#3             0.4467   60       100      1        0
S4               5Year-10Min      MH#5             0.5299   60       90       1        0
S5               5Year-10Min      MH#6             0.7202   60       120      1        0
S6               5Year-10Min      MH#1             0.121    60       75       1        0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
S1               0.013      0.15       2.5        7.5        0          OUTLET
S2               0.013      0.15       2.5        7.5        0          OUTLET
S3               0.013      0.15       2.5        7.5        0          OUTLET
S4               0.013      0.15       2.5        7.5        0          OUTLET
S5               0.013      0.15       2.5        7.5        0          OUTLET
S6               0.013      0.15       2.5        7.5        0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
S1               25         0.5        4          4          0
S2               25         0.5        4          4          0
```

```
S3               25         0.5        4          4          0
S4               25         0.5        4          4          0
S5               25         0.5        4          4          0
S6               25         0.5        4          4          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
CB#1&2           189.711    0.318      0          0          0
CB#11&12         189.818    0.318      0          0          0
CB#3&4           189.73     0.318      0          0          0
CB#7&8           189.763    0.318      0          0          0
CB#9&10          189.725    0.318      0          0          0
CB5&6            189.71     0.318      0          0          0
HP1              190.052    0.318      0          0          0
HP2              189.907    0.318      0          0          0
HP3              189.943    0.318      0          0          0
hp4              189.9      0.318      0          0          0
HP5              190.053    0.318      0          0          0
HP6              190.127    0.357      0          0          0
MH#1             186.457    3.713      0          0.318      0
MH#2             186.403    3.423      0          0.3        0
MH#3             186.34     3.653      0          0.318      0
MH#4             186.41     3.92       0          0.318      0
MH#5             186.345    3.671      0          0.318      0
MH#6             186.25     3.707      0          0.317      0
MH#7-A           186.19     3.9        0          0.317      1
MH#7-B           186.16     3.99       0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Southwood1200    186.086    TIMESERIES 100YrTailwater-Elev. NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
-------- --------
DryPond          188.34   1.93       0          TABULAR    Pond                         0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ---------
-
C1               MH#4             MH#3             69.935     0.013      0          0.025      0          0
C10              HP6              CB#9&10          35         0.013      0          0          0          0
C11              HP3              CB#3&4           43.625     0.013      0          0          0          0
C12              HP2              CB#3&4           43.625     0.013      0          0          0          0
C13              HP2              CB#7&8           35         0.013      0          0          0          0
C14              HP5              CB#7&8           35         0.013      0          0          0          0
C15              HP2              CB#1&2           49.284     0.013      0          0          0          0
C16              HP1              CB#1&2           29         0.013      0          0          0          0
C18              MH#1             MH#2             15.958     0.013      0          0.025      0          0
C19              HP1              CB#11&12         17.4       0.013      0          0          0          0
C2               MH#3             MH#6             87.25      0.013      0          0.025      0          0
C3               MH#6             MH#7-A           94.54      0.013      0          0.025      0          0
C4               MH#7-B           Southwood1200    40.759     0.013      0          0.025      0          0
C5               MH#5             MH#6             58.299     0.013      0          0.025      0          0
C6               MH#2             MH#3             42.715     0.013      0          0.025      0          0
C7               hp4              CB5&6            10         0.013      0          0          0          0
C8               HP3              hp4              35         0.013      0          0          0          0
C9               HP3              CB#9&10          35         0.013      0          0          0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;
CB1/2            CB#1&2           MH#6             BOTTOM       0          0.614      NO       0
CB3/4            CB#3&4           MH#3             BOTTOM       0          0.614      NO       0
CB7/8            CB#7&8           MH#5             BOTTOM       0          0.614      NO       0
CB9/10           CB#9&10          MH#2             BOTTOM       0          0.614      NO       0
OR1              CB#11&12         MH#7-A           BOTTOM       0          0.65       NO       0
OR6              MH#7-A           MH#7-B           SIDE         0          0.614      NO       0
OR7              DryPond          MH#4             BOTTOM       0          0.614      NO       0
orfice           CB5&6            DryPond          BOTTOM       0          0.614      NO       0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C1               CIRCULAR     1.05             0          0          0          1
C10              IRREGULAR    NTRoad           0          0          0          1
C11              IRREGULAR    NTRoad           0          0          0          1
C12              IRREGULAR    NTRoad           0          0          0          1
C13              IRREGULAR    NTRoad           0          0          0          1
C14              IRREGULAR    NTRoad           0          0          0          1
C15              IRREGULAR    NTRoad           0          0          0          1
C16              IRREGULAR    NTRoad           0          0          0          1
C18              CIRCULAR     0.45             0          0          0          1
C19              IRREGULAR    NTRoad           0          0          0          1
C2               CIRCULAR     1.05             0          0          0          1
C3               CIRCULAR     1.05             0          0          0          1
C4               CIRCULAR     0.6              0          0          0          1
C5               CIRCULAR     0.6              0          0          0          1
C6               CIRCULAR     0.75             0          0          0          1
C7               IRREGULAR    NTRoad           0          0          0          1
C8               IRREGULAR    NTRoad           0          0          0          1
```

```
C9               IRREGULAR    NTRoad           0          0          0          1
CB1/2            CIRCULAR     0.8              0          0          0
CB3/4            CIRCULAR     0.8              0          0          0
CB7/8            CIRCULAR     0.8              0          0          0
CB9/10           CIRCULAR     0.8              0          0          0
OR1              CIRCULAR     0.8              0          0          0
OR6              CIRCULAR     0.33             0          0          0
OR7              CIRCULAR     0.9              0          0          0
orfice           CIRCULAR     0.8              0          0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.15     0.15     0.013
X1 NTRoad            9        5.583    14.567   0.0      0.0      0.0      0.0      0.0
GR 0.3176   0        0.15     5.583    0.15     5.733    0        5.775    0.15     10.075
GR 0        14.375   0.15     14.417   0.15     14.567   0.3176   20.15
;
;Pond spill way for node RJ33
NC 0.01     0.01     0.15
X1 PondSpillway1     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.35   0        176.21   20.1     176.555  78.4
;
;Pond spill way for node RJ31
NC 0.01     0.01     0.15
X1 PondSpillway2     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.555  0        176.43   35.3     176.76   60.7
;
;Pond spill way for node RJ4
NC 0.01     0.01     0.15
X1 PondSpillway3     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.765  0        176.325  103.43   176.515  149.35
;
;Typical Road Cross Section
NC 0.15     0.15     0.013
X1 Road              9        5        13.85    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     5        0.15     5.15     0        5.15     0.15     9.425
GR 0        13.7     0.15     13.7     0.15     13.85    0.45     18.85
;
;Wider Road Section at Entrance of the development
NC 0.15     0.15     0.013
X1 Road2             9        4.15     17.15    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     4        0.15     4.15     0        4.15     0.15     10.65
GR 0        17.15    0.15     17.15    0.15     17.3     0.45     21.3

[LOSSES]
;;Link            Kentry     Kexit      Kavg       Flap Gate  Seepage
;;--------------- ---------- ---------- ---------- ---------- ----------
C1                0.5        0.5        0          NO         0
C18               0.5        0.5        0          NO         0
C2                0.5        0.5        0          NO         0
C3                0.5        0.5        0          NO         0
C4                0.5        0.5        0          NO         0
C5                0.5        0.5        0          NO         0
C6                0.5        0.5        0          NO         0

[CURVES]
;;Name            Type       X-Value    Y-Value
;;--------------- ---------- ---------- ----------
PS                Pump4      1          0.34921
PS                           2          0.32415
PS                           3          0.3
PS                           4          0.27813
PS                           5          0.25535
PS                           6          0.23128
PS                           7          0.20698
PS                           8          0.18195
PS                           9          0.15638
PS                           10         0.13038
PS                           11         0.10339
PS                           12         0.07679
PS                           13         0.04882
PS                           14         0.02168

Pond              Storage    0          0.36
Pond                         0.04       172.47
Pond                         1.04       537.902
Pond                         1.94       942.54

StoragePond       Storage    0          1991.2
StoragePond                  0.5        5787.1
StoragePond                  1          10547
StoragePond                  1.5        12120
StoragePond                  2          13451
StoragePond                  2.5        15820
StoragePond                  3          18306
StoragePond                  3.5        20828
StoragePond                  4          23947
StoragePond                  4.2        27244

[TIMESERIES]
;;Name            Date       Time       Value
;;--------------- ---------- ---------- ----------
;Depth (m)
100-YearTailWater 06/06/2018 10:31:00   0.172
100-YearTailWater 06/06/2018 10:32:00   0.172
```

```
100-YearTailWater 06/06/2018 10:33:00   0.172
100-YearTailWater 06/06/2018 10:34:00   0.172
100-YearTailWater 06/06/2018 10:35:00   0.172
100-YearTailWater 06/06/2018 10:36:00   0.172
100-YearTailWater 06/06/2018 10:37:00   0.172
100-YearTailWater 06/06/2018 10:38:00   0.1719998
100-YearTailWater 06/06/2018 10:39:00   0.171997
100-YearTailWater 06/06/2018 10:40:00   0.1719945
100-YearTailWater 06/06/2018 10:41:00   0.1719998
......
Too many data points (2250 in total).

100Yr-10Min                 0:00       3.83
100Yr-10Min                 0:10       4.35
100Yr-10Min                 0:20       5.05
100Yr-10Min                 0:30       6.02
100Yr-10Min                 0:40       7.47
100Yr-10Min                 0:50       9.83
100Yr-10Min                 1:00       14.28
100Yr-10Min                 1:10       25.26
100Yr-10Min                 1:20       67.16
100Yr-10Min                 1:30       172.68
100Yr-10Min                 1:40       51.34
100Yr-10Min                 1:50       27.82
100Yr-10Min                 2:00       18.55
100Yr-10Min                 2:10       13.75
100Yr-10Min                 2:20       10.87
100Yr-10Min                 2:30       8.97
100Yr-10Min                 2:40       7.63
100Yr-10Min                 2:50       6.63
100Yr-10Min                 3:00       5.87
100Yr-10Min                 3:10       5.26
100Yr-10Min                 3:20       4.77
100Yr-10Min                 3:30       4.37
100Yr-10Min                 3:40       4.03
100Yr-10Min                 3:50       3.74
100Yr-10Min                 4:00       0

100Yr-15Min                 0:00       3.83
100Yr-15Min                 0:15       4.35
100Yr-15Min                 0:30       6.36
100Yr-15Min                 0:45       9.19
100Yr-15Min                 1:00       16.45
100Yr-15Min                 1:15       46.45
100Yr-15Min                 1:30       143.67
100Yr-15Min                 1:45       32.45
100Yr-15Min                 2:00       17.25
100Yr-15Min                 2:15       11.53
100Yr-15Min                 2:30       8.62
100Yr-15Min                 2:45       6.87
100Yr-15Min                 3:00       5.71
100Yr-15Min                 3:15       4.89
100Yr-15Min                 3:30       4.28
100Yr-15Min                 3:45       3.81
100Yr-15Min                 4:00       0

100Yr-20Min                 0:00       4.09
100Yr-20Min                 0:20       5.54
100Yr-20Min                 0:40       8.65
100Yr-20Min                 1:00       19.77
100Yr-20Min                 1:20       123.48
100Yr-20Min                 1:40       36.02
100Yr-20Min                 2:00       16.15
100Yr-20Min                 2:20       9.92
100Yr-20Min                 2:40       7.13
100Yr-20Min                 3:00       5.56
100Yr-20Min                 3:20       4.57
100Yr-20Min                 3:40       3.88
100Yr-20Min                 4:00       0

100Yr-30Min                 0:00       4.41
100Yr-30Min                 0:30       7.78
100Yr-30Min                 1:00       22.45
100Yr-30Min                 1:30       97.06
100Yr-30Min                 2:00       14.39
100Yr-30Min                 2:30       7.74
100Yr-30Min                 3:00       5.3
100Yr-30Min                 3:30       4.04
100Yr-30Min                 4:00       0

100Yr-5Min                  0:00       3.71
100Yr-5Min                  0:05       3.94
100Yr-5Min                  0:10       4.2
100Yr-5Min                  0:15       4.5
100Yr-5Min                  0:20       4.85
100Yr-5Min                  0:25       5.25
100Yr-5Min                  0:30       5.73
100Yr-5Min                  0:35       6.31
100Yr-5Min                  0:40       7.03
100Yr-5Min                  0:45       7.92
100Yr-5Min                  0:50       9.07
100Yr-5Min                  0:55       10.59
100Yr-5Min                  1:00       12.72
100Yr-5Min                  1:05       15.84
100Yr-5Min                  1:10       20.81
100Yr-5Min                  1:15       29.71
```

```
100Yr-5Min                  1:20       49.12
100Yr-5Min                  1:25       108.91
100Yr-5Min                  1:30       218.23
100Yr-5Min                  1:35       103.42
100Yr-5Min                  1:40       60.97
100Yr-5Min                  1:45       41.72
100Yr-5Min                  1:50       31.11
100Yr-5Min                  1:55       24.53
100Yr-5Min                  2:00       20.12
100Yr-5Min                  2:05       16.98
100Yr-5Min                  2:10       14.65
100Yr-5Min                  2:15       12.86
100Yr-5Min                  2:20       11.44
100Yr-5Min                  2:25       10.3
100Yr-5Min                  2:30       9.36
100Yr-5Min                  2:35       8.58
100Yr-5Min                  2:40       7.91
100Yr-5Min                  2:45       7.34
100Yr-5Min                  2:50       6.85
100Yr-5Min                  2:55       6.42
100Yr-5Min                  3:00       6.04
100Yr-5Min                  3:05       5.7
100Yr-5Min                  3:10       5.4
100Yr-5Min                  3:15       5.13
100Yr-5Min                  3:20       4.88
100Yr-5Min                  3:25       4.66
100Yr-5Min                  3:30       4.46
100Yr-5Min                  3:35       4.27
100Yr-5Min                  3:40       4.1
100Yr-5Min                  3:45       3.95
100Yr-5Min                  3:50       3.8
100Yr-5Min                  3:55       3.67
100Yr-5Min                  4:00       0

;Depth (m)
100YrTailwater-Elev. 06/06/2018 10:31:00   186.38
100YrTailwater-Elev. 06/06/2018 10:32:00   186.38
100YrTailwater-Elev. 06/06/2018 10:33:00   186.38
100YrTailwater-Elev. 06/06/2018 10:34:00   186.38
100YrTailwater-Elev. 06/06/2018 10:35:00   186.38
100YrTailwater-Elev. 06/06/2018 10:36:00   186.38
100YrTailwater-Elev. 06/06/2018 10:37:00   186.38
100YrTailwater-Elev. 06/06/2018 10:38:00   186.38
100YrTailwater-Elev. 06/06/2018 10:39:00   186.38
100YrTailwater-Elev. 06/06/2018 10:40:00   186.38
100YrTailwater-Elev. 06/06/2018 10:41:00   186.38
......
Too many data points (2250 in total).

;Depth (m)
5-Year_Tailwater 06/06/2018 00:01:00   186.38
5-Year_Tailwater 06/06/2018 00:02:00   186.38
5-Year_Tailwater 06/06/2018 00:03:00   186.38
5-Year_Tailwater 06/06/2018 00:04:00   186.38
5-Year_Tailwater 06/06/2018 00:05:00   186.38
5-Year_Tailwater 06/06/2018 00:06:00   186.38
5-Year_Tailwater 06/06/2018 00:07:00   186.38
5-Year_Tailwater 06/06/2018 00:08:00   186.38
5-Year_Tailwater 06/06/2018 00:09:00   186.38
5-Year_Tailwater 06/06/2018 00:10:00   186.38
5-Year_Tailwater 06/06/2018 00:11:00   186.38
......
Too many data points (959 in total).

5Yr-10Min                   0:00       2.51
5Yr-10Min                   0:10       2.82
5Yr-10Min                   0:20       3.24
5Yr-10Min                   0:30       3.82
5Yr-10Min                   0:40       4.67
5Yr-10Min                   0:50       6.02
5Yr-10Min                   1:00       8.54
5Yr-10Min                   1:10       14.69
5Yr-10Min                   1:20       38.85
5Yr-10Min                   1:30       107.72
5Yr-10Min                   1:40       29.51
5Yr-10Min                   1:50       16.12
5Yr-10Min                   2:00       10.93
5Yr-10Min                   2:10       8.25
5Yr-10Min                   2:20       6.62
5Yr-10Min                   2:30       5.53
5Yr-10Min                   2:40       4.76
5Yr-10Min                   2:50       4.18
5Yr-10Min                   3:00       3.73
5Yr-10Min                   3:10       3.37
5Yr-10Min                   3:20       3.08
5Yr-10Min                   3:30       2.83
5Yr-10Min                   3:40       2.63
5Yr-10Min                   3:50       2.45
5Yr-10Min                   4:00       0

5Yr-15Min                   0:00       2.58
5Yr-15Min                   0:15       3.13
5Yr-15Min                   0:30       4.02
5Yr-15Min                   0:45       5.66
5Yr-15Min                   1:00       9.76
```

```
5Yr-15Min               1:15        26.72
5Yr-15Min               1:30        88.4
5Yr-15Min               1:45        18.73
5Yr-15Min               2:00        10.21
5Yr-15Min               2:15        6.99
5Yr-15Min               2:30        5.33
5Yr-15Min               2:45        4.31
5Yr-15Min               3:00        3.64
5Yr-15Min               3:15        3.15
5Yr-15Min               3:30        2.78
5Yr-15Min               3:45        2.49
5Yr-15Min               4:00        0

5Yr-20Min               0:00        2.66
5Yr-20Min               0:20        3.53
5Yr-20Min               0:40        5.34
5Yr-20Min               1:00        11.61
5Yr-20Min               1:20        75.35
5Yr-20Min               1:40        20.75
5Yr-20Min               2:00        9.59
5Yr-20Min               2:20        6.07
5Yr-20Min               2:40        4.47
5Yr-20Min               3:00        3.55
5Yr-20Min               3:20        2.95
5Yr-20Min               3:40        2.54
5Yr-20Min               4:00        0

5Yr-30Min               0:00        2.86
5Yr-30Min               0:30        4.84
5Yr-30Min               1:00        13.11
5Yr-30Min               1:30        58.69
5Yr-30Min               2:00        8.69
5Yr-30Min               2:30        4.82
5Yr-30Min               3:00        3.39
5Yr-30Min               3:30        2.64
5Yr-30Min               4:00        0

;Chicago 4 Hour
5Yr-5Min                0:00        2.44
5Yr-5Min                0:05        2.58
5Yr-5Min                0:10        2.73
5Yr-5Min                0:15        2.91
5Yr-5Min                0:20        3.12
5Yr-5Min                0:25        3.36
5Yr-5Min                0:30        3.65
5Yr-5Min                0:35        3.99
5Yr-5Min                0:40        4.41
5Yr-5Min                0:45        4.92
5Yr-5Min                0:50        5.59
5Yr-5Min                0:55        6.46
5Yr-5Min                1:00        7.66
5Yr-5Min                1:05        9.42
5Yr-5Min                1:10        12.2
5Yr-5Min                1:15        17.18
5Yr-5Min                1:20        28.2
5Yr-5Min                1:25        64.52
5Yr-5Min                1:30        139.58
5Yr-5Min                1:35        60.83
5Yr-5Min                1:40        35.06
5Yr-5Min                1:45        23.95
5Yr-5Min                1:50        17.96
5Yr-5Min                1:55        14.28
5Yr-5Min                2:00        11.81
5Yr-5Min                2:05        10.06
5Yr-5Min                2:10        8.75
5Yr-5Min                2:15        7.74
5Yr-5Min                2:20        6.94
5Yr-5Min                2:25        6.29
5Yr-5Min                2:30        5.76
5Yr-5Min                2:35        5.3
5Yr-5Min                2:40        4.92
5Yr-5Min                2:45        4.59
5Yr-5Min                2:50        4.3
5Yr-5Min                2:55        4.05
5Yr-5Min                3:00        3.83
5Yr-5Min                3:05        3.63
5Yr-5Min                3:10        3.45
5Yr-5Min                3:15        3.29
5Yr-5Min                3:20        3.14
5Yr-5Min                3:25        3.01
5Yr-5Min                3:30        2.89
5Yr-5Min                3:35        2.78
5Yr-5Min                3:40        2.67
5Yr-5Min                3:45        2.58
5Yr-5Min                3:50        2.49
5Yr-5Min                3:55        2.41
5Yr-5Min                4:00        0

SCSII-100Yr             0:00        0
SCSII-100Yr             2:00        1.08
SCSII-100Yr             4:00        1.62
SCSII-100Yr             6:00        1.62
SCSII-100Yr             8:00        2.16
SCSII-100Yr             10:00       3.24
SCSII-100Yr             12:00       25.92
```

SCSII-100Yr	14:00	8.64
SCSII-100Yr	16:00	3.24
SCSII-100Yr	18:00	2.16
SCSII-100Yr	20:00	1.62
SCSII-100Yr	22:00	1.62
SCSII-100Yr	24:00	1.08
SCSII-5-Year	0:00	0
SCSII-5-Year	2:00	0.68
SCSII-5-Year	4:00	1.02
SCSII-5-Year	6:00	1.02
SCSII-5-Year	8:00	1.36
SCSII-5-Year	10:00	2.04
SCSII-5-Year	12:00	16.32
SCSII-5-Year	14:00	5.44
SCSII-5-Year	16:00	2.04
SCSII-5-Year	18:00	1.36
SCSII-5-Year	20:00	1.02
SCSII-5-Year	22:00	1.02
SCSII-5-Year	24:00	0.68
SCSII-RST	0:00	0
SCSII-RST	2:00	1.5
SCSII-RST	4:00	2.25
SCSII-RST	6:00	2.25
SCSII-RST	8:00	3
SCSII-RST	10:00	4.5
SCSII-RST	12:00	36
SCSII-RST	14:00	12
SCSII-RST	16:00	4.5
SCSII-RST	18:00	3
SCSII-RST	20:00	2.25
SCSII-RST	22:00	2.25
SCSII-RST	24:00	1.5
SCSII-Unit	0:00	0
SCSII-Unit	2:00	0.01
SCSII-Unit	4:00	0.015
SCSII-Unit	6:00	0.015
SCSII-Unit	8:00	0.02
SCSII-Unit	10:00	0.03
SCSII-Unit	12:00	0.24
SCSII-Unit	14:00	0.08
SCSII-Unit	16:00	0.03
SCSII-Unit	18:00	0.02
SCSII-Unit	20:00	0.015
SCSII-Unit	22:00	0.015
SCSII-Unit	24:00	0.01
UrbanStressTest	0:00	2.41
UrbanStressTest	0:15	2.43
UrbanStressTest	0:30	2.45
UrbanStressTest	0:45	2.46
UrbanStressTest	1:00	2.48
UrbanStressTest	1:15	2.51
UrbanStressTest	1:30	2.53
UrbanStressTest	1:45	2.55
UrbanStressTest	2:00	2.58
UrbanStressTest	2:15	2.61
UrbanStressTest	2:30	2.64
UrbanStressTest	2:45	2.67
UrbanStressTest	3:00	2.71
UrbanStressTest	3:15	2.74
UrbanStressTest	3:30	2.79
UrbanStressTest	3:45	2.83
UrbanStressTest	4:00	2.88
UrbanStressTest	4:15	2.94
UrbanStressTest	4:30	3
UrbanStressTest	4:45	3.07
UrbanStressTest	5:00	3.15
UrbanStressTest	5:15	3.23
UrbanStressTest	5:30	3.33
UrbanStressTest	5:45	3.45
UrbanStressTest	6:00	3.59
UrbanStressTest	6:15	3.75
UrbanStressTest	6:30	3.94
UrbanStressTest	6:45	4.18
UrbanStressTest	7:00	4.49
UrbanStressTest	7:15	4.89
UrbanStressTest	7:30	5.43
UrbanStressTest	7:45	6.2
UrbanStressTest	8:00	7.41
UrbanStressTest	8:15	9.56
UrbanStressTest	8:30	14.29
UrbanStressTest	8:45	32.01
UrbanStressTest	9:00	145.13
UrbanStressTest	9:15	48.51
UrbanStressTest	9:30	23.13
UrbanStressTest	9:45	15.08
UrbanStressTest	10:00	11.35
UrbanStressTest	10:15	9.23
UrbanStressTest	10:30	7.88
UrbanStressTest	10:45	6.94
UrbanStressTest	11:00	6.25
UrbanStressTest	11:15	5.73

```
UrbanStressTest             11:30      5.32
UrbanStressTest             11:45      4.99
UrbanStressTest             12:00      4.72
UrbanStressTest             12:15      4.49
UrbanStressTest             12:30      4.29
UrbanStressTest             12:45      4.12
UrbanStressTest             13:00      3.98
UrbanStressTest             13:15      3.85
UrbanStressTest             13:30      3.74
UrbanStressTest             13:45      3.63
UrbanStressTest             14:00      3.54
UrbanStressTest             14:15      3.46
UrbanStressTest             14:30      3.39
UrbanStressTest             14:45      3.32
UrbanStressTest             15:00      3.26
UrbanStressTest             15:15      3.2
UrbanStressTest             15:30      3.15
UrbanStressTest             15:45      3.1
UrbanStressTest             16:00      3.05
UrbanStressTest             16:15      3.01
UrbanStressTest             16:30      2.97
UrbanStressTest             16:45      2.93
UrbanStressTest             17:00      2.9
UrbanStressTest             17:15      2.87
UrbanStressTest             17:30      2.84
UrbanStressTest             17:45      2.81
UrbanStressTest             18:00      2.78
UrbanStressTest             18:15      2.76
UrbanStressTest             18:30      2.73
UrbanStressTest             18:45      2.71
UrbanStressTest             19:00      2.69
UrbanStressTest             19:15      2.67
UrbanStressTest             19:30      2.65
UrbanStressTest             19:45      2.63
UrbanStressTest             20:00      2.61
UrbanStressTest             20:15      2.59
UrbanStressTest             20:30      2.57
UrbanStressTest             20:45      2.56
UrbanStressTest             21:00      2.54
UrbanStressTest             21:15      2.53
UrbanStressTest             21:30      2.51
UrbanStressTest             21:45      2.5
UrbanStressTest             22:00      2.49
UrbanStressTest             22:15      2.47
UrbanStressTest             22:30      2.46
UrbanStressTest             22:45      2.45
UrbanStressTest             23:00      2.44
UrbanStressTest             23:15      2.43
UrbanStressTest             23:30      2.42
UrbanStressTest             23:45      2.41
UrbanStressTest             24:00      0
UrbanStressTest             24:15      0
UrbanStressTest             24:30      0
UrbanStressTest             24:45      0
UrbanStressTest             25:00      0
UrbanStressTest             25:15      0

;Depth (m)
UST_Tailwater    06/06/2018 00:01:00   186.38
UST_Tailwater    06/06/2018 00:02:00   186.38
UST_Tailwater    06/06/2018 00:03:00   186.38
UST_Tailwater    06/06/2018 00:04:00   186.38
UST_Tailwater    06/06/2018 00:05:00   186.38
UST_Tailwater    06/06/2018 00:06:00   186.38
UST_Tailwater    06/06/2018 00:07:00   186.38
UST_Tailwater    06/06/2018 00:08:00   186.38
UST_Tailwater    06/06/2018 00:09:00   186.38
UST_Tailwater    06/06/2018 00:10:00   186.38
UST_Tailwater    06/06/2018 00:11:00   186.38
......
Too many data points (2880 in total).

;2-Year, 4-Hour, Chicago
WaterQualityStorm-10MIN           0:00       1.73
WaterQualityStorm-10MIN           0:10       1.94
WaterQualityStorm-10MIN           0:20       2.21
WaterQualityStorm-10MIN           0:30       2.57
WaterQualityStorm-10MIN           0:40       3.1
WaterQualityStorm-10MIN           0:50       3.94
WaterQualityStorm-10MIN           1:00       5.47
WaterQualityStorm-10MIN           1:10       9.16
WaterQualityStorm-10MIN           1:20       23.89
WaterQualityStorm-10MIN           1:30       71.41
WaterQualityStorm-10MIN           1:40       18.09
WaterQualityStorm-10MIN           1:50       10.01
WaterQualityStorm-10MIN           2:00       6.91
WaterQualityStorm-10MIN           2:10       5.3
WaterQualityStorm-10MIN           2:20       4.31
WaterQualityStorm-10MIN           2:30       3.64
WaterQualityStorm-10MIN           2:40       3.16
WaterQualityStorm-10MIN           2:50       2.8
WaterQualityStorm-10MIN           3:00       2.51
WaterQualityStorm-10MIN           3:10       2.29
WaterQualityStorm-10MIN           3:20       2.1
WaterQualityStorm-10MIN           3:30       1.94
```

```
WaterQualityStorm-10MIN          3:40       1.81
WaterQualityStorm-10MIN          3:50       1.69
WaterQualityStorm-10MIN          4:00       0

WaterQualityStorm-15MIN          0:00       1.78
WaterQualityStorm-15MIN          0:15       2.13
WaterQualityStorm-15MIN          0:30       2.7
WaterQualityStorm-15MIN          0:45       3.72
WaterQualityStorm-15MIN          1:00       6.21
WaterQualityStorm-15MIN          1:15       16.41
WaterQualityStorm-15MIN          1:30       57.83
WaterQualityStorm-15MIN          1:45       11.58
WaterQualityStorm-15MIN          2:00       6.48
WaterQualityStorm-15MIN          2:15       4.53
WaterQualityStorm-15MIN          2:30       3.51
WaterQualityStorm-15MIN          2:45       2.88
WaterQualityStorm-15MIN          3:00       2.45
WaterQualityStorm-15MIN          3:15       2.14
WaterQualityStorm-15MIN          3:30       1.91
WaterQualityStorm-15MIN          3:45       1.72
WaterQualityStorm-15MIN          4:00       0

WaterQualityStorm-20MIN          0:00       1.83
WaterQualityStorm-20MIN          0:20       2.39
WaterQualityStorm-20MIN          0:40       3.52
WaterQualityStorm-20MIN          1:00       7.32
WaterQualityStorm-20MIN          1:20       48.91
WaterQualityStorm-20MIN          1:40       12.79
WaterQualityStorm-20MIN          2:00       6.11
WaterQualityStorm-20MIN          2:20       3.97
WaterQualityStorm-20MIN          2:40       2.98
WaterQualityStorm-20MIN          3:00       2.4
WaterQualityStorm-20MIN          3:20       2.02
WaterQualityStorm-20MIN          3:40       1.75
WaterQualityStorm-20MIN          4:00       0

WaterQualityStorm-30MIN          0:00       1.96
WaterQualityStorm-30MIN          0:30       3.21
WaterQualityStorm-30MIN          1:00       8.21
WaterQualityStorm-30MIN          1:30       37.8
WaterQualityStorm-30MIN          2:00       5.51
WaterQualityStorm-30MIN          2:30       3.2
WaterQualityStorm-30MIN          3:00       2.3
WaterQualityStorm-30MIN          3:30       1.81
WaterQualityStorm-30MIN          4:00       0

;Chicago 2-year, 4-hour
WaterQualityStorm-5MIN          0:00       1.68
WaterQualityStorm-5MIN          0:05       1.77
WaterQualityStorm-5MIN          0:10       1.88
WaterQualityStorm-5MIN          0:15       1.99
WaterQualityStorm-5MIN          0:20       2.13
WaterQualityStorm-5MIN          0:25       2.28
WaterQualityStorm-5MIN          0:30       2.46
WaterQualityStorm-5MIN          0:35       2.68
WaterQualityStorm-5MIN          0:40       2.94
WaterQualityStorm-5MIN          0:45       3.26
WaterQualityStorm-5MIN          0:50       3.67
WaterQualityStorm-5MIN          0:55       4.21
WaterQualityStorm-5MIN          1:00       4.94
WaterQualityStorm-5MIN          1:05       6
WaterQualityStorm-5MIN          1:10       7.67
WaterQualityStorm-5MIN          1:15       10.65
WaterQualityStorm-5MIN          1:20       17.28
WaterQualityStorm-5MIN          1:25       40.48
WaterQualityStorm-5MIN          1:30       94.95
WaterQualityStorm-5MIN          1:35       37.9
WaterQualityStorm-5MIN          1:40       21.47
WaterQualityStorm-5MIN          1:45       14.71
WaterQualityStorm-5MIN          1:50       11.11
WaterQualityStorm-5MIN          1:55       8.91
WaterQualityStorm-5MIN          2:00       7.44
WaterQualityStorm-5MIN          2:05       6.39
WaterQualityStorm-5MIN          2:10       5.6
WaterQualityStorm-5MIN          2:15       4.99
WaterQualityStorm-5MIN          2:20       4.5
WaterQualityStorm-5MIN          2:25       4.11
WaterQualityStorm-5MIN          2:30       3.78
WaterQualityStorm-5MIN          2:35       3.5
WaterQualityStorm-5MIN          2:40       3.26
WaterQualityStorm-5MIN          2:45       3.06
WaterQualityStorm-5MIN          2:50       2.88
WaterQualityStorm-5MIN          2:55       2.72
WaterQualityStorm-5MIN          3:00       2.58
WaterQualityStorm-5MIN          3:05       2.45
WaterQualityStorm-5MIN          3:10       2.34
WaterQualityStorm-5MIN          3:15       2.23
WaterQualityStorm-5MIN          3:20       2.14
WaterQualityStorm-5MIN          3:25       2.06
WaterQualityStorm-5MIN          3:30       1.98
WaterQualityStorm-5MIN          3:35       1.91
WaterQualityStorm-5MIN          3:40       1.84
WaterQualityStorm-5MIN          3:45       1.78
WaterQualityStorm-5MIN          3:50       1.72
WaterQualityStorm-5MIN          3:55       1.67
```

```
WaterQualityStorm-5MIN            4:00       0

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[EVENTS]
;;Start Date         End Date
;  03/15/2021  00:00  03/24/2021  00:00

[TAGS]

[MAP]
DIMENSIONS       2502211.244      432630.18795     2845298.45       557269.86905
UNITS            Meters

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
CB#1&2           2607223.06          484880.831
CB#11&12         2557244.601         484399.715
CB#3&4           2696753.997         485366.094
CB#7&8           2647499.85          521518.152
CB#9&10          2734361.843         521760.784
CB5&6            2779942.845         486336.635
HP1              2562794.634         483958.166
HP2              2650654.056         485608.725
HP3              2738001.312         485851.356
hp4              2772697.583         486336.619
HP5              2649440.9           547722.329
HP6              2737030.787         547237.067
MH#1             2739996.879         532696.678
MH#2             2740596.096         522267.613
MH#3             2740596.096         480433.442
MH#4             2803975.763         480433.442
MH#5             2653336.837         521549.43
MH#6             2653157.292         480612.987
MH#7-A           2561588.934         480612.987
MH#7-B           2558536.44          480629.694
Southwood1200    2517816.117         480836.201
DryPond          2801072.055         502182.658

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
S1               2787315.013         439911.122
S1               2750760.348         439399.868
S1               2749993.467         470841.992
S1               2740535.267         481067.073
S1               2750429.422         491034.855
S1               2750069.316         520120.063
S1               2768568.989         520007.603
S1               2773321.248         519766.002
S1               2778365.704         519923.641
S1               2782621.98          519923.64
S1               2786878.223         520238.92
S1               2829703.577         519713.454
S1               2787315.013         439911.122
S2               2750069.316         520120.063
S2               2750429.422         491034.855
S2               2740535.267         481067.073
S2               2730117.021         490490.773
S2               2697109.369         490490.773
S2               2696983.647         531853.123
S2               2730155.074         531993.692
S2               2750069.316         520120.063
S3               2658660.888         439751.416
S3               2658660.888         470808.218
S3               2652837.738         480998.731
S3               2663270.882         490703.982
S3               2730117.021         490490.773
S3               2740535.267         481067.073
S3               2749993.467         470841.992
S3               2750760.348         439399.868
S3               2658660.888         439751.416
S4               2696928.008         550158.451
S4               2697109.369         490490.773
S4               2663270.882         490703.982
S4               2652837.738         480998.731
S4               2643132.487         490703.982
S4               2609892.004         491189.244
S4               2609892.004         550876.536
S4               2696928.008         550158.451
S5               2643132.487         490703.982
S5               2652837.738         480998.731
S5               2658660.888         470808.218
S5               2658660.888         439751.416
S5               2533463.155         438295.628
```

```
S5                2554329.444        480756.1
S5                2555542.6          551604.429
S5                2577375.596        550657.902
S5                2578386.105        520342.626
S5                2609892.004        521016.299
S5                2609892.004        491189.244
S5                2643132.487        490703.982
S6                2696928.008        550158.451
S6                2703441.603        550552.524
S6                2720313.269        549990.135
S6                2763309.289        549647.393
S6                2760277.762        536847.609
S6                2761290.599        520051.849
S6                2750069.316        520120.063
S6                2730155.074        531993.692
S6                2696983.647        531853.123
S6                2696928.008        550158.451

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

Appendix D

100-Year Chicago Storm Event – Input/Output Summary

100 YEAR CHICAGO INPUT RESULTS

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CMS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        YES
SKIP_STEADY_STATE    NO

START_DATE           06/06/2018
START_TIME           10:30:00
REPORT_START_DATE    06/06/2018
REPORT_START_TIME    10:30:00
END_DATE             06/08/2018
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         2
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              4

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
100Year-10Min    INTENSITY 0:10     1.0      TIMESERIES 100Yr-10Min
100Year-15Min    INTENSITY 0:15     1.0      TIMESERIES 100Yr-15Min
100Year-20Min    INTENSITY 0:20     1.0      TIMESERIES 100Yr-20Min
100Year-30Min    INTENSITY 0:30     1.0      TIMESERIES 100Yr-30Min
100Year-5Min     INTENSITY 0:05     1.0      TIMESERIES 100Yr-5Min
5Year-10Min      INTENSITY 0:10     1.0      TIMESERIES 5Yr-10Min
5Year-15Min      INTENSITY 0:15     1.0      TIMESERIES 5Yr-15Min
5Year-20Min      INTENSITY 0:20     1.0      TIMESERIES 5Yr-20Min
5Year-30Min      INTENSITY 0:30     1.0      TIMESERIES 5Yr-30Min
5Year-5Min       INTENSITY 0:05     1.0      TIMESERIES 5Yr-5Min
SCSII-100-Yr     INTENSITY 2:00     1.0      TIMESERIES SCSII-100Yr
SCSII-5-Year     INTENSITY 2:00     1.0      TIMESERIES SCSII-5-Year
SCSII-RuralStress INTENSITY 2:00     1.0      TIMESERIES SCSII-RST
SCSII-Unit       INTENSITY 2:00     1.0      TIMESERIES SCSII-Unit
UrbanStressTest  INTENSITY 0:15     1.0      TIMESERIES UrbanStressTest
WaterQualityStorm10MIN INTENSITY 0:10     1.0      TIMESERIES WaterQualityStorm-10MIN
WaterQualityStorm15MIN INTENSITY 0:15     1.0      TIMESERIES WaterQualityStorm-15MIN
WaterQualityStorm20MIN INTENSITY 0:20     1.0      TIMESERIES WaterQualityStorm-20MIN
WaterQualityStorm30MIN INTENSITY 0:30     1.0      TIMESERIES WaterQualityStorm-30MIN
WaterQualityStorm5MIN INTENSITY 0:05     1.0      TIMESERIES WaterQualityStorm-5MIN

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
S1               100Year-10Min    MH#4             0.479    60       110      1        0
S2               100Year-10Min    MH#2             0.2194   60       75       1        0
S3               100Year-10Min    MH#3             0.4467   60       100      1        0
S4               100Year-10Min    MH#5             0.5299   60       90       1        0
S5               100Year-10Min    MH#6             0.7202   60       120      1        0
S6               100Year-10Min    MH#1             0.121    60       75       1        0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
S1               0.013      0.15       2.5        7.5        0          OUTLET
S2               0.013      0.15       2.5        7.5        0          OUTLET
S3               0.013      0.15       2.5        7.5        0          OUTLET
S4               0.013      0.15       2.5        7.5        0          OUTLET
S5               0.013      0.15       2.5        7.5        0          OUTLET
S6               0.013      0.15       2.5        7.5        0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
S1               25         0.5        4          4          0
S2               25         0.5        4          4          0
```

```
S3               25         0.5        4          4          0
S4               25         0.5        4          4          0
S5               25         0.5        4          4          0
S6               25         0.5        4          4          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
CB#1&2           189.711    0.318      0          0          0
CB#11&12         189.818    0.318      0          0          0
CB#3&4           189.73     0.318      0          0          0
CB#7&8           189.763    0.318      0          0          0
CB#9&10          189.725    0.318      0          0          0
CB5&6            189.71     0.318      0          0          0
HP1              190.052    0.318      0          0          0
HP2              189.907    0.318      0          0          0
HP3              189.943    0.318      0          0          0
hp4              189.9      0.318      0          0          0
HP5              190.053    0.318      0          0          0
HP6              190.127    0.357      0          0          0
MH#1             186.457    3.713      0          0.318      0
MH#2             186.403    3.423      0          0.3        0
MH#3             186.34     3.653      0          0.318      0
MH#4             186.41     3.92       0          0.318      0
MH#5             186.345    3.671      0          0.318      0
MH#6             186.25     3.707      0          0.317      0
MH#7-A           186.19     3.9        0          0.317      1
MH#7-B           186.16     3.99       0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Southwood1200    186.086    TIMESERIES 100YrTailwater-Elev. NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
-------- --------
DryPond          188.34   1.93       0          TABULAR    Pond                         0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ---------
-
C1               MH#4             MH#3             69.935     0.013      0          0.025      0          0
C10              HP6              CB#9&10          35         0.013      0          0          0          0
C11              HP3              CB#3&4           43.625     0.013      0          0          0          0
C12              HP2              CB#3&4           43.625     0.013      0          0          0          0
C13              HP2              CB#7&8           35         0.013      0          0          0          0
C14              HP5              CB#7&8           35         0.013      0          0          0          0
C15              HP2              CB#1&2           49.284     0.013      0          0          0          0
C16              HP1              CB#1&2           29         0.013      0          0          0          0
C18              MH#1             MH#2             15.958     0.013      0          0.025      0          0
C19              HP1              CB#11&12         17.4       0.013      0          0          0          0
C2               MH#3             MH#6             87.25      0.013      0          0.025      0          0
C3               MH#6             MH#7-A           94.54      0.013      0          0.025      0          0
C4               MH#7-B           Southwood1200    40.759     0.013      0          0.025      0          0
C5               MH#5             MH#6             58.299     0.013      0          0.025      0          0
C6               MH#2             MH#3             42.715     0.013      0          0.025      0          0
C7               hp4              CB5&6            10         0.013      0          0          0          0
C8               HP3              hp4              35         0.013      0          0          0          0
C9               HP3              CB#9&10          35         0.013      0          0          0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;
CB1/2            CB#1&2           MH#6             BOTTOM       0          0.614      NO       0
CB3/4            CB#3&4           MH#3             BOTTOM       0          0.614      NO       0
CB7/8            CB#7&8           MH#5             BOTTOM       0          0.614      NO       0
CB9/10           CB#9&10          MH#2             BOTTOM       0          0.614      NO       0
OR1              CB#11&12         MH#7-A           BOTTOM       0          0.65       NO       0
OR6              MH#7-A           MH#7-B           SIDE         0          0.614      NO       0
OR7              DryPond          MH#4             BOTTOM       0          0.614      NO       0
orfice           CB5&6            DryPond          BOTTOM       0          0.614      NO       0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C1               CIRCULAR     1.05             0          0          0          1
C10              IRREGULAR    NTRoad           0          0          0          1
C11              IRREGULAR    NTRoad           0          0          0          1
C12              IRREGULAR    NTRoad           0          0          0          1
C13              IRREGULAR    NTRoad           0          0          0          1
C14              IRREGULAR    NTRoad           0          0          0          1
C15              IRREGULAR    NTRoad           0          0          0          1
C16              IRREGULAR    NTRoad           0          0          0          1
C18              CIRCULAR     0.45             0          0          0          1
C19              IRREGULAR    NTRoad           0          0          0          1
C2               CIRCULAR     1.05             0          0          0          1
C3               CIRCULAR     1.05             0          0          0          1
C4               CIRCULAR     0.6              0          0          0          1
C5               CIRCULAR     0.6              0          0          0          1
C6               CIRCULAR     0.75             0          0          0          1
C7               IRREGULAR    NTRoad           0          0          0          1
C8               IRREGULAR    NTRoad           0          0          0          1
```

```
C9               IRREGULAR    NTRoad           0          0          0          1
CB1/2            CIRCULAR     0.8              0          0          0
CB3/4            CIRCULAR     0.8              0          0          0
CB7/8            CIRCULAR     0.8              0          0          0
CB9/10           CIRCULAR     0.8              0          0          0
OR1              CIRCULAR     0.8              0          0          0
OR6              CIRCULAR     0.33             0          0          0
OR7              CIRCULAR     0.9              0          0          0
orfice           CIRCULAR     0.8              0          0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.15     0.15     0.013
X1 NTRoad            9        5.583    14.567   0.0      0.0      0.0      0.0      0.0
GR 0.3176   0        0.15     5.583    0.15     5.733    0        5.775    0.15     10.075
GR 0        14.375   0.15     14.417   0.15     14.567   0.3176   20.15
;
;Pond spill way for node RJ33
NC 0.01     0.01     0.15
X1 PondSpillway1     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.35   0        176.21   20.1     176.555  78.4
;
;Pond spill way for node RJ31
NC 0.01     0.01     0.15
X1 PondSpillway2     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.555  0        176.43   35.3     176.76   60.7
;
;Pond spill way for node RJ4
NC 0.01     0.01     0.15
X1 PondSpillway3     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.765  0        176.325  103.43   176.515  149.35
;
;Typical Road Cross Section
NC 0.15     0.15     0.013
X1 Road              9        5        13.85    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     5        0.15     5.15     0        5.15     0.15     9.425
GR 0        13.7     0.15     13.7     0.15     13.85    0.45     18.85
;
;Wider Road Section at Entrance of the development
NC 0.15     0.15     0.013
X1 Road2             9        4.15     17.15    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     4        0.15     4.15     0        4.15     0.15     10.65
GR 0        17.15    0.15     17.15    0.15     17.3     0.45     21.3

[LOSSES]
;;Link            Kentry     Kexit      Kavg       Flap Gate  Seepage
;;--------------- ---------- ---------- ---------- ---------- ----------
C1                0.5        0.5        0          NO         0
C18               0.5        0.5        0          NO         0
C2                0.5        0.5        0          NO         0
C3                0.5        0.5        0          NO         0
C4                0.5        0.5        0          NO         0
C5                0.5        0.5        0          NO         0
C6                0.5        0.5        0          NO         0

[CURVES]
;;Name            Type       X-Value    Y-Value
;;--------------- ---------- ---------- ----------
PS                Pump4      1          0.34921
PS                           2          0.32415
PS                           3          0.3
PS                           4          0.27813
PS                           5          0.25535
PS                           6          0.23128
PS                           7          0.20698
PS                           8          0.18195
PS                           9          0.15638
PS                           10         0.13038
PS                           11         0.10339
PS                           12         0.07679
PS                           13         0.04882
PS                           14         0.02168

Pond              Storage    0          0.36
Pond                         0.04       172.47
Pond                         1.04       537.902
Pond                         1.94       942.54

StoragePond       Storage    0          1991.2
StoragePond                  0.5        5787.1
StoragePond                  1          10547
StoragePond                  1.5        12120
StoragePond                  2          13451
StoragePond                  2.5        15820
StoragePond                  3          18306
StoragePond                  3.5        20828
StoragePond                  4          23947
StoragePond                  4.2        27244

[TIMESERIES]
;;Name            Date       Time       Value
;;--------------- ---------- ---------- ----------
;Depth (m)
100-YearTailWater 06/06/2018 10:31:00   0.172
100-YearTailWater 06/06/2018 10:32:00   0.172
```

```
100-YearTailWater 06/06/2018 10:33:00   0.172
100-YearTailWater 06/06/2018 10:34:00   0.172
100-YearTailWater 06/06/2018 10:35:00   0.172
100-YearTailWater 06/06/2018 10:36:00   0.172
100-YearTailWater 06/06/2018 10:37:00   0.172
100-YearTailWater 06/06/2018 10:38:00   0.1719998
100-YearTailWater 06/06/2018 10:39:00   0.171997
100-YearTailWater 06/06/2018 10:40:00   0.1719945
100-YearTailWater 06/06/2018 10:41:00   0.1719998
......
Too many data points (2250 in total).

100Yr-10Min                 0:00       3.83
100Yr-10Min                 0:10       4.35
100Yr-10Min                 0:20       5.05
100Yr-10Min                 0:30       6.02
100Yr-10Min                 0:40       7.47
100Yr-10Min                 0:50       9.83
100Yr-10Min                 1:00       14.28
100Yr-10Min                 1:10       25.26
100Yr-10Min                 1:20       67.16
100Yr-10Min                 1:30       172.68
100Yr-10Min                 1:40       51.34
100Yr-10Min                 1:50       27.82
100Yr-10Min                 2:00       18.55
100Yr-10Min                 2:10       13.75
100Yr-10Min                 2:20       10.87
100Yr-10Min                 2:30       8.97
100Yr-10Min                 2:40       7.63
100Yr-10Min                 2:50       6.63
100Yr-10Min                 3:00       5.87
100Yr-10Min                 3:10       5.26
100Yr-10Min                 3:20       4.77
100Yr-10Min                 3:30       4.37
100Yr-10Min                 3:40       4.03
100Yr-10Min                 3:50       3.74
100Yr-10Min                 4:00       0

100Yr-15Min                 0:00       3.83
100Yr-15Min                 0:15       4.35
100Yr-15Min                 0:30       6.36
100Yr-15Min                 0:45       9.19
100Yr-15Min                 1:00       16.45
100Yr-15Min                 1:15       46.45
100Yr-15Min                 1:30       143.67
100Yr-15Min                 1:45       32.45
100Yr-15Min                 2:00       17.25
100Yr-15Min                 2:15       11.53
100Yr-15Min                 2:30       8.62
100Yr-15Min                 2:45       6.87
100Yr-15Min                 3:00       5.71
100Yr-15Min                 3:15       4.89
100Yr-15Min                 3:30       4.28
100Yr-15Min                 3:45       3.81
100Yr-15Min                 4:00       0

100Yr-20Min                 0:00       4.09
100Yr-20Min                 0:20       5.54
100Yr-20Min                 0:40       8.65
100Yr-20Min                 1:00       19.77
100Yr-20Min                 1:20       123.48
100Yr-20Min                 1:40       36.02
100Yr-20Min                 2:00       16.15
100Yr-20Min                 2:20       9.92
100Yr-20Min                 2:40       7.13
100Yr-20Min                 3:00       5.56
100Yr-20Min                 3:20       4.57
100Yr-20Min                 3:40       3.88
100Yr-20Min                 4:00       0

100Yr-30Min                 0:00       4.41
100Yr-30Min                 0:30       7.78
100Yr-30Min                 1:00       22.45
100Yr-30Min                 1:30       97.06
100Yr-30Min                 2:00       14.39
100Yr-30Min                 2:30       7.74
100Yr-30Min                 3:00       5.3
100Yr-30Min                 3:30       4.04
100Yr-30Min                 4:00       0

100Yr-5Min                  0:00       3.71
100Yr-5Min                  0:05       3.94
100Yr-5Min                  0:10       4.2
100Yr-5Min                  0:15       4.5
100Yr-5Min                  0:20       4.85
100Yr-5Min                  0:25       5.25
100Yr-5Min                  0:30       5.73
100Yr-5Min                  0:35       6.31
100Yr-5Min                  0:40       7.03
100Yr-5Min                  0:45       7.92
100Yr-5Min                  0:50       9.07
100Yr-5Min                  0:55       10.59
100Yr-5Min                  1:00       12.72
100Yr-5Min                  1:05       15.84
100Yr-5Min                  1:10       20.81
100Yr-5Min                  1:15       29.71
```

```
100Yr-5Min                  1:20       49.12
100Yr-5Min                  1:25       108.91
100Yr-5Min                  1:30       218.23
100Yr-5Min                  1:35       103.42
100Yr-5Min                  1:40       60.97
100Yr-5Min                  1:45       41.72
100Yr-5Min                  1:50       31.11
100Yr-5Min                  1:55       24.53
100Yr-5Min                  2:00       20.12
100Yr-5Min                  2:05       16.98
100Yr-5Min                  2:10       14.65
100Yr-5Min                  2:15       12.86
100Yr-5Min                  2:20       11.44
100Yr-5Min                  2:25       10.3
100Yr-5Min                  2:30       9.36
100Yr-5Min                  2:35       8.58
100Yr-5Min                  2:40       7.91
100Yr-5Min                  2:45       7.34
100Yr-5Min                  2:50       6.85
100Yr-5Min                  2:55       6.42
100Yr-5Min                  3:00       6.04
100Yr-5Min                  3:05       5.7
100Yr-5Min                  3:10       5.4
100Yr-5Min                  3:15       5.13
100Yr-5Min                  3:20       4.88
100Yr-5Min                  3:25       4.66
100Yr-5Min                  3:30       4.46
100Yr-5Min                  3:35       4.27
100Yr-5Min                  3:40       4.1
100Yr-5Min                  3:45       3.95
100Yr-5Min                  3:50       3.8
100Yr-5Min                  3:55       3.67
100Yr-5Min                  4:00       0

;Depth (m)
100YrTailwater-Elev. 06/06/2018 10:31:00   186.38
100YrTailwater-Elev. 06/06/2018 10:32:00   186.38
100YrTailwater-Elev. 06/06/2018 10:33:00   186.38
100YrTailwater-Elev. 06/06/2018 10:34:00   186.38
100YrTailwater-Elev. 06/06/2018 10:35:00   186.38
100YrTailwater-Elev. 06/06/2018 10:36:00   186.38
100YrTailwater-Elev. 06/06/2018 10:37:00   186.38
100YrTailwater-Elev. 06/06/2018 10:38:00   186.38
100YrTailwater-Elev. 06/06/2018 10:39:00   186.38
100YrTailwater-Elev. 06/06/2018 10:40:00   186.38
100YrTailwater-Elev. 06/06/2018 10:41:00   186.38
......
Too many data points (2250 in total).

;Depth (m)
5-Year_Tailwater 06/06/2018 00:01:00   186.38
5-Year_Tailwater 06/06/2018 00:02:00   186.38
5-Year_Tailwater 06/06/2018 00:03:00   186.38
5-Year_Tailwater 06/06/2018 00:04:00   186.38
5-Year_Tailwater 06/06/2018 00:05:00   186.38
5-Year_Tailwater 06/06/2018 00:06:00   186.38
5-Year_Tailwater 06/06/2018 00:07:00   186.38
5-Year_Tailwater 06/06/2018 00:08:00   186.38
5-Year_Tailwater 06/06/2018 00:09:00   186.38
5-Year_Tailwater 06/06/2018 00:10:00   186.38
5-Year_Tailwater 06/06/2018 00:11:00   186.38
......
Too many data points (959 in total).

5Yr-10Min                   0:00       2.51
5Yr-10Min                   0:10       2.82
5Yr-10Min                   0:20       3.24
5Yr-10Min                   0:30       3.82
5Yr-10Min                   0:40       4.67
5Yr-10Min                   0:50       6.02
5Yr-10Min                   1:00       8.54
5Yr-10Min                   1:10       14.69
5Yr-10Min                   1:20       38.85
5Yr-10Min                   1:30       107.72
5Yr-10Min                   1:40       29.51
5Yr-10Min                   1:50       16.12
5Yr-10Min                   2:00       10.93
5Yr-10Min                   2:10       8.25
5Yr-10Min                   2:20       6.62
5Yr-10Min                   2:30       5.53
5Yr-10Min                   2:40       4.76
5Yr-10Min                   2:50       4.18
5Yr-10Min                   3:00       3.73
5Yr-10Min                   3:10       3.37
5Yr-10Min                   3:20       3.08
5Yr-10Min                   3:30       2.83
5Yr-10Min                   3:40       2.63
5Yr-10Min                   3:50       2.45
5Yr-10Min                   4:00       0

5Yr-15Min                   0:00       2.58
5Yr-15Min                   0:15       3.13
5Yr-15Min                   0:30       4.02
5Yr-15Min                   0:45       5.66
5Yr-15Min                   1:00       9.76
```

```
5Yr-15Min               1:15        26.72
5Yr-15Min               1:30        88.4
5Yr-15Min               1:45        18.73
5Yr-15Min               2:00        10.21
5Yr-15Min               2:15        6.99
5Yr-15Min               2:30        5.33
5Yr-15Min               2:45        4.31
5Yr-15Min               3:00        3.64
5Yr-15Min               3:15        3.15
5Yr-15Min               3:30        2.78
5Yr-15Min               3:45        2.49
5Yr-15Min               4:00        0

5Yr-20Min               0:00        2.66
5Yr-20Min               0:20        3.53
5Yr-20Min               0:40        5.34
5Yr-20Min               1:00        11.61
5Yr-20Min               1:20        75.35
5Yr-20Min               1:40        20.75
5Yr-20Min               2:00        9.59
5Yr-20Min               2:20        6.07
5Yr-20Min               2:40        4.47
5Yr-20Min               3:00        3.55
5Yr-20Min               3:20        2.95
5Yr-20Min               3:40        2.54
5Yr-20Min               4:00        0

5Yr-30Min               0:00        2.86
5Yr-30Min               0:30        4.84
5Yr-30Min               1:00        13.11
5Yr-30Min               1:30        58.69
5Yr-30Min               2:00        8.69
5Yr-30Min               2:30        4.82
5Yr-30Min               3:00        3.39
5Yr-30Min               3:30        2.64
5Yr-30Min               4:00        0

;Chicago 4 Hour
5Yr-5Min                0:00        2.44
5Yr-5Min                0:05        2.58
5Yr-5Min                0:10        2.73
5Yr-5Min                0:15        2.91
5Yr-5Min                0:20        3.12
5Yr-5Min                0:25        3.36
5Yr-5Min                0:30        3.65
5Yr-5Min                0:35        3.99
5Yr-5Min                0:40        4.41
5Yr-5Min                0:45        4.92
5Yr-5Min                0:50        5.59
5Yr-5Min                0:55        6.46
5Yr-5Min                1:00        7.66
5Yr-5Min                1:05        9.42
5Yr-5Min                1:10        12.2
5Yr-5Min                1:15        17.18
5Yr-5Min                1:20        28.2
5Yr-5Min                1:25        64.52
5Yr-5Min                1:30        139.58
5Yr-5Min                1:35        60.83
5Yr-5Min                1:40        35.06
5Yr-5Min                1:45        23.95
5Yr-5Min                1:50        17.96
5Yr-5Min                1:55        14.28
5Yr-5Min                2:00        11.81
5Yr-5Min                2:05        10.06
5Yr-5Min                2:10        8.75
5Yr-5Min                2:15        7.74
5Yr-5Min                2:20        6.94
5Yr-5Min                2:25        6.29
5Yr-5Min                2:30        5.76
5Yr-5Min                2:35        5.3
5Yr-5Min                2:40        4.92
5Yr-5Min                2:45        4.59
5Yr-5Min                2:50        4.3
5Yr-5Min                2:55        4.05
5Yr-5Min                3:00        3.83
5Yr-5Min                3:05        3.63
5Yr-5Min                3:10        3.45
5Yr-5Min                3:15        3.29
5Yr-5Min                3:20        3.14
5Yr-5Min                3:25        3.01
5Yr-5Min                3:30        2.89
5Yr-5Min                3:35        2.78
5Yr-5Min                3:40        2.67
5Yr-5Min                3:45        2.58
5Yr-5Min                3:50        2.49
5Yr-5Min                3:55        2.41
5Yr-5Min                4:00        0

SCSII-100Yr             0:00        0
SCSII-100Yr             2:00        1.08
SCSII-100Yr             4:00        1.62
SCSII-100Yr             6:00        1.62
SCSII-100Yr             8:00        2.16
SCSII-100Yr             10:00       3.24
SCSII-100Yr             12:00       25.92
```

SCSII-100Yr	14:00	8.64
SCSII-100Yr	16:00	3.24
SCSII-100Yr	18:00	2.16
SCSII-100Yr	20:00	1.62
SCSII-100Yr	22:00	1.62
SCSII-100Yr	24:00	1.08
SCSII-5-Year	0:00	0
SCSII-5-Year	2:00	0.68
SCSII-5-Year	4:00	1.02
SCSII-5-Year	6:00	1.02
SCSII-5-Year	8:00	1.36
SCSII-5-Year	10:00	2.04
SCSII-5-Year	12:00	16.32
SCSII-5-Year	14:00	5.44
SCSII-5-Year	16:00	2.04
SCSII-5-Year	18:00	1.36
SCSII-5-Year	20:00	1.02
SCSII-5-Year	22:00	1.02
SCSII-5-Year	24:00	0.68
SCSII-RST	0:00	0
SCSII-RST	2:00	1.5
SCSII-RST	4:00	2.25
SCSII-RST	6:00	2.25
SCSII-RST	8:00	3
SCSII-RST	10:00	4.5
SCSII-RST	12:00	36
SCSII-RST	14:00	12
SCSII-RST	16:00	4.5
SCSII-RST	18:00	3
SCSII-RST	20:00	2.25
SCSII-RST	22:00	2.25
SCSII-RST	24:00	1.5
SCSII-Unit	0:00	0
SCSII-Unit	2:00	0.01
SCSII-Unit	4:00	0.015
SCSII-Unit	6:00	0.015
SCSII-Unit	8:00	0.02
SCSII-Unit	10:00	0.03
SCSII-Unit	12:00	0.24
SCSII-Unit	14:00	0.08
SCSII-Unit	16:00	0.03
SCSII-Unit	18:00	0.02
SCSII-Unit	20:00	0.015
SCSII-Unit	22:00	0.015
SCSII-Unit	24:00	0.01
UrbanStressTest	0:00	2.41
UrbanStressTest	0:15	2.43
UrbanStressTest	0:30	2.45
UrbanStressTest	0:45	2.46
UrbanStressTest	1:00	2.48
UrbanStressTest	1:15	2.51
UrbanStressTest	1:30	2.53
UrbanStressTest	1:45	2.55
UrbanStressTest	2:00	2.58
UrbanStressTest	2:15	2.61
UrbanStressTest	2:30	2.64
UrbanStressTest	2:45	2.67
UrbanStressTest	3:00	2.71
UrbanStressTest	3:15	2.74
UrbanStressTest	3:30	2.79
UrbanStressTest	3:45	2.83
UrbanStressTest	4:00	2.88
UrbanStressTest	4:15	2.94
UrbanStressTest	4:30	3
UrbanStressTest	4:45	3.07
UrbanStressTest	5:00	3.15
UrbanStressTest	5:15	3.23
UrbanStressTest	5:30	3.33
UrbanStressTest	5:45	3.45
UrbanStressTest	6:00	3.59
UrbanStressTest	6:15	3.75
UrbanStressTest	6:30	3.94
UrbanStressTest	6:45	4.18
UrbanStressTest	7:00	4.49
UrbanStressTest	7:15	4.89
UrbanStressTest	7:30	5.43
UrbanStressTest	7:45	6.2
UrbanStressTest	8:00	7.41
UrbanStressTest	8:15	9.56
UrbanStressTest	8:30	14.29
UrbanStressTest	8:45	32.01
UrbanStressTest	9:00	145.13
UrbanStressTest	9:15	48.51
UrbanStressTest	9:30	23.13
UrbanStressTest	9:45	15.08
UrbanStressTest	10:00	11.35
UrbanStressTest	10:15	9.23
UrbanStressTest	10:30	7.88
UrbanStressTest	10:45	6.94
UrbanStressTest	11:00	6.25
UrbanStressTest	11:15	5.73

```
UrbanStressTest             11:30      5.32
UrbanStressTest             11:45      4.99
UrbanStressTest             12:00      4.72
UrbanStressTest             12:15      4.49
UrbanStressTest             12:30      4.29
UrbanStressTest             12:45      4.12
UrbanStressTest             13:00      3.98
UrbanStressTest             13:15      3.85
UrbanStressTest             13:30      3.74
UrbanStressTest             13:45      3.63
UrbanStressTest             14:00      3.54
UrbanStressTest             14:15      3.46
UrbanStressTest             14:30      3.39
UrbanStressTest             14:45      3.32
UrbanStressTest             15:00      3.26
UrbanStressTest             15:15      3.2
UrbanStressTest             15:30      3.15
UrbanStressTest             15:45      3.1
UrbanStressTest             16:00      3.05
UrbanStressTest             16:15      3.01
UrbanStressTest             16:30      2.97
UrbanStressTest             16:45      2.93
UrbanStressTest             17:00      2.9
UrbanStressTest             17:15      2.87
UrbanStressTest             17:30      2.84
UrbanStressTest             17:45      2.81
UrbanStressTest             18:00      2.78
UrbanStressTest             18:15      2.76
UrbanStressTest             18:30      2.73
UrbanStressTest             18:45      2.71
UrbanStressTest             19:00      2.69
UrbanStressTest             19:15      2.67
UrbanStressTest             19:30      2.65
UrbanStressTest             19:45      2.63
UrbanStressTest             20:00      2.61
UrbanStressTest             20:15      2.59
UrbanStressTest             20:30      2.57
UrbanStressTest             20:45      2.56
UrbanStressTest             21:00      2.54
UrbanStressTest             21:15      2.53
UrbanStressTest             21:30      2.51
UrbanStressTest             21:45      2.5
UrbanStressTest             22:00      2.49
UrbanStressTest             22:15      2.47
UrbanStressTest             22:30      2.46
UrbanStressTest             22:45      2.45
UrbanStressTest             23:00      2.44
UrbanStressTest             23:15      2.43
UrbanStressTest             23:30      2.42
UrbanStressTest             23:45      2.41
UrbanStressTest             24:00      0
UrbanStressTest             24:15      0
UrbanStressTest             24:30      0
UrbanStressTest             24:45      0
UrbanStressTest             25:00      0
UrbanStressTest             25:15      0

;Depth (m)
UST_Tailwater    06/06/2018 00:01:00   186.38
UST_Tailwater    06/06/2018 00:02:00   186.38
UST_Tailwater    06/06/2018 00:03:00   186.38
UST_Tailwater    06/06/2018 00:04:00   186.38
UST_Tailwater    06/06/2018 00:05:00   186.38
UST_Tailwater    06/06/2018 00:06:00   186.38
UST_Tailwater    06/06/2018 00:07:00   186.38
UST_Tailwater    06/06/2018 00:08:00   186.38
UST_Tailwater    06/06/2018 00:09:00   186.38
UST_Tailwater    06/06/2018 00:10:00   186.38
UST_Tailwater    06/06/2018 00:11:00   186.38
......
Too many data points (2880 in total).

;2-Year, 4-Hour, Chicago
WaterQualityStorm-10MIN           0:00       1.73
WaterQualityStorm-10MIN           0:10       1.94
WaterQualityStorm-10MIN           0:20       2.21
WaterQualityStorm-10MIN           0:30       2.57
WaterQualityStorm-10MIN           0:40       3.1
WaterQualityStorm-10MIN           0:50       3.94
WaterQualityStorm-10MIN           1:00       5.47
WaterQualityStorm-10MIN           1:10       9.16
WaterQualityStorm-10MIN           1:20       23.89
WaterQualityStorm-10MIN           1:30       71.41
WaterQualityStorm-10MIN           1:40       18.09
WaterQualityStorm-10MIN           1:50       10.01
WaterQualityStorm-10MIN           2:00       6.91
WaterQualityStorm-10MIN           2:10       5.3
WaterQualityStorm-10MIN           2:20       4.31
WaterQualityStorm-10MIN           2:30       3.64
WaterQualityStorm-10MIN           2:40       3.16
WaterQualityStorm-10MIN           2:50       2.8
WaterQualityStorm-10MIN           3:00       2.51
WaterQualityStorm-10MIN           3:10       2.29
WaterQualityStorm-10MIN           3:20       2.1
WaterQualityStorm-10MIN           3:30       1.94
```

```
WaterQualityStorm-10MIN          3:40       1.81
WaterQualityStorm-10MIN          3:50       1.69
WaterQualityStorm-10MIN          4:00       0

WaterQualityStorm-15MIN          0:00       1.78
WaterQualityStorm-15MIN          0:15       2.13
WaterQualityStorm-15MIN          0:30       2.7
WaterQualityStorm-15MIN          0:45       3.72
WaterQualityStorm-15MIN          1:00       6.21
WaterQualityStorm-15MIN          1:15       16.41
WaterQualityStorm-15MIN          1:30       57.83
WaterQualityStorm-15MIN          1:45       11.58
WaterQualityStorm-15MIN          2:00       6.48
WaterQualityStorm-15MIN          2:15       4.53
WaterQualityStorm-15MIN          2:30       3.51
WaterQualityStorm-15MIN          2:45       2.88
WaterQualityStorm-15MIN          3:00       2.45
WaterQualityStorm-15MIN          3:15       2.14
WaterQualityStorm-15MIN          3:30       1.91
WaterQualityStorm-15MIN          3:45       1.72
WaterQualityStorm-15MIN          4:00       0

WaterQualityStorm-20MIN          0:00       1.83
WaterQualityStorm-20MIN          0:20       2.39
WaterQualityStorm-20MIN          0:40       3.52
WaterQualityStorm-20MIN          1:00       7.32
WaterQualityStorm-20MIN          1:20       48.91
WaterQualityStorm-20MIN          1:40       12.79
WaterQualityStorm-20MIN          2:00       6.11
WaterQualityStorm-20MIN          2:20       3.97
WaterQualityStorm-20MIN          2:40       2.98
WaterQualityStorm-20MIN          3:00       2.4
WaterQualityStorm-20MIN          3:20       2.02
WaterQualityStorm-20MIN          3:40       1.75
WaterQualityStorm-20MIN          4:00       0

WaterQualityStorm-30MIN          0:00       1.96
WaterQualityStorm-30MIN          0:30       3.21
WaterQualityStorm-30MIN          1:00       8.21
WaterQualityStorm-30MIN          1:30       37.8
WaterQualityStorm-30MIN          2:00       5.51
WaterQualityStorm-30MIN          2:30       3.2
WaterQualityStorm-30MIN          3:00       2.3
WaterQualityStorm-30MIN          3:30       1.81
WaterQualityStorm-30MIN          4:00       0

;Chicago 2-year, 4-hour
WaterQualityStorm-5MIN          0:00       1.68
WaterQualityStorm-5MIN          0:05       1.77
WaterQualityStorm-5MIN          0:10       1.88
WaterQualityStorm-5MIN          0:15       1.99
WaterQualityStorm-5MIN          0:20       2.13
WaterQualityStorm-5MIN          0:25       2.28
WaterQualityStorm-5MIN          0:30       2.46
WaterQualityStorm-5MIN          0:35       2.68
WaterQualityStorm-5MIN          0:40       2.94
WaterQualityStorm-5MIN          0:45       3.26
WaterQualityStorm-5MIN          0:50       3.67
WaterQualityStorm-5MIN          0:55       4.21
WaterQualityStorm-5MIN          1:00       4.94
WaterQualityStorm-5MIN          1:05       6
WaterQualityStorm-5MIN          1:10       7.67
WaterQualityStorm-5MIN          1:15       10.65
WaterQualityStorm-5MIN          1:20       17.28
WaterQualityStorm-5MIN          1:25       40.48
WaterQualityStorm-5MIN          1:30       94.95
WaterQualityStorm-5MIN          1:35       37.9
WaterQualityStorm-5MIN          1:40       21.47
WaterQualityStorm-5MIN          1:45       14.71
WaterQualityStorm-5MIN          1:50       11.11
WaterQualityStorm-5MIN          1:55       8.91
WaterQualityStorm-5MIN          2:00       7.44
WaterQualityStorm-5MIN          2:05       6.39
WaterQualityStorm-5MIN          2:10       5.6
WaterQualityStorm-5MIN          2:15       4.99
WaterQualityStorm-5MIN          2:20       4.5
WaterQualityStorm-5MIN          2:25       4.11
WaterQualityStorm-5MIN          2:30       3.78
WaterQualityStorm-5MIN          2:35       3.5
WaterQualityStorm-5MIN          2:40       3.26
WaterQualityStorm-5MIN          2:45       3.06
WaterQualityStorm-5MIN          2:50       2.88
WaterQualityStorm-5MIN          2:55       2.72
WaterQualityStorm-5MIN          3:00       2.58
WaterQualityStorm-5MIN          3:05       2.45
WaterQualityStorm-5MIN          3:10       2.34
WaterQualityStorm-5MIN          3:15       2.23
WaterQualityStorm-5MIN          3:20       2.14
WaterQualityStorm-5MIN          3:25       2.06
WaterQualityStorm-5MIN          3:30       1.98
WaterQualityStorm-5MIN          3:35       1.91
WaterQualityStorm-5MIN          3:40       1.84
WaterQualityStorm-5MIN          3:45       1.78
WaterQualityStorm-5MIN          3:50       1.72
WaterQualityStorm-5MIN          3:55       1.67
```

```
WaterQualityStorm-5MIN            4:00       0

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[EVENTS]
;;Start Date         End Date
;  03/15/2021  00:00  03/24/2021  00:00

[TAGS]

[MAP]
DIMENSIONS       2502211.244      432630.18795     2845298.45       557269.86905
UNITS            Meters

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
CB#1&2           2607223.06          484880.831
CB#11&12         2557244.601         484399.715
CB#3&4           2696753.997         485366.094
CB#7&8           2647499.85          521518.152
CB#9&10          2734361.843         521760.784
CB5&6            2779942.845         486336.635
HP1              2562794.634         483958.166
HP2              2650654.056         485608.725
HP3              2738001.312         485851.356
hp4              2772697.583         486336.619
HP5              2649440.9           547722.329
HP6              2737030.787         547237.067
MH#1             2739996.879         532696.678
MH#2             2740596.096         522267.613
MH#3             2740596.096         480433.442
MH#4             2803975.763         480433.442
MH#5             2653336.837         521549.43
MH#6             2653157.292         480612.987
MH#7-A           2561588.934         480612.987
MH#7-B           2558536.44          480629.694
Southwood1200    2517816.117         480836.201
DryPond          2801072.055         502182.658

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
S1               2787315.013         439911.122
S1               2750760.348         439399.868
S1               2749993.467         470841.992
S1               2740535.267         481067.073
S1               2750429.422         491034.855
S1               2750069.316         520120.063
S1               2768568.989         520007.603
S1               2773321.248         519766.002
S1               2778365.704         519923.641
S1               2782621.98          519923.64
S1               2786878.223         520238.92
S1               2829703.577         519713.454
S1               2787315.013         439911.122
S2               2750069.316         520120.063
S2               2750429.422         491034.855
S2               2740535.267         481067.073
S2               2730117.021         490490.773
S2               2697109.369         490490.773
S2               2696983.647         531853.123
S2               2730155.074         531993.692
S2               2750069.316         520120.063
S3               2658660.888         439751.416
S3               2658660.888         470808.218
S3               2652837.738         480998.731
S3               2663270.882         490703.982
S3               2730117.021         490490.773
S3               2740535.267         481067.073
S3               2749993.467         470841.992
S3               2750760.348         439399.868
S3               2658660.888         439751.416
S4               2696928.008         550158.451
S4               2697109.369         490490.773
S4               2663270.882         490703.982
S4               2652837.738         480998.731
S4               2643132.487         490703.982
S4               2609892.004         491189.244
S4               2609892.004         550876.536
S4               2696928.008         550158.451
S5               2643132.487         490703.982
S5               2652837.738         480998.731
S5               2658660.888         470808.218
S5               2658660.888         439751.416
S5               2533463.155         438295.628
```

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S5                2554329.444        480756.1
S5                2555542.6          551604.429
S5                2577375.596        550657.902
S5                2578386.105        520342.626
S5                2609892.004        521016.299
S5                2609892.004        491189.244
S5                2643132.487        490703.982
S6                2696928.008        550158.451
S6                2703441.603        550552.524
S6                2720313.269        549990.135
S6                2763309.289        549647.393
S6                2760277.762        536847.609
S6                2761290.599        520051.849
S6                2750069.316        520120.063
S6                2730155.074        531993.692
S6                2696983.647        531853.123
S6                2696928.008        550158.451

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

100 YEAR CHICAGO OUTPUT RESULTS

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 20
Number of subcatchments ... 6
Number of nodes 22
Number of links 26
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100Year-10Min	100Yr-10Min	INTENSITY	10 min.
100Year-15Min	100Yr-15Min	INTENSITY	15 min.
100Year-20Min	100Yr-20Min	INTENSITY	20 min.
100Year-30Min	100Yr-30Min	INTENSITY	30 min.
100Year-5Min	100Yr-5Min	INTENSITY	5 min.
5Year-10Min	5Yr-10Min	INTENSITY	10 min.
5Year-15Min	5Yr-15Min	INTENSITY	15 min.
5Year-20Min	5Yr-20Min	INTENSITY	20 min.
5Year-30Min	5Yr-30Min	INTENSITY	30 min.
5Year-5Min	5Yr-5Min	INTENSITY	5 min.
SCSII-100-Yr	SCSII-100Yr	INTENSITY	120 min.
SCSII-5-Year	SCSII-5-Year	INTENSITY	120 min.
SCSII-RuralStress	SCSII-RST	INTENSITY	120 min.
SCSII-Unit	SCSII-Unit	INTENSITY	120 min.
UrbanStressTest	UrbanStressTest	INTENSITY	15 min.
WaterQualityStorm10MIN	WaterQualityStorm-10MIN	INTENSITY	10 min.
WaterQualityStorm15MIN	WaterQualityStorm-15MIN	INTENSITY	15 min.
WaterQualityStorm20MIN	WaterQualityStorm-20MIN	INTENSITY	20 min.
WaterQualityStorm30MIN	WaterQualityStorm-30MIN	INTENSITY	30 min.
WaterQualityStorm5MIN	WaterQualityStorm-5MIN	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	0.48	110.00	60.00	1.0000	100Year-10Min	MH#4
S2	0.22	75.00	60.00	1.0000	100Year-10Min	MH#2
S3	0.45	100.00	60.00	1.0000	100Year-10Min	MH#3
S4	0.53	90.00	60.00	1.0000	100Year-10Min	MH#5
S5	0.72	120.00	60.00	1.0000	100Year-10Min	MH#6
S6	0.12	75.00	60.00	1.0000	100Year-10Min	MH#1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
CB#1&2	JUNCTION	189.71	0.32	0.0	
CB#11&12	JUNCTION	189.82	0.32	0.0	
CB#3&4	JUNCTION	189.73	0.32	0.0	
CB#7&8	JUNCTION	189.76	0.32	0.0	
CB#9&10	JUNCTION	189.72	0.32	0.0	
CB5&6	JUNCTION	189.71	0.32	0.0	
HP1	JUNCTION	190.05	0.32	0.0	
HP2	JUNCTION	189.91	0.32	0.0	
HP3	JUNCTION	189.94	0.32	0.0	
hp4	JUNCTION	189.90	0.32	0.0	
HP5	JUNCTION	190.05	0.32	0.0	
HP6	JUNCTION	190.13	0.36	0.0	
MH#1	JUNCTION	186.46	3.71	0.0	
MH#2	JUNCTION	186.40	3.42	0.0	
MH#3	JUNCTION	186.34	3.65	0.0	
MH#4	JUNCTION	186.41	3.92	0.0	
MH#5	JUNCTION	186.34	3.67	0.0	
MH#6	JUNCTION	186.25	3.71	0.0	
MH#7-A	JUNCTION	186.19	3.90	1.0	
MH#7-B	JUNCTION	186.16	3.99	0.0	
Southwood1200	OUTFALL	186.09	0.63	0.0	
DryPond	STORAGE	188.34	1.93	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH#4	MH#3	CONDUIT	69.9	0.0643	0.0130
C10	HP6	CB#9&10	CONDUIT	35.0	1.1486	0.0130
C11	HP3	CB#3&4	CONDUIT	43.6	0.4883	0.0130

C12	HP2	CB#3&4	CONDUIT	43.6	0.4057	0.0130
C13	HP2	CB#7&8	CONDUIT	35.0	0.4114	0.0130
C14	HP5	CB#7&8	CONDUIT	35.0	0.8286	0.0130
C15	HP2	CB#1&2	CONDUIT	49.3	0.3977	0.0130
C16	HP1	CB#1&2	CONDUIT	29.0	1.1759	0.0130
C18	MH#1	MH#2	CONDUIT	16.0	0.1817	0.0130
C19	HP1	CB#11&12	CONDUIT	17.4	1.3449	0.0130
C2	MH#3	MH#6	CONDUIT	87.3	0.0745	0.0130
C3	MH#6	MH#7-A	CONDUIT	94.5	0.0370	0.0130
C4	MH#7-B	Southwood1200	CONDUIT	40.8	0.1202	0.0130
C5	MH#5	MH#6	CONDUIT	58.3	0.1201	0.0130
C6	MH#2	MH#3	CONDUIT	42.7	0.0890	0.0130
C7	hp4	CB5&6	CONDUIT	10.0	1.9003	0.0130
C8	HP3	hp4	CONDUIT	35.0	0.1229	0.0130
C9	HP3	CB#9&10	CONDUIT	35.0	0.6229	0.0130
CB1/2	CB#1&2	MH#6	ORIFICE			
CB3/4	CB#3&4	MH#3	ORIFICE			
CB7/8	CB#7&8	MH#5	ORIFICE			
CB9/10	CB#9&10	MH#2	ORIFICE			
OR1	CB#11&12	MH#7-A	ORIFICE			
OR6	MH#7-A	MH#7-B	ORIFICE			
OR7	DryPond	MH#4	ORIFICE			
orfice	CB5&6	DryPond	ORIFICE			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	1.05	0.87	0.26	1.05	1	0.69
C10	NTRoad	0.32	3.09	0.14	20.15	1	6.86
C11	NTRoad	0.32	3.09	0.14	20.15	1	4.48
C12	NTRoad	0.32	3.09	0.14	20.15	1	4.08
C13	NTRoad	0.32	3.09	0.14	20.15	1	4.11
C14	NTRoad	0.32	3.09	0.14	20.15	1	5.83
C15	NTRoad	0.32	3.09	0.14	20.15	1	4.04
C16	NTRoad	0.32	3.09	0.14	20.15	1	6.95
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.12
C19	NTRoad	0.32	3.09	0.14	20.15	1	7.43
C2	CIRCULAR	1.05	0.87	0.26	1.05	1	0.75
C3	CIRCULAR	1.05	0.87	0.26	1.05	1	0.53
C4	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C5	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C6	CIRCULAR	0.75	0.44	0.19	0.75	1	0.33
C7	NTRoad	0.32	3.09	0.14	20.15	1	8.83
C8	NTRoad	0.32	3.09	0.14	20.15	1	2.24
C9	NTRoad	0.32	3.09	0.14	20.15	1	5.05

****
Transect Summary
****

Transect NTRoad
Area:

0.0004	0.0015	0.0034	0.0060	0.0094
0.0136	0.0185	0.0242	0.0306	0.0378
0.0457	0.0544	0.0638	0.0740	0.0850
0.0967	0.1091	0.1224	0.1363	0.1511
0.1665	0.1828	0.1998	0.2178	0.2370
0.2571	0.2780	0.2999	0.3226	0.3461
0.3706	0.3959	0.4220	0.4491	0.4770
0.5058	0.5354	0.5660	0.5973	0.6296
0.6627	0.6967	0.7316	0.7673	0.8039
0.8414	0.8798	0.9190	0.9590	1.0000

Hrad:

0.0221	0.0441	0.0662	0.0882	0.1103
0.1324	0.1544	0.1765	0.1985	0.2206
0.2427	0.2647	0.2868	0.3088	0.3309
0.3530	0.3750	0.3971	0.4192	0.4412
0.4633	0.4853	0.5074	0.5208	0.5622
0.6007	0.6364	0.6694	0.6999	0.7280
0.7541	0.7781	0.8003	0.8207	0.8397
0.8571	0.8733	0.8882	0.9020	0.9147
0.9265	0.9374	0.9475	0.9569	0.9655
0.9735	0.9809	0.9878	0.9941	1.0000

Width:

0.0183	0.0365	0.0548	0.0730	0.0913
0.1095	0.1278	0.1460	0.1643	0.1825
0.2008	0.2190	0.2373	0.2555	0.2738
0.2920	0.3103	0.3285	0.3468	0.3650
0.3833	0.4015	0.4198	0.4540	0.4750
0.4960	0.5170	0.5380	0.5590	0.5800
0.6010	0.6220	0.6430	0.6640	0.6850
0.7060	0.7270	0.7480	0.7690	0.7900
0.8110	0.8320	0.8530	0.8740	0.8950
0.9160	0.9370	0.9580	0.9790	1.0000

Transect PondSpillway1
Area:

0.0005	0.0019	0.0043	0.0076	0.0119
0.0172	0.0234	0.0306	0.0387	0.0477

0.0578 0.0688 0.0807 0.0936 0.1074
0.1222 0.1380 0.1547 0.1724 0.1910
0.2104 0.2304 0.2510 0.2720 0.2935
0.3156 0.3382 0.3613 0.3849 0.4090
0.4337 0.4588 0.4845 0.5107 0.5374
0.5646 0.5924 0.6206 0.6494 0.6787
0.7085 0.7388 0.7697 0.8010 0.8329
0.8653 0.8982 0.9316 0.9655 1.0000
Hrad:
0.0174 0.0348 0.0522 0.0696 0.0870
0.1044 0.1218 0.1392 0.1566 0.1740
0.1914 0.2088 0.2262 0.2436 0.2610
0.2784 0.2958 0.3132 0.3306 0.3480
0.3710 0.3958 0.4203 0.4444 0.4682
0.4917 0.5149 0.5378 0.5605 0.5830
0.6052 0.6273 0.6492 0.6708 0.6924
0.7137 0.7349 0.7560 0.7769 0.7977
0.8184 0.8390 0.8594 0.8798 0.9000
0.9202 0.9403 0.9603 0.9802 1.0000
Width:
0.0275 0.0550 0.0825 0.1100 0.1375
0.1650 0.1926 0.2201 0.2476 0.2751
0.3026 0.3301 0.3576 0.3851 0.4126
0.4401 0.4676 0.4951 0.5227 0.5502
0.5687 0.5836 0.5984 0.6133 0.6282
0.6431 0.6579 0.6728 0.6877 0.7026
0.7174 0.7323 0.7472 0.7620 0.7769
0.7918 0.8067 0.8215 0.8364 0.8513
0.8661 0.8810 0.8959 0.9108 0.9256
0.9405 0.9554 0.9703 0.9851 1.0000

Transect PondSpillway2
Area:
0.0006 0.0023 0.0052 0.0092 0.0144
0.0207 0.0281 0.0367 0.0465 0.0574
0.0695 0.0827 0.0970 0.1125 0.1292
0.1470 0.1659 0.1860 0.2072 0.2291
0.2513 0.2736 0.2963 0.3191 0.3422
0.3656 0.3892 0.4131 0.4372 0.4615
0.4861 0.5109 0.5360 0.5613 0.5869
0.6127 0.6388 0.6651 0.6916 0.7185
0.7455 0.7728 0.8003 0.8281 0.8562
0.8844 0.9130 0.9417 0.9707 1.0000
Hrad:
0.0147 0.0295 0.0442 0.0590 0.0737
0.0885 0.1032 0.1179 0.1327 0.1474
0.1622 0.1769 0.1916 0.2064 0.2211
0.2359 0.2506 0.2654 0.2808 0.3069
0.3328 0.3584 0.3838 0.4090 0.4339
0.4586 0.4831 0.5074 0.5315 0.5553
0.5790 0.6026 0.6259 0.6491 0.6721
0.6949 0.7176 0.7401 0.7625 0.7848
0.8069 0.8288 0.8506 0.8723 0.8939
0.9154 0.9367 0.9579 0.9790 1.0000
Width:
0.0391 0.0781 0.1172 0.1563 0.1954
0.2344 0.2735 0.3126 0.3517 0.3907
0.4298 0.4689 0.5080 0.5470 0.5861
0.6252 0.6643 0.7033 0.7406 0.7489
0.7573 0.7657 0.7740 0.7824 0.7908
0.7991 0.8075 0.8159 0.8243 0.8326
0.8410 0.8494 0.8577 0.8661 0.8745
0.8828 0.8912 0.8996 0.9079 0.9163
0.9247 0.9330 0.9414 0.9498 0.9582
0.9665 0.9749 0.9833 0.9916 1.0000

Transect PondSpillway3
Area:
0.0005 0.0019 0.0043 0.0077 0.0120
0.0172 0.0234 0.0306 0.0387 0.0478
0.0579 0.0689 0.0808 0.0937 0.1076
0.1224 0.1382 0.1550 0.1727 0.1913
0.2109 0.2314 0.2525 0.2741 0.2961
0.3186 0.3416 0.3650 0.3889 0.4133
0.4382 0.4635 0.4893 0.5155 0.5423
0.5695 0.5972 0.6253 0.6540 0.6831
0.7126 0.7427 0.7732 0.8042 0.8356
0.8676 0.9000 0.9328 0.9662 1.0000
Hrad:
0.0170 0.0341 0.0511 0.0681 0.0851
0.1022 0.1192 0.1362 0.1532 0.1703
0.1873 0.2043 0.2213 0.2384 0.2554
0.2724 0.2894 0.3065 0.3235 0.3405
0.3575 0.3781 0.4034 0.4283 0.4529
0.4772 0.5012 0.5250 0.5484 0.5717
0.5946 0.6174 0.6400 0.6623 0.6845
0.7065 0.7283 0.7500 0.7715 0.7929
0.8141 0.8352 0.8562 0.8771 0.8978
0.9185 0.9390 0.9594 0.9798 1.0000
Width:
0.0281 0.0562 0.0843 0.1124 0.1405
0.1685 0.1966 0.2247 0.2528 0.2809
0.3090 0.3371 0.3652 0.3933 0.4214
0.4495 0.4776 0.5056 0.5337 0.5618
0.5899 0.6122 0.6260 0.6399 0.6537

```
            0.6676     0.6814     0.6953     0.7091     0.7230
            0.7368     0.7507     0.7645     0.7784     0.7922
            0.8061     0.8199     0.8338     0.8476     0.8615
            0.8753     0.8892     0.9030     0.9169     0.9307
            0.9446     0.9584     0.9723     0.9861     1.0000

  Transect Road
  Area:
            0.0005     0.0019     0.0043     0.0077     0.0120
            0.0173     0.0236     0.0308     0.0390     0.0481
            0.0582     0.0693     0.0813     0.0943     0.1083
            0.1232     0.1393     0.1563     0.1740     0.1922
            0.2109     0.2303     0.2502     0.2706     0.2916
            0.3132     0.3354     0.3581     0.3813     0.4052
            0.4296     0.4545     0.4800     0.5061     0.5328
            0.5600     0.5877     0.6161     0.6450     0.6744
            0.7045     0.7350     0.7662     0.7979     0.8302
            0.8630     0.8964     0.9304     0.9649     1.0000
  Hrad:
            0.0205     0.0410     0.0615     0.0820     0.1025
            0.1230     0.1435     0.1640     0.1845     0.2050
            0.2255     0.2460     0.2665     0.2870     0.3075
            0.3280     0.3441     0.3834     0.4208     0.4563
            0.4899     0.5219     0.5522     0.5811     0.6084
            0.6345     0.6592     0.6828     0.7052     0.7266
            0.7469     0.7663     0.7848     0.8024     0.8193
            0.8354     0.8508     0.8655     0.8795     0.8930
            0.9058     0.9181     0.9299     0.9413     0.9521
            0.9625     0.9724     0.9820     0.9912     1.0000
  Width:
            0.0272     0.0544     0.0816     0.1089     0.1361
            0.1633     0.1905     0.2177     0.2449     0.2721
            0.2994     0.3266     0.3538     0.3810     0.4082
            0.4354     0.4748     0.4907     0.5066     0.5225
            0.5385     0.5544     0.5703     0.5862     0.6021
            0.6180     0.6340     0.6499     0.6658     0.6817
            0.6976     0.7135     0.7294     0.7454     0.7613
            0.7772     0.7931     0.8090     0.8249     0.8408
            0.8568     0.8727     0.8886     0.9045     0.9204
            0.9363     0.9523     0.9682     0.9841     1.0000

  Transect Road2
  Area:
            0.0006     0.0023     0.0051     0.0091     0.0142
            0.0205     0.0279     0.0364     0.0461     0.0569
            0.0689     0.0820     0.0962     0.1116     0.1281
            0.1458     0.1646     0.1844     0.2044     0.2248
            0.2456     0.2667     0.2881     0.3100     0.3321
            0.3546     0.3775     0.4007     0.4243     0.4482
            0.4724     0.4971     0.5220     0.5473     0.5730
            0.5990     0.6254     0.6521     0.6792     0.7066
            0.7343     0.7625     0.7909     0.8197     0.8489
            0.8784     0.9083     0.9385     0.9691     1.0000
  Hrad:
            0.0167     0.0335     0.0502     0.0670     0.0837
            0.1004     0.1172     0.1339     0.1507     0.1674
            0.1841     0.2009     0.2176     0.2344     0.2511
            0.2678     0.2897     0.3213     0.3521     0.3820
            0.4111     0.4395     0.4671     0.4939     0.5201
            0.5456     0.5704     0.5946     0.6182     0.6411
            0.6635     0.6854     0.7067     0.7274     0.7477
            0.7675     0.7867     0.8056     0.8240     0.8419
            0.8594     0.8765     0.8932     0.9096     0.9255
            0.9411     0.9563     0.9712     0.9858     1.0000
  Width:
            0.0366     0.0732     0.1099     0.1465     0.1831
            0.2197     0.2563     0.2930     0.3296     0.3662
            0.4028     0.4394     0.4761     0.5127     0.5493
            0.5859     0.6282     0.6394     0.6507     0.6620
            0.6732     0.6845     0.6958     0.7070     0.7183
            0.7296     0.7408     0.7521     0.7634     0.7746
            0.7859     0.7972     0.8085     0.8197     0.8310
            0.8423     0.8535     0.8648     0.8761     0.8873
            0.8986     0.9099     0.9211     0.9324     0.9437
            0.9549     0.9662     0.9775     0.9887     1.0000


  ***********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  ***********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ YES
    Water Quality .......... NO
```

Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date 06/06/2018 10:30:00
Ending Date 06/08/2018 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:01:00
Dry Time Step 00:01:00
Routing Time Step ..... 2.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 4
Head Tolerance ..... 0.001500 m

**********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**********	---------	-------
Total Precipitation	0.205	81.588
Evaporation Loss	0.000	0.000
Infiltration Loss	0.016	6.453
Surface Runoff	0.185	73.679
Final Storage	0.004	1.500
Continuity Error (%)	-0.054	

**********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**********	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.185	1.854
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.046	0.457
External Outflow	0.214	2.135
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.002
Final Stored Volume	0.013	0.133
Continuity Error (%)	1.900	

****
Highest Continuity Errors
****
Node hp4 (3.72%)
Node MH#4 (2.44%)
Node MH#6 (1.64%)
Node MH#2 (1.57%)
Node MH#5 (1.56%)

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
Link OR6 (41)
Link C4 (18)
Link C18 (16)
Link C5 (16)
Link C1 (15)

****
Routing Time Step Summary
****
Minimum Time Step : 1.51 sec
Average Time Step : 2.00 sec
Maximum Time Step : 2.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.96
Percent Not Converging : 10.54
Time Step Frequencies :
2.000 - 1.516 sec : 100.00 %
1.516 - 1.149 sec : 0.00 %
1.149 - 0.871 sec : 0.00 %
0.871 - 0.660 sec : 0.00 %
0.660 - 0.500 sec : 0.00 %

****
Subcatchment Runoff Summary
****

	Total	Total	Total	Total	Imperv	Perv	Total	Total	Peak	Runoff

Subcatchment	Precip mm	Runon mm	Evap mm	Infil mm	Runoff mm	Runoff mm	Runoff mm	Runoff 10^6 ltr	Runoff CMS	Coeff
S1	81.59	0.00	0.00	6.43	47.49	26.21	73.70	0.35	0.22	0.903
S2	81.59	0.00	0.00	6.37	47.49	26.28	73.77	0.16	0.10	0.904
S3	81.59	0.00	0.00	6.44	47.49	26.21	73.70	0.33	0.21	0.903
S4	81.59	0.00	0.00	6.49	47.48	26.15	73.63	0.39	0.24	0.903
S5	81.59	0.00	0.00	6.50	47.48	26.15	73.63	0.53	0.32	0.902
S6	81.59	0.00	0.00	6.30	47.50	26.35	73.86	0.09	0.06	0.905

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
CB#1&2	JUNCTION	0.01	0.28	189.99	0 02:01	0.28
CB#11&12	JUNCTION	0.00	0.19	190.01	0 01:53	0.19
CB#3&4	JUNCTION	0.01	0.26	189.99	0 02:02	0.26
CB#7&8	JUNCTION	0.01	0.22	189.99	0 02:03	0.22
CB#9&10	JUNCTION	0.01	0.26	189.99	0 02:02	0.26
CB5&6	JUNCTION	0.01	0.27	189.98	0 02:16	0.27
HP1	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP2	JUNCTION	0.00	0.08	189.99	0 02:02	0.08
HP3	JUNCTION	0.00	0.05	189.99	0 02:03	0.04
hp4	JUNCTION	0.00	0.08	189.98	0 02:16	0.08
HP5	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP6	JUNCTION	0.00	0.00	190.13	0 00:00	0.00
MH#1	JUNCTION	0.90	3.57	190.03	0 01:50	3.57
MH#2	JUNCTION	0.95	3.62	190.03	0 01:50	3.62
MH#3	JUNCTION	1.01	3.69	190.03	0 01:50	3.69
MH#4	JUNCTION	0.94	3.62	190.03	0 01:50	3.62
MH#5	JUNCTION	1.01	3.70	190.04	0 01:40	3.70
MH#6	JUNCTION	1.10	3.78	190.03	0 01:50	3.78
MH#7-A	JUNCTION	1.16	3.83	190.02	0 01:50	3.83
MH#7-B	JUNCTION	1.15	3.65	189.81	0 01:30	3.63
Southwood1200	OUTFALL	1.22	3.75	189.84	0 01:30	3.75
DryPond	STORAGE	0.09	1.62	189.96	0 02:25	1.62

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
CB#1&2	JUNCTION	0.000	0.138	0 01:40	0	0.0782	-0.484	
CB#11&12	JUNCTION	0.000	0.026	0 01:40	0	0.0071	0.126	
CB#3&4	JUNCTION	0.000	0.137	0 01:40	0	0.0845	-0.806	
CB#7&8	JUNCTION	0.000	0.114	0 01:40	0	0.0805	-0.682	
CB#9&10	JUNCTION	0.000	0.122	0 01:40	0	0.0691	-0.486	
CB5&6	JUNCTION	0.000	0.016	0 02:11	0	0.018	-0.143	
HP1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP2	JUNCTION	0.000	0.055	0 01:41	0	0.0356	4.582	
HP3	JUNCTION	0.000	0.023	0 01:44	0	0.0242	1.648	
hp4	JUNCTION	0.000	0.013	0 02:04	0	0.0163	3.864	
HP5	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP6	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
MH#1	JUNCTION	0.058	0.058	0 01:40	0.0894	0.0955	-0.088	
MH#2	JUNCTION	0.103	0.161	0 01:40	0.162	0.349	1.594	
MH#3	JUNCTION	0.206	0.773	0 01:32	0.329	2.26	1.370	
MH#4	JUNCTION	0.221	0.952	0 01:32	0.353	1.77	2.505	
MH#5	JUNCTION	0.239	0.239	0 01:40	0.39	0.467	1.584	
MH#6	JUNCTION	0.325	0.475	0 01:32	0.53	2.85	1.671	
MH#7-A	JUNCTION	0.000	0.283	0 02:59	0	2.54	1.347	
MH#7-B	JUNCTION	0.000	0.284	0 02:59	0	2.57	0.447	
Southwood1200	OUTFALL	0.000	0.284	0 02:59	0	2.59	0.000	
DryPond	STORAGE	0.000	0.984	0 01:32	0	0.757	-0.467	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters

MH#1	JUNCTION	27.31	3.122	0.141
MH#2	JUNCTION	16.56	2.825	0.000
MH#3	JUNCTION	12.01	2.613	0.000
MH#4	JUNCTION	11.26	2.568	0.302
MH#5	JUNCTION	18.11	2.897	0.000
MH#6	JUNCTION	13.80	2.702	0.000
MH#7-A	JUNCTION	15.11	2.758	0.067
MH#7-B	JUNCTION	36.29	3.046	0.344

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CMS
DryPond	0.037	4	0	0	0.746	73	0 02:25	0.226

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Southwood1200	99.56	0.019	0.284	2.592
System	99.56	0.019	0.284	2.592

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.776	0 01:32	0.90	1.12	1.00
C10	CHANNEL	0.000	0 00:00	0.00	0.00	0.41
C11	CHANNEL	0.012	0 02:03	0.12	0.00	0.48
C12	CHANNEL	0.016	0 01:45	0.15	0.00	0.53
C13	CHANNEL	0.055	0 01:41	0.21	0.01	0.48
C14	CHANNEL	0.000	0 00:00	0.00	0.00	0.35
C15	CHANNEL	0.015	0 01:43	0.15	0.00	0.56
C16	CHANNEL	0.000	0 00:00	0.00	0.00	0.44
C18	CONDUIT	0.058	0 01:38	0.36	0.48	1.00
C19	CHANNEL	0.000	0 00:00	0.00	0.00	0.30
C2	CONDUIT	0.474	0 01:32	0.55	0.64	1.00
C3	CONDUIT	0.283	0 02:59	0.33	0.54	1.00
C4	CONDUIT	0.284	0 02:59	1.00	1.33	1.00
C5	CONDUIT	0.179	0 01:34	0.63	0.84	1.00
C6	CONDUIT	0.143	0 01:33	0.32	0.43	1.00
C7	CHANNEL	0.016	0 02:11	0.15	0.00	0.55
C8	CHANNEL	0.012	0 02:03	0.21	0.01	0.19
C9	CHANNEL	0.020	0 01:44	0.15	0.00	0.48
CB1/2	ORIFICE	0.137	0 01:40			
CB3/4	ORIFICE	0.136	0 01:40			
CB7/8	ORIFICE	0.114	0 01:40			
CB9/10	ORIFICE	0.122	0 01:40			
OR1	ORIFICE	0.026	0 01:40			
OR6	ORIFICE	0.284	0 02:59			1.00
OR7	ORIFICE	0.984	0 01:32			
orfice	ORIFICE	0.011	0 03:05			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.01	0.00	0.99	0.00	0.00	0.00	0.01	0.00
C10	1.00	0.92	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11	1.00	0.04	0.00	0.00	0.91	0.04	0.00	0.00	0.02	0.00
C12	1.00	0.04	0.00	0.00	0.90	0.06	0.00	0.00	0.01	0.00
C13	1.00	0.04	0.00	0.00	0.90	0.06	0.00	0.00	0.01	0.00

C14	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.04	0.00	0.00	0.90	0.06	0.00	0.00	0.01	0.00
C16	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	0.01	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C19	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.01	0.00	0.99	0.00	0.00	0.00	0.01	0.00
C7	1.00	0.04	0.00	0.00	0.83	0.12	0.00	0.00	0.01	0.00
C8	1.00	0.05	0.00	0.00	0.95	0.00	0.00	0.00	0.93	0.00
C9	1.00	0.04	0.00	0.00	0.91	0.04	0.00	0.00	0.01	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	11.26	11.26	12.01	0.05	0.01
C18	27.31	27.31	28.94	0.01	0.01
C2	12.55	12.55	13.80	0.01	0.05
C3	14.31	14.31	15.11	0.01	0.35
C4	36.29	36.29	36.32	0.84	1.41
C5	25.36	25.36	29.10	0.01	0.08
C6	17.87	17.87	19.02	0.01	0.02

Analysis begun on: Thu May 26 16:45:17 2022
Analysis ended on: Thu May 26 16:45:19 2022
Total elapsed time: 00:00:02

Appendix E

100 Year SCS Type II Storm Event – Input/Output Summary

100 YEAR SCS OUTPUT RESULTS

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 20
Number of subcatchments ... 6
Number of nodes 22
Number of links 26
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100Year-10Min	100Yr-10Min	INTENSITY	10 min.
100Year-15Min	100Yr-15Min	INTENSITY	15 min.
100Year-20Min	100Yr-20Min	INTENSITY	20 min.
100Year-30Min	100Yr-30Min	INTENSITY	30 min.
100Year-5Min	100Yr-5Min	INTENSITY	5 min.
5Year-10Min	5Yr-10Min	INTENSITY	10 min.
5Year-15Min	5Yr-15Min	INTENSITY	15 min.
5Year-20Min	5Yr-20Min	INTENSITY	20 min.
5Year-30Min	5Yr-30Min	INTENSITY	30 min.
5Year-5Min	5Yr-5Min	INTENSITY	5 min.
SCSII-100-Yr	SCSII-100Yr	INTENSITY	120 min.
SCSII-5-Year	SCSII-5-Year	INTENSITY	120 min.
SCSII-RuralStress	SCSII-RST	INTENSITY	120 min.
SCSII-Unit	SCSII-Unit	INTENSITY	120 min.
UrbanStressTest	UrbanStressTest	INTENSITY	15 min.
WaterQualityStorm10MIN	WaterQualityStorm-10MIN	INTENSITY	10 min.
WaterQualityStorm15MIN	WaterQualityStorm-15MIN	INTENSITY	15 min.
WaterQualityStorm20MIN	WaterQualityStorm-20MIN	INTENSITY	20 min.
WaterQualityStorm30MIN	WaterQualityStorm-30MIN	INTENSITY	30 min.
WaterQualityStorm5MIN	WaterQualityStorm-5MIN	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	0.48	110.00	60.00	1.0000	SCSII-100-Yr	MH#4
S2	0.22	75.00	60.00	1.0000	SCSII-100-Yr	MH#2
S3	0.45	100.00	60.00	1.0000	SCSII-100-Yr	MH#3
S4	0.53	90.00	60.00	1.0000	SCSII-100-Yr	MH#5
S5	0.72	120.00	60.00	1.0000	SCSII-100-Yr	MH#6
S6	0.12	75.00	60.00	1.0000	SCSII-100-Yr	MH#1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
CB#1&2	JUNCTION	189.71	0.32	0.0	
CB#11&12	JUNCTION	189.82	0.32	0.0	
CB#3&4	JUNCTION	189.73	0.32	0.0	
CB#7&8	JUNCTION	189.76	0.32	0.0	
CB#9&10	JUNCTION	189.72	0.32	0.0	
CB5&6	JUNCTION	189.71	0.32	0.0	
HP1	JUNCTION	190.05	0.32	0.0	
HP2	JUNCTION	189.91	0.32	0.0	
HP3	JUNCTION	189.94	0.32	0.0	
hp4	JUNCTION	189.90	0.32	0.0	
HP5	JUNCTION	190.05	0.32	0.0	
HP6	JUNCTION	190.13	0.36	0.0	
MH#1	JUNCTION	186.46	3.71	0.0	
MH#2	JUNCTION	186.40	3.42	0.0	
MH#3	JUNCTION	186.34	3.65	0.0	
MH#4	JUNCTION	186.41	3.92	0.0	
MH#5	JUNCTION	186.34	3.67	0.0	
MH#6	JUNCTION	186.25	3.71	0.0	
MH#7-A	JUNCTION	186.19	3.90	1.0	
MH#7-B	JUNCTION	186.16	3.99	0.0	
Southwood1200	OUTFALL	186.09	0.63	0.0	
DryPond	STORAGE	188.34	1.93	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH#4	MH#3	CONDUIT	69.9	0.0643	0.0130
C10	HP6	CB#9&10	CONDUIT	35.0	1.1486	0.0130
C11	HP3	CB#3&4	CONDUIT	43.6	0.4883	0.0130

C12	HP2	CB#3&4	CONDUIT	43.6	0.4057	0.0130
C13	HP2	CB#7&8	CONDUIT	35.0	0.4114	0.0130
C14	HP5	CB#7&8	CONDUIT	35.0	0.8286	0.0130
C15	HP2	CB#1&2	CONDUIT	49.3	0.3977	0.0130
C16	HP1	CB#1&2	CONDUIT	29.0	1.1759	0.0130
C18	MH#1	MH#2	CONDUIT	16.0	0.1817	0.0130
C19	HP1	CB#11&12	CONDUIT	17.4	1.3449	0.0130
C2	MH#3	MH#6	CONDUIT	87.3	0.0745	0.0130
C3	MH#6	MH#7-A	CONDUIT	94.5	0.0370	0.0130
C4	MH#7-B	Southwood1200	CONDUIT	40.8	0.1202	0.0130
C5	MH#5	MH#6	CONDUIT	58.3	0.1201	0.0130
C6	MH#2	MH#3	CONDUIT	42.7	0.0890	0.0130
C7	hp4	CB5&6	CONDUIT	10.0	1.9003	0.0130
C8	HP3	hp4	CONDUIT	35.0	0.1229	0.0130
C9	HP3	CB#9&10	CONDUIT	35.0	0.6229	0.0130
CB1/2	CB#1&2	MH#6	ORIFICE			
CB3/4	CB#3&4	MH#3	ORIFICE			
CB7/8	CB#7&8	MH#5	ORIFICE			
CB9/10	CB#9&10	MH#2	ORIFICE			
OR1	CB#11&12	MH#7-A	ORIFICE			
OR6	MH#7-A	MH#7-B	ORIFICE			
OR7	DryPond	MH#4	ORIFICE			
orfice	CB5&6	DryPond	ORIFICE			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	1.05	0.87	0.26	1.05	1	0.69
C10	NTRoad	0.32	3.09	0.14	20.15	1	6.86
C11	NTRoad	0.32	3.09	0.14	20.15	1	4.48
C12	NTRoad	0.32	3.09	0.14	20.15	1	4.08
C13	NTRoad	0.32	3.09	0.14	20.15	1	4.11
C14	NTRoad	0.32	3.09	0.14	20.15	1	5.83
C15	NTRoad	0.32	3.09	0.14	20.15	1	4.04
C16	NTRoad	0.32	3.09	0.14	20.15	1	6.95
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.12
C19	NTRoad	0.32	3.09	0.14	20.15	1	7.43
C2	CIRCULAR	1.05	0.87	0.26	1.05	1	0.75
C3	CIRCULAR	1.05	0.87	0.26	1.05	1	0.53
C4	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C5	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C6	CIRCULAR	0.75	0.44	0.19	0.75	1	0.33
C7	NTRoad	0.32	3.09	0.14	20.15	1	8.83
C8	NTRoad	0.32	3.09	0.14	20.15	1	2.24
C9	NTRoad	0.32	3.09	0.14	20.15	1	5.05

****
Transect Summary
****

Transect NTRoad
Area:

0.0004	0.0015	0.0034	0.0060	0.0094
0.0136	0.0185	0.0242	0.0306	0.0378
0.0457	0.0544	0.0638	0.0740	0.0850
0.0967	0.1091	0.1224	0.1363	0.1511
0.1665	0.1828	0.1998	0.2178	0.2370
0.2571	0.2780	0.2999	0.3226	0.3461
0.3706	0.3959	0.4220	0.4491	0.4770
0.5058	0.5354	0.5660	0.5973	0.6296
0.6627	0.6967	0.7316	0.7673	0.8039
0.8414	0.8798	0.9190	0.9590	1.0000

Hrad:

0.0221	0.0441	0.0662	0.0882	0.1103
0.1324	0.1544	0.1765	0.1985	0.2206
0.2427	0.2647	0.2868	0.3088	0.3309
0.3530	0.3750	0.3971	0.4192	0.4412
0.4633	0.4853	0.5074	0.5208	0.5622
0.6007	0.6364	0.6694	0.6999	0.7280
0.7541	0.7781	0.8003	0.8207	0.8397
0.8571	0.8733	0.8882	0.9020	0.9147
0.9265	0.9374	0.9475	0.9569	0.9655
0.9735	0.9809	0.9878	0.9941	1.0000

Width:

0.0183	0.0365	0.0548	0.0730	0.0913
0.1095	0.1278	0.1460	0.1643	0.1825
0.2008	0.2190	0.2373	0.2555	0.2738
0.2920	0.3103	0.3285	0.3468	0.3650
0.3833	0.4015	0.4198	0.4540	0.4750
0.4960	0.5170	0.5380	0.5590	0.5800
0.6010	0.6220	0.6430	0.6640	0.6850
0.7060	0.7270	0.7480	0.7690	0.7900
0.8110	0.8320	0.8530	0.8740	0.8950
0.9160	0.9370	0.9580	0.9790	1.0000

Transect PondSpillway1
Area:

0.0005	0.0019	0.0043	0.0076	0.0119
0.0172	0.0234	0.0306	0.0387	0.0477

0.0578 0.0688 0.0807 0.0936 0.1074
0.1222 0.1380 0.1547 0.1724 0.1910
0.2104 0.2304 0.2510 0.2720 0.2935
0.3156 0.3382 0.3613 0.3849 0.4090
0.4337 0.4588 0.4845 0.5107 0.5374
0.5646 0.5924 0.6206 0.6494 0.6787
0.7085 0.7388 0.7697 0.8010 0.8329
0.8653 0.8982 0.9316 0.9655 1.0000
Hrad:
0.0174 0.0348 0.0522 0.0696 0.0870
0.1044 0.1218 0.1392 0.1566 0.1740
0.1914 0.2088 0.2262 0.2436 0.2610
0.2784 0.2958 0.3132 0.3306 0.3480
0.3710 0.3958 0.4203 0.4444 0.4682
0.4917 0.5149 0.5378 0.5605 0.5830
0.6052 0.6273 0.6492 0.6708 0.6924
0.7137 0.7349 0.7560 0.7769 0.7977
0.8184 0.8390 0.8594 0.8798 0.9000
0.9202 0.9403 0.9603 0.9802 1.0000
Width:
0.0275 0.0550 0.0825 0.1100 0.1375
0.1650 0.1926 0.2201 0.2476 0.2751
0.3026 0.3301 0.3576 0.3851 0.4126
0.4401 0.4676 0.4951 0.5227 0.5502
0.5687 0.5836 0.5984 0.6133 0.6282
0.6431 0.6579 0.6728 0.6877 0.7026
0.7174 0.7323 0.7472 0.7620 0.7769
0.7918 0.8067 0.8215 0.8364 0.8513
0.8661 0.8810 0.8959 0.9108 0.9256
0.9405 0.9554 0.9703 0.9851 1.0000

Transect PondSpillway2
Area:
0.0006 0.0023 0.0052 0.0092 0.0144
0.0207 0.0281 0.0367 0.0465 0.0574
0.0695 0.0827 0.0970 0.1125 0.1292
0.1470 0.1659 0.1860 0.2072 0.2291
0.2513 0.2736 0.2963 0.3191 0.3422
0.3656 0.3892 0.4131 0.4372 0.4615
0.4861 0.5109 0.5360 0.5613 0.5869
0.6127 0.6388 0.6651 0.6916 0.7185
0.7455 0.7728 0.8003 0.8281 0.8562
0.8844 0.9130 0.9417 0.9707 1.0000
Hrad:
0.0147 0.0295 0.0442 0.0590 0.0737
0.0885 0.1032 0.1179 0.1327 0.1474
0.1622 0.1769 0.1916 0.2064 0.2211
0.2359 0.2506 0.2654 0.2808 0.3069
0.3328 0.3584 0.3838 0.4090 0.4339
0.4586 0.4831 0.5074 0.5315 0.5553
0.5790 0.6026 0.6259 0.6491 0.6721
0.6949 0.7176 0.7401 0.7625 0.7848
0.8069 0.8288 0.8506 0.8723 0.8939
0.9154 0.9367 0.9579 0.9790 1.0000
Width:
0.0391 0.0781 0.1172 0.1563 0.1954
0.2344 0.2735 0.3126 0.3517 0.3907
0.4298 0.4689 0.5080 0.5470 0.5861
0.6252 0.6643 0.7033 0.7406 0.7489
0.7573 0.7657 0.7740 0.7824 0.7908
0.7991 0.8075 0.8159 0.8243 0.8326
0.8410 0.8494 0.8577 0.8661 0.8745
0.8828 0.8912 0.8996 0.9079 0.9163
0.9247 0.9330 0.9414 0.9498 0.9582
0.9665 0.9749 0.9833 0.9916 1.0000

Transect PondSpillway3
Area:
0.0005 0.0019 0.0043 0.0077 0.0120
0.0172 0.0234 0.0306 0.0387 0.0478
0.0579 0.0689 0.0808 0.0937 0.1076
0.1224 0.1382 0.1550 0.1727 0.1913
0.2109 0.2314 0.2525 0.2741 0.2961
0.3186 0.3416 0.3650 0.3889 0.4133
0.4382 0.4635 0.4893 0.5155 0.5423
0.5695 0.5972 0.6253 0.6540 0.6831
0.7126 0.7427 0.7732 0.8042 0.8356
0.8676 0.9000 0.9328 0.9662 1.0000
Hrad:
0.0170 0.0341 0.0511 0.0681 0.0851
0.1022 0.1192 0.1362 0.1532 0.1703
0.1873 0.2043 0.2213 0.2384 0.2554
0.2724 0.2894 0.3065 0.3235 0.3405
0.3575 0.3781 0.4034 0.4283 0.4529
0.4772 0.5012 0.5250 0.5484 0.5717
0.5946 0.6174 0.6400 0.6623 0.6845
0.7065 0.7283 0.7500 0.7715 0.7929
0.8141 0.8352 0.8562 0.8771 0.8978
0.9185 0.9390 0.9594 0.9798 1.0000
Width:
0.0281 0.0562 0.0843 0.1124 0.1405
0.1685 0.1966 0.2247 0.2528 0.2809
0.3090 0.3371 0.3652 0.3933 0.4214
0.4495 0.4776 0.5056 0.5337 0.5618
0.5899 0.6122 0.6260 0.6399 0.6537

```
            0.6676     0.6814     0.6953     0.7091     0.7230
            0.7368     0.7507     0.7645     0.7784     0.7922
            0.8061     0.8199     0.8338     0.8476     0.8615
            0.8753     0.8892     0.9030     0.9169     0.9307
            0.9446     0.9584     0.9723     0.9861     1.0000

  Transect Road
  Area:
            0.0005     0.0019     0.0043     0.0077     0.0120
            0.0173     0.0236     0.0308     0.0390     0.0481
            0.0582     0.0693     0.0813     0.0943     0.1083
            0.1232     0.1393     0.1563     0.1740     0.1922
            0.2109     0.2303     0.2502     0.2706     0.2916
            0.3132     0.3354     0.3581     0.3813     0.4052
            0.4296     0.4545     0.4800     0.5061     0.5328
            0.5600     0.5877     0.6161     0.6450     0.6744
            0.7045     0.7350     0.7662     0.7979     0.8302
            0.8630     0.8964     0.9304     0.9649     1.0000
  Hrad:
            0.0205     0.0410     0.0615     0.0820     0.1025
            0.1230     0.1435     0.1640     0.1845     0.2050
            0.2255     0.2460     0.2665     0.2870     0.3075
            0.3280     0.3441     0.3834     0.4208     0.4563
            0.4899     0.5219     0.5522     0.5811     0.6084
            0.6345     0.6592     0.6828     0.7052     0.7266
            0.7469     0.7663     0.7848     0.8024     0.8193
            0.8354     0.8508     0.8655     0.8795     0.8930
            0.9058     0.9181     0.9299     0.9413     0.9521
            0.9625     0.9724     0.9820     0.9912     1.0000
  Width:
            0.0272     0.0544     0.0816     0.1089     0.1361
            0.1633     0.1905     0.2177     0.2449     0.2721
            0.2994     0.3266     0.3538     0.3810     0.4082
            0.4354     0.4748     0.4907     0.5066     0.5225
            0.5385     0.5544     0.5703     0.5862     0.6021
            0.6180     0.6340     0.6499     0.6658     0.6817
            0.6976     0.7135     0.7294     0.7454     0.7613
            0.7772     0.7931     0.8090     0.8249     0.8408
            0.8568     0.8727     0.8886     0.9045     0.9204
            0.9363     0.9523     0.9682     0.9841     1.0000

  Transect Road2
  Area:
            0.0006     0.0023     0.0051     0.0091     0.0142
            0.0205     0.0279     0.0364     0.0461     0.0569
            0.0689     0.0820     0.0962     0.1116     0.1281
            0.1458     0.1646     0.1844     0.2044     0.2248
            0.2456     0.2667     0.2881     0.3100     0.3321
            0.3546     0.3775     0.4007     0.4243     0.4482
            0.4724     0.4971     0.5220     0.5473     0.5730
            0.5990     0.6254     0.6521     0.6792     0.7066
            0.7343     0.7625     0.7909     0.8197     0.8489
            0.8784     0.9083     0.9385     0.9691     1.0000
  Hrad:
            0.0167     0.0335     0.0502     0.0670     0.0837
            0.1004     0.1172     0.1339     0.1507     0.1674
            0.1841     0.2009     0.2176     0.2344     0.2511
            0.2678     0.2897     0.3213     0.3521     0.3820
            0.4111     0.4395     0.4671     0.4939     0.5201
            0.5456     0.5704     0.5946     0.6182     0.6411
            0.6635     0.6854     0.7067     0.7274     0.7477
            0.7675     0.7867     0.8056     0.8240     0.8419
            0.8594     0.8765     0.8932     0.9096     0.9255
            0.9411     0.9563     0.9712     0.9858     1.0000
  Width:
            0.0366     0.0732     0.1099     0.1465     0.1831
            0.2197     0.2563     0.2930     0.3296     0.3662
            0.4028     0.4394     0.4761     0.5127     0.5493
            0.5859     0.6282     0.6394     0.6507     0.6620
            0.6732     0.6845     0.6958     0.7070     0.7183
            0.7296     0.7408     0.7521     0.7634     0.7746
            0.7859     0.7972     0.8085     0.8197     0.8310
            0.8423     0.8535     0.8648     0.8761     0.8873
            0.8986     0.9099     0.9211     0.9324     0.9437
            0.9549     0.9662     0.9775     0.9887     1.0000


  ***********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  ***********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ YES
    Water Quality .......... NO
```

Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date 06/06/2018 10:30:00
Ending Date 06/08/2018 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:01:00
Dry Time Step 00:01:00
Routing Time Step ..... 2.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 4
Head Tolerance ..... 0.001500 m

**********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**********	---------	-------
Total Precipitation	0.272	108.000
Evaporation Loss	0.000	0.000
Infiltration Loss	0.022	8.802
Surface Runoff	0.244	96.813
Final Storage	0.006	2.390
Continuity Error (%)	-0.004	

**********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**********	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.244	2.436
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.079	0.793
External Outflow	0.311	3.106
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.002
Final Stored Volume	0.013	0.133
Continuity Error (%)	-0.249	

****
Highest Continuity Errors
****
Node CB#7&8 (-146.92%)
Node DryPond (-2.17%)
Node MH#2 (1.50%)
Node MH#3 (1.29%)
Node MH#5 (1.25%)

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
Link OR6 (20)
Link C4 (4)
Link C1 (4)
Link C5 (3)
Link C18 (3)

****
Routing Time Step Summary
****
Minimum Time Step : 0.41 sec
Average Time Step : 2.00 sec
Maximum Time Step : 2.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.24
Percent Not Converging : 2.30
Time Step Frequencies :
2.000 - 1.516 sec : 100.00 %
1.516 - 1.149 sec : 0.00 %
1.149 - 0.871 sec : 0.00 %
0.871 - 0.660 sec : 0.00 %
0.660 - 0.500 sec : 0.00 %

****
Subcatchment Runoff Summary
****

	Total	Total	Total	Total	Imperv	Perv	Total	Total	Peak	Runoff

Subcatchment	Precip mm	Runon mm	Evap mm	Infil mm	Runoff mm	Runoff mm	Runoff mm	Runoff 10^6 ltr	Runoff CMS	Coeff
S1	108.00	0.00	0.00	8.80	63.30	33.52	96.83	0.46	0.03	0.897
S2	108.00	0.00	0.00	8.80	63.30	33.56	96.87	0.21	0.02	0.897
S3	108.00	0.00	0.00	8.80	63.30	33.52	96.82	0.43	0.03	0.897
S4	108.00	0.00	0.00	8.80	63.30	33.49	96.79	0.51	0.04	0.896
S5	108.00	0.00	0.00	8.80	63.30	33.48	96.78	0.70	0.05	0.896
S6	108.00	0.00	0.00	8.80	63.31	33.60	96.91	0.12	0.01	0.897

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
CB#1&2	JUNCTION	0.00	0.00	189.71	0 02:43	0.00
CB#11&12	JUNCTION	0.00	0.00	189.82	0 02:41	0.00
CB#3&4	JUNCTION	0.00	0.00	189.73	0 00:00	0.00
CB#7&8	JUNCTION	0.00	0.01	189.77	0 02:43	0.00
CB#9&10	JUNCTION	0.00	0.00	189.72	0 00:00	0.00
CB5&6	JUNCTION	0.00	0.00	189.71	0 00:00	0.00
HP1	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP2	JUNCTION	0.00	0.00	189.91	0 00:00	0.00
HP3	JUNCTION	0.00	0.00	189.94	0 00:00	0.00
hp4	JUNCTION	0.00	0.00	189.90	0 00:00	0.00
HP5	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP6	JUNCTION	0.00	0.00	190.13	0 00:00	0.00
MH#1	JUNCTION	0.88	3.14	189.59	0 02:43	3.04
MH#2	JUNCTION	0.93	3.15	189.55	0 02:43	3.09
MH#3	JUNCTION	1.00	3.19	189.53	0 02:41	3.16
MH#4	JUNCTION	0.93	3.10	189.51	0 02:43	3.09
MH#5	JUNCTION	0.99	3.38	189.72	0 02:43	3.15
MH#6	JUNCTION	1.09	3.36	189.61	0 02:43	3.25
MH#7-A	JUNCTION	1.15	3.71	189.90	0 02:46	3.31
MH#7-B	JUNCTION	1.14	3.86	190.02	0 02:45	3.58
Southwood1200	OUTFALL	1.22	3.75	189.84	0 01:30	3.75
DryPond	STORAGE	0.04	1.12	189.46	0 02:45	1.12

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
CB#1&2	JUNCTION	0.000	0.001	0 02:43	0	1.36e-06	-8.494	ltr
CB#11&12	JUNCTION	0.000	0.000	0 02:43	0	5.85e-07	-9.263	ltr
CB#3&4	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
CB#7&8	JUNCTION	0.000	0.013	0 02:43	0	2.55e-05	-59.501	
CB#9&10	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
CB5&6	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP2	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP3	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
hp4	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP5	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP6	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
MH#1	JUNCTION	0.009	0.026	0 01:29	0.117	0.121	0.631	
MH#2	JUNCTION	0.016	0.071	0 01:29	0.213	0.363	1.520	
MH#3	JUNCTION	0.032	0.369	0 01:29	0.433	2.35	1.303	
MH#4	JUNCTION	0.034	0.274	0 01:29	0.464	1.34	0.658	
MH#5	JUNCTION	0.038	0.038	0 14:00	0.513	0.535	1.268	
MH#6	JUNCTION	0.051	0.356	0 01:28	0.697	3.78	1.180	
MH#7-A	JUNCTION	0.000	0.351	0 01:28	0	3.86	0.930	
MH#7-B	JUNCTION	0.000	0.351	0 01:28	0	3.88	0.015	
Southwood1200	OUTFALL	0.000	0.351	0 01:28	0	3.9	0.000	
DryPond	STORAGE	0.000	0.277	0 01:29	0	0.394	-2.123	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters

MH#1	JUNCTION	27.23	2.688	0.575
MH#2	JUNCTION	16.71	2.347	0.276
MH#3	JUNCTION	13.42	2.113	0.465
MH#4	JUNCTION	12.88	2.048	0.822
MH#5	JUNCTION	18.16	2.578	0.293
MH#6	JUNCTION	14.62	2.280	0.352
MH#7-A	JUNCTION	15.34	2.632	0.193
MH#7-B	JUNCTION	36.28	3.257	0.133

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CMS
DryPond	0.014	1	0	0	0.403	40	0 02:45	0.217

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Southwood1200	99.83	0.029	0.351	3.898
System	99.83	0.029	0.351	3.898

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.274	0 01:29	0.32	0.40	1.00
C10	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C11	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C12	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C13	CHANNEL	0.000	0 00:00	0.00	0.00	0.01
C14	CHANNEL	0.000	0 00:00	0.00	0.00	0.01
C15	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C16	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C18	CONDUIT	0.026	0 01:29	0.17	0.22	1.00
C19	CHANNEL	0.000	0 00:00	0.00	0.00	0.01
C2	CONDUIT	0.369	0 01:29	0.43	0.50	1.00
C3	CONDUIT	0.356	0 01:28	0.41	0.68	1.00
C4	CONDUIT	0.351	0 01:28	1.24	1.65	1.00
C5	CONDUIT	0.038	0 13:24	0.13	0.18	1.00
C6	CONDUIT	0.071	0 01:29	0.16	0.21	1.00
C7	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C8	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C9	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
CB1/2	ORIFICE	0.001	0 02:43			
CB3/4	ORIFICE	0.000	0 00:00			
CB7/8	ORIFICE	0.013	0 02:43			
CB9/10	ORIFICE	0.000	0 00:00			
OR1	ORIFICE	0.000	0 02:41			
OR6	ORIFICE	0.351	0 01:28			1.00
OR7	ORIFICE	0.277	0 01:29			
orfice	ORIFICE	0.000	0 00:00			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C10	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C13	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C14	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C16	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00
C19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C7	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	12.88	12.88	13.42	0.01	0.01
C18	27.23	27.23	28.85	0.01	0.01
C2	13.90	13.90	14.62	0.01	0.03
C3	14.75	14.75	15.34	0.01	0.08
C4	36.28	36.28	36.32	0.24	2.13
C5	25.30	25.30	29.03	0.01	0.03
C6	17.94	17.94	19.09	0.01	0.02

Analysis begun on: Thu May 26 16:55:55 2022
Analysis ended on: Thu May 26 16:55:57 2022
Total elapsed time: 00:00:02

100 YEAR SCS INPUT RESULTS

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CMS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        YES
SKIP_STEADY_STATE    NO

START_DATE           06/06/2018
START_TIME           10:30:00
REPORT_START_DATE    06/06/2018
REPORT_START_TIME    10:30:00
END_DATE             06/08/2018
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         2
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              4

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
100Year-10Min    INTENSITY 0:10     1.0      TIMESERIES 100Yr-10Min
100Year-15Min    INTENSITY 0:15     1.0      TIMESERIES 100Yr-15Min
100Year-20Min    INTENSITY 0:20     1.0      TIMESERIES 100Yr-20Min
100Year-30Min    INTENSITY 0:30     1.0      TIMESERIES 100Yr-30Min
100Year-5Min     INTENSITY 0:05     1.0      TIMESERIES 100Yr-5Min
5Year-10Min      INTENSITY 0:10     1.0      TIMESERIES 5Yr-10Min
5Year-15Min      INTENSITY 0:15     1.0      TIMESERIES 5Yr-15Min
5Year-20Min      INTENSITY 0:20     1.0      TIMESERIES 5Yr-20Min
5Year-30Min      INTENSITY 0:30     1.0      TIMESERIES 5Yr-30Min
5Year-5Min       INTENSITY 0:05     1.0      TIMESERIES 5Yr-5Min
SCSII-100-Yr     INTENSITY 2:00     1.0      TIMESERIES SCSII-100Yr
SCSII-5-Year     INTENSITY 2:00     1.0      TIMESERIES SCSII-5-Year
SCSII-RuralStress INTENSITY 2:00     1.0      TIMESERIES SCSII-RST
SCSII-Unit       INTENSITY 2:00     1.0      TIMESERIES SCSII-Unit
UrbanStressTest  INTENSITY 0:15     1.0      TIMESERIES UrbanStressTest
WaterQualityStorm10MIN INTENSITY 0:10     1.0      TIMESERIES WaterQualityStorm-10MIN
WaterQualityStorm15MIN INTENSITY 0:15     1.0      TIMESERIES WaterQualityStorm-15MIN
WaterQualityStorm20MIN INTENSITY 0:20     1.0      TIMESERIES WaterQualityStorm-20MIN
WaterQualityStorm30MIN INTENSITY 0:30     1.0      TIMESERIES WaterQualityStorm-30MIN
WaterQualityStorm5MIN INTENSITY 0:05     1.0      TIMESERIES WaterQualityStorm-5MIN

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
S1               SCSII-100-Yr     MH#4             0.479    60       110      1        0
S2               SCSII-100-Yr     MH#2             0.2194   60       75       1        0
S3               SCSII-100-Yr     MH#3             0.4467   60       100      1        0
S4               SCSII-100-Yr     MH#5             0.5299   60       90       1        0
S5               SCSII-100-Yr     MH#6             0.7202   60       120      1        0
S6               SCSII-100-Yr     MH#1             0.121    60       75       1        0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
S1               0.013      0.15       2.5        7.5        0          OUTLET
S2               0.013      0.15       2.5        7.5        0          OUTLET
S3               0.013      0.15       2.5        7.5        0          OUTLET
S4               0.013      0.15       2.5        7.5        0          OUTLET
S5               0.013      0.15       2.5        7.5        0          OUTLET
S6               0.013      0.15       2.5        7.5        0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
S1               25         0.5        4          4          0
S2               25         0.5        4          4          0
```

```
S3               25         0.5        4          4          0
S4               25         0.5        4          4          0
S5               25         0.5        4          4          0
S6               25         0.5        4          4          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
CB#1&2           189.711    0.318      0          0          0
CB#11&12         189.818    0.318      0          0          0
CB#3&4           189.73     0.318      0          0          0
CB#7&8           189.763    0.318      0          0          0
CB#9&10          189.725    0.318      0          0          0
CB5&6            189.71     0.318      0          0          0
HP1              190.052    0.318      0          0          0
HP2              189.907    0.318      0          0          0
HP3              189.943    0.318      0          0          0
hp4              189.9      0.318      0          0          0
HP5              190.053    0.318      0          0          0
HP6              190.127    0.357      0          0          0
MH#1             186.457    3.713      0          0.318      0
MH#2             186.403    3.423      0          0.3        0
MH#3             186.34     3.653      0          0.318      0
MH#4             186.41     3.92       0          0.318      0
MH#5             186.345    3.671      0          0.318      0
MH#6             186.25     3.707      0          0.317      0
MH#7-A           186.19     3.9        0          0.317      1
MH#7-B           186.16     3.99       0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Southwood1200    186.086    TIMESERIES 100YrTailwater-Elev. NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
-------- --------
DryPond          188.34   1.93       0          TABULAR    Pond                         0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ---------
-
C1               MH#4             MH#3             69.935     0.013      0          0.025      0          0
C10              HP6              CB#9&10          35         0.013      0          0          0          0
C11              HP3              CB#3&4           43.625     0.013      0          0          0          0
C12              HP2              CB#3&4           43.625     0.013      0          0          0          0
C13              HP2              CB#7&8           35         0.013      0          0          0          0
C14              HP5              CB#7&8           35         0.013      0          0          0          0
C15              HP2              CB#1&2           49.284     0.013      0          0          0          0
C16              HP1              CB#1&2           29         0.013      0          0          0          0
C18              MH#1             MH#2             15.958     0.013      0          0.025      0          0
C19              HP1              CB#11&12         17.4       0.013      0          0          0          0
C2               MH#3             MH#6             87.25      0.013      0          0.025      0          0
C3               MH#6             MH#7-A           94.54      0.013      0          0.025      0          0
C4               MH#7-B           Southwood1200    40.759     0.013      0          0.025      0          0
C5               MH#5             MH#6             58.299     0.013      0          0.025      0          0
C6               MH#2             MH#3             42.715     0.013      0          0.025      0          0
C7               hp4              CB5&6            10         0.013      0          0          0          0
C8               HP3              hp4              35         0.013      0          0          0          0
C9               HP3              CB#9&10          35         0.013      0          0          0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;
CB1/2            CB#1&2           MH#6             BOTTOM       0          0.614      NO       0
CB3/4            CB#3&4           MH#3             BOTTOM       0          0.614      NO       0
CB7/8            CB#7&8           MH#5             BOTTOM       0          0.614      NO       0
CB9/10           CB#9&10          MH#2             BOTTOM       0          0.614      NO       0
OR1              CB#11&12         MH#7-A           BOTTOM       0          0.65       NO       0
OR6              MH#7-A           MH#7-B           SIDE         0          0.614      NO       0
OR7              DryPond          MH#4             BOTTOM       0          0.614      NO       0
orfice           CB5&6            DryPond          BOTTOM       0          0.614      NO       0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C1               CIRCULAR     1.05             0          0          0          1
C10              IRREGULAR    NTRoad           0          0          0          1
C11              IRREGULAR    NTRoad           0          0          0          1
C12              IRREGULAR    NTRoad           0          0          0          1
C13              IRREGULAR    NTRoad           0          0          0          1
C14              IRREGULAR    NTRoad           0          0          0          1
C15              IRREGULAR    NTRoad           0          0          0          1
C16              IRREGULAR    NTRoad           0          0          0          1
C18              CIRCULAR     0.45             0          0          0          1
C19              IRREGULAR    NTRoad           0          0          0          1
C2               CIRCULAR     1.05             0          0          0          1
C3               CIRCULAR     1.05             0          0          0          1
C4               CIRCULAR     0.6              0          0          0          1
C5               CIRCULAR     0.6              0          0          0          1
C6               CIRCULAR     0.75             0          0          0          1
C7               IRREGULAR    NTRoad           0          0          0          1
C8               IRREGULAR    NTRoad           0          0          0          1
```

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C9               IRREGULAR    NTRoad           0          0          0          1
CB1/2            CIRCULAR     0.8              0          0          0
CB3/4            CIRCULAR     0.8              0          0          0
CB7/8            CIRCULAR     0.8              0          0          0
CB9/10           CIRCULAR     0.8              0          0          0
OR1              CIRCULAR     0.8              0          0          0
OR6              CIRCULAR     0.33             0          0          0
OR7              CIRCULAR     0.9              0          0          0
orfice           CIRCULAR     0.8              0          0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.15     0.15     0.013
X1 NTRoad            9        5.583    14.567   0.0      0.0      0.0      0.0      0.0
GR 0.3176   0        0.15     5.583    0.15     5.733    0        5.775    0.15     10.075
GR 0        14.375   0.15     14.417   0.15     14.567   0.3176   20.15
;
;Pond spill way for node RJ33
NC 0.01     0.01     0.15
X1 PondSpillway1     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.35   0        176.21   20.1     176.555  78.4
;
;Pond spill way for node RJ31
NC 0.01     0.01     0.15
X1 PondSpillway2     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.555  0        176.43   35.3     176.76   60.7
;
;Pond spill way for node RJ4
NC 0.01     0.01     0.15
X1 PondSpillway3     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.765  0        176.325  103.43   176.515  149.35
;
;Typical Road Cross Section
NC 0.15     0.15     0.013
X1 Road              9        5        13.85    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     5        0.15     5.15     0        5.15     0.15     9.425
GR 0        13.7     0.15     13.7     0.15     13.85    0.45     18.85
;
;Wider Road Section at Entrance of the development
NC 0.15     0.15     0.013
X1 Road2             9        4.15     17.15    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     4        0.15     4.15     0        4.15     0.15     10.65
GR 0        17.15    0.15     17.15    0.15     17.3     0.45     21.3

[LOSSES]
;;Link            Kentry     Kexit      Kavg       Flap Gate  Seepage
;;--------------- ---------- ---------- ---------- ---------- ----------
C1                0.5        0.5        0          NO         0
C18               0.5        0.5        0          NO         0
C2                0.5        0.5        0          NO         0
C3                0.5        0.5        0          NO         0
C4                0.5        0.5        0          NO         0
C5                0.5        0.5        0          NO         0
C6                0.5        0.5        0          NO         0

[CURVES]
;;Name            Type       X-Value    Y-Value
;;--------------- ---------- ---------- ----------
PS                Pump4      1          0.34921
PS                           2          0.32415
PS                           3          0.3
PS                           4          0.27813
PS                           5          0.25535
PS                           6          0.23128
PS                           7          0.20698
PS                           8          0.18195
PS                           9          0.15638
PS                           10         0.13038
PS                           11         0.10339
PS                           12         0.07679
PS                           13         0.04882
PS                           14         0.02168

Pond              Storage    0          0.36
Pond                         0.04       172.47
Pond                         1.04       537.902
Pond                         1.94       942.54

StoragePond       Storage    0          1991.2
StoragePond                  0.5        5787.1
StoragePond                  1          10547
StoragePond                  1.5        12120
StoragePond                  2          13451
StoragePond                  2.5        15820
StoragePond                  3          18306
StoragePond                  3.5        20828
StoragePond                  4          23947
StoragePond                  4.2        27244

[TIMESERIES]
;;Name            Date       Time       Value
;;--------------- ---------- ---------- ----------
;Depth (m)
100-YearTailWater 06/06/2018 10:31:00   0.172
100-YearTailWater 06/06/2018 10:32:00   0.172
```

```
100-YearTailWater 06/06/2018 10:33:00   0.172
100-YearTailWater 06/06/2018 10:34:00   0.172
100-YearTailWater 06/06/2018 10:35:00   0.172
100-YearTailWater 06/06/2018 10:36:00   0.172
100-YearTailWater 06/06/2018 10:37:00   0.172
100-YearTailWater 06/06/2018 10:38:00   0.1719998
100-YearTailWater 06/06/2018 10:39:00   0.171997
100-YearTailWater 06/06/2018 10:40:00   0.1719945
100-YearTailWater 06/06/2018 10:41:00   0.1719998
......
Too many data points (2250 in total).

100Yr-10Min                 0:00       3.83
100Yr-10Min                 0:10       4.35
100Yr-10Min                 0:20       5.05
100Yr-10Min                 0:30       6.02
100Yr-10Min                 0:40       7.47
100Yr-10Min                 0:50       9.83
100Yr-10Min                 1:00       14.28
100Yr-10Min                 1:10       25.26
100Yr-10Min                 1:20       67.16
100Yr-10Min                 1:30       172.68
100Yr-10Min                 1:40       51.34
100Yr-10Min                 1:50       27.82
100Yr-10Min                 2:00       18.55
100Yr-10Min                 2:10       13.75
100Yr-10Min                 2:20       10.87
100Yr-10Min                 2:30       8.97
100Yr-10Min                 2:40       7.63
100Yr-10Min                 2:50       6.63
100Yr-10Min                 3:00       5.87
100Yr-10Min                 3:10       5.26
100Yr-10Min                 3:20       4.77
100Yr-10Min                 3:30       4.37
100Yr-10Min                 3:40       4.03
100Yr-10Min                 3:50       3.74
100Yr-10Min                 4:00       0

100Yr-15Min                 0:00       3.83
100Yr-15Min                 0:15       4.35
100Yr-15Min                 0:30       6.36
100Yr-15Min                 0:45       9.19
100Yr-15Min                 1:00       16.45
100Yr-15Min                 1:15       46.45
100Yr-15Min                 1:30       143.67
100Yr-15Min                 1:45       32.45
100Yr-15Min                 2:00       17.25
100Yr-15Min                 2:15       11.53
100Yr-15Min                 2:30       8.62
100Yr-15Min                 2:45       6.87
100Yr-15Min                 3:00       5.71
100Yr-15Min                 3:15       4.89
100Yr-15Min                 3:30       4.28
100Yr-15Min                 3:45       3.81
100Yr-15Min                 4:00       0

100Yr-20Min                 0:00       4.09
100Yr-20Min                 0:20       5.54
100Yr-20Min                 0:40       8.65
100Yr-20Min                 1:00       19.77
100Yr-20Min                 1:20       123.48
100Yr-20Min                 1:40       36.02
100Yr-20Min                 2:00       16.15
100Yr-20Min                 2:20       9.92
100Yr-20Min                 2:40       7.13
100Yr-20Min                 3:00       5.56
100Yr-20Min                 3:20       4.57
100Yr-20Min                 3:40       3.88
100Yr-20Min                 4:00       0

100Yr-30Min                 0:00       4.41
100Yr-30Min                 0:30       7.78
100Yr-30Min                 1:00       22.45
100Yr-30Min                 1:30       97.06
100Yr-30Min                 2:00       14.39
100Yr-30Min                 2:30       7.74
100Yr-30Min                 3:00       5.3
100Yr-30Min                 3:30       4.04
100Yr-30Min                 4:00       0

100Yr-5Min                  0:00       3.71
100Yr-5Min                  0:05       3.94
100Yr-5Min                  0:10       4.2
100Yr-5Min                  0:15       4.5
100Yr-5Min                  0:20       4.85
100Yr-5Min                  0:25       5.25
100Yr-5Min                  0:30       5.73
100Yr-5Min                  0:35       6.31
100Yr-5Min                  0:40       7.03
100Yr-5Min                  0:45       7.92
100Yr-5Min                  0:50       9.07
100Yr-5Min                  0:55       10.59
100Yr-5Min                  1:00       12.72
100Yr-5Min                  1:05       15.84
100Yr-5Min                  1:10       20.81
100Yr-5Min                  1:15       29.71
```

```
100Yr-5Min                  1:20       49.12
100Yr-5Min                  1:25       108.91
100Yr-5Min                  1:30       218.23
100Yr-5Min                  1:35       103.42
100Yr-5Min                  1:40       60.97
100Yr-5Min                  1:45       41.72
100Yr-5Min                  1:50       31.11
100Yr-5Min                  1:55       24.53
100Yr-5Min                  2:00       20.12
100Yr-5Min                  2:05       16.98
100Yr-5Min                  2:10       14.65
100Yr-5Min                  2:15       12.86
100Yr-5Min                  2:20       11.44
100Yr-5Min                  2:25       10.3
100Yr-5Min                  2:30       9.36
100Yr-5Min                  2:35       8.58
100Yr-5Min                  2:40       7.91
100Yr-5Min                  2:45       7.34
100Yr-5Min                  2:50       6.85
100Yr-5Min                  2:55       6.42
100Yr-5Min                  3:00       6.04
100Yr-5Min                  3:05       5.7
100Yr-5Min                  3:10       5.4
100Yr-5Min                  3:15       5.13
100Yr-5Min                  3:20       4.88
100Yr-5Min                  3:25       4.66
100Yr-5Min                  3:30       4.46
100Yr-5Min                  3:35       4.27
100Yr-5Min                  3:40       4.1
100Yr-5Min                  3:45       3.95
100Yr-5Min                  3:50       3.8
100Yr-5Min                  3:55       3.67
100Yr-5Min                  4:00       0

;Depth (m)
100YrTailwater-Elev. 06/06/2018 10:31:00   186.38
100YrTailwater-Elev. 06/06/2018 10:32:00   186.38
100YrTailwater-Elev. 06/06/2018 10:33:00   186.38
100YrTailwater-Elev. 06/06/2018 10:34:00   186.38
100YrTailwater-Elev. 06/06/2018 10:35:00   186.38
100YrTailwater-Elev. 06/06/2018 10:36:00   186.38
100YrTailwater-Elev. 06/06/2018 10:37:00   186.38
100YrTailwater-Elev. 06/06/2018 10:38:00   186.38
100YrTailwater-Elev. 06/06/2018 10:39:00   186.38
100YrTailwater-Elev. 06/06/2018 10:40:00   186.38
100YrTailwater-Elev. 06/06/2018 10:41:00   186.38
......
Too many data points (2250 in total).

;Depth (m)
5-Year_Tailwater 06/06/2018 00:01:00   186.38
5-Year_Tailwater 06/06/2018 00:02:00   186.38
5-Year_Tailwater 06/06/2018 00:03:00   186.38
5-Year_Tailwater 06/06/2018 00:04:00   186.38
5-Year_Tailwater 06/06/2018 00:05:00   186.38
5-Year_Tailwater 06/06/2018 00:06:00   186.38
5-Year_Tailwater 06/06/2018 00:07:00   186.38
5-Year_Tailwater 06/06/2018 00:08:00   186.38
5-Year_Tailwater 06/06/2018 00:09:00   186.38
5-Year_Tailwater 06/06/2018 00:10:00   186.38
5-Year_Tailwater 06/06/2018 00:11:00   186.38
......
Too many data points (959 in total).

5Yr-10Min                   0:00       2.51
5Yr-10Min                   0:10       2.82
5Yr-10Min                   0:20       3.24
5Yr-10Min                   0:30       3.82
5Yr-10Min                   0:40       4.67
5Yr-10Min                   0:50       6.02
5Yr-10Min                   1:00       8.54
5Yr-10Min                   1:10       14.69
5Yr-10Min                   1:20       38.85
5Yr-10Min                   1:30       107.72
5Yr-10Min                   1:40       29.51
5Yr-10Min                   1:50       16.12
5Yr-10Min                   2:00       10.93
5Yr-10Min                   2:10       8.25
5Yr-10Min                   2:20       6.62
5Yr-10Min                   2:30       5.53
5Yr-10Min                   2:40       4.76
5Yr-10Min                   2:50       4.18
5Yr-10Min                   3:00       3.73
5Yr-10Min                   3:10       3.37
5Yr-10Min                   3:20       3.08
5Yr-10Min                   3:30       2.83
5Yr-10Min                   3:40       2.63
5Yr-10Min                   3:50       2.45
5Yr-10Min                   4:00       0

5Yr-15Min                   0:00       2.58
5Yr-15Min                   0:15       3.13
5Yr-15Min                   0:30       4.02
5Yr-15Min                   0:45       5.66
5Yr-15Min                   1:00       9.76
```

```
5Yr-15Min               1:15        26.72
5Yr-15Min               1:30        88.4
5Yr-15Min               1:45        18.73
5Yr-15Min               2:00        10.21
5Yr-15Min               2:15        6.99
5Yr-15Min               2:30        5.33
5Yr-15Min               2:45        4.31
5Yr-15Min               3:00        3.64
5Yr-15Min               3:15        3.15
5Yr-15Min               3:30        2.78
5Yr-15Min               3:45        2.49
5Yr-15Min               4:00        0

5Yr-20Min               0:00        2.66
5Yr-20Min               0:20        3.53
5Yr-20Min               0:40        5.34
5Yr-20Min               1:00        11.61
5Yr-20Min               1:20        75.35
5Yr-20Min               1:40        20.75
5Yr-20Min               2:00        9.59
5Yr-20Min               2:20        6.07
5Yr-20Min               2:40        4.47
5Yr-20Min               3:00        3.55
5Yr-20Min               3:20        2.95
5Yr-20Min               3:40        2.54
5Yr-20Min               4:00        0

5Yr-30Min               0:00        2.86
5Yr-30Min               0:30        4.84
5Yr-30Min               1:00        13.11
5Yr-30Min               1:30        58.69
5Yr-30Min               2:00        8.69
5Yr-30Min               2:30        4.82
5Yr-30Min               3:00        3.39
5Yr-30Min               3:30        2.64
5Yr-30Min               4:00        0

;Chicago 4 Hour
5Yr-5Min                0:00        2.44
5Yr-5Min                0:05        2.58
5Yr-5Min                0:10        2.73
5Yr-5Min                0:15        2.91
5Yr-5Min                0:20        3.12
5Yr-5Min                0:25        3.36
5Yr-5Min                0:30        3.65
5Yr-5Min                0:35        3.99
5Yr-5Min                0:40        4.41
5Yr-5Min                0:45        4.92
5Yr-5Min                0:50        5.59
5Yr-5Min                0:55        6.46
5Yr-5Min                1:00        7.66
5Yr-5Min                1:05        9.42
5Yr-5Min                1:10        12.2
5Yr-5Min                1:15        17.18
5Yr-5Min                1:20        28.2
5Yr-5Min                1:25        64.52
5Yr-5Min                1:30        139.58
5Yr-5Min                1:35        60.83
5Yr-5Min                1:40        35.06
5Yr-5Min                1:45        23.95
5Yr-5Min                1:50        17.96
5Yr-5Min                1:55        14.28
5Yr-5Min                2:00        11.81
5Yr-5Min                2:05        10.06
5Yr-5Min                2:10        8.75
5Yr-5Min                2:15        7.74
5Yr-5Min                2:20        6.94
5Yr-5Min                2:25        6.29
5Yr-5Min                2:30        5.76
5Yr-5Min                2:35        5.3
5Yr-5Min                2:40        4.92
5Yr-5Min                2:45        4.59
5Yr-5Min                2:50        4.3
5Yr-5Min                2:55        4.05
5Yr-5Min                3:00        3.83
5Yr-5Min                3:05        3.63
5Yr-5Min                3:10        3.45
5Yr-5Min                3:15        3.29
5Yr-5Min                3:20        3.14
5Yr-5Min                3:25        3.01
5Yr-5Min                3:30        2.89
5Yr-5Min                3:35        2.78
5Yr-5Min                3:40        2.67
5Yr-5Min                3:45        2.58
5Yr-5Min                3:50        2.49
5Yr-5Min                3:55        2.41
5Yr-5Min                4:00        0

SCSII-100Yr             0:00        0
SCSII-100Yr             2:00        1.08
SCSII-100Yr             4:00        1.62
SCSII-100Yr             6:00        1.62
SCSII-100Yr             8:00        2.16
SCSII-100Yr             10:00       3.24
SCSII-100Yr             12:00       25.92
```

SCSII-100Yr	14:00	8.64
SCSII-100Yr	16:00	3.24
SCSII-100Yr	18:00	2.16
SCSII-100Yr	20:00	1.62
SCSII-100Yr	22:00	1.62
SCSII-100Yr	24:00	1.08
SCSII-5-Year	0:00	0
SCSII-5-Year	2:00	0.68
SCSII-5-Year	4:00	1.02
SCSII-5-Year	6:00	1.02
SCSII-5-Year	8:00	1.36
SCSII-5-Year	10:00	2.04
SCSII-5-Year	12:00	16.32
SCSII-5-Year	14:00	5.44
SCSII-5-Year	16:00	2.04
SCSII-5-Year	18:00	1.36
SCSII-5-Year	20:00	1.02
SCSII-5-Year	22:00	1.02
SCSII-5-Year	24:00	0.68
SCSII-RST	0:00	0
SCSII-RST	2:00	1.5
SCSII-RST	4:00	2.25
SCSII-RST	6:00	2.25
SCSII-RST	8:00	3
SCSII-RST	10:00	4.5
SCSII-RST	12:00	36
SCSII-RST	14:00	12
SCSII-RST	16:00	4.5
SCSII-RST	18:00	3
SCSII-RST	20:00	2.25
SCSII-RST	22:00	2.25
SCSII-RST	24:00	1.5
SCSII-Unit	0:00	0
SCSII-Unit	2:00	0.01
SCSII-Unit	4:00	0.015
SCSII-Unit	6:00	0.015
SCSII-Unit	8:00	0.02
SCSII-Unit	10:00	0.03
SCSII-Unit	12:00	0.24
SCSII-Unit	14:00	0.08
SCSII-Unit	16:00	0.03
SCSII-Unit	18:00	0.02
SCSII-Unit	20:00	0.015
SCSII-Unit	22:00	0.015
SCSII-Unit	24:00	0.01
UrbanStressTest	0:00	2.41
UrbanStressTest	0:15	2.43
UrbanStressTest	0:30	2.45
UrbanStressTest	0:45	2.46
UrbanStressTest	1:00	2.48
UrbanStressTest	1:15	2.51
UrbanStressTest	1:30	2.53
UrbanStressTest	1:45	2.55
UrbanStressTest	2:00	2.58
UrbanStressTest	2:15	2.61
UrbanStressTest	2:30	2.64
UrbanStressTest	2:45	2.67
UrbanStressTest	3:00	2.71
UrbanStressTest	3:15	2.74
UrbanStressTest	3:30	2.79
UrbanStressTest	3:45	2.83
UrbanStressTest	4:00	2.88
UrbanStressTest	4:15	2.94
UrbanStressTest	4:30	3
UrbanStressTest	4:45	3.07
UrbanStressTest	5:00	3.15
UrbanStressTest	5:15	3.23
UrbanStressTest	5:30	3.33
UrbanStressTest	5:45	3.45
UrbanStressTest	6:00	3.59
UrbanStressTest	6:15	3.75
UrbanStressTest	6:30	3.94
UrbanStressTest	6:45	4.18
UrbanStressTest	7:00	4.49
UrbanStressTest	7:15	4.89
UrbanStressTest	7:30	5.43
UrbanStressTest	7:45	6.2
UrbanStressTest	8:00	7.41
UrbanStressTest	8:15	9.56
UrbanStressTest	8:30	14.29
UrbanStressTest	8:45	32.01
UrbanStressTest	9:00	145.13
UrbanStressTest	9:15	48.51
UrbanStressTest	9:30	23.13
UrbanStressTest	9:45	15.08
UrbanStressTest	10:00	11.35
UrbanStressTest	10:15	9.23
UrbanStressTest	10:30	7.88
UrbanStressTest	10:45	6.94
UrbanStressTest	11:00	6.25
UrbanStressTest	11:15	5.73

```
UrbanStressTest             11:30      5.32
UrbanStressTest             11:45      4.99
UrbanStressTest             12:00      4.72
UrbanStressTest             12:15      4.49
UrbanStressTest             12:30      4.29
UrbanStressTest             12:45      4.12
UrbanStressTest             13:00      3.98
UrbanStressTest             13:15      3.85
UrbanStressTest             13:30      3.74
UrbanStressTest             13:45      3.63
UrbanStressTest             14:00      3.54
UrbanStressTest             14:15      3.46
UrbanStressTest             14:30      3.39
UrbanStressTest             14:45      3.32
UrbanStressTest             15:00      3.26
UrbanStressTest             15:15      3.2
UrbanStressTest             15:30      3.15
UrbanStressTest             15:45      3.1
UrbanStressTest             16:00      3.05
UrbanStressTest             16:15      3.01
UrbanStressTest             16:30      2.97
UrbanStressTest             16:45      2.93
UrbanStressTest             17:00      2.9
UrbanStressTest             17:15      2.87
UrbanStressTest             17:30      2.84
UrbanStressTest             17:45      2.81
UrbanStressTest             18:00      2.78
UrbanStressTest             18:15      2.76
UrbanStressTest             18:30      2.73
UrbanStressTest             18:45      2.71
UrbanStressTest             19:00      2.69
UrbanStressTest             19:15      2.67
UrbanStressTest             19:30      2.65
UrbanStressTest             19:45      2.63
UrbanStressTest             20:00      2.61
UrbanStressTest             20:15      2.59
UrbanStressTest             20:30      2.57
UrbanStressTest             20:45      2.56
UrbanStressTest             21:00      2.54
UrbanStressTest             21:15      2.53
UrbanStressTest             21:30      2.51
UrbanStressTest             21:45      2.5
UrbanStressTest             22:00      2.49
UrbanStressTest             22:15      2.47
UrbanStressTest             22:30      2.46
UrbanStressTest             22:45      2.45
UrbanStressTest             23:00      2.44
UrbanStressTest             23:15      2.43
UrbanStressTest             23:30      2.42
UrbanStressTest             23:45      2.41
UrbanStressTest             24:00      0
UrbanStressTest             24:15      0
UrbanStressTest             24:30      0
UrbanStressTest             24:45      0
UrbanStressTest             25:00      0
UrbanStressTest             25:15      0

;Depth (m)
UST_Tailwater    06/06/2018 00:01:00   186.38
UST_Tailwater    06/06/2018 00:02:00   186.38
UST_Tailwater    06/06/2018 00:03:00   186.38
UST_Tailwater    06/06/2018 00:04:00   186.38
UST_Tailwater    06/06/2018 00:05:00   186.38
UST_Tailwater    06/06/2018 00:06:00   186.38
UST_Tailwater    06/06/2018 00:07:00   186.38
UST_Tailwater    06/06/2018 00:08:00   186.38
UST_Tailwater    06/06/2018 00:09:00   186.38
UST_Tailwater    06/06/2018 00:10:00   186.38
UST_Tailwater    06/06/2018 00:11:00   186.38
......
Too many data points (2880 in total).

;2-Year, 4-Hour, Chicago
WaterQualityStorm-10MIN           0:00       1.73
WaterQualityStorm-10MIN           0:10       1.94
WaterQualityStorm-10MIN           0:20       2.21
WaterQualityStorm-10MIN           0:30       2.57
WaterQualityStorm-10MIN           0:40       3.1
WaterQualityStorm-10MIN           0:50       3.94
WaterQualityStorm-10MIN           1:00       5.47
WaterQualityStorm-10MIN           1:10       9.16
WaterQualityStorm-10MIN           1:20       23.89
WaterQualityStorm-10MIN           1:30       71.41
WaterQualityStorm-10MIN           1:40       18.09
WaterQualityStorm-10MIN           1:50       10.01
WaterQualityStorm-10MIN           2:00       6.91
WaterQualityStorm-10MIN           2:10       5.3
WaterQualityStorm-10MIN           2:20       4.31
WaterQualityStorm-10MIN           2:30       3.64
WaterQualityStorm-10MIN           2:40       3.16
WaterQualityStorm-10MIN           2:50       2.8
WaterQualityStorm-10MIN           3:00       2.51
WaterQualityStorm-10MIN           3:10       2.29
WaterQualityStorm-10MIN           3:20       2.1
WaterQualityStorm-10MIN           3:30       1.94
```

```
WaterQualityStorm-10MIN          3:40       1.81
WaterQualityStorm-10MIN          3:50       1.69
WaterQualityStorm-10MIN          4:00       0

WaterQualityStorm-15MIN          0:00       1.78
WaterQualityStorm-15MIN          0:15       2.13
WaterQualityStorm-15MIN          0:30       2.7
WaterQualityStorm-15MIN          0:45       3.72
WaterQualityStorm-15MIN          1:00       6.21
WaterQualityStorm-15MIN          1:15       16.41
WaterQualityStorm-15MIN          1:30       57.83
WaterQualityStorm-15MIN          1:45       11.58
WaterQualityStorm-15MIN          2:00       6.48
WaterQualityStorm-15MIN          2:15       4.53
WaterQualityStorm-15MIN          2:30       3.51
WaterQualityStorm-15MIN          2:45       2.88
WaterQualityStorm-15MIN          3:00       2.45
WaterQualityStorm-15MIN          3:15       2.14
WaterQualityStorm-15MIN          3:30       1.91
WaterQualityStorm-15MIN          3:45       1.72
WaterQualityStorm-15MIN          4:00       0

WaterQualityStorm-20MIN          0:00       1.83
WaterQualityStorm-20MIN          0:20       2.39
WaterQualityStorm-20MIN          0:40       3.52
WaterQualityStorm-20MIN          1:00       7.32
WaterQualityStorm-20MIN          1:20       48.91
WaterQualityStorm-20MIN          1:40       12.79
WaterQualityStorm-20MIN          2:00       6.11
WaterQualityStorm-20MIN          2:20       3.97
WaterQualityStorm-20MIN          2:40       2.98
WaterQualityStorm-20MIN          3:00       2.4
WaterQualityStorm-20MIN          3:20       2.02
WaterQualityStorm-20MIN          3:40       1.75
WaterQualityStorm-20MIN          4:00       0

WaterQualityStorm-30MIN          0:00       1.96
WaterQualityStorm-30MIN          0:30       3.21
WaterQualityStorm-30MIN          1:00       8.21
WaterQualityStorm-30MIN          1:30       37.8
WaterQualityStorm-30MIN          2:00       5.51
WaterQualityStorm-30MIN          2:30       3.2
WaterQualityStorm-30MIN          3:00       2.3
WaterQualityStorm-30MIN          3:30       1.81
WaterQualityStorm-30MIN          4:00       0

;Chicago 2-year, 4-hour
WaterQualityStorm-5MIN          0:00       1.68
WaterQualityStorm-5MIN          0:05       1.77
WaterQualityStorm-5MIN          0:10       1.88
WaterQualityStorm-5MIN          0:15       1.99
WaterQualityStorm-5MIN          0:20       2.13
WaterQualityStorm-5MIN          0:25       2.28
WaterQualityStorm-5MIN          0:30       2.46
WaterQualityStorm-5MIN          0:35       2.68
WaterQualityStorm-5MIN          0:40       2.94
WaterQualityStorm-5MIN          0:45       3.26
WaterQualityStorm-5MIN          0:50       3.67
WaterQualityStorm-5MIN          0:55       4.21
WaterQualityStorm-5MIN          1:00       4.94
WaterQualityStorm-5MIN          1:05       6
WaterQualityStorm-5MIN          1:10       7.67
WaterQualityStorm-5MIN          1:15       10.65
WaterQualityStorm-5MIN          1:20       17.28
WaterQualityStorm-5MIN          1:25       40.48
WaterQualityStorm-5MIN          1:30       94.95
WaterQualityStorm-5MIN          1:35       37.9
WaterQualityStorm-5MIN          1:40       21.47
WaterQualityStorm-5MIN          1:45       14.71
WaterQualityStorm-5MIN          1:50       11.11
WaterQualityStorm-5MIN          1:55       8.91
WaterQualityStorm-5MIN          2:00       7.44
WaterQualityStorm-5MIN          2:05       6.39
WaterQualityStorm-5MIN          2:10       5.6
WaterQualityStorm-5MIN          2:15       4.99
WaterQualityStorm-5MIN          2:20       4.5
WaterQualityStorm-5MIN          2:25       4.11
WaterQualityStorm-5MIN          2:30       3.78
WaterQualityStorm-5MIN          2:35       3.5
WaterQualityStorm-5MIN          2:40       3.26
WaterQualityStorm-5MIN          2:45       3.06
WaterQualityStorm-5MIN          2:50       2.88
WaterQualityStorm-5MIN          2:55       2.72
WaterQualityStorm-5MIN          3:00       2.58
WaterQualityStorm-5MIN          3:05       2.45
WaterQualityStorm-5MIN          3:10       2.34
WaterQualityStorm-5MIN          3:15       2.23
WaterQualityStorm-5MIN          3:20       2.14
WaterQualityStorm-5MIN          3:25       2.06
WaterQualityStorm-5MIN          3:30       1.98
WaterQualityStorm-5MIN          3:35       1.91
WaterQualityStorm-5MIN          3:40       1.84
WaterQualityStorm-5MIN          3:45       1.78
WaterQualityStorm-5MIN          3:50       1.72
WaterQualityStorm-5MIN          3:55       1.67
```

```
WaterQualityStorm-5MIN            4:00       0

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[EVENTS]
;;Start Date         End Date
;  03/15/2021  00:00  03/24/2021  00:00

[TAGS]

[MAP]
DIMENSIONS       2502211.244      432630.18795     2845298.45       557269.86905
UNITS            Meters

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
CB#1&2           2607223.06          484880.831
CB#11&12         2557244.601         484399.715
CB#3&4           2696753.997         485366.094
CB#7&8           2647499.85          521518.152
CB#9&10          2734361.843         521760.784
CB5&6            2779942.845         486336.635
HP1              2562794.634         483958.166
HP2              2650654.056         485608.725
HP3              2738001.312         485851.356
hp4              2772697.583         486336.619
HP5              2649440.9           547722.329
HP6              2737030.787         547237.067
MH#1             2739996.879         532696.678
MH#2             2740596.096         522267.613
MH#3             2740596.096         480433.442
MH#4             2803975.763         480433.442
MH#5             2653336.837         521549.43
MH#6             2653157.292         480612.987
MH#7-A           2561588.934         480612.987
MH#7-B           2558536.44          480629.694
Southwood1200    2517816.117         480836.201
DryPond          2801072.055         502182.658

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
S1               2787315.013         439911.122
S1               2750760.348         439399.868
S1               2749993.467         470841.992
S1               2740535.267         481067.073
S1               2750429.422         491034.855
S1               2750069.316         520120.063
S1               2768568.989         520007.603
S1               2773321.248         519766.002
S1               2778365.704         519923.641
S1               2782621.98          519923.64
S1               2786878.223         520238.92
S1               2829703.577         519713.454
S1               2787315.013         439911.122
S2               2750069.316         520120.063
S2               2750429.422         491034.855
S2               2740535.267         481067.073
S2               2730117.021         490490.773
S2               2697109.369         490490.773
S2               2696983.647         531853.123
S2               2730155.074         531993.692
S2               2750069.316         520120.063
S3               2658660.888         439751.416
S3               2658660.888         470808.218
S3               2652837.738         480998.731
S3               2663270.882         490703.982
S3               2730117.021         490490.773
S3               2740535.267         481067.073
S3               2749993.467         470841.992
S3               2750760.348         439399.868
S3               2658660.888         439751.416
S4               2696928.008         550158.451
S4               2697109.369         490490.773
S4               2663270.882         490703.982
S4               2652837.738         480998.731
S4               2643132.487         490703.982
S4               2609892.004         491189.244
S4               2609892.004         550876.536
S4               2696928.008         550158.451
S5               2643132.487         490703.982
S5               2652837.738         480998.731
S5               2658660.888         470808.218
S5               2658660.888         439751.416
S5               2533463.155         438295.628
```

```
S5                2554329.444        480756.1
S5                2555542.6          551604.429
S5                2577375.596        550657.902
S5                2578386.105        520342.626
S5                2609892.004        521016.299
S5                2609892.004        491189.244
S5                2643132.487        490703.982
S6                2696928.008        550158.451
S6                2703441.603        550552.524
S6                2720313.269        549990.135
S6                2763309.289        549647.393
S6                2760277.762        536847.609
S6                2761290.599        520051.849
S6                2750069.316        520120.063
S6                2730155.074        531993.692
S6                2696983.647        531853.123
S6                2696928.008        550158.451

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

Appendix F

Urban Stress Test Storm Event – Input/Output Summary

100 YEAR STRESS TEST OUTPUT RESULTS

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 20
Number of subcatchments ... 6
Number of nodes 22
Number of links 26
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100Year-10Min	100Yr-10Min	INTENSITY	10 min.
100Year-15Min	100Yr-15Min	INTENSITY	15 min.
100Year-20Min	100Yr-20Min	INTENSITY	20 min.
100Year-30Min	100Yr-30Min	INTENSITY	30 min.
100Year-5Min	100Yr-5Min	INTENSITY	5 min.
5Year-10Min	5Yr-10Min	INTENSITY	10 min.
5Year-15Min	5Yr-15Min	INTENSITY	15 min.
5Year-20Min	5Yr-20Min	INTENSITY	20 min.
5Year-30Min	5Yr-30Min	INTENSITY	30 min.
5Year-5Min	5Yr-5Min	INTENSITY	5 min.
SCSII-100-Yr	SCSII-100Yr	INTENSITY	120 min.
SCSII-5-Year	SCSII-5-Year	INTENSITY	120 min.
SCSII-RuralStress	SCSII-RST	INTENSITY	120 min.
SCSII-Unit	SCSII-Unit	INTENSITY	120 min.
UrbanStressTest	UrbanStressTest	INTENSITY	15 min.
WaterQualityStorm10MIN	WaterQualityStorm-10MIN	INTENSITY	10 min.
WaterQualityStorm15MIN	WaterQualityStorm-15MIN	INTENSITY	15 min.
WaterQualityStorm20MIN	WaterQualityStorm-20MIN	INTENSITY	20 min.
WaterQualityStorm30MIN	WaterQualityStorm-30MIN	INTENSITY	30 min.
WaterQualityStorm5MIN	WaterQualityStorm-5MIN	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	0.48	110.00	60.00	1.0000	UrbanStressTest	MH#4
S2	0.22	75.00	60.00	1.0000	UrbanStressTest	MH#2
S3	0.45	100.00	60.00	1.0000	UrbanStressTest	MH#3
S4	0.53	90.00	60.00	1.0000	UrbanStressTest	MH#5
S5	0.72	120.00	60.00	1.0000	UrbanStressTest	MH#6
S6	0.12	75.00	60.00	1.0000	UrbanStressTest	MH#1

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
CB#1&2	JUNCTION	189.71	0.32	0.0	
CB#11&12	JUNCTION	189.82	0.32	0.0	
CB#3&4	JUNCTION	189.73	0.32	0.0	
CB#7&8	JUNCTION	189.76	0.32	0.0	
CB#9&10	JUNCTION	189.72	0.32	0.0	
CB5&6	JUNCTION	189.71	0.32	0.0	
HP1	JUNCTION	190.05	0.32	0.0	
HP2	JUNCTION	189.91	0.32	0.0	
HP3	JUNCTION	189.94	0.32	0.0	
hp4	JUNCTION	189.90	0.32	0.0	
HP5	JUNCTION	190.05	0.32	0.0	
HP6	JUNCTION	190.13	0.36	0.0	
MH#1	JUNCTION	186.46	3.71	0.0	
MH#2	JUNCTION	186.40	3.42	0.0	
MH#3	JUNCTION	186.34	3.65	0.0	
MH#4	JUNCTION	186.41	3.92	0.0	
MH#5	JUNCTION	186.34	3.67	0.0	
MH#6	JUNCTION	186.25	3.71	0.0	
MH#7-A	JUNCTION	186.19	3.90	1.0	
MH#7-B	JUNCTION	186.16	3.99	0.0	
Southwood1200	OUTFALL	186.09	0.63	0.0	
DryPond	STORAGE	188.34	1.93	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C1	MH#4	MH#3	CONDUIT	69.9	0.0643	0.0130
C10	HP6	CB#9&10	CONDUIT	35.0	1.1486	0.0130
C11	HP3	CB#3&4	CONDUIT	43.6	0.4883	0.0130

C12	HP2	CB#3&4	CONDUIT	43.6	0.4057	0.0130
C13	HP2	CB#7&8	CONDUIT	35.0	0.4114	0.0130
C14	HP5	CB#7&8	CONDUIT	35.0	0.8286	0.0130
C15	HP2	CB#1&2	CONDUIT	49.3	0.3977	0.0130
C16	HP1	CB#1&2	CONDUIT	29.0	1.1759	0.0130
C18	MH#1	MH#2	CONDUIT	16.0	0.1817	0.0130
C19	HP1	CB#11&12	CONDUIT	17.4	1.3449	0.0130
C2	MH#3	MH#6	CONDUIT	87.3	0.0745	0.0130
C3	MH#6	MH#7-A	CONDUIT	94.5	0.0370	0.0130
C4	MH#7-B	Southwood1200	CONDUIT	40.8	0.1202	0.0130
C5	MH#5	MH#6	CONDUIT	58.3	0.1201	0.0130
C6	MH#2	MH#3	CONDUIT	42.7	0.0890	0.0130
C7	hp4	CB5&6	CONDUIT	10.0	1.9003	0.0130
C8	HP3	hp4	CONDUIT	35.0	0.1229	0.0130
C9	HP3	CB#9&10	CONDUIT	35.0	0.6229	0.0130
CB1/2	CB#1&2	MH#6	ORIFICE			
CB3/4	CB#3&4	MH#3	ORIFICE			
CB7/8	CB#7&8	MH#5	ORIFICE			
CB9/10	CB#9&10	MH#2	ORIFICE			
OR1	CB#11&12	MH#7-A	ORIFICE			
OR6	MH#7-A	MH#7-B	ORIFICE			
OR7	DryPond	MH#4	ORIFICE			
orfice	CB5&6	DryPond	ORIFICE			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C1	CIRCULAR	1.05	0.87	0.26	1.05	1	0.69
C10	NTRoad	0.32	3.09	0.14	20.15	1	6.86
C11	NTRoad	0.32	3.09	0.14	20.15	1	4.48
C12	NTRoad	0.32	3.09	0.14	20.15	1	4.08
C13	NTRoad	0.32	3.09	0.14	20.15	1	4.11
C14	NTRoad	0.32	3.09	0.14	20.15	1	5.83
C15	NTRoad	0.32	3.09	0.14	20.15	1	4.04
C16	NTRoad	0.32	3.09	0.14	20.15	1	6.95
C18	CIRCULAR	0.45	0.16	0.11	0.45	1	0.12
C19	NTRoad	0.32	3.09	0.14	20.15	1	7.43
C2	CIRCULAR	1.05	0.87	0.26	1.05	1	0.75
C3	CIRCULAR	1.05	0.87	0.26	1.05	1	0.53
C4	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C5	CIRCULAR	0.60	0.28	0.15	0.60	1	0.21
C6	CIRCULAR	0.75	0.44	0.19	0.75	1	0.33
C7	NTRoad	0.32	3.09	0.14	20.15	1	8.83
C8	NTRoad	0.32	3.09	0.14	20.15	1	2.24
C9	NTRoad	0.32	3.09	0.14	20.15	1	5.05

****
Transect Summary
****

Transect NTRoad
Area:

0.0004	0.0015	0.0034	0.0060	0.0094
0.0136	0.0185	0.0242	0.0306	0.0378
0.0457	0.0544	0.0638	0.0740	0.0850
0.0967	0.1091	0.1224	0.1363	0.1511
0.1665	0.1828	0.1998	0.2178	0.2370
0.2571	0.2780	0.2999	0.3226	0.3461
0.3706	0.3959	0.4220	0.4491	0.4770
0.5058	0.5354	0.5660	0.5973	0.6296
0.6627	0.6967	0.7316	0.7673	0.8039
0.8414	0.8798	0.9190	0.9590	1.0000

Hrad:

0.0221	0.0441	0.0662	0.0882	0.1103
0.1324	0.1544	0.1765	0.1985	0.2206
0.2427	0.2647	0.2868	0.3088	0.3309
0.3530	0.3750	0.3971	0.4192	0.4412
0.4633	0.4853	0.5074	0.5208	0.5622
0.6007	0.6364	0.6694	0.6999	0.7280
0.7541	0.7781	0.8003	0.8207	0.8397
0.8571	0.8733	0.8882	0.9020	0.9147
0.9265	0.9374	0.9475	0.9569	0.9655
0.9735	0.9809	0.9878	0.9941	1.0000

Width:

0.0183	0.0365	0.0548	0.0730	0.0913
0.1095	0.1278	0.1460	0.1643	0.1825
0.2008	0.2190	0.2373	0.2555	0.2738
0.2920	0.3103	0.3285	0.3468	0.3650
0.3833	0.4015	0.4198	0.4540	0.4750
0.4960	0.5170	0.5380	0.5590	0.5800
0.6010	0.6220	0.6430	0.6640	0.6850
0.7060	0.7270	0.7480	0.7690	0.7900
0.8110	0.8320	0.8530	0.8740	0.8950
0.9160	0.9370	0.9580	0.9790	1.0000

Transect PondSpillway1
Area:

0.0005	0.0019	0.0043	0.0076	0.0119
0.0172	0.0234	0.0306	0.0387	0.0477

0.0578 0.0688 0.0807 0.0936 0.1074
0.1222 0.1380 0.1547 0.1724 0.1910
0.2104 0.2304 0.2510 0.2720 0.2935
0.3156 0.3382 0.3613 0.3849 0.4090
0.4337 0.4588 0.4845 0.5107 0.5374
0.5646 0.5924 0.6206 0.6494 0.6787
0.7085 0.7388 0.7697 0.8010 0.8329
0.8653 0.8982 0.9316 0.9655 1.0000
Hrad:
0.0174 0.0348 0.0522 0.0696 0.0870
0.1044 0.1218 0.1392 0.1566 0.1740
0.1914 0.2088 0.2262 0.2436 0.2610
0.2784 0.2958 0.3132 0.3306 0.3480
0.3710 0.3958 0.4203 0.4444 0.4682
0.4917 0.5149 0.5378 0.5605 0.5830
0.6052 0.6273 0.6492 0.6708 0.6924
0.7137 0.7349 0.7560 0.7769 0.7977
0.8184 0.8390 0.8594 0.8798 0.9000
0.9202 0.9403 0.9603 0.9802 1.0000
Width:
0.0275 0.0550 0.0825 0.1100 0.1375
0.1650 0.1926 0.2201 0.2476 0.2751
0.3026 0.3301 0.3576 0.3851 0.4126
0.4401 0.4676 0.4951 0.5227 0.5502
0.5687 0.5836 0.5984 0.6133 0.6282
0.6431 0.6579 0.6728 0.6877 0.7026
0.7174 0.7323 0.7472 0.7620 0.7769
0.7918 0.8067 0.8215 0.8364 0.8513
0.8661 0.8810 0.8959 0.9108 0.9256
0.9405 0.9554 0.9703 0.9851 1.0000

Transect PondSpillway2
Area:
0.0006 0.0023 0.0052 0.0092 0.0144
0.0207 0.0281 0.0367 0.0465 0.0574
0.0695 0.0827 0.0970 0.1125 0.1292
0.1470 0.1659 0.1860 0.2072 0.2291
0.2513 0.2736 0.2963 0.3191 0.3422
0.3656 0.3892 0.4131 0.4372 0.4615
0.4861 0.5109 0.5360 0.5613 0.5869
0.6127 0.6388 0.6651 0.6916 0.7185
0.7455 0.7728 0.8003 0.8281 0.8562
0.8844 0.9130 0.9417 0.9707 1.0000
Hrad:
0.0147 0.0295 0.0442 0.0590 0.0737
0.0885 0.1032 0.1179 0.1327 0.1474
0.1622 0.1769 0.1916 0.2064 0.2211
0.2359 0.2506 0.2654 0.2808 0.3069
0.3328 0.3584 0.3838 0.4090 0.4339
0.4586 0.4831 0.5074 0.5315 0.5553
0.5790 0.6026 0.6259 0.6491 0.6721
0.6949 0.7176 0.7401 0.7625 0.7848
0.8069 0.8288 0.8506 0.8723 0.8939
0.9154 0.9367 0.9579 0.9790 1.0000
Width:
0.0391 0.0781 0.1172 0.1563 0.1954
0.2344 0.2735 0.3126 0.3517 0.3907
0.4298 0.4689 0.5080 0.5470 0.5861
0.6252 0.6643 0.7033 0.7406 0.7489
0.7573 0.7657 0.7740 0.7824 0.7908
0.7991 0.8075 0.8159 0.8243 0.8326
0.8410 0.8494 0.8577 0.8661 0.8745
0.8828 0.8912 0.8996 0.9079 0.9163
0.9247 0.9330 0.9414 0.9498 0.9582
0.9665 0.9749 0.9833 0.9916 1.0000

Transect PondSpillway3
Area:
0.0005 0.0019 0.0043 0.0077 0.0120
0.0172 0.0234 0.0306 0.0387 0.0478
0.0579 0.0689 0.0808 0.0937 0.1076
0.1224 0.1382 0.1550 0.1727 0.1913
0.2109 0.2314 0.2525 0.2741 0.2961
0.3186 0.3416 0.3650 0.3889 0.4133
0.4382 0.4635 0.4893 0.5155 0.5423
0.5695 0.5972 0.6253 0.6540 0.6831
0.7126 0.7427 0.7732 0.8042 0.8356
0.8676 0.9000 0.9328 0.9662 1.0000
Hrad:
0.0170 0.0341 0.0511 0.0681 0.0851
0.1022 0.1192 0.1362 0.1532 0.1703
0.1873 0.2043 0.2213 0.2384 0.2554
0.2724 0.2894 0.3065 0.3235 0.3405
0.3575 0.3781 0.4034 0.4283 0.4529
0.4772 0.5012 0.5250 0.5484 0.5717
0.5946 0.6174 0.6400 0.6623 0.6845
0.7065 0.7283 0.7500 0.7715 0.7929
0.8141 0.8352 0.8562 0.8771 0.8978
0.9185 0.9390 0.9594 0.9798 1.0000
Width:
0.0281 0.0562 0.0843 0.1124 0.1405
0.1685 0.1966 0.2247 0.2528 0.2809
0.3090 0.3371 0.3652 0.3933 0.4214
0.4495 0.4776 0.5056 0.5337 0.5618
0.5899 0.6122 0.6260 0.6399 0.6537

```
            0.6676     0.6814     0.6953     0.7091     0.7230
            0.7368     0.7507     0.7645     0.7784     0.7922
            0.8061     0.8199     0.8338     0.8476     0.8615
            0.8753     0.8892     0.9030     0.9169     0.9307
            0.9446     0.9584     0.9723     0.9861     1.0000

  Transect Road
  Area:
            0.0005     0.0019     0.0043     0.0077     0.0120
            0.0173     0.0236     0.0308     0.0390     0.0481
            0.0582     0.0693     0.0813     0.0943     0.1083
            0.1232     0.1393     0.1563     0.1740     0.1922
            0.2109     0.2303     0.2502     0.2706     0.2916
            0.3132     0.3354     0.3581     0.3813     0.4052
            0.4296     0.4545     0.4800     0.5061     0.5328
            0.5600     0.5877     0.6161     0.6450     0.6744
            0.7045     0.7350     0.7662     0.7979     0.8302
            0.8630     0.8964     0.9304     0.9649     1.0000
  Hrad:
            0.0205     0.0410     0.0615     0.0820     0.1025
            0.1230     0.1435     0.1640     0.1845     0.2050
            0.2255     0.2460     0.2665     0.2870     0.3075
            0.3280     0.3441     0.3834     0.4208     0.4563
            0.4899     0.5219     0.5522     0.5811     0.6084
            0.6345     0.6592     0.6828     0.7052     0.7266
            0.7469     0.7663     0.7848     0.8024     0.8193
            0.8354     0.8508     0.8655     0.8795     0.8930
            0.9058     0.9181     0.9299     0.9413     0.9521
            0.9625     0.9724     0.9820     0.9912     1.0000
  Width:
            0.0272     0.0544     0.0816     0.1089     0.1361
            0.1633     0.1905     0.2177     0.2449     0.2721
            0.2994     0.3266     0.3538     0.3810     0.4082
            0.4354     0.4748     0.4907     0.5066     0.5225
            0.5385     0.5544     0.5703     0.5862     0.6021
            0.6180     0.6340     0.6499     0.6658     0.6817
            0.6976     0.7135     0.7294     0.7454     0.7613
            0.7772     0.7931     0.8090     0.8249     0.8408
            0.8568     0.8727     0.8886     0.9045     0.9204
            0.9363     0.9523     0.9682     0.9841     1.0000

  Transect Road2
  Area:
            0.0006     0.0023     0.0051     0.0091     0.0142
            0.0205     0.0279     0.0364     0.0461     0.0569
            0.0689     0.0820     0.0962     0.1116     0.1281
            0.1458     0.1646     0.1844     0.2044     0.2248
            0.2456     0.2667     0.2881     0.3100     0.3321
            0.3546     0.3775     0.4007     0.4243     0.4482
            0.4724     0.4971     0.5220     0.5473     0.5730
            0.5990     0.6254     0.6521     0.6792     0.7066
            0.7343     0.7625     0.7909     0.8197     0.8489
            0.8784     0.9083     0.9385     0.9691     1.0000
  Hrad:
            0.0167     0.0335     0.0502     0.0670     0.0837
            0.1004     0.1172     0.1339     0.1507     0.1674
            0.1841     0.2009     0.2176     0.2344     0.2511
            0.2678     0.2897     0.3213     0.3521     0.3820
            0.4111     0.4395     0.4671     0.4939     0.5201
            0.5456     0.5704     0.5946     0.6182     0.6411
            0.6635     0.6854     0.7067     0.7274     0.7477
            0.7675     0.7867     0.8056     0.8240     0.8419
            0.8594     0.8765     0.8932     0.9096     0.9255
            0.9411     0.9563     0.9712     0.9858     1.0000
  Width:
            0.0366     0.0732     0.1099     0.1465     0.1831
            0.2197     0.2563     0.2930     0.3296     0.3662
            0.4028     0.4394     0.4761     0.5127     0.5493
            0.5859     0.6282     0.6394     0.6507     0.6620
            0.6732     0.6845     0.6958     0.7070     0.7183
            0.7296     0.7408     0.7521     0.7634     0.7746
            0.7859     0.7972     0.8085     0.8197     0.8310
            0.8423     0.8535     0.8648     0.8761     0.8873
            0.8986     0.9099     0.9211     0.9324     0.9437
            0.9549     0.9662     0.9775     0.9887     1.0000


  ***********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  ***********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ YES
    Water Quality .......... NO
```

Infiltration Method ...... HORTON
Flow Routing Method ...... DYNWAVE
Surcharge Method .... EXTRAN
Starting Date 06/06/2018 10:30:00
Ending Date 06/08/2018 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:01:00
Dry Time Step 00:01:00
Routing Time Step .... 2.00 sec
Variable Time Step .... YES
Maximum Trials 8
Number of Threads 4
Head Tolerance .... 0.001500 m

**************************	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**************************	---------	-------
Total Precipitation	0.377	149.985
Evaporation Loss	0.000	0.000
Infiltration Loss	0.024	9.599
Surface Runoff	0.348	138.353
Final Storage	0.005	2.070
Continuity Error (%)	-0.025	

**************************	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**************************	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.348	3.481
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.074	0.736
External Outflow	0.410	4.105
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.002
Final Stored Volume	0.013	0.133
Continuity Error (%)	-0.456	

****
Highest Continuity Errors
****
Node DryPond (-1.16%)
Node MH#2 (1.05%)

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
Link OR6 (19)
Link C4 (3)
Link OR7 (1)
Link C3 (1)

****
Routing Time Step Summary
****
Minimum Time Step : 1.54 sec
Average Time Step : 2.00 sec
Maximum Time Step : 2.00 sec
Percent in Steady State : -0.00
Average Iterations per Step : 2.07
Percent Not Converging : 0.48
Time Step Frequencies :
2.000 - 1.516 sec : 100.00 %
1.516 - 1.149 sec : 0.00 %
1.149 - 0.871 sec : 0.00 %
0.871 - 0.660 sec : 0.00 %
0.660 - 0.500 sec : 0.00 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff

S1		149.99	0.00	0.00	9.60	88.52	49.85	138.37	0.66
0.19	0.923								
S2		149.98	0.00	0.00	9.60	88.53	49.90	138.43	0.30
0.09	0.923								
S3		149.99	0.00	0.00	9.60	88.52	49.85	138.37	0.62
0.18	0.923								
S4		149.98	0.00	0.00	9.60	88.52	49.80	138.32	0.73
0.21	0.922								
S5		149.98	0.00	0.00	9.60	88.52	49.79	138.31	1.00
0.28	0.922								
S6		149.99	0.00	0.00	9.60	88.54	49.97	138.51	0.17
0.05	0.923								

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
CB#1&2	JUNCTION	0.00	0.12	189.83	0 09:24	0.12
CB#11&12	JUNCTION	0.00	0.02	189.84	0 09:15	0.02
CB#3&4	JUNCTION	0.00	0.10	189.83	0 09:23	0.10
CB#7&8	JUNCTION	0.00	0.11	189.87	0 09:16	0.11
CB#9&10	JUNCTION	0.00	0.11	189.84	0 09:20	0.11
CB5&6	JUNCTION	0.00	0.05	189.76	0 09:37	0.05
HP1	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP2	JUNCTION	0.00	0.00	189.91	0 00:00	0.00
HP3	JUNCTION	0.00	0.00	189.94	0 00:00	0.00
hp4	JUNCTION	0.00	0.00	189.90	0 00:00	0.00
HP5	JUNCTION	0.00	0.00	190.05	0 00:00	0.00
HP6	JUNCTION	0.00	0.00	190.13	0 00:00	0.00
MH#1	JUNCTION	0.93	3.43	189.88	0 09:15	3.42
MH#2	JUNCTION	0.98	3.47	189.87	0 09:15	3.47
MH#3	JUNCTION	1.04	3.53	189.87	0 09:15	3.53
MH#4	JUNCTION	0.97	3.46	189.87	0 09:15	3.45
MH#5	JUNCTION	1.04	3.57	189.92	0 09:15	3.57
MH#6	JUNCTION	1.13	3.62	189.87	0 09:15	3.62
MH#7-A	JUNCTION	1.19	3.66	189.85	0 09:15	3.65
MH#7-B	JUNCTION	1.15	3.77	189.93	0 01:28	3.66
Southwood1200	OUTFALL	1.22	3.75	189.84	0 01:30	3.75
DryPond	STORAGE	0.09	1.42	189.76	0 09:34	1.42

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent	
CB#1&2	JUNCTION	0.000	0.056	0 09:15	0	0.0113	0.022	
CB#11&12	JUNCTION	0.000	0.002	0 09:15	0	0.000112	-0.325	
CB#3&4	JUNCTION	0.000	0.052	0 09:15	0	0.00996	0.002	
CB#7&8	JUNCTION	0.000	0.048	0 09:15	0	0.00946	-0.081	
CB#9&10	JUNCTION	0.000	0.048	0 09:15	0	0.00937	0.011	
CB5&6	JUNCTION	0.000	0.000	0 09:28	0	0.000288	-0.006	
HP1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP2	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP3	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
hp4	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP5	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
HP6	JUNCTION	0.000	0.000	0 00:00	0	0	0.000	ltr
MH#1	JUNCTION	0.049	0.049	0 09:15	0.168	0.17	0.320	
MH#2	JUNCTION	0.088	0.136	0 09:15	0.304	0.51	1.064	
MH#3	JUNCTION	0.177	0.465	0 09:10	0.618	3.33	0.903	
MH#4	JUNCTION	0.190	0.649	0 09:10	0.663	2.5	0.263	
MH#5	JUNCTION	0.208	0.208	0 09:15	0.733	0.762	0.828	
MH#6	JUNCTION	0.283	0.471	0 09:10	0.996	4.86	0.905	
MH#7-A	JUNCTION	0.000	0.347	0 01:28	0	4.8	0.517	
MH#7-B	JUNCTION	0.000	0.347	0 01:28	0	4.83	0.143	
Southwood1200	OUTFALL	0.000	0.347	0 01:28	0	4.84	0.000	
DryPond	STORAGE	0.000	0.647	0 09:10	0	0.994	-1.142	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
MH#1	JUNCTION	27.24	2.975	0.288
MH#2	JUNCTION	16.74	2.670	0.000
MH#3	JUNCTION	12.24	2.455	0.123

MH#4	JUNCTION	11.43	2.407	0.463
MH#5	JUNCTION	18.25	2.775	0.096
MH#6	JUNCTION	13.98	2.541	0.091
MH#7-A	JUNCTION	15.25	2.581	0.244
MH#7-B	JUNCTION	36.28	3.168	0.222

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CMS
DryPond	0.030	3	0	0	0.596	59	0 09:34	0.210

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Southwood1200	99.90	0.036	0.347	4.840
System	99.90	0.036	0.347	4.840

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.464	0 09:10	0.54	0.67	1.00
C10	CHANNEL	0.000	0 00:00	0.00	0.00	0.17
C11	CHANNEL	0.000	0 00:00	0.00	0.00	0.16
C12	CHANNEL	0.000	0 00:00	0.00	0.00	0.16
C13	CHANNEL	0.000	0 00:00	0.00	0.00	0.18
C14	CHANNEL	0.000	0 00:00	0.00	0.00	0.18
C15	CHANNEL	0.000	0 00:00	0.00	0.00	0.18
C16	CHANNEL	0.000	0 00:00	0.00	0.00	0.18
C18	CONDUIT	0.049	0 09:09	0.31	0.40	1.00
C19	CHANNEL	0.000	0 00:00	0.00	0.00	0.04
C2	CONDUIT	0.370	0 01:28	0.43	0.50	1.00
C3	CONDUIT	0.354	0 01:28	0.41	0.67	1.00
C4	CONDUIT	0.347	0 01:28	1.23	1.63	1.00
C5	CONDUIT	0.200	0 09:10	0.71	0.94	1.00
C6	CONDUIT	0.135	0 09:10	0.31	0.41	1.00
C7	CHANNEL	0.000	0 00:00	0.00	0.00	0.08
C8	CHANNEL	0.000	0 00:00	0.00	0.00	0.00
C9	CHANNEL	0.000	0 00:00	0.00	0.00	0.17
CB1/2	ORIFICE	0.056	0 09:15			
CB3/4	ORIFICE	0.052	0 09:15			
CB7/8	ORIFICE	0.048	0 09:15			
CB9/10	ORIFICE	0.048	0 09:15			
OR1	ORIFICE	0.002	0 09:15			
OR6	ORIFICE	0.347	0 01:28			1.00
OR7	ORIFICE	0.647	0 09:10			
orfice	ORIFICE	0.002	0 09:39			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C10	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C12	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C13	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C14	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C16	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C18	1.00	0.02	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00

C19	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C3	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C4	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C6	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C7	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C1	11.43	11.43	12.23	0.01	0.01
C18	27.24	27.24	28.86	0.01	0.01
C2	12.75	12.75	13.98	0.01	0.01
C3	14.47	14.47	15.25	0.01	0.01
C4	36.28	36.28	36.32	1.84	2.27
C5	25.29	25.29	29.03	0.01	0.11
C6	18.01	18.01	19.15	0.01	0.01

Analysis begun on: Thu May 26 16:39:24 2022
Analysis ended on: Thu May 26 16:39:26 2022
Total elapsed time: 00:00:02

100 YEAR URBAN STRESS INPUT RESULTS

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CMS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        YES
SKIP_STEADY_STATE    NO

START_DATE           06/06/2018
START_TIME           10:30:00
REPORT_START_DATE    06/06/2018
REPORT_START_TIME    10:30:00
END_DATE             06/08/2018
END_TIME             00:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         2
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              4

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
100Year-10Min    INTENSITY 0:10     1.0      TIMESERIES 100Yr-10Min
100Year-15Min    INTENSITY 0:15     1.0      TIMESERIES 100Yr-15Min
100Year-20Min    INTENSITY 0:20     1.0      TIMESERIES 100Yr-20Min
100Year-30Min    INTENSITY 0:30     1.0      TIMESERIES 100Yr-30Min
100Year-5Min     INTENSITY 0:05     1.0      TIMESERIES 100Yr-5Min
5Year-10Min      INTENSITY 0:10     1.0      TIMESERIES 5Yr-10Min
5Year-15Min      INTENSITY 0:15     1.0      TIMESERIES 5Yr-15Min
5Year-20Min      INTENSITY 0:20     1.0      TIMESERIES 5Yr-20Min
5Year-30Min      INTENSITY 0:30     1.0      TIMESERIES 5Yr-30Min
5Year-5Min       INTENSITY 0:05     1.0      TIMESERIES 5Yr-5Min
SCSII-100-Yr     INTENSITY 2:00     1.0      TIMESERIES SCSII-100Yr
SCSII-5-Year     INTENSITY 2:00     1.0      TIMESERIES SCSII-5-Year
SCSII-RuralStress INTENSITY 2:00     1.0      TIMESERIES SCSII-RST
SCSII-Unit       INTENSITY 2:00     1.0      TIMESERIES SCSII-Unit
UrbanStressTest  INTENSITY 0:15     1.0      TIMESERIES UrbanStressTest
WaterQualityStorm10MIN INTENSITY 0:10     1.0      TIMESERIES WaterQualityStorm-10MIN
WaterQualityStorm15MIN INTENSITY 0:15     1.0      TIMESERIES WaterQualityStorm-15MIN
WaterQualityStorm20MIN INTENSITY 0:20     1.0      TIMESERIES WaterQualityStorm-20MIN
WaterQualityStorm30MIN INTENSITY 0:30     1.0      TIMESERIES WaterQualityStorm-30MIN
WaterQualityStorm5MIN INTENSITY 0:05     1.0      TIMESERIES WaterQualityStorm-5MIN

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
S1               UrbanStressTest  MH#4             0.479    60       110      1        0
S2               UrbanStressTest  MH#2             0.2194   60       75       1        0
S3               UrbanStressTest  MH#3             0.4467   60       100      1        0
S4               UrbanStressTest  MH#5             0.5299   60       90       1        0
S5               UrbanStressTest  MH#6             0.7202   60       120      1        0
S6               UrbanStressTest  MH#1             0.121    60       75       1        0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
S1               0.013      0.15       2.5        7.5        0          OUTLET
S2               0.013      0.15       2.5        7.5        0          OUTLET
S3               0.013      0.15       2.5        7.5        0          OUTLET
S4               0.013      0.15       2.5        7.5        0          OUTLET
S5               0.013      0.15       2.5        7.5        0          OUTLET
S6               0.013      0.15       2.5        7.5        0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
S1               25         0.5        4          4          0
S2               25         0.5        4          4          0
```

```
S3               25         0.5        4          4          0
S4               25         0.5        4          4          0
S5               25         0.5        4          4          0
S6               25         0.5        4          4          0

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
CB#1&2           189.711    0.318      0          0          0
CB#11&12         189.818    0.318      0          0          0
CB#3&4           189.73     0.318      0          0          0
CB#7&8           189.763    0.318      0          0          0
CB#9&10          189.725    0.318      0          0          0
CB5&6            189.71     0.318      0          0          0
HP1              190.052    0.318      0          0          0
HP2              189.907    0.318      0          0          0
HP3              189.943    0.318      0          0          0
hp4              189.9      0.318      0          0          0
HP5              190.053    0.318      0          0          0
HP6              190.127    0.357      0          0          0
MH#1             186.457    3.713      0          0.318      0
MH#2             186.403    3.423      0          0.3        0
MH#3             186.34     3.653      0          0.318      0
MH#4             186.41     3.92       0          0.318      0
MH#5             186.345    3.671      0          0.318      0
MH#6             186.25     3.707      0          0.317      0
MH#7-A           186.19     3.9        0          0.317      1
MH#7-B           186.16     3.99       0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
Southwood1200    186.086    TIMESERIES 100YrTailwater-Elev. NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
-------- --------
DryPond          188.34   1.93       0          TABULAR    Pond                         0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ---------
-
C1               MH#4             MH#3             69.935     0.013      0          0.025      0          0
C10              HP6              CB#9&10          35         0.013      0          0          0          0
C11              HP3              CB#3&4           43.625     0.013      0          0          0          0
C12              HP2              CB#3&4           43.625     0.013      0          0          0          0
C13              HP2              CB#7&8           35         0.013      0          0          0          0
C14              HP5              CB#7&8           35         0.013      0          0          0          0
C15              HP2              CB#1&2           49.284     0.013      0          0          0          0
C16              HP1              CB#1&2           29         0.013      0          0          0          0
C18              MH#1             MH#2             15.958     0.013      0          0.025      0          0
C19              HP1              CB#11&12         17.4       0.013      0          0          0          0
C2               MH#3             MH#6             87.25      0.013      0          0.025      0          0
C3               MH#6             MH#7-A           94.54      0.013      0          0.025      0          0
C4               MH#7-B           Southwood1200    40.759     0.013      0          0.025      0          0
C5               MH#5             MH#6             58.299     0.013      0          0.025      0          0
C6               MH#2             MH#3             42.715     0.013      0          0.025      0          0
C7               hp4              CB5&6            10         0.013      0          0          0          0
C8               HP3              hp4              35         0.013      0          0          0          0
C9               HP3              CB#9&10          35         0.013      0          0          0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;
CB1/2            CB#1&2           MH#6             BOTTOM       0          0.614      NO       0
CB3/4            CB#3&4           MH#3             BOTTOM       0          0.614      NO       0
CB7/8            CB#7&8           MH#5             BOTTOM       0          0.614      NO       0
CB9/10           CB#9&10          MH#2             BOTTOM       0          0.614      NO       0
OR1              CB#11&12         MH#7-A           BOTTOM       0          0.65       NO       0
OR6              MH#7-A           MH#7-B           SIDE         0          0.614      NO       0
OR7              DryPond          MH#4             BOTTOM       0          0.614      NO       0
orfice           CB5&6            DryPond          BOTTOM       0          0.614      NO       0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C1               CIRCULAR     1.05             0          0          0          1
C10              IRREGULAR    NTRoad           0          0          0          1
C11              IRREGULAR    NTRoad           0          0          0          1
C12              IRREGULAR    NTRoad           0          0          0          1
C13              IRREGULAR    NTRoad           0          0          0          1
C14              IRREGULAR    NTRoad           0          0          0          1
C15              IRREGULAR    NTRoad           0          0          0          1
C16              IRREGULAR    NTRoad           0          0          0          1
C18              CIRCULAR     0.45             0          0          0          1
C19              IRREGULAR    NTRoad           0          0          0          1
C2               CIRCULAR     1.05             0          0          0          1
C3               CIRCULAR     1.05             0          0          0          1
C4               CIRCULAR     0.6              0          0          0          1
C5               CIRCULAR     0.6              0          0          0          1
C6               CIRCULAR     0.75             0          0          0          1
C7               IRREGULAR    NTRoad           0          0          0          1
C8               IRREGULAR    NTRoad           0          0          0          1
```

```
C9               IRREGULAR    NTRoad           0          0          0          1
CB1/2            CIRCULAR     0.8              0          0          0
CB3/4            CIRCULAR     0.8              0          0          0
CB7/8            CIRCULAR     0.8              0          0          0
CB9/10           CIRCULAR     0.8              0          0          0
OR1              CIRCULAR     0.8              0          0          0
OR6              CIRCULAR     0.33             0          0          0
OR7              CIRCULAR     0.9              0          0          0
orfice           CIRCULAR     0.8              0          0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.15     0.15     0.013
X1 NTRoad            9        5.583    14.567   0.0      0.0      0.0      0.0      0.0
GR 0.3176   0        0.15     5.583    0.15     5.733    0        5.775    0.15     10.075
GR 0        14.375   0.15     14.417   0.15     14.567   0.3176   20.15
;
;Pond spill way for node RJ33
NC 0.01     0.01     0.15
X1 PondSpillway1     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.35   0        176.21   20.1     176.555  78.4
;
;Pond spill way for node RJ31
NC 0.01     0.01     0.15
X1 PondSpillway2     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.555  0        176.43   35.3     176.76   60.7
;
;Pond spill way for node RJ4
NC 0.01     0.01     0.15
X1 PondSpillway3     3        0.0      0.0      0.0      0.0      0.0      0.0      0.0
GR 176.765  0        176.325  103.43   176.515  149.35
;
;Typical Road Cross Section
NC 0.15     0.15     0.013
X1 Road              9        5        13.85    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     5        0.15     5.15     0        5.15     0.15     9.425
GR 0        13.7     0.15     13.7     0.15     13.85    0.45     18.85
;
;Wider Road Section at Entrance of the development
NC 0.15     0.15     0.013
X1 Road2             9        4.15     17.15    0.0      0.0      0.0      0.0      0.0
GR 0.45     0        0.15     4        0.15     4.15     0        4.15     0.15     10.65
GR 0        17.15    0.15     17.15    0.15     17.3     0.45     21.3

[LOSSES]
;;Link            Kentry     Kexit      Kavg       Flap Gate  Seepage
;;--------------- ---------- ---------- ---------- ---------- ----------
C1                0.5        0.5        0          NO         0
C18               0.5        0.5        0          NO         0
C2                0.5        0.5        0          NO         0
C3                0.5        0.5        0          NO         0
C4                0.5        0.5        0          NO         0
C5                0.5        0.5        0          NO         0
C6                0.5        0.5        0          NO         0

[CURVES]
;;Name            Type       X-Value    Y-Value
;;--------------- ---------- ---------- ----------
PS                Pump4      1          0.34921
PS                           2          0.32415
PS                           3          0.3
PS                           4          0.27813
PS                           5          0.25535
PS                           6          0.23128
PS                           7          0.20698
PS                           8          0.18195
PS                           9          0.15638
PS                           10         0.13038
PS                           11         0.10339
PS                           12         0.07679
PS                           13         0.04882
PS                           14         0.02168

Pond              Storage    0          0.36
Pond                         0.04       172.47
Pond                         1.04       537.902
Pond                         1.94       942.54

StoragePond       Storage    0          1991.2
StoragePond                  0.5        5787.1
StoragePond                  1          10547
StoragePond                  1.5        12120
StoragePond                  2          13451
StoragePond                  2.5        15820
StoragePond                  3          18306
StoragePond                  3.5        20828
StoragePond                  4          23947
StoragePond                  4.2        27244

[TIMESERIES]
;;Name            Date       Time       Value
;;--------------- ---------- ---------- ----------
;Depth (m)
100-YearTailWater 06/06/2018 10:31:00   0.172
100-YearTailWater 06/06/2018 10:32:00   0.172
```

```
100-YearTailWater 06/06/2018 10:33:00   0.172
100-YearTailWater 06/06/2018 10:34:00   0.172
100-YearTailWater 06/06/2018 10:35:00   0.172
100-YearTailWater 06/06/2018 10:36:00   0.172
100-YearTailWater 06/06/2018 10:37:00   0.172
100-YearTailWater 06/06/2018 10:38:00   0.1719998
100-YearTailWater 06/06/2018 10:39:00   0.171997
100-YearTailWater 06/06/2018 10:40:00   0.1719945
100-YearTailWater 06/06/2018 10:41:00   0.1719998
......
Too many data points (2250 in total).

100Yr-10Min                 0:00       3.83
100Yr-10Min                 0:10       4.35
100Yr-10Min                 0:20       5.05
100Yr-10Min                 0:30       6.02
100Yr-10Min                 0:40       7.47
100Yr-10Min                 0:50       9.83
100Yr-10Min                 1:00       14.28
100Yr-10Min                 1:10       25.26
100Yr-10Min                 1:20       67.16
100Yr-10Min                 1:30       172.68
100Yr-10Min                 1:40       51.34
100Yr-10Min                 1:50       27.82
100Yr-10Min                 2:00       18.55
100Yr-10Min                 2:10       13.75
100Yr-10Min                 2:20       10.87
100Yr-10Min                 2:30       8.97
100Yr-10Min                 2:40       7.63
100Yr-10Min                 2:50       6.63
100Yr-10Min                 3:00       5.87
100Yr-10Min                 3:10       5.26
100Yr-10Min                 3:20       4.77
100Yr-10Min                 3:30       4.37
100Yr-10Min                 3:40       4.03
100Yr-10Min                 3:50       3.74
100Yr-10Min                 4:00       0

100Yr-15Min                 0:00       3.83
100Yr-15Min                 0:15       4.35
100Yr-15Min                 0:30       6.36
100Yr-15Min                 0:45       9.19
100Yr-15Min                 1:00       16.45
100Yr-15Min                 1:15       46.45
100Yr-15Min                 1:30       143.67
100Yr-15Min                 1:45       32.45
100Yr-15Min                 2:00       17.25
100Yr-15Min                 2:15       11.53
100Yr-15Min                 2:30       8.62
100Yr-15Min                 2:45       6.87
100Yr-15Min                 3:00       5.71
100Yr-15Min                 3:15       4.89
100Yr-15Min                 3:30       4.28
100Yr-15Min                 3:45       3.81
100Yr-15Min                 4:00       0

100Yr-20Min                 0:00       4.09
100Yr-20Min                 0:20       5.54
100Yr-20Min                 0:40       8.65
100Yr-20Min                 1:00       19.77
100Yr-20Min                 1:20       123.48
100Yr-20Min                 1:40       36.02
100Yr-20Min                 2:00       16.15
100Yr-20Min                 2:20       9.92
100Yr-20Min                 2:40       7.13
100Yr-20Min                 3:00       5.56
100Yr-20Min                 3:20       4.57
100Yr-20Min                 3:40       3.88
100Yr-20Min                 4:00       0

100Yr-30Min                 0:00       4.41
100Yr-30Min                 0:30       7.78
100Yr-30Min                 1:00       22.45
100Yr-30Min                 1:30       97.06
100Yr-30Min                 2:00       14.39
100Yr-30Min                 2:30       7.74
100Yr-30Min                 3:00       5.3
100Yr-30Min                 3:30       4.04
100Yr-30Min                 4:00       0

100Yr-5Min                  0:00       3.71
100Yr-5Min                  0:05       3.94
100Yr-5Min                  0:10       4.2
100Yr-5Min                  0:15       4.5
100Yr-5Min                  0:20       4.85
100Yr-5Min                  0:25       5.25
100Yr-5Min                  0:30       5.73
100Yr-5Min                  0:35       6.31
100Yr-5Min                  0:40       7.03
100Yr-5Min                  0:45       7.92
100Yr-5Min                  0:50       9.07
100Yr-5Min                  0:55       10.59
100Yr-5Min                  1:00       12.72
100Yr-5Min                  1:05       15.84
100Yr-5Min                  1:10       20.81
100Yr-5Min                  1:15       29.71
```

```
100Yr-5Min                  1:20       49.12
100Yr-5Min                  1:25       108.91
100Yr-5Min                  1:30       218.23
100Yr-5Min                  1:35       103.42
100Yr-5Min                  1:40       60.97
100Yr-5Min                  1:45       41.72
100Yr-5Min                  1:50       31.11
100Yr-5Min                  1:55       24.53
100Yr-5Min                  2:00       20.12
100Yr-5Min                  2:05       16.98
100Yr-5Min                  2:10       14.65
100Yr-5Min                  2:15       12.86
100Yr-5Min                  2:20       11.44
100Yr-5Min                  2:25       10.3
100Yr-5Min                  2:30       9.36
100Yr-5Min                  2:35       8.58
100Yr-5Min                  2:40       7.91
100Yr-5Min                  2:45       7.34
100Yr-5Min                  2:50       6.85
100Yr-5Min                  2:55       6.42
100Yr-5Min                  3:00       6.04
100Yr-5Min                  3:05       5.7
100Yr-5Min                  3:10       5.4
100Yr-5Min                  3:15       5.13
100Yr-5Min                  3:20       4.88
100Yr-5Min                  3:25       4.66
100Yr-5Min                  3:30       4.46
100Yr-5Min                  3:35       4.27
100Yr-5Min                  3:40       4.1
100Yr-5Min                  3:45       3.95
100Yr-5Min                  3:50       3.8
100Yr-5Min                  3:55       3.67
100Yr-5Min                  4:00       0

;Depth (m)
100YrTailwater-Elev. 06/06/2018 10:31:00   186.38
100YrTailwater-Elev. 06/06/2018 10:32:00   186.38
100YrTailwater-Elev. 06/06/2018 10:33:00   186.38
100YrTailwater-Elev. 06/06/2018 10:34:00   186.38
100YrTailwater-Elev. 06/06/2018 10:35:00   186.38
100YrTailwater-Elev. 06/06/2018 10:36:00   186.38
100YrTailwater-Elev. 06/06/2018 10:37:00   186.38
100YrTailwater-Elev. 06/06/2018 10:38:00   186.38
100YrTailwater-Elev. 06/06/2018 10:39:00   186.38
100YrTailwater-Elev. 06/06/2018 10:40:00   186.38
100YrTailwater-Elev. 06/06/2018 10:41:00   186.38
......
Too many data points (2250 in total).

;Depth (m)
5-Year_Tailwater 06/06/2018 00:01:00   186.38
5-Year_Tailwater 06/06/2018 00:02:00   186.38
5-Year_Tailwater 06/06/2018 00:03:00   186.38
5-Year_Tailwater 06/06/2018 00:04:00   186.38
5-Year_Tailwater 06/06/2018 00:05:00   186.38
5-Year_Tailwater 06/06/2018 00:06:00   186.38
5-Year_Tailwater 06/06/2018 00:07:00   186.38
5-Year_Tailwater 06/06/2018 00:08:00   186.38
5-Year_Tailwater 06/06/2018 00:09:00   186.38
5-Year_Tailwater 06/06/2018 00:10:00   186.38
5-Year_Tailwater 06/06/2018 00:11:00   186.38
......
Too many data points (959 in total).

5Yr-10Min                   0:00       2.51
5Yr-10Min                   0:10       2.82
5Yr-10Min                   0:20       3.24
5Yr-10Min                   0:30       3.82
5Yr-10Min                   0:40       4.67
5Yr-10Min                   0:50       6.02
5Yr-10Min                   1:00       8.54
5Yr-10Min                   1:10       14.69
5Yr-10Min                   1:20       38.85
5Yr-10Min                   1:30       107.72
5Yr-10Min                   1:40       29.51
5Yr-10Min                   1:50       16.12
5Yr-10Min                   2:00       10.93
5Yr-10Min                   2:10       8.25
5Yr-10Min                   2:20       6.62
5Yr-10Min                   2:30       5.53
5Yr-10Min                   2:40       4.76
5Yr-10Min                   2:50       4.18
5Yr-10Min                   3:00       3.73
5Yr-10Min                   3:10       3.37
5Yr-10Min                   3:20       3.08
5Yr-10Min                   3:30       2.83
5Yr-10Min                   3:40       2.63
5Yr-10Min                   3:50       2.45
5Yr-10Min                   4:00       0

5Yr-15Min                   0:00       2.58
5Yr-15Min                   0:15       3.13
5Yr-15Min                   0:30       4.02
5Yr-15Min                   0:45       5.66
5Yr-15Min                   1:00       9.76
```

```
5Yr-15Min               1:15        26.72
5Yr-15Min               1:30        88.4
5Yr-15Min               1:45        18.73
5Yr-15Min               2:00        10.21
5Yr-15Min               2:15        6.99
5Yr-15Min               2:30        5.33
5Yr-15Min               2:45        4.31
5Yr-15Min               3:00        3.64
5Yr-15Min               3:15        3.15
5Yr-15Min               3:30        2.78
5Yr-15Min               3:45        2.49
5Yr-15Min               4:00        0

5Yr-20Min               0:00        2.66
5Yr-20Min               0:20        3.53
5Yr-20Min               0:40        5.34
5Yr-20Min               1:00        11.61
5Yr-20Min               1:20        75.35
5Yr-20Min               1:40        20.75
5Yr-20Min               2:00        9.59
5Yr-20Min               2:20        6.07
5Yr-20Min               2:40        4.47
5Yr-20Min               3:00        3.55
5Yr-20Min               3:20        2.95
5Yr-20Min               3:40        2.54
5Yr-20Min               4:00        0

5Yr-30Min               0:00        2.86
5Yr-30Min               0:30        4.84
5Yr-30Min               1:00        13.11
5Yr-30Min               1:30        58.69
5Yr-30Min               2:00        8.69
5Yr-30Min               2:30        4.82
5Yr-30Min               3:00        3.39
5Yr-30Min               3:30        2.64
5Yr-30Min               4:00        0

;Chicago 4 Hour
5Yr-5Min                0:00        2.44
5Yr-5Min                0:05        2.58
5Yr-5Min                0:10        2.73
5Yr-5Min                0:15        2.91
5Yr-5Min                0:20        3.12
5Yr-5Min                0:25        3.36
5Yr-5Min                0:30        3.65
5Yr-5Min                0:35        3.99
5Yr-5Min                0:40        4.41
5Yr-5Min                0:45        4.92
5Yr-5Min                0:50        5.59
5Yr-5Min                0:55        6.46
5Yr-5Min                1:00        7.66
5Yr-5Min                1:05        9.42
5Yr-5Min                1:10        12.2
5Yr-5Min                1:15        17.18
5Yr-5Min                1:20        28.2
5Yr-5Min                1:25        64.52
5Yr-5Min                1:30        139.58
5Yr-5Min                1:35        60.83
5Yr-5Min                1:40        35.06
5Yr-5Min                1:45        23.95
5Yr-5Min                1:50        17.96
5Yr-5Min                1:55        14.28
5Yr-5Min                2:00        11.81
5Yr-5Min                2:05        10.06
5Yr-5Min                2:10        8.75
5Yr-5Min                2:15        7.74
5Yr-5Min                2:20        6.94
5Yr-5Min                2:25        6.29
5Yr-5Min                2:30        5.76
5Yr-5Min                2:35        5.3
5Yr-5Min                2:40        4.92
5Yr-5Min                2:45        4.59
5Yr-5Min                2:50        4.3
5Yr-5Min                2:55        4.05
5Yr-5Min                3:00        3.83
5Yr-5Min                3:05        3.63
5Yr-5Min                3:10        3.45
5Yr-5Min                3:15        3.29
5Yr-5Min                3:20        3.14
5Yr-5Min                3:25        3.01
5Yr-5Min                3:30        2.89
5Yr-5Min                3:35        2.78
5Yr-5Min                3:40        2.67
5Yr-5Min                3:45        2.58
5Yr-5Min                3:50        2.49
5Yr-5Min                3:55        2.41
5Yr-5Min                4:00        0

SCSII-100Yr             0:00        0
SCSII-100Yr             2:00        1.08
SCSII-100Yr             4:00        1.62
SCSII-100Yr             6:00        1.62
SCSII-100Yr             8:00        2.16
SCSII-100Yr             10:00       3.24
SCSII-100Yr             12:00       25.92
```

SCSII-100Yr	14:00	8.64
SCSII-100Yr	16:00	3.24
SCSII-100Yr	18:00	2.16
SCSII-100Yr	20:00	1.62
SCSII-100Yr	22:00	1.62
SCSII-100Yr	24:00	1.08
SCSII-5-Year	0:00	0
SCSII-5-Year	2:00	0.68
SCSII-5-Year	4:00	1.02
SCSII-5-Year	6:00	1.02
SCSII-5-Year	8:00	1.36
SCSII-5-Year	10:00	2.04
SCSII-5-Year	12:00	16.32
SCSII-5-Year	14:00	5.44
SCSII-5-Year	16:00	2.04
SCSII-5-Year	18:00	1.36
SCSII-5-Year	20:00	1.02
SCSII-5-Year	22:00	1.02
SCSII-5-Year	24:00	0.68
SCSII-RST	0:00	0
SCSII-RST	2:00	1.5
SCSII-RST	4:00	2.25
SCSII-RST	6:00	2.25
SCSII-RST	8:00	3
SCSII-RST	10:00	4.5
SCSII-RST	12:00	36
SCSII-RST	14:00	12
SCSII-RST	16:00	4.5
SCSII-RST	18:00	3
SCSII-RST	20:00	2.25
SCSII-RST	22:00	2.25
SCSII-RST	24:00	1.5
SCSII-Unit	0:00	0
SCSII-Unit	2:00	0.01
SCSII-Unit	4:00	0.015
SCSII-Unit	6:00	0.015
SCSII-Unit	8:00	0.02
SCSII-Unit	10:00	0.03
SCSII-Unit	12:00	0.24
SCSII-Unit	14:00	0.08
SCSII-Unit	16:00	0.03
SCSII-Unit	18:00	0.02
SCSII-Unit	20:00	0.015
SCSII-Unit	22:00	0.015
SCSII-Unit	24:00	0.01
UrbanStressTest	0:00	2.41
UrbanStressTest	0:15	2.43
UrbanStressTest	0:30	2.45
UrbanStressTest	0:45	2.46
UrbanStressTest	1:00	2.48
UrbanStressTest	1:15	2.51
UrbanStressTest	1:30	2.53
UrbanStressTest	1:45	2.55
UrbanStressTest	2:00	2.58
UrbanStressTest	2:15	2.61
UrbanStressTest	2:30	2.64
UrbanStressTest	2:45	2.67
UrbanStressTest	3:00	2.71
UrbanStressTest	3:15	2.74
UrbanStressTest	3:30	2.79
UrbanStressTest	3:45	2.83
UrbanStressTest	4:00	2.88
UrbanStressTest	4:15	2.94
UrbanStressTest	4:30	3
UrbanStressTest	4:45	3.07
UrbanStressTest	5:00	3.15
UrbanStressTest	5:15	3.23
UrbanStressTest	5:30	3.33
UrbanStressTest	5:45	3.45
UrbanStressTest	6:00	3.59
UrbanStressTest	6:15	3.75
UrbanStressTest	6:30	3.94
UrbanStressTest	6:45	4.18
UrbanStressTest	7:00	4.49
UrbanStressTest	7:15	4.89
UrbanStressTest	7:30	5.43
UrbanStressTest	7:45	6.2
UrbanStressTest	8:00	7.41
UrbanStressTest	8:15	9.56
UrbanStressTest	8:30	14.29
UrbanStressTest	8:45	32.01
UrbanStressTest	9:00	145.13
UrbanStressTest	9:15	48.51
UrbanStressTest	9:30	23.13
UrbanStressTest	9:45	15.08
UrbanStressTest	10:00	11.35
UrbanStressTest	10:15	9.23
UrbanStressTest	10:30	7.88
UrbanStressTest	10:45	6.94
UrbanStressTest	11:00	6.25
UrbanStressTest	11:15	5.73

```
UrbanStressTest             11:30      5.32
UrbanStressTest             11:45      4.99
UrbanStressTest             12:00      4.72
UrbanStressTest             12:15      4.49
UrbanStressTest             12:30      4.29
UrbanStressTest             12:45      4.12
UrbanStressTest             13:00      3.98
UrbanStressTest             13:15      3.85
UrbanStressTest             13:30      3.74
UrbanStressTest             13:45      3.63
UrbanStressTest             14:00      3.54
UrbanStressTest             14:15      3.46
UrbanStressTest             14:30      3.39
UrbanStressTest             14:45      3.32
UrbanStressTest             15:00      3.26
UrbanStressTest             15:15      3.2
UrbanStressTest             15:30      3.15
UrbanStressTest             15:45      3.1
UrbanStressTest             16:00      3.05
UrbanStressTest             16:15      3.01
UrbanStressTest             16:30      2.97
UrbanStressTest             16:45      2.93
UrbanStressTest             17:00      2.9
UrbanStressTest             17:15      2.87
UrbanStressTest             17:30      2.84
UrbanStressTest             17:45      2.81
UrbanStressTest             18:00      2.78
UrbanStressTest             18:15      2.76
UrbanStressTest             18:30      2.73
UrbanStressTest             18:45      2.71
UrbanStressTest             19:00      2.69
UrbanStressTest             19:15      2.67
UrbanStressTest             19:30      2.65
UrbanStressTest             19:45      2.63
UrbanStressTest             20:00      2.61
UrbanStressTest             20:15      2.59
UrbanStressTest             20:30      2.57
UrbanStressTest             20:45      2.56
UrbanStressTest             21:00      2.54
UrbanStressTest             21:15      2.53
UrbanStressTest             21:30      2.51
UrbanStressTest             21:45      2.5
UrbanStressTest             22:00      2.49
UrbanStressTest             22:15      2.47
UrbanStressTest             22:30      2.46
UrbanStressTest             22:45      2.45
UrbanStressTest             23:00      2.44
UrbanStressTest             23:15      2.43
UrbanStressTest             23:30      2.42
UrbanStressTest             23:45      2.41
UrbanStressTest             24:00      0
UrbanStressTest             24:15      0
UrbanStressTest             24:30      0
UrbanStressTest             24:45      0
UrbanStressTest             25:00      0
UrbanStressTest             25:15      0

;Depth (m)
UST_Tailwater    06/06/2018 00:01:00   186.38
UST_Tailwater    06/06/2018 00:02:00   186.38
UST_Tailwater    06/06/2018 00:03:00   186.38
UST_Tailwater    06/06/2018 00:04:00   186.38
UST_Tailwater    06/06/2018 00:05:00   186.38
UST_Tailwater    06/06/2018 00:06:00   186.38
UST_Tailwater    06/06/2018 00:07:00   186.38
UST_Tailwater    06/06/2018 00:08:00   186.38
UST_Tailwater    06/06/2018 00:09:00   186.38
UST_Tailwater    06/06/2018 00:10:00   186.38
UST_Tailwater    06/06/2018 00:11:00   186.38
......
Too many data points (2880 in total).

;2-Year, 4-Hour, Chicago
WaterQualityStorm-10MIN           0:00       1.73
WaterQualityStorm-10MIN           0:10       1.94
WaterQualityStorm-10MIN           0:20       2.21
WaterQualityStorm-10MIN           0:30       2.57
WaterQualityStorm-10MIN           0:40       3.1
WaterQualityStorm-10MIN           0:50       3.94
WaterQualityStorm-10MIN           1:00       5.47
WaterQualityStorm-10MIN           1:10       9.16
WaterQualityStorm-10MIN           1:20       23.89
WaterQualityStorm-10MIN           1:30       71.41
WaterQualityStorm-10MIN           1:40       18.09
WaterQualityStorm-10MIN           1:50       10.01
WaterQualityStorm-10MIN           2:00       6.91
WaterQualityStorm-10MIN           2:10       5.3
WaterQualityStorm-10MIN           2:20       4.31
WaterQualityStorm-10MIN           2:30       3.64
WaterQualityStorm-10MIN           2:40       3.16
WaterQualityStorm-10MIN           2:50       2.8
WaterQualityStorm-10MIN           3:00       2.51
WaterQualityStorm-10MIN           3:10       2.29
WaterQualityStorm-10MIN           3:20       2.1
WaterQualityStorm-10MIN           3:30       1.94
```

```
WaterQualityStorm-10MIN          3:40       1.81
WaterQualityStorm-10MIN          3:50       1.69
WaterQualityStorm-10MIN          4:00       0

WaterQualityStorm-15MIN          0:00       1.78
WaterQualityStorm-15MIN          0:15       2.13
WaterQualityStorm-15MIN          0:30       2.7
WaterQualityStorm-15MIN          0:45       3.72
WaterQualityStorm-15MIN          1:00       6.21
WaterQualityStorm-15MIN          1:15       16.41
WaterQualityStorm-15MIN          1:30       57.83
WaterQualityStorm-15MIN          1:45       11.58
WaterQualityStorm-15MIN          2:00       6.48
WaterQualityStorm-15MIN          2:15       4.53
WaterQualityStorm-15MIN          2:30       3.51
WaterQualityStorm-15MIN          2:45       2.88
WaterQualityStorm-15MIN          3:00       2.45
WaterQualityStorm-15MIN          3:15       2.14
WaterQualityStorm-15MIN          3:30       1.91
WaterQualityStorm-15MIN          3:45       1.72
WaterQualityStorm-15MIN          4:00       0

WaterQualityStorm-20MIN          0:00       1.83
WaterQualityStorm-20MIN          0:20       2.39
WaterQualityStorm-20MIN          0:40       3.52
WaterQualityStorm-20MIN          1:00       7.32
WaterQualityStorm-20MIN          1:20       48.91
WaterQualityStorm-20MIN          1:40       12.79
WaterQualityStorm-20MIN          2:00       6.11
WaterQualityStorm-20MIN          2:20       3.97
WaterQualityStorm-20MIN          2:40       2.98
WaterQualityStorm-20MIN          3:00       2.4
WaterQualityStorm-20MIN          3:20       2.02
WaterQualityStorm-20MIN          3:40       1.75
WaterQualityStorm-20MIN          4:00       0

WaterQualityStorm-30MIN          0:00       1.96
WaterQualityStorm-30MIN          0:30       3.21
WaterQualityStorm-30MIN          1:00       8.21
WaterQualityStorm-30MIN          1:30       37.8
WaterQualityStorm-30MIN          2:00       5.51
WaterQualityStorm-30MIN          2:30       3.2
WaterQualityStorm-30MIN          3:00       2.3
WaterQualityStorm-30MIN          3:30       1.81
WaterQualityStorm-30MIN          4:00       0

;Chicago 2-year, 4-hour
WaterQualityStorm-5MIN          0:00       1.68
WaterQualityStorm-5MIN          0:05       1.77
WaterQualityStorm-5MIN          0:10       1.88
WaterQualityStorm-5MIN          0:15       1.99
WaterQualityStorm-5MIN          0:20       2.13
WaterQualityStorm-5MIN          0:25       2.28
WaterQualityStorm-5MIN          0:30       2.46
WaterQualityStorm-5MIN          0:35       2.68
WaterQualityStorm-5MIN          0:40       2.94
WaterQualityStorm-5MIN          0:45       3.26
WaterQualityStorm-5MIN          0:50       3.67
WaterQualityStorm-5MIN          0:55       4.21
WaterQualityStorm-5MIN          1:00       4.94
WaterQualityStorm-5MIN          1:05       6
WaterQualityStorm-5MIN          1:10       7.67
WaterQualityStorm-5MIN          1:15       10.65
WaterQualityStorm-5MIN          1:20       17.28
WaterQualityStorm-5MIN          1:25       40.48
WaterQualityStorm-5MIN          1:30       94.95
WaterQualityStorm-5MIN          1:35       37.9
WaterQualityStorm-5MIN          1:40       21.47
WaterQualityStorm-5MIN          1:45       14.71
WaterQualityStorm-5MIN          1:50       11.11
WaterQualityStorm-5MIN          1:55       8.91
WaterQualityStorm-5MIN          2:00       7.44
WaterQualityStorm-5MIN          2:05       6.39
WaterQualityStorm-5MIN          2:10       5.6
WaterQualityStorm-5MIN          2:15       4.99
WaterQualityStorm-5MIN          2:20       4.5
WaterQualityStorm-5MIN          2:25       4.11
WaterQualityStorm-5MIN          2:30       3.78
WaterQualityStorm-5MIN          2:35       3.5
WaterQualityStorm-5MIN          2:40       3.26
WaterQualityStorm-5MIN          2:45       3.06
WaterQualityStorm-5MIN          2:50       2.88
WaterQualityStorm-5MIN          2:55       2.72
WaterQualityStorm-5MIN          3:00       2.58
WaterQualityStorm-5MIN          3:05       2.45
WaterQualityStorm-5MIN          3:10       2.34
WaterQualityStorm-5MIN          3:15       2.23
WaterQualityStorm-5MIN          3:20       2.14
WaterQualityStorm-5MIN          3:25       2.06
WaterQualityStorm-5MIN          3:30       1.98
WaterQualityStorm-5MIN          3:35       1.91
WaterQualityStorm-5MIN          3:40       1.84
WaterQualityStorm-5MIN          3:45       1.78
WaterQualityStorm-5MIN          3:50       1.72
WaterQualityStorm-5MIN          3:55       1.67
```

```
WaterQualityStorm-5MIN            4:00       0

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[EVENTS]
;;Start Date         End Date
;  03/15/2021  00:00  03/24/2021  00:00

[TAGS]

[MAP]
DIMENSIONS       2502211.244      432630.18795     2845298.45       557269.86905
UNITS            Meters

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
CB#1&2           2607223.06          484880.831
CB#11&12         2557244.601         484399.715
CB#3&4           2696753.997         485366.094
CB#7&8           2647499.85          521518.152
CB#9&10          2734361.843         521760.784
CB5&6            2779942.845         486336.635
HP1              2562794.634         483958.166
HP2              2650654.056         485608.725
HP3              2738001.312         485851.356
hp4              2772697.583         486336.619
HP5              2649440.9           547722.329
HP6              2737030.787         547237.067
MH#1             2739996.879         532696.678
MH#2             2740596.096         522267.613
MH#3             2740596.096         480433.442
MH#4             2803975.763         480433.442
MH#5             2653336.837         521549.43
MH#6             2653157.292         480612.987
MH#7-A           2561588.934         480612.987
MH#7-B           2558536.44          480629.694
Southwood1200    2517816.117         480836.201
DryPond          2801072.055         502182.658

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
S1               2787315.013         439911.122
S1               2750760.348         439399.868
S1               2749993.467         470841.992
S1               2740535.267         481067.073
S1               2750429.422         491034.855
S1               2750069.316         520120.063
S1               2768568.989         520007.603
S1               2773321.248         519766.002
S1               2778365.704         519923.641
S1               2782621.98          519923.64
S1               2786878.223         520238.92
S1               2829703.577         519713.454
S1               2787315.013         439911.122
S2               2750069.316         520120.063
S2               2750429.422         491034.855
S2               2740535.267         481067.073
S2               2730117.021         490490.773
S2               2697109.369         490490.773
S2               2696983.647         531853.123
S2               2730155.074         531993.692
S2               2750069.316         520120.063
S3               2658660.888         439751.416
S3               2658660.888         470808.218
S3               2652837.738         480998.731
S3               2663270.882         490703.982
S3               2730117.021         490490.773
S3               2740535.267         481067.073
S3               2749993.467         470841.992
S3               2750760.348         439399.868
S3               2658660.888         439751.416
S4               2696928.008         550158.451
S4               2697109.369         490490.773
S4               2663270.882         490703.982
S4               2652837.738         480998.731
S4               2643132.487         490703.982
S4               2609892.004         491189.244
S4               2609892.004         550876.536
S4               2696928.008         550158.451
S5               2643132.487         490703.982
S5               2652837.738         480998.731
S5               2658660.888         470808.218
S5               2658660.888         439751.416
S5               2533463.155         438295.628
```

```
S5                2554329.444        480756.1
S5                2555542.6          551604.429
S5                2577375.596        550657.902
S5                2578386.105        520342.626
S5                2609892.004        521016.299
S5                2609892.004        491189.244
S5                2643132.487        490703.982
S6                2696928.008        550158.451
S6                2703441.603        550552.524
S6                2720313.269        549990.135
S6                2763309.289        549647.393
S6                2760277.762        536847.609
S6                2761290.599        520051.849
S6                2750069.316        520120.063
S6                2730155.074        531993.692
S6                2696983.647        531853.123
S6                2696928.008        550158.451

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```