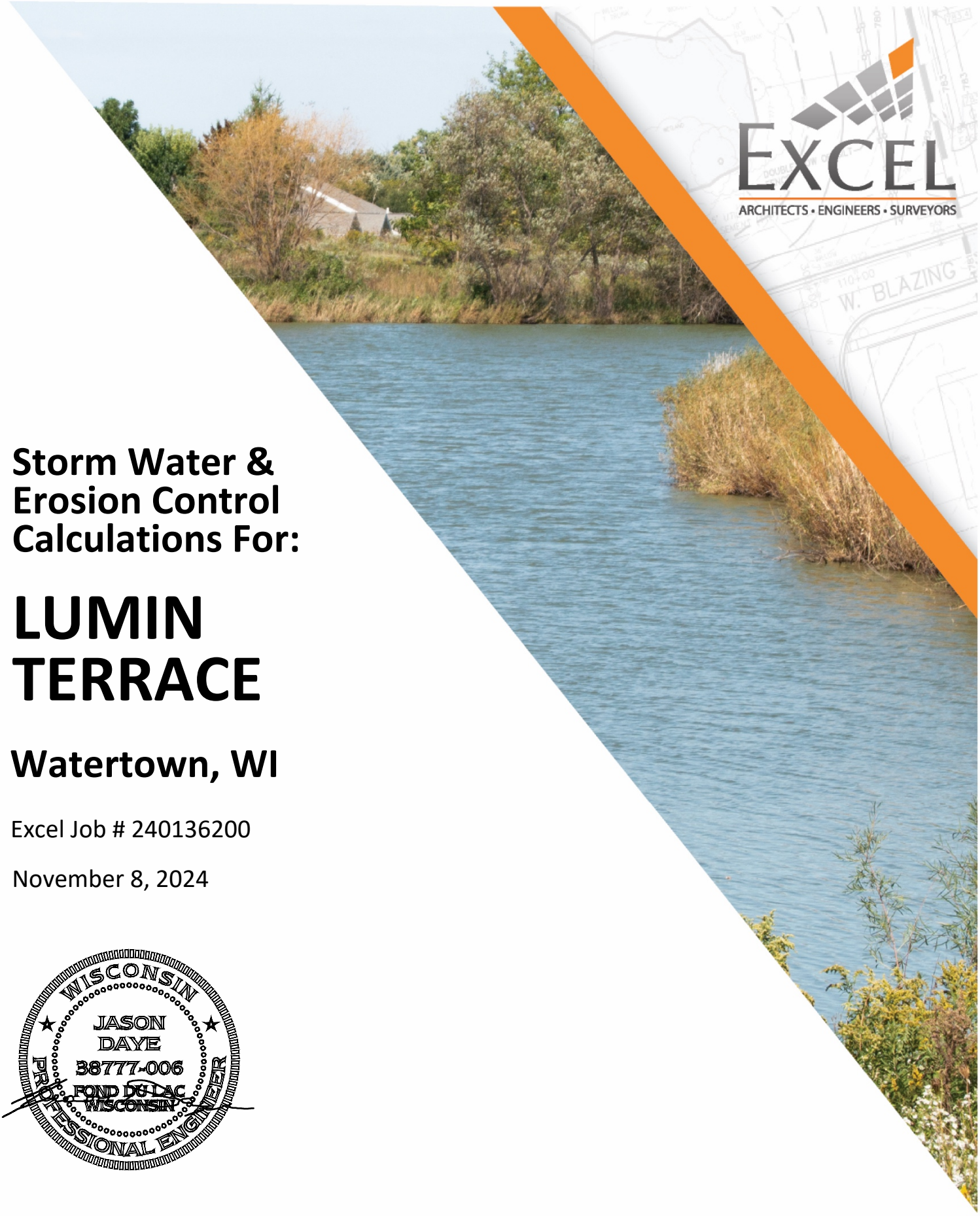

Storm Water & Erosion Control Calculations For:

LUMIN TERRACE

Watertown, WI

Excel Job # 240136200

November 8, 2024

WISCONSIN
JASON
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Table of Contents

Appendices

0.0 Introduction

0.1 Existing Conditions

The proposed development is located on the east side of Johnson Street in the city of Watertown, Wisconsin. The project site is bound by Johson Street to the west, Hoffman Road to the east, proposed development to the north, and vacant land to the south. The existing site currently contains trees. The site currently drains to the east to Hoffman Road. The existing site can be seen in Appendix A.

- Property Area: 9.33 acres

0.2 Proposed Project Overview

The proposed project will include four proposed buildings with parking located primarily east and west of the proposed buildings. The proposed development will drain to inlets that will drain stormwater east to a proposed wet pond and infiltration basin. The stormwater management pond and infiltration basin will reduce peak flows and treat stormwater to meet local and state requirements. The wet pond will drain into an infiltration basin to meet local and state infiltration requirements. The proposed site can be seen in Appendix B.

- Disturbed Area: 8.90 acres

1.0 Design Criteria

1.1 Soils

Soil characteristics were determined using the web soil survey. See Table 1 for a summary of the soils and hydrologic ratings indicated by the web soil survey and Appendix D for web soil survey map.

Table 1: Web Soil Survey

MAP SYMBOL	SOIL TYPE	HYDROLOGIC RATING
Gtb	Grellton fine sandy loam	B
RtB	Rotamer loam	B
SoB	Sisson fine sandy loam	B

Soil borings were completed for the project site. The boring logs can be seen in Appendix E.

1.2 Rainfall Data

NOAA Atlas 14, city of Watertown rainfall depths with a MSE 3 distribution was used for stormwater calculations.

Table 2: NOAA Atlas 14 24-hour Rainfall Depth

DESIGN STORM	RAINFALL DEPTH (INCHES)
1-YEAR	2.42
2-YEAR	2.73
100-YEAR	6.19

2.0 Stormwater Management Requirements

2.1 Peak Discharge

City of Watertown- Maintain or reduce the 1-yr and 100-yr, 24 hour post development peak runoff discharge rates to the 1-yr, and 2-yr, 24 hour pre development peak runoff discharge rates respectively.

Wisconsin DNR- Maintain or reduce the 1-yr and 2-yr, 24 hour post development peak runoff discharge rates to the 1-yr and 2-yr, 24 hour predevelopment peak runoff discharge rates respectively.

A wet pond will be used to reduce peak flows to predevelopment flows.

Table 3: Runoff Summary

	PREDEVELOPMENT	POST DEVELOPMENT			
DESIGN STORM	**Peak Discharge (cfs)**	**To Pond (cfs)**	**Offsite (cfs)**	**Infiltration Basin discharge (cfs)**	Peak Discharge (To Pond + Offsite) (cfs)
1YR-24 HR	**2.99**	16.89	0.60	0.87	0.89
2YR-24 HR	**4.16**	20.36	0.68	1.04	1.08
100YR-24HR	**21.64**	60.47	1.56	1.25	2.57

Table 4: Wet Pond Summary

DESIGN STORM	POND RELEASE RATE (CFS)	STORAGE VOLUME (C.F.)	MAXIMUM ELEVATION (FT)
1YR-24 HR	0.98	21,311	803.34
2YR-24 HR	1.40	25,146	803.54
100YR-24HR	2.12	90,528	806.42

Table 5: 100yr-24hr storm pond summary

POND	EMERGENCY SPILLWAY ELEVATION (FT)	CALCULATED POND ELEVATION (FT)	POND DISCHARGE IN (CFS)	DISCHARGE EXIT POINT
WET	806.50	806.42	2.12	INFILTRATION BASIN
INFIL	806.50	804.90	1.25	STORM SEWER

Table 6: Peak Discharge Release Summary

DESIGN STORM	PREDEVELOPMENT (CFS)	POST DEVELOPMENT (CFS)
1 YR- 24 HR	**2.99**	0.89
2 YR- 24 HR	**4.16**	1.08
100 YR- 24 HR	**21.64**	2.57

Table 6 shows that post development release rates will be less than predevelopment release rates for all design storms. See sheet C1.3 and C2.0 of the construction plans for pond design and Appendix C for peak discharge calculations.

Therefore, peak discharge requirements are met.

2.2 Stormwater Quality

Wisconsin DNR and city of Watertown- The site is considered a new development project and will be required to remove 80% of total suspended solids (TSS) from site runoff.

The site will treat stormwater using a wet pond and infiltration basin. SLAMM analysis was used to determine the quantity of suspended solids that will be removed by the proposed wet pond and infiltration basin. The proposed site will create 2,423 lbs of TSS and the proposed wet pond and infiltration basin will reduce TSS to 252 lbs, which results in a 89.60% reduction in TSS release.

The proposed wet pond removes 89.60% of suspended solids which is greater than the required 80%.

Therefore, stormwater quality requirements have been met.

2.3 Infiltration

City of Watertown and Wisconsin DNR- Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75% of the pre-development infiltration

volume, based on an average annual rainfall. However, no more than 2% of the post-construction site is required as an effective infiltration area.

The proposed development will be 387,800 sf, which means that a maximum 7,756 sf of area will be required for infiltration onsite. The proposed soils are classified as silt and have an estimated infiltration rate of 0.50 in/hr respectively per the Wisconsin DNR evaluation for infiltration standard (1002). Since the basin must empty within 24 hrs after the storm the basin be 12" deep (0.5 in/hr * 24 hr= 12 in).

There is one infiltration basin proposed onsite. The infiltration basin will be downstream of the proposed wet pond. The basin will be 15,000 sf and 12" deep.

Therefore, Infiltration requirements are met.

3.0 Storm Sewer Design

All storm sewer has been designed to convey the 100-year 24-hour post development storm.

See Appendix F, Appendix G, and Appendix H for pipe drainage areas and pipe sizing calculations.

3.1 Emergency Overflow Route

The emergency overflow route is to the east, over the curb and gutter. Maximum ponding onsite will be 9" in drive aisles and 6" in parking stalls.

4.0 Erosion Control

The erosion control specifications, construction sequence, site stabilization notes, seeding notes, dewatering notes, and post construction and maintenance plan will be included on sheet C0.2 of the construction plan set.

Appendix A: Pre-Development Basin Area(s)

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
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PROJECT INFORMATION

PROPOSED MULTI-FAMILY DEVELOPMENT
LUMIN TERRACE
JOHNSON STREET ● WATERTOWN, WI

PROFESSIONAL SEAL

PRELIMINARY DATES

NOT FOR CONSTRUCTION

JOB NUMBER
240136200

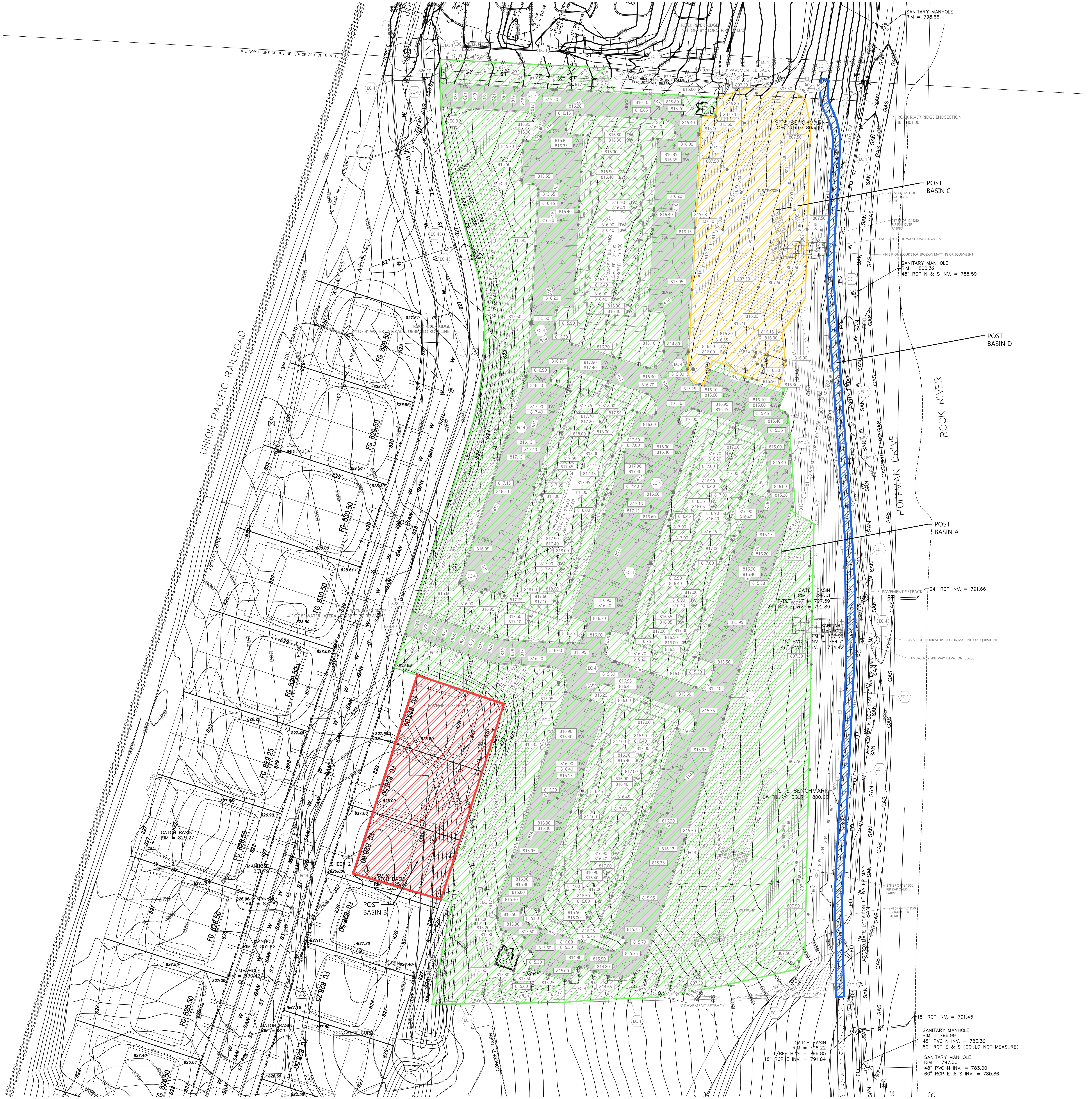
SHEET NUMBER
PRE

PRE BASIN	TOTAL (SF)	TOTAL (AC)	BLDG (SF)	BLDG (AC)	PAVEMENT (SF)	PAVEMENT (AC)	OPEN (SF)	OPEN (AC)
A	373,688	8.58	0	0.00	37,357	0.86	336,331	7.72

SCALE 1"= 40'
40 0 40 80
NORTH

PREDEVELOPMENT BASIN AREA

Appendix B: Post Development Basin Area(s)



POST BASIN	TOTAL (SF)	TOTAL (AC)	BLDG (SF)	BLDG (AC)	PAVEMENT (SF)	PAVEMENT (AC)	OPEN (SF)	OPEN (AC)
A	312,698	7.18	49,429	1.13	124,161	2.85	139,108	3.19
B	20,550	0.47	8,643	0.20	0	0.00	11,907	0.27
C	32,761	0.75	0	0.00	583	0.01	32,178	0.74
D	7,629	0.18	0	0.00	7,629	0.18	0	0.00

SCALE: 1"= 40'

NORTH

POST DEVELOPMENT BASIN AREAS

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PROJECT INFORMATION

PROPOSED MULTI-FAMILY DEVELOPMENT
LUMIN TERRACE
JOHNSON STREET • WATERTOWN, WI

PROFESSIONAL SEAL

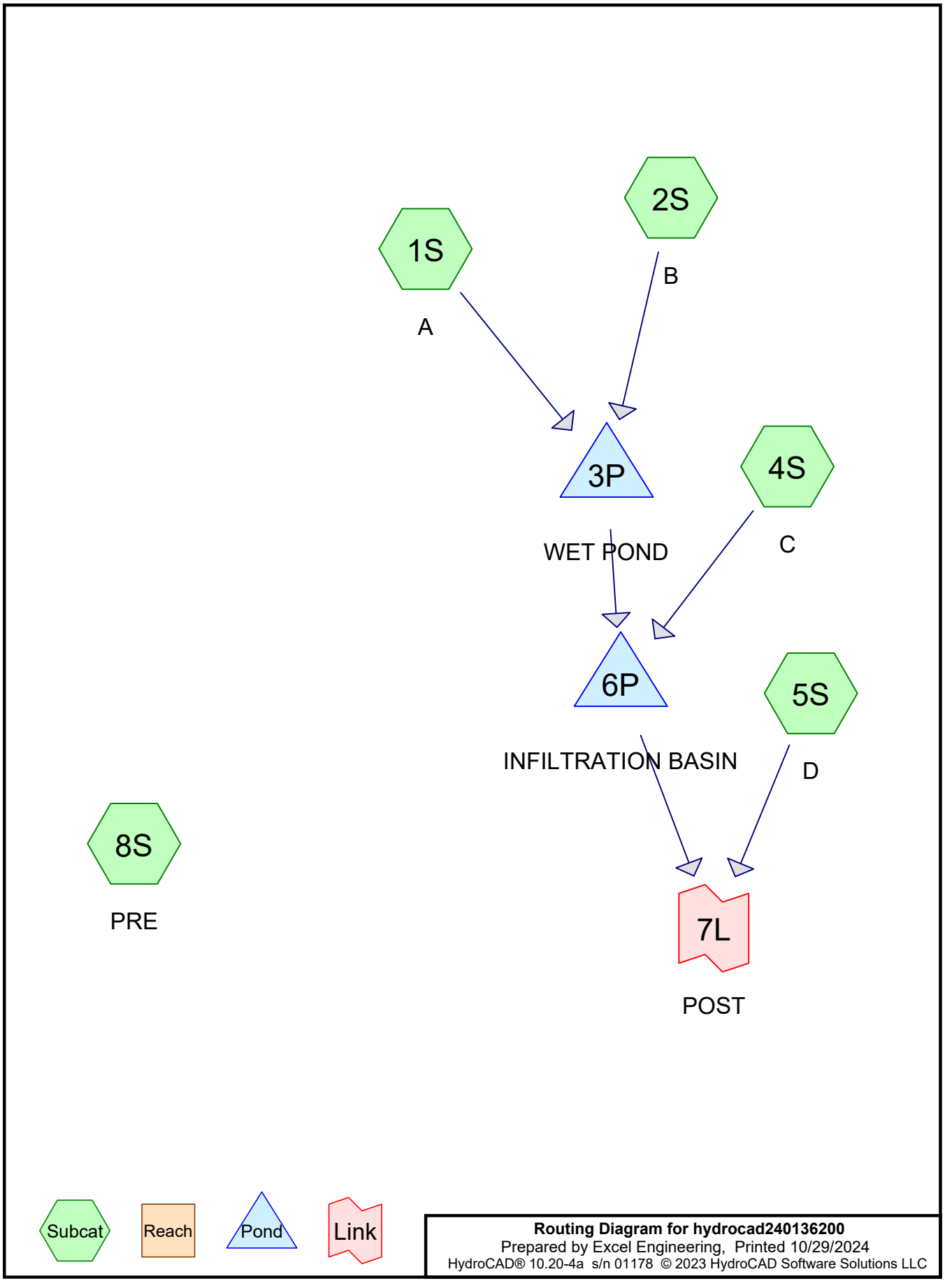
PRELIMINARY DATES

NOT FOR CONSTRUCTION

JOB NUMBER
240136200

SHEET NUMBER
C1.2

Appendix C: Peak Discharge Calculations



Routing Diagram for hydrocad240136200
Prepared by Excel Engineering, Printed 10/29/2024

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.228	98	(1S, 2S, 4S, 5S, 8S)
0.273	74	(2S)
7.721	70	(8S)
4.002	74	>75% Grass cover, Good, HSG C (1S, 4S)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
4.002	HSG C	1S, 4S
0.000	HSG D	
13.223	Other	1S, 2S, 4S, 5S, 8S

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	13.223	13.223		1S, 2S, 4S, 5S, 8S
0.000	0.000	4.002	0.000	0.000	4.002	>75% Grass cover, Good	1S, 4S

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A Runoff Area=312,698 sf 55.51% Impervious Runoff Depth>1.19"
Tc=6.0 min CN=87 Runoff=15.99 cfs 0.712 af

Subcatchment2S: B Runoff Area=20,550 sf 42.06% Impervious Runoff Depth>1.00"
Tc=6.0 min CN=84 Runoff=0.89 cfs 0.040 af

Subcatchment4S: C Runoff Area=35,816 sf 1.63% Impervious Runoff Depth>0.53"
Tc=0.0 min CN=74 Runoff=0.92 cfs 0.036 af

Subcatchment5S: D Runoff Area=7,629 sf 100.00% Impervious Runoff Depth>2.12"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.031 af

Subcatchment8S: PRE Runoff Area=373,638 sf 9.98% Impervious Runoff Depth>0.48"
Flow Length=433' Slope=0.0600 '/' Tc=37.9 min CN=73 Runoff=2.99 cfs 0.346 af

Pond 3P: WET POND Peak Elev=803.34' Storage=21,311 cf Inflow=16.89 cfs 0.752 af
Outflow=0.98 cfs 0.436 af

Pond 6P: INFILTRATIONBASIN Peak Elev=800.66' Storage=2,864 cf Inflow=1.05 cfs 0.472 af
Discarded=0.05 cfs 0.035 af Primary=0.87 cfs 0.400 af Outflow=0.93 cfs 0.435 af

Link 7L: POST Inflow=0.89 cfs 0.431 af
Primary=0.89 cfs 0.431 af

Summary for Subcatchment 1S: A

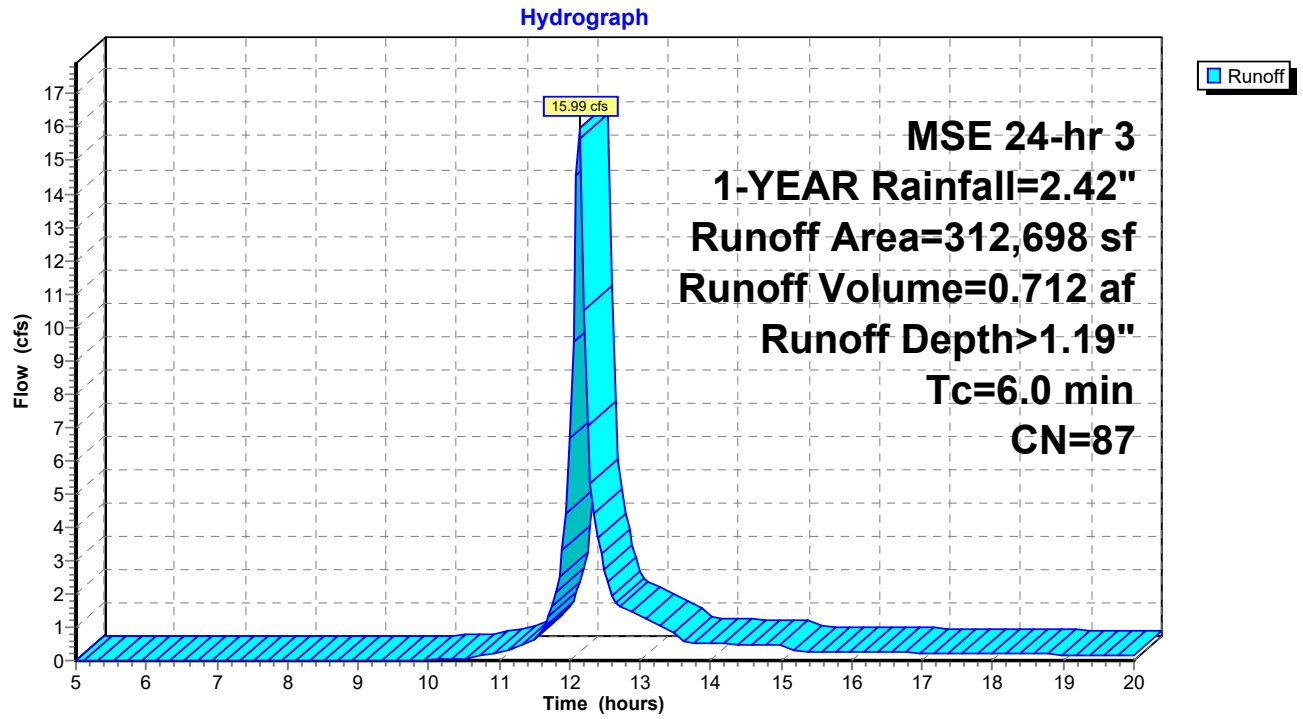
Runoff = 15.99 cfs @ 12.13 hrs, Volume= 0.712 af, Depth> 1.19"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.42"

	Area (sf)	CN	Description
*	49,429	98	
*	124,161	98	
	139,108	74	>75% Grass cover, Good, HSG C
	312,698	87	Weighted Average
	139,108		44.49% Pervious Area
	173,590		55.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: A



Summary for Subcatchment 2S: B

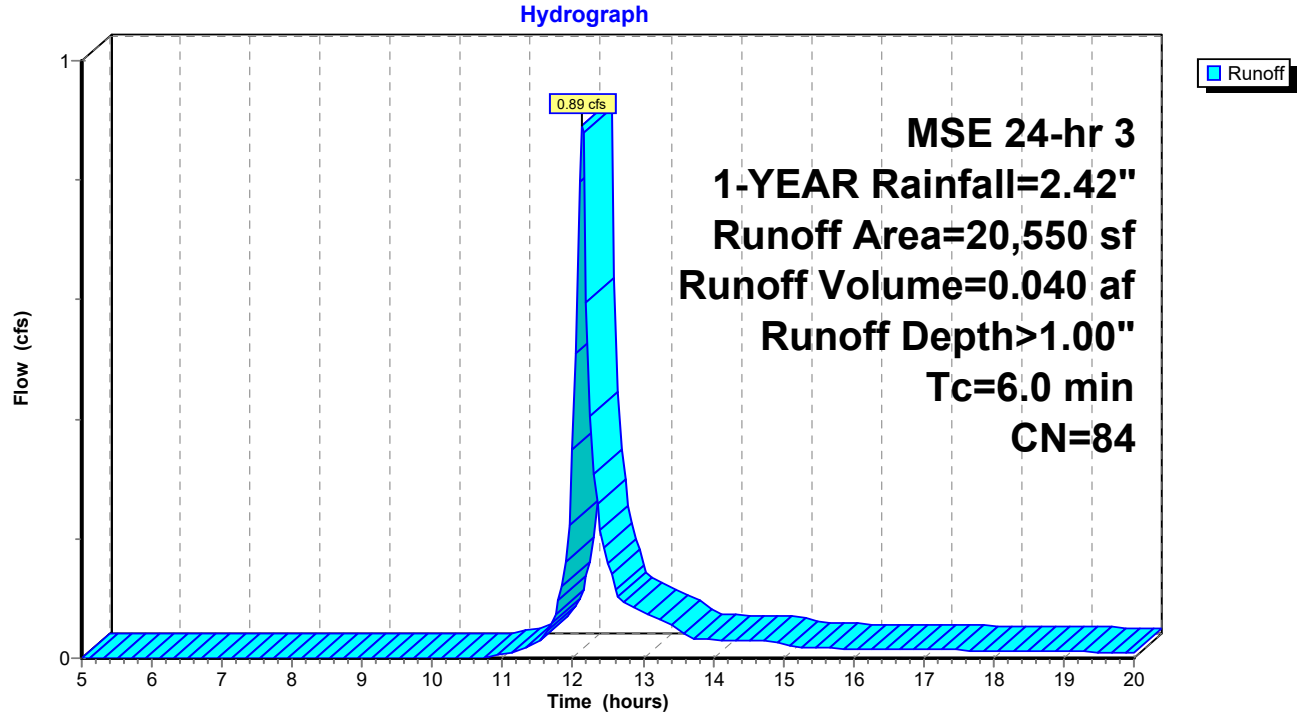
Runoff = 0.89 cfs @ 12.14 hrs, Volume= 0.040 af, Depth> 1.00"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.42"

	Area (sf)	CN	Description
*	8,643	98	
*	11,907	74	
	20,550	84	Weighted Average
	11,907		57.94% Pervious Area
	8,643		42.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: B



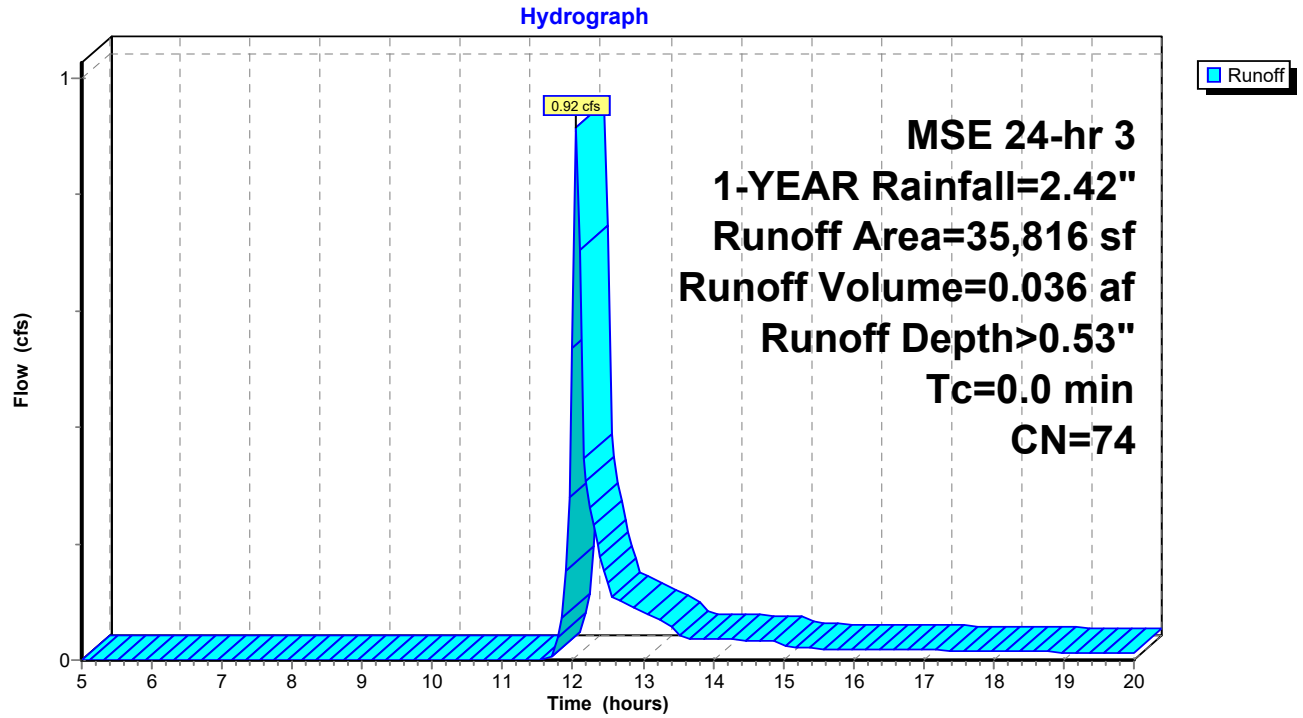
Summary for Subcatchment 4S: C

Runoff = 0.92 cfs @ 12.06 hrs, Volume= 0.036 af, Depth> 0.53"
Routed to Pond 6P : INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.42"

	Area (sf)	CN	Description
*	583	98	
	35,233	74	>75% Grass cover, Good, HSG C
	35,816	74	Weighted Average
	35,233		98.37% Pervious Area
	583		1.63% Impervious Area

Subcatchment 4S: C



Summary for Subcatchment 5S: D

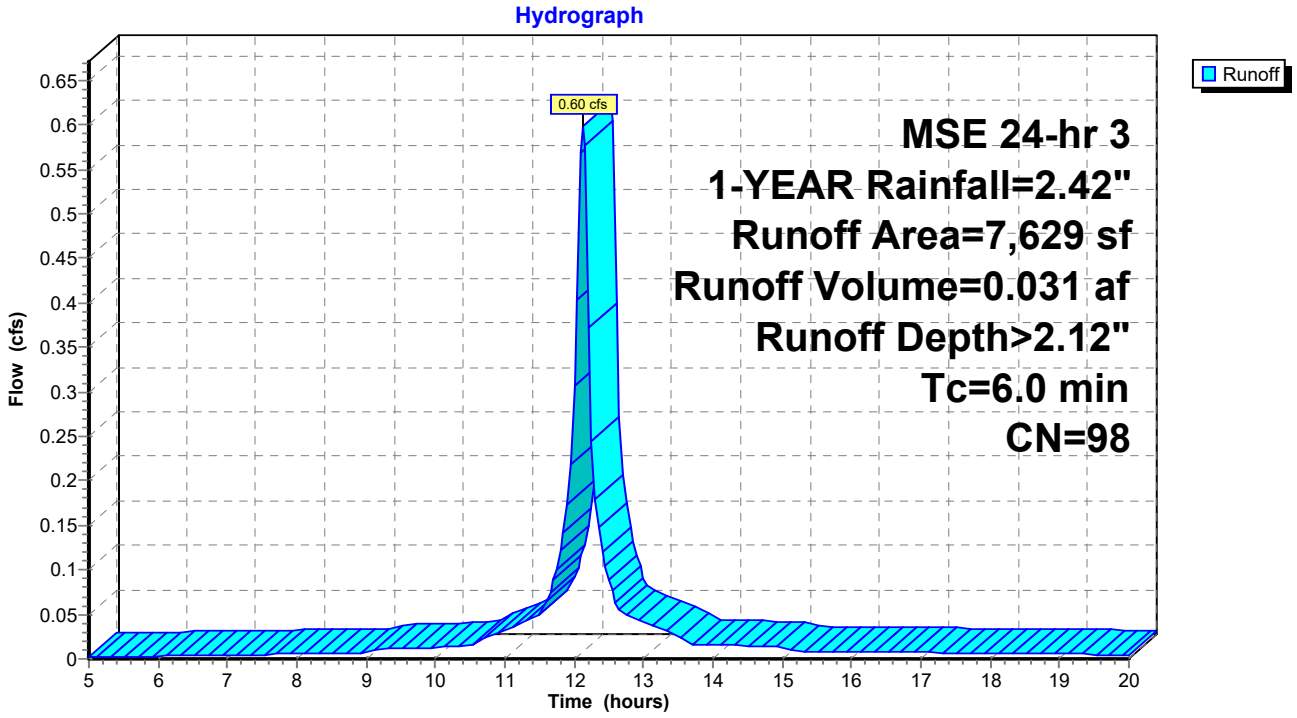
Runoff = 0.60 cfs @ 12.13 hrs, Volume= 0.031 af, Depth> 2.12"
Routed to Link 7L : POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.42"

	Area (sf)	CN	Description
*	7,629	98	
	7,629		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: D



Summary for Subcatchment 8S: PRE

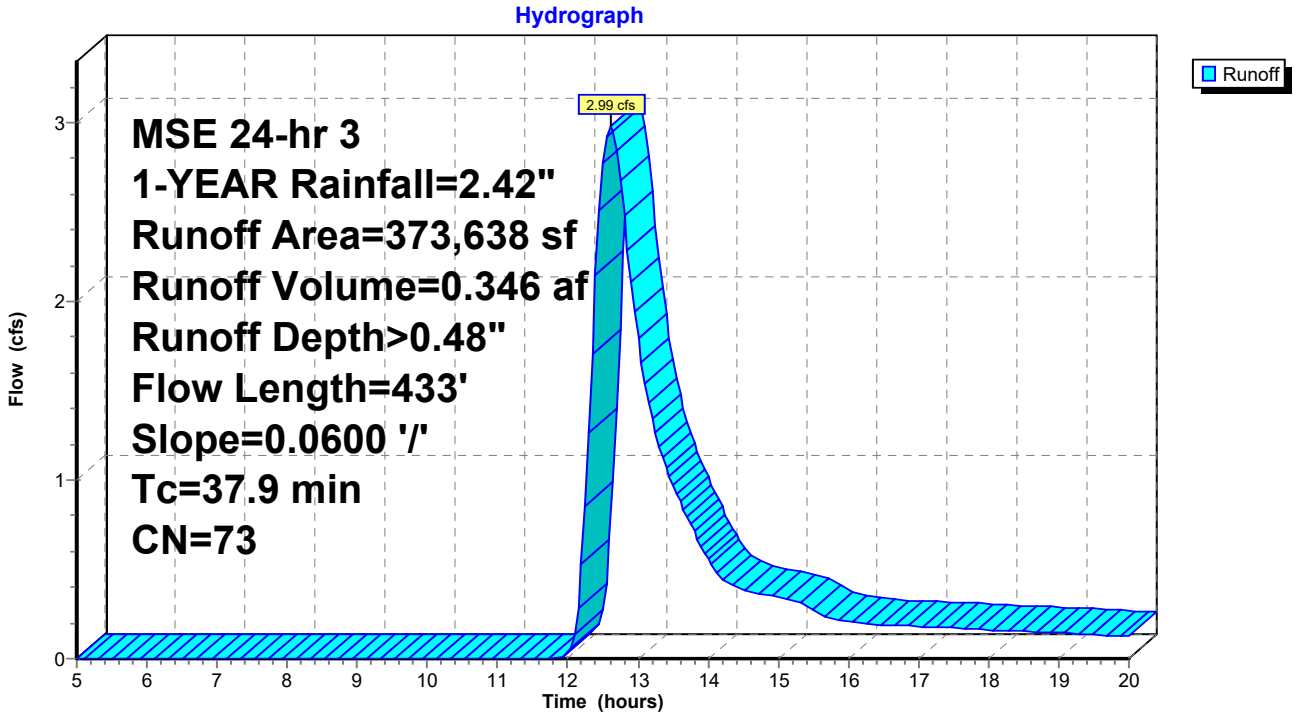
Runoff = 2.99 cfs @ 12.61 hrs, Volume= 0.346 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.42"

	Area (sf)	CN	Description
*	336,331	70	
*	37,307	98	
	373,638	73	Weighted Average
	336,331		90.02% Pervious Area
	37,307		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.1	300	0.0600	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.73"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.9	433	Total			

Subcatchment 8S: PRE



Summary for Pond 3P: WET POND

Inflow Area = 7.650 ac, 54.68% Impervious, Inflow Depth > 1.18" for 1-YEAR event
Inflow = 16.89 cfs @ 12.13 hrs, Volume= 0.752 af
Outflow = 0.98 cfs @ 13.41 hrs, Volume= 0.436 af, Atten= 94%, Lag= 76.6 min
Primary = 0.98 cfs @ 13.41 hrs, Volume= 0.436 af
Routed to Pond 6P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 803.34' @ 13.41 hrs Surf.Area= 18,345 sf Storage= 21,311 cf

Plug-Flow detention time= 207.2 min calculated for 0.436 af (58% of inflow)
Center-of-Mass det. time= 145.1 min (929.4 - 784.3)

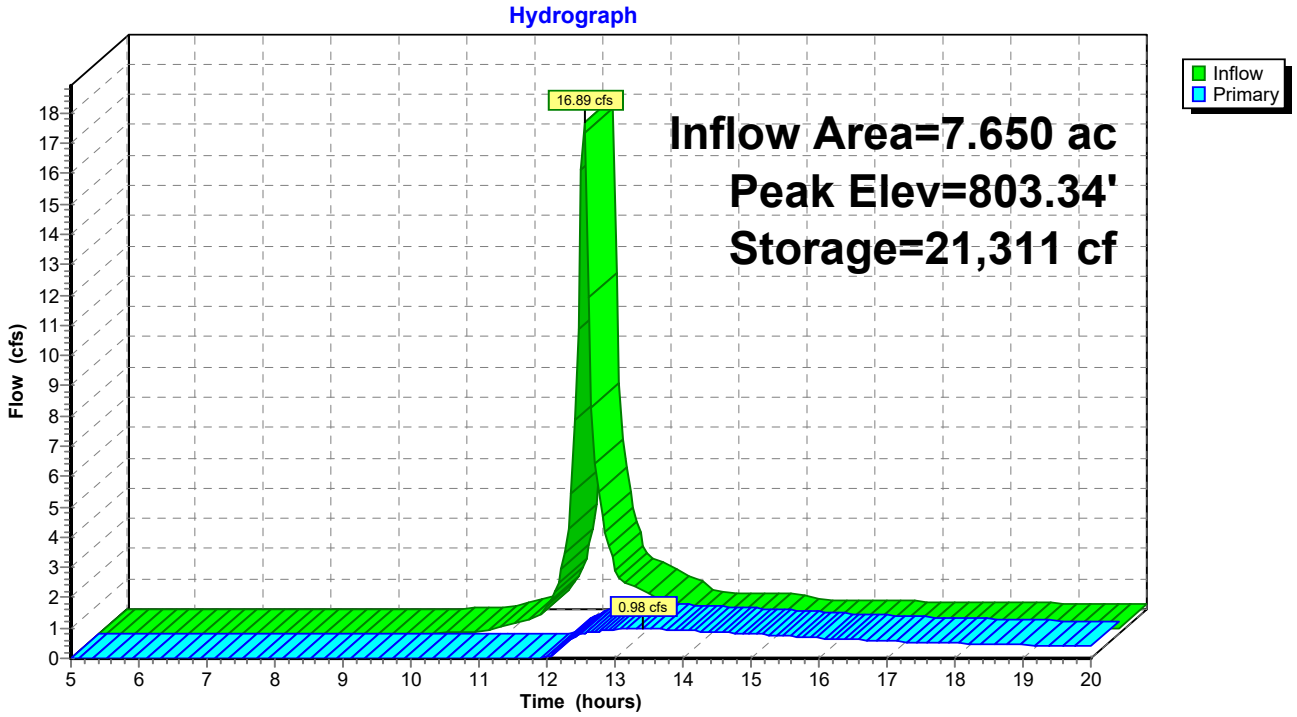
Volume	Invert	Avail.Storage	Storage Description
#1	802.00'	120,650 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
802.00	13,000	0	0
803.00	17,500	15,250	15,250
804.00	20,000	18,750	34,000
805.00	22,900	21,450	55,450
806.00	25,500	24,200	79,650
807.00	28,000	26,750	106,400
807.50	29,000	14,250	120,650

Device	Routing	Invert	Outlet Devices
#1	Primary	802.00'	**10.0" Round Culvert** L= 546.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 802.00' / 800.00' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	802.00'	**20.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.69 (C= 3.36)
#3	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Device 1	805.00'	**24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.98 cfs @ 13.41 hrs HW=803.34' (Free Discharge)
- **1=Culvert** (Passes 0.98 cfs of 1.42 cfs potential flow)
  - **2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.98 cfs @ 3.11 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WET POND



Summary for Pond 6P: INFILTRATION BASIN

Inflow Area = 8.473 ac, 49.54% Impervious, Inflow Depth > 0.67" for 1-YEAR event
Inflow = 1.05 cfs @ 13.25 hrs, Volume= 0.472 af
Outflow = 0.93 cfs @ 14.24 hrs, Volume= 0.435 af, Atten= 12%, Lag= 59.9 min
Discarded = 0.05 cfs @ 14.24 hrs, Volume= 0.035 af
Primary = 0.87 cfs @ 14.24 hrs, Volume= 0.400 af
Routed to Link 7L : POST

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 800.66' @ 14.24 hrs Surf.Area= 4,661 sf Storage= 2,864 cf

Plug-Flow detention time= 52.2 min calculated for 0.433 af (92% of inflow)
Center-of-Mass det. time= 31.0 min (951.1 - 920.1)

Volume	Invert	Avail.Storage	Storage Description
#1	800.00'	62,850 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

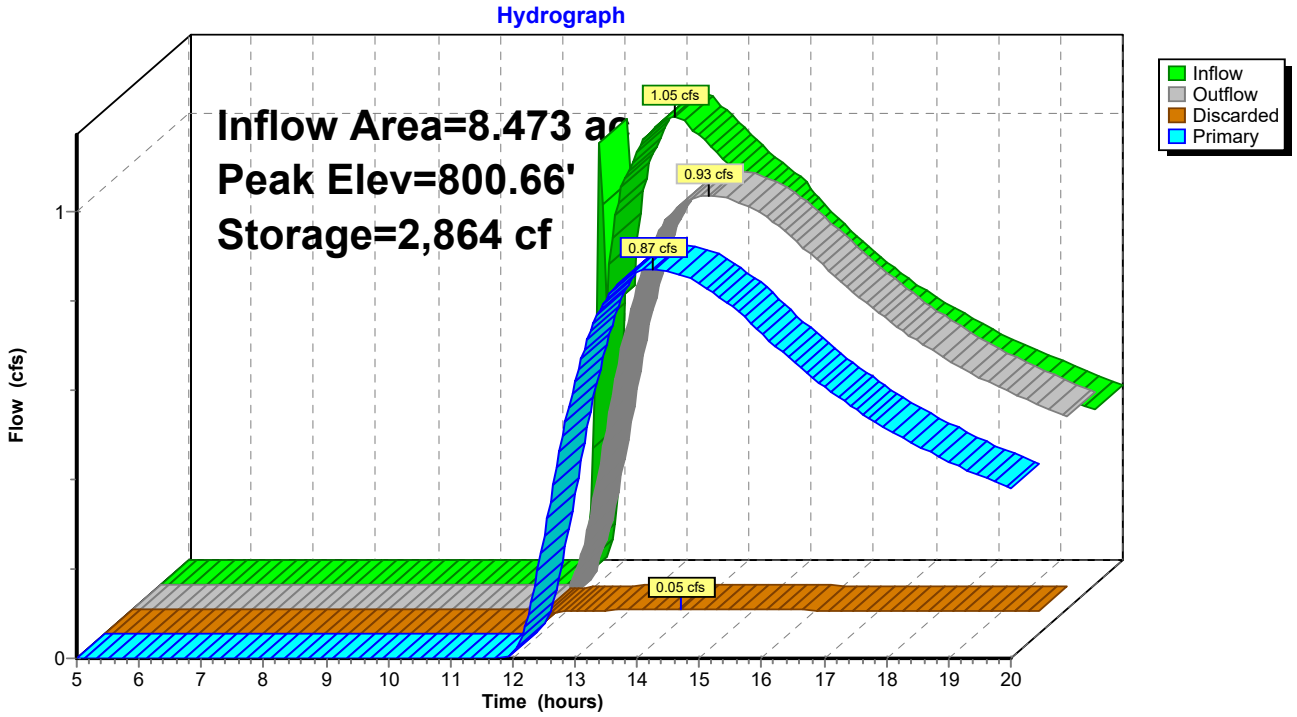
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
800.00	4,000	0	0
801.00	5,000	4,500	4,500
802.00	6,100	5,550	10,050
803.00	7,500	6,800	16,850
804.00	8,500	8,000	24,850
805.00	10,000	9,250	34,100
806.00	11,000	10,500	44,600
807.00	12,500	11,750	56,350
807.50	13,500	6,500	62,850

Device	Routing	Invert	Outlet Devices
#1	Primary	800.00'	**8.0" Round Culvert** L= 391.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 800.00' / 794.00' S= 0.0153 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Discarded	800.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 700.00'

Discarded OutFlow Max=0.05 cfs @ 14.24 hrs HW=800.66' (Free Discharge)
└**3=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.87 cfs @ 14.24 hrs HW=800.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.87 cfs @ 3.13 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: INFILTRATION BASIN

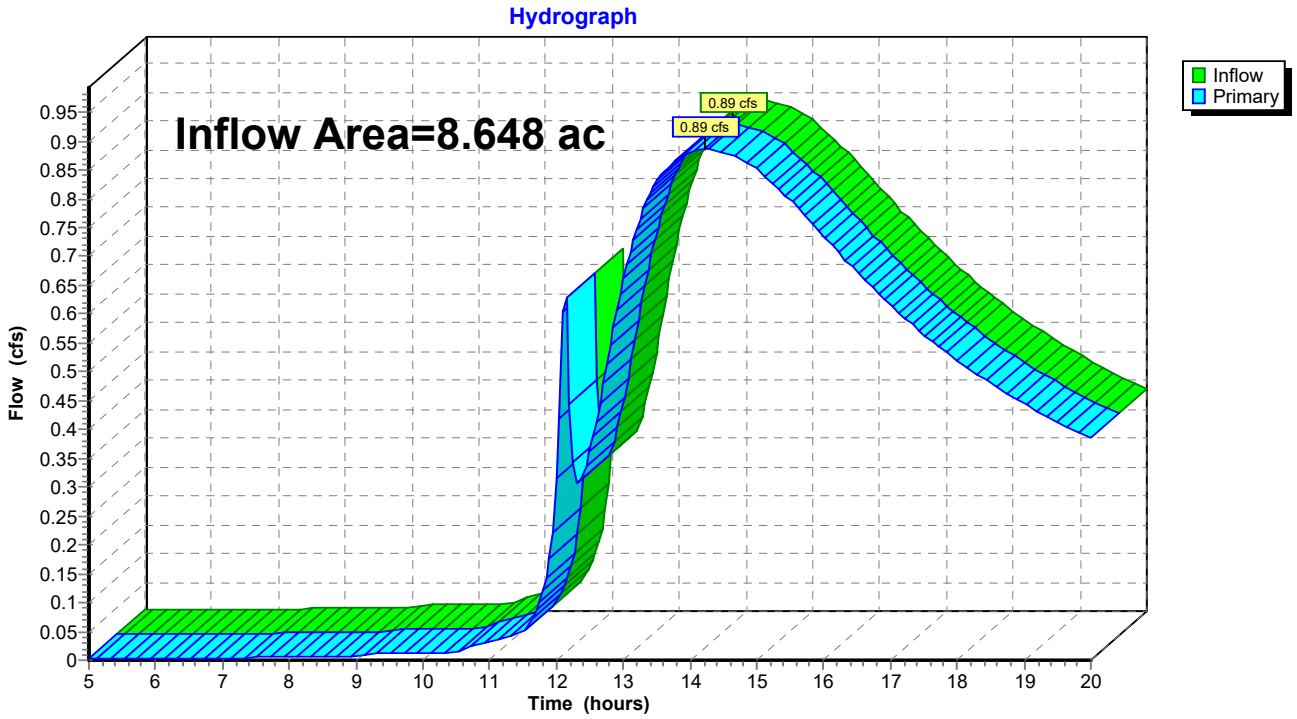


Summary for Link 7L: POST

Inflow Area = 8.648 ac, 50.56% Impervious, Inflow Depth > 0.60" for 1-YEAR event
Inflow = 0.89 cfs @ 14.23 hrs, Volume= 0.431 af
Primary = 0.89 cfs @ 14.23 hrs, Volume= 0.431 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: POST



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A Runoff Area=312,698 sf 55.51% Impervious Runoff Depth>1.44"
Tc=6.0 min CN=87 Runoff=19.27 cfs 0.863 af

Subcatchment2S: B Runoff Area=20,550 sf 42.06% Impervious Runoff Depth>1.24"
Tc=6.0 min CN=84 Runoff=1.10 cfs 0.049 af

Subcatchment4S: C Runoff Area=35,816 sf 1.63% Impervious Runoff Depth>0.70"
Tc=0.0 min CN=74 Runoff=1.24 cfs 0.048 af

Subcatchment5S: D Runoff Area=7,629 sf 100.00% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=98 Runoff=0.68 cfs 0.035 af

Subcatchment8S: PRE Runoff Area=373,638 sf 9.98% Impervious Runoff Depth>0.65"
Flow Length=433' Slope=0.0600 '/' Tc=37.9 min CN=73 Runoff=4.16 cfs 0.462 af

Pond 3P: WET POND Peak Elev=803.54' Storage=25,146 cf Inflow=20.36 cfs 0.912 af
Outflow=1.40 cfs 0.573 af

Pond 6P: INFILTRATIONBASIN Peak Elev=801.09' Storage=4,971 cf Inflow=1.50 cfs 0.621 af
Discarded=0.06 cfs 0.036 af Primary=1.04 cfs 0.543 af Outflow=1.10 cfs 0.579 af

Link 7L: POST Inflow=1.08 cfs 0.578 af
Primary=1.08 cfs 0.578 af

Summary for Subcatchment 1S: A

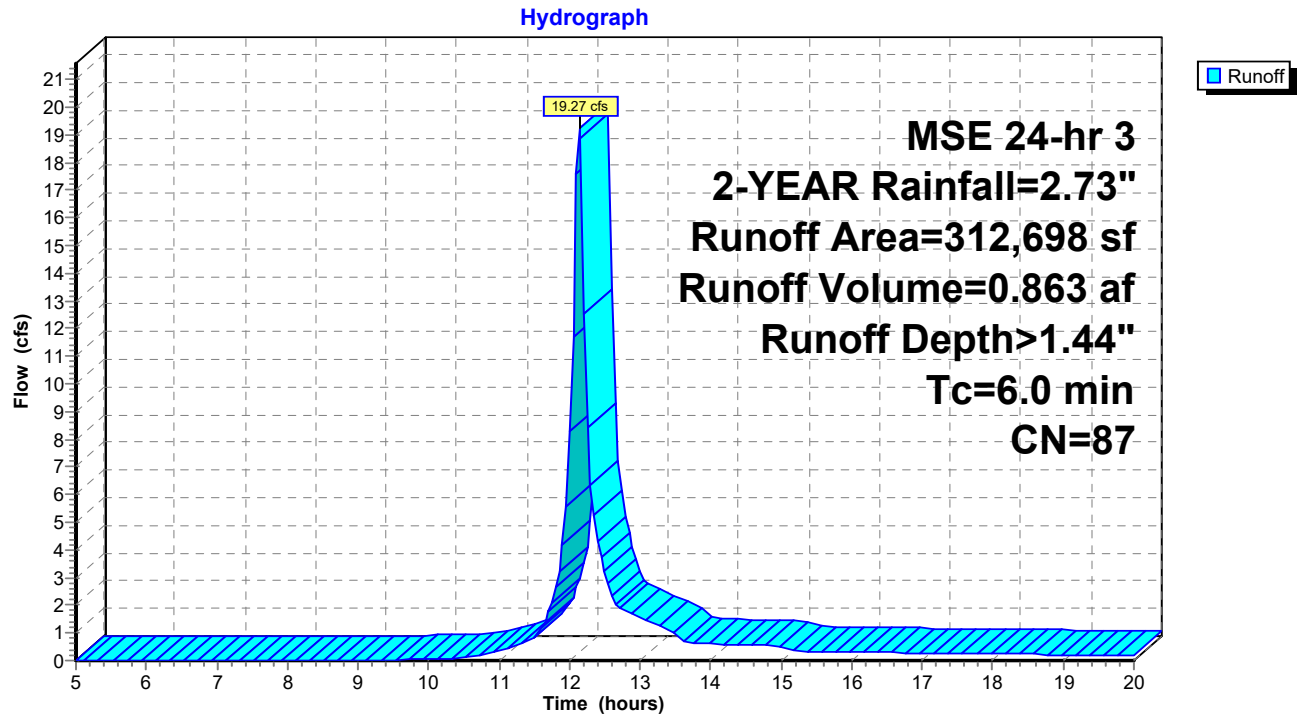
Runoff = 19.27 cfs @ 12.13 hrs, Volume= 0.863 af, Depth> 1.44"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.73"

	Area (sf)	CN	Description
*	49,429	98	
*	124,161	98	
	139,108	74	>75% Grass cover, Good, HSG C
	312,698	87	Weighted Average
	139,108		44.49% Pervious Area
	173,590		55.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: A



Summary for Subcatchment 2S: B

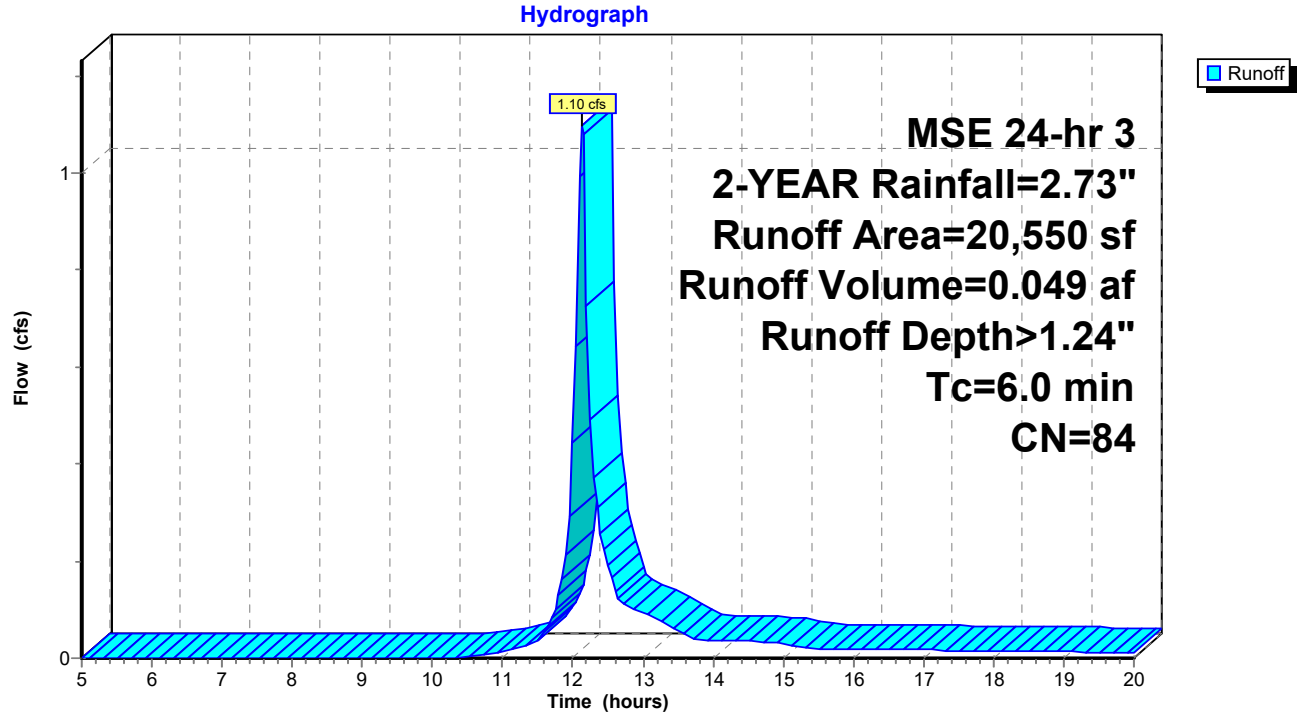
Runoff = 1.10 cfs @ 12.13 hrs, Volume= 0.049 af, Depth> 1.24"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.73"

	Area (sf)	CN	Description
*	8,643	98	
*	11,907	74	
	20,550	84	Weighted Average
	11,907		57.94% Pervious Area
	8,643		42.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: B



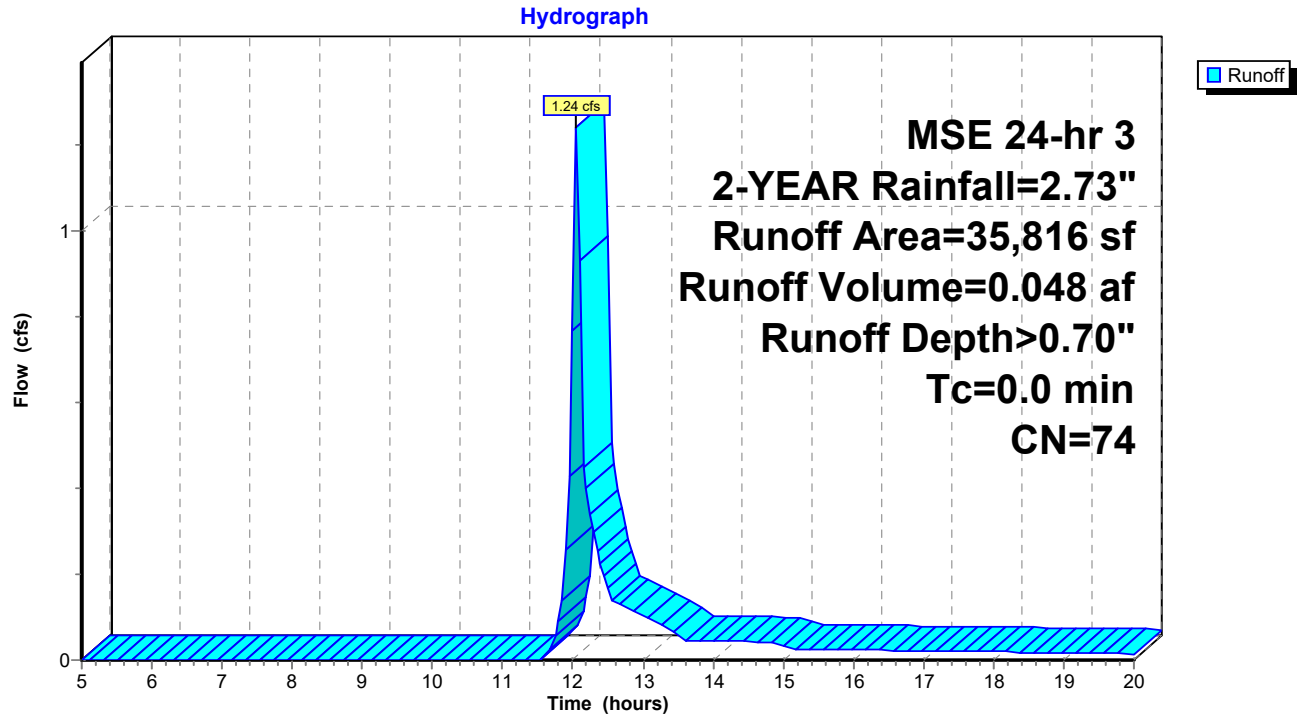
Summary for Subcatchment 4S: C

Runoff = 1.24 cfs @ 12.06 hrs, Volume= 0.048 af, Depth> 0.70"
Routed to Pond 6P : INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.73"

	Area (sf)	CN	Description
*	583	98	
	35,233	74	>75% Grass cover, Good, HSG C
	35,816	74	Weighted Average
	35,233		98.37% Pervious Area
	583		1.63% Impervious Area

Subcatchment 4S: C



Summary for Subcatchment 5S: D

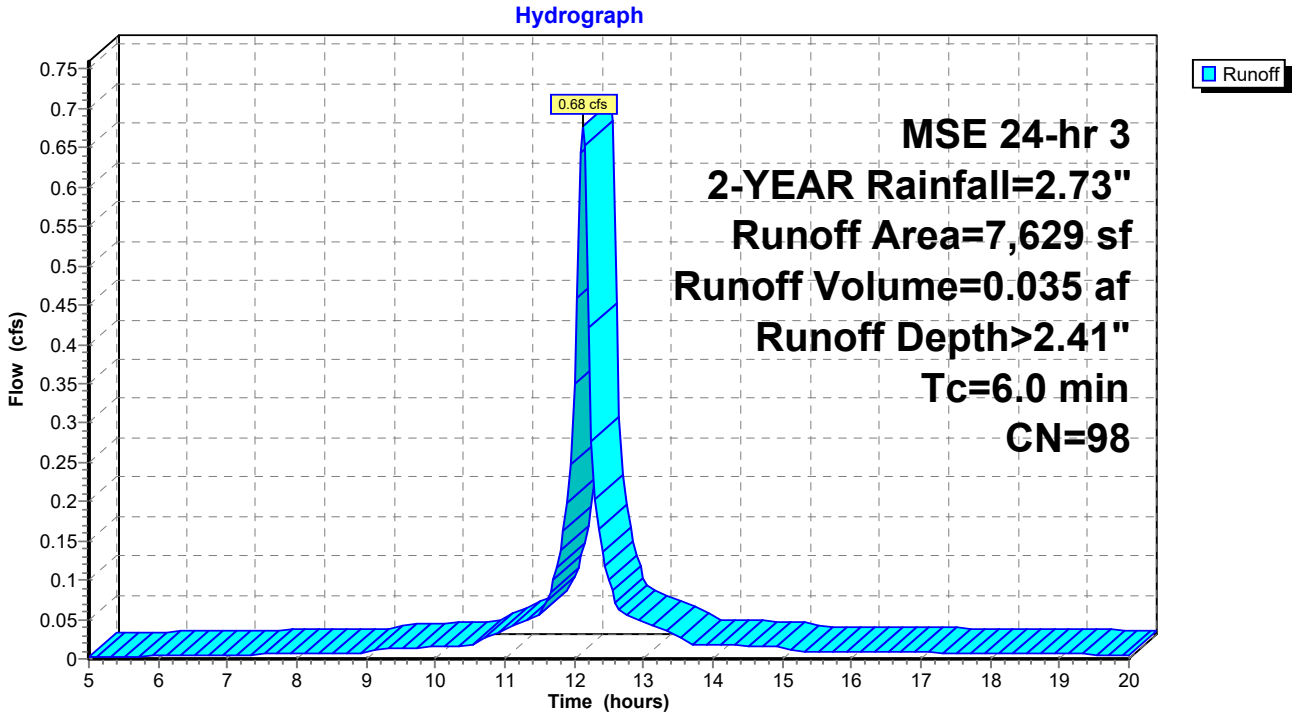
Runoff = 0.68 cfs @ 12.13 hrs, Volume= 0.035 af, Depth> 2.41"
Routed to Link 7L : POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.73"

	Area (sf)	CN	Description
*	7,629	98	
	7,629		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: D



Summary for Subcatchment 8S: PRE

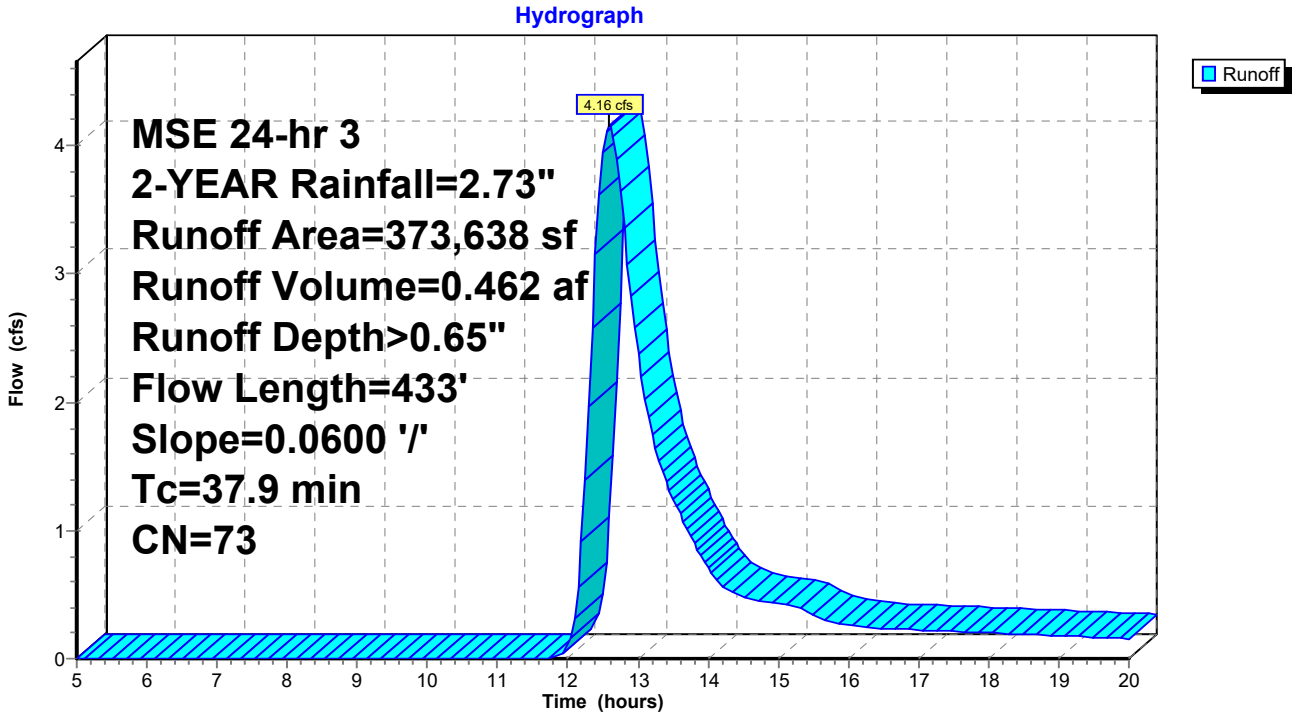
Runoff = 4.16 cfs @ 12.59 hrs, Volume= 0.462 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.73"

	Area (sf)	CN	Description
*	336,331	70	
*	37,307	98	
	373,638	73	Weighted Average
	336,331		90.02% Pervious Area
	37,307		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.1	300	0.0600	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.73"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.9	433	Total			

Subcatchment 8S: PRE



Summary for Pond 3P: WET POND

Inflow Area = 7.650 ac, 54.68% Impervious, Inflow Depth > 1.43" for 2-YEAR event
Inflow = 20.36 cfs @ 12.13 hrs, Volume= 0.912 af
Outflow = 1.40 cfs @ 13.21 hrs, Volume= 0.573 af, Atten= 93%, Lag= 64.7 min
Primary = 1.40 cfs @ 13.21 hrs, Volume= 0.573 af
Routed to Pond 6P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 803.54' @ 13.21 hrs Surf.Area= 18,861 sf Storage= 25,146 cf

Plug-Flow detention time= 196.3 min calculated for 0.573 af (63% of inflow)
Center-of-Mass det. time= 137.4 min (918.5 - 781.2)

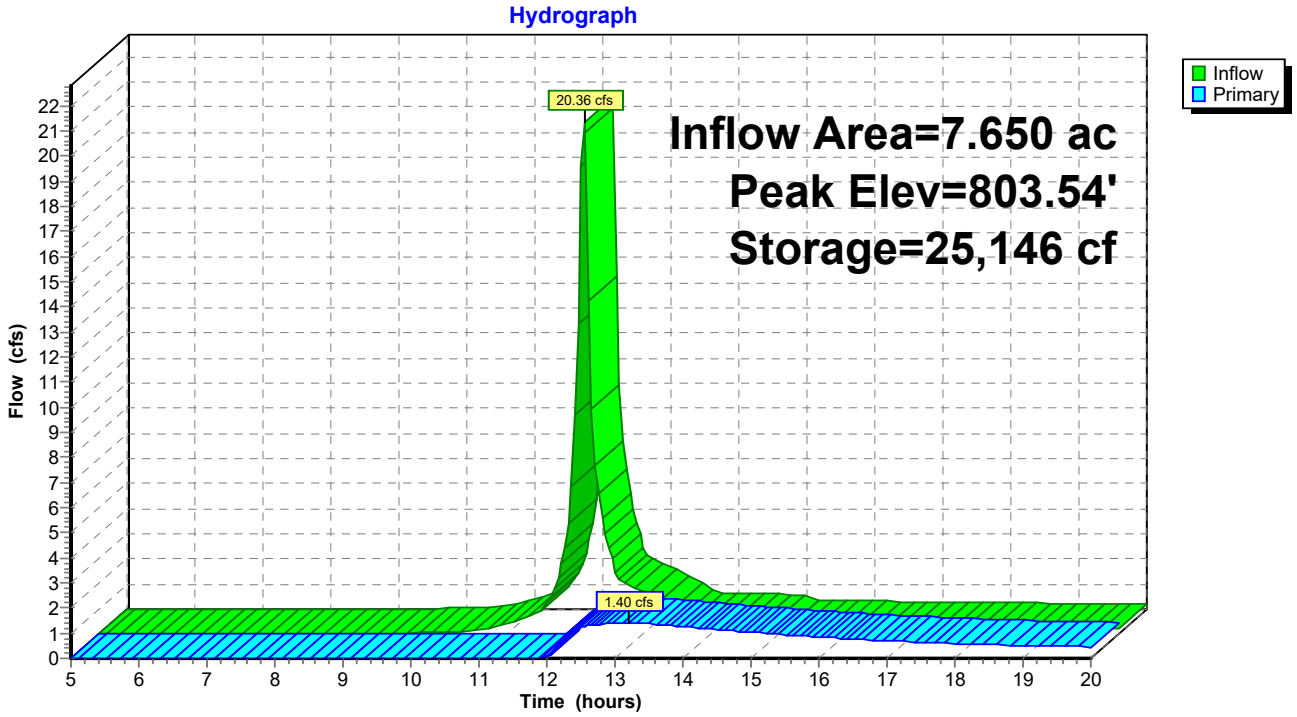
Volume	Invert	Avail.Storage	Storage Description
#1	802.00'	120,650 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
802.00	13,000	0	0
803.00	17,500	15,250	15,250
804.00	20,000	18,750	34,000
805.00	22,900	21,450	55,450
806.00	25,500	24,200	79,650
807.00	28,000	26,750	106,400
807.50	29,000	14,250	120,650

Device	Routing	Invert	Outlet Devices
#1	Primary	802.00'	**10.0" Round Culvert** L= 546.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 802.00' / 800.00' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	802.00'	**20.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.69 (C= 3.36)
#3	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Device 1	805.00'	**24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 13.21 hrs HW=803.54' (Free Discharge)
- **1=Culvert** (Passes 1.41 cfs of 1.48 cfs potential flow)
  - **2=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.41 cfs @ 3.34 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WET POND



Summary for Pond 6P: INFILTRATION BASIN

Inflow Area = 8.473 ac, 49.54% Impervious, Inflow Depth > 0.88" for 2-YEAR event
Inflow = 1.50 cfs @ 13.04 hrs, Volume= 0.621 af
Outflow = 1.10 cfs @ 13.34 hrs, Volume= 0.579 af, Atten= 27%, Lag= 17.9 min
Discarded = 0.06 cfs @ 13.34 hrs, Volume= 0.036 af
Primary = 1.04 cfs @ 13.34 hrs, Volume= 0.543 af
Routed to Link 7L : POST

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 801.09' @ 15.10 hrs Surf.Area= 5,103 sf Storage= 4,971 cf

Plug-Flow detention time= 62.0 min calculated for 0.577 af (93% of inflow)
Center-of-Mass det. time= 43.2 min (952.9 - 909.6)

Volume	Invert	Avail.Storage	Storage Description
#1	800.00'	62,850 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

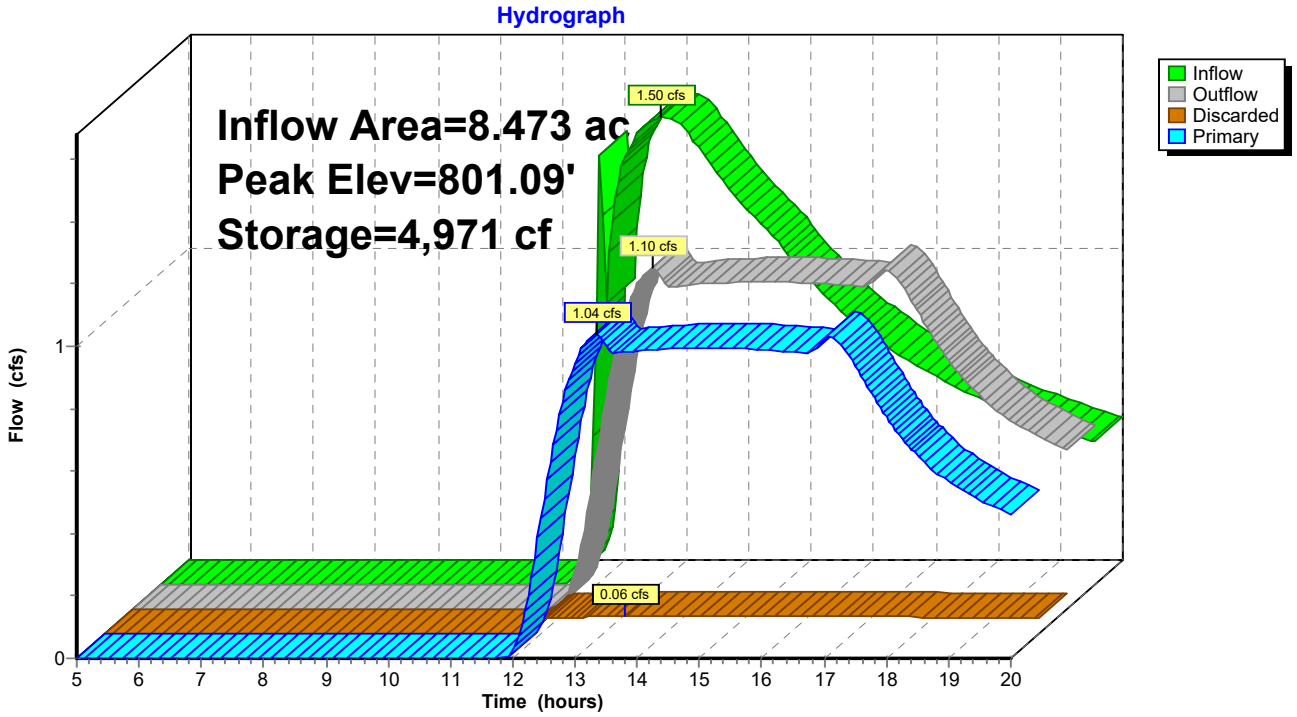
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
800.00	4,000	0	0
801.00	5,000	4,500	4,500
802.00	6,100	5,550	10,050
803.00	7,500	6,800	16,850
804.00	8,500	8,000	24,850
805.00	10,000	9,250	34,100
806.00	11,000	10,500	44,600
807.00	12,500	11,750	56,350
807.50	13,500	6,500	62,850

Device	Routing	Invert	Outlet Devices
#1	Primary	800.00'	**8.0" Round Culvert** L= 391.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 800.00' / 794.00' S= 0.0153 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Discarded	800.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 700.00'

Discarded OutFlow Max=0.06 cfs @ 13.34 hrs HW=800.83' (Free Discharge)
└**3=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=1.04 cfs @ 13.34 hrs HW=800.83' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.04 cfs @ 3.09 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: INFILTRATION BASIN

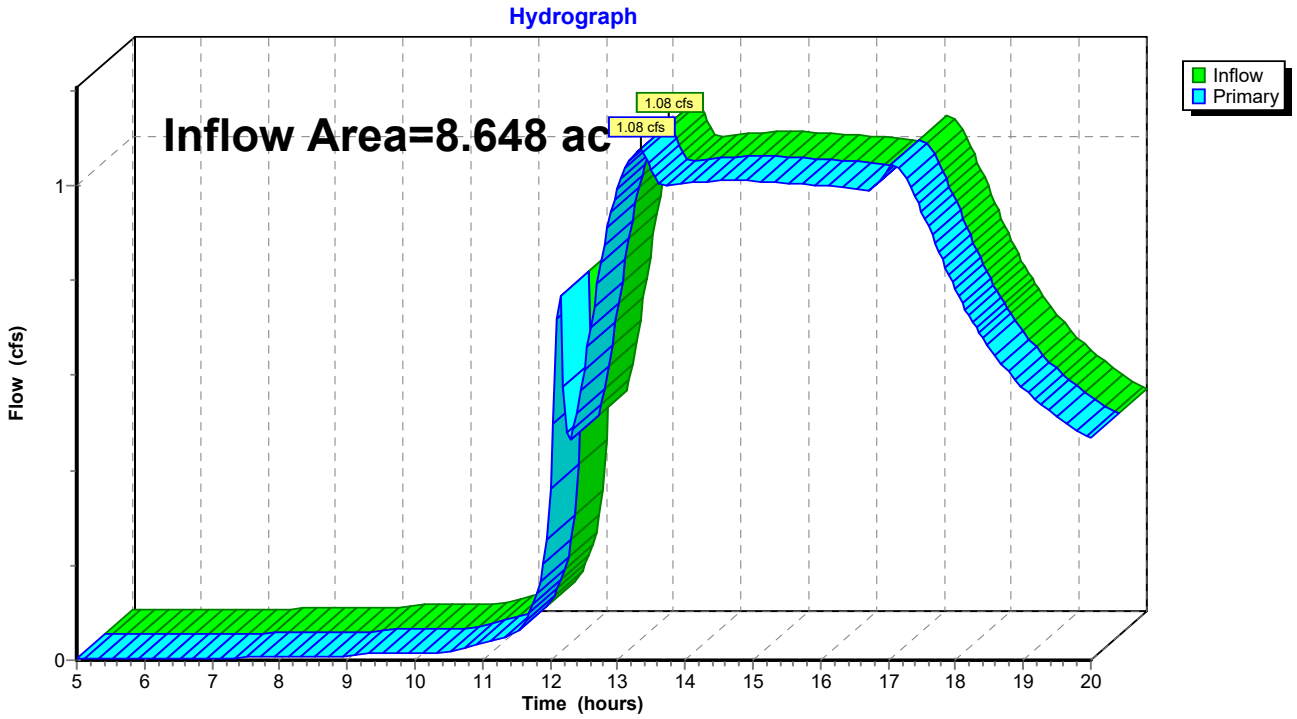


Summary for Link 7L: POST

Inflow Area = 8.648 ac, 50.56% Impervious, Inflow Depth > 0.80" for 2-YEAR event
Inflow = 1.08 cfs @ 13.33 hrs, Volume= 0.578 af
Primary = 1.08 cfs @ 13.33 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: POST



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: A Runoff Area=312,698 sf 55.51% Impervious Runoff Depth>4.54"
Tc=6.0 min CN=87 Runoff=56.92 cfs 2.716 af

Subcatchment2S: B Runoff Area=20,550 sf 42.06% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=84 Runoff=3.55 cfs 0.166 af

Subcatchment4S: C Runoff Area=35,816 sf 1.63% Impervious Runoff Depth>3.21"
Tc=0.0 min CN=74 Runoff=5.72 cfs 0.220 af

Subcatchment5S: D Runoff Area=7,629 sf 100.00% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=98 Runoff=1.56 cfs 0.083 af

Subcatchment8S: PRE Runoff Area=373,638 sf 9.98% Impervious Runoff Depth>3.08"
Flow Length=433' Slope=0.0600 '/' Tc=37.9 min CN=73 Runoff=21.64 cfs 2.202 af

Pond 3P: WET POND Peak Elev=806.42' Storage=90,528 cf Inflow=60.47 cfs 2.882 af
Outflow=2.12 cfs 1.400 af

Pond 6P: INFILTRATIONBASIN Peak Elev=804.90' Storage=33,065 cf Inflow=7.36 cfs 1.620 af
Discarded=0.12 cfs 0.069 af Primary=1.25 cfs 0.790 af Outflow=1.37 cfs 0.860 af

Link 7L: POST Inflow=2.57 cfs 0.874 af
Primary=2.57 cfs 0.874 af

Summary for Subcatchment 1S: A

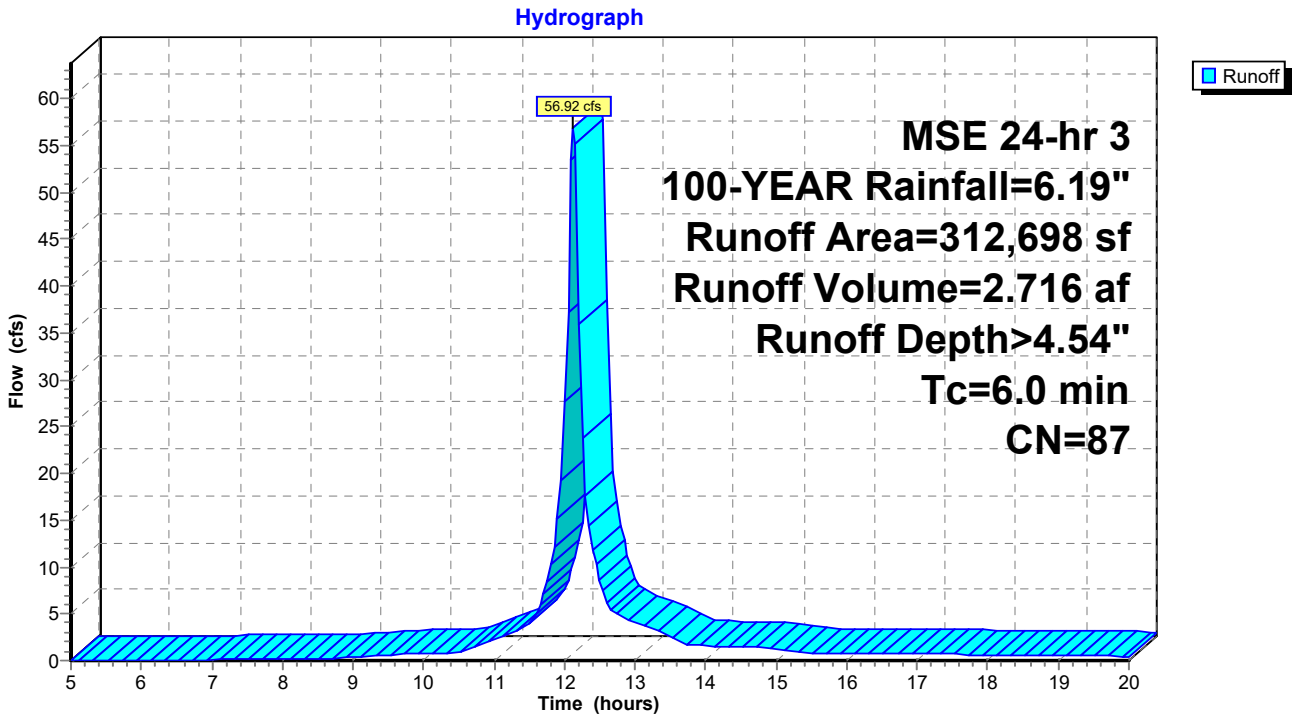
Runoff = 56.92 cfs @ 12.13 hrs, Volume= 2.716 af, Depth> 4.54"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	49,429	98	
*	124,161	98	
	139,108	74	>75% Grass cover, Good, HSG C
	312,698	87	Weighted Average
	139,108		44.49% Pervious Area
	173,590		55.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: A



Summary for Subcatchment 2S: B

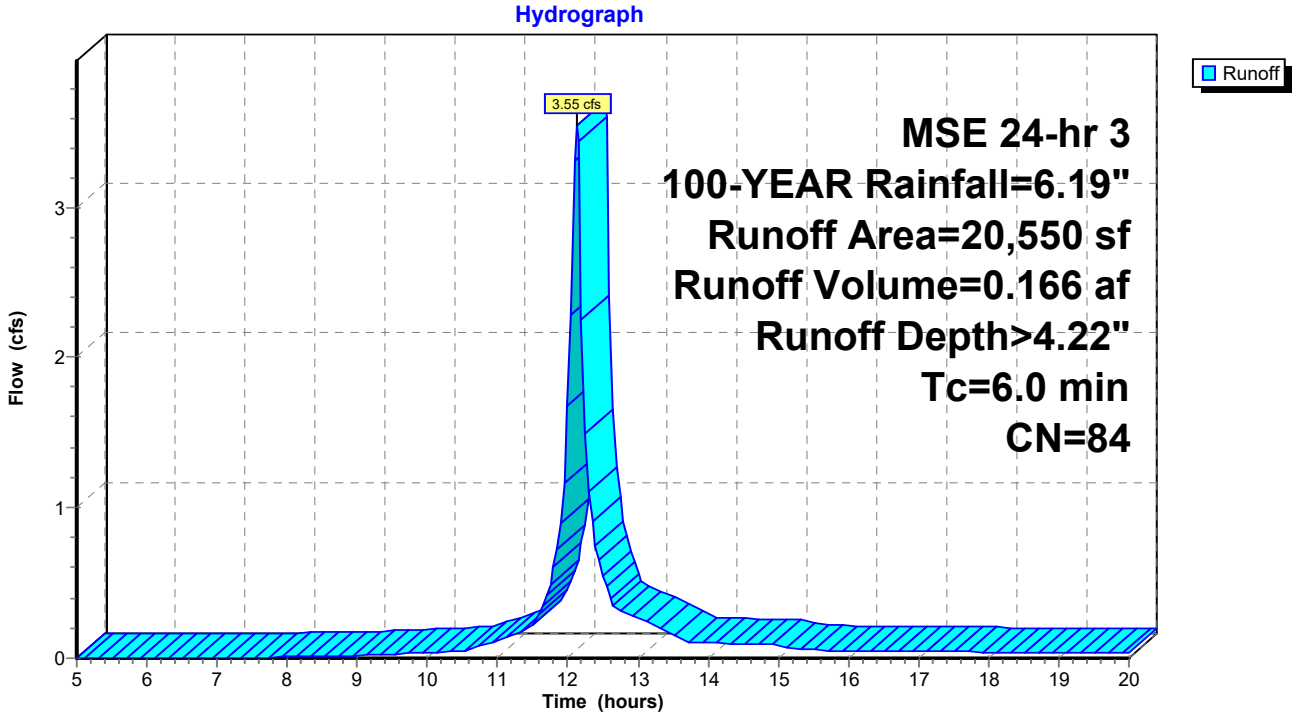
Runoff = 3.55 cfs @ 12.13 hrs, Volume= 0.166 af, Depth> 4.22"
Routed to Pond 3P : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	8,643	98	
*	11,907	74	
	20,550	84	Weighted Average
	11,907		57.94% Pervious Area
	8,643		42.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: B



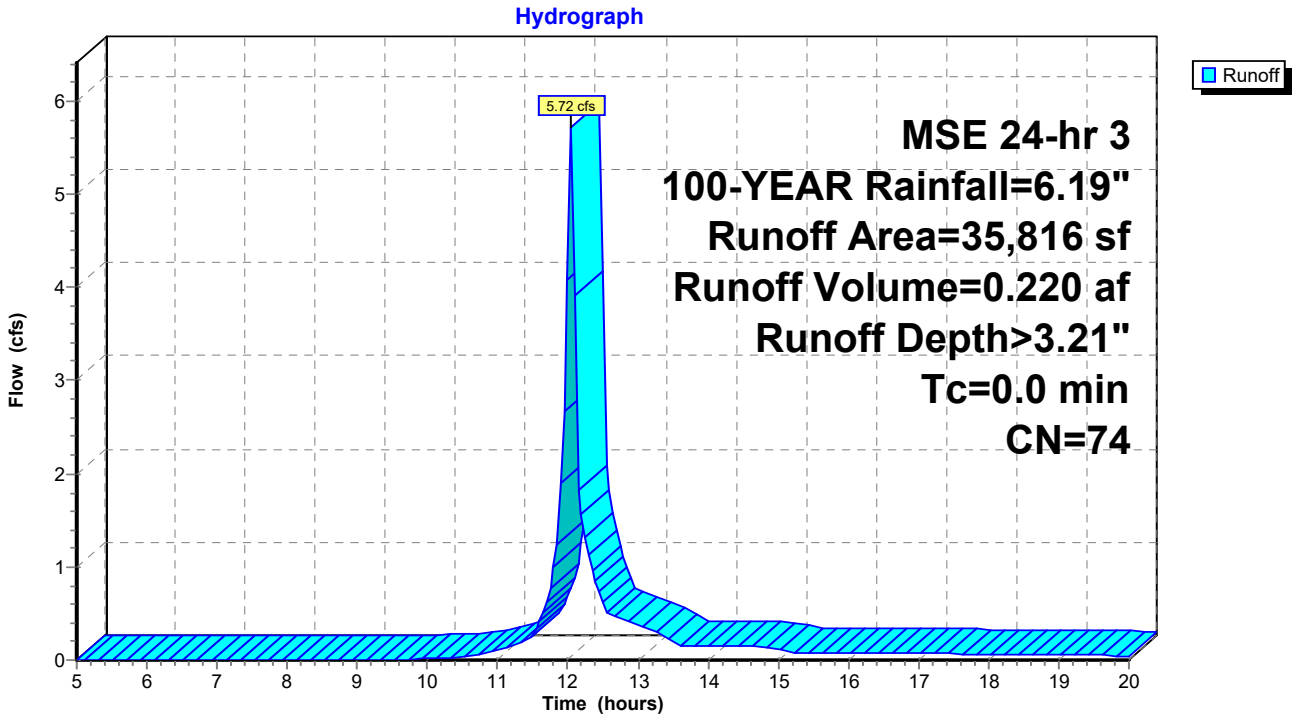
Summary for Subcatchment 4S: C

Runoff = 5.72 cfs @ 12.05 hrs, Volume= 0.220 af, Depth> 3.21"
Routed to Pond 6P : INFILTRATION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	583	98	
	35,233	74	>75% Grass cover, Good, HSG C
	35,816	74	Weighted Average
	35,233		98.37% Pervious Area
	583		1.63% Impervious Area

Subcatchment 4S: C



Summary for Subcatchment 5S: D

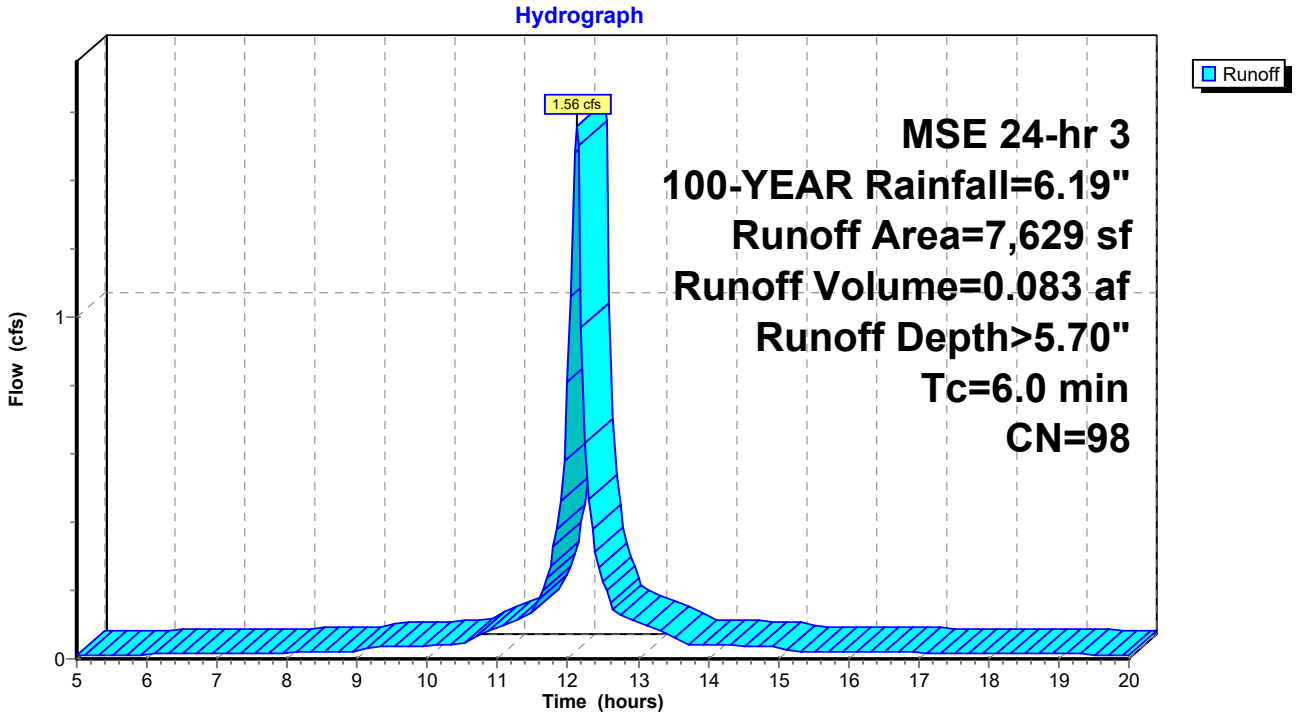
Runoff = 1.56 cfs @ 12.13 hrs, Volume= 0.083 af, Depth> 5.70"
Routed to Link 7L : POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	7,629	98	
	7,629		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: D



Summary for Subcatchment 8S: PRE

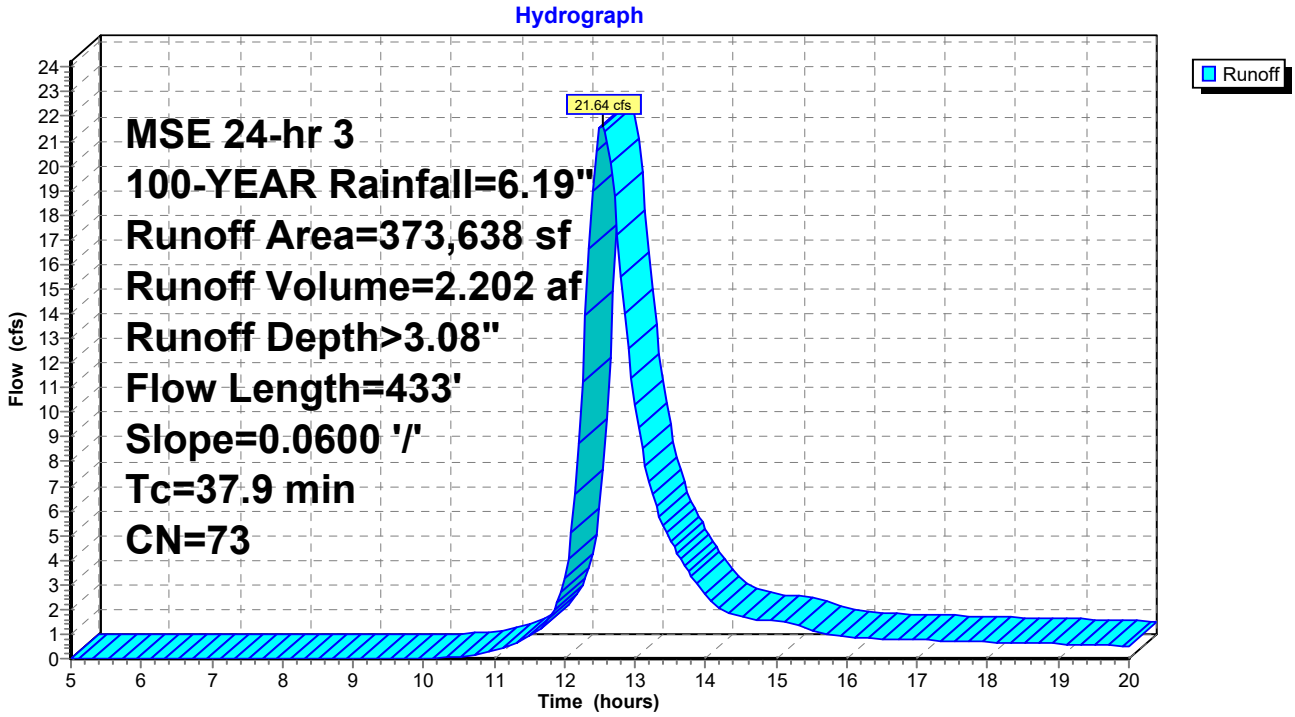
Runoff = 21.64 cfs @ 12.53 hrs, Volume= 2.202 af, Depth> 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	336,331	70	
*	37,307	98	
	373,638	73	Weighted Average
	336,331		90.02% Pervious Area
	37,307		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.1	300	0.0600	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.73"
1.8	133	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.9	433	Total			

Subcatchment 8S: PRE



Summary for Pond 3P: WET POND

Inflow Area = 7.650 ac, 54.68% Impervious, Inflow Depth > 4.52" for 100-YEAR event
Inflow = 60.47 cfs @ 12.13 hrs, Volume= 2.882 af
Outflow = 2.12 cfs @ 13.60 hrs, Volume= 1.400 af, Atten= 96%, Lag= 88.2 min
Primary = 2.12 cfs @ 13.60 hrs, Volume= 1.400 af
Routed to Pond 6P : INFILTRATION BASIN

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 806.42' @ 13.60 hrs Surf.Area= 26,545 sf Storage= 90,528 cf

Plug-Flow detention time= 250.8 min calculated for 1.395 af (48% of inflow)
Center-of-Mass det. time= 187.5 min (949.2 - 761.7)

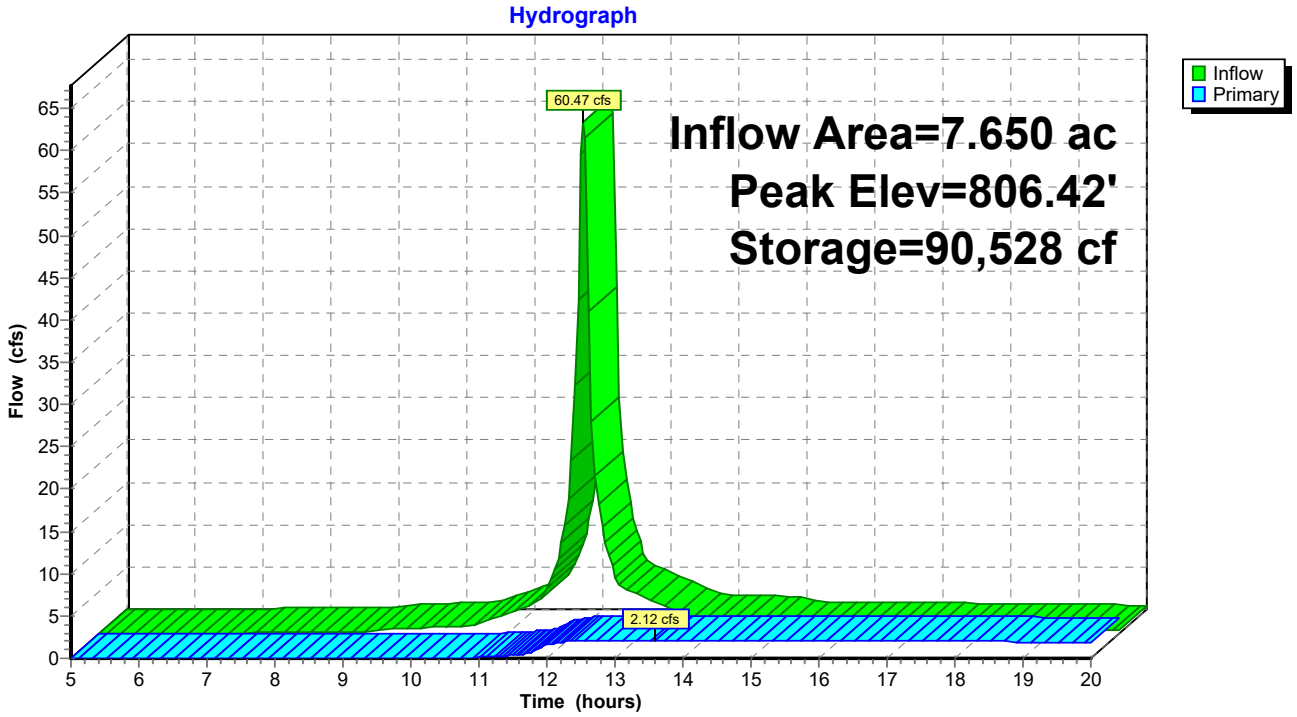
Volume	Invert	Avail.Storage	Storage Description
#1	802.00'	120,650 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
802.00	13,000	0	0
803.00	17,500	15,250	15,250
804.00	20,000	18,750	34,000
805.00	22,900	21,450	55,450
806.00	25,500	24,200	79,650
807.00	28,000	26,750	106,400
807.50	29,000	14,250	120,650

Device	Routing	Invert	Outlet Devices
#1	Primary	802.00'	**10.0" Round Culvert** L= 546.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 802.00' / 800.00' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	802.00'	**20.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.69 (C= 3.36)
#3	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Device 1	805.00'	**24.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.12 cfs @ 13.60 hrs HW=806.42' (Free Discharge)
- **1=Culvert** (Barrel Controls 2.12 cfs @ 3.89 fps)
  - **2=Sharp-Crested Vee/Trap Weir** (Passes < 19.46 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 34.40 cfs potential flow)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WET POND



Summary for Pond 6P: INFILTRATION BASIN

Inflow Area = 8.473 ac, 49.54% Impervious, Inflow Depth > 2.29" for 100-YEAR event
Inflow = 7.36 cfs @ 12.05 hrs, Volume= 1.620 af
Outflow = 1.37 cfs @ 20.00 hrs, Volume= 0.860 af, Atten= 81%, Lag= 477.0 min
Discarded = 0.12 cfs @ 20.00 hrs, Volume= 0.069 af
Primary = 1.25 cfs @ 20.00 hrs, Volume= 0.790 af
Routed to Link 7L : POST

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 804.90' @ 20.00 hrs Surf.Area= 9,843 sf Storage= 33,065 cf

Plug-Flow detention time= 159.2 min calculated for 0.857 af (53% of inflow)
Center-of-Mass det. time= 35.7 min (961.5 - 925.8)

Volume	Invert	Avail.Storage	Storage Description
#1	800.00'	62,850 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

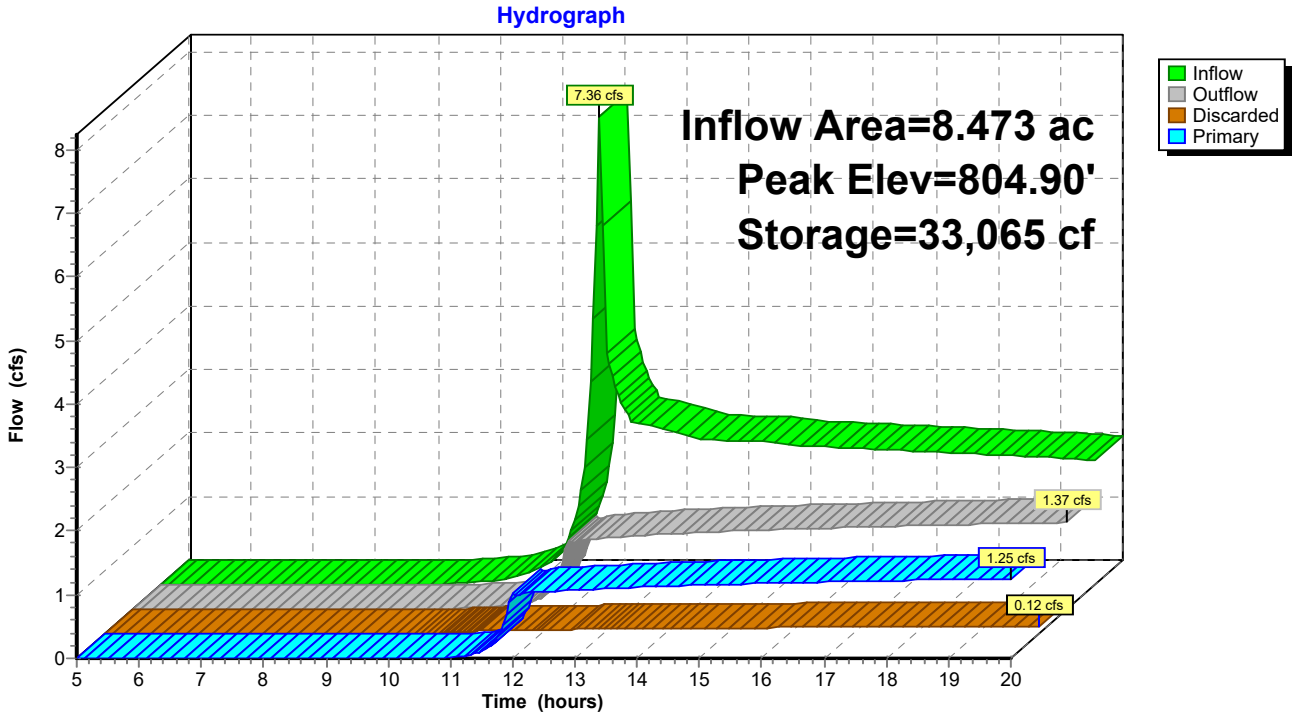
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
800.00	4,000	0	0
801.00	5,000	4,500	4,500
802.00	6,100	5,550	10,050
803.00	7,500	6,800	16,850
804.00	8,500	8,000	24,850
805.00	10,000	9,250	34,100
806.00	11,000	10,500	44,600
807.00	12,500	11,750	56,350
807.50	13,500	6,500	62,850

Device	Routing	Invert	Outlet Devices
#1	Primary	800.00'	**8.0" Round Culvert** L= 391.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 800.00' / 794.00' S= 0.0153 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	806.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Discarded	800.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 700.00'

Discarded OutFlow Max=0.12 cfs @ 20.00 hrs HW=804.90' (Free Discharge)
└**3=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=1.25 cfs @ 20.00 hrs HW=804.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.25 cfs @ 3.58 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: INFILTRATION BASIN

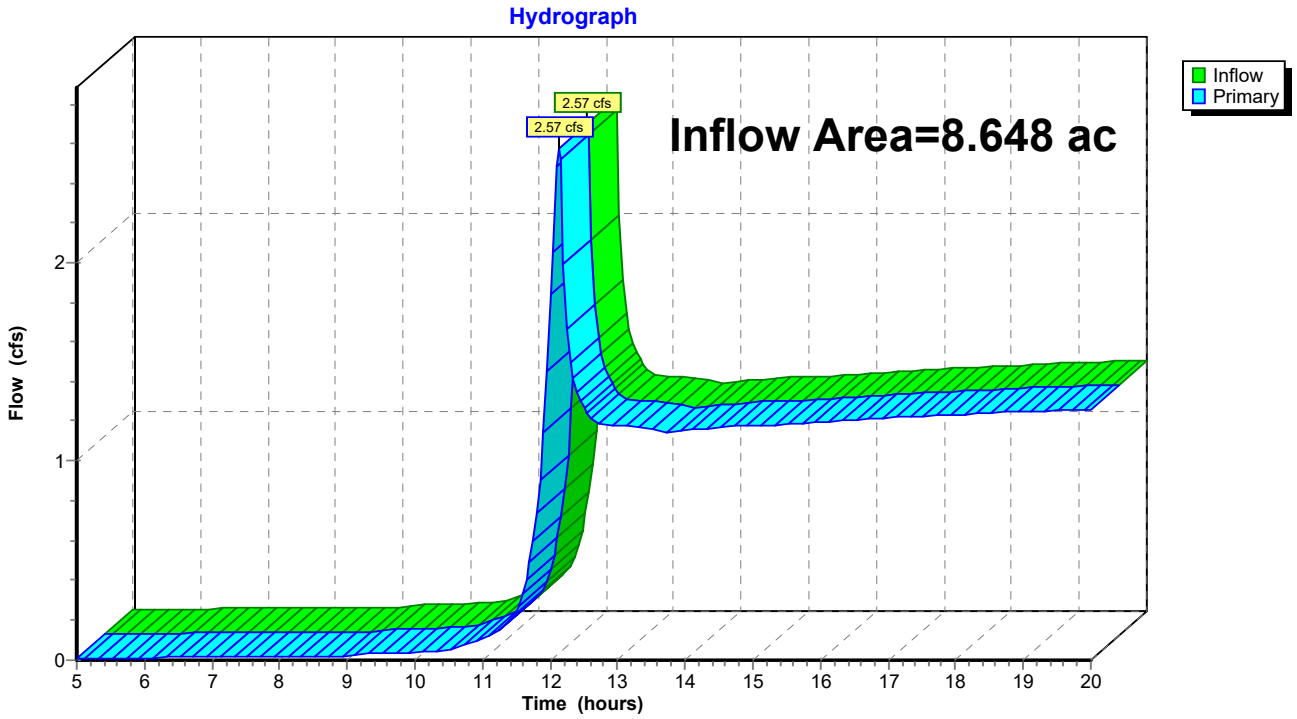


Summary for Link 7L: POST

Inflow Area = 8.648 ac, 50.56% Impervious, Inflow Depth > 1.21" for 100-YEAR event
Inflow = 2.57 cfs @ 12.13 hrs, Volume= 0.874 af
Primary = 2.57 cfs @ 12.13 hrs, Volume= 0.874 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 7L: POST



Appendix D: Web Soil Survey Map

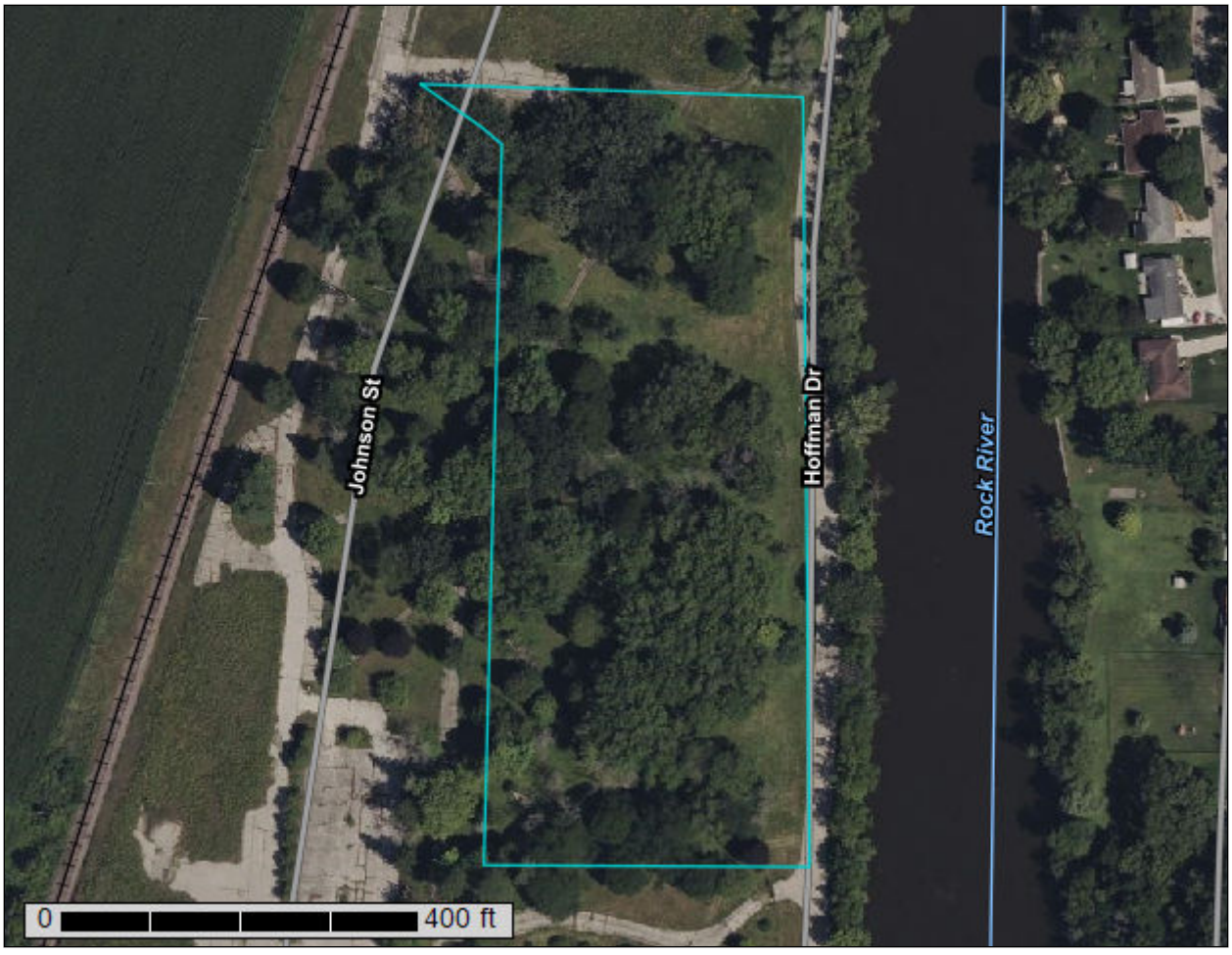
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Jefferson County, Wisconsin



October 3, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

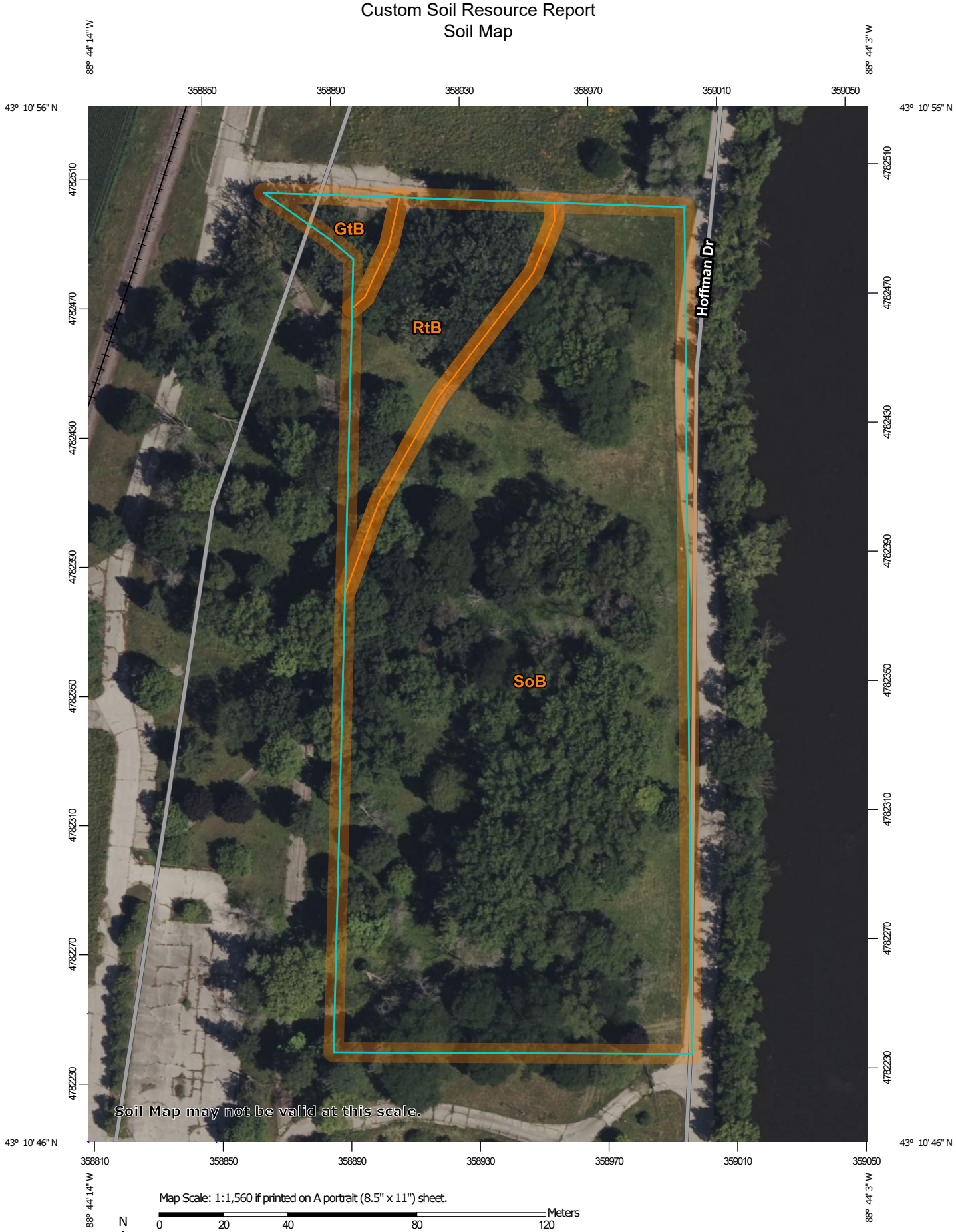
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:1,560 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jefferson County, Wisconsin
Survey Area Data: Version 23, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GtB	Grellton fine sandy loam, 2 to 6 percent slopes	0.1	2.0%
RtB	Rotamer loam, 2 to 6 percent slopes, eroded	0.8	12.0%
SoB	Sisson fine sandy loam, 2 to 6 percent slopes	6.1	86.0%
Totals for Area of Interest		**7.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Jefferson County, Wisconsin

GtB—Grellton fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: g6zl
Elevation: 780 to 1,060 feet
Mean annual precipitation: 28 to 35 inches
Mean annual air temperature: 36 to 57 degrees F
Frost-free period: 135 to 170 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Grellton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grellton

Setting

Landform: Till plains
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy eolian deposits and/or loamy outwash over eolian deposits

Typical profile

Ap,BA - 0 to 14 inches: fine sandy loam
Bt - 14 to 35 inches: loam
2Bt - 35 to 44 inches: silt loam
2C - 44 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F095XB010WI - Loamy and Clayey Upland
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

RtB—Rotamer loam, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2wpxt
Elevation: 790 to 1,070 feet
Mean annual precipitation: 33 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 150 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Rotamer, eroded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rotamer, Eroded

Setting

Landform: Moraines, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

Ap - 0 to 9 inches: loam
Bt - 9 to 19 inches: clay loam
C - 19 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Kidder

Percent of map unit: 5 percent
Landform: Moraines, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB010WI - Loamy and Clayey Upland
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Lapeer

Percent of map unit: 3 percent
Landform: Moraines, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F095XB007WI - Loamy Upland with Carbonates
Hydric soil rating: No

Lamartine

Percent of map unit: 2 percent
Landform: Moraines, drumlins
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Hydric soil rating: No

SoB—Sisson fine sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2wsr8
Elevation: 590 to 1,030 feet
Mean annual precipitation: 29 to 35 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 124 to 193 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sisson and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sisson

Setting

Landform: Lake plains
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy lacustrine deposits over stratified sandy and silty lacustrine deposits

Typical profile

Ap - 0 to 8 inches: fine sandy loam
E - 8 to 12 inches: fine sandy loam
Bt - 12 to 30 inches: loam
2C - 30 to 79 inches: stratified fine sand to silt loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F095XB010WI - Loamy and Clayey Upland
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Kibbie

Percent of map unit: 4 percent
Landform: Lake plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland
Hydric soil rating: No

Yahara

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F095XB005WI - Moist Loamy or Clayey Lowland

Other vegetative classification: Mod AWC, high water table (G095BY004WI)
Hydric soil rating: No

Plainfield, eroded

Percent of map unit: 3 percent
Landform: Lake plains
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F095XB009WI - Sandy Upland
Hydric soil rating: No

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Appendix E: Soil Borings

= Site Borings (12)

= Stormwater Area Borings (8)

PROPOSED PATHWAY

PROPOSED PATHWAY. CONNECT TO COLLECTIVE PATHWAY

SB-1

SB-2

SB-3

SB-4

SB-5

SB-6

SB-7

SB-8

SB-9

SB-10

SB-11

SB-12

SW-1

SW-2

SW-3

SW-4

SW-5

SW-6

SW-7

SW-8

MULTI FAMILY BUILDING

TWIN HOMES

TWIN HOMES (9)

POTENTIAL STORMWATER BASIN

775'

780'

584'

177'

752'

345'

102'

244'

210'

225'

NEIGHBORHOOD PLAN

MULTI-FAMILY HOUSING - 20 UNITS PER BUILDING (4) = 80 UNITS

TWIN HOMES - 2 UNITS PER BUILDING (9) = 18 UNITS

SINGLE FAMILY HOMES - 80 UNITS

HARWOOD

255 N 21st Street, Milwaukee, WI 53233 | 414-475-5554

GWCHF Development

Site Exhibit

2/01/2024

North

Scale: 1" = 80'

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-1**
Surface Elevation (ft) **819±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						18" Dark Brown Clayey TOPSOIL					
1		18	VM	1		Very Loose, Dark Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
2		18	VM	8		Loose, Brown and Gray Mottled Sandy SILT; Little Clay, Trace Gravel (ML)					
					5						
3		12	VM	6							
4		16	VM	47		Dense, Brown and Gray Mottled Sandy SILT; Little Clay, Trace Gravel (ML)					
					10						
5		18	W	91		Very Dense, Light Brown SILT; Little Fine Sand, Few Cobbles (ML)					
					15						
6		12	W	50		Very Dense, Brown and Gray Mottled Sandy SILT; Little Gravel (ML)					
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **13.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**5.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-2**
Surface Elevation (ft) **809.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
					0	8" Black Clayey TOPSOIL					
1		18	VM	6		Medium Stiff, Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)	(1.0)				
2		18	VM	10	5	Medium Dense, Brown and Gray Mottled SILT; with Clay, Little Sand, Trace Gravel (ML)					
3		4	VM	16							
4		16	M	23	10						
5		12	M	70 ▽		Very Dense, Gray Sandy SILT; Little Gravel, Few Cobbles and Boulders (ML)					
					15	End of Boring and Refusal on Probable Boulder at 16 ft Backfilled with Bentonite Chips					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **14.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**NW** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-3**
Surface Elevation (ft) **817±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						12" Black Clayey TOPSOIL					
1		18	W	2		Very Loose, Dark Brown Sandy SILT; Little Clay, Trace Gravel (ML)	(2.0)				
						Stiff, Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)					
2		18	M	14		Medium Dense, Brown and Gray Mottled Sandy SILT; Little Gravel (ML)					
					5						
3		18	VM	22		Medium Dense to Very Dense, Brown Sandy SILT; Trace Gravel (ML)					
4		18	W	45							
					10						
5		16	W	95							
					15						
						Dense, Gray Sandy SILT; Little Clay, Trace Gravel (ML)					
6		18	W	32							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips Note: Boring offset 15 ft south due to dense brush.					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **14.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**5.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-4**
Surface Elevation (ft) **807.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						24" Black Clayey TOPSOIL					
1		12	VM	4							
						Medium Stiff, Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)	(1.0)				
2		18	M	12		Medium Demse, Brown and Gray Mottled Sandy SILT; Little Clay, Trace Gravel (ML)					
					5						
3		18	M	51		Very Dense, Brown and Gray Mottled Sandy SILT; Little Gravel (ML)					
					▽						
4		18	M	71	▼	Very Dense, Gray Sandy SILT; Little Gravel (ML)					
					10						
5		18	M	82							
					15						
6		18	M	34							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **8.0'** Upon Completion of Drilling **--**
Time After Drilling **5 min.**
Depth to Water **9.0'** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-5**
Surface Elevation (ft) **825.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						10" Dark Brown Clayey TOPSOIL					
1		18	VM	2		Stiff to Soft, Dark Brown Sandy CLAY; Trace Gravel (CL)	(1.5)				
2		18	VM	3	5		(0.5)				
3		16	M/W	15		Medium Dense to Very Dense, Brown Sandy SILT; Little Gravel (ML)					
4		18	W	20	10						
5		12	M	50	15						
6		18	W	42		Very Dense, Gray Sandy SILT; Little Gravel (ML)					
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **7.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**8.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-6**
Surface Elevation (ft) **828±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						3.5" ASPHALT over 8" Gray Crushed Stone BASE COURSE					
1	■	16	M	7		Very Stiff to Stiff, Dark Brown Sandy CLAY; Trace Gravel (CL)	(3.0)				
2	■	4	VM	9			(1.5)				
					5	Loose, Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
3	■	18	VM	11		Medium Dense, Brown Sandy SILT; Little Gravel (ML)					
4	■	18	VM	12							
					10						
						Very Dense, Brown and Gray Mottled SILT; Little Fine Sand (ML)					
5	■	18	W	66							
					15						
						Very Dense, Gray SILT; Little Fine Sand (ML)					
6	■	3	M	50							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **13.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**12.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-7**
Surface Elevation (ft) **833±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						FILL: 4" Black Clayey Topsoil					
1	■	18	M	41		FILL: Gray Crushed/Reprocessed Concrete					
2	■	18	M	61							
					5						
3	■	18	M	25							
4	■	18	VM	6		FILL: Brown, Gray and Dark Brown Lean Clay, Trace Sand and Gravel	(1.0)				
					10						
					▼	Loose, Dark Brown and Dark Clayey SAND (SC)					
5	■	18	W	6	▽						
					15						
						Medium Dense, Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
6	■	12	W	21							
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **14.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**12.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/3/24** End **5/3/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-8**
Surface Elevation (ft) **816±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						FILL: 4" Dark Brown Clayey Topsoil					
1	■	18	M	7		FILL: Brown/Dark Brown Mixed Sandy Silt, Little Clay, Trace Gravel					
2	■	16	M	8							
					5						
						FILL: Dark Brown Sandy Silt, Trace Clay, Little Gravel					
3	■	18	M	11							
4	■	18	M	10							
					10						
5	■	6	M	23							
6	■	18	M	17							
					15						
						Very Dense, Light Brown Sandy SILT; Trace Gravel (ML)					
7	■	18	W	61	▽						
						Very Dense, Gray SILT; Little Fine Sand (ML)					
8	■	18	M	54							
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **17.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**NW** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-9**
Surface Elevation (ft) **821±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						18" Black Clayey TOPSOIL					
1		18	M	4		Stiff, Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)	(1.5)				
2		18	M/W	5	▽	Loose, Brown and Gray Mottled Sandy SILT; Little Gravel (ML)					
					5						
3		16	W	17		Medium Dense, Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
4		18	W	13							
					10						
					▼	Medium Dense, Brown SILT; with Clay, Little Sand, Trace Gravel (ML)					
5		4	VM/W	25							
					15						
						Medium Dense, Gray Sandy SILT; Little Clay, Trace Gravel (ML)					
6		18	VM	14							
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **4.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**12.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/3/24** End **5/3/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-10**
Surface Elevation (ft) **816±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						FILL: Black Clayey Topsoil					
1	■	18	M	12							
						Loose, Brown and Gray Mottled Sandy SILT; Little Clay, Trace Gravel (ML)					
2	■	18	VM	6	5						
						Medium Dense, Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
3	■	18	VM	13							
4	■	18	VM	16	10						
					▼						
						Dense to Very Dense, Gray Sandy SILT; Little Gravel (ML)					
5	■	18	M/W	48	▽ 15						
6	■	18	W	71	20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **14.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**11.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/2/24** End **5/2/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-11**
Surface Elevation (ft) **807.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LOI
						FILL: 5" Dark Brown Clayey Topsoil					
1		18	VM	3		FILL: Brown Sandy Clay, Trace Gravel	(1.25-1.5)				
2		18	VM	5		FILL: Gray and Dark Gray Mixed Sandy Silt, Little Clay, Trace Gravel	(1.5)				
					5						
3		18	M	5		Stiff, Black Silty CLAY; with Organics (BURIED TOPSOIL) (OL)	(1.5)				
4		4	M	14		Stiff, Dark Gray Lean CLAY; Trace Sand and Gravel (CL)	(2.0)				
					10	Medium Dense, Tan and Gray Mottled Sandy SILT; Little Gravel (ML)					
5		18	M	19							
					15						
						Dense, Gray Sandy SILT; Little Gravel (ML)					
6		18	M	36							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **NW** Upon Completion of Drilling **--**
Time After Drilling **5 min.**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/12/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

LOG OF TEST BORING

CGC Inc.

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SB-12**
Surface Elevation (ft) **824±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LOI
						FILL: Gray Crushed/Reprocessed Concrete					
1	■	18	M	33							
2	■	18	VM	10	▽						
					5	Stiff, Brown and Dark Gray Mottled Sandy CLAY; Trace Gravel (CL)	(1.5)				
3	■	18	VM	10		Very Stiff, Light Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)	(2.5)				
4	■	12	W	7		Loose, Brown and Gray Mottled Sandy SILT; Little Clay, Trace Gravel (ML)					
					10						
5	■	18	W	39		Dense to Medium Dense, Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
					15						
6	■	6	W	13							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **4.0'** Upon Completion of Drilling **--**
Time After Drilling **5 min.**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/3/24** End **5/3/24**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-1**
Surface Elevation (ft) **801±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						8" Black Clayey TOPSOIL					
1		6	W	6		Loose, Tan and Gray Mottled SILT; with Clay, Little Sand, Trace Gravel (ML)					
2		18	W	20	5	Medium Dense, Tan and Gray Mottled Fine SAND; Little Silt (SP-SM)					
3		18	W/M	18		Medium Dense, Gray SILT; Little Fine Sand (ML)					
4		18	M	23	10						
5		18	M	12							
6		18	M	32		Dense, Gray Sandy SILT; Little Gravel (ML)					
7		18	M	38	15						
8		18	M	31							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **1.0'** Upon Completion of Drilling **--**
Time After Drilling **5 min.**
Depth to Water **5.0'** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-2**
Surface Elevation (ft) **804±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						24" Black Clayey TOPSOIL					
1		18	VM	5							
						Stiff, Tan and Gray Mottled Silty CLAY; Trace Sand and Fine Roots (CL/CL-ML)	(1.0-2.0)				
2		18	M	18		Medium Dense, Tan and Gray Mottled Sandy SILT; Little Gravel (ML)					
					5						
3		16	W	31		Dense, Grayish Brown Sandy SILT; Little Gravel (ML)					
4		18	M	25		Medium Dense to Very Dense, Gray Sandy SILT; Little Gravel, Occasional Cobbles and Boulders (ML)					
					10						
5		12	M	80/9"							
6		12	M	69							
					15						
7		18	M	60							
8		18	M	66							
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **7.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**8.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-3**
Surface Elevation (ft) **798±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						FILL: 5" Black Clayey Topsoil					
1		18	M	11		FILL: Brown and Dark Brown Mixed Sandy Silt, Little Gravel, Trace Clay					
2		18	M	12		Black Silty CLAY; with Organics (BURIED TOPSOIL)					
3		18	M	11	5	Medium Dense, Tan and Gray Sandy SILT; Little Gravel (ML)					
4		4	VM/W	20		Medium Dense, Grayish Brown Sandy SILT; Little Clay, Trace Gravel (ML)					
5		18	M/W	36	10	Dense to Very Dense, Gray SILT; Trace to Some Sand, Few Sand Seams (ML)					
6		16	M	32							
7		18	W	37	15						
8		18	W	83							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **12.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**10.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-4**
Surface Elevation (ft) **801.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						FILL: 4" Black Clayey Topsoil					
1		18	M	20		FILL: Brown Silty Sand, Trace Clay and Gravel					
2		18	M	10		FILL: Black and Dark Gray Mixed Sandy Silt, Little Clay, Trace Gravel with Intermixed Topsoil					
					5	Black Silty CLAY; with Organics (BURIED TOPSOIL)					
3		18	M	12							
4		18	M	8		Loose, Brown and Gray Mottled SILT; Little Clay, Trace to Little Sand, Trace Gravel (ML)					
					10						
5		18	M/W	28		Medium Dense, Brown Sandy SILT; Little Gravel (ML)					
6		18	M	38		Dense, Gray SILT; Trace Fine Sand (ML)					
					15						
7		18	M	70		Very Dense, Gray Sandy SILT; Little Gravel (ML)					
8		18	M	54							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **12.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**15.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-5**
Surface Elevation (ft) **823±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						FILL: Gray Crushed/Reprocessed Concrete					
1		18	M	12							
2		12	W	7							
					5	Dark Gray and Black Mottled Silty CLAY; with Organics (BURIED TOPSOIL)	(1.75)				
						Very Stiff, Brown and Gray Mottled Silty CLAY; Trace Sand (CL/CL-ML)					
3		16	W	10			(2.5-3.0)				
						Medium Dense, Brown Sandy SILT; Little Gravel (ML)					
4		18	W	11							
					10						
5		18	W	8							
6		18	W	14							
					15						
						Soft, Sandy CLAY; Trace Gravel (CL)					
7		18	W	6			(0.5)				
8		4	W	9							
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **3.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**2.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/3/24** End **5/3/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-6**
Surface Elevation (ft) **822.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						FILL: Gray Crushed/Reprocessed Concrete					
1		18	M	10							
						Black Silty CLAY; with Organics (BURIED TOPSOIL)					
2		18	W	4	▽						
					5	Loose, Brown and Gray Mottled Sandy SILT; Some Clay, Few Sand Seams (ML)					
3		18	M	10		Very Stiff, Brown and Gray Mottled Lean CLAY; Trace Sand and Gravel (CL)	(2.5-2.75)				
						Medium Stiff, Gray Lean CLAY; Trace Sand and Gravel, Few Silt Seams (CL)					
4		18	W	6	▼		(1.0)				
					10	Loose, Gray Sandy SILT; Little to Some Clay, Trace Gravel (ML)					
5		18	W	9							
6		4	W	8							
					15	Medium Dense, Gray Sandy SILT; Little Gravel (ML)					
7		18	W	20							
8		18	W	15							
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **4.0'**			Upon Completion of Drilling	**--**
Time After Drilling				**5 min.**
Depth to Water				**10.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/3/24** End **5/3/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-7**
Surface Elevation (ft) **794±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LOI
						Black Clayey TOPSOIL					
1		18	M	4			(1.0-2.0)				
2		6	M	41		Dense, Brown and Gray Mottled Silty SAND; Little Gravel (SM)					
					5						
						Medium Dense to Dense, Gray Gravelly, Sandy SILT; Little Clay (ML)					
3		2	W	24							
4		2	W	32							
					10						
						Very Dense to Medium Dense, Gray SILT; Little Sand, Trace to Little Gravel, Trace Clay (ML)					
5		18	VM	46							
6		18	M	56							
					15						
7		8	W	45							
8		18	W	24			(4.5)				
					20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **6.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**2.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **GWCHF Residential Development**
Hoffmann Drive
Location **Watertown, Wisconsin**

Boring No. **SW-8**
Surface Elevation (ft) **797.5±**
Job No. **CM24062**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LOI
						18" Black Clayey TOPSOIL					
1		18	VM	4		Stiff, Light Gray and Brown Mottled Lean CLAY; Trace Sand and Gravel (CL)	(1.5)				
2		18	VM	6	5	Loose, Brown and Gray Mottled Sandy SILT; Little Gravel (ML)					
3		2	M/W	20	▽	Stiff, Brown and Gray Mottled Sandy CLAY; Trace Gravel (CL)					
4		12	M	22	10	Medium Dense to Very Dense, Gray SILT; Little Sand and Gravel (ML)					
5		18	M	75							
6		12	M	36	▼ 15						
7		18	M	18		Medium Dense, Gray Sandy CLAY; Trace Gravel (CL)					
8		4	M	24	20						
						End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **6.0'**	Upon Completion of Drilling			**--**
Time After Drilling				**5 min.**
Depth to Water				**15.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/1/24** End **5/1/24**
Driller **GeoServe** Chief **Matt** Rig **7822**
Logger **Matt** Editor **TAC**
Drill Method **2.25" HSA**

Wisconsin Department of Commerce
Division of Safety and Buildings

SOIL AND SITE EVALUATION - STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and BM referenced to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s.15.04 (1) (m)).

County	Jefferson
Parcel I.D.	291-0815-0814-001
Review by	**Date**

Property Owner		**Property Location**	600 and 700 Hoffman Drive
Hoffman Matz LLC		**Govt. Lot**	SE 1/4 of NE 1/4 S08 T8N R15E
Property Owner's Mailing Address		**Lot #**	**Block #** / **Subd. Name or CSM#**
600 E. Main Street, Suite 200		1	4146-02-181
City	**State** / **Zip Code** / **Phone Number**	[X] **City** [ ] **Village** [ ] **Town**	**Nearest Road**
Watertown	WI 53094	Watertown	Johnson Street

Drainage area: _____ [ ] **sq. ft.** [ ] **acres**

Test Site Suitable for (check all that apply) [ ] **Site not suitable**

[ ] **Bioretention** [ ] **Subsurface Dispersal System**

[ ] **Reuse** [ ] **Irrigation** [ ] **Other** _____

Hydraulic Application Test Method

[X] **Morphological Evaluation**

[ ] **Double-Ring Infiltrometer**

[ ] **Other (Specify)** _____

Soil Moisture

Date of soil borings: May 1-3, 2024

USDA-NRCS WETS Value:

[ ] **Dry = 1**

[X] **Normal = 2**

[ ] **Wet = 3**

SW-1 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** **801±** **ft** **Elevation of limiting factor** **801±** **ft**

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-8	Topsoil (Not Sampled)								
2	8-36	10YR6/4	c2d 10YR7/2	L	0,m	mfr	g	<5	70	0.24
3	36-66	10YR5/6	c2f 10YR7/2	LFS	0,sg	mfr	g	<5	15	0.50
4	66-156	10YR5/1	--	SICL	0,m	mvfi	g	<5	80	0.04
5	156-240	10YR6/1	--	SL	0,m	mvfi	g	<15	50	0.50

Comments:

SW-2 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** **804±** **ft** **Elevation of limiting factor** **804±** **ft**

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-24	Topsoil (Not Sampled)								
2	24-36	10YR6/2	c2d 10YR7/4	SIC	0,m	mfi	g	<5	>90	0.07
3	36-66	10YR6/4	c2d 10YR7/1	SL	0,m	mfr	g	<15	40	0.50
4	66-96	10YR6/2	--	SL	0,m	mfi	g	<15	50	0.50
5	96-240	10YR6/1	--	SL	0,m	mvfi	g	<15	50	0.50

Comments:

CST/PSS Name (Please Print)	Signature	CST Number
Paul J. Giese, CST	Paul J. Giese	SP-030800004
Address	**Date Evaluation Conducted**	**Telephone Number**
336 S. Curtis Road, West Allis, WI 53214	5/9/24	(414) 443-2000

SBD-10793 (R.01/17)

Property Owner Hoffman Matz LLC **Parcel ID#** 291-0815-0814-001 **Page** 2 **of** 3

SW-3 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 798± ft **Elevation of limiting factor** 798± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-5	Topsoil Fill (Not Sampled)								
2	5-36	10YR4/2 & 10YR6/4	--	L*	0,m	mfi	a	<15	60	0.24
3	36-66	10YR2/1	--	SICL**	0,m	mfi	a	<5	>90	0.04
4	66-96	10YR5/6	c2d 10YR7/2	SL	0,m	mfr	g	<5	50	0.50
5	96-126	10YR6/2	--	SCL	0,m	mfr	g	<5	55	0.11
6	126-240	10YR6/2	--	SIL	0,m	mvfi	g	<15	70-80	0.13

Comments: * FILL ** Buried Topsoil

SW-4 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 801.5± ft **Elevation of limiting factor** 801.5± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-4	Topsoil Fill (Not Sampled)								
2	4-36	10YR5/4	--	SL*	0,sg	mfr	a	<15	15	0.50
3	36-54	10YR4/2 & 10YR2/1	--	SL*	0,m	mfr	a	<5	50	0.50
4	54-96	10YR2/1	--	SICL**	0,m	mfi	a	<5	>90	0.04
5	96-126	10YR6/4	c2d 2.5Y7/1	CL	0,m	mfi	g	<5	70	0.03
6	126-156	10YR6/6	c2f 10YR7/2	SL	0,m	mfi	g	<5	40	0.50
7	156-186	10YR6/2	--	SI	0,m	mfr	g	<5	90	0.13
8	186-240	10YR6/2	--	SL	0,m	mfi	g	<15	50	0.50

Comments: * FILL ** Buried Topsoil

SW-5 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 823± ft **Elevation of limiting factor** 823± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-48	10YR6/2	--	GRS*	0,sg	mfr	a	15-35	5-10	3.60
2	48-66	10YR3/1	m2p 10YR2/1	SIC**	0,m	mfr	a	<5	>90	0.07
3	66-96	10YR5/6	m2p 10YR7/2	SIC	0,m	mfi	g	<5	>90	0.07
4	96-186	10YR6/4	--	SICL	0,m	mfi	g	<5	50	0.04
5	186-240	10YR6/2	--	SC	0,m	mfr	g	<5	55	0.04

Comments: * FILL (Crushed/Reprocessed Concrete) ** Buried Topsoil

SW-6 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 822.5± ft **Elevation of limiting factor** 822.5± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-24	10YR6/2	--	GRS*	0,sg	mfr	a	15-35	5-10	3.60
2	24-48	10YR2/1	--	SIC**	0,m	mfr	g	<5	>90	0.07
3	48-72	2.5Y6/1	c2f 10YR7/3	SCL	0,m	mfr	g	<5	55	0.11
4	72-96	10YR5/6	m2p 10YR6/3	C	0,m	mfi	g	<5	>90	0.07
5	96-126	10YR6/2	--	C	0,m	mfi	g	<5	>90	0.07
6	126-186	10YR6/1	--	SCL	0,m	mfr	g	<15	55	0.11
7	186-240	10YR6/2	--	SL	0,m	mfi	g	<15	50	0.50

Comments: * FILL (Crushed/Reprocessed Concrete) ** Buried Topsoil

SW-7 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 794± ft **Elevation of limiting factor** 794± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-48	10YR2/1	--	SIC*	0,m	mfr	g	<5	>90	0.07
2	48-66	10YR6/8	m2p 10YR7/1	SL	0,sg	mfr	g	<15	15-20	0.50
3	66-126	10YR6/2	--	GRSCL	0,m	mfi	g	15-35	50	0.11
4	126-240	10YR6/2	--	L	0,m	mfi	g	<15	60	0.24

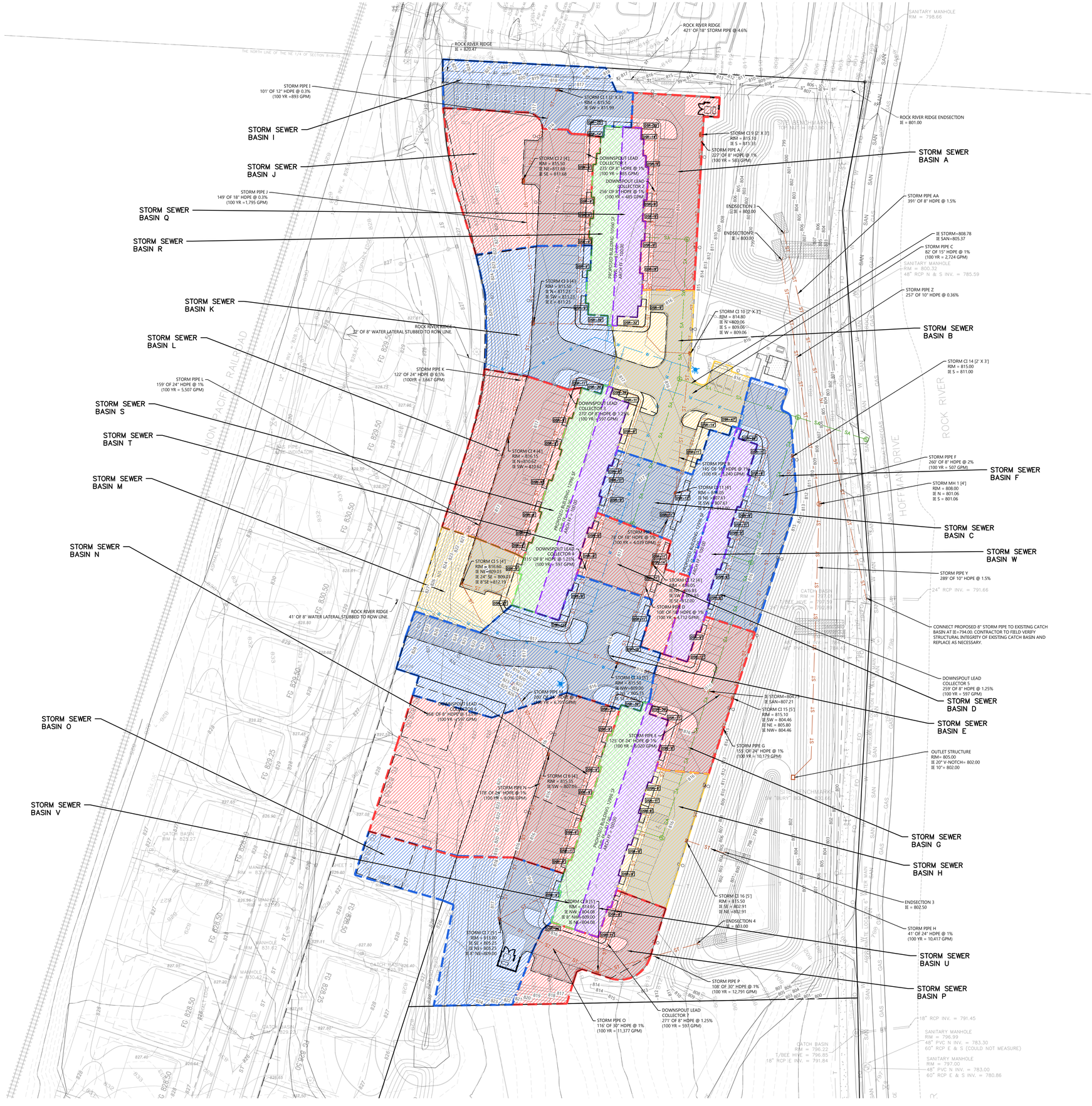
Comments: * Topsoil

SW-8 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 797.5± ft **Elevation of limiting factor** 797.5± ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-18	Topsoil (Not Sampled)								
2	18-48	10YR7/1	m2d 10YR6/4	C	0,m	mfi	g	<5	>90	0.07
3	48-66	10YR6/4	m2d 10YR7/1	SCL	0,m	mfi	g	5-10	50	0.11
4	66-96	10YR6/2	c2d 10YR6/2	SC	0,m	mfi	g	5	50	0.04
5	96-186	10YR6/1	--	GRL	0,m	mfi	g	15-35	50-60	0.24
6	186-240	10YR5/1	--	SC	0,m	mfr	g	<15	55	0.04

Comments:

Appendix F: Storm Sewer Basin Map



PIPE BASIN	TOTAL (SF)	TOTAL (AC)	IMPERVIOUS (SF)	IMPERVIOUS (AC)	OPEN (SF)	OPEN (AC)
A	12,555	0.29	11,184	0.26	1,371	0.03
B	17,077	0.39	12,838	0.29	4,239	0.10
C	10,199	0.23	9,465	0.22	734	0.02
D	7,944	0.18	7,209	0.17	735	0.02
E	25,631	0.59	13,246	0.30	12,385	0.28
F	13,281	0.30	11,761	0.27	1,520	0.03
G	10,820	0.25	8,456	0.19	2,364	0.05
H	7,815	0.18	7,214	0.17	601	0.01
I	10,955	0.25	6,155	0.14	4,800	0.11
J	19,472	0.45	7,525	0.17	11,947	0.27
K	16,867	0.39	7,637	0.18	9,230	0.21
L	16,596	0.38	8,993	0.21	7,603	0.17
M	8,078	0.19	2,567	0.06	5,511	0.13
N	33,870	0.78	14,078	0.32	19,792	0.45
O	19,598	0.45	6,728	0.15	12,870	0.30
P	9,415	0.22	6,543	0.15	2,872	0.07
Q	5,280	0.12	5,280	0.12	0	0.00
R	5,280	0.12	5,280	0.12	0	0.00
S	6,498	0.15	6,498	0.15	0	0.00
T	6,498	0.15	6,498	0.15	0	0.00
U	6,498	0.15	6,498	0.15	0	0.00
V	6,498	0.15	6,498	0.15	0	0.00
W	6,498	0.15	6,498	0.15	0	0.00

SCALE: 1" = 40'
40' 0 40' 80'
NORTH

STORM SEWER BASIN MAP

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

PROPOSED MULTI-FAMILY DEVELOPMENT

LUMIN TERRACE

JOHNSON STREET • WATERTOWN, WI

PROFESSIONAL SEAL

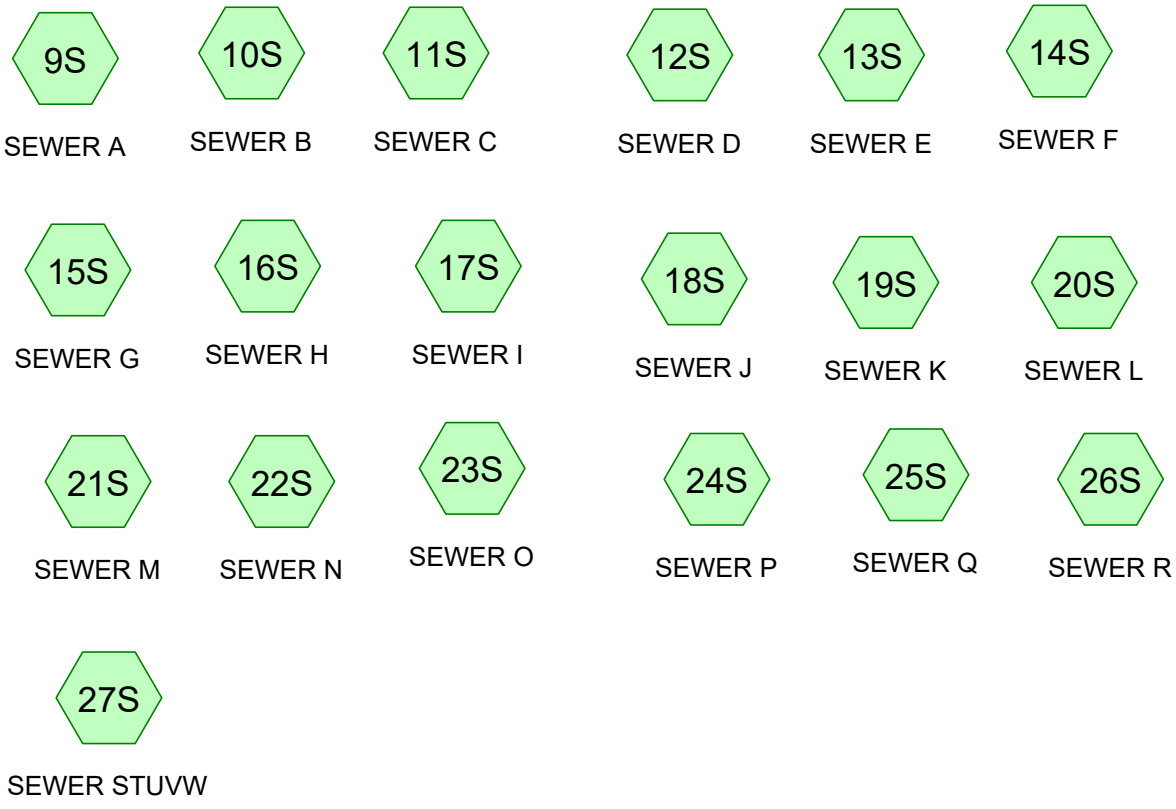
PRELIMINARY DATES

NOT FOR CONSTRUCTION

JOB NUMBER
240136200

SHEET NUMBER
SSBM

Appendix G: Storm Sewer TR-55 Calculations



Subcat Reach Pond Link

Routing Diagram for hydrocad240136200
Prepared by Excel Engineering, Printed 10/29/2024

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.642	98	(9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S)
2.263	74	(9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S)

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
5.905	Other	9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	5.905	5.905		9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 26S, 27S

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment9S: SEWER A Runoff Area=12,555 sf 89.08% Impervious Runoff Depth>5.41"
Tc=6.0 min CN=95 Runoff=2.52 cfs 0.130 af

Subcatchment10S: SEWER B Runoff Area=17,077 sf 75.18% Impervious Runoff Depth>5.09"
Tc=6.0 min CN=92 Runoff=3.33 cfs 0.166 af

Subcatchment11S: SEWER C Runoff Area=10,199 sf 92.80% Impervious Runoff Depth>5.52"
Tc=6.0 min CN=96 Runoff=2.06 cfs 0.108 af

Subcatchment12S: SEWER D Runoff Area=7,944 sf 90.75% Impervious Runoff Depth>5.52"
Tc=6.0 min CN=96 Runoff=1.61 cfs 0.084 af

Subcatchment13S: SEWER E Runoff Area=25,631 sf 51.68% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=86 Runoff=4.59 cfs 0.217 af

Subcatchment14S: SEWER F Runoff Area=13,281 sf 88.56% Impervious Runoff Depth>5.41"
Tc=6.0 min CN=95 Runoff=2.67 cfs 0.138 af

Subcatchment15S: SEWER G Runoff Area=10,820 sf 78.15% Impervious Runoff Depth>5.20"
Tc=6.0 min CN=93 Runoff=2.13 cfs 0.108 af

Subcatchment16S: SEWER H Runoff Area=7,815 sf 92.31% Impervious Runoff Depth>5.52"
Tc=6.0 min CN=96 Runoff=1.58 cfs 0.082 af

Subcatchment17S: SEWER I Runoff Area=10,955 sf 56.18% Impervious Runoff Depth>4.54"
Tc=6.0 min CN=87 Runoff=1.99 cfs 0.095 af

Subcatchment18S: SEWER J Runoff Area=19,472 sf 38.65% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=83 Runoff=3.30 cfs 0.153 af

Subcatchment19S: SEWER K Runoff Area=16,867 sf 45.28% Impervious Runoff Depth>4.33"
Tc=6.0 min CN=85 Runoff=2.97 cfs 0.140 af

Subcatchment20S: SEWER L Runoff Area=16,596 sf 54.19% Impervious Runoff Depth>4.54"
Tc=6.0 min CN=87 Runoff=3.02 cfs 0.144 af

Subcatchment21S: SEWER M Runoff Area=8,078 sf 31.78% Impervious Runoff Depth>4.01"
Tc=6.0 min CN=82 Runoff=1.34 cfs 0.062 af

Subcatchment22S: SEWER N Runoff Area=33,870 sf 41.56% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=84 Runoff=5.85 cfs 0.273 af

Subcatchment23S: SEWER O Runoff Area=19,598 sf 34.33% Impervious Runoff Depth>4.01"
Tc=6.0 min CN=82 Runoff=3.25 cfs 0.150 af

Subcatchment24S: SEWER P Runoff Area=9,415 sf 69.50% Impervious Runoff Depth>4.98"
Tc=6.0 min CN=91 Runoff=1.82 cfs 0.090 af

Subcatchment25S: SEWER Q Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=98 Runoff=1.08 cfs 0.058 af

Subcatchment26S: SEWER R Runoff Area=5,280 sf 100.00% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=98 Runoff=1.08 cfs 0.058 af

Subcatchment27S: SEWER STUVW Runoff Area=6,498 sf 100.00% Impervious Runoff Depth>5.70"
Tc=6.0 min CN=98 Runoff=1.33 cfs 0.071 af

Summary for Subcatchment 9S: SEWER A

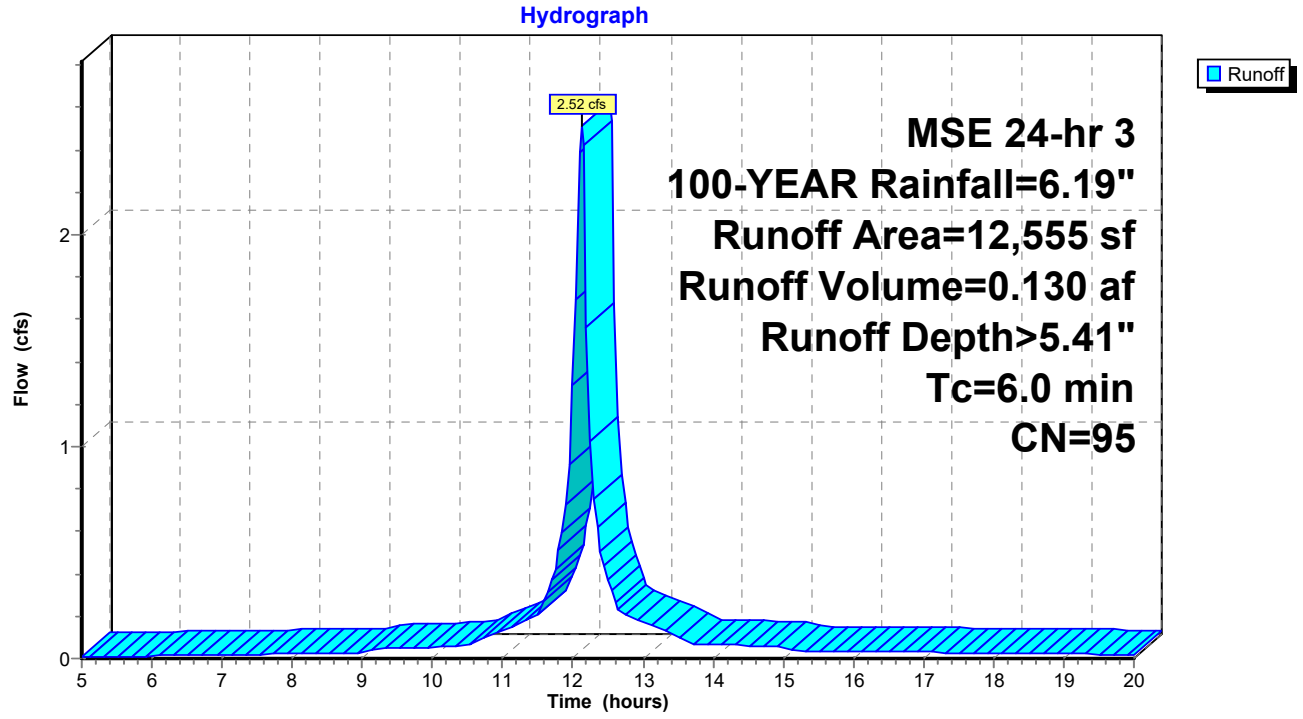
Runoff = 2.52 cfs @ 12.13 hrs, Volume= 0.130 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	11,184	98	
*	1,371	74	
	12,555	95	Weighted Average
	1,371		10.92% Pervious Area
	11,184		89.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S: SEWER A



Summary for Subcatchment 10S: SEWER B

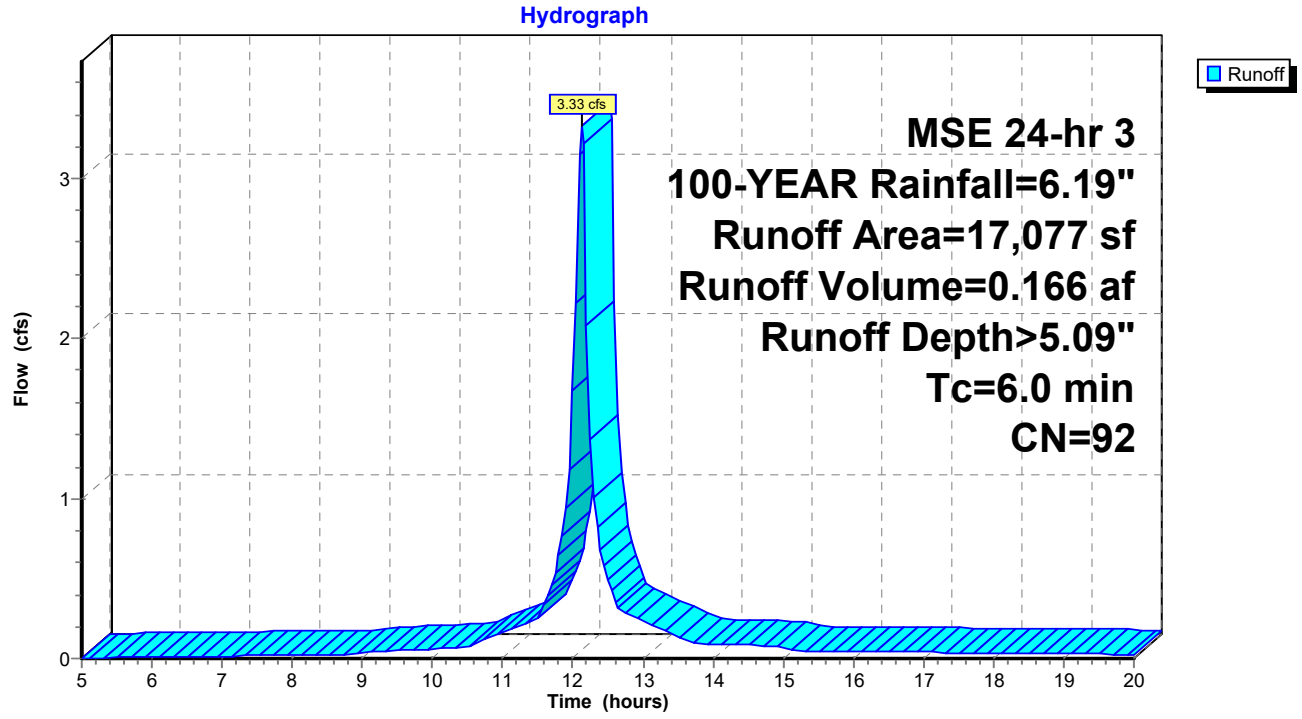
Runoff = 3.33 cfs @ 12.13 hrs, Volume= 0.166 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	12,838	98	
*	4,239	74	
	17,077	92	Weighted Average
	4,239		24.82% Pervious Area
	12,838		75.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S: SEWER B



Summary for Subcatchment 11S: SEWER C

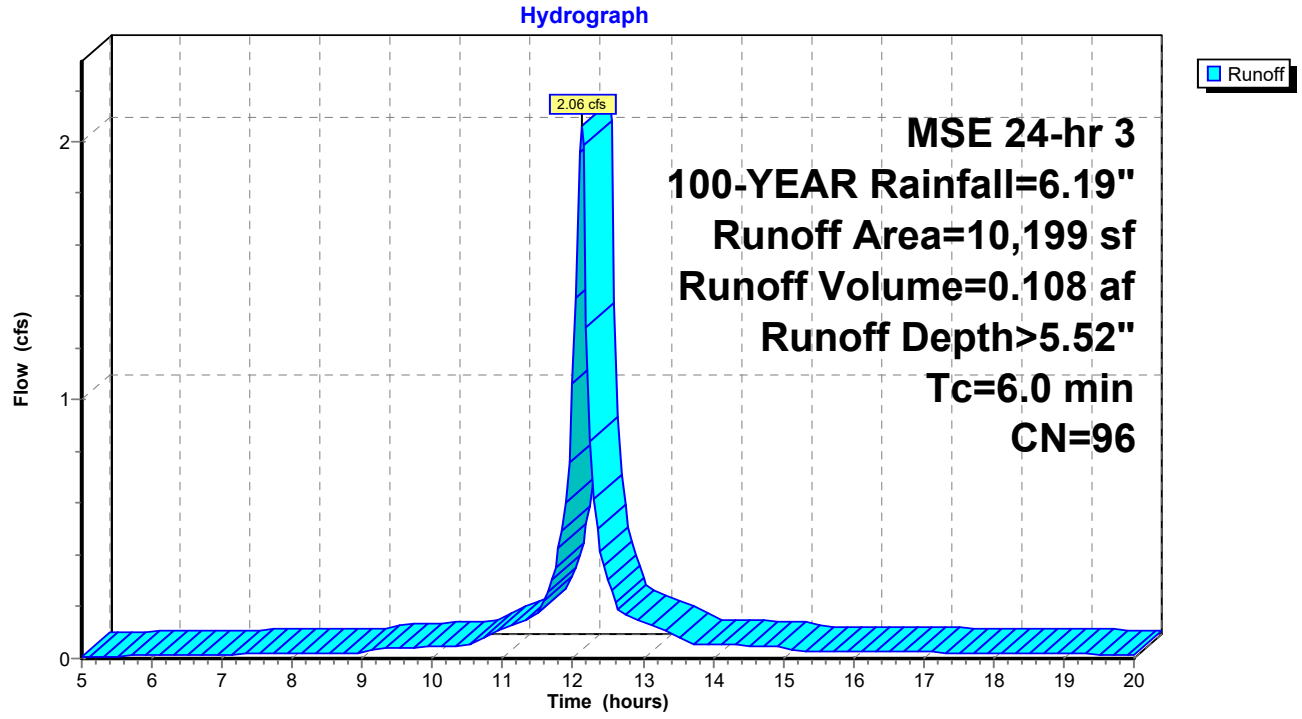
Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.108 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	9,465	98	
*	734	74	
	10,199	96	Weighted Average
	734		7.20% Pervious Area
	9,465		92.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 11S: SEWER C



Summary for Subcatchment 12S: SEWER D

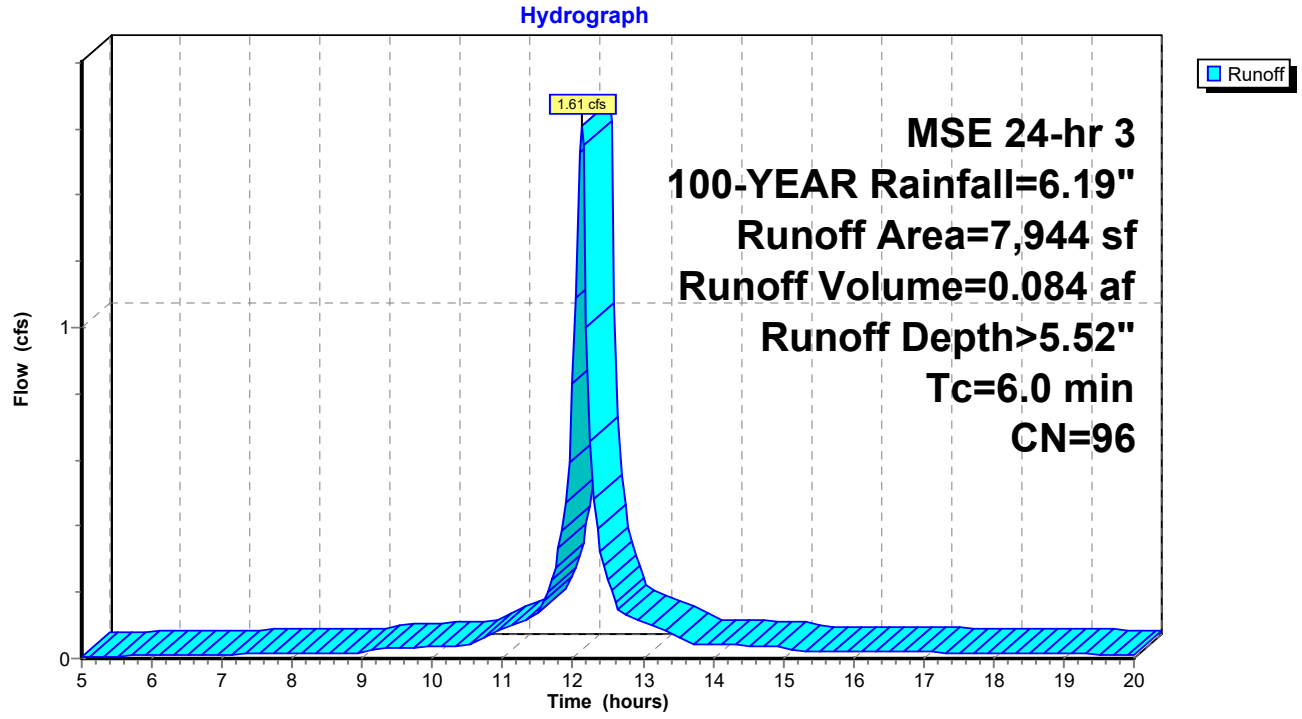
Runoff = 1.61 cfs @ 12.13 hrs, Volume= 0.084 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	7,209	98	
*	735	74	
	7,944	96	Weighted Average
	735		9.25% Pervious Area
	7,209		90.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12S: SEWER D



Summary for Subcatchment 13S: SEWER E

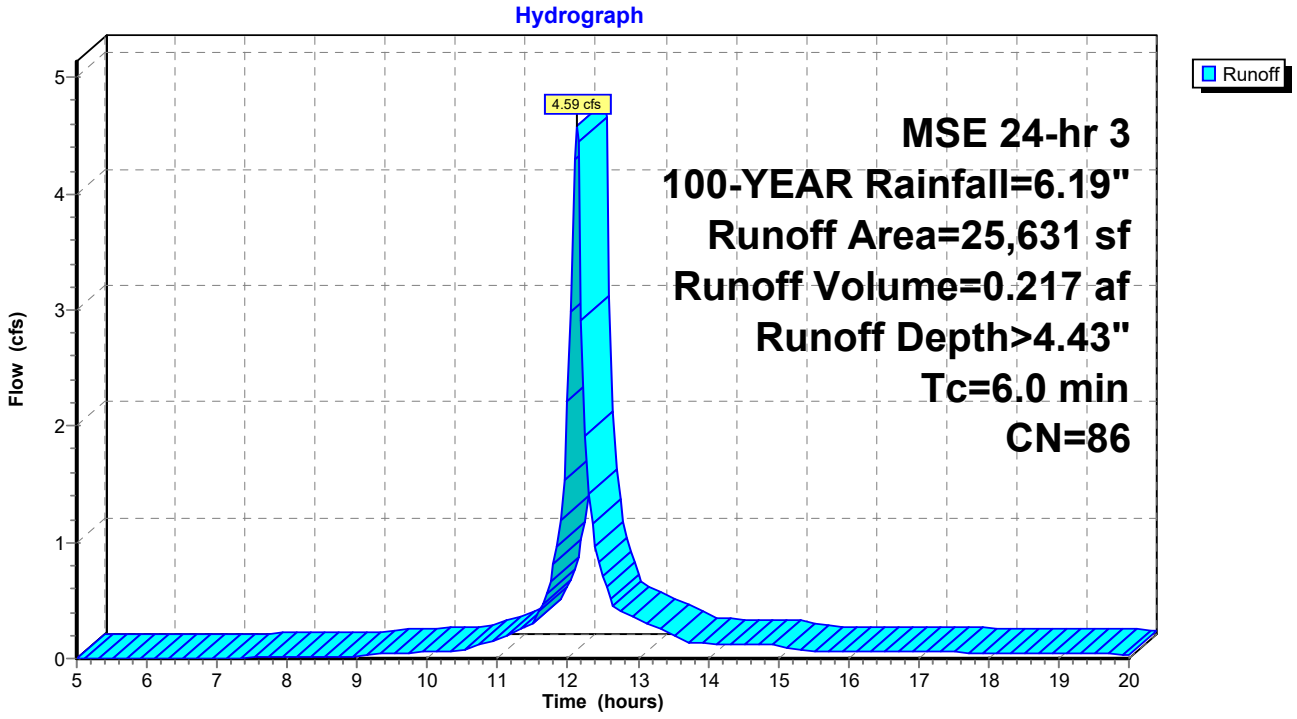
Runoff = 4.59 cfs @ 12.13 hrs, Volume= 0.217 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	13,246	98	
*	12,385	74	
	25,631	86	Weighted Average
	12,385		48.32% Pervious Area
	13,246		51.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 13S: SEWER E



Summary for Subcatchment 14S: SEWER F

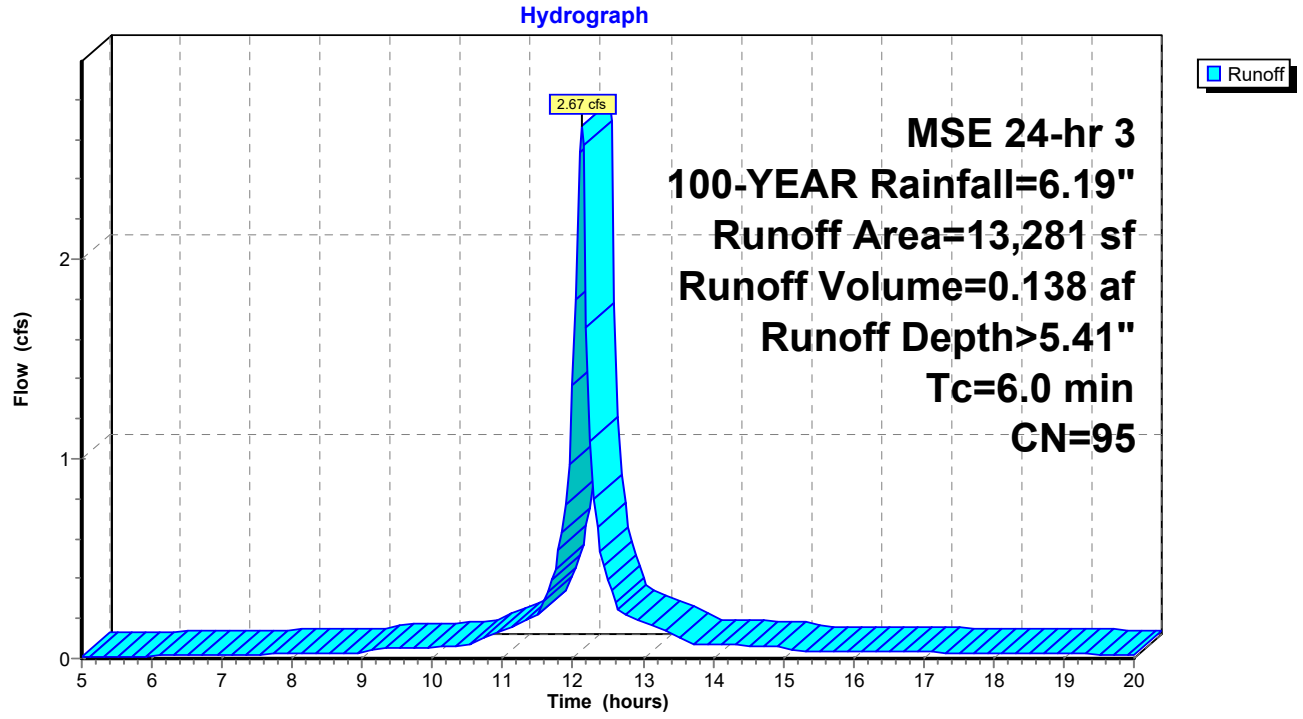
Runoff = 2.67 cfs @ 12.13 hrs, Volume= 0.138 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	11,761	98	
*	1,520	74	
	13,281	95	Weighted Average
	1,520		11.44% Pervious Area
	11,761		88.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 14S: SEWER F



Summary for Subcatchment 15S: SEWER G

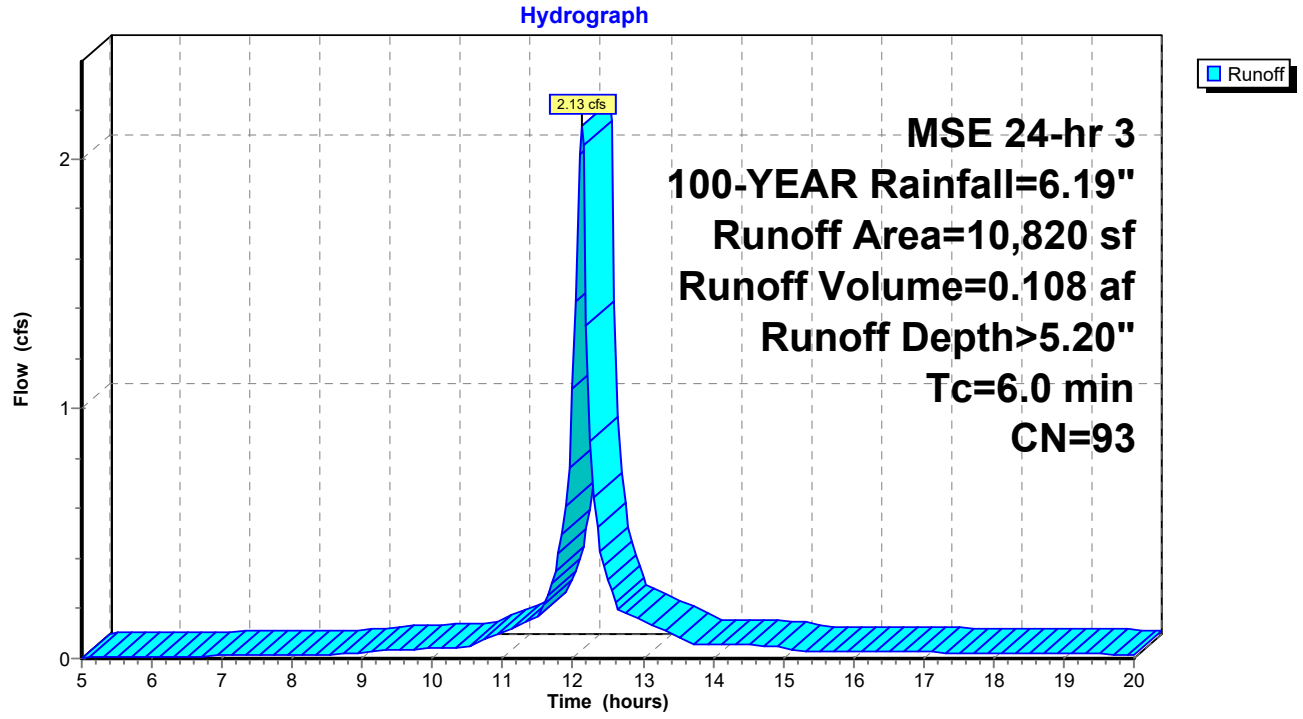
Runoff = 2.13 cfs @ 12.13 hrs, Volume= 0.108 af, Depth> 5.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	8,456	98	
*	2,364	74	
	10,820	93	Weighted Average
	2,364		21.85% Pervious Area
	8,456		78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 15S: SEWER G



Summary for Subcatchment 16S: SEWER H

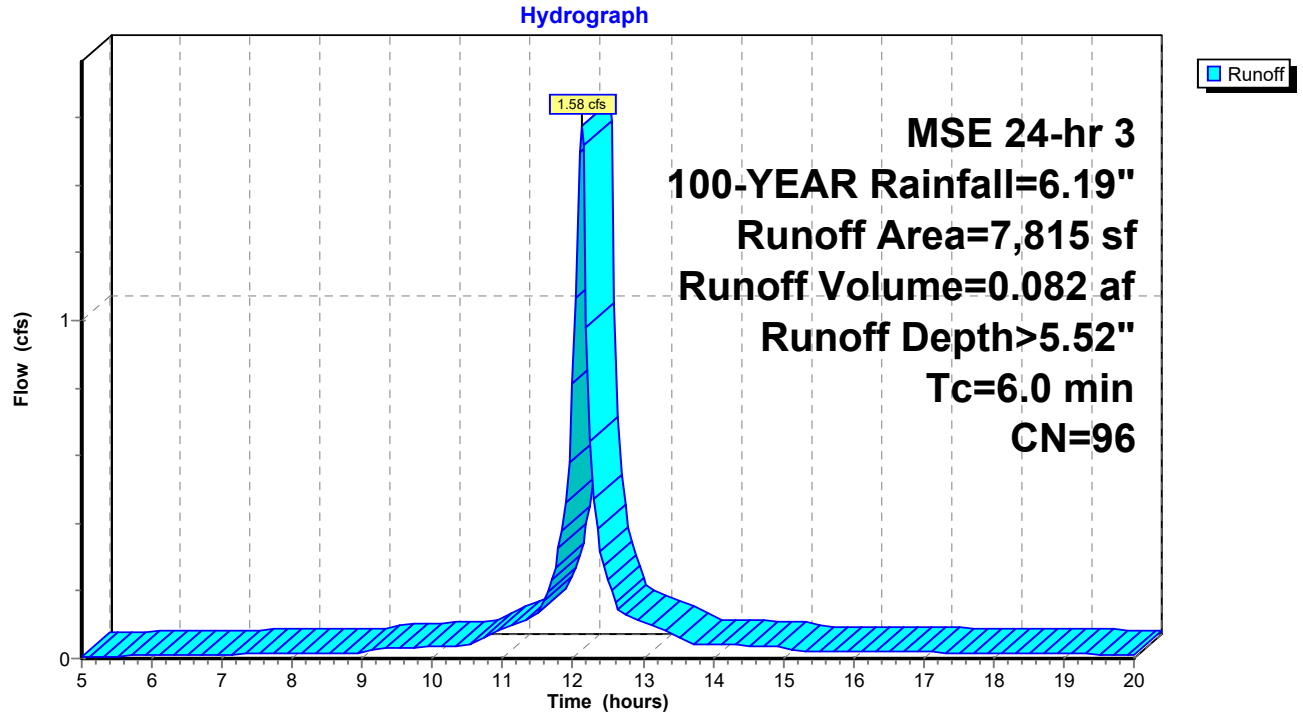
Runoff = 1.58 cfs @ 12.13 hrs, Volume= 0.082 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	7,214	98	
*	601	74	
	7,815	96	Weighted Average
	601		7.69% Pervious Area
	7,214		92.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 16S: SEWER H



Summary for Subcatchment 17S: SEWER I

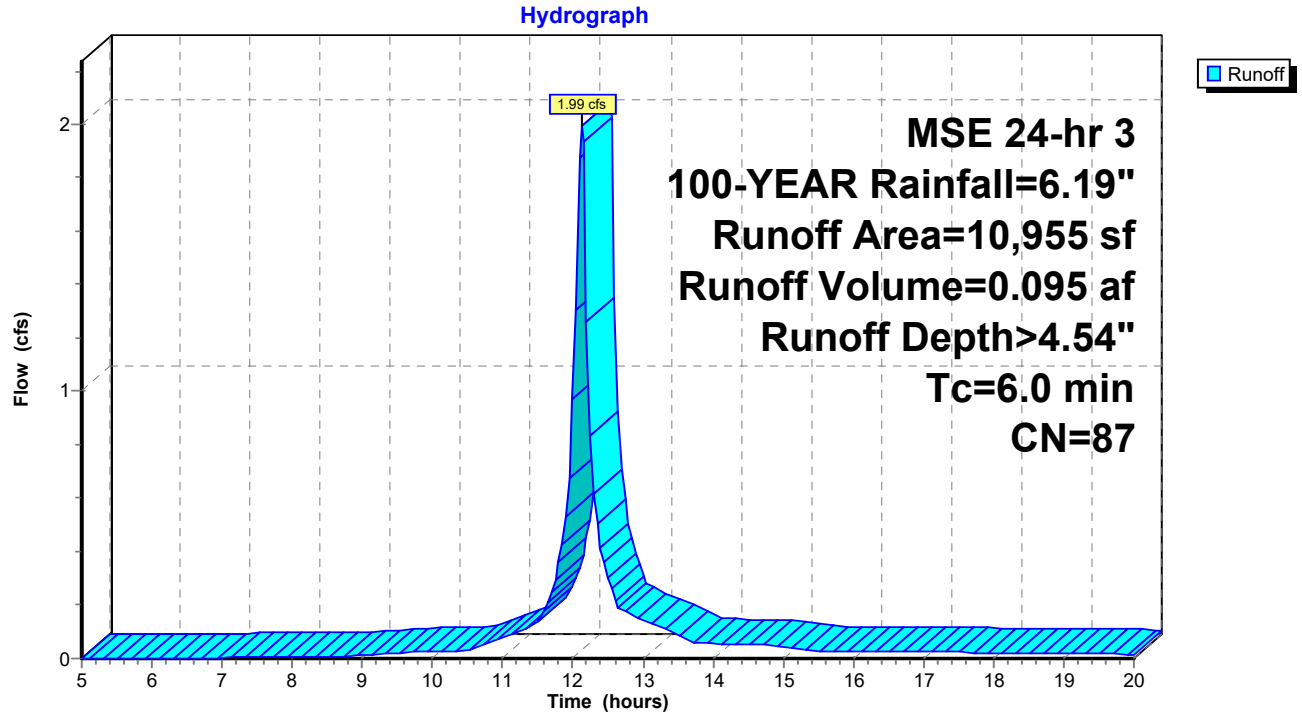
Runoff = 1.99 cfs @ 12.13 hrs, Volume= 0.095 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	6,155	98	
*	4,800	74	
	10,955	87	Weighted Average
	4,800		43.82% Pervious Area
	6,155		56.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 17S: SEWER I



Summary for Subcatchment 18S: SEWER J

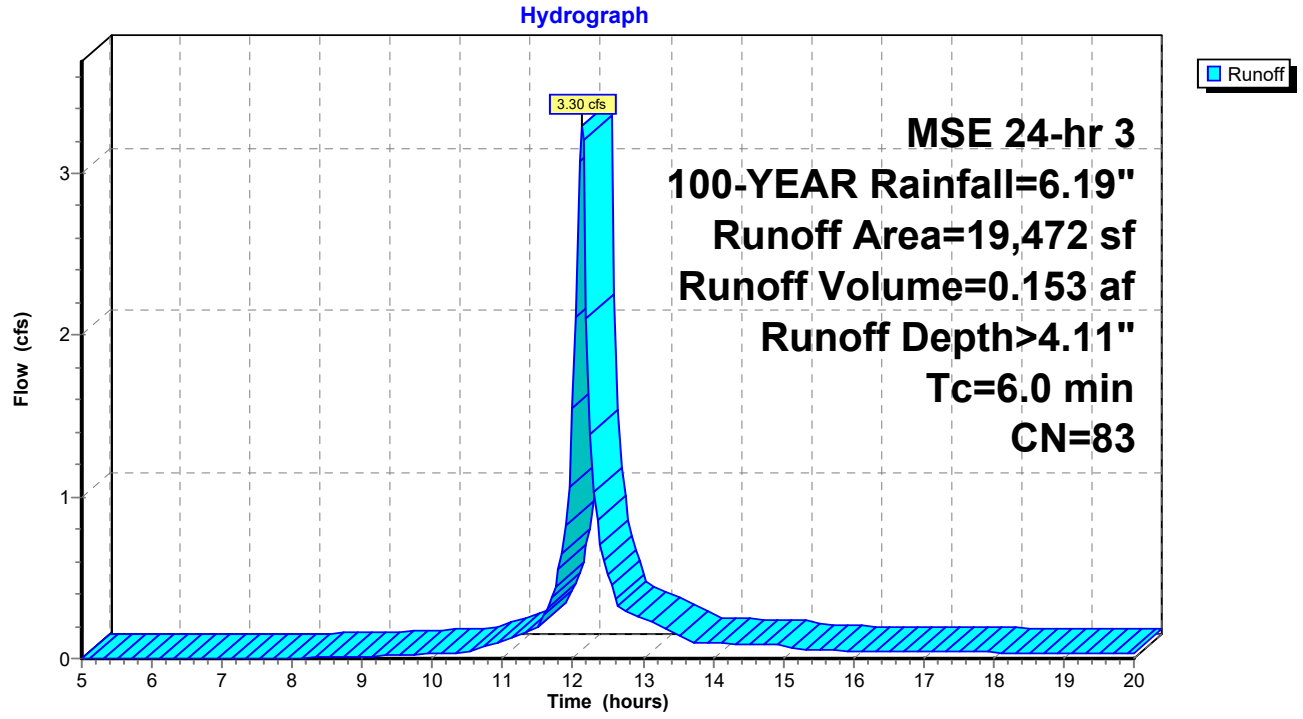
Runoff = 3.30 cfs @ 12.13 hrs, Volume= 0.153 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	7,525	98	
*	11,947	74	
	19,472	83	Weighted Average
	11,947		61.35% Pervious Area
	7,525		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 18S: SEWER J



Summary for Subcatchment 19S: SEWER K

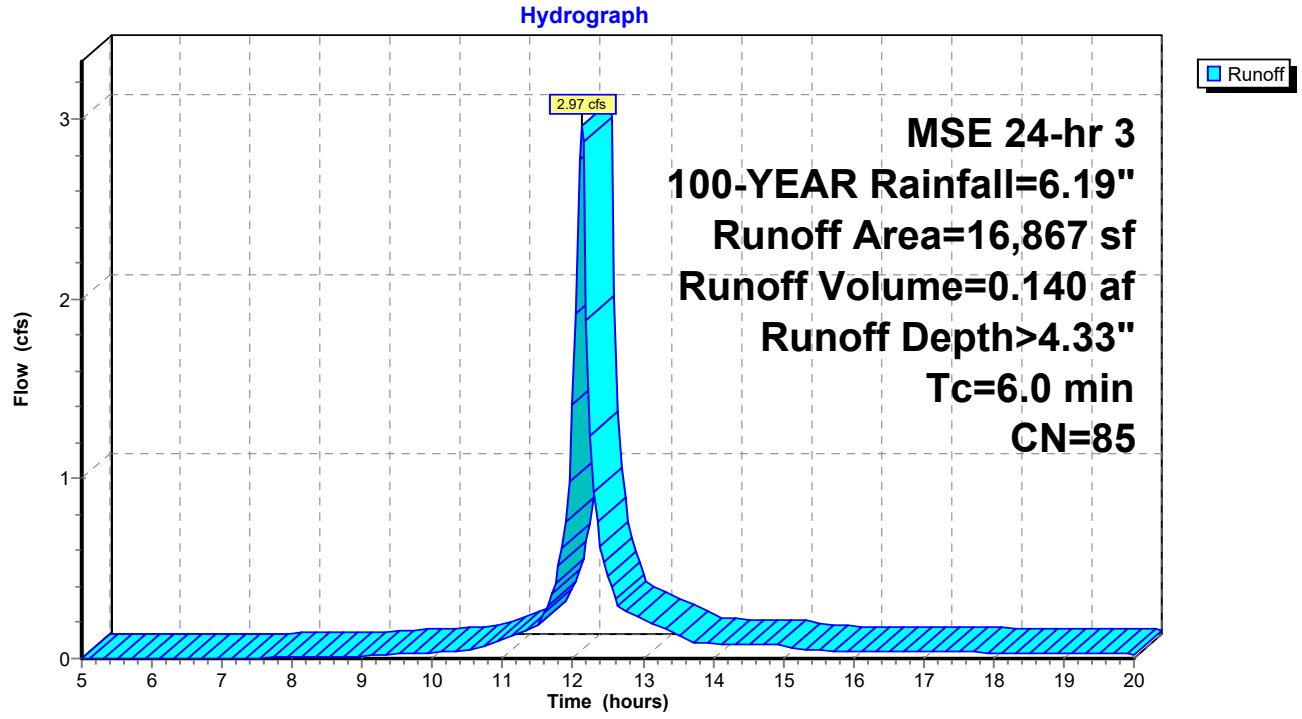
Runoff = 2.97 cfs @ 12.13 hrs, Volume= 0.140 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	7,637	98	
*	9,230	74	
	16,867	85	Weighted Average
	9,230		54.72% Pervious Area
	7,637		45.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 19S: SEWER K



Summary for Subcatchment 20S: SEWER L

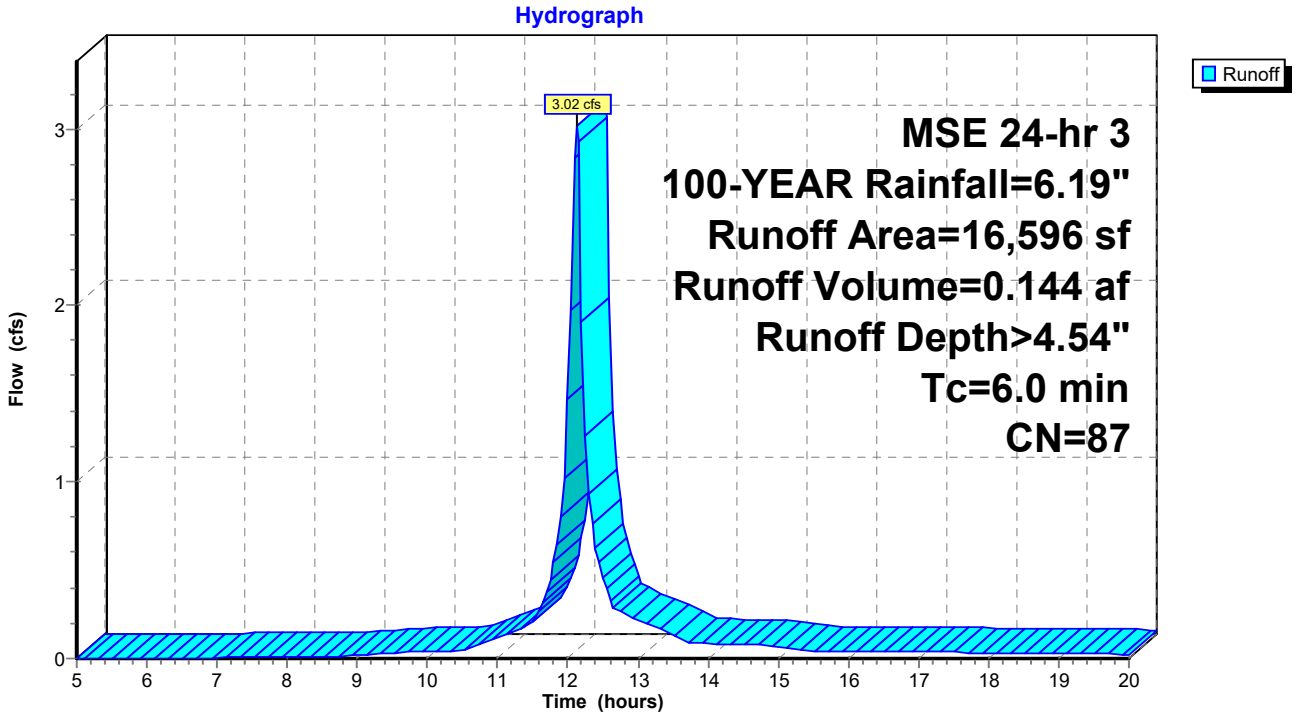
Runoff = 3.02 cfs @ 12.13 hrs, Volume= 0.144 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	8,993	98	
*	7,603	74	
	16,596	87	Weighted Average
	7,603		45.81% Pervious Area
	8,993		54.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 20S: SEWER L



Summary for Subcatchment 21S: SEWER M

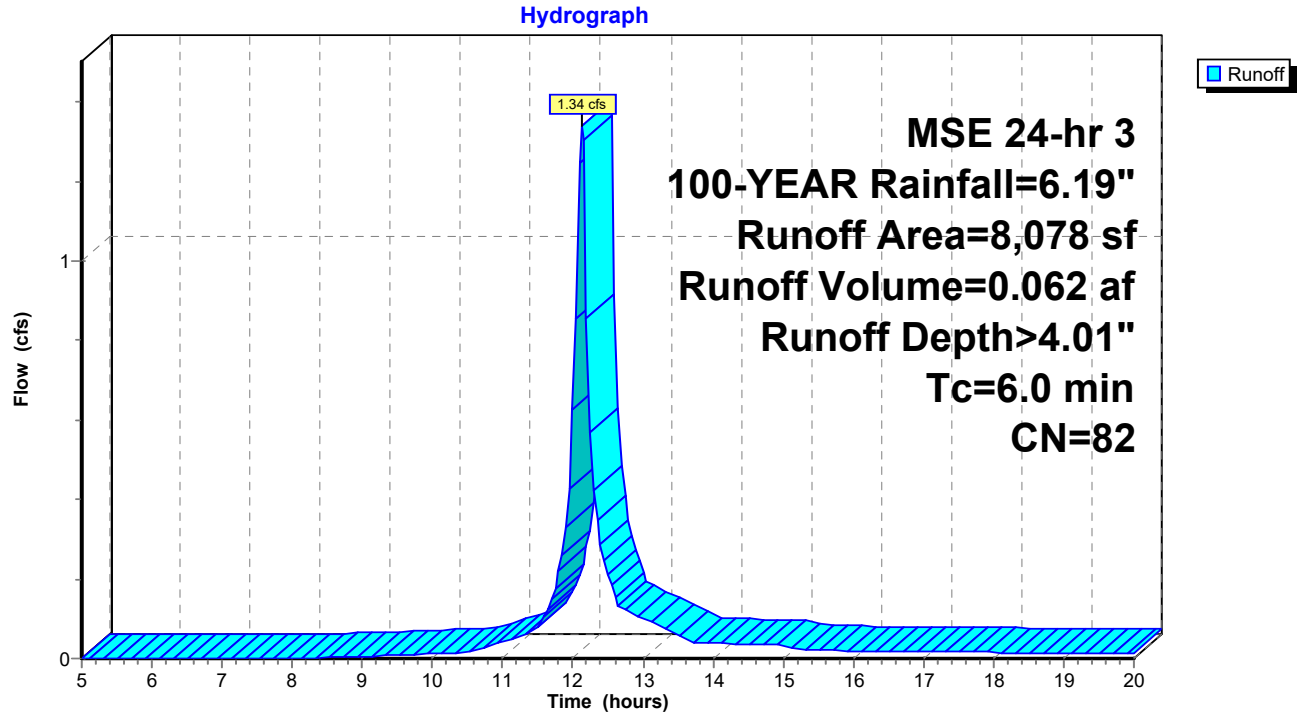
Runoff = 1.34 cfs @ 12.13 hrs, Volume= 0.062 af, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	2,567	98	
*	5,511	74	
	8,078	82	Weighted Average
	5,511		68.22% Pervious Area
	2,567		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 21S: SEWER M



Summary for Subcatchment 22S: SEWER N

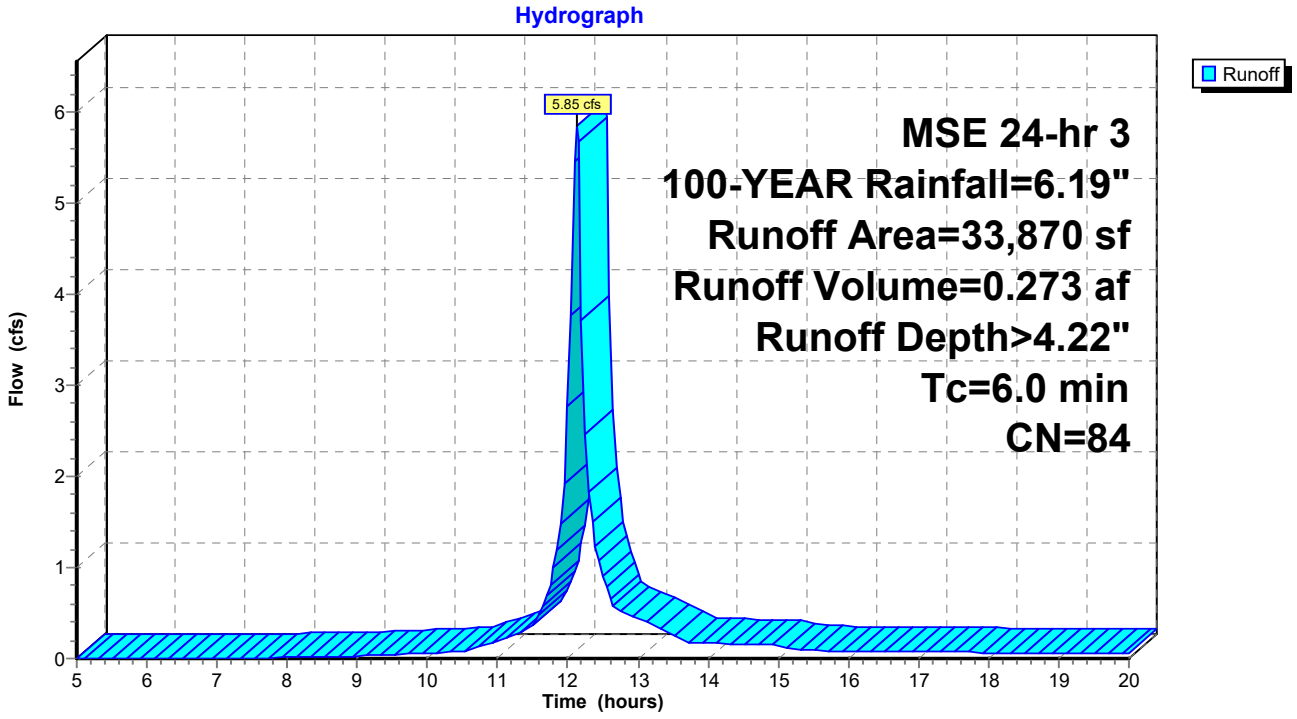
Runoff = 5.85 cfs @ 12.13 hrs, Volume= 0.273 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	14,078	98	
*	19,792	74	
	33,870	84	Weighted Average
	19,792		58.44% Pervious Area
	14,078		41.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 22S: SEWER N



Summary for Subcatchment 23S: SEWER O

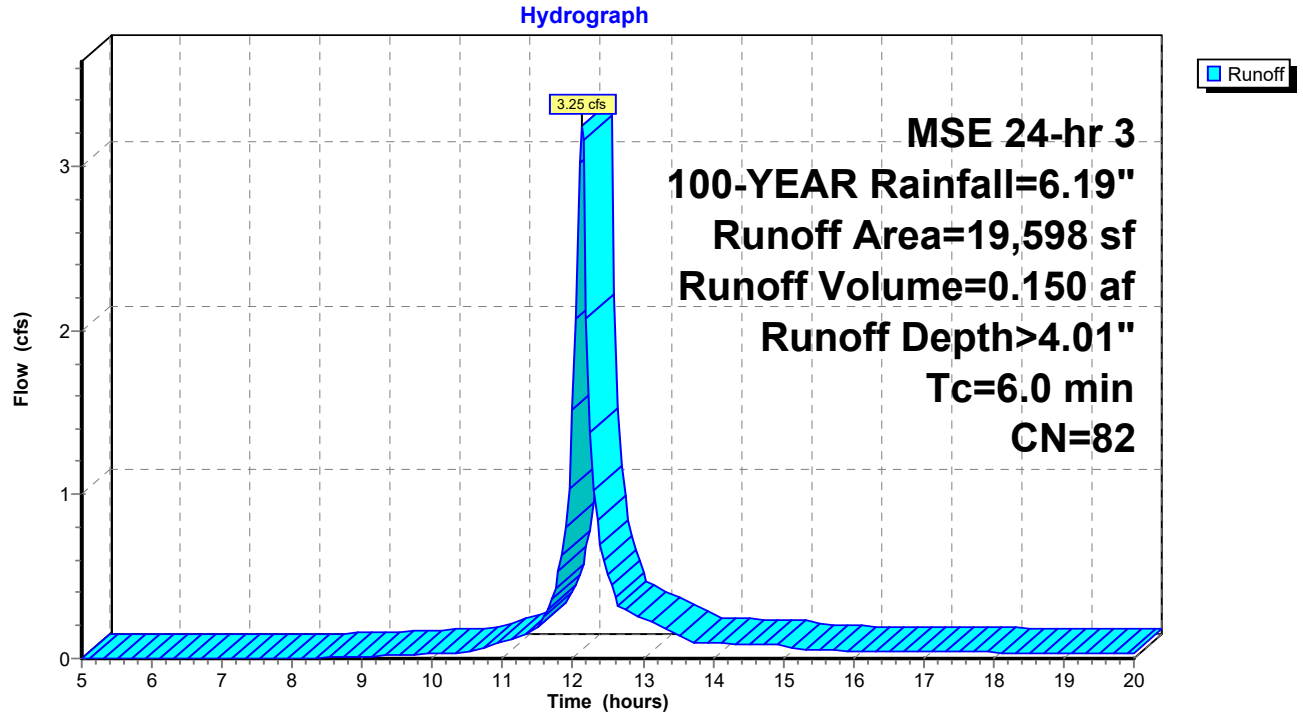
Runoff = 3.25 cfs @ 12.13 hrs, Volume= 0.150 af, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	6,728	98	
*	12,870	74	
	19,598	82	Weighted Average
	12,870		65.67% Pervious Area
	6,728		34.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 23S: SEWER O



Summary for Subcatchment 24S: SEWER P

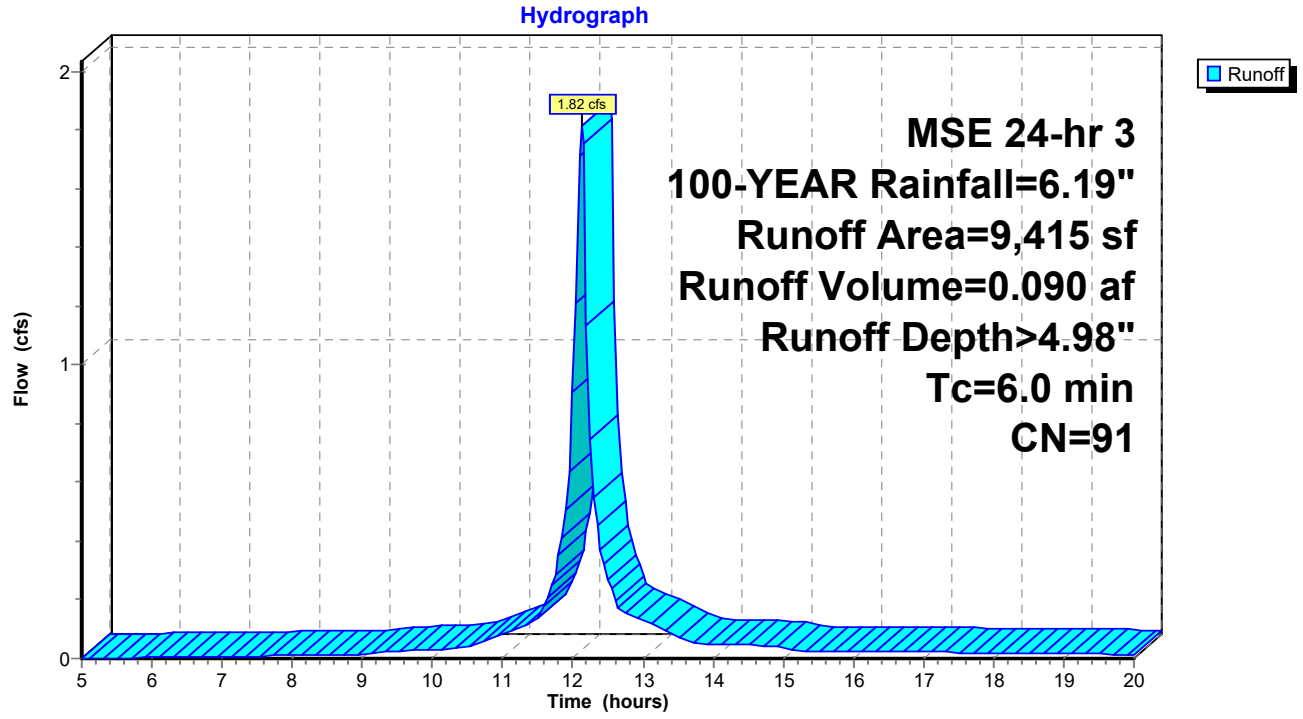
Runoff = 1.82 cfs @ 12.13 hrs, Volume= 0.090 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	6,543	98	
*	2,872	74	
	9,415	91	Weighted Average
	2,872		30.50% Pervious Area
	6,543		69.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 24S: SEWER P



Summary for Subcatchment 25S: SEWER Q

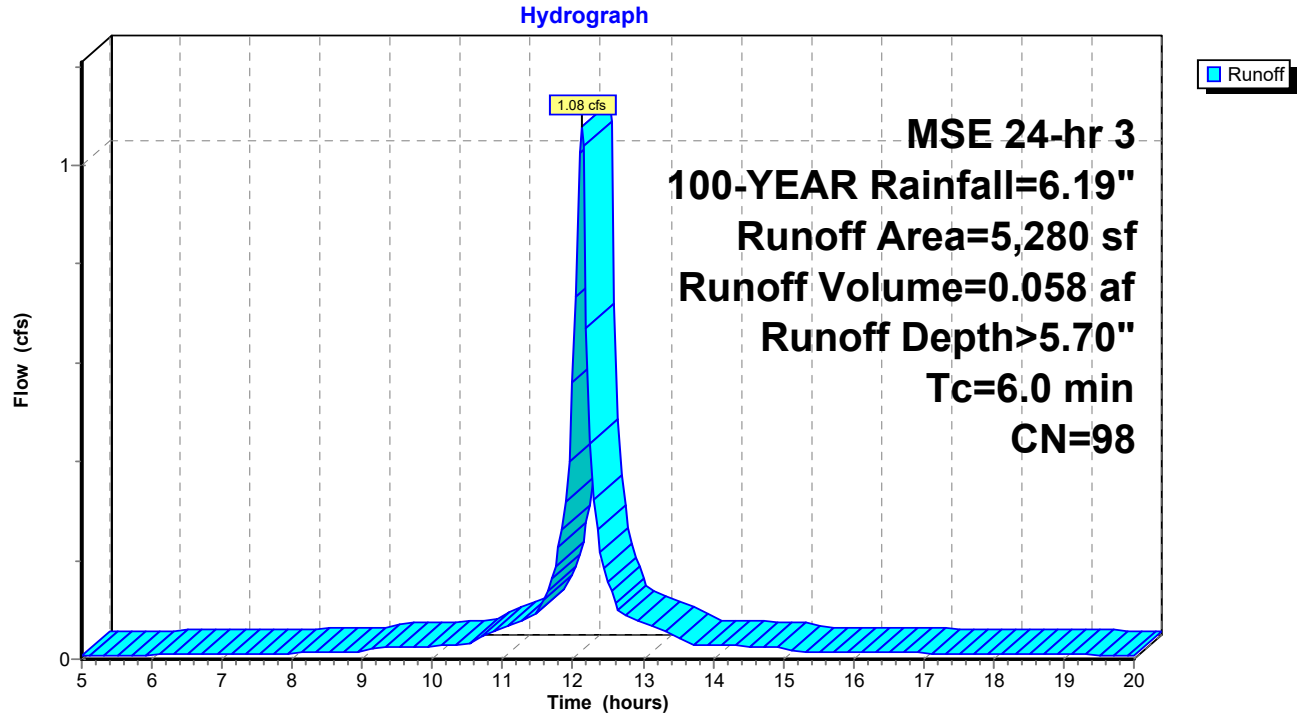
Runoff = 1.08 cfs @ 12.13 hrs, Volume= 0.058 af, Depth> 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	5,280	98	
	5,280		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 25S: SEWER Q



Summary for Subcatchment 26S: SEWER R

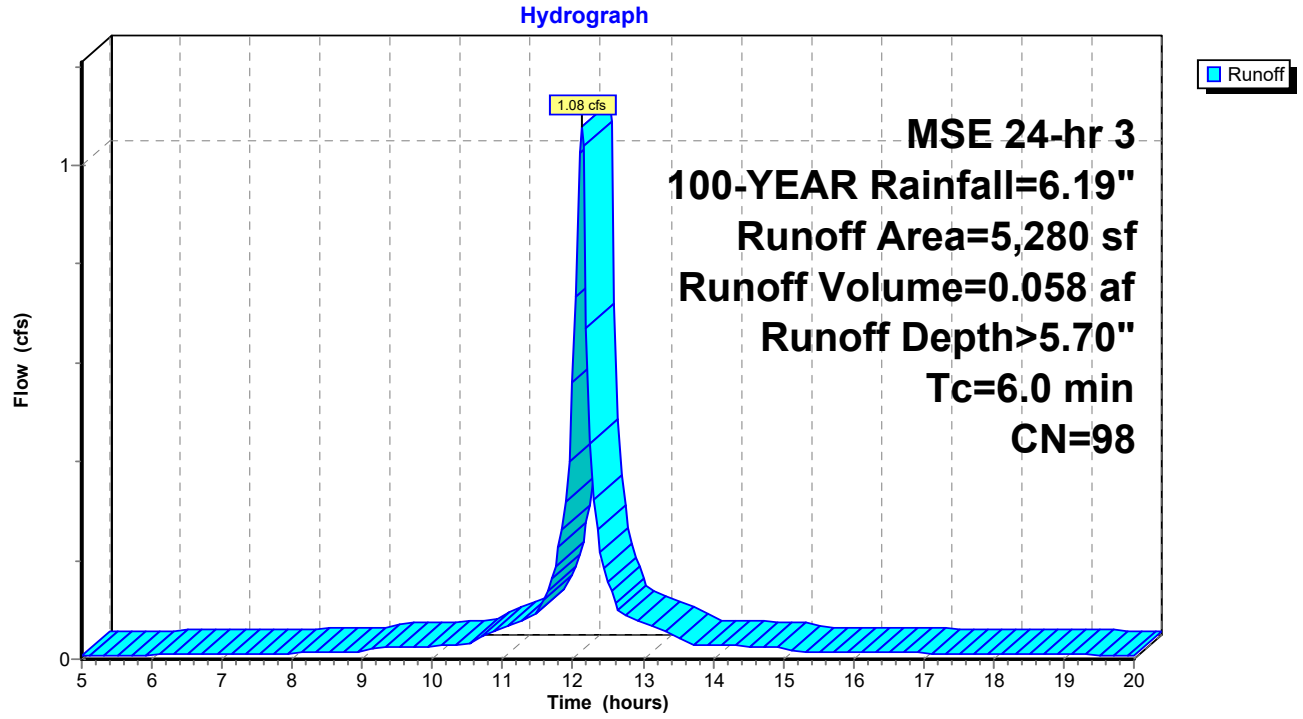
Runoff = 1.08 cfs @ 12.13 hrs, Volume= 0.058 af, Depth> 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	5,280	98	
	5,280		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 26S: SEWER R



Summary for Subcatchment 27S: SEWER STUVW

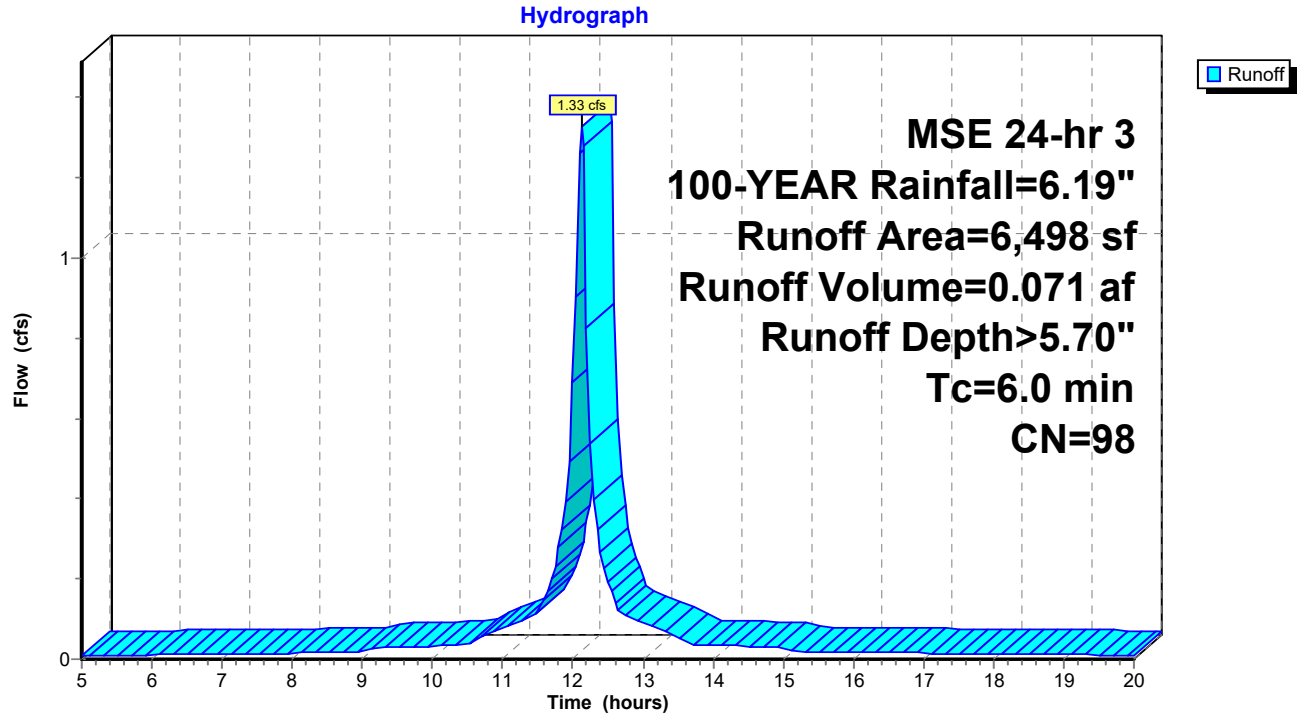
Runoff = 1.33 cfs @ 12.13 hrs, Volume= 0.071 af, Depth> 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.19"

	Area (sf)	CN	Description
*	6,498	98	
	6,498		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 27S: SEWER STUVW



Appendix H: Storm Sewer Manning's Spreadsheet

Excel Engineering Project No. 240136200 Project Name Lumin Terrace

Pipe Data				Pipe Capacity (100-yr)				
Pipe ID	Diameter (FT)	Slope (FT/FT)	Manning's n	Basin No.	Total Flow (cfs)	Total Flow (gpm)	Full Flow Capacity (cfs)	Full Flow Capacity (gpm)
A	1	0.010	0.012	A	2.52	1131	3.87	1737
B	1.5	0.010	0.012	A,B,Q	6.93	3110	11.41	5121
C	1.5	0.010	0.012	A,B,C,Q	8.99	4035	11.41	5121
D	1.5	0.010	0.012	A,B,C,D,Q	10.60	4757	11.41	5121
E	2	0.010	0.012	A,B,C,D,E,Q,T,W	17.85	8011	24.57	11029
F	0.83	0.020	0.012	F	2.67	1198	3.37	1511
G	2	0.010	0.012	A,B,C,D,E,F,G,Q,T,W	22.65	10165	24.57	11029
H	2	0.010	0.012	A,B,C,D,E,F,G,H,Q,T,W	24.23	10874	24.57	11029
I	1.00	0.003	0.012	I	1.99	893	2.12	951
J	1.5	0.003	0.012	I,J	5.29	2374	6.25	2805
K	2	0.005	0.012	I,J,K,R	9.34	4192	17.38	7798
L	2	0.010	0.012	I,J,K,L,R	12.36	5547	24.57	11029
M	2	0.010	0.012	I,J,K,L,M,R,S	15.03	6745	24.57	11029
N	2	0.010	0.012	I,J,K,L,M,N,R,S	20.88	9371	24.57	11029
O	2.5	0.010	0.012	I,J,K,L,M,N,O,R,S,V	25.46	11426	44.55	19996
P	1.5	0.010	0.012	I,J,K,L,M,N,O,P,R,S,U,V	28.61	12840	11.41	5121
DS	0.666666667	0.010	0.012	Q	1.08	485	1.31	589
DS	0.666666667	0.013	0.012	S	1.33	597	1.47	659

Full Flow Capacity based off Manning's Equation $Q = \frac{1.49}{n} R^{2/3} S^{1/2} a$

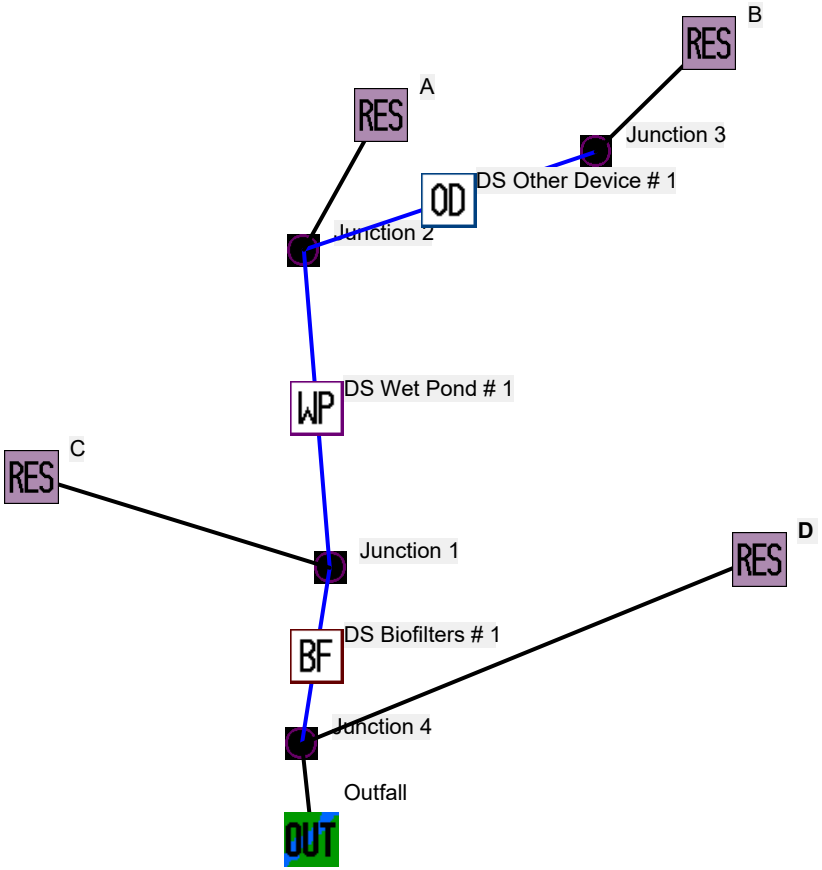
Where:
- Q = Full Flow Capacity of Pipe (cfs)
- n = manning's roughness coefficient
- R = hydraulic radius (ft) (D/4)
- s = hydraulic gradient, slope (ft/ft)
- a = flow area (sq. ft.)

Typical Manning's n

HDPE	0.012
PVC	0.012
Concrete	0.013
CMP	0.024

*Total Flow calculated via TR-55 hydrologic calculations. Reference Storm Pipe Basin Map & TR-55 Calculations

Appendix I: SLAMM Input/ Output Information


RES
B
RES
A
Junction 3
OD
DS Other Device # 1
Junction 2
WP
DS Wet Pond # 1
RES
C
Junction 1
RES
D
BF
DS Biofilters # 1
Junction 4
Outfall
OUT

Data file name: \\job-files\2024 Job Files\240136200 Horizon - Lumin Terrace Multifamily - Watertown WI\240136204 Civil\storm water report and calculations\2024-10-10 SUBMITTAL\CALCS\slamm2340136200.mdb
WinSLAMM Version 10.5.0
Rain file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WisReg - Madison WI 1981.ran
Particulate Solids Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 10-30-2024 Time: 08:24:21
Site information:

LU# 1 - Residential: A Total area (ac): 7.170
  1 - Roofs 1: 1.130 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  13 - Paved Parking 1: 2.850 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  45 - Large Landscaped Areas 1: 3.190 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: D   Total area (ac): 0.180
     31 - Sidewalks 1: 0.180 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: C   Total area (ac): 0.750
     31 - Sidewalks 1: 0.010 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 0.740 ac.   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: B   Total area (ac): 0.470
     1 - Roofs 1: 0.200 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 0.270 ac.   Normal Silty   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - DS Wet Pond # 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft):   6
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: V - notch weir
1. Weir angle (degrees):   20
2. Weir height from invert: 0
3. Invert elevation above datum (ft):   6
Outlet type: Broad Crested Weir
1. Weir crest length (ft):   10
2. Weir crest width (ft):   10
3. Height from datum to bottom of weir opening: 10.5
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0700	0.00	0.00
2	1.00	0.0900	0.00	0.00
3	2.00	0.1000	0.00	0.00
4	3.00	0.1300	0.00	0.00
5	4.00	0.1500	0.00	0.00
6	5.00	0.1600	0.00	0.00

7	6.00	0.3000	0.00	0.00
8	7.00	0.4000	0.00	0.00
9	8.00	0.4600	0.00	0.00
10	9.00	0.5300	0.00	0.00
11	10.00	0.5900	0.00	0.00
12	11.00	0.6400	0.00	0.00
13	11.50	0.6700	0.00	0.00

Control Practice 2: Other Device CP# 1 (DS) - DS Other Device # 1
   Fraction of drainage area served by device (ac) = 1.00
   Particulate Concentration reduction fraction = 1.00
   Filterable Concentration reduction fraction = 1.00
   Runoff volume reduction fraction = 0

Control Practice 3: Biofilter CP# 1 (DS) - DS Biofilters # 1
   1. Top area (square feet) = 15000
   2. Bottom aea (square feet) = 3300
   3. Depth (ft):   8.5
   4. Biofilter width (ft) - for Cost Purposes Only: 10
   5. Infiltration rate (in/hr) = 0.5
   6. Random infiltration rate generation? No
   7. Infiltration rate fraction (side):   1
   8. Infiltration rate fraction (bottom):   1
   9. Depth of biofilter that is rock filled (ft) 0
   10. Porosity of rock filled volume = 0
   11. Engineered soil infiltration rate: 0
   12. Engineered soil depth (ft) = 0
   13. Engineered soil porosity = 0
   14. Percent solids reduction due to flow through engineered soil = 0
   15. Biofilter peak to average flow ratio = 3.8
   16. Number of biofiltration control devices = 1
   17. Particle size distribution file: Not needed - calculated by program
   18. Initial water surface elevation (ft):   0
        Soil Data   Soil Type Fraction in Eng. Soil
        Biofilter Outlet/Discharge Characteristics:
       Outlet type: Broad Crested Weir
               1. Weir crest length (ft):   10
               2. Weir crest width (ft):   10

3. Height of datum to bottom of weir opening: 7.5

Outlet type: Surface Discharge Pipe

1. Surface discharge pipe outlet diameter (ft): 0.67
2. Pipe invert elevation above datum (ft): 1
3. Number of surface pipe outlets: 1

SLAMM for Windows Version 10.5.0

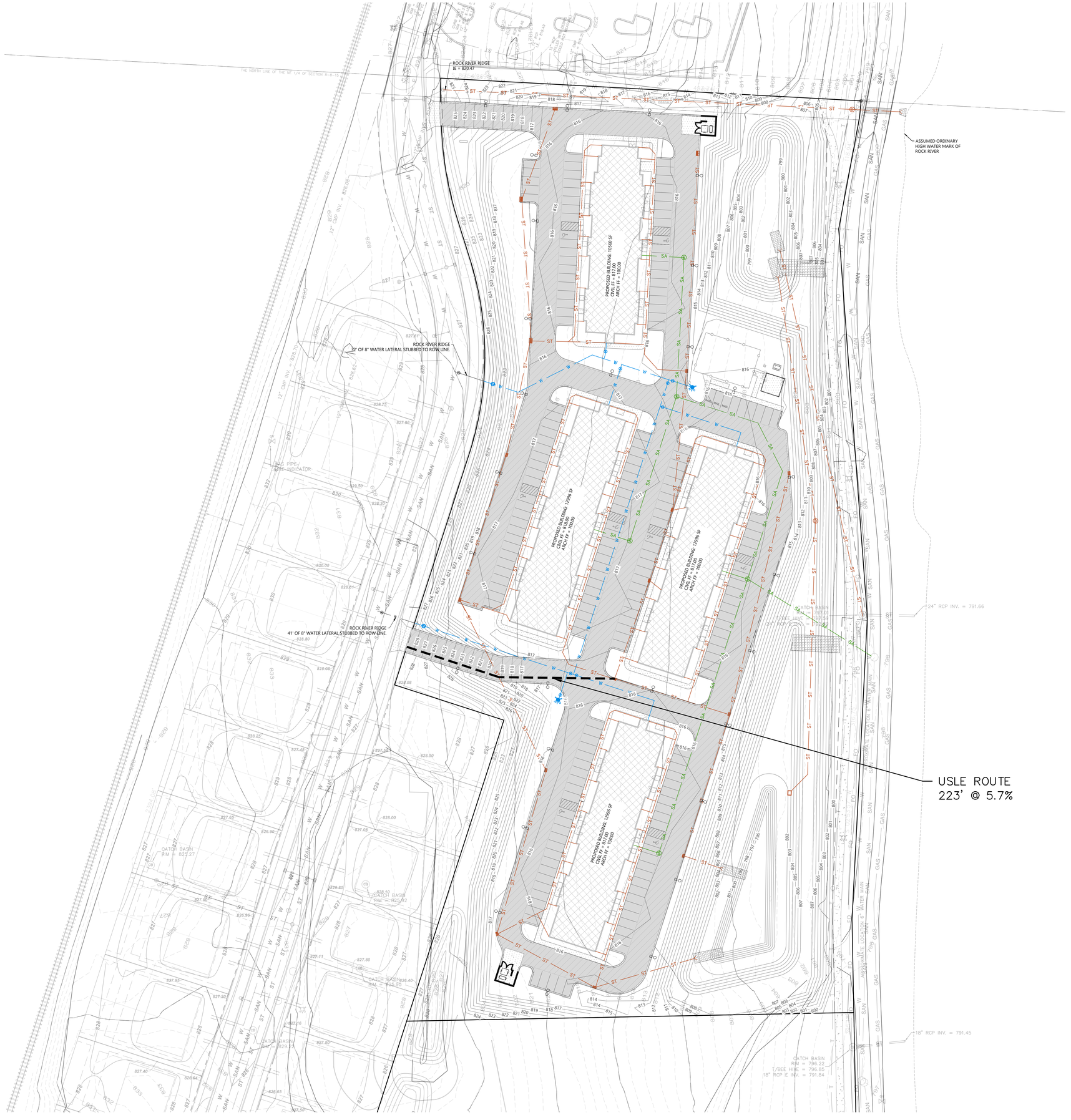
Data file name: \\job-files\2024 Job Files\240136200 Horizon - Lumin Terrace Multifamily - Watertown WI\240136204 Civil\storm water report and calculations\2024-10-10 SUBMITTAL\CALCS\slamm2340136200.mdb
Data file description:
Rain file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WisReg - Madison WI 1981.ran
Particulate Solids Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_GEO03.ppdx
Residential Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/01/81 Model Run End Date: 12/31/81
Date of run: 10-30-2024 Time of run: 08:23:55
Total Area Modeled (acres): 8.570
Years in Model Run: 1.00

Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction

Total of all Land Uses without Controls:	384604	-	100.9	2423 -
Outfall Total with Controls:	129292	66.38%	31.23	252.0 89.60%
Annualized Total After Outfall Controls:	129647			252.7

. Percent Solids Reduction due to Engineered Media Not Used

Appendix J: USLE Map and Calculations



USLE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

PROPOSED MULTI-FAMILY DEVELOPMENT
LUMIN TERRACE
JOHNSON STREET • WATERTOWN, WI

PROFESSIONAL SEAL

PRELIMINARY DATES

NOT FOR CONSTRUCTION

JOB NUMBER
240136200

SHEET NUMBER

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer:

Project:

Date: 11/08/24

County: Jefferson

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	04/01/25	06/08/25	20.4%	140	Sandy Loam	0.28	5.7%	223	0.94	1.00	7.5	0.923	Inlet Protection	4.9
End	06/08/25	-----	-----	-----	-------	-----	5.7%	223	0.94	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	5.7%	223	0.94	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	5.7%	223	0.94	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	5.7%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	**7.5**		**TOTAL**	**4.9**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/1-5/15	and	8/7-8/29	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	
Date	

Appendix K: Post Construction Operation and Maintenance Plan

The owner of the property affected shall inspect and maintain the following stormwater management systems frequently, especially after heavy rainfalls, but at least on an annual basis unless otherwise specified.	
STORMWATER FACILITY	**TYPE OF ACTION**
1. Lawn and Landscaped Areas	All lawn areas shall be kept clear of any materials that block the flow of stormwater. Rills and small gullies shall immediately be filled and seeded or have sod placed in them. The lawn shall be kept mowed, tree seedlings shall be removed, and litter shall be removed from landscaped areas.
2. Rip Rap	All rip rap showing signs of erosion or scour shall be repaired, reinforced, and revegetated immediately. Rip rap should be kept clean of vegetation and sediment. All rip rap shall be repaired to the construction plan requirements.
3. Catch Basin/Curb Inlet Grates	The grate openings to these structures must be cleared of any clogging or the blocking of stormwater flow from getting into the stormwater conveyance system of any kind.
4. Retention/Detention Basins	Trash racks, standpipes, outlet structures, inlet and outlet pipes, and anti vortex devices shall be kept clear of debris. Non-structurally sound devices shall be replaced. Floating litter and algae shall be removed monthly. All grassed areas, embankments, and flow control devices showing signs of erosion shall be repaired, reinforced, and revegetated immediately to the original plan requirements. Dry basins shall be mowed no less than twice per year at a height of no less than 3 inches. Grasses shall not be allowed to grow to a height that permits branching or bending. Mowing shall only take place when the ground is dry and able to support machinery. Every 5 years, the elevations of the pond bottom shall be surveyed to determine the permanent pool depth and sediment depth in the pond. When silt has accumulated three feet from the original design depth elevation of the pond, the pond shall be cleaned out and restored back to the original design depth of a minimum of 5' from the normal water elevation. Cleaning, removal, and deposit of silt from the detention pond shall be done by means and methods acceptable to the Wisconsin Department of Natural Resources.
5. Infiltration Basin	Inspections shall occur at minimum every 3 months. Inspections shall include the spreader, overflow spillway, and the condition of vegetation. To maintain vegetation, the first mowing of newly planted seed shall occur once it reaches a height of 10 to 12 inches. Mowing shall reduce the height of plants to 5 to 6 inches. After establishment, if burning cannot be accommodated, mowing shall occur once in the fall after November 1st. Mowing shall reduce the height of plants to 5 to 6 inches. If burning can take

	place, beginning the second year, burning shall occur in the early spring prior to May 1st, or in late fall after November 1st. Burning shall be done two consecutive years and then up to three years can pass before the next burning. Under no circumstances shall burning occur every other year. If standing water is observed over 50% of the basin floor 3 days after rainfall, the basin is considered clogged. If this ever occurs, remove the top 2 to 3 inches, chisel plow and add topsoil and compost. If deep tilling is used, the basin shall be drained and soils dried to a depth of 8 inches. Replant with turf grass. If clogging again occurs, the basin shall be replanted with prairie style vegetation. During winter conditions, all draw down devices in the pond shall be opened to discourage the infiltration of high levels of chlorides. For enclosed basins, the use of chloride deicers shall be limited in the upland areas of the basin. Trash shall be removed as quickly as possible once observed.
6. Record of Maintenance	The operation and maintenance plan shall remain onsite and be available for inspection when requested by WDNR. When requested, the owner shall make available for inspection all maintenance records to the department or agent for the life of the system.