Payne+Dolan
A WALBEC COMPANY
www.walbecgroup.com
(920) 757-7559

W6380 Design Drive
Greenville, WI 54942 (920) 757-7559
www.walbecgroup.com

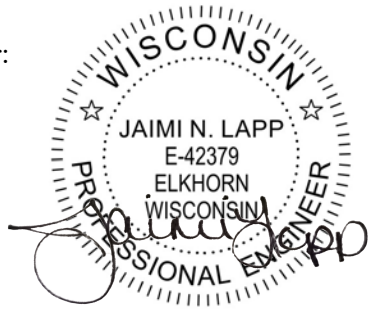
Project:

Prairie Philip Property
2105 Pewaukee Road

Location:
Waukesha, Wisconsin

STORM WATER MANAGEMENT PLAN

Preparer:



ALL PLANS AND SUPPORTING DOCUMENTATION HAVE BEEN REVIEWED AND APPROVED BY THE SIGNING ENGINEER HEREBY CERTIFYING THAT HE/SHE HAS READ THE REQUIREMENTS OF THE CITY ORDINANCE AND TO THE BEST OF HIS/HER KNOWLEDGE THE SUBMITTED COMPLIES WITH THE REQUIREMENTS.

Project Number: 490493
Last Revised: June 24, 2021

Table of Contents

1.0 INTRODUCTION

The Prairie Philip property at 2105 Pewaukee Road is located north of West Moreland Boulevard and south of Northview Road and the Waukesha County airport. The site was previously a residential site with just a small home and driveway. Recently, the site was disturbed and a long gravel driveway, a retaining wall and a large gravel parking area were constructed without rezoning or a City Site Plan Review, therefore erosion control and stormwater permits were not issued. The property owner was notified in October and December regarding the process that needed to be completed in order to be in compliance and Payne + Dolan was contracted to assist. A wet detention basin is planned for the property to comply with the storm water management requirements of the City of Waukesha and Wisconsin Department of Natural Resources (WDNR) at the time of approval.

The 6.030 acre study area is located within part of the NW ¼ of the NW 1/4, Section 35, T7N, R19E in the City of Waukesha, Waukesha County, Wisconsin. A location map for the site is located in **Appendix 1**.

Storm water management is required by the Wisconsin Department of Natural Resources (DNR) through Chapter NR 151 Runoff Management and the City of Waukesha's Chapter 32 Storm Water Management and Erosion Control because the proposed redevelopment causes a land disturbing activity of one acre or more. Therefore, redevelopment is required to implement the following controls:

- **Runoff Rate Control**: In the City of Waukesha, runoff rate control or detention is required whenever the proposed plan disturbs a total land surface of one acre or more. Per Chapter 32 "the calculated post-development peak storm water discharge rates shall not exceed the calculated pre-development discharge rates for the 1-year, 2-year, 10-year, and 100-year, 24-hour design storms".

- **Sediment Control**: Per Chapter 32 "each storm water management plan shall meet the following post-development total suspended solids reduction targets, based on average annual rainfalls, as compared to no runoff management controls: (i.) For new land development and in-fill development, 80% reduction in total suspended solids load; (ii.) For redevelopment, 40% reduction of total suspended solids load from parking areas and roads."

- **Infiltration**: Per Chapter 32.10.3.C the site is considered prohibited from storm water infiltration requirements due to the potential for groundwater contamination because the runoff is from outdoor material storage areas. The soil boring logs and USDA Web Soil Survey included in **Appendix 1** do not suggest a high likelihood of infiltratable soils.

Planning Goals

The stormwater planning goals include:

- Reduce pre-development peak flows to avoid off-site erosion during post-development storm water conveyance events; and
- Minimize sediment and other pollutants from leaving the site during and after construction; and

Design Summary

To help accomplish the above goals, a stormwater conveyance system is proposed to be installed within the development. The site runoff will continue to follow the existing drainage patterns. The proposed site is required to maintain compliance with the following standards:

- Post-development peak storm water discharge rates shall not exceed the calculated pre-development discharge rates for the 1-year, 2-year, 10-year, and 100-year, 24-hour design storms

in accordance with Chapter 32 design standards.

- The proposed site will control total suspended solids carried in runoff from the post-construction site. By design, the site shall reduce total suspended solids by 80% based on an average annual rainfall, as compared to no runoff management controls in accordance with WDNR design standards.
- BMPs will be constructed and maintained at the construction site to prevent pollutants from reaching waters of the state.

2.0 HYDROLOGIC CALCULATIONS

HydroCAD version 10.10-5a has been used to analyze storm water hydrologic characteristics for the site. HydroCAD uses the TR-55 methodology for determining peak discharge runoff rates. Curve numbers for the existing ground cover were selected for a "D" soil type in "good" condition using the maximum values specified in Chapter 32. Storm water modeling was conducted using the 1-year, 2-year, 10-year and 100-year storm events using the MSE3 rainfall distribution with rainfall depths per Chapter 32.

Table 1: Design Rainfall Values

Storm Recurrence Interval	24-hour Rainfall Depth
1-year	**2.4 inches**
2-year	**2.7 inches**
10-year	**3.81 inches**
100-year	**6.18 inches**

3.0 PRE-DEVELOPED CONDITIONS

The drainage study areas were determined using 1-foot topographic mapping generated from topographic field survey data developed for the project. A drainage area map is included in **Appendix 2**. The existing site is generally split with the west portion draining north off site and the east portion draining south and east off site. There is a small offsite area north of this property that drains through it in a southeasterly direction. As part of the Fox River watershed the entire study area ultimately discharges to the east. The following table presents the results of the hydrological analysis for the existing conditions:

Table 2: Hydrologic Analysis of Pre-Developed Conditions

	Area (Ac)	Runoff Curve Number	Time of Conc. (min.)	Peak Flow Rate (cfs)			
				1-year	2-year	10-year	100-year
North (1S)	1.788	79	9.5	2.13	2.74	5.16	10.83
South and East (2S)	3.301	78	13.8	3.06	3.97	7.70	16.56
Offsite (2aS)	0.941	78	29.4	0.58	0.75	1.47	3.18
Total	6.030	---	---	5.23	6.78	13.14	28.25

Detailed hydrologic calculations for the study area are included in **Appendix 2**.

4.0 POST-DEVELOPMENT CONDITIONS

The post-development conditions include an unpaved, dustless surface driveway leading from the existing driveway east to a large unpaved, dustless surface outdoor storage area.

The post-development drainage basins match those of the existing conditions. Proposed sub-basin 3S is undetained area that drains to the north as in the existing condition but flows over a grass filter strip prior

to leaving the site. Proposed sub-basin 4S is area captured by the proposed swale and wet detention basin. Sub-basins 4aS and 4bS are the offsite area split into flows that are detained and not detained by the proposed pond. The following table summarizes the results of the analysis of proposed conditions:

Table 3: Hydrologic Analysis of Post-Development Conditions

	Area (Ac)	Runoff Curve Number	Time of Conc. (min.)	Peak Flow Rate (cfs)			
				1-year	2-year	10-year	100-year
North (3S)	1.615	81	9.5	2.21	2.78	5.05	10.24
South and East (4S)	3.474	85	6.0	7.13	8.67	14.60	27.59
Offsite (4aS)	0.509	78	29.4	0.31	0.41	0.79	1.72
Offsite (4bS)	0.432	78	20.3	0.33	0.42	0.83	1.80
Total (w/o detention)	6.030	---	---	9.33	11.49	19.91	38.71
Detention Features				1-year	2-year	10-year	100-year
Wet Pond	Peak Inflow (cfs)			7.21	8.79	14.87	28.27
	Peak Outflow (cfs)			1.06	1.22	1.71	13.21
	High Water Level			895.97	896.20	897.05	897.80

Detailed hydrologic calculations are included in **Appendix 2**.

5.0 ALLOWABLE PEAK RUNOFF RATES

Hydrologic analysis included in this report was performed using the HydroCAD hydrologic simulation computer model, version 10.10-5a by HydroCAD Software Solutions LLC. The discharges were generated using the SCS Dimensionless Unit Hydrograph Method for a 24-hour duration storm. Model parameters include drainage area, SCS runoff curve number, time of concentration and 24-hour precipitation with MSE3 NRCS rainfall distribution curve. A 6-minute minimum time of concentration was used for the east post-development area. The following table summarize the results of the analysis.

Table 4: Comparison of Pre- and Post-Development Flows

	1-year	2-year	10-year	100-year
Total Discharge (cfs)	Pre-developed Flows			
	5.23	6.78	13.14	28.25
	Post-developed Flows			
	3.25	4.03	7.01	23.47

6.0 STORM WATER QUALITY CONTROL

The post-development site will utilize the wet pond and a grass filter strip north of the proposed gravel drive to achieve post-construction storm water quality control in accordance with the State of Wisconsin requirements for suspended solids removal.

The requirement is 80% removal of the Total Suspended Solids (TSS) as compared to no controls. Water quality analysis included in this report was performed using the Source Loading and Management Model (WINSLAMM) computer model, version 10.4.1. WINSLAMM was adopted and calibrated by the Wisconsin Department of Natural Resources to better understand the relationships between sources of urban runoff pollutants and runoff quality. Detailed computations are provided in **Appendix 3**.

The water quality modeling results for the study area are as follows:

Table 5: Water Quality Modeling Results

Site	No Controls (lbs)	With Controls (lbs)	% Reduction
Post-developed Site	542.6	96.76	82.17%

7.0 INFILTRATION

The proposed development site is exempt from the WDNR and City of Waukesha infiltration requirements.

8.0 STORMWATER MANAGEMENT MAINTENANCE PLAN

The stormwater management maintenance provisions and inspection checklist are detailed in **Appendix 4.**

9.0 WISCONSIN DNR SOIL LOSS CALCULATIONS

The erosion control best management practices and construction sequence for the proposed development has been developed using the Wisconsin DNR Sediment Loss & Discharge Calculation Tool Version 2.0. See **Appendix 5**.

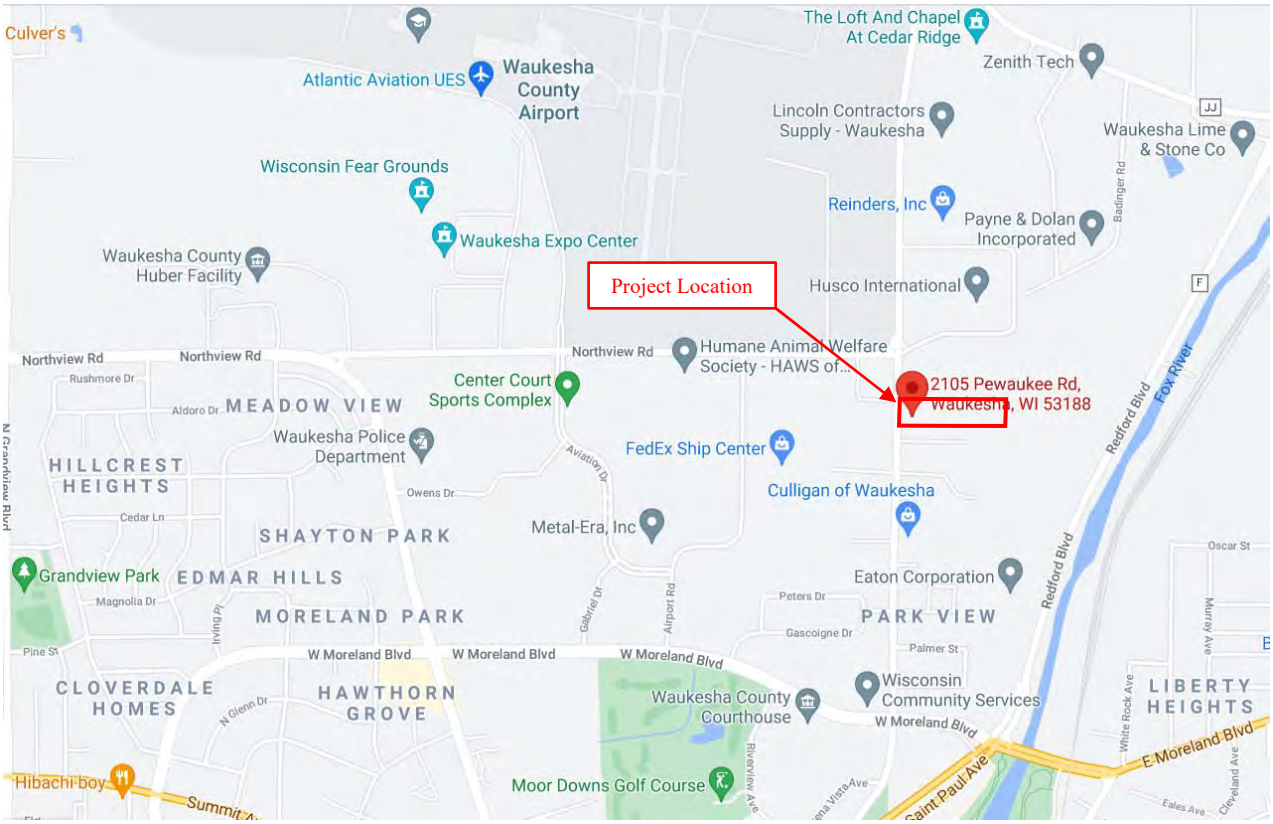
Appendix 1

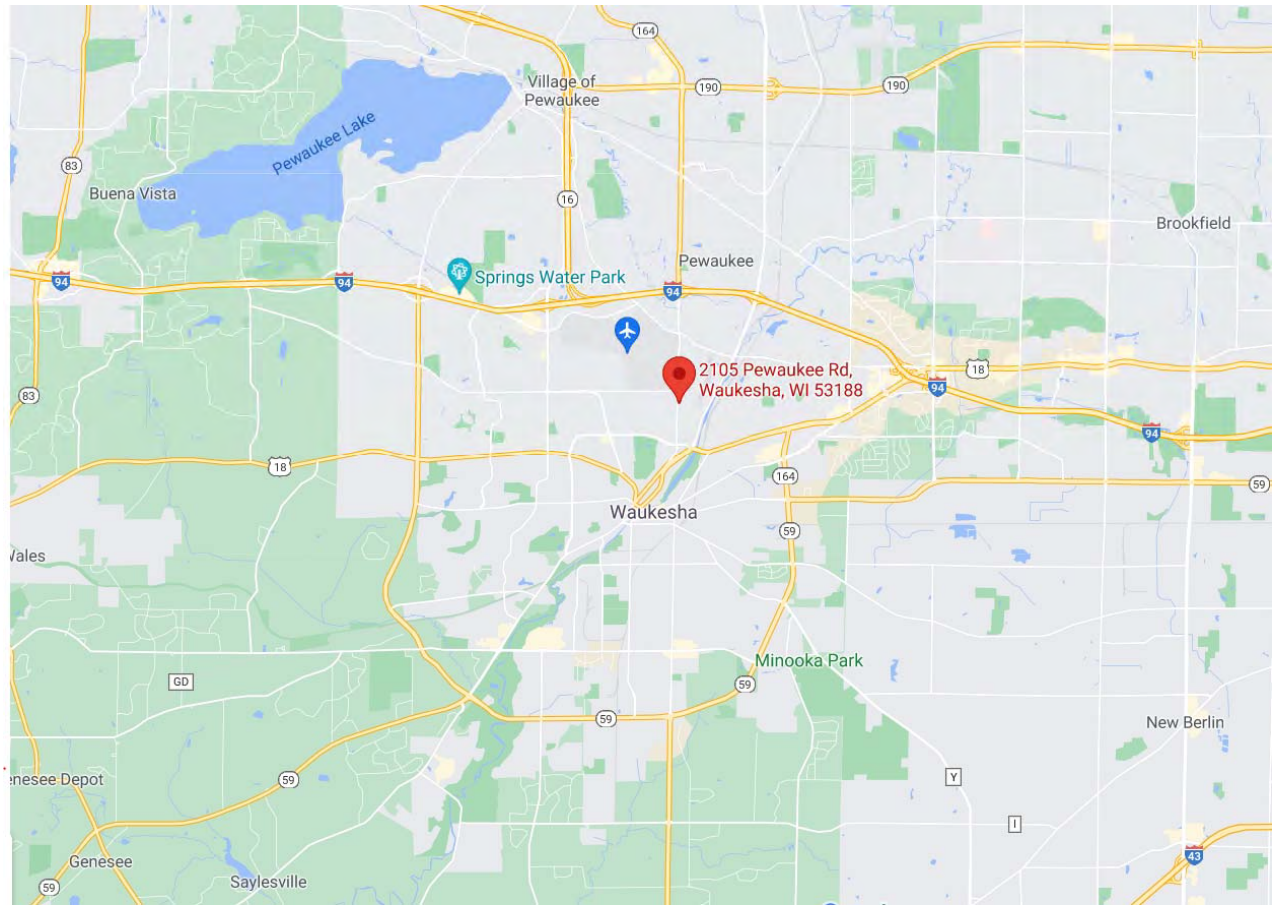
Site Location Map, Soil Borings and

USDA Web Soil Survey

Site Location Map

Located at 2105 Pewaukee Road Waukesha, WI 53188:





November 9, 2017

Midwest Drilled Foundations and Engineering, Inc.
200 S. Prairie Ave.
Waukesha, WI 53186

Attn: Mr. Riley Padron
Assistant Project Manager

Re: Subcontract Drilling and Boring Log Preparation
WisDOT Drilled Pier Research Project
2105 Pewaukee Road
Waukesha, Wisconsin
PSI Project No.: 00522038

Dear Mr. Padron:

In accordance with your request and executed PSI Proposal 226522, dated October 27, 2017, PSI has completed the soil test borings for the proposed project. Copies of the Soil Boring Logs are enclosed. As requested, no engineering analysis or recommendations have been provided. It is understood that the boring logs are being supplied to Midwest Dilled Foundations and Engineering, Inc. for its own evaluation and use.

Field Exploration

Two soil test borings (B-1 and B-2) were drilled for this project as requested to a depth of 40 feet below the existing ground surface. The borings were performed at the locations chosen by the client. Ground surface elevations for the soil test borings were not provided by the client.

The soil test borings were performed with a truck-mounted rotary drilling rig utilizing continuous flight hollow stem augers to advance the holes. It should be noted that at boring B-2, mud rotary drilling was employed beginning at a depth of 20 feet below the ground surface due to difficulty experienced with advancement of hollow stem augers in the very dense materials. Representative samples were obtained by split spoon sampling

at 2.5 foot intervals to a depth of 10 feet and every 5 feet thereafter in accordance with ASTM D-1587 procedures. N-values were obtained during sampling and provide a means of estimating the relative density of granular soils and comparative consistency of cohesive soils, thereby providing a method of evaluating the relative strength and compressibility characteristics of the subsoil.

The soil samples were transferred to clean glass jars immediately after retrieval, and returned to the laboratory upon completion of the field operations. Samples will be stored for a period of 60 days at which time they will be discarded unless other instructions are received. All soil samples were visually classified by a PSI soils engineer in general accordance with the Unified Soil Classification System (ASTM D-2488-75).

Copies of the Soil Boring Logs are enclosed. The soil stratification shown on the logs represents the soil conditions in the actual boring locations at the time of the exploration. The terms and symbols used on the logs are described in the General Notes enclosed. After completion of the boring, the auger holes were backfilled to the ground surface with bentonite chips.

Laboratory Physical Testing

Soil samples obtained from the exploration were visually classified by a soils engineer in the laboratory, and subjected to laboratory testing, which included moisture content determination. The values of strength tests performed on soil samples obtained by the Standard Penetration Test Method (SPT) during sampling are considered approximate, recognizing that the SPT method provides a representative but somewhat disturbed soil sample. The laboratory testing was performed in general accordance with the respective ASTM methods, as applicable, and the results are shown on the boring logs.

General

A description of the subsurface conditions encountered at the test boring locations is shown on the enclosed Soil Boring Logs. The lines of demarcation shown on the logs represent approximate boundaries between the various soil classifications. It must be recognized that the soil descriptions are considered representative of the specific test location, and that variations may occur between the sampling intervals. Soil depths, topsoil and layer thicknesses, and demarcation lines utilized for preliminary construction calculations should not be expected to yield exact and final quantities.

We appreciate the opportunity to have been of service on this project. If there are any questions, please contact us at any time.

Respectfully Submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Benjamin J. Kroeger, E.I.T.
Staff Engineer
Geotechnical Services

Ted A. Cera, P.E.
Department Manager
Geotechnical Services

Enclosures: Boring Location Plan
Soil Boring Logs (2)
General Notes

Intertek psi

Boring Location Plan
WisDOT Drilled Pier Research Project
2105 Pewaukee Road
Waukesha, Wisconsin
PSI Project No: 00522038

Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125
Fax: (262) 521-2471

LOG OF BORING B-1

PSI Job No.: 00522038
Project: WisDOT Drilled Pier Research
Location: 2105 Pewaukee Road
Waukesha, WI

Drilling Method: Hollow Stem Auger
Sampling Method: 2-in SS
Hammer Type: Automatic
Boring Location:

WATER LEVELS
While Drilling: Not Obsvd.
Upon Completion: Not Obsvd.
Delay: N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (6"± Thick)	OL				
				1	14	Brown Lean Clay with Gravel, Trace Sand, Moist, Very Stiff	CL	4-11-14 N=25	13		Q_r = 1.7 tsf
				2	13	Brown Silty Sand with Gravel, Moist, Dense	SM	10-17-18 N=35	4		
	5			3	16	Brown Sandy Silt with Gravel, Possible Cobble, Moist, Dense to Very Dense		10-19-23 N=42	7		
				4	18			19-30-38 N=68	6		
	10			5	18			11-32-46 N=78	6		
	15			6	10			27-50/4"	5		
	20			7	10		ML	23-50/5"	6		
	25			8	11			21-47-50/3"	7		
	30			9	9			32-50/5"	8		
	35			10	10			30-50/4"	7		
	40					End of Boring at 40'					
						Cave-In at 25'					

Completion Depth: 40.0 ft
Date Boring Started: 11/6/17
Date Boring Completed: 11/6/17
Logged By: DH
Drilling Contractor: PSI, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Calif. Sampler
Texas Cone

Latitude:
Longitude:
Drill Rig: 2016 F-750 Ford (Truck Mount)
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125
Fax: (262) 521-2471

LOG OF BORING B-2

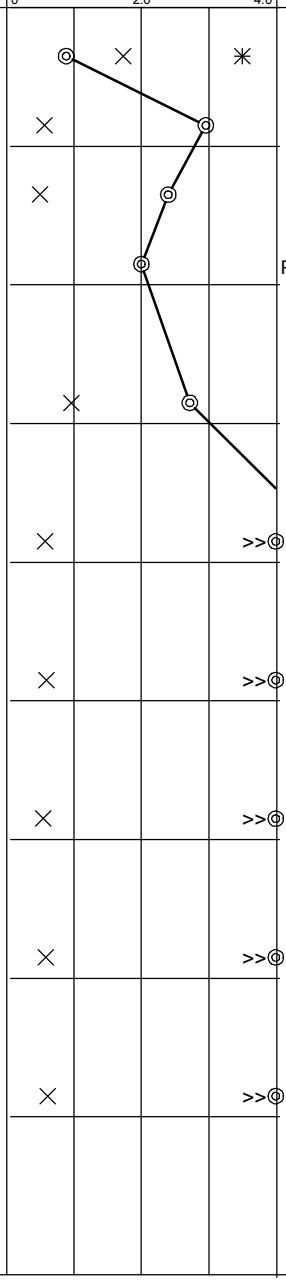
PSI Job No.: 00522038
Project: WisDOT Drilled Pier Research
Location: 2105 Pewaukee Road
Waukesha, WI

Drilling Method: Hollow Stem Auger
Sampling Method: 2-in SS
Hammer Type: Automatic
Boring Location:

WATER LEVELS
While Drilling: Not Obsvd.
Upon Completion: Not Obsvd.
Delay: N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0					Topsoil (6"± Thick)	OL			
				1	15	Brown Silty Clay, Trace Root Matter, Very Moist, Very Stiff	CL-ML	6-5-6 N=11	22	
				2	5	Brown Silty Fine Sand with Gravel, Moist, Dense	SM	19-20-17 N=37	7	
	5			3	14			6-11-19 N=30	6	
				4	3	Brown Silty Sand with Silt Lenses and Gravel, Moist, Medium Dense to Very Dense		11-13-12 N=25		Poor Recovery
	10						SM			
				5	16			8-15-19 N=34	12	
	15									
				6	12	Brown Sandy Silt with Gravel, Possible Cobble, Moist, Very Dense		11-35-50/3"	7	
	20									
				7	10			20-50/5"	7	
	25						ML			
				8	10			27-48-50/2"	7	
	30									
				9	8			34-50/4"	7	
	35									
				10	9			39-50/4"	8	
	40					End of Boring at 40'				
						Cave-In at 28'				
						Switched to Mud Rotary Drilling at 20'				



Completion Depth: 40.0 ft
Date Boring Started: 11/6/17
Date Boring Completed: 11/6/17
Logged By: DH
Drilling Contractor: PSI, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Calif. Sampler
Texas Cone

Latitude:
Longitude:
Drill Rig: 2016 F-750 Ford (Truck Mount)
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.
HSA: Hollow Stem Auger - typically 3¼" or 4¼ I.D. openings, except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry
R.C.: Diamond Bit Core Sampler
H.A.: Hand Auger
P.A.: Power Auger - Handheld motorized auger

SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
RC: Rock Core
TC: Texas Cone
BS: Bulk Sample
PM: Pressuremeter
CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N_{60}: A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q_u: Unconfined compressive strength, TSF
Q_p: Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL),%
DD: Dry unit weight, pcf
▼,▽,⧩ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (¾ in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to ¾ in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

Q_U - TSF	N - Blows/foot	Consistency
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

Description	Criteria
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term	% Dry Weight
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

Description	Criteria
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided:	Fracture planes appear polished or glossy, sometimes striated
Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed:	Inclusion of small pockets of different soils
Layer:	Inclusion greater than 3 inches thick (75 mm)
Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

Q_U - TSF	Consistency
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

Description	Criteria
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

Voids	Void Diameter
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)

Component	Size Range
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

Rock Mass Description	RQD Value
Excellent	90 -100
Good	75 - 90
Fair	50 - 75
Poor	25 -50
Very Poor	Less than 25

DEGREE OF WEATHERING

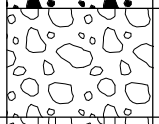
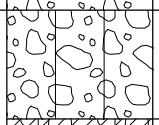
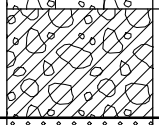
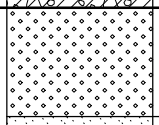
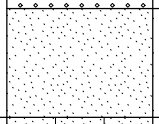
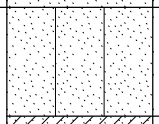
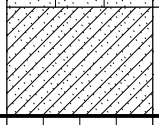
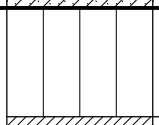
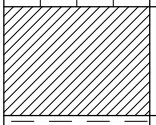
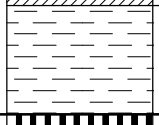
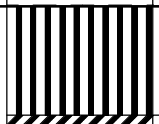
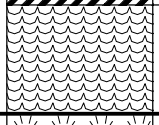
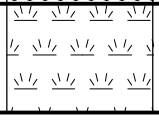
Slightly Weathered: Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.

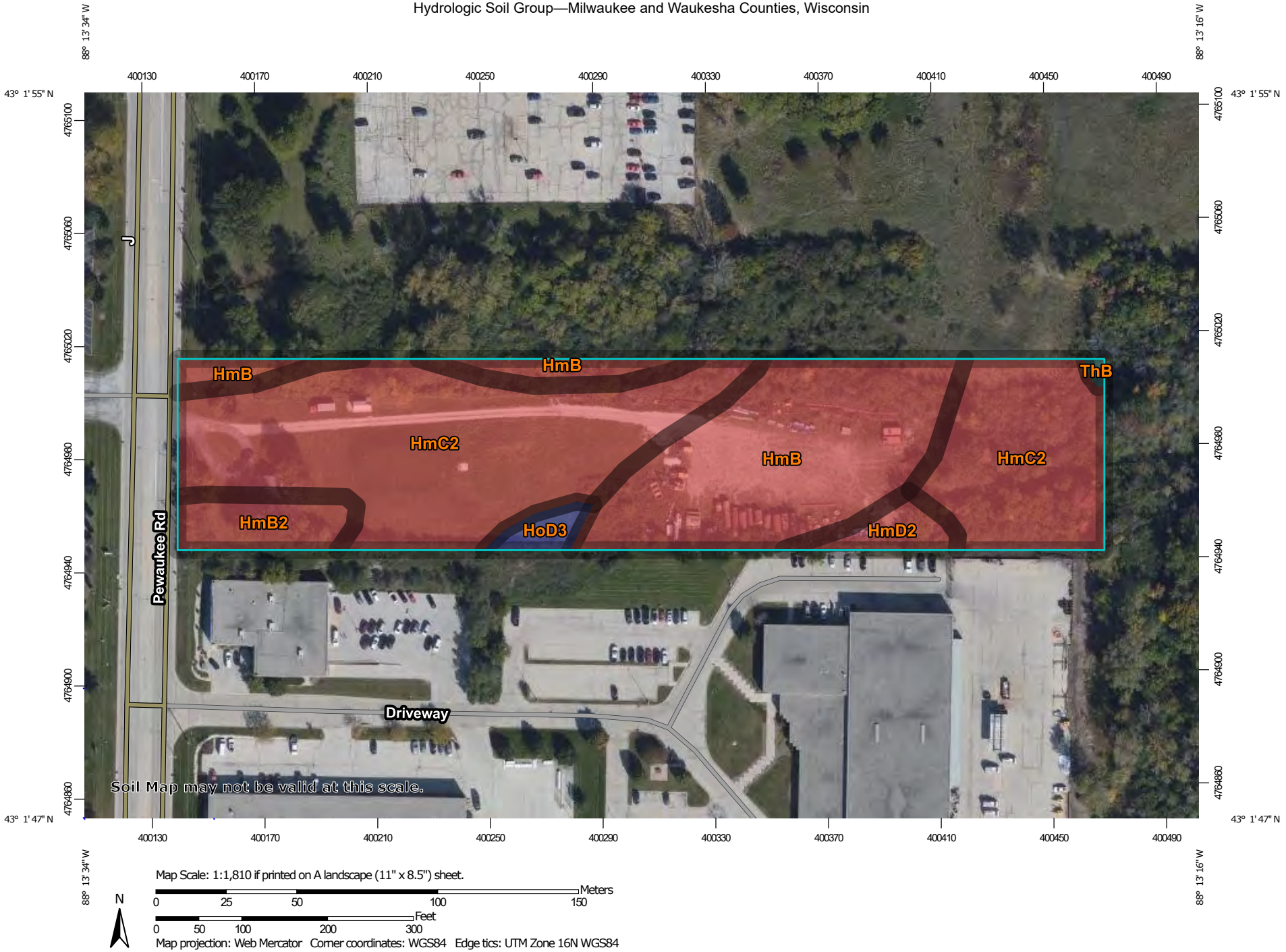
Weathered: Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.

Highly Weathered: Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS



Map Scale: 1:1,810 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

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 Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

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: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 16, Jun 8, 2020

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

Date(s) aerial images were photographed: Aug 1, 2019—Oct 12, 2019

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HmB	Hochheim loam, 2 to 6 percent slopes	D	1.8	32.8%
HmB2	Hochheim loam, 2 to 6 percent slopes, eroded	D	0.3	5.3%
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	D	3.1	56.9%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	D	0.2	2.9%
HoD3	Hochheim soils, 12 to 20 percent slopes, severely eroded	B	0.1	1.8%
ThB	Theresa silt loam, 2 to 6 percent slopes	C	0.0	0.2%
Totals for Area of Interest			**5.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

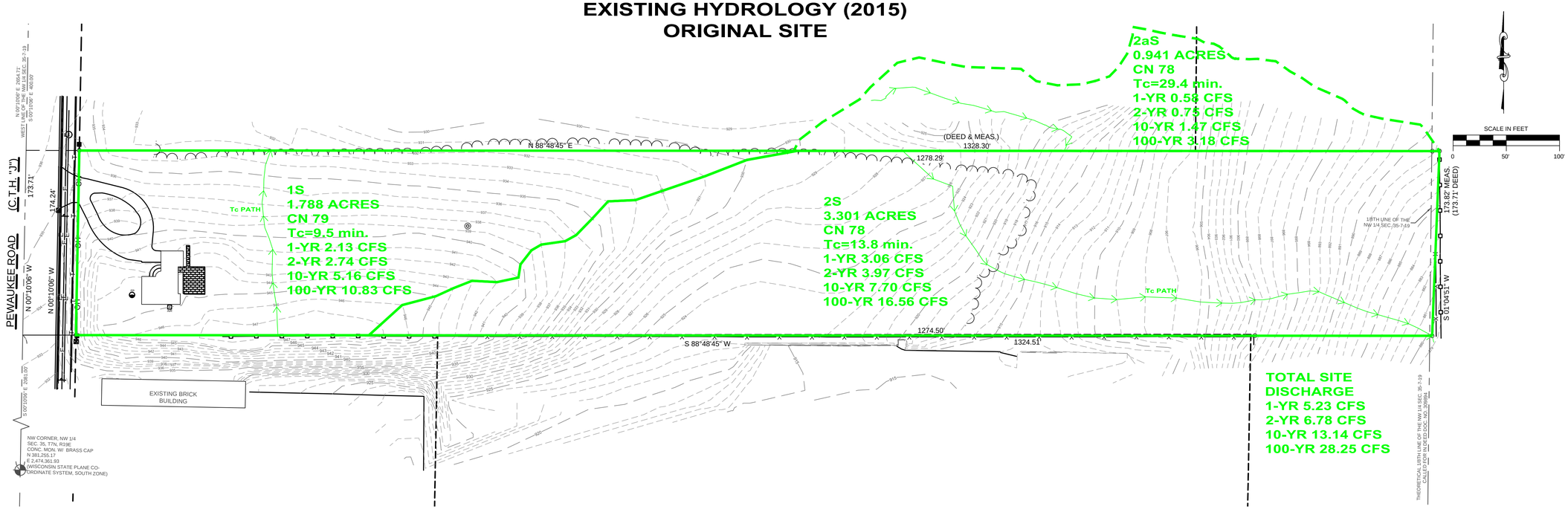
Tie-break Rule: Higher

Appendix 2

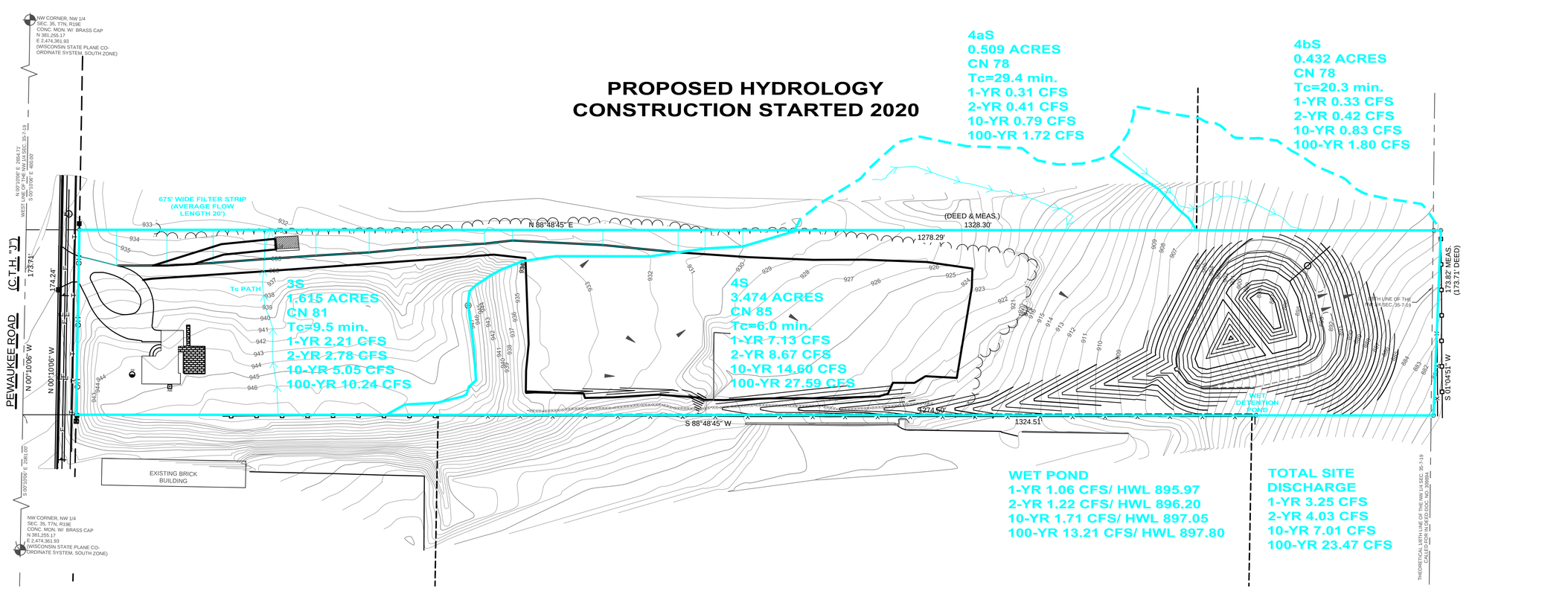
Drainage Area Map and

HydroCAD Model Results

EXISTING HYDROLOGY (2015)
ORIGINAL SITE



PROPOSED HYDROLOGY
CONSTRUCTION STARTED 2020



Jun 23, 2021 – 1:19pm
S:\Design & Construction Services\080-C30\Prairie Philip\040-Sheets0ther\Hydrology.dwg

NO	REVISION DESCRIPTION	DATE

Payne+Dolan
A WALBEC COMPANY
www.paydolgroup.com
(920) 757-7559

PROJECT
OUTDOOR STORAGE YARD
2105 PEWAUKEE ROAD

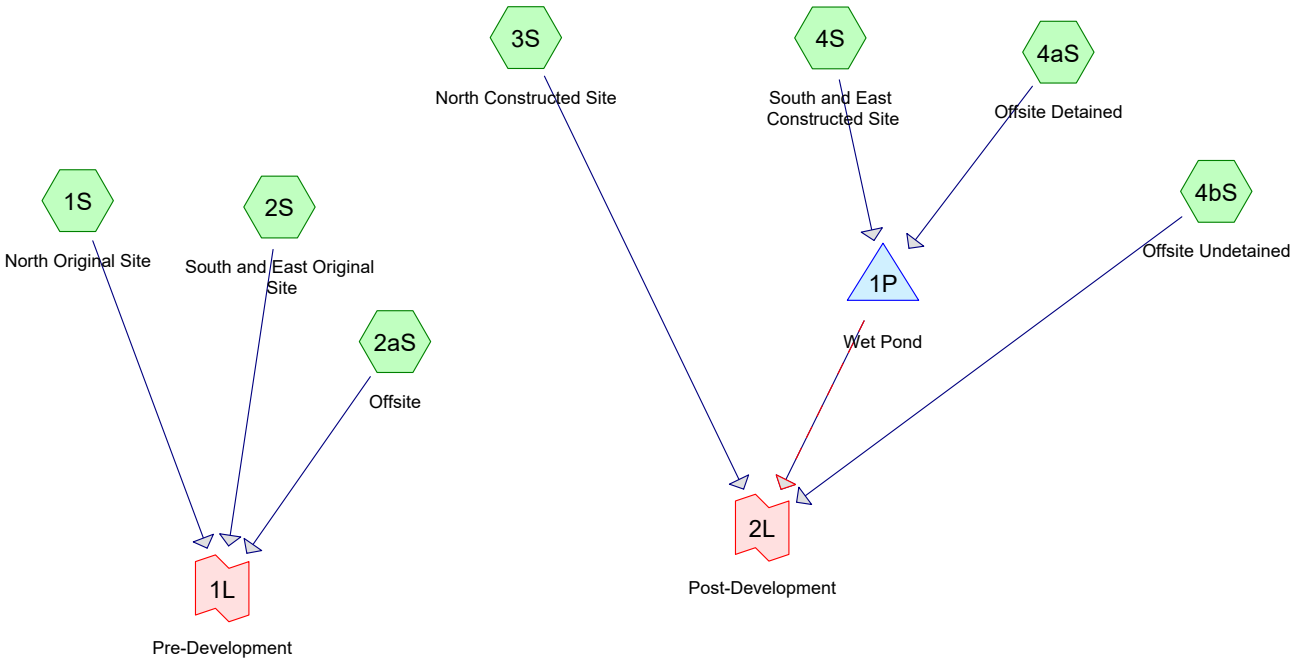
CLIENT
PRAIRIE PHIILIP LLC
2105 PEWAUKEE ROAD

Seal

WISCONSIN
JAIMI N. LAPP
E-42379
ELKHORN WIS.
PROFESSIONAL ENGINEER

SHEET TITLE
HYDROLOGY EXHIBIT

Drawing Scale:	1: 50
Drawn:	JNL
Checked:	CTD
P&D Project No:	490493
Sheet No.	



Subcat Reach Pond Link

Routing Diagram for 2021-06-23 Prairie Phillip

Prepared by Construction Resources Management, Printed 6/23/2021

Summary for Subcatchment 1S: North Original Site

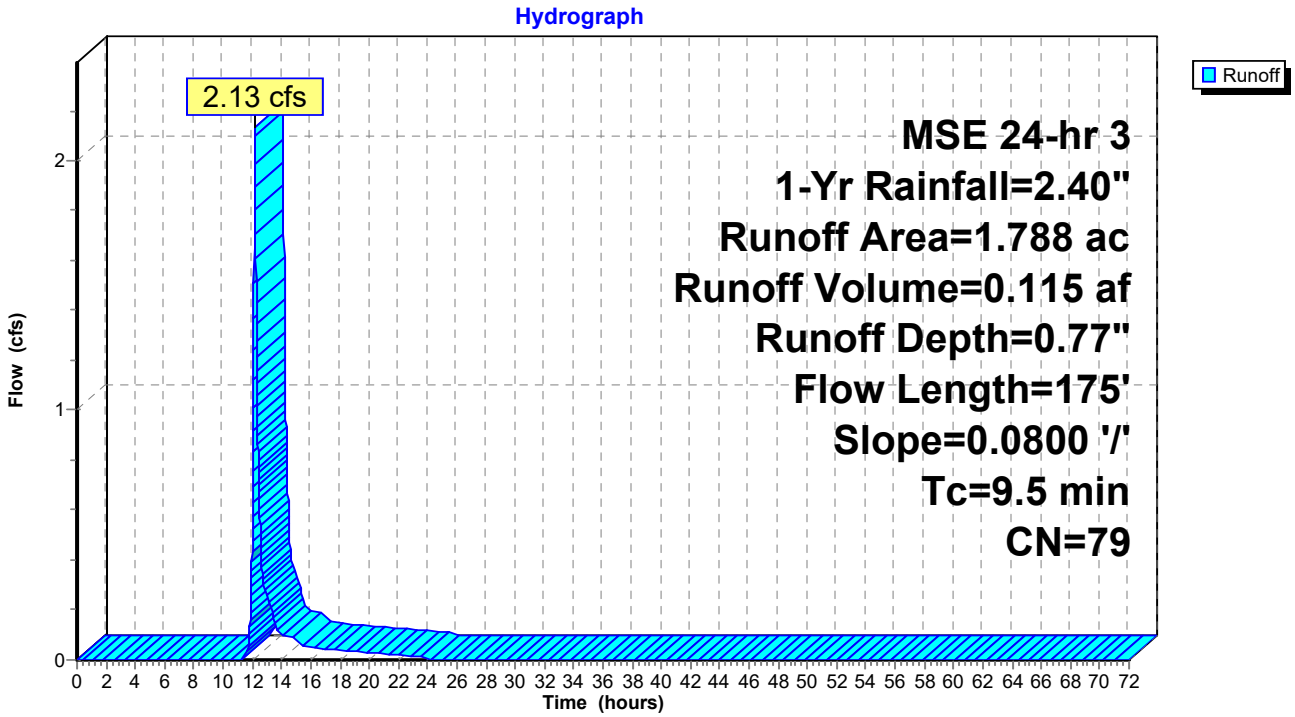
Runoff = 2.13 cfs @ 12.18 hrs, Volume= 0.115 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.032	98	Roofs, HSG D
*	1.680	78	>75% Grass cover, Good, HSG D per ordinance
	1.788	79	Weighted Average
	1.680		93.96% Pervious Area
	0.108		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 1S: North Original Site



Summary for Subcatchment 2aS: Offsite

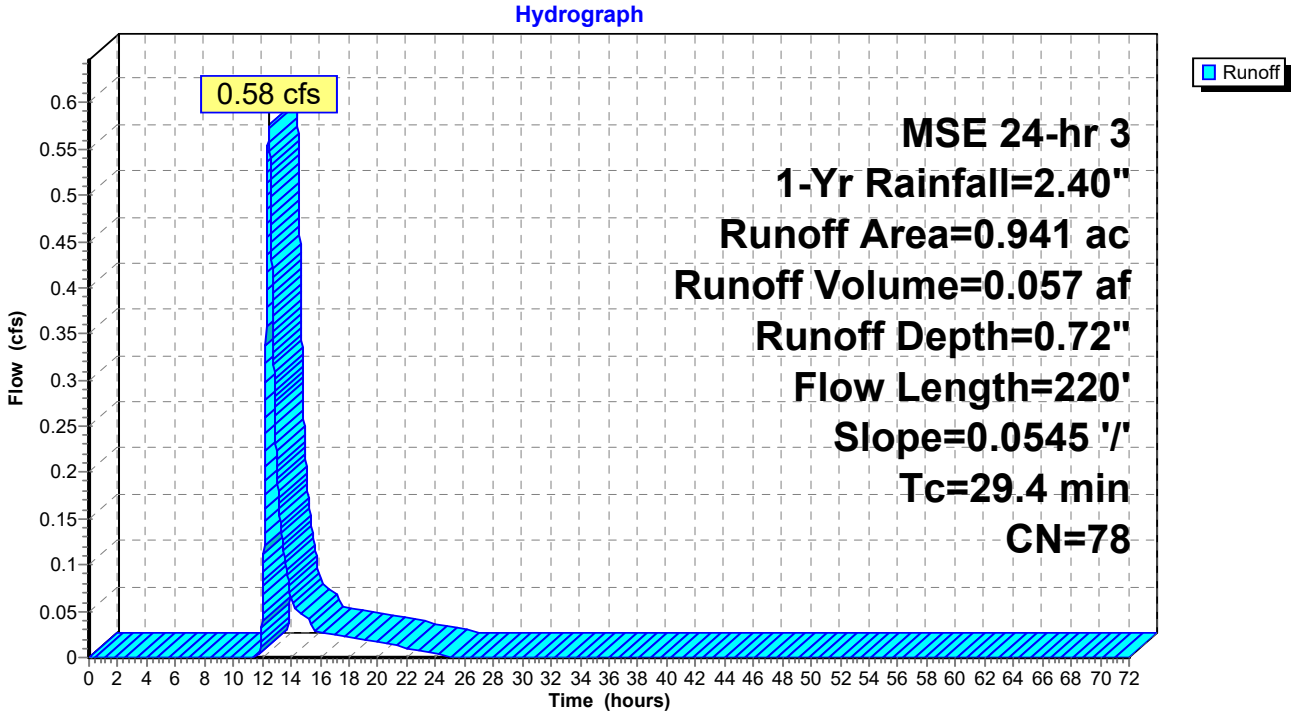
Runoff = 0.58 cfs @ 12.45 hrs, Volume= 0.057 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.941	78	>75% Grass cover, Good, HSG D
	0.941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 2aS: Offsite



Summary for Subcatchment 2S: South and East Original Site

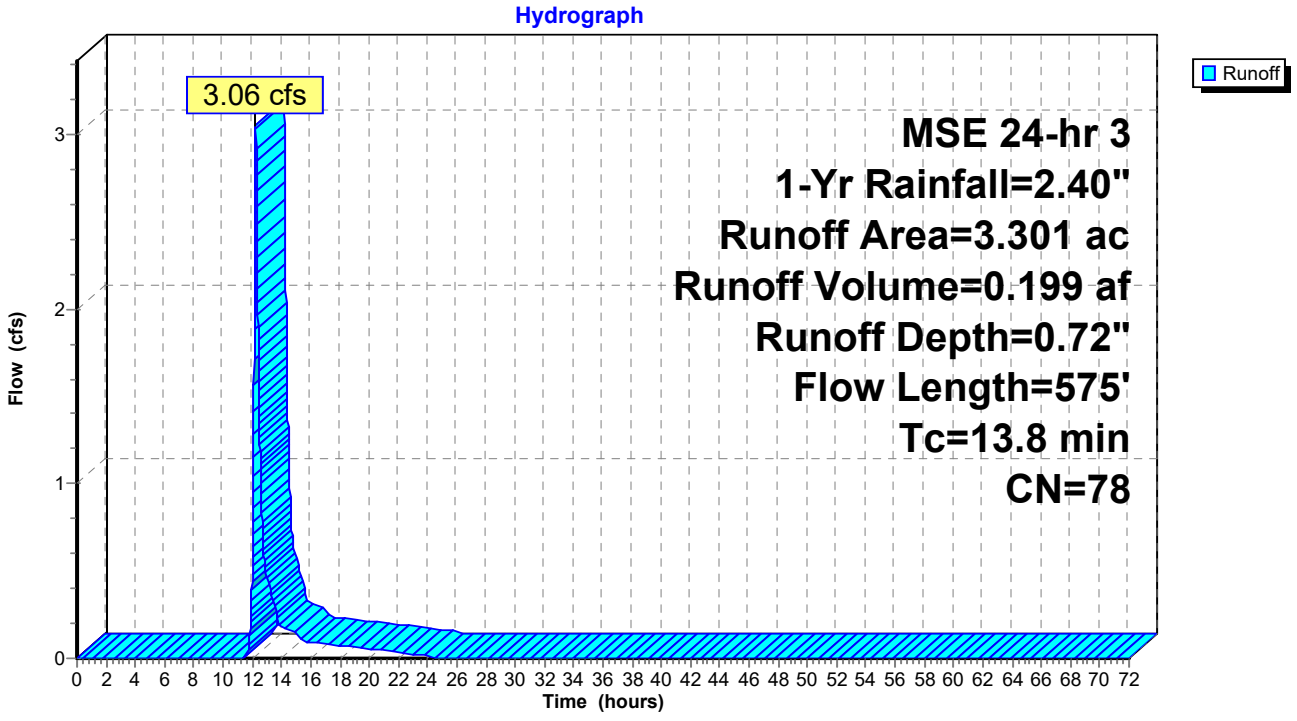
Runoff = 3.06 cfs @ 12.23 hrs, Volume= 0.199 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	3.301	78	>75% Grass cover, Good, HSG D per ordinance
	3.301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0600	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.8	475	0.0900	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.8	575	Total			

Subcatchment 2S: South and East Original Site



Summary for Subcatchment 3S: North Constructed Site

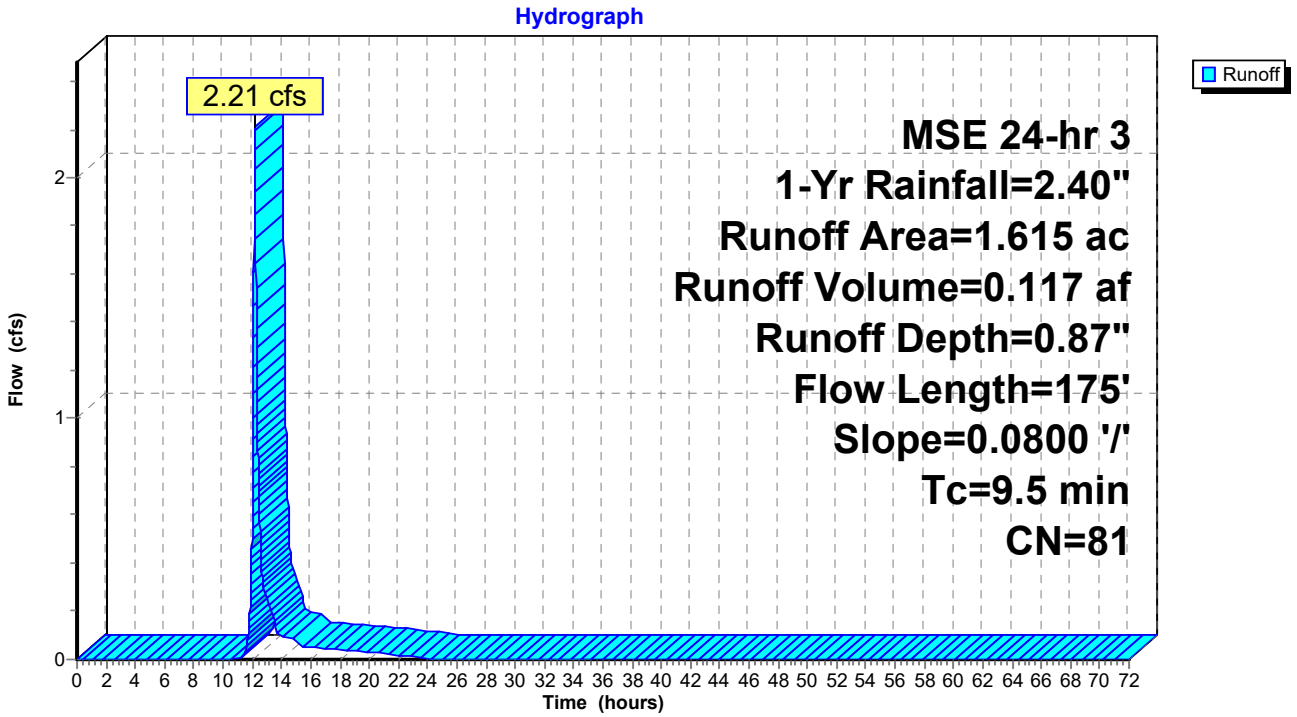
Runoff = 2.21 cfs @ 12.17 hrs, Volume= 0.117 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.037	98	Roofs, HSG D
*	0.154	98	Gravel Drive, HSG D
*	1.348	78	>75% Grass cover, Good, HSG D per ordinance
	1.615	81	Weighted Average
	1.348		83.47% Pervious Area
	0.267		16.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 3S: North Constructed Site



Summary for Subcatchment 4aS: Offsite Detained

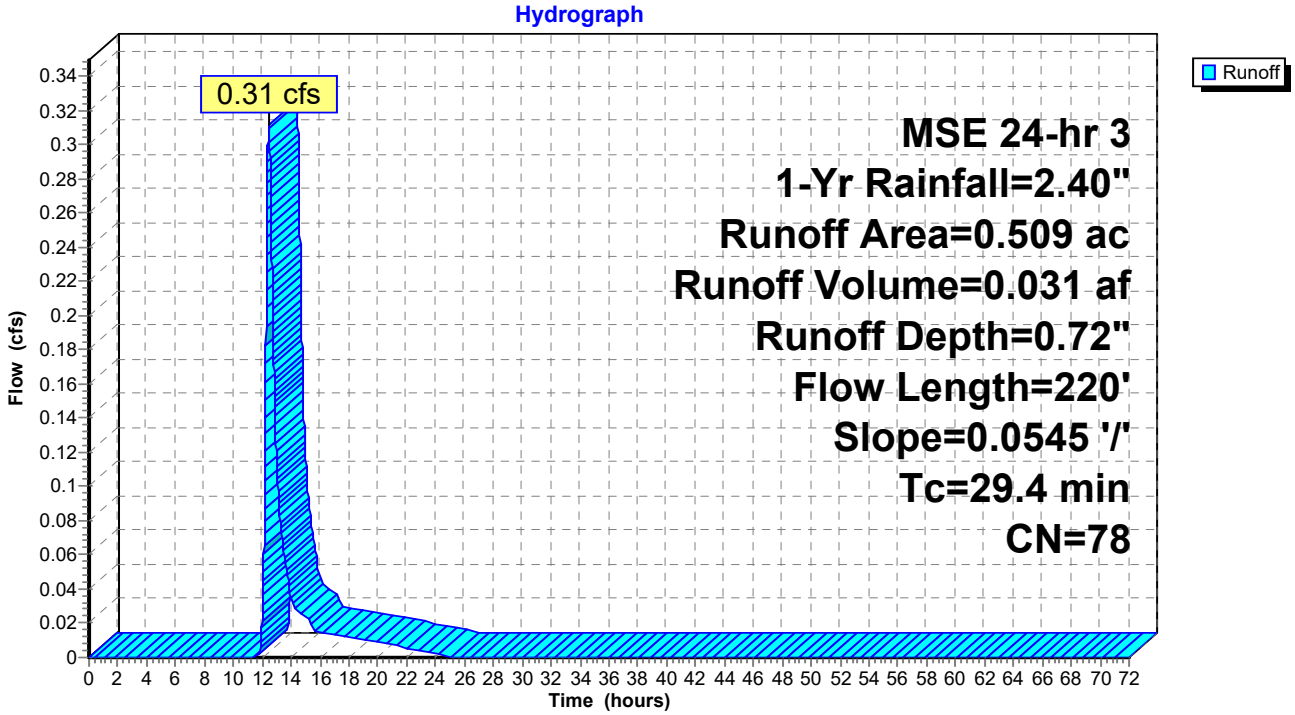
Runoff = 0.31 cfs @ 12.45 hrs, Volume= 0.031 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.509	78	>75% Grass cover, Good, HSG D
	0.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4aS: Offsite Detained



Summary for Subcatchment 4bS: Offsite Undetained

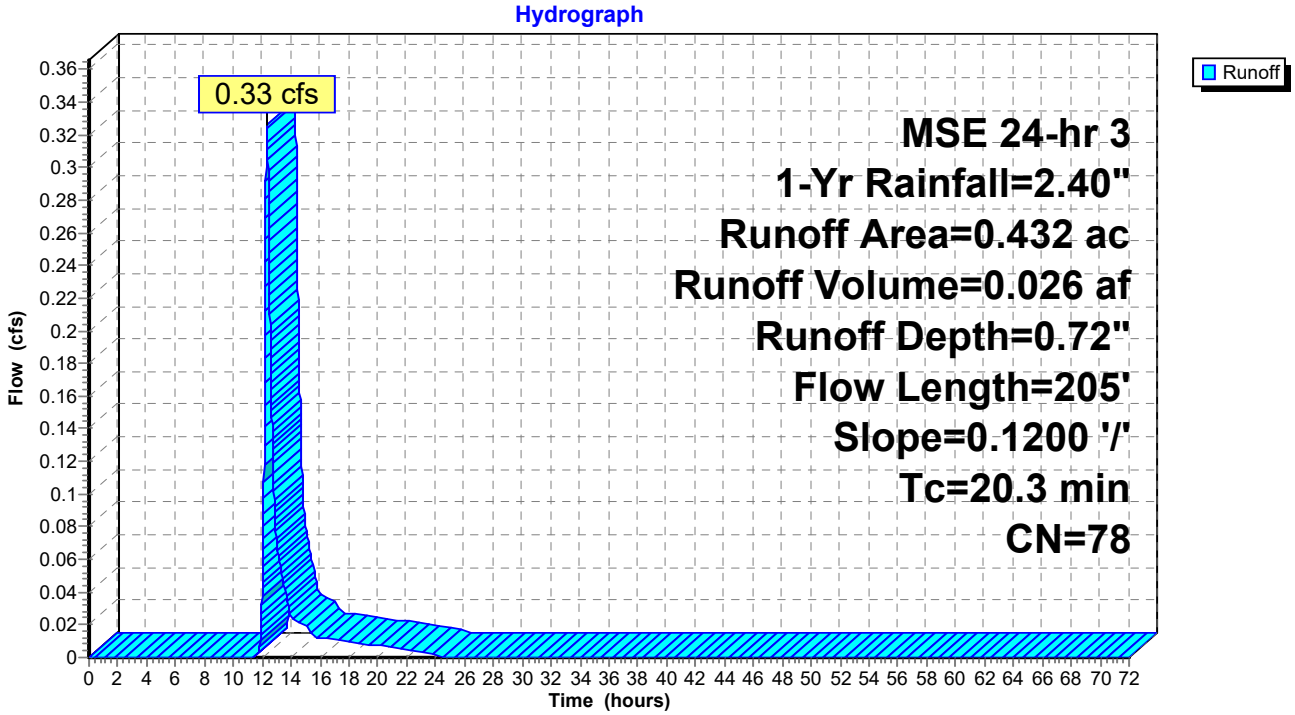
Runoff = 0.33 cfs @ 12.33 hrs, Volume= 0.026 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	0.432	78	>75% Grass cover, Good, HSG D
	0.432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	205	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4bS: Offsite Undetained



Summary for Subcatchment 4S: South and East Constructed Site

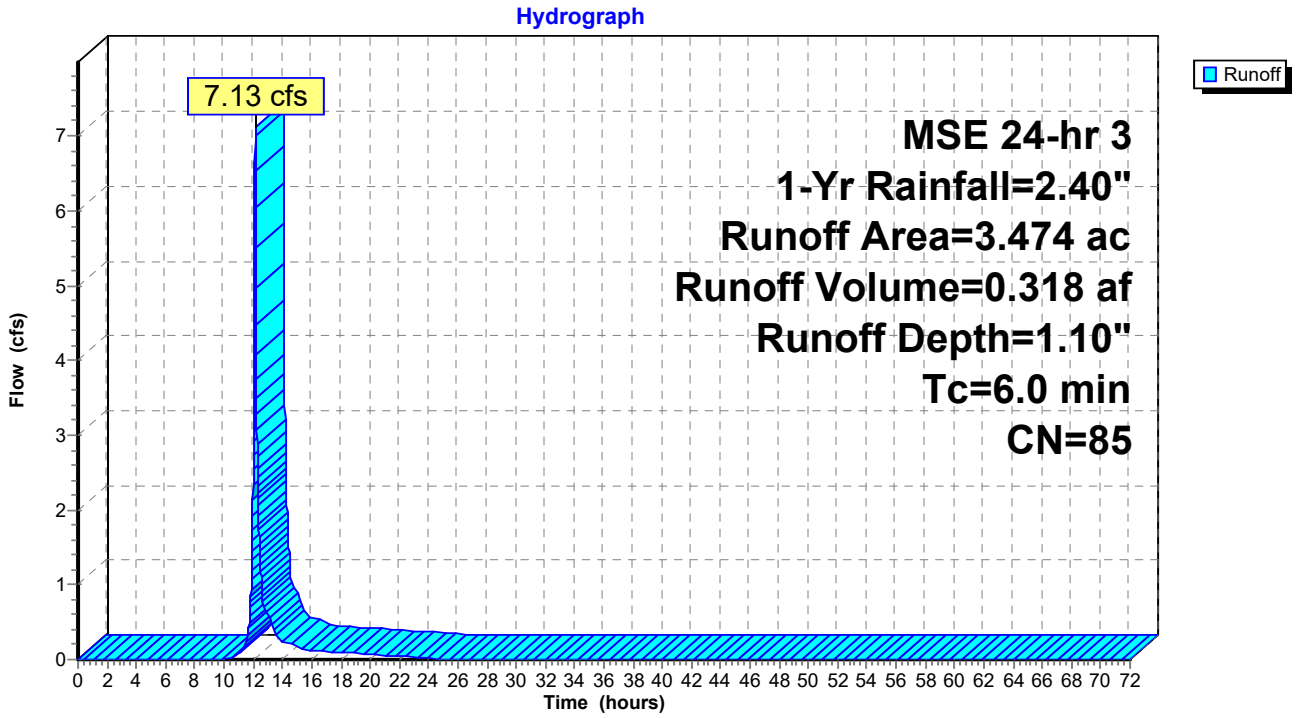
Runoff = 7.13 cfs @ 12.14 hrs, Volume= 0.318 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Yr Rainfall=2.40"

	Area (ac)	CN	Description
*	1.204	98	Gravel Drive and Parking, HSG D
*	2.270	78	>75% Grass cover, Good, HSG D per ordinance
	3.474	85	Weighted Average
	2.270		65.34% Pervious Area
	1.204		34.66% Impervious Area

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

Subcatchment 4S: South and East Constructed Site



Summary for Pond 1P: Wet Pond

Inflow Area = 3.983 ac, 30.23% Impervious, Inflow Depth = 1.05" for 1-Yr event
Inflow = 7.21 cfs @ 12.14 hrs, Volume= 0.349 af
Outflow = 1.06 cfs @ 12.62 hrs, Volume= 0.349 af, Atten= 85%, Lag= 29.3 min
Primary = 1.06 cfs @ 12.62 hrs, Volume= 0.349 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 895.97' @ 12.62 hrs Surf.Area= 7,781 sf Storage= 6,753 cf

Plug-Flow detention time= 134.2 min calculated for 0.349 af (100% of inflow)
Center-of-Mass det. time= 134.1 min (949.8 - 815.7)

Volume	Invert	Avail.Storage	Storage Description
#1	895.00'	37,068 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

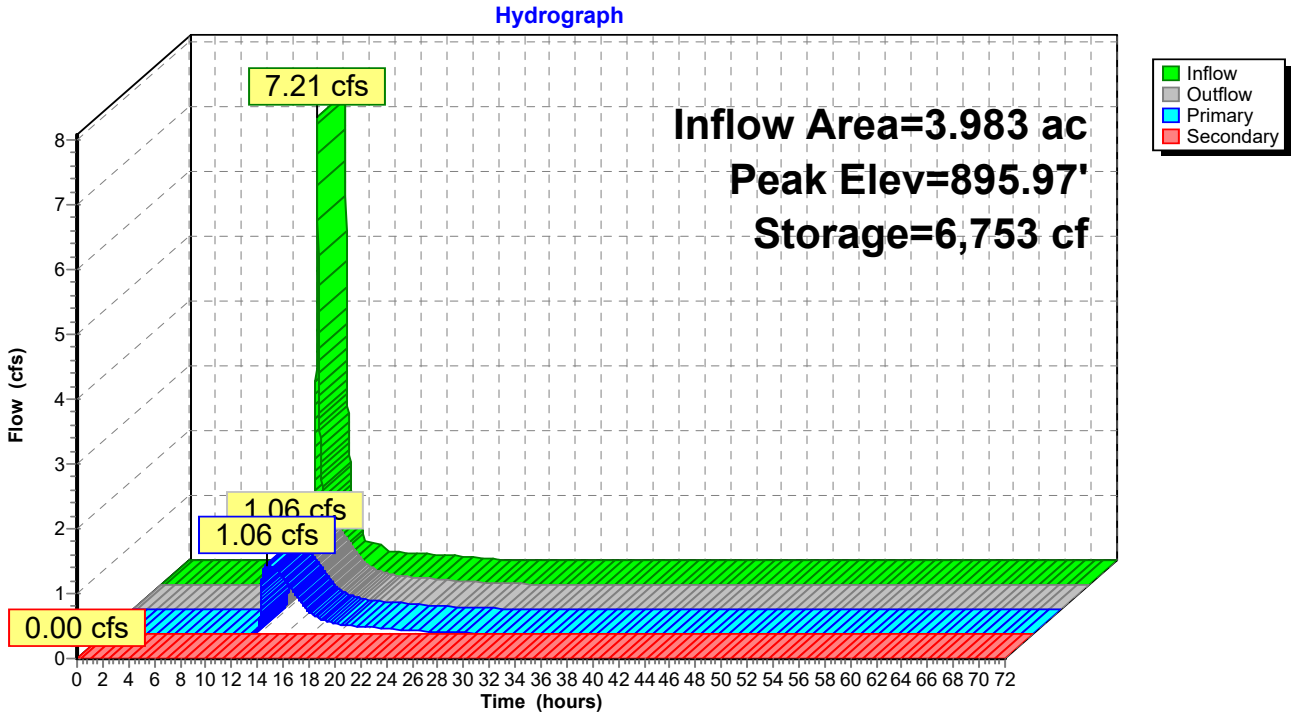
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	6,098	0	0
896.00	7,827	6,963	6,963
897.00	9,243	8,535	15,498
898.00	10,760	10,002	25,499
899.00	12,378	11,569	37,068

Device	Routing	Invert	Outlet Devices
#1	Primary	895.00'	**24.0" Round Culvert** L= 50.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 895.00' / 894.63' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	895.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	897.10'	**6.0' long x 0.5' breadth Top of Weir Plate** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Secondary	898.55'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=1.06 cfs @ 12.62 hrs HW=895.97' (Free Discharge)
└**1=Culvert** (Passes 1.06 cfs of 4.56 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 3.97 fps)
  └**3=Top of Weir Plate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=895.00' (Free Discharge)
└**4=Emergency Spillway** (Controls 0.00 cfs)

Pond 1P: Wet Pond

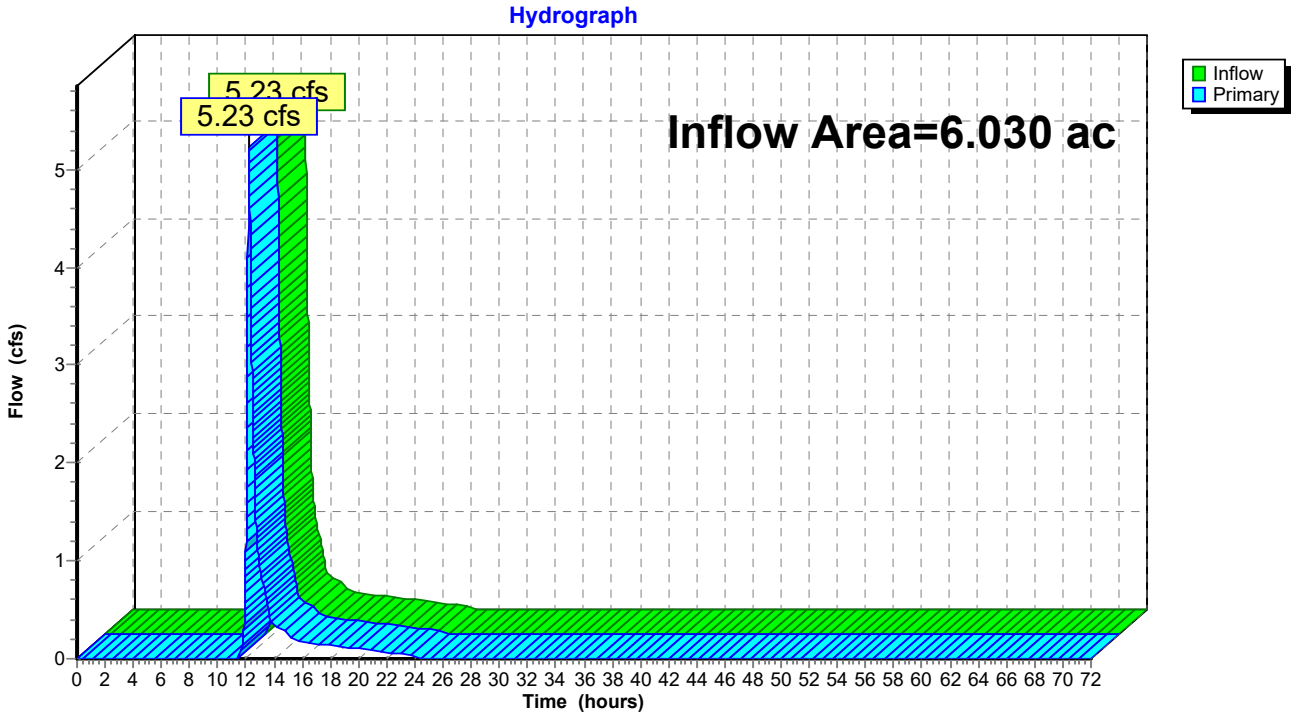


Summary for Link 1L: Pre-Development

Inflow Area = 6.030 ac, 1.79% Impervious, Inflow Depth = 0.74" for 1-Yr event
Inflow = 5.23 cfs @ 12.21 hrs, Volume= 0.371 af
Primary = 5.23 cfs @ 12.21 hrs, Volume= 0.371 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Development

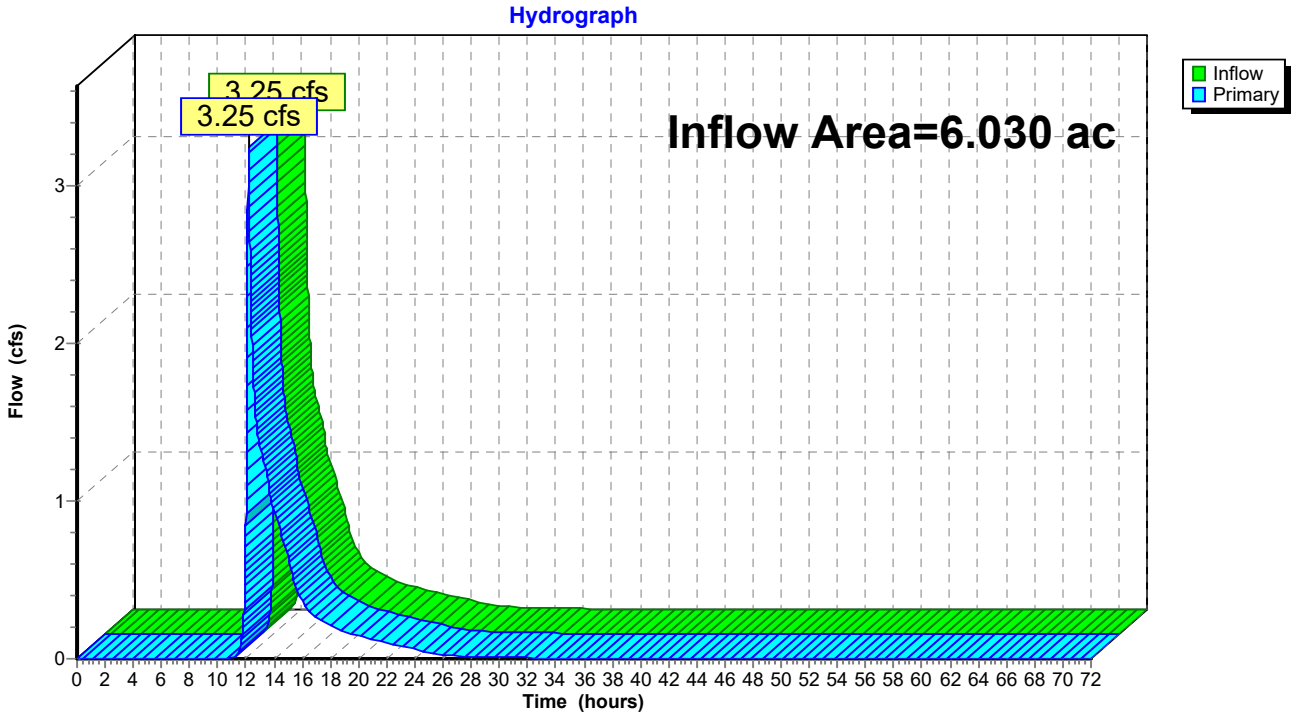


Summary for Link 2L: Post-Development

Inflow Area = 6.030 ac, 24.39% Impervious, Inflow Depth = 0.98" for 1-Yr event
Inflow = 3.25 cfs @ 12.19 hrs, Volume= 0.492 af
Primary = 3.25 cfs @ 12.19 hrs, Volume= 0.492 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Development



Summary for Subcatchment 1S: North Original Site

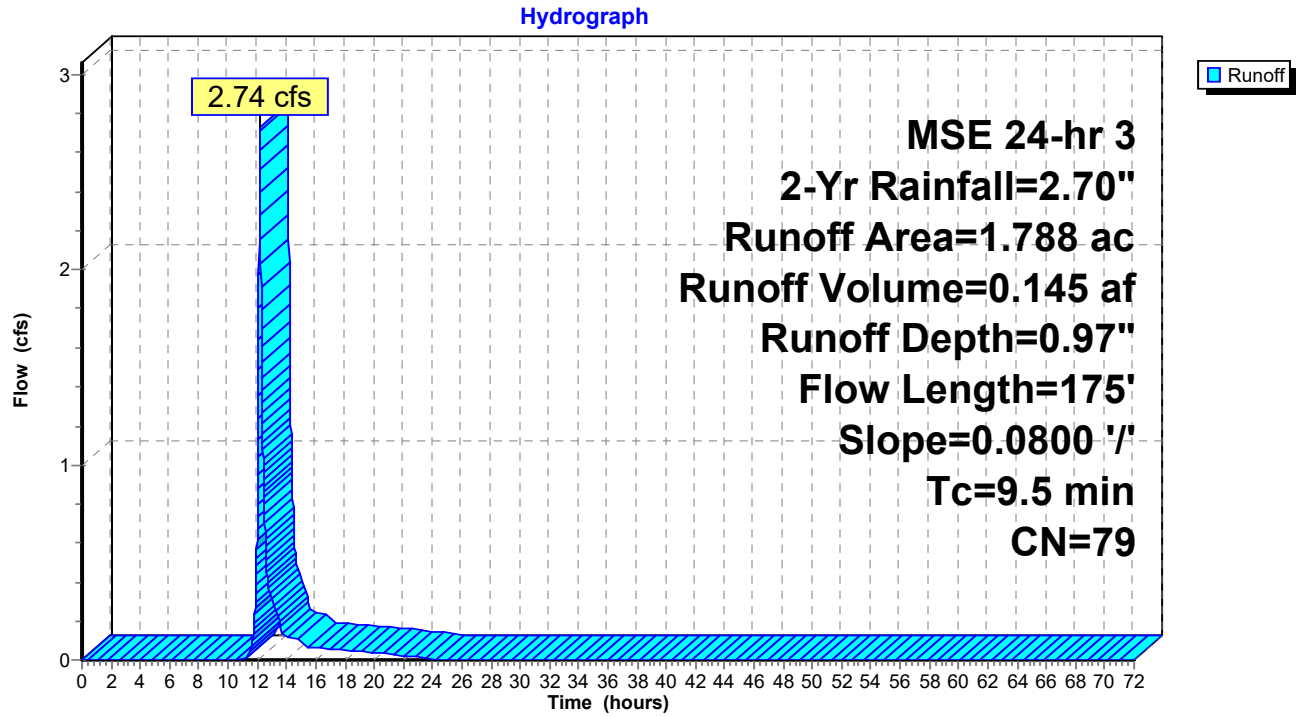
Runoff = 2.74 cfs @ 12.17 hrs, Volume= 0.145 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.032	98	Roofs, HSG D
*	1.680	78	>75% Grass cover, Good, HSG D per ordinance
	1.788	79	Weighted Average
	1.680		93.96% Pervious Area
	0.108		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 1S: North Original Site



Summary for Subcatchment 2aS: Offsite

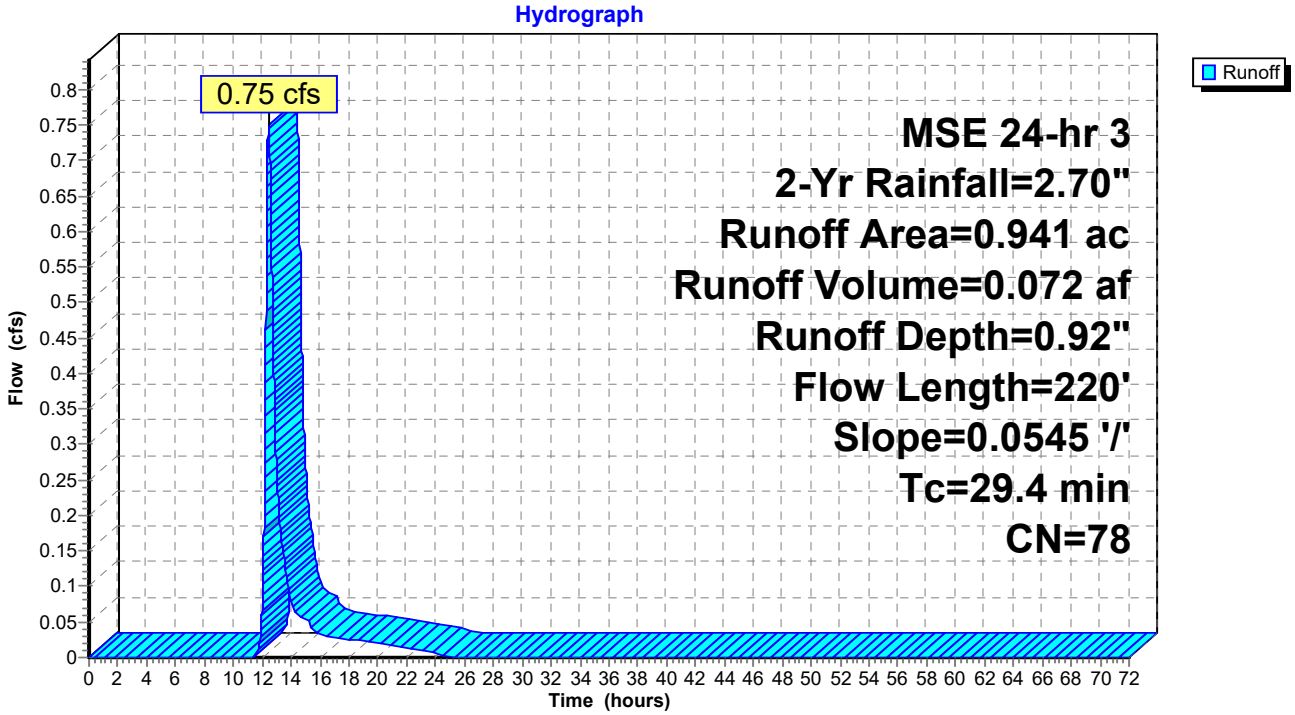
Runoff = 0.75 cfs @ 12.45 hrs, Volume= 0.072 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.941	78	>75% Grass cover, Good, HSG D
	0.941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 2aS: Offsite



Summary for Subcatchment 2S: South and East Original Site

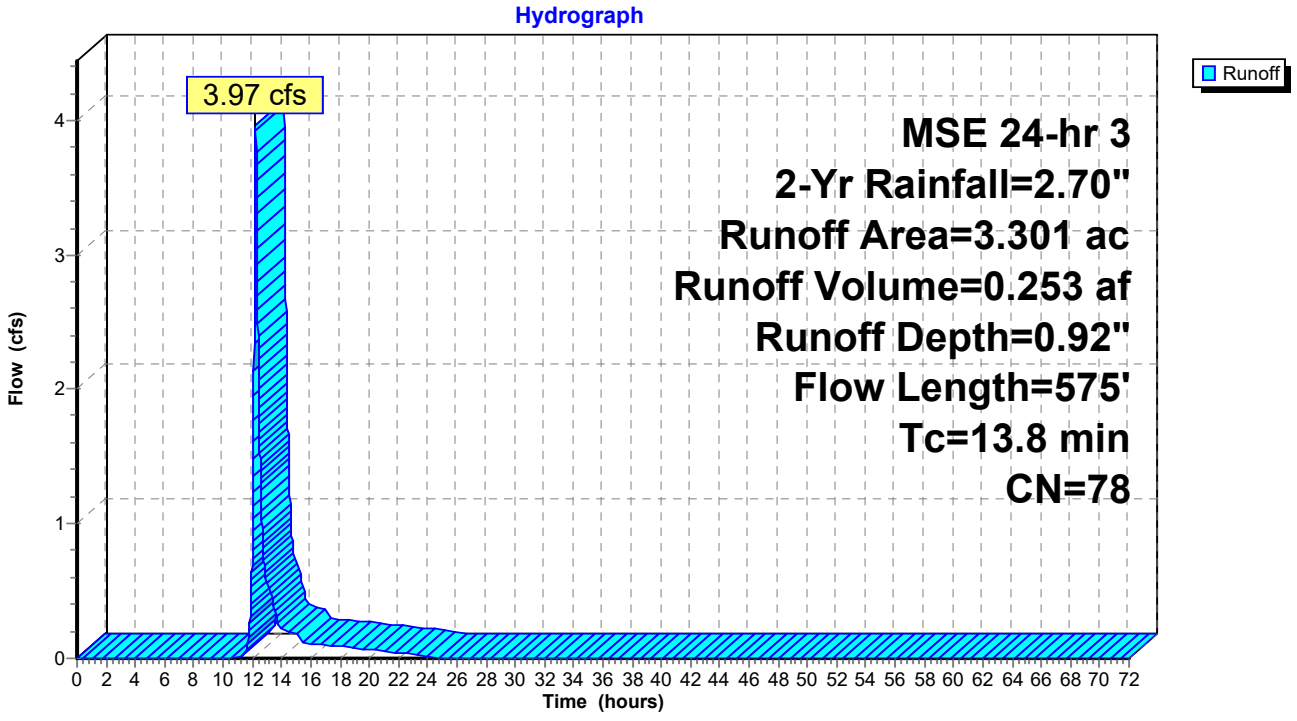
Runoff = 3.97 cfs @ 12.23 hrs, Volume= 0.253 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	3.301	78	>75% Grass cover, Good, HSG D per ordinance
	3.301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0600	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.8	475	0.0900	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.8	575	Total			

Subcatchment 2S: South and East Original Site



Summary for Subcatchment 3S: North Constructed Site

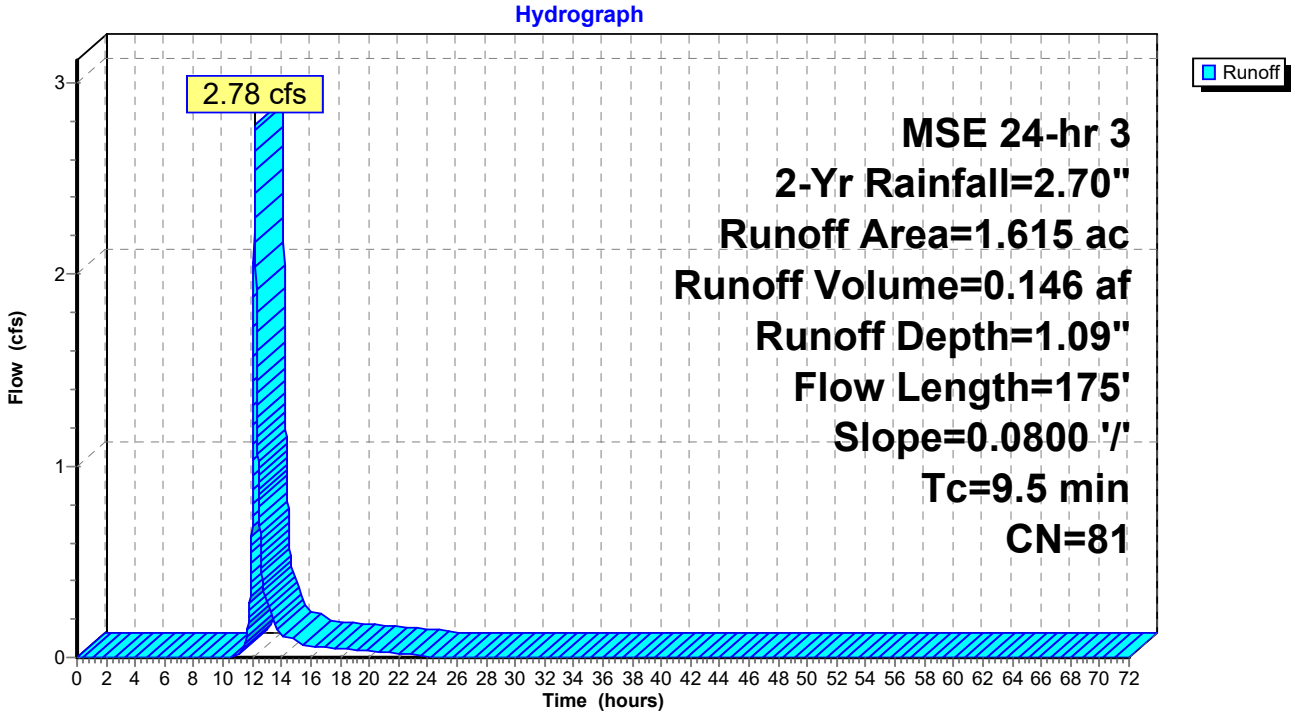
Runoff = 2.78 cfs @ 12.17 hrs, Volume= 0.146 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.037	98	Roofs, HSG D
*	0.154	98	Gravel Drive, HSG D
*	1.348	78	>75% Grass cover, Good, HSG D per ordinance
	1.615	81	Weighted Average
	1.348		83.47% Pervious Area
	0.267		16.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 3S: North Constructed Site



Summary for Subcatchment 4aS: Offsite Detained

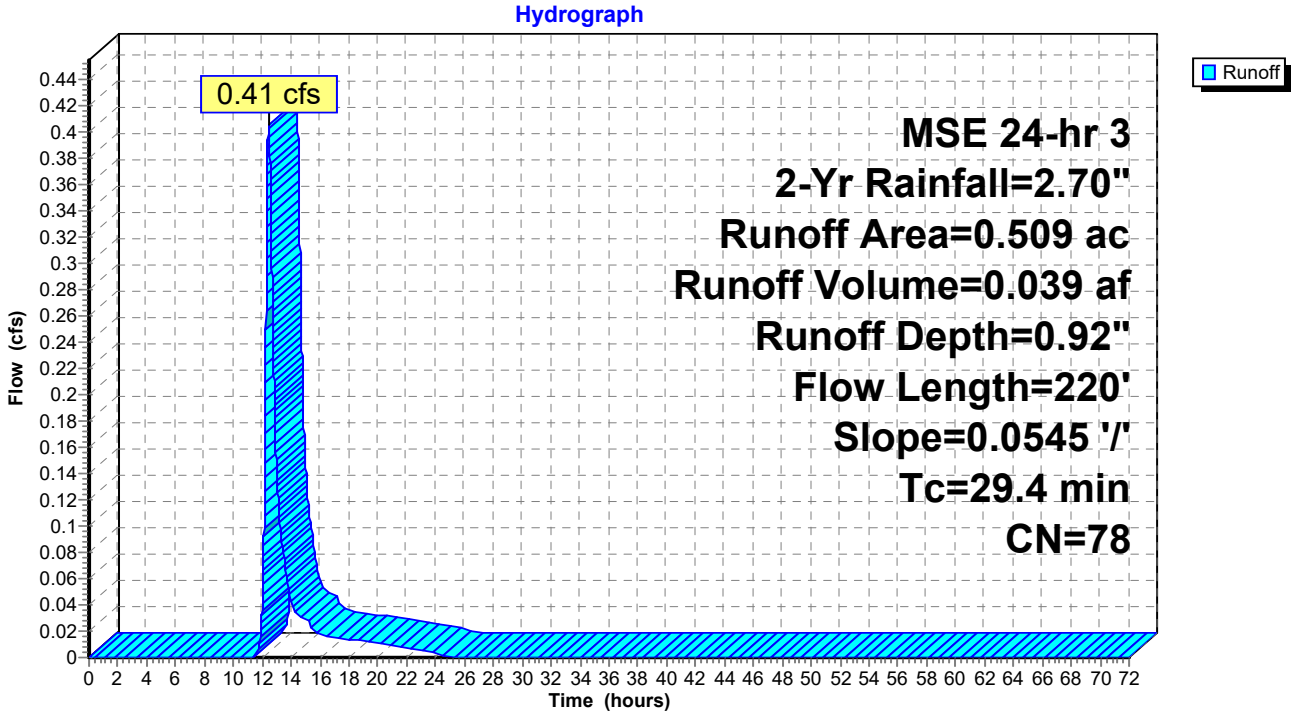
Runoff = 0.41 cfs @ 12.45 hrs, Volume= 0.039 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.509	78	>75% Grass cover, Good, HSG D
	0.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4aS: Offsite Detained



Summary for Subcatchment 4bS: Offsite Undetained

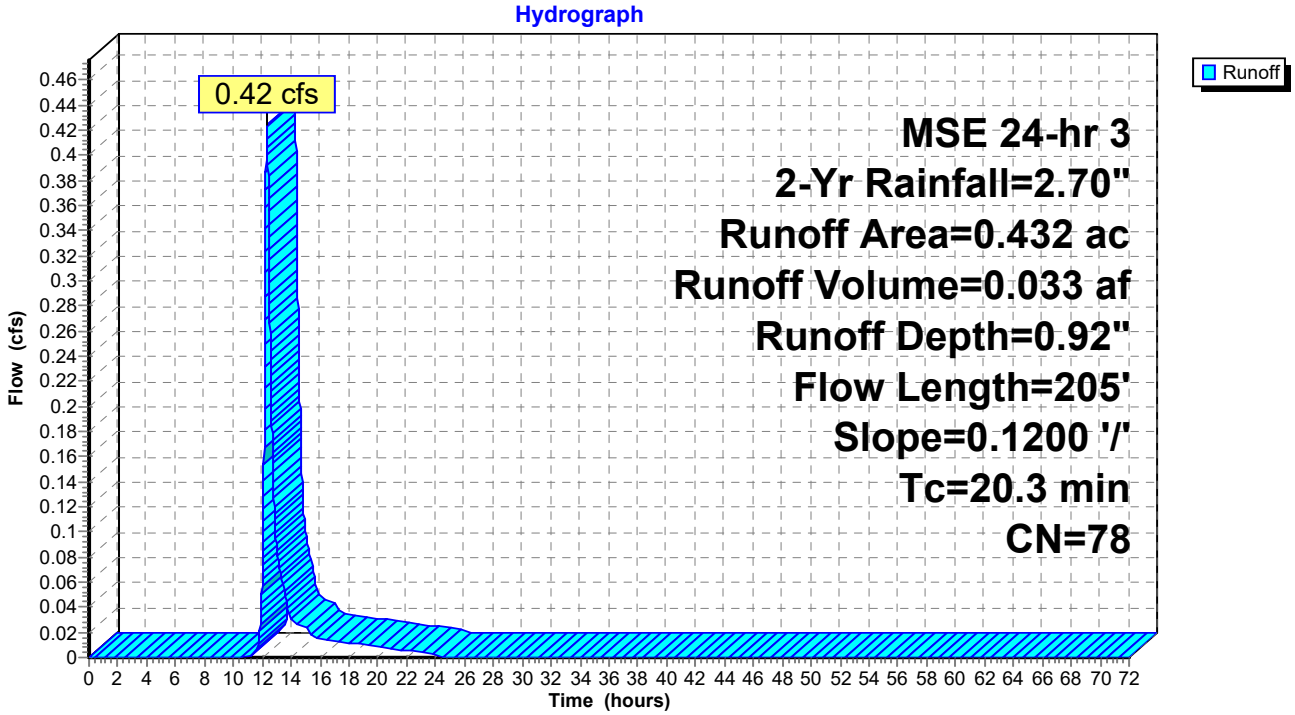
Runoff = 0.42 cfs @ 12.32 hrs, Volume= 0.033 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.432	78	>75% Grass cover, Good, HSG D
	0.432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	205	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4bS: Offsite Undetained



Summary for Subcatchment 4S: South and East Constructed Site

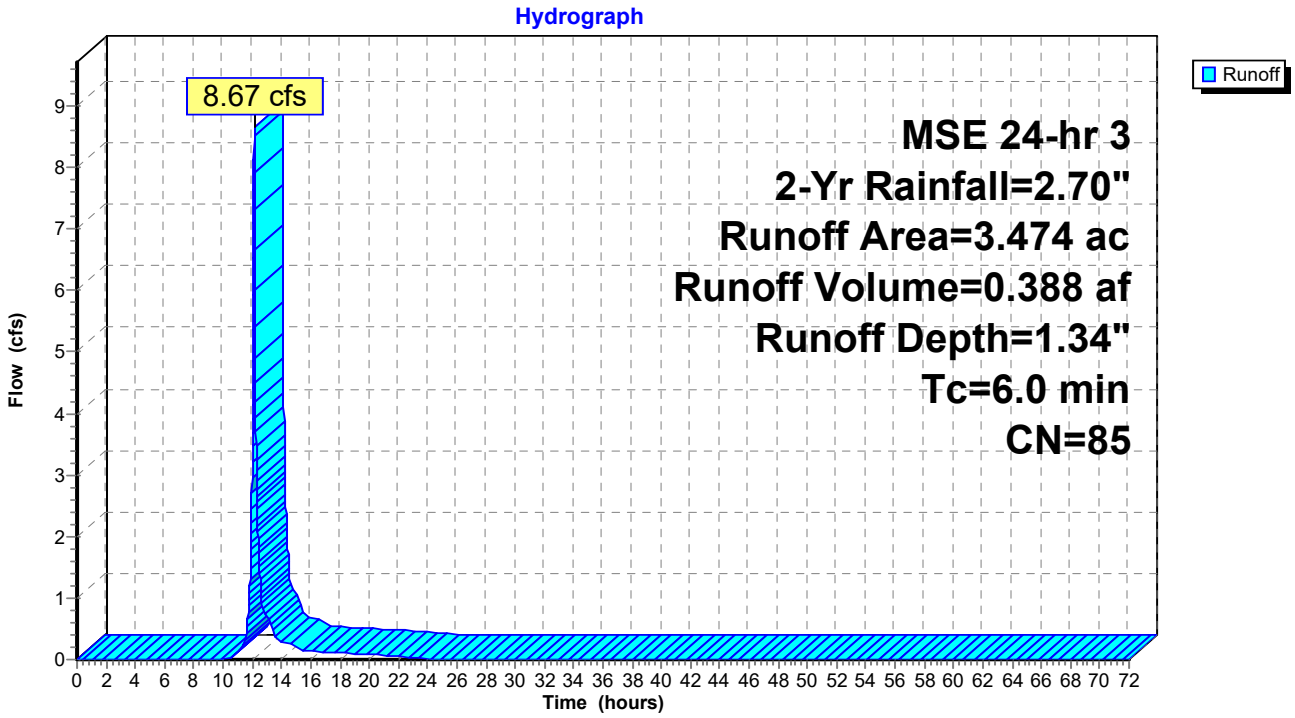
Runoff = 8.67 cfs @ 12.13 hrs, Volume= 0.388 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Yr Rainfall=2.70"

	Area (ac)	CN	Description
*	1.204	98	Gravel Drive and Parking, HSG D
*	2.270	78	>75% Grass cover, Good, HSG D per ordinance
	3.474	85	Weighted Average
	2.270		65.34% Pervious Area
	1.204		34.66% Impervious Area

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

Subcatchment 4S: South and East Constructed Site



Summary for Pond 1P: Wet Pond

Inflow Area = 3.983 ac, 30.23% Impervious, Inflow Depth = 1.29" for 2-Yr event
Inflow = 8.79 cfs @ 12.14 hrs, Volume= 0.427 af
Outflow = 1.22 cfs @ 12.65 hrs, Volume= 0.427 af, Atten= 86%, Lag= 30.8 min
Primary = 1.22 cfs @ 12.65 hrs, Volume= 0.427 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 896.20' @ 12.65 hrs Surf.Area= 8,104 sf Storage= 8,521 cf

Plug-Flow detention time= 131.3 min calculated for 0.427 af (100% of inflow)
Center-of-Mass det. time= 131.3 min (943.0 - 811.7)

Volume	Invert	Avail.Storage	Storage Description
#1	895.00'	37,068 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

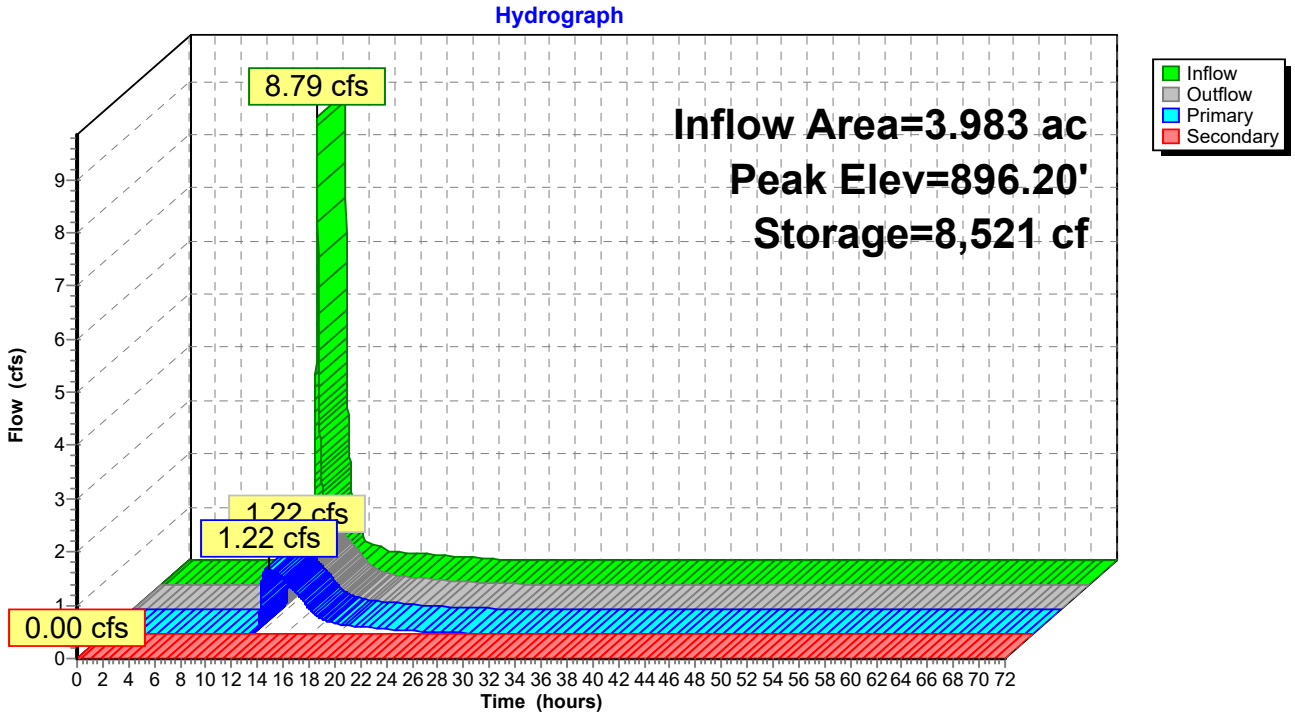
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	6,098	0	0
896.00	7,827	6,963	6,963
897.00	9,243	8,535	15,498
898.00	10,760	10,002	25,499
899.00	12,378	11,569	37,068

Device	Routing	Invert	Outlet Devices
#1	Primary	895.00'	**24.0" Round Culvert** L= 50.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 895.00' / 894.63' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	895.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	897.10'	**6.0' long x 0.5' breadth Top of Weir Plate** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Secondary	898.55'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=1.22 cfs @ 12.65 hrs HW=896.20' (Free Discharge)
└**1=Culvert** (Passes 1.22 cfs of 6.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.22 cfs @ 4.58 fps)
  └**3=Top of Weir Plate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=895.00' (Free Discharge)
└**4=Emergency Spillway** (Controls 0.00 cfs)

Pond 1P: Wet Pond

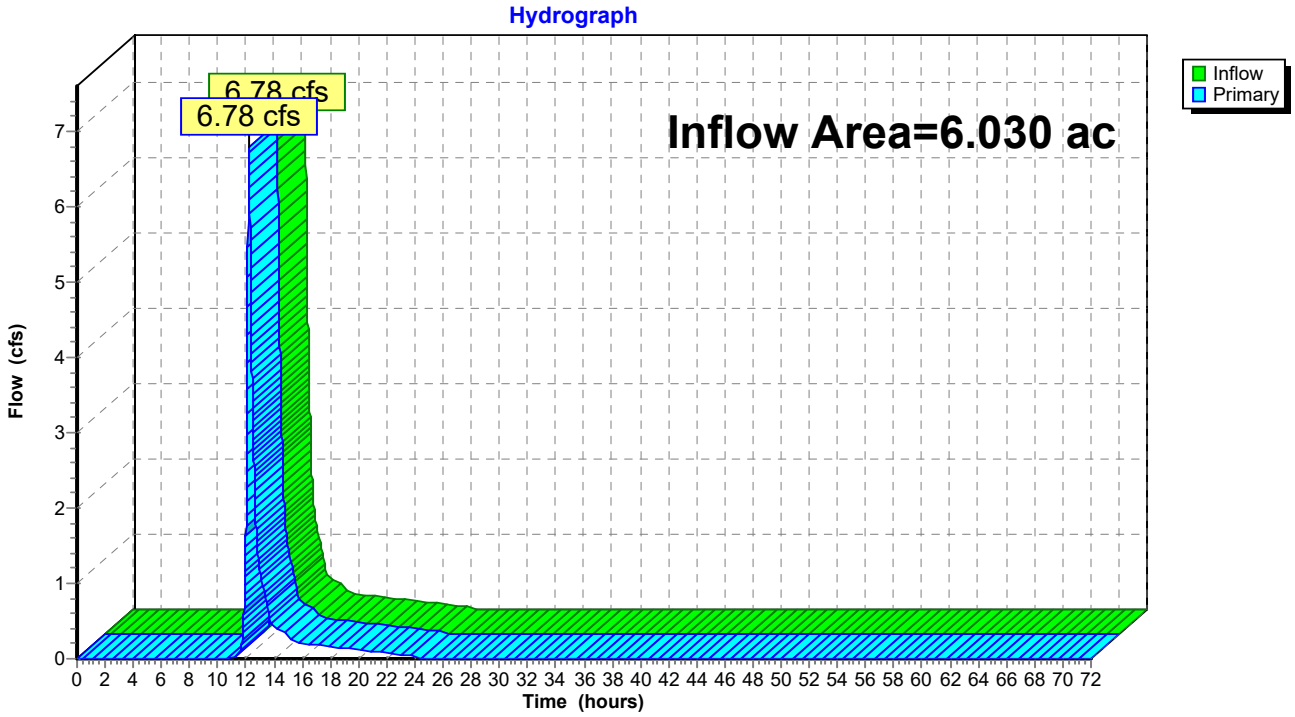


Summary for Link 1L: Pre-Development

Inflow Area = 6.030 ac, 1.79% Impervious, Inflow Depth = 0.94" for 2-Yr event
Inflow = 6.78 cfs @ 12.21 hrs, Volume= 0.471 af
Primary = 6.78 cfs @ 12.21 hrs, Volume= 0.471 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Development

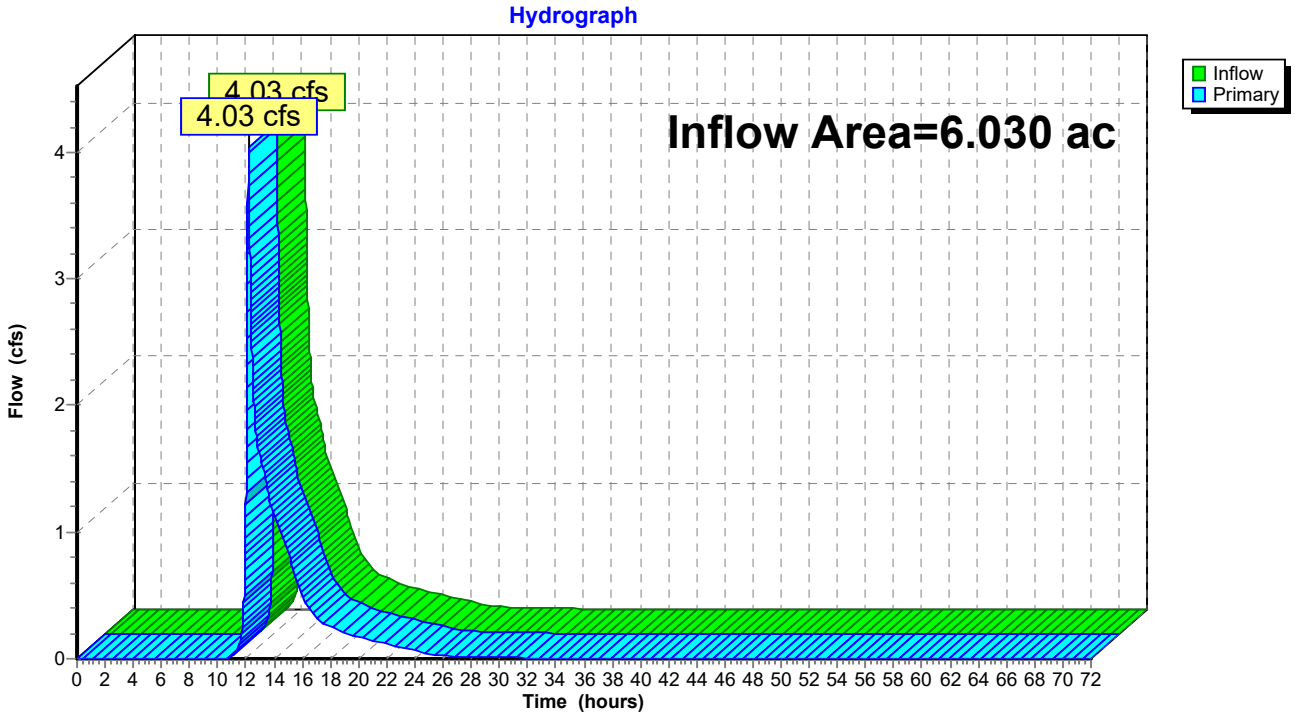


Summary for Link 2L: Post-Development

Inflow Area = 6.030 ac, 24.39% Impervious, Inflow Depth = 1.21" for 2-Yr event
Inflow = 4.03 cfs @ 12.18 hrs, Volume= 0.606 af
Primary = 4.03 cfs @ 12.18 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Development



Summary for Subcatchment 1S: North Original Site

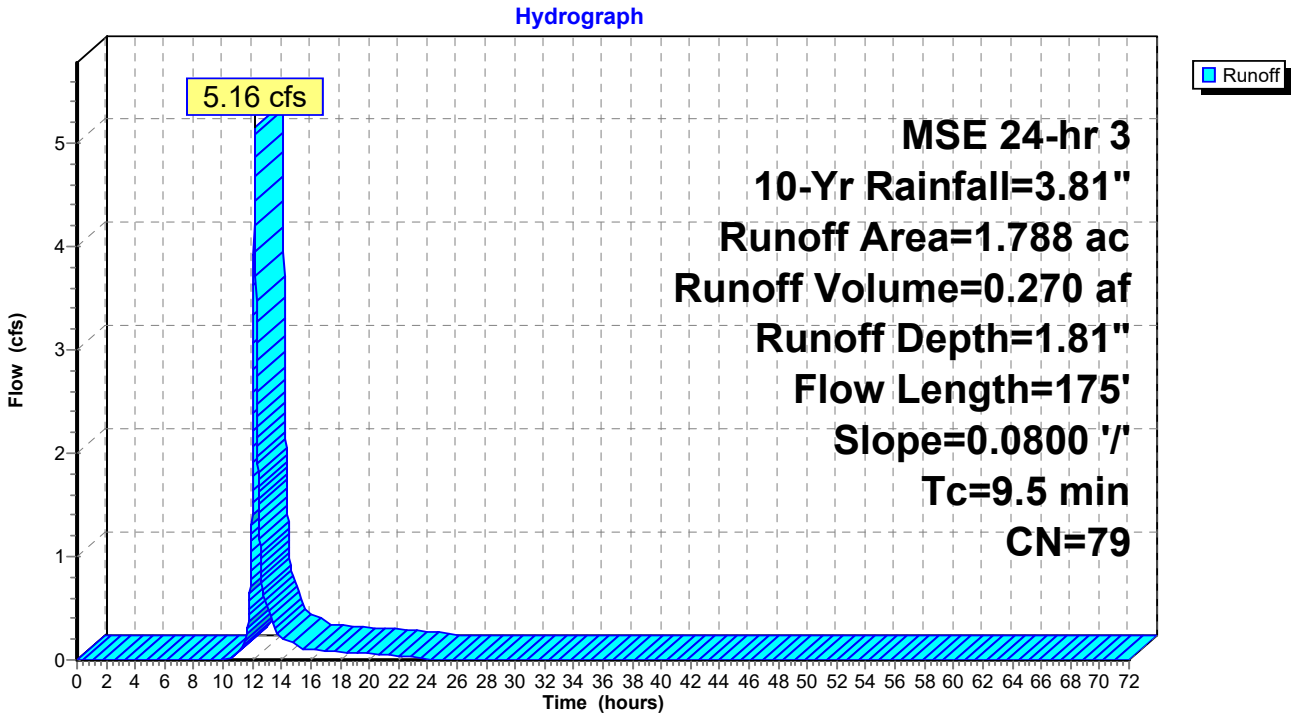
Runoff = 5.16 cfs @ 12.17 hrs, Volume= 0.270 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.032	98	Roofs, HSG D
*	1.680	78	>75% Grass cover, Good, HSG D per ordinance
	1.788	79	Weighted Average
	1.680		93.96% Pervious Area
	0.108		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 1S: North Original Site



Summary for Subcatchment 2aS: Offsite

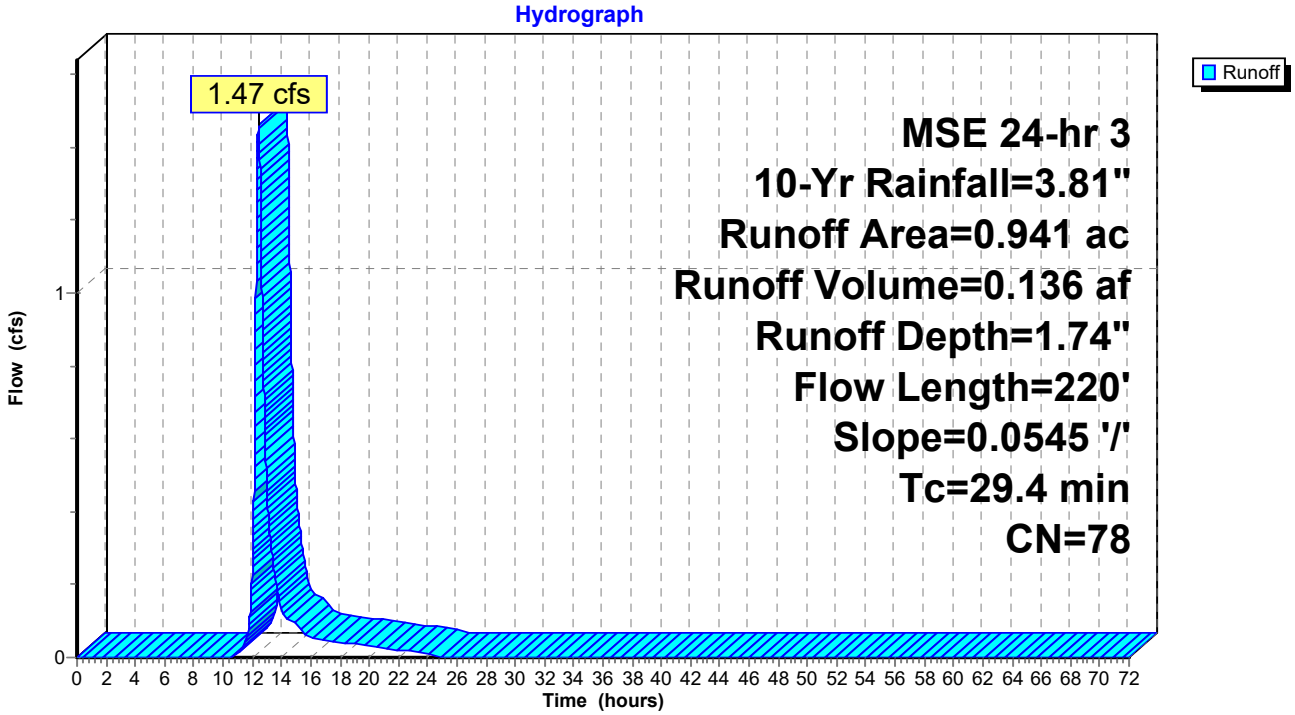
Runoff = 1.47 cfs @ 12.44 hrs, Volume= 0.136 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.941	78	>75% Grass cover, Good, HSG D
	0.941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 2aS: Offsite



Summary for Subcatchment 2S: South and East Original Site

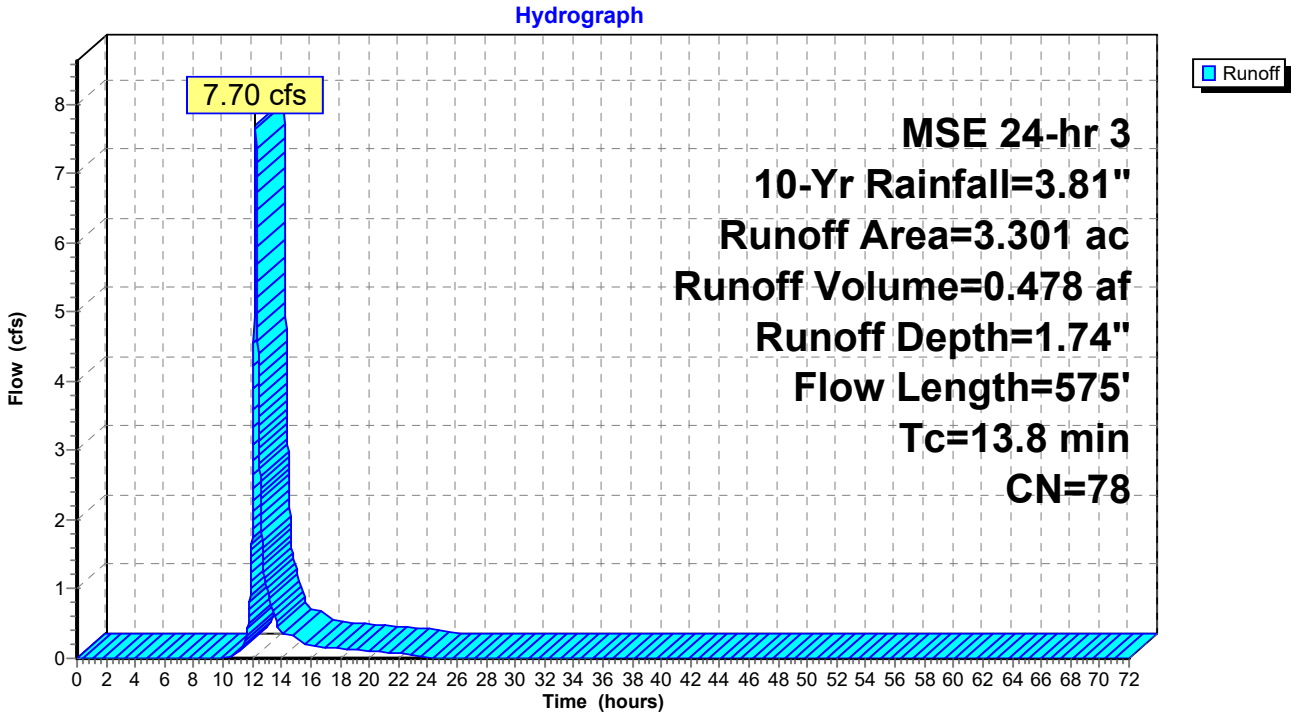
Runoff = 7.70 cfs @ 12.22 hrs, Volume= 0.478 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	3.301	78	>75% Grass cover, Good, HSG D per ordinance
	3.301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0600	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.8	475	0.0900	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.8	575	Total			

Subcatchment 2S: South and East Original Site



Summary for Subcatchment 3S: North Constructed Site

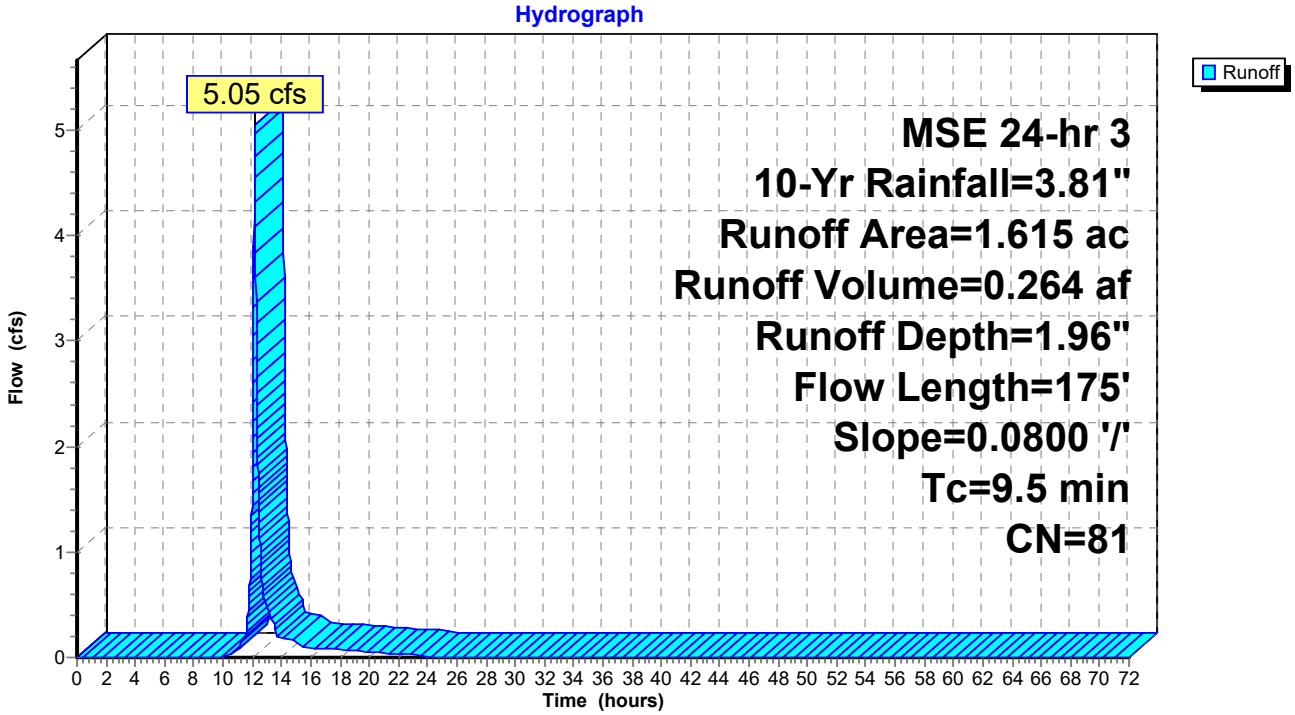
Runoff = 5.05 cfs @ 12.17 hrs, Volume= 0.264 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.037	98	Roofs, HSG D
*	0.154	98	Gravel Drive, HSG D
*	1.348	78	>75% Grass cover, Good, HSG D per ordinance
	1.615	81	Weighted Average
	1.348		83.47% Pervious Area
	0.267		16.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 3S: North Constructed Site



Summary for Subcatchment 4aS: Offsite Detained

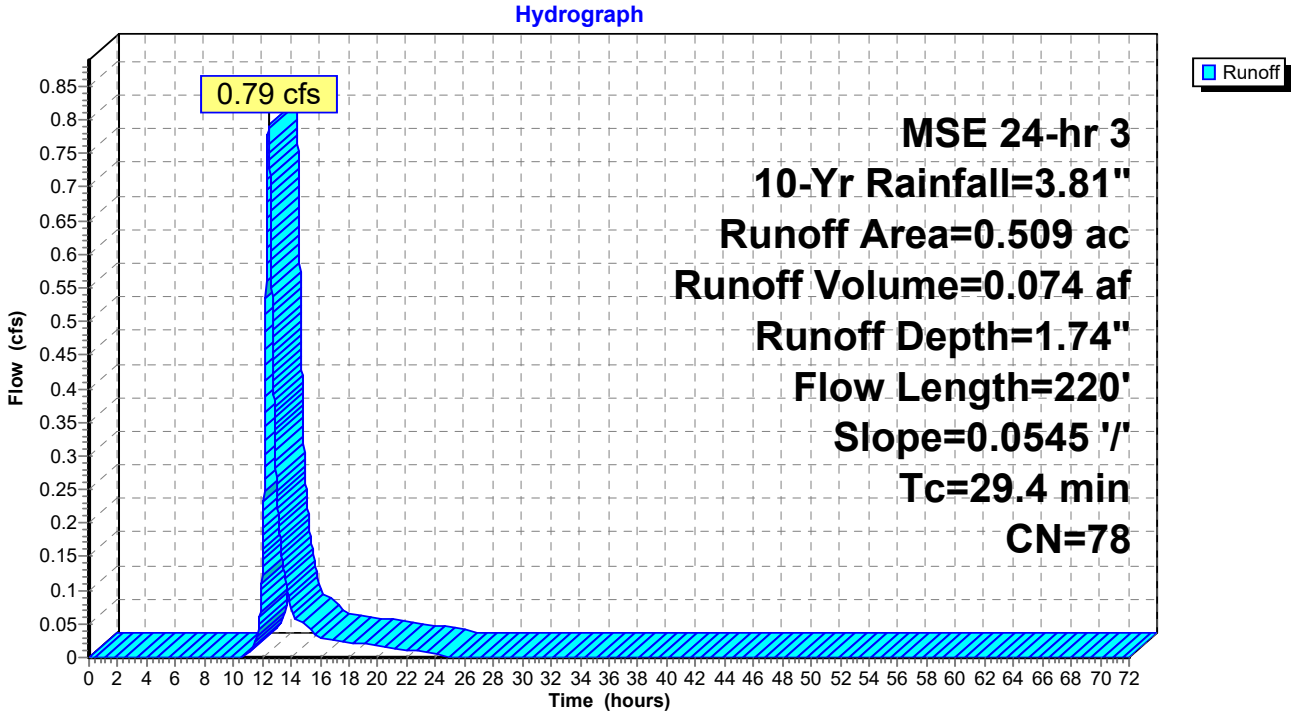
Runoff = 0.79 cfs @ 12.44 hrs, Volume= 0.074 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.509	78	>75% Grass cover, Good, HSG D
	0.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4aS: Offsite Detained



Summary for Subcatchment 4bS: Offsite Undetained

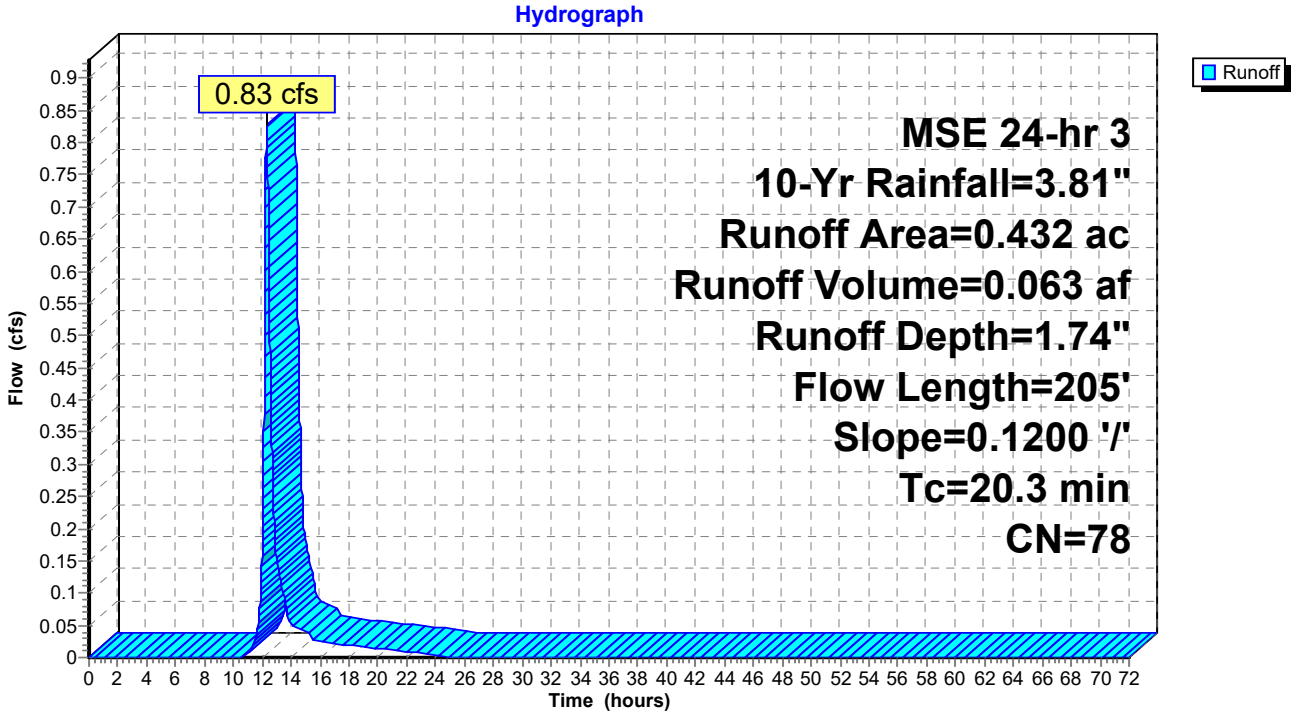
Runoff = 0.83 cfs @ 12.30 hrs, Volume= 0.063 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	0.432	78	>75% Grass cover, Good, HSG D
	0.432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	205	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4bS: Offsite Undetained



Summary for Subcatchment 4S: South and East Constructed Site

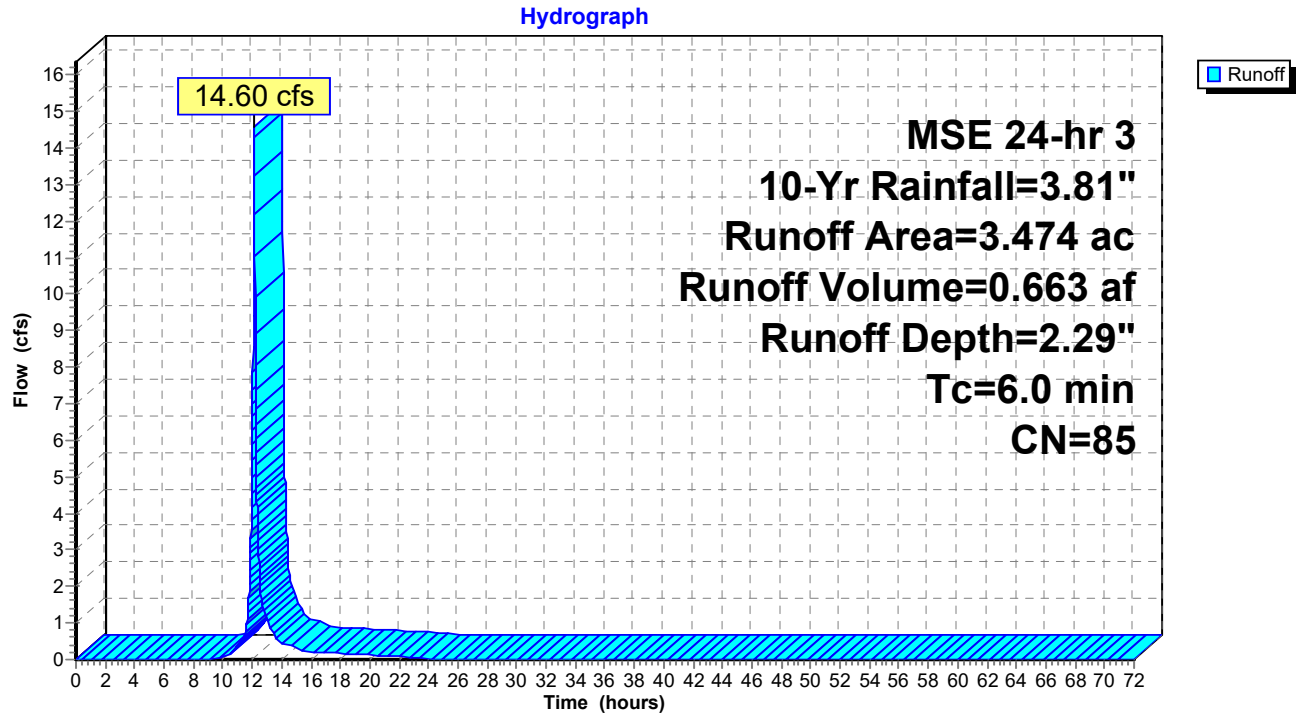
Runoff = 14.60 cfs @ 12.13 hrs, Volume= 0.663 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Yr Rainfall=3.81"

	Area (ac)	CN	Description
*	1.204	98	Gravel Drive and Parking, HSG D
*	2.270	78	>75% Grass cover, Good, HSG D per ordinance
	3.474	85	Weighted Average
	2.270		65.34% Pervious Area
	1.204		34.66% Impervious Area

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

Subcatchment 4S: South and East Constructed Site



Summary for Pond 1P: Wet Pond

Inflow Area = 3.983 ac, 30.23% Impervious, Inflow Depth = 2.22" for 10-Yr event
Inflow = 14.87 cfs @ 12.13 hrs, Volume= 0.736 af
Outflow = 1.71 cfs @ 12.78 hrs, Volume= 0.736 af, Atten= 89%, Lag= 38.6 min
Primary = 1.71 cfs @ 12.78 hrs, Volume= 0.736 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 897.05' @ 12.78 hrs Surf.Area= 9,316 sf Storage= 15,947 cf

Plug-Flow detention time= 138.2 min calculated for 0.736 af (100% of inflow)
Center-of-Mass det. time= 138.3 min (939.2 - 800.9)

Volume	Invert	Avail.Storage	Storage Description
#1	895.00'	37,068 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

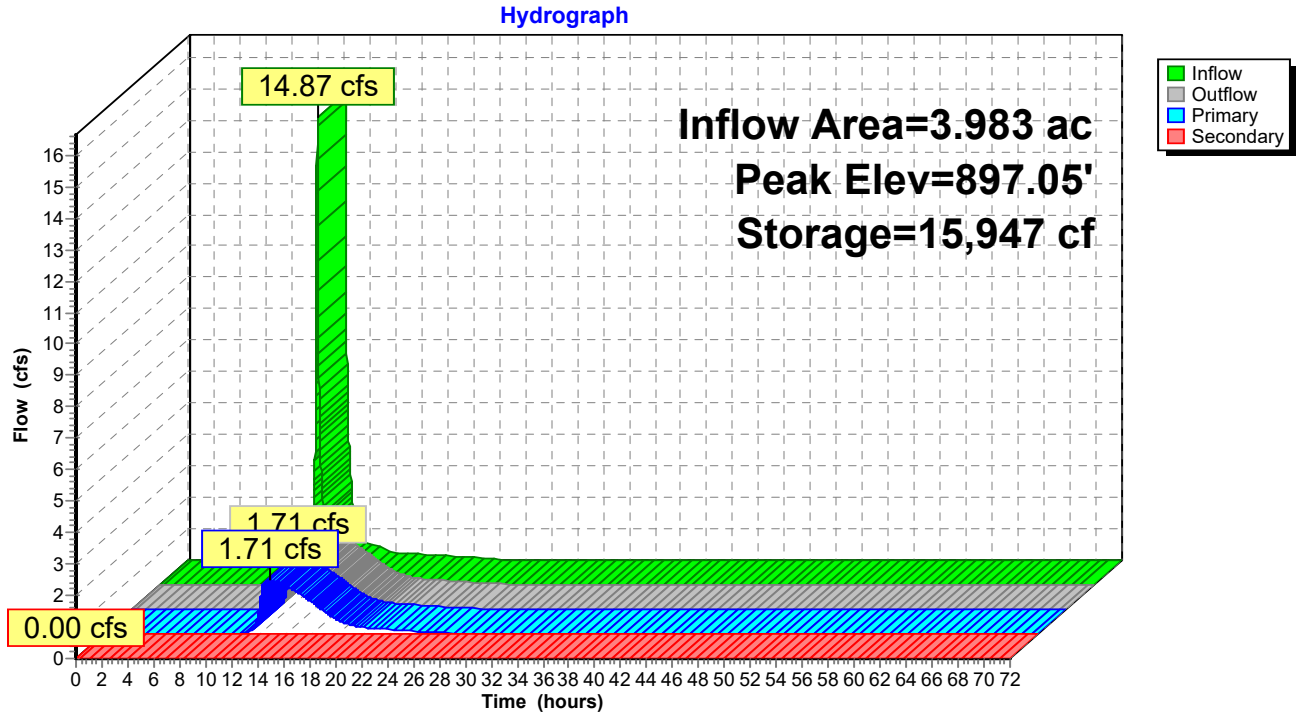
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	6,098	0	0
896.00	7,827	6,963	6,963
897.00	9,243	8,535	15,498
898.00	10,760	10,002	25,499
899.00	12,378	11,569	37,068

Device	Routing	Invert	Outlet Devices
#1	Primary	895.00'	**24.0" Round Culvert** L= 50.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 895.00' / 894.63' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	895.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	897.10'	**6.0' long x 0.5' breadth Top of Weir Plate** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Secondary	898.55'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=1.71 cfs @ 12.78 hrs HW=897.05' (Free Discharge)
└**1=Culvert** (Passes 1.71 cfs of 15.05 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.71 cfs @ 6.38 fps)
  └**3=Top of Weir Plate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=895.00' (Free Discharge)
└**4=Emergency Spillway** (Controls 0.00 cfs)

Pond 1P: Wet Pond

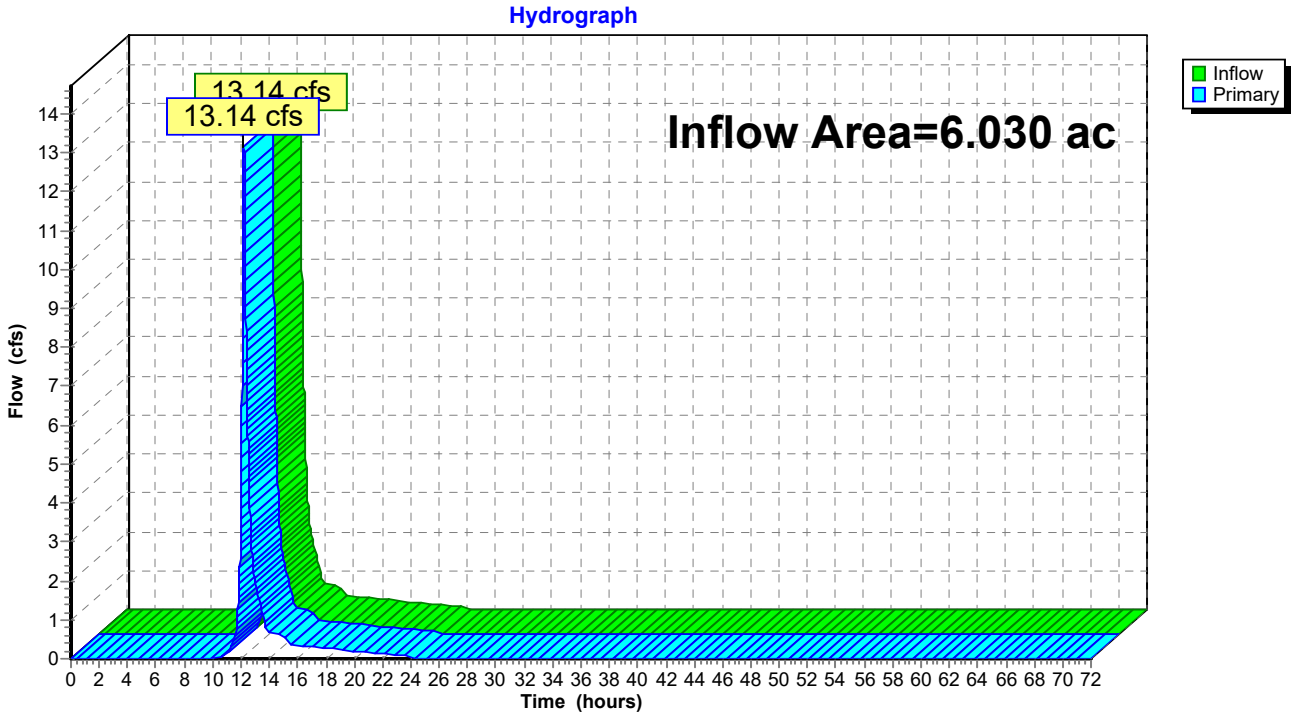


Summary for Link 1L: Pre-Development

Inflow Area = 6.030 ac, 1.79% Impervious, Inflow Depth = 1.76" for 10-Yr event
Inflow = 13.14 cfs @ 12.20 hrs, Volume= 0.884 af
Primary = 13.14 cfs @ 12.20 hrs, Volume= 0.884 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Development

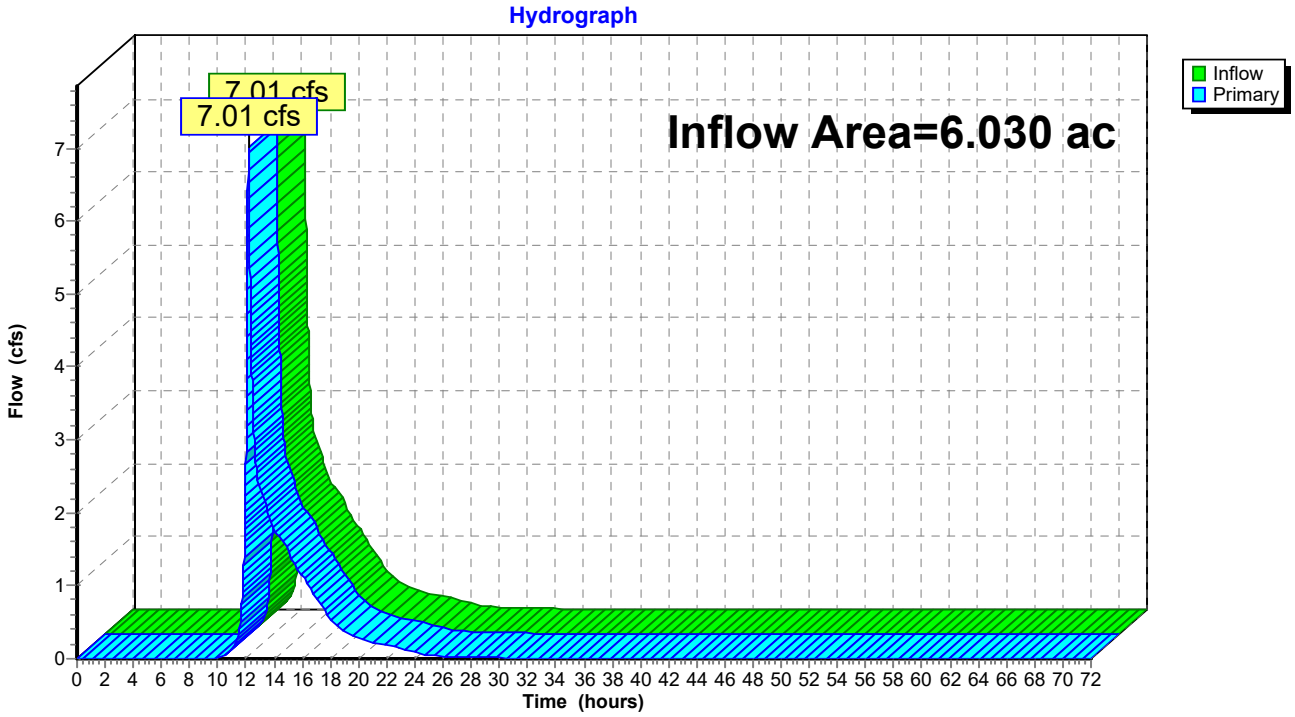


Summary for Link 2L: Post-Development

Inflow Area = 6.030 ac, 24.39% Impervious, Inflow Depth = 2.11" for 10-Yr event
Inflow = 7.01 cfs @ 12.18 hrs, Volume= 1.063 af
Primary = 7.01 cfs @ 12.18 hrs, Volume= 1.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Development



Summary for Subcatchment 1S: North Original Site

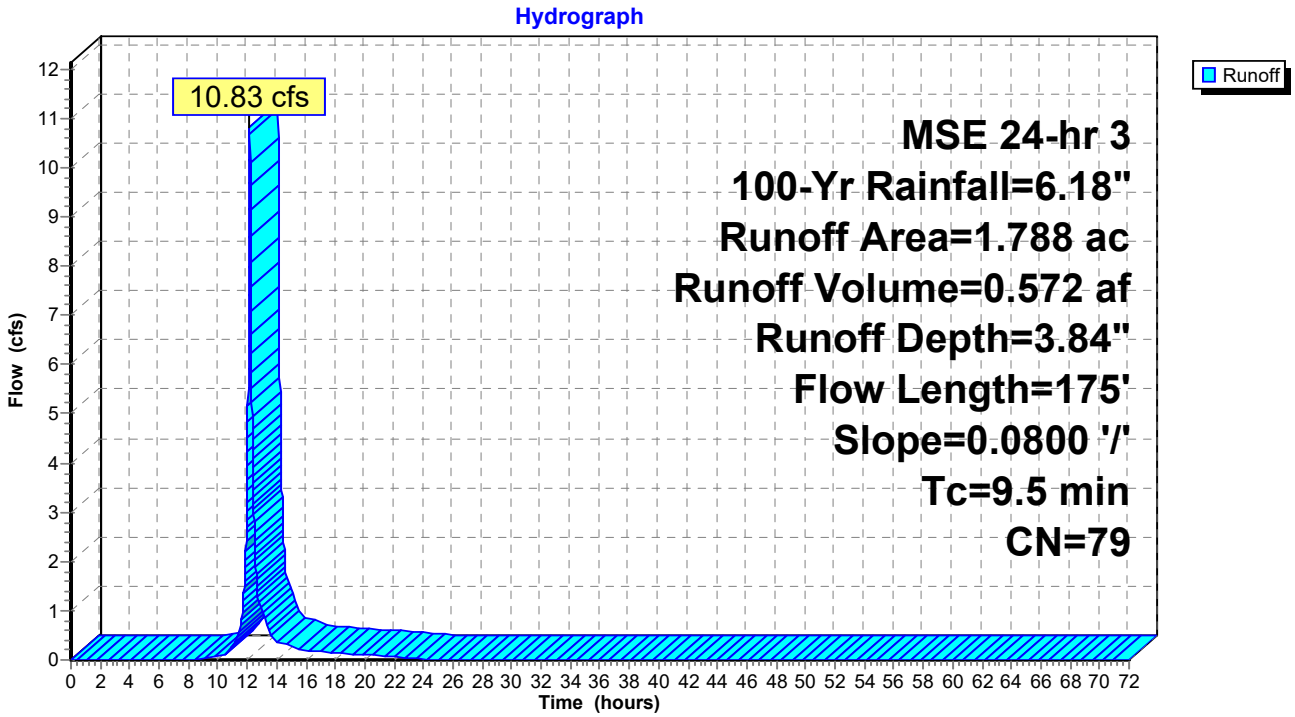
Runoff = 10.83 cfs @ 12.17 hrs, Volume= 0.572 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.032	98	Roofs, HSG D
*	1.680	78	>75% Grass cover, Good, HSG D per ordinance
	1.788	79	Weighted Average
	1.680		93.96% Pervious Area
	0.108		6.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 1S: North Original Site



Summary for Subcatchment 2aS: Offsite

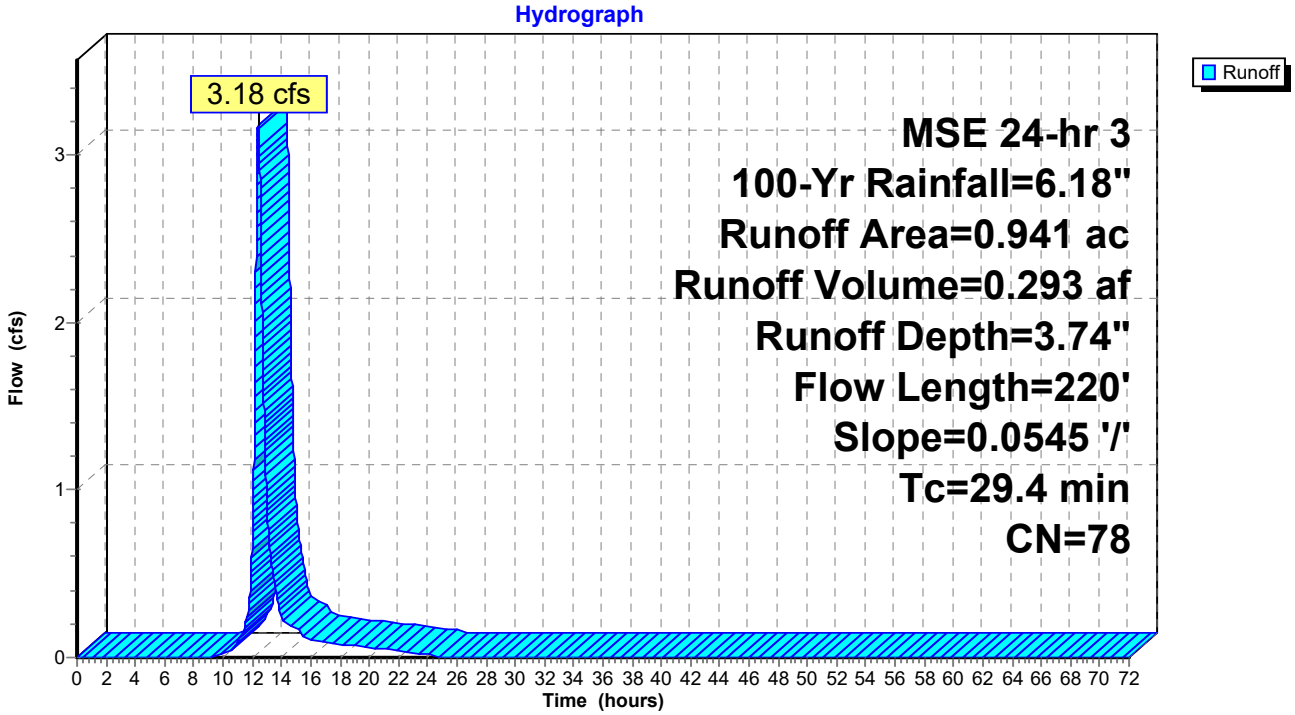
Runoff = 3.18 cfs @ 12.41 hrs, Volume= 0.293 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.941	78	>75% Grass cover, Good, HSG D
	0.941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 2aS: Offsite



Summary for Subcatchment 2S: South and East Original Site

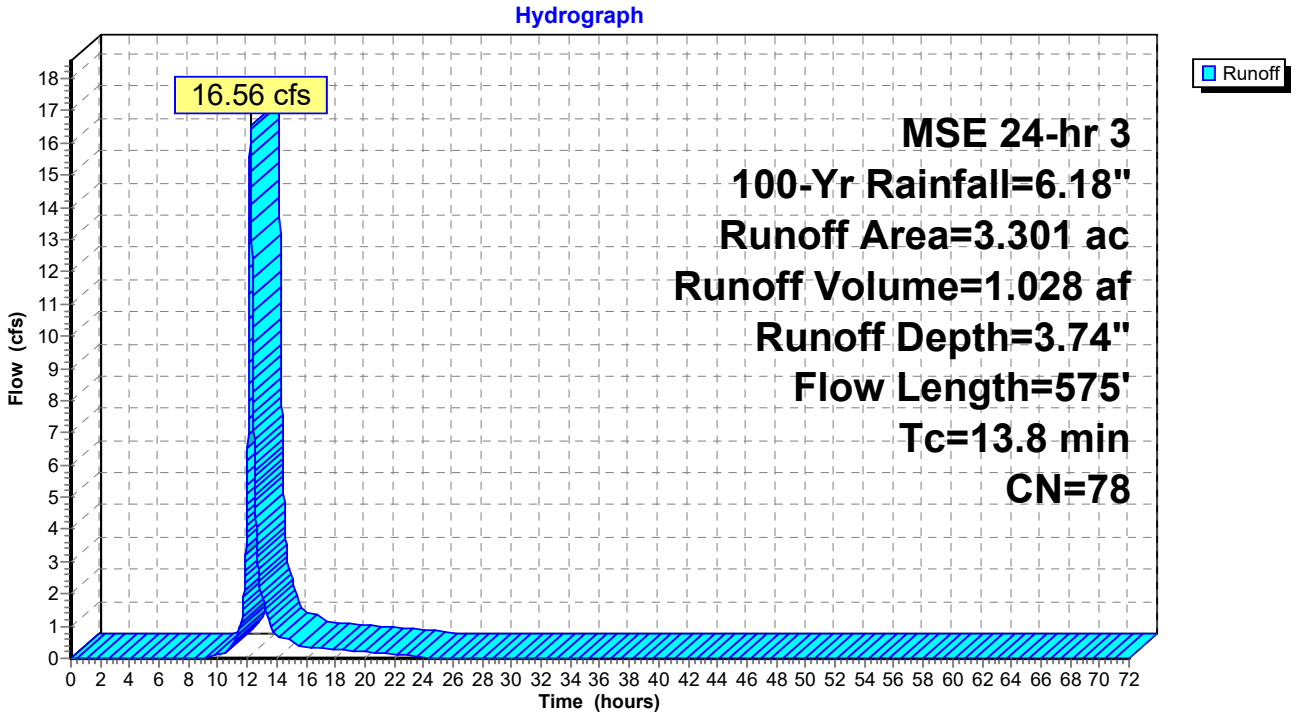
Runoff = 16.56 cfs @ 12.22 hrs, Volume= 1.028 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	3.301	78	>75% Grass cover, Good, HSG D per ordinance
	3.301		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0600	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.8	475	0.0900	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.8	575	Total			

Subcatchment 2S: South and East Original Site



Summary for Subcatchment 3S: North Constructed Site

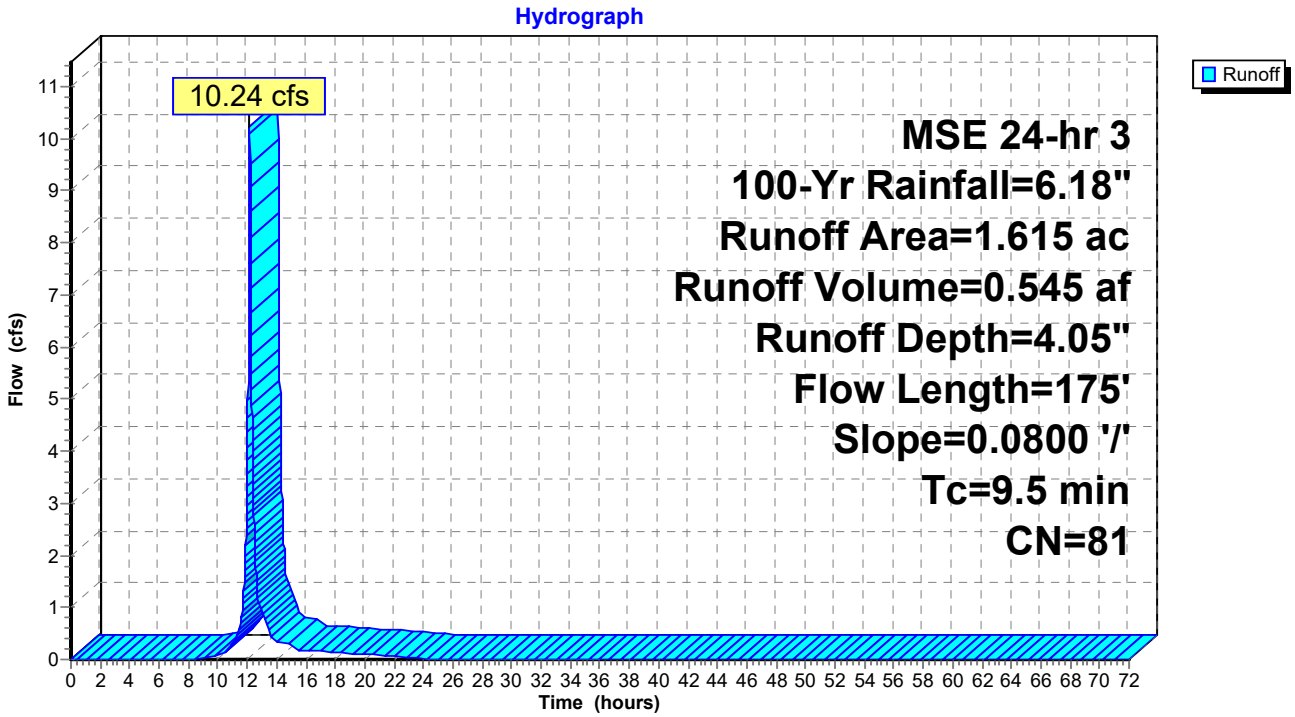
Runoff = 10.24 cfs @ 12.17 hrs, Volume= 0.545 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.061	98	Paved asphalt drive, HSG D
*	0.015	98	Paved walks, HSG D
	0.037	98	Roofs, HSG D
*	0.154	98	Gravel Drive, HSG D
*	1.348	78	>75% Grass cover, Good, HSG D per ordinance
	1.615	81	Weighted Average
	1.348		83.47% Pervious Area
	0.267		16.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.6	75	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.5	175	Total			

Subcatchment 3S: North Constructed Site



Summary for Subcatchment 4aS: Offsite Detained

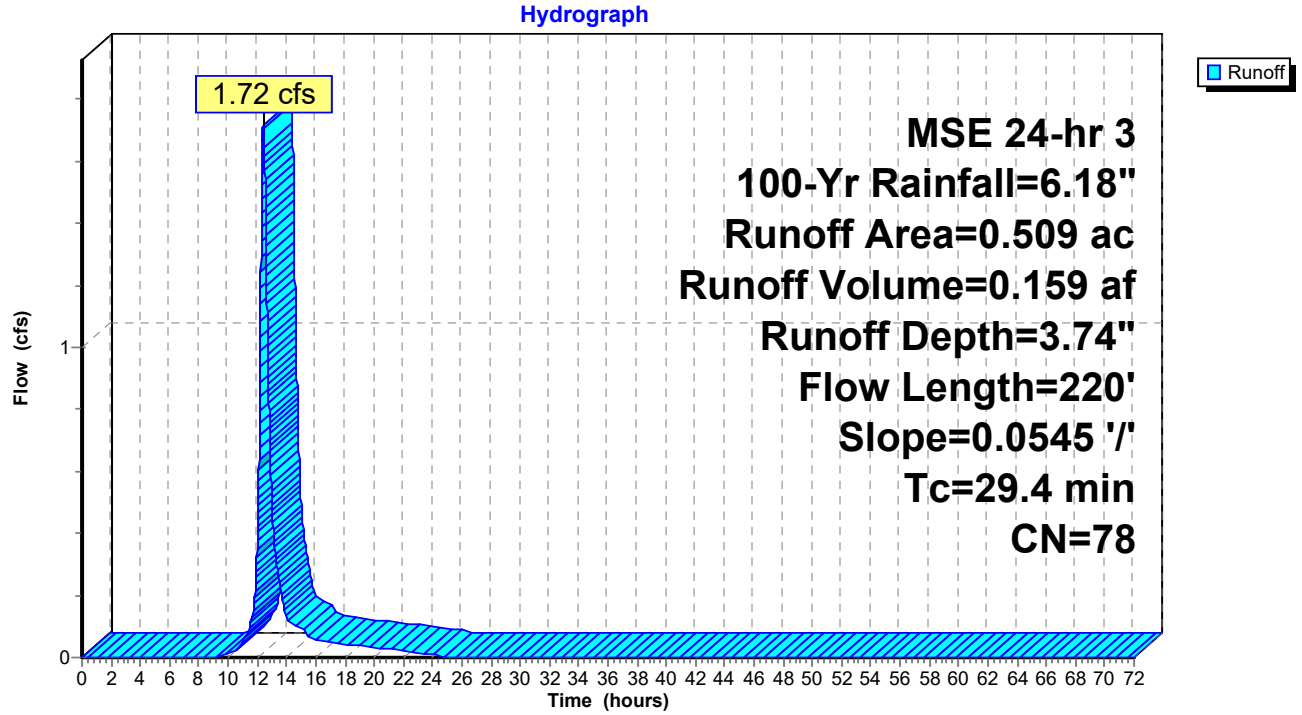
Runoff = 1.72 cfs @ 12.41 hrs, Volume= 0.159 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.509	78	>75% Grass cover, Good, HSG D
	0.509		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	220	0.0545	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4aS: Offsite Detained



Summary for Subcatchment 4bS: Offsite Undetained

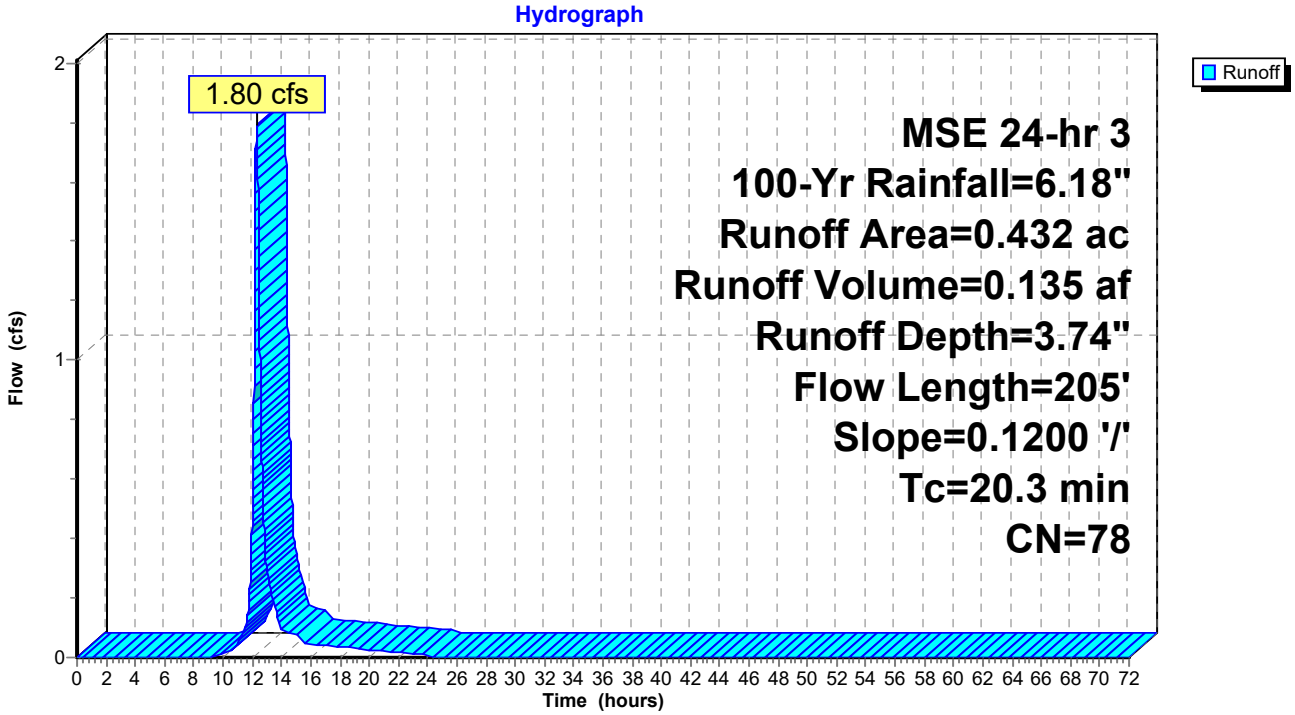
Runoff = 1.80 cfs @ 12.29 hrs, Volume= 0.135 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.432	78	>75% Grass cover, Good, HSG D
	0.432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	205	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"

Subcatchment 4bS: Offsite Undetained



Summary for Subcatchment 4S: South and East Constructed Site

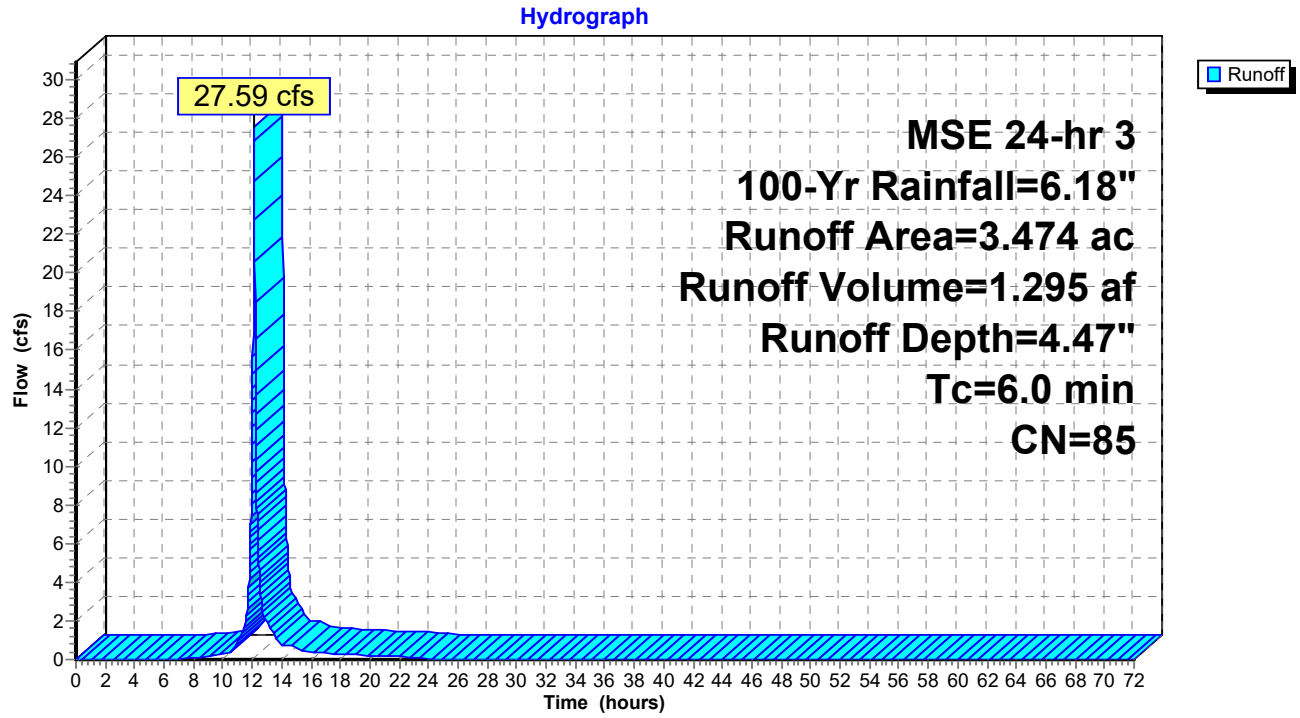
Runoff = 27.59 cfs @ 12.13 hrs, Volume= 1.295 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.204	98	Gravel Drive and Parking, HSG D
*	2.270	78	>75% Grass cover, Good, HSG D per ordinance
	3.474	85	Weighted Average
	2.270		65.34% Pervious Area
	1.204		34.66% Impervious Area

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

Subcatchment 4S: South and East Constructed Site



Summary for Pond 1P: Wet Pond

Inflow Area = 3.983 ac, 30.23% Impervious, Inflow Depth = 4.38" for 100-Yr event
Inflow = 28.27 cfs @ 12.13 hrs, Volume= 1.453 af
Outflow = 13.21 cfs @ 12.24 hrs, Volume= 1.453 af, Atten= 53%, Lag= 6.4 min
Primary = 13.21 cfs @ 12.24 hrs, Volume= 1.453 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 897.80' @ 12.24 hrs Surf.Area= 10,455 sf Storage= 23,365 cf

Plug-Flow detention time= 99.0 min calculated for 1.453 af (100% of inflow)
Center-of-Mass det. time= 99.2 min (886.8 - 787.6)

Volume	Invert	Avail.Storage	Storage Description
#1	895.00'	37,068 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

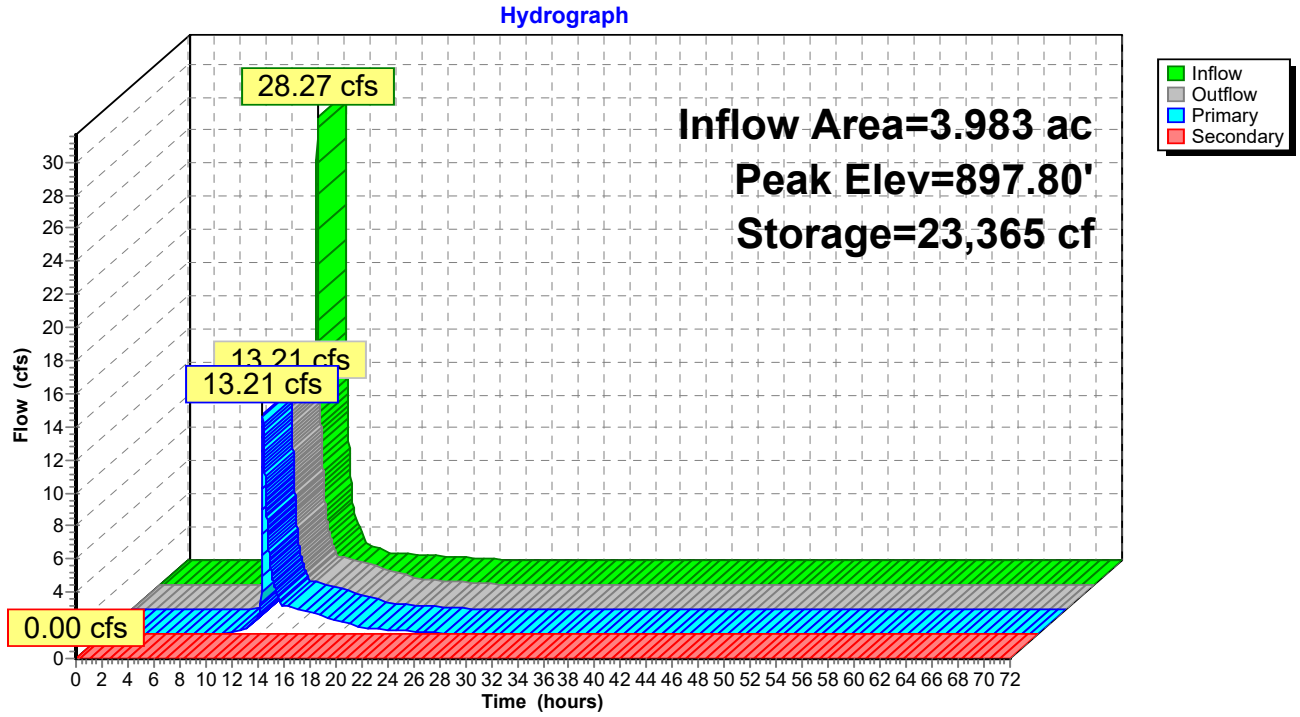
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	6,098	0	0
896.00	7,827	6,963	6,963
897.00	9,243	8,535	15,498
898.00	10,760	10,002	25,499
899.00	12,378	11,569	37,068

Device	Routing	Invert	Outlet Devices
#1	Primary	895.00'	**24.0" Round Culvert** L= 50.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 895.00' / 894.63' S= 0.0074 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	895.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	897.10'	**6.0' long x 0.5' breadth Top of Weir Plate** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Secondary	898.55'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=13.21 cfs @ 12.24 hrs HW=897.80' (Free Discharge)
└**1=Culvert** (Passes 13.21 cfs of 20.18 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.04 cfs @ 7.62 fps)
  └**3=Top of Weir Plate** (Weir Controls 11.17 cfs @ 2.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=895.00' (Free Discharge)
└**4=Emergency Spillway** (Controls 0.00 cfs)

Pond 1P: Wet Pond

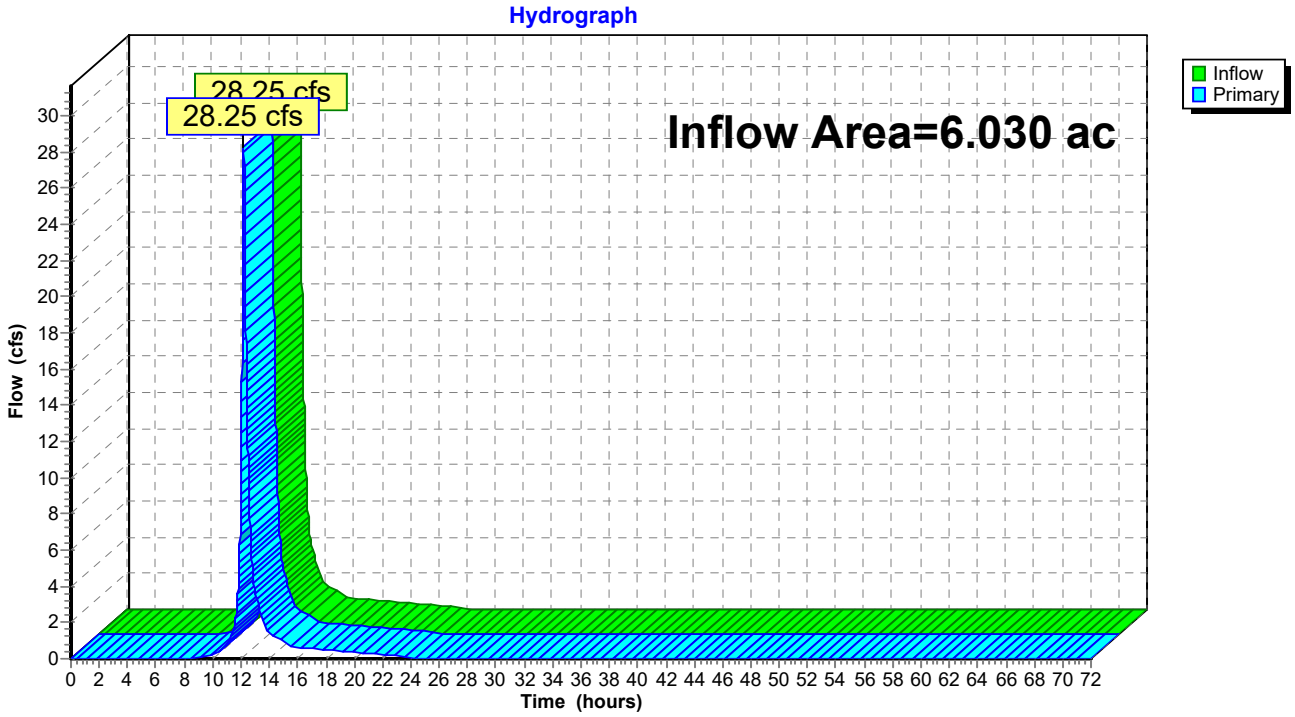


Summary for Link 1L: Pre-Development

Inflow Area = 6.030 ac, 1.79% Impervious, Inflow Depth = 3.77" for 100-Yr event
Inflow = 28.25 cfs @ 12.19 hrs, Volume= 1.894 af
Primary = 28.25 cfs @ 12.19 hrs, Volume= 1.894 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Development

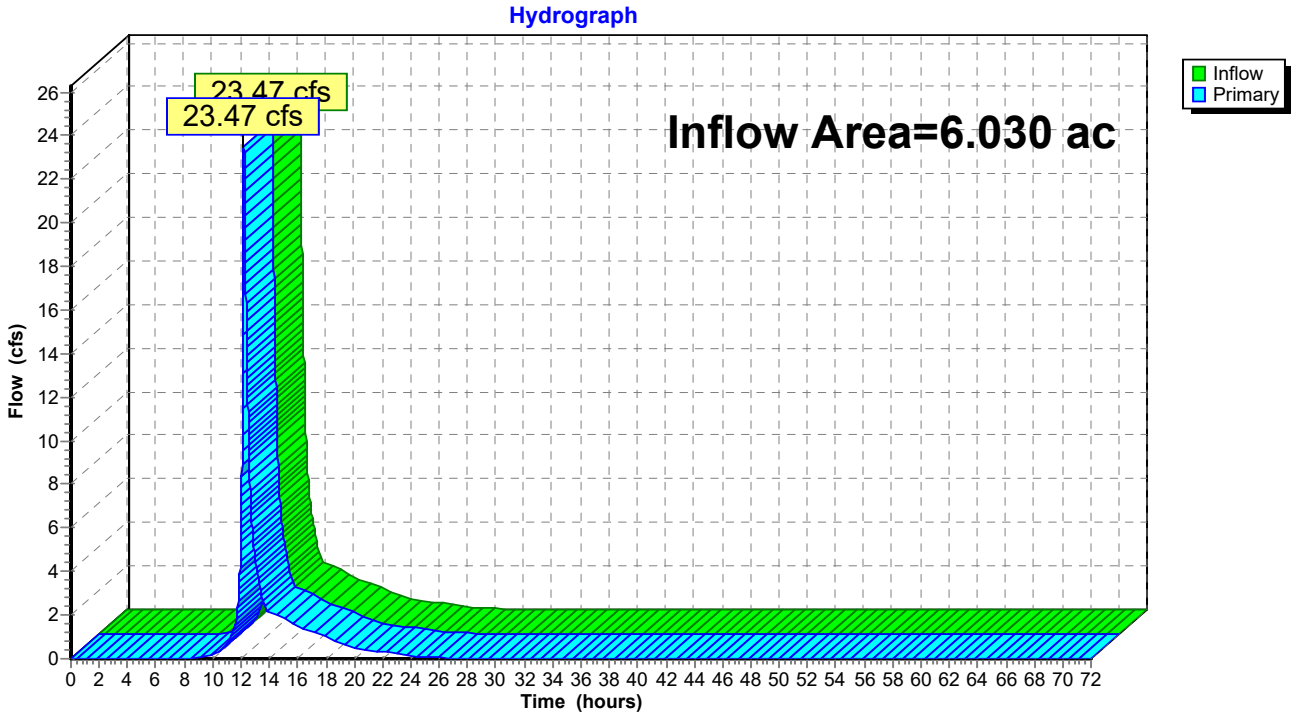


Summary for Link 2L: Post-Development

Inflow Area = 6.030 ac, 24.39% Impervious, Inflow Depth = 4.24" for 100-Yr event
Inflow = 23.47 cfs @ 12.21 hrs, Volume= 2.132 af
Primary = 23.47 cfs @ 12.21 hrs, Volume= 2.132 af, Atten= 0%, Lag= 0.0 min

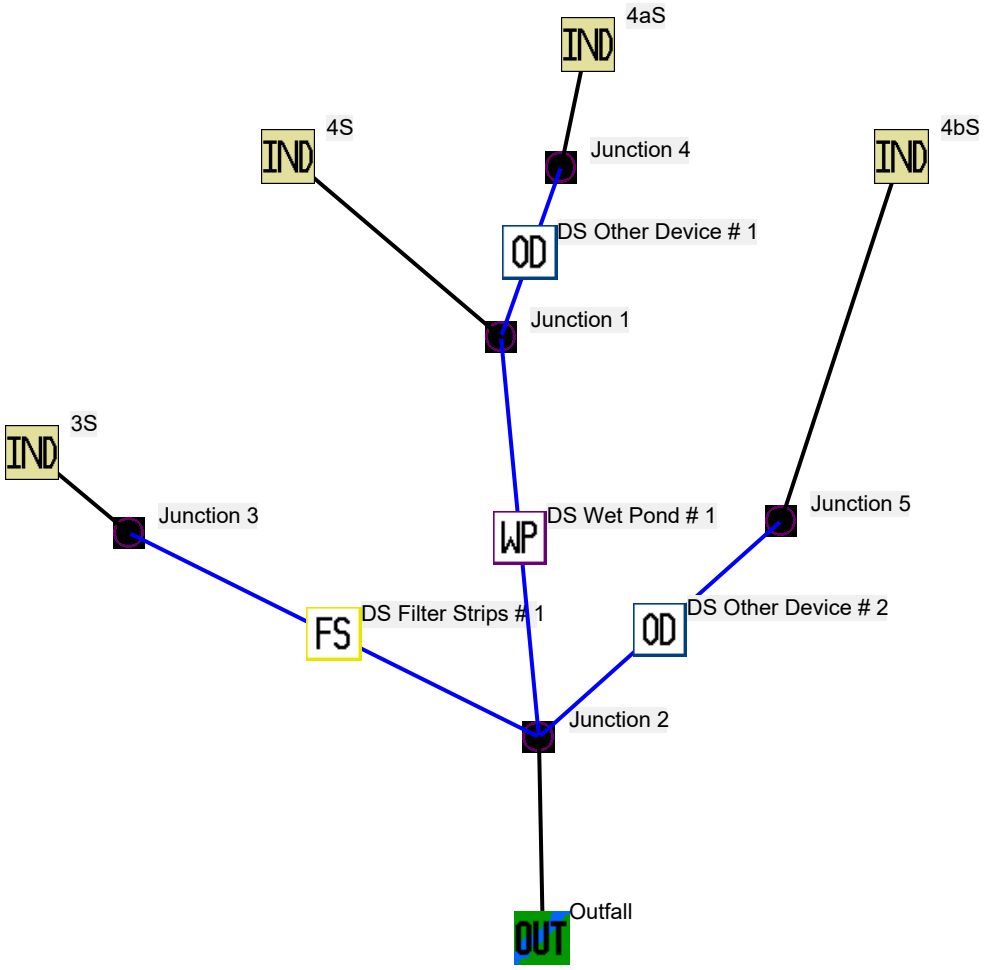
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Development



Appendix 3

WinSLAMM Input/Output


IND
4aS
IND
4S
Junction 4
IND
4bS
OD
DS Other Device # 1
Junction 1
IND
3S
Junction 3
WP
DS Wet Pond # 1
Junction 5
FS
DS Filter Strips # 1
OD
DS Other Device # 2
Junction 2
OUT
Outfall

Data file name: S:\Design & Construction Services\Prairie Philip\SWMP\WinSLAMM\2021-06-23 Prairie Phillip.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM 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: 03/28/69 Study period ending date: 12/06/69
Date: 06-23-2021 Time: 11:11:20
Site information:

LU# 1 - Industrial: 3S Total area (ac): 1.615
1 - Roofs 1: 0.037 ac. Pitched Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.061 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Driveways 2: 0.154 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.015 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.348 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Industrial: 4S Total area (ac): 3.474
13 - Paved Parking 1: 1.204 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.270 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Industrial: 4aS Total area (ac): 0.509
45 - Large Landscaped Areas 1: 0.509 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Industrial: 4bS Total area (ac): 0.432
45 - Large Landscaped Areas 1: 0.432 ac. Normal Clayey Low Density 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): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.58
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.55
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	0.0119	0.00	0.00
2	1.00	0.0213	0.00	0.00
3	2.00	0.0343	0.00	0.00
4	3.00	0.0510	0.00	0.00
5	4.00	0.0712	0.00	0.00
6	5.00	0.1400	0.00	0.00
7	6.00	0.1800	0.00	0.00
8	7.00	0.2120	0.00	0.00
9	8.00	0.2470	0.00	0.00
10	9.00	0.2840	0.00	0.00

Control Practice 2: Filter Strip CP# 1 (DS) - DS Filter Strips # 1
Total drainage area (acres)= 1.615
Fraction of drainage area served by filter strips (ac) = 1.00
Total filter strip width (ft) = 675.0
Effective flow length (ft) = 20
Infiltration rate (in/hr)= 0.010
Typical longitudinal slope (ft.H/ft.V) = 0.080
Typical grass height (in) = 3.0
Swale retardance factor = C
Use stochastic analysis to determine infiltration rate: False
Infiltration rate coeficient of variation (COV) = 0.00
Particle size distribution file name: Not needed - calculated by program
Surface Clogging Load (lbs/sf) = 3.50

Data file name: S:\Design & Construction Services\Prairie Philip\SWMP\WinSLAMM\2021-06-23 Prairie Phillip.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN

Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM 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: 03/28/69 Study period ending date: 12/06/69
Date: 06-23-2021 Time: 11:12:17
Site information:

LU# 1 - Industrial: 3S Total area (ac): 1.615
1 - Roofs 1: 0.037 ac. Pitched Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.061 ac. Disconnected Normal Silty PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Driveways 2: 0.154 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.015 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.348 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Industrial: 4S Total area (ac): 3.474
13 - Paved Parking 1: 1.204 ac. Disconnected Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.270 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Industrial: 4aS Total area (ac): 0.509
45 - Large Landscaped Areas 1: 0.509 ac. Normal Clayey Low Density PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Industrial: 4bS Total area (ac): 0.432
45 - Large Landscaped Areas 1: 0.432 ac. Normal Clayey Low Density 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): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.58
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.55
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	0.0119	0.00	0.00
2	1.00	0.0213	0.00	0.00
3	2.00	0.0343	0.00	0.00
4	3.00	0.0510	0.00	0.00
5	4.00	0.0712	0.00	0.00
6	5.00	0.1400	0.00	0.00
7	6.00	0.1800	0.00	0.00
8	7.00	0.2120	0.00	0.00
9	8.00	0.2470	0.00	0.00
10	9.00	0.2840	0.00	0.00

Control Practice 2: Filter Strip CP# 1 (DS) - DS Filter Strips # 1
Total drainage area (acres)= 1.615
Fraction of drainage area served by filter strips (ac) = 1.00
Total filter strip width (ft) = 675.0
Effective flow length (ft) = 20
Infiltration rate (in/hr)= 0.010
Typical longitudinal slope (ft.H/ft.V) = 0.080
Typical grass height (in) = 3.0
Swale retardance factor = C
Use stochastic analysis to determine infiltration rate: False
Infiltration rate coeficient of variation (COV) = 0.00
Particle size distribution file name: Not needed - calculated by program
Surface Clogging Load (lbs/sf) = 3.50

Data file name: S:\Design & Construction Services\Prairie Philip\SWMP\WinSLAMM\2021-06-23 Prairie Phillip.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
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Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
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Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std

Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM 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: 03/28/69 Study period ending date: 12/06/69
Date: 06-23-2021 Time: 11:15:29
Site information:

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4	3.00	0.0510	0.00	0.00
5	4.00	0.0712	0.00	0.00
6	5.00	0.1400	0.00	0.00
7	6.00	0.1800	0.00	0.00
8	7.00	0.2120	0.00	0.00
9	8.00	0.2470	0.00	0.00
10	9.00	0.2840	0.00	0.00

Control Practice 2: Filter Strip CP# 1 (DS) - DS Filter Strips # 1
Total drainage area (acres)= 1.615
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Typical longitudinal slope (ft.H/ft.V) = 0.080
Typical grass height (in) = 3.0
Swale retardance factor = C
Use stochastic analysis to determine infiltration rate: False
Infiltration rate coeficient of variation (COV) = 0.00
Particle size distribution file name: Not needed - calculated by program
Surface Clogging Load (lbs/sf) = 3.50

SLAMM for Windows Version 10.4.1

Data file name: S:\Design & Construction Services\Prairie Philip\SWMP\WinSLAMM\2021-06-23 Prairie Phillip.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust 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: C:\WinSLAMM 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: 03/28/69 Study period ending date: 12/06/69
Model Run Start Date: 03/28/69 Model Run End Date: 12/06/69
Date of run: 06-23-2021 Time of run: 11:10:42
Total Area Modeled (acres): 6.030
Years in Model Run: 0.67

	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:	45242	-	192.1	542.6	-
Outfall Total with Controls:	42382	6.32%	36.57	96.76	82.17%
Annualized Total After Outfall Controls:	63660			145.3	

Appendix 4

Storm Water Maintenance Plan

Payne+Dolan
A WALBEC COMPANY
www.walbecgroup.com
(920) 757-7559

June 2021

Project #490493

Document Number

Storm Water Management Practice Maintenance Agreement

Prairie Philip, as "Owner" of the property described below, in accordance with Chapter 32 City of Waukesha Storm Water Management and Erosion Control, agrees to install and maintain storm water management practice(s) on the subject property in accordance with approved plans and Storm Water Management Plan conditions. The owner further agrees to the terms stated in this document to ensure that the storm water management practice(s) continues serving the intended functions in perpetuity. This Agreement includes the following exhibits:

Exhibit A: Legal Description of the real estate for which this Agreement applies ("Property").
Exhibit B: Location Map(s) – shows an accurate location of each storm water management practice affected by this Agreement.
Exhibit C: Maintenance Plan – prescribes those activities that must be carried out to maintain compliance with this Agreement.

Note: After construction verification has been accepted by the City of Waukesha, for all planned storm water management practices, an addendum(s) to this agreement shall be recorded by the Owner showing design and construction details. The addendum(s) may contain several additional exhibits, including certification by City of Waukesha of Storm Water and Erosion Control Permit termination, as described below.

Name and Return Address

City of Waukesha
130 Delafield Street
Waukesha, WI 53188

Parcel Identification Number – (PIN)
WAKC1002998

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions and restrictions:

1. The Owner shall be responsible for the routine and extraordinary maintenance and repair of the storm water management practice(s) identified in Exhibit B until Storm Water and Erosion Control Permit termination by the City of Waukesha in accordance with Chapter 32 of the City Code of Ordinances.
2. After Storm Water and Erosion Control Permit termination under 1., the current Owner(s) shall be solely responsible for maintenance and repair of the storm water management practices in accordance with the maintenance plan contained in Exhibit C.
3. The Owner(s) shall, at their own cost, complete inspections of the storm water management practices at the time intervals listed in Exhibit C, and conduct the inspections by a qualified professional, file the reports with the City of Waukesha after each inspection and complete any maintenance or repair work recommended in the report. The Owner(s) shall be liable for the failure to undertake any maintenance or repairs. After the work is completed by the Contractor, the qualified professional shall verify that the work was properly completed and submit the follow-up report to the City within 30 days.
4. In addition, and independent of the requirements under paragraph 3 above, the City of Waukesha, or its designee, is authorized to access the property as necessary to conduct inspections of the storm water management practices to ascertain compliance with the intent of this Agreement and the activities prescribed in Exhibit C. The City of Waukesha may require work to be done which differs from the report described in paragraph 3 above, if the City of Waukesha reasonably concludes that such work is necessary and consistent with the intent of this agreement. Upon notification by the City of Waukesha of required maintenance or repairs, the Owner(s) shall complete the specified maintenance or repairs within a reasonable time frame determined by the City of Waukesha.
5. If the Owner(s) do not complete an inspection under 3. above or required maintenance or repairs under 4. above within the specified time period, the City of Waukesha is authorized, but not required, to perform the specified inspections, maintenance or repairs. In the case of an emergency situation, as determined by the City of Waukesha, no notice shall be required prior to the City of Waukesha performing emergency maintenance or repairs. The City of Waukesha may levy the costs and expenses of such inspections, maintenance or repair

related actions as a special charge against the Property and collected as such in accordance with the procedures under s. 66.0627 Wis. Stats. or subch. VII of ch. 66 Wis. Stats.

6. This Agreement shall run with the Property and be binding upon all heirs, successors and assigns. After the Owner records the addendum noted above, the City of Waukesha shall have the sole authority to modify this agreement upon a 30-day notice to the current Owner(s).

Dated this_____day of_____, 2021.

Owner:

_____

_____

Eugene Sheedy _____

Acknowledgements

State of Wisconsin:
County of Waukesha

Personally came before me this_____day of_____, 2021, the above named___Eugene Sheedy___to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.

Notary Public, Waukesha County, WI
My commission expires:_____.

This document was drafted by:

Payne + Dolan
Jaimi Lapp, PE
W6380 Design Drive
Greenville, WI 54942

For Certification Stamp

City of Waukesha Common Council Approval

Dated this_____day of_____, 2021.

_____

_____
Shawn N. Reilly, Mayor

_____
Gina Kozlik, City Clerk

Acknowledgements

State of Wisconsin:
County of Waukesha

Personally came before me this_____day of_____, 2021, the above named___Eugene Sheedy___ to me known to be the person who executed the foregoing instrument and acknowledged the same.

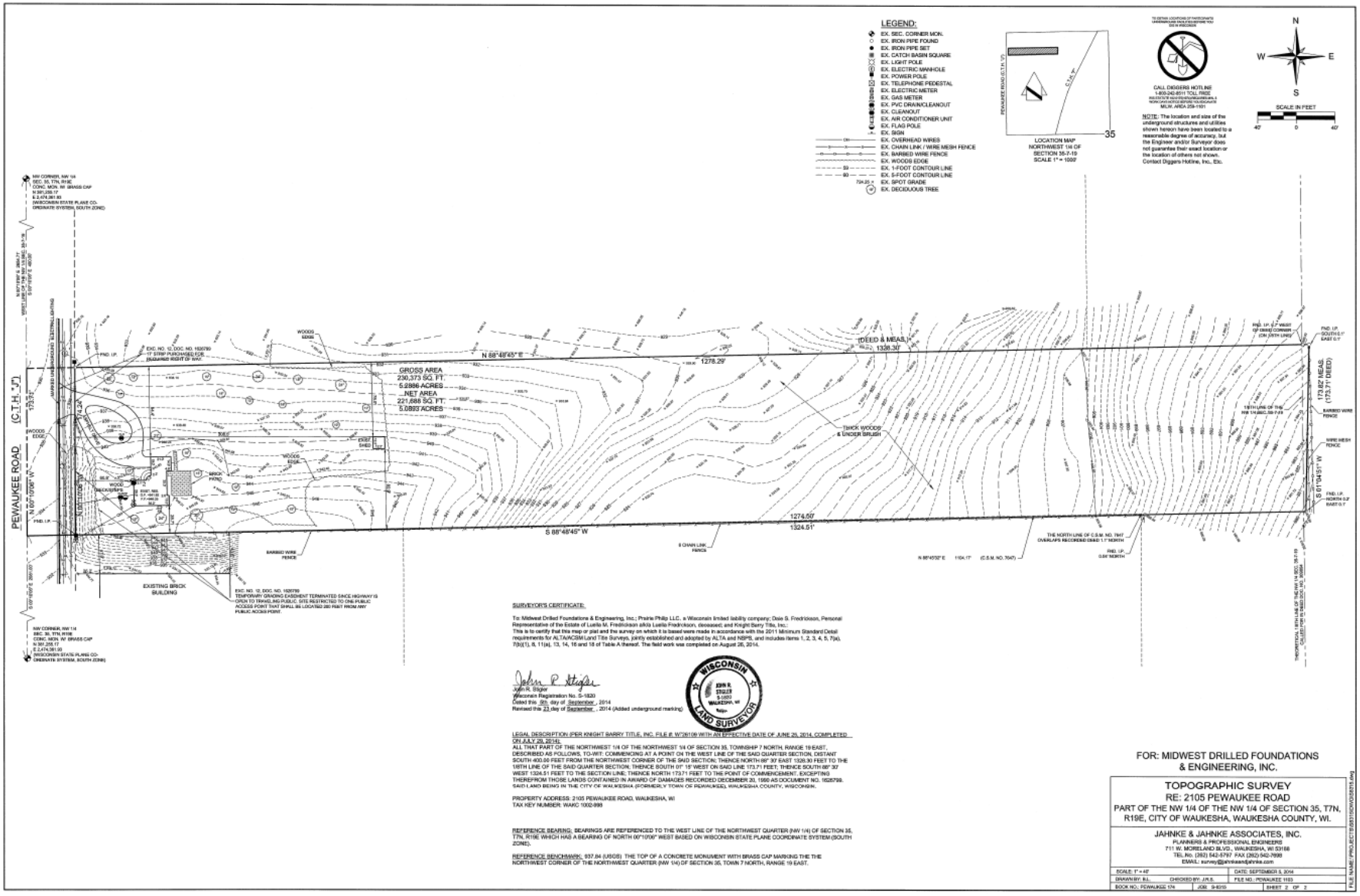
_____.

Notary Public, Waukesha County, WI
My commission expires:_____.

Exhibit A – Legal Description

The following description and reduced copy map identifies the land parcel(s) affected by this Agreement. For a larger scale view of the referenced document, contact the Waukesha County Register of Deeds office.

Project Identifier: **2105 Pewaukee Road** Acres**: 5.2886**
Date of Recording: **September 23, 2014**
Map Produced By: **Jahnke & Jahnke Associates, Inc.**
Legal Description: **ALL THAT PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 35, TOWNSHIP 7 NORTH, RANGE 19 EAST, DESCRIBED AS FOLLOWS, TO-WIT: COMMENCING AT A POINT ON THE WEST LINE OF THE SAID QUARTER SECTION, DISTANT SOUTH 400.00 FEET FROM THE NORTHWEST CORNER OF THE SAID SECTION; THENCE NORTH 88° 30' EAST 1328.30 FEET TO THE 1/8TH LINE OF THE SAID QUARTER SECTION; THENCE SOUTH 01° 15' WEST ON SAID LINE 173.71 FEET; THENCE SOUTH 88° 30' WEST 1324.51 FEET TO THE SECTION LINE; THENCE NORTH 173.71 FEET TO THE POINT OF COMMENCEMENT. EXCEPTING THEREFROM THOSE LANDS CONTAINED IN AWARD OF DAMAGES RECORDED DECEMBER 2, 1990 AS DOCUMENT NO. 1626799. SAID LAND BEING IN THE CITY OF WAUKESHA (FORMERLY TOWN OF PEWAUKEE), WAUKESHA COUNTY, WISCONSIN.**



SURVEYOR'S CERTIFICATE:

To: Midwest Drilled Foundations & Engineering, Inc.; Prairie Philip LLC, a Wisconsin limited liability company; Dixie S. Fredrickson, Personal Representative of the Estate of Luella M. Fredrickson a/k/a Luella Fredrickson, deceased; and Knight Barry Title, Inc.:
This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1, 2, 3, 4, 5, 7(a), 7(b)(1), 8, 11(a), 13, 14, 16 and 18 of Table A thereof. The field work was completed on August 26, 2014.

John R. Stajer
Wisconsin Registration No. S-1820
Dated this 9th day of September, 2014
Revised this 23 day of September, 2014 (Added underground marking)

WISCONSIN JOHN R. STAJER S-1820 WAUKESHA, WI LAND SURVEYOR

LEGAL DESCRIPTION (PER KNIGHT BARRY TITLE, INC. FILE #: W726108 WITH AN EFFECTIVE DATE OF JUNE 25, 2014, COMPLETED ON JULY 29, 2014):
ALL THAT PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 35, TOWNSHIP 7 NORTH, RANGE 19 EAST, DESCRIBED AS FOLLOWS, TO-WIT: COMMENCING AT A POINT ON THE WEST LINE OF THE SAID QUARTER SECTION, DISTANT SOUTH 400.00 FEET FROM THE NORTHWEST CORNER OF THE SAID SECTION; THENCE NORTH 88° 30' EAST 1326.90 FEET TO THE 199TH LINE OF THE SAID QUARTER SECTION; THENCE SOUTH 01° 16' WEST ON SAID LINE 173.71 FEET; THENCE SOUTH 88° 30' WEST 1324.51 FEET TO THE SECTION LINE; THENCE NORTH 173.71 FEET TO THE POINT OF COMMENCEMENT. EXCEPTING THEREFROM THOSE LANDS CONTAINED IN AWARD OF DAMAGES RECORDED DECEMBER 20, 1960 AS DOCUMENT NO. 1626799. SAID LAND BEING IN THE CITY OF WAUKESHA (FORMERLY TOWN OF PEWAUKEE), WAUKESHA COUNTY, WISCONSIN.

PROPERTY ADDRESS: 2105 PEWAUKEE ROAD, WAUKESHA, WI
TAX KEY NUMBER: WAKC 1002-999

REFERENCE BEARING: BEARINGS ARE REFERENCED TO THE WEST LINE OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 35, T7N, R19E WHICH HAS A BEARING OF NORTH 00°10'06" WEST BASED ON WISCONSIN STATE PLANE COORDINATE SYSTEM (SOUTH ZONE).

REFERENCE BENCHMARK: 937.84 (USGS) THE TOP OF A CONCRETE MONUMENT WITH BRASS CAP MARKING THE THE NORTHWEST CORNER OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 35, TOWN 7 NORTH, RANGE 19 EAST.

FOR: MIDWEST DRILLED FOUNDATIONS & ENGINEERING, INC.

TOPOGRAPHIC SURVEY
RE: 2105 PEWAUKEE ROAD
PART OF THE NW 1/4 OF THE NW 1/4 OF SECTION 35, T7N, R19E, CITY OF WAUKESHA, WAUKESHA COUNTY, WI.

JAHNKE & JAHNKE ASSOCIATES, INC.
PLANNERS & PROFESSIONAL ENGINEERS
711 W. MORELAND BLVD., WAUKESHA, WI 53188
TEL No. (262) 542-5797 FAX (262) 542-7698
EMAIL: survey@jahnkeandjahnke.com

SCALE: 1" = 40'	DATE: SEPTEMBER 3, 2014
DRAWN BY: BJL	CHECKED BY: JRS
FILE NO.: PEWAUKEE 1103	
BOOK NO.: PEWAUKEE 174	JOB: 9-8215
SHEET 2 OF 2	

FILE NAME: P:\PRO_EC\7\9\8215\WORD\8215.dwg

Exhibit B - Location Map
Storm Water Management Practices Covered by this Agreement

The storm water management practices covered by this Agreement are depicted in the reduced copy of a portion of the construction plans, as shown below. The practices include one wet detention basin, one forebay, one grass swale (conveying storm water to the forebay) and all associated pipes, earthen berms, rock chutes and other components of these practices.

Project Identifier: **Prairie Philip Outdoor Storage Yard**
Storm water Practices: **Wet Detention Basin, Grass swale**
Location of Practices: **East limits of property**

Figure 1
Plan View of Storm Water Practices

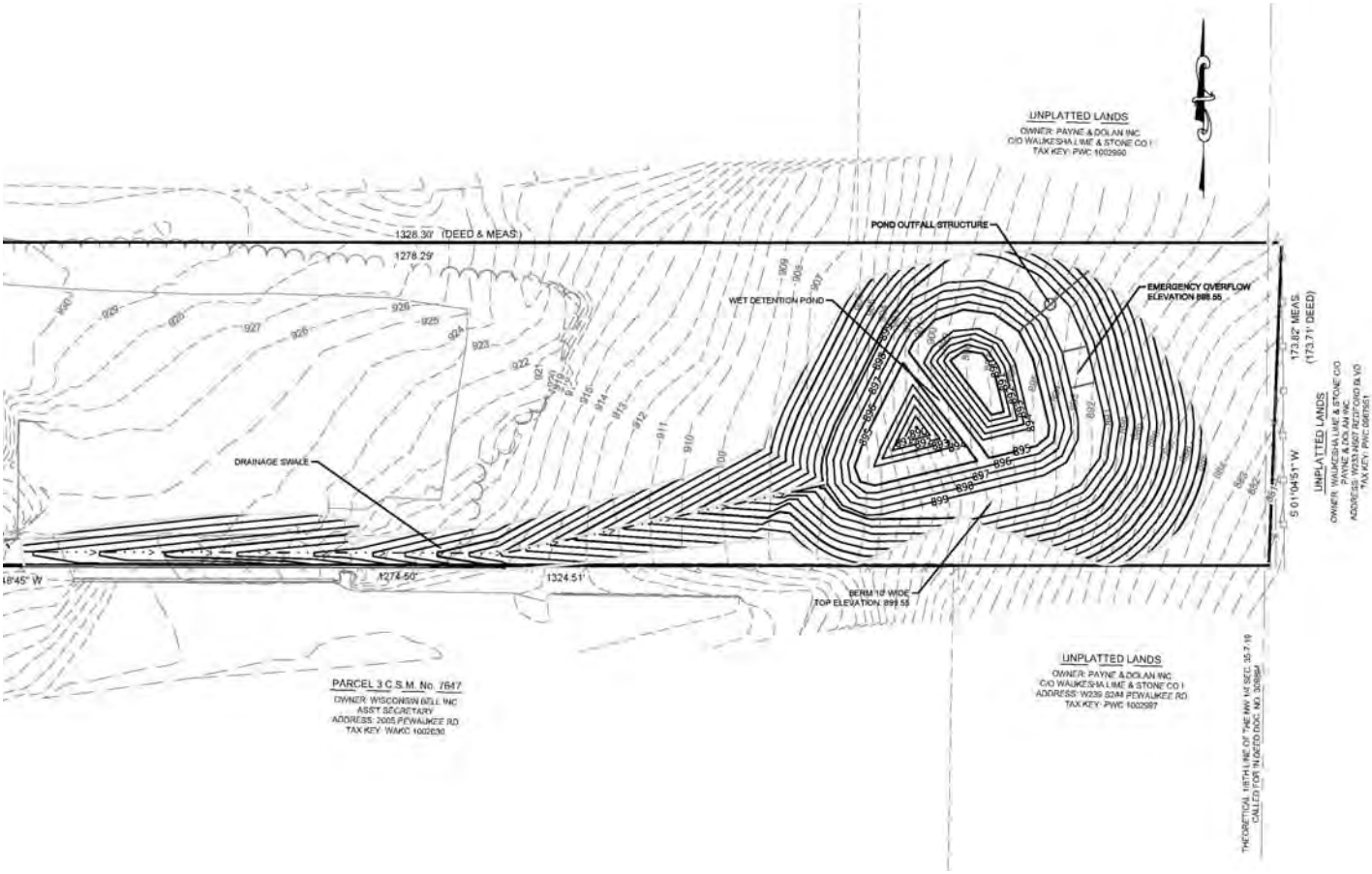


Exhibit C
Storm Water Practice Maintenance Plan

This exhibit explains the basic function of each of the storm water practices listed in Exhibit B and prescribes the minimum maintenance requirements to remain compliant with this Agreement. The maintenance activities listed below are aimed to ensure these practices continue serving their intended functions in perpetuity. The list of activities is not all inclusive, but rather indicates the minimum type of maintenance that can be expected for this particular site. Any failure of a storm water practice that is caused by a lack of maintenance will subject the Owner(s) to enforcement of the provisions listed on page 1 of this Agreement by the City of Waukesha.

System Description:
The wet detention basin is designed to trap 80% of sediment in runoff and maintain pre-development downstream peak flows. The basin has one forebay located at the low end of a grass swale. In addition to runoff conveyance, the grass swale also allows filtering of pollutants, especially from smaller storms. The forebay is 4 feet deep. It is connected to the main pool via a rock overflow weir. The forebay will trap coarse sediments in runoff, thus reducing maintenance of the main basin. The main pool will trap the finer suspended sediment. To do this, the pond size, water level and outlet structures must be maintained as specified in this Agreement (see Figures 1, 2 and 3). To prevent congregation of nuisance waterfowl at this location, wires will be strung over the permanent pool.

The basin receives runoff from a 3.983 acre drainage. During high rainfall or snow melt events, the water level will temporarily rise and slowly drain down to the elevation of the control structure. The water level is controlled by a 24-inch concrete pipe extending through an outlet structure within the berm in the northeast corner of the basin (see Figures 1 and 3). Inside the structure there is metal plate with a 7-inch drilled hole (orifice). This orifice controls the water level and causes the pond to temporarily rise during runoff events. High flows may flow over the mat-lined emergency spillway.

"As-built" construction drawings of the basin, showing actual dimensions, elevations, outlet structure, etc. will be recorded as an addendum(s) to this agreement within 60 days after City of Waukesha accepts verification of construction from the project engineer.

Wet Detention Basin Minimum Maintenance Requirements:
To ensure the proper long-term function of the storm water management practices described above, the following activities must be completed:

1. All outlet pipes must be checked monthly to ensure there is no blockage from floating debris or ice. Any blockage must be removed immediately.
2. Grass swale shall be preserved to allow free flowing of surface runoff in accordance with approved grading plans. No buildings or other structures are allowed in these areas. No grading or filling is allowed that may interrupt flows in any way.
3. Grass swale, inlets and outlets must be checked after heavy rains (minimum of annually) for signs of erosion. Any eroding areas must be repaired immediately to prevent premature sediment build-up in the downstream forebay or basin. Erosion matting is recommended for repairing grassed areas.
4. NO trees are to be planted or allowed to grow on the earthen berms. Tree root systems can reduce soil compaction and cause berm failure. The berms must be inspected annually and any woody vegetation removed.
5. Invasive plant and animal species shall be managed in compliance with Wisconsin Administrative Code Chapter NR 40. This may require eradication of invasive species in some cases.
6. If the permanent pool falls below the safety shelf, a review shall be performed to determine whether the cause is liner leakage or an insufficient water budget. If the cause is leakage, the liner shall be repaired. Leakage due to muskrat burrows may require removal of the animals. If the permanent pool cannot be sustained at the design elevation, benching of the safety shelf may be necessary.
7. If floating algae or weed growth becomes a nuisance (decay odors, etc.), it must be removed from the basin or the forebay and deposited where it cannot drain back into the basin. Removal of the vegetation from the water reduces regrowth the following season (by harvesting the nutrients). Wetland vegetation must be maintained along the waters edge for safety and pollutant removal purposes.

8. When sediment in the forebay or the basin has accumulated to an elevation of three feet below the outlet elevation, it must be removed (see Exhibit D). All removed sediment must be placed in an appropriate upland disposal site and stabilized (grass cover) to prevent sediment from washing back into the basin. The forebay will likely need sediment removal first. Failure to remove sediment from the forebay will cause resuspension of previously trapped sediments and increase downstream deposition.
9. No grading or filling of the basin or berm other than for sediment removal is allowed, unless otherwise approved by the City of Waukesha.
10. Periodic mowing of the grass swales will encourage vigorous grass cover and allow better inspections for erosion. Waiting until after August 1 will avoid disturbing nesting wildlife. Mowing around the basin or the forebay may attract nuisance populations of geese to the property and is not necessary or recommended.
11. Any other repair or maintenance needed to ensure the continued function of the storm water practices or as ordered by the City of Waukesha under the provisions listed on page 1 of this Agreement.
12. The titleholder(s) or their designee must document all inspections as specified above. Documentation shall include as a minimum: (a) Inspectors Name, Address and Telephone Number, (b) Date of Inspections, (c) Condition Report of the Storm Water Management Practice, (d) Corrective Actions to be Taken and Time Frame for Completion, (e) Follow-up Documentation after Completion of the Maintenance Activities. All documentation is to be delivered to the attention of the City Engineer at the City of Waukesha Engineering Department on January 10th and July 10th each year.

Waterfowl Deterrent Netting Minimum Maintenance Requirements:

In response to FAA efforts to mitigate the hazards to human flight posed by wildlife, construction plans include placement of netting over the wet-bottom detention pond to make the facility less attractive to waterfowl. To maintain its function, the following activities must be completed:

1. Inspect net monthly for first year, reduce inspection frequency to quarterly thereafter. Replace or re-tension strands as needed. Remove and discard broken strands in appropriate waste containers.
2. Inspect rebar posts monthly for first year; reduce inspection frequency to quarterly thereafter. Ensure that posts remain upright and firmly embedded in the soil. Reinstall or replace as needed in order to maintain necessary tension on netting.
3. Temporarily remove strands as needed to perform other required maintenance activities (e.g. mowing, burning, outfall cleaning), and reinstall immediately upon completion of maintenance.
4. Waukesha County Airport staff will monitor maintenance and effectiveness of netting; comply with their maintenance requests in a timely manner; see airport approval letter below:

Exhibit D
Design Summaries for Wet Detention Basin

Project Identifier: Prairie Philip Outdoor Storage Yard **Project Size:** 5.089 acres
Number of Runoff Discharge Points: 1 **Watershed (ultimate discharge)**: Fox River
Watershed Area (including off-site runoff traveling through project area): 6.030 acres

Watershed Data Summary. The following table summarizes the watershed data used to determine peak flows and runoff volumes required to design the wet detention basin.

Summary Data Elements	Subwatershed North		Subwatershed South and East		Subwatershed Offsite		
	Pre-develop 1S	Post-develop 3S	Pre-develop 2S	Post-develop 4S	2aS	4aS	4bS
Watershed Areas *(in acres)*	1.788	1.615	3.301	3.474	0.941	0.509	0.432
Average Watershed Slopes (%)	2-8%	2-8%	3-9%	3-9%	3-6%	3-6%	3-6%
Land Uses (% of each) ***(see attached map)***	3.4% drives 0.8% walks 1.8% roof 94% grass	13.3% drives 0.9% walks 2.3% roof 83.5% grass	100% grass	35% drives/parking 65% grass	100% grass	100% grass	100% grass
Runoff Curve Numbers	79	81	78	85	78	78	78
Conveyance Systems Types	Grass waterway	Grass waterway	Grass waterway	Grass swale	Grass waterway	Grass waterway	Grass Waterway
Summary of Average Conveyance System Data	overland flow Avg. 8% grade	overland flow Avg. 8% grade	overland flow Avg. 8% grade	4-5' deep swale Avg. 5% grade	overland flow Avg. 5.5% grade	overland flow Avg. 5.5% grade	overland flow Avg. 12% grade
Time of Concentration *(Tc)*	9.5 min.	9.5 min.	13.8 min.	6 min.	29.4 min.	29.4 min.	20.3 min.
25% of 2-yr 24-hr post-dev runoff volume	N/A	0.04 ac. ft.	N/A	0.10 ac. ft.	N/A	N/A	N/A
1-year/24 hour Runoff Volume	N/A	0.12 ac. ft.	N/A	.32 ac. ft.	N/A	N/A	N/A
2-yr./24 hour Peak Flow	2.74 cfs	2.78 cfs	3.97 cfs	8.67 cfs	0.75 cfs	0.41 cfs	0.42 cfs
10-yr./24 hour Peak Flow	5.16 cfs	5.05 cfs	7.70 cfs	14.6 cfs	1.47 cfs	0.79 cfs	0.83 cfs
100-yr./24 hour Peak Flow	10.83 cfs	10.24 cfs	16.56 cfs	27.59 cfs	3.18 cfs	1.72 cfs	1.80 cfs

Exhibit D (continued)

Practice Design Summary. The following table summarizes the data used to design wet detention basin.

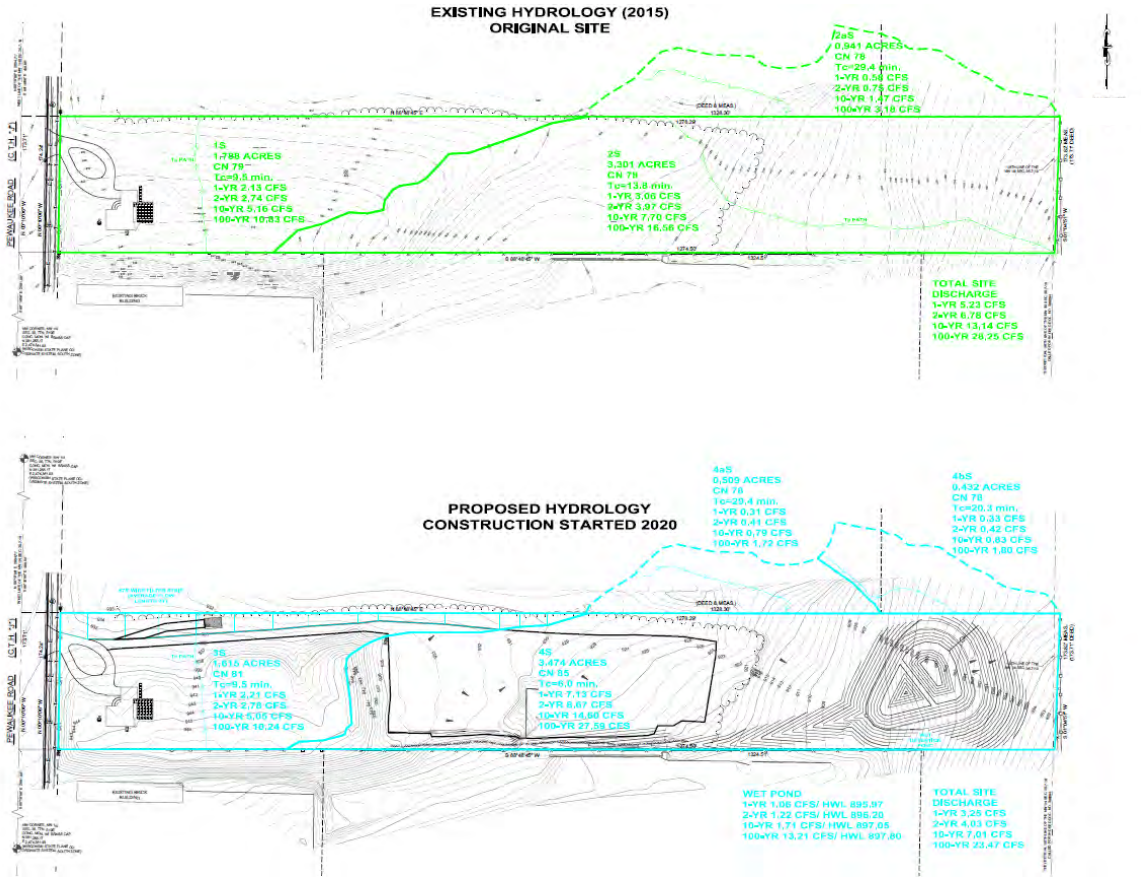
Design Element	Design Data
Site assessment data: (see attached maps)	
Contributing drainage area to basin	6.03 acres
Distance to nearest private well (including off-site wells)	> 100 feet
Distance to municipal well (including off-site wells)	> 1200 feet
Wellhead protection area involved?	No
Ground slope at site of proposed basin	average 8%
Any buried or overhead utilities in the area?	No
Proposed outfall conveyance system/discharge (w/ distances)	Overland flow 105' offsite to neighboring quarry
Any downstream roads or other structures? (describe)	No
Floodplain, shoreland or wetlands?	No
Soil investigation data (see attached map & soil logs):	
Number of soil investigations completed	2
Do elevations of test holes extend 3 ft. below proposed bottom?	yes
Average soil texture at pond bottom elevation (USDA)	Sandy Silt with Gravel
Distance from pond bottom to bedrock	> 5 feet
Distance from pond bottom to seasonal water table	No water observed in test holes
General basin design data (see attached detailed drawings):	
Permanent pool surface area	0.14 acres
Design permanent pool water surface elevation	elev. 895.0
Top of berm elevation (after settling) and width	elev. 899.55 / 10 feet wide
Length/width (dimensions/ratio)	115 ft. (L) x 70 ft. (W) = 2:1
Safety shelf design (length, grade, max. depth)	10 ft. @ 10% slope/1' deepest
Ave. water depth (minus safety shelf/sediment)	5 ft. (in center)
Sediment forebay size & depth	.05 acres (25% pool size)/5 feet
Sediment storage depth & design maintenance	2 ft. depth for forebay & pool 15 year maintenance schedule

Design Basin Inflow, Outflow & Storage Data
(see attached hydrographs and detail drawings)

Inflow Peak/Volume	Maximum Outflow Rate	Max. Water Elevation	Storage Volume at Max. Elev. (above perm. pool)	Outflow Control Structures*
1-yr./24 hr. (volume)	1.06 cfs (34 hr. drawdown)	895.97 ft.	0.15 acre feet	#1
8.79 cfs (Post 2-yr./24 hr. peak)	1.22 cfs	896.20 ft.	0.20 acre feet	#1
14.87 cfs (Post 10-yr./24 hr. peak)	1.71 cfs	897.05 ft.	0.37 acre feet	#2
28.27 cfs (Post 100-yr./24 hr. peak)	13.21 cfs	897.80 ft.	0.54 acre feet	#2

* #1 = 7 inch orifice in water level control weir plate – flow line elev. @ 895.0
#2 = 6 foot wide rectangular weir – flow line elev. @ 897.1
#3 = 24 inch diameter smooth wall rcp pipe – flow line elev. @ 895.0
#4 = 20 foot wide rock emergency spillway – flow line elev. @ 898.55

Watershed Map. The watershed map shown below was used to determine the post-development data contained in this exhibit. The post-developed watershed areas are the same as the pre-development watershed areas for this project.



Appendix 5

USLE Soil Loss Calculation,

Erosion Control Plan

and Storm Water Details

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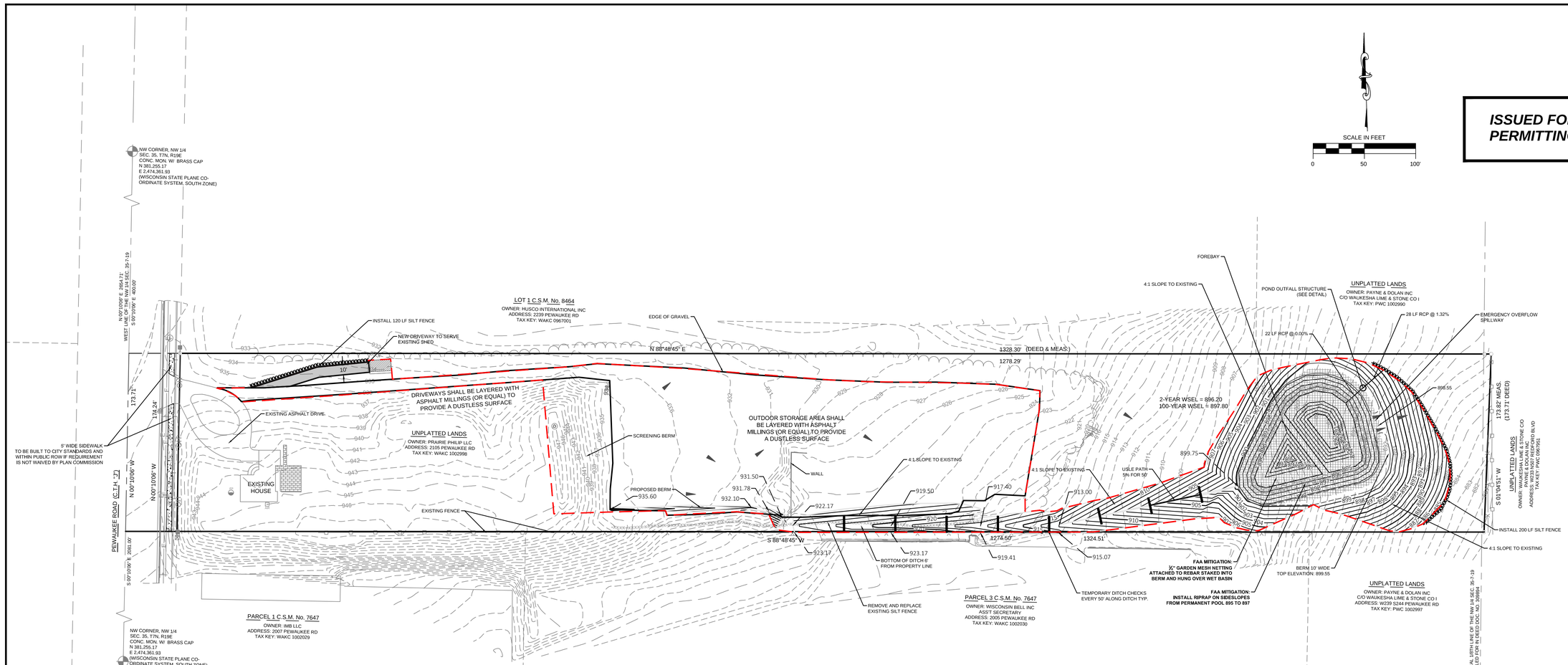
June 2021

Project #490493



ISSUED FOR PERMITTING

NO	REVISION DESCRIPTION	DATE
A	CITY REVIEW COMMENTS	6/14/2021

Payne+Dolan
A WALBEC COMPANY
www.paynedolan.com
(920) 757-7559

PROJECT
OUTDOOR STORAGE YARD
2105 PEWAUKEE ROAD

CLIENT
PRAIRIE PHILIP LLC
2105 PEWAUKEE ROAD

Seal

WISCONSIN
JAIMI N. LAPP
E--42379
ELKHORN WIS.
PROFESSIONAL ENGINEER

SHEET TITLE
GRADING AND EROSION CONTROL PLAN

CONSTRUCTION SEQUENCE

ESTIMATED CONSTRUCTION TIMEFRAMES*:
INSTALL EROSION CONTROL MEASURES = JUNE 2021

GRADE WET POND AND SWALE = JUNE 2021

FINE GRADING = JUNE 2021

FINAL RESTORATION = JUNE 2021

THE INTENDED SEQUENCES OF SITE CONSTRUCTION ACTIVITIES ARE AS FOLLOWS:

1. INSTALL EROSION CONTROL MEASURES AS INDICATED ON THE EROSION CONTROL PLAN AND IN ACCORDANCE WITH THE REQUIREMENTS OF WNDR CONSERVATION PRACTICE STANDARDS PRIOR TO ANY LAND DISTURBING ACTIVITIES
2. FINE GRADE.
3. INSTALL LANDSCAPING/RESTORATION.
4. WHEN THE SITE VEGETATION HAS BEEN ESTABLISHED AND THE POTENTIAL OF EROSION IS STABILIZED, THE TEMPORARY EROSION CONTROL MEASURE WILL BE REMOVED.

*CONSTRUCTION ACTIVITY DATES ARE APPROXIMATE AND MAY CHANGE DUE TO WEATHER OR OTHER UNFORESEEN REASONS.

EROSION CONTROL NOTES:

1. SILT FENCE SHALL BE INSTALLED AS INDICATED ON THE EROSION CONTROL PLAN.
2. ALL DISTURBED AREAS WILL REQUIRE TOPSOIL, FERTILIZER, SEED & MULCH. PLACE SEEDING MIXTURE NO. 40 AT A RATE OF 2 LB PER 1000 SF PER WISDOT STANDARD SPEC 630. PLACE FERTILIZER TYPE B AT A RATE OF 7 LB PER 1000 SF PER WISDOT STANDARD SPEC 629.
3. INSPECT AND REPAIR ALL SEDIMENT CONTROL STRUCTURES AT LEAST EVERY 7 DAYS AND WITHIN 24 HRS AFTER EVERY RAINFALL GREATER THAN 1/2".
4. MAINTAIN EROSION CONTROL FACILITIES THROUGHOUT THE DURATION OF THE PROJECT AND WARRANTY PERIOD IN CONFORMANCE WITH DNR WPDES GENERAL PERMIT (IF APPLICABLE).
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION.
6. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
7. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING COPIES OF ALL PERMITS. CONTRACTOR IS RESPONSIBLE FOR ABIDING BY ALL PERMIT REQUIREMENTS AND RESTRICTIONS.

NOTE:
ALL EQUIPMENT/STORAGE SHALL BE CONTAINED WITHIN THE DUSTLESS SURFACE LIMITS.

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	06/01/21	06/18/21	10.2%	130	Silt Loam	0.43	5.2%	50	0.40	1.00	2.3	0.864	Ditch Check Sed	1.4
Seed with Mulch or Er	06/18/21	09/01/21	49.8%	130	Silt Loam	0.43	5.2%	50	0.40	0.10	1.1	0.864	Ditch Check Sed	0.7
End	09/01/21	-----	-----	-----	--------	-----	5.2%	50	0.40	------	-----	0.000		0.0
		-----	-----	-----	--------	-----	5.2%	50	0.40	-----	-----	0.000		0.0
		-----	-----	-----	--------	-----	5.2%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	--------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	3.4		TOTAL	2.0
													% Reduction Required	NONE

Notes:

LEGEND

- AIR CONDITIONER
- INLET, SQUARE
- SIGN
- TRANSFORMER
- TEMPORARY DITCH CHECK
- DISTURBANCE LIMITS (2.6 AC)
- E — E — EXISTING ELECTRIC GENERAL
- OH — EXISTING ELECTRIC OVERHEAD
- T — EXISTING TELEPHONE UNDERGROUND
- X — EXISTING CHAINLINK FENCE
- EXISTING WOOD FENCE
- EXISTING SILT FENCE
- PROPOSED SILT FENCE
- DIRECTIONAL FLOW
- EXISTING TREE LINE
- PROPERTY LINE
- XXX — EXISTING CONTOUR
- PROPOSED CONTOUR

THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.

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Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

"THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. IF ADDITIONAL UTILITIES ARE KNOWN TO EXIST IN THE PROPERTY, THE OWNER WILL PROVIDE EXISTING PLANS OF OTHER UTILITIES SERVING THE SITE AND THE BUILDING THAT OTHERWISE CANNOT BE LOCATED BY A VISUAL OBSERVATION OF THE PROPERTY OR OF WHICH THE SURVEYOR WOULD HAVE NO KNOWLEDGE".

Drawing Scale:	1: 50
Drawn:	GME 04/26/2021
Checked:	CTD 04/26/2021
P&D Project No:	490493
Sheet No.	02

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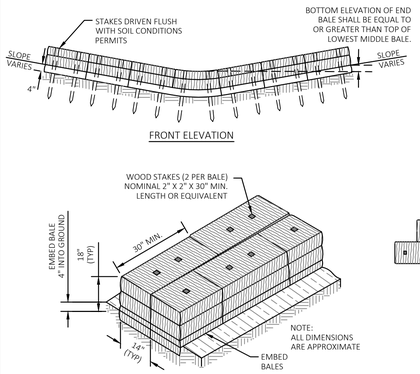
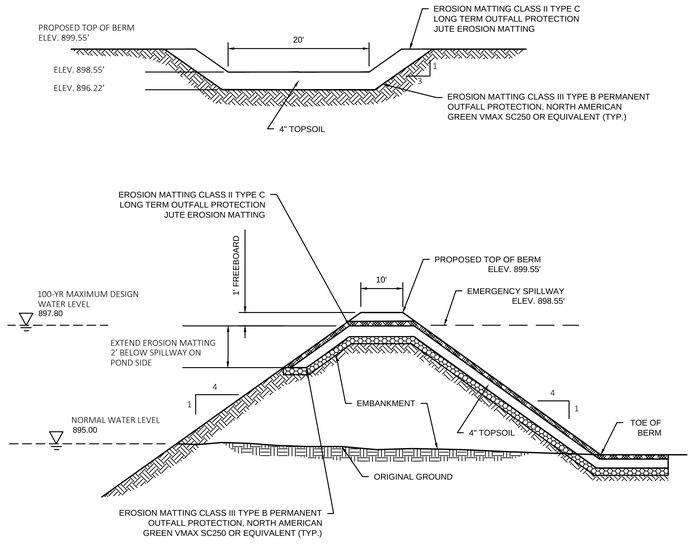


GENERAL NOTES:

1. INSTALLED, THE MINIMUM HEIGHT OF DITCH CHECKS SHALL BE 10-INCHES AND SHALL NOT EXCEED A MAXIMUM HEIGHT OF 16-INCHES FOR MANUFACTURED OR BIODEGRADABLE MATERIALS.
2. DITCH CHECKS MUST BE INSTALLED WITH THE CENTER LOWER THAN THE SIDES FORMING A WEIR.
3. AT A MINIMUM, INSTALL ONE DITCH CHECK FOR EVERY TWO-FEET OF DROP IN THE CHANNEL.
4. DITCH CHECK SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24- HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5-INCHES OF RAIN OR MORE DURING A 24-HOUR PERIOD.
5. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH HALF OF THE HEIGHT OF THE LOWEST BALE.
6. DITCH CHECKS SHALL BE UTILIZED DURING ROUGH GRADING AND SHALL BE REMOVED ONCE FINAL GRADING AND CHANNEL STABILIZATION IS APPLIED.
7. DITCH CHECK CONSTRUCTION AND MAINTENANCE SHALL BE IN ACCORDANCE WITH WDNR TECHNICAL STANDARD (1062). EROSION MATTING SCOUR PROTECTION SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD (1053).

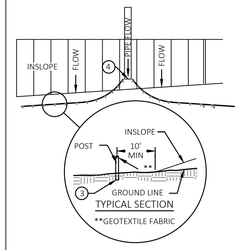
TEMPORARY DITCH CHECK
(STRAW BALES OR WADDLES)



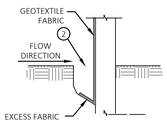
PROPOSED EMERGENCY SPILLWAY WET POND

GENERAL NOTES

1. SILT FENCE SHALL BE ANCHORED BY SPREADING AT LEAST 8-INCHES OF FABRIC IN A 4-INCH WIDE AND 6-INCH DEEP TRENCH OR 6-INCH DEEP V-TRENCH ON THE UPSLOPE SIDE OF THE FENCE. TRENCHES SHALL NOT BE EXCAVATED WIDER OR DEEPER THAN NECESSARY FOR PROPER INSTALLATION.
2. FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1.125-INCHES x 1.125-INCHES OF DRIED OAK OR HICKORY.
4. SILT FENCE TO EXTEND ABOVE THE TOP OF PIPE.
5. SILT FENCE CONSTRUCTION AND GEOTEXTILE FABRIC SHALL CONFORM TO WDNR TECHNICAL STANDARD 1056.
6. POST SPACING SHALL BE SELECTED BASED ON GEOTEXTILE FABRIC (8-FEET FOR WOVEN & 3-FEET FOR NON-WOVEN).

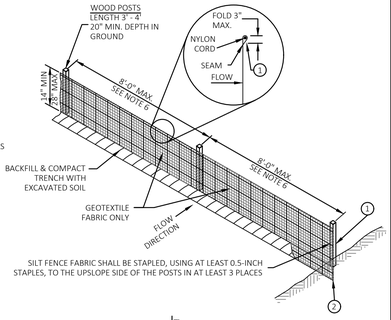


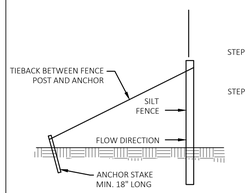
SILT FENCE ALONG SLOPES & OUTFALLS



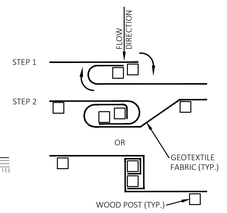
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

TRENCH DETAIL

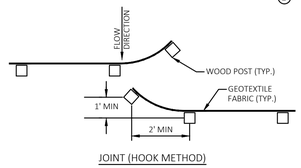




SILT FENCE TIE BACK
(WHEN ADDITIONAL SUPPORT REQUIRED)

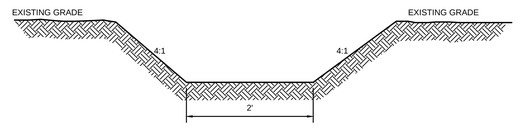


JOINT (TWIST METHOD)



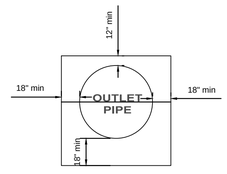
JOINT (HOOK METHOD)

SILT FENCE DETAIL
N.T.S.

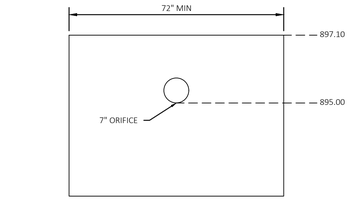


TYPICAL DITCH SECTION

WET POND #1	DIA	INV	SLOPE
DISCHARGE PIPE	24"	895.00	0.74%
	RIM		
OUTLET STRUCTURE	899.55		
	ELEV		
TOP OF BAFFLE WALL	897.10		
	INV	DIA	
ORIFICE #1	895.00	7"	

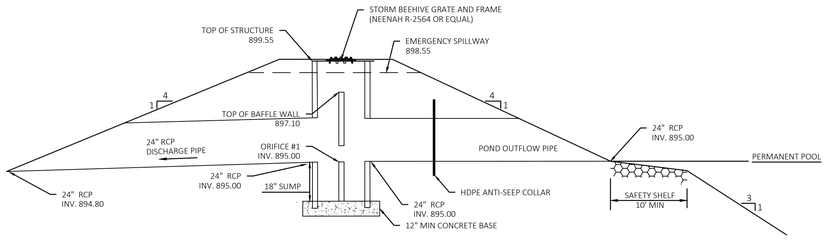


HDPE ANTI-SEEP COLLAR
N.T.S.

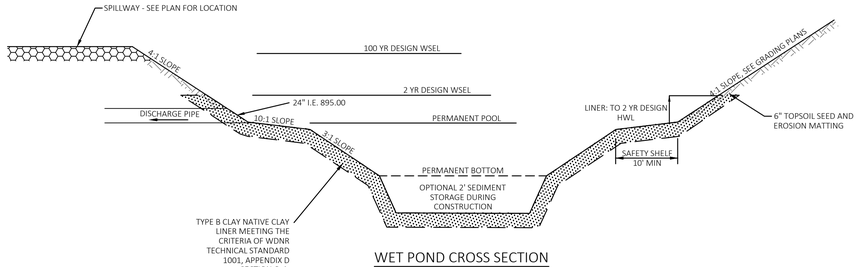


BAFFLE WALL (SHARP-CRESTED RECTANGULAR WEIR)
N.T.S.

WET POND #1 DATA	ELEV
TOP OF BERM	899.55
SPILLWAY	898.55
100-YR WSEL	897.80
2-YR WSEL	896.20
PERMANENT POOL	895.00
PERMANENT BOTTOM	890.00



WET POND PRECAST OUTLET STRUCTURE
NTS



WET POND CROSS SECTION
NTS

½" GARDEN MESH NETTING SHALL BE ATTACHED TO REBAR POSTS AND HUNG OVER WET BASIN AND RIPRAP SHALL BE INSTALLED A MINIMUM OF 2' ABOVE PERMANENT POOL IN RESPONSE TO FAA EFFORTS TO MITIGATE THE HAZARDS TO HUMAN FLIGHT AS POSED BY WILDLIFE.

WET POND

ISSUED FOR PERMITTING

NO	REVISION DESCRIPTION	DATE
A	CITY REVIEW COMMENTS	6/14/2021

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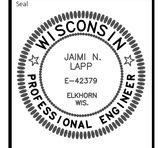
Seal



SHEET TITLE
DETAILS

Drawing Scale:

Drawn: GME 04/26/2021

Checked: CTD 04/26/2021

P&D Project No: 490493

Sheet No. **03**

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