Drainage Report

Woodstock Academy Tennis Courts
150 Route 169, Woodstock, CT

CHA Project Number: 082795.000

Prepared for:
Woodstock Academy
57 Academy Road
Woodstock, CT 06281

Prepared by:

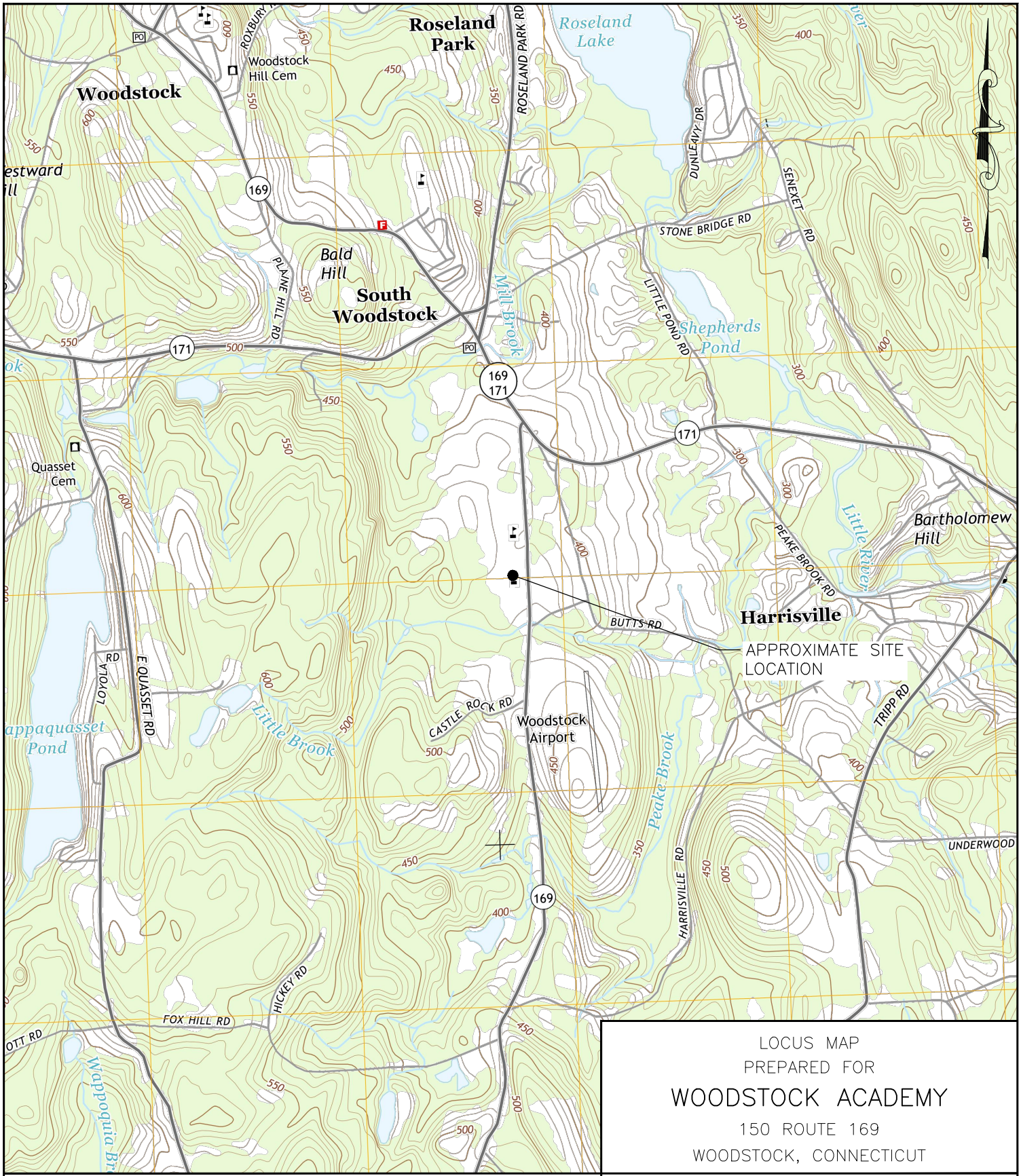
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
Phone: (860) 257-4557

December 11, 2023

V:\Projects\ANY\K6\082795.000\06_Project_Data\Calcs\082795 DrainageRPT.doc

TABLE OF CONTENTS

LOCUS & SUMMARY



LOCUS MAP
PREPARED FOR

WOODSTOCK ACADEMY

150 ROUTE 169
WOODSTOCK, CONNECTICUT

USGS QUADRANGLE
PUTNAM, CT
2015

2000 1000 0 2000
GRAPHIC SCALE IN FEET

DATE: 07/09/2021	SCALE: 1" = 2000'	SHEET: 1 OF 1

CHA
33 Wilbur Cross Way, Mansfield, CT 06268
101 East River Drive, 1st Floor
East Hartford, CT 06108
860-885-1055 | www.chacompanies.com

SUMMARY

Woodstock Academy proposes to construct four new Tennis Courts to the northwest of the existing Gymnasium on their ±119 acre South Campus, located on the west side of Route 169 just north of the intersection of Liljegren Road, in Woodstock. Storm flows from the existing site are collected by a series of existing catch basins/yard drains and ultimately discharge to Little Brook by an existing 24-inch culvert in the southeast corner of the site or flow to the west towards a wetland system associated with Little Brook. Available USDA soils mapping (See Section F) indicates that soils in the proposed development area consist primarily of fine sandy loams with a hydrologic soil group of 'C'.

The proposed project will consist of the construction of four new Tennis Courts and associated spectator areas. Storm flows from the proposed Tennis Courts will sheet flow to a new water quality basin along the west side of the courts, sized to treat the required water quality volume, and will discharge to the existing on-site drainage system to Little Brook.

CHA utilized a computer model, HydroCAD®, to perform drainage calculations. The model used the Soil Conservation Service TR-20 method with NOAA 24-hour rainfall data to calculate the runoff. The design point for calculating the existing and proposed peak storm flows is the existing on-site drainage system. Calculations for the 2, 10, 25, and 100-year storm events are provided. Peak storm flows for existing and proposed conditions are listed in Table 1-1.

Table 1-1. Existing & Proposed Peak Storm Flows

Storm Event	To Existing Catch Basin	
	Existing	Proposed
2 Year Storm	3.3 cfs	3.1 cfs
10 Year Storm	6.6 cfs	5.7 cfs
25 Year Storm	8.7 cfs	7.3 cfs
100 Year Storm	12.1 cfs	9.9 cfs

Peak Flows to all Design Points will be reduced or maintained through the 100-year storm event.

WATER QUALITY CALCULATIONS

Water Quality Volume

Project Name: Woodstock Academy Tennis Project # 082795

Date: December 11, 2023

Following Guidelines From "2004 Connecticut Stormwater Manual"

Section 7
Table 7-1

WQV = 1" (R) (A) / 12

Where:

WQV = Water Quality Volume (ac-ft)
R = Volumetric Runoff Coefficient
(0.05 + 0.009(I))
I = % Impervious Cover
A = Site Area in acres

Water Quality Basin

Areas From AutoCAD

	SQ. FT	Acres
Impervious	32,650	0.750
Pervious	61,180	1.404
Total (A)	93,830	2.154

I = Impervious / Total
I = 34.8%

R= 0.05 + (0.009)(I)
R= 0.363

WQV REQUIRED = 0.065 ac ft
2,840 cf

WQV PROVIDED= **10,246 cf** Elev. 426.50

Drawdown

T = WQV / K (Btm Area)

Where:

T = Time (hrs)
WQV = Provided Water Quality Volume
K = Saturated Hydraulic Conductivity

K=Rawls Rate for Loamy Sand

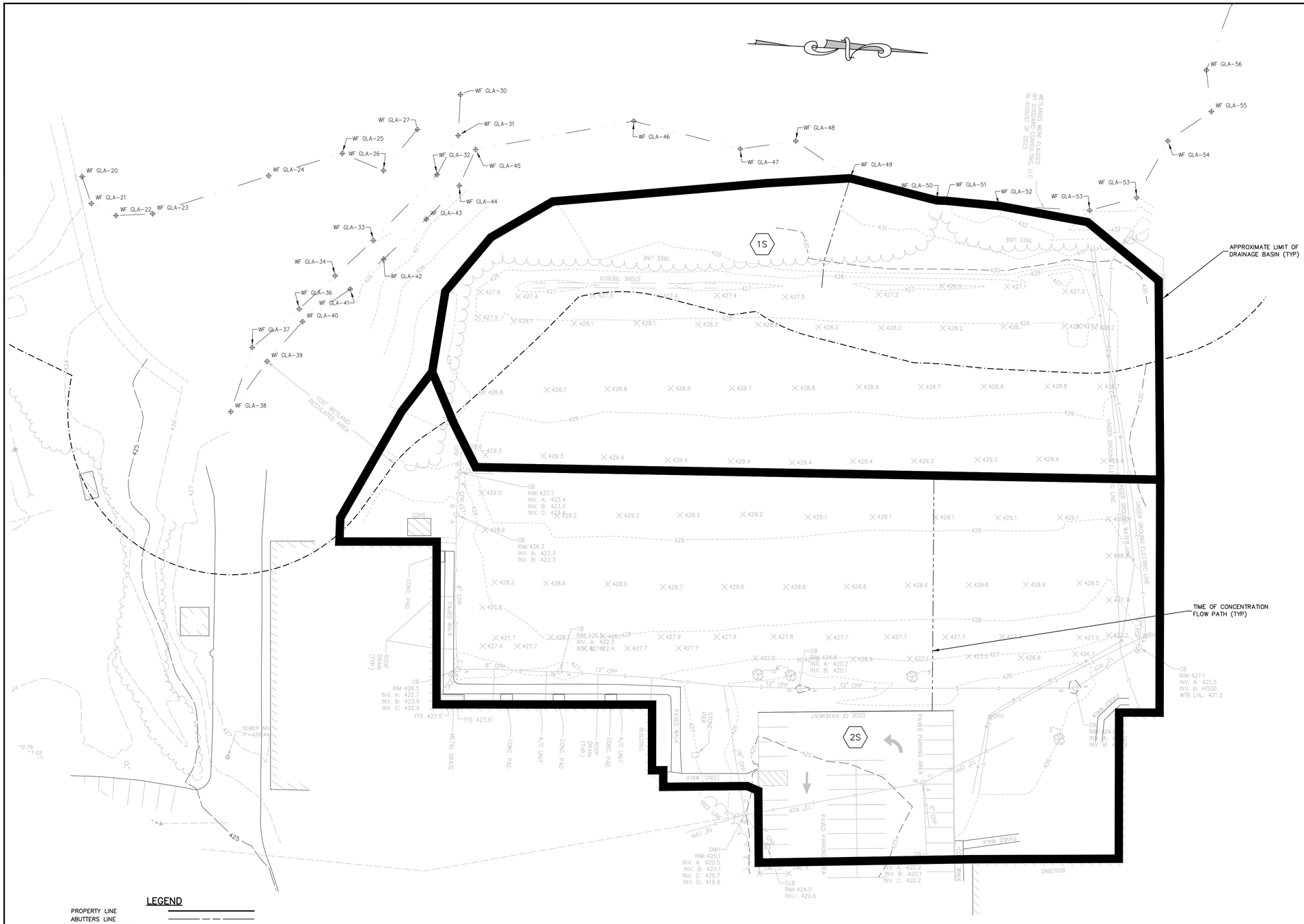
T = 10246/ (2.41 * (3950 / 12))

T = **12.9 hrs**

12.9 ≤ 24

Prepared By: PMP

EXISTING CONDITIONS DRAINAGE CALCULATIONS



LEGEND

- PROPERTY LINE
- ABUTTERS LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- EXISTING CONTOUR — 425
- LIMITS OF INLAND WETLANDS — WF 100
- FENCE
- TREE LINE
- OVERHEAD WIRES — O/W
- NOW OR FORMERLY — N/F
- UTILITY POLE
- BOUNDARY POINT
- IRON MONUMENT
- CONNECTICUT HIGHWAY DEPARTMENT MONUMENT(CHD)

30 15 0 30
GRAPHIC SCALE IN FEET

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN
PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

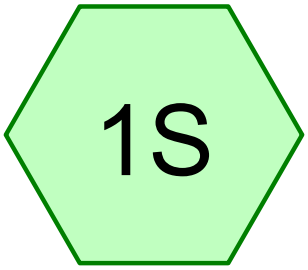
No.	Submittal / Revision	App'd.	By	Date

EXISTING CONDITIONS
DRAINAGE BASIN MAP

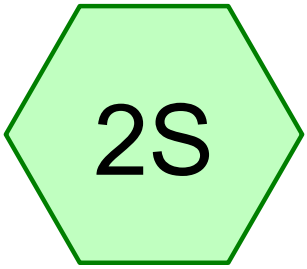
Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	1" = 30'

Drawing No.:

SHEET 1



Existing to Stone Trench



Existing to CB in Parking Area

Subcat Reach Pond Link

Routing Diagram for 082795 WA Tennis
Prepared by CHA Consulting, Inc, Printed 12/11/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	CT_Woodstock_WA South 24-hr S1	2-yr	Default	24.00	1	3.37	2
2	10-yr	CT_Woodstock_WA South 24-hr S1	10-yr	Default	24.00	1	5.12	2
3	25-yr	CT_Woodstock_WA South 24-hr S1	25-yr	Default	24.00	1	6.22	2
4	100-yr	CT_Woodstock_WA South 24-hr S1	100-yr	Default	24.00	1	7.90	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
134,420	74	>75% Grass cover, Good, HSG C (1S, 2S)
14,230	98	Paved (2S)
14,600	70	Woods, Good, HSG C (1S)
163,250	**76**	**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Existing to Stone Trench Runoff Area=71,420 sf 0.00% Impervious Runoff Depth=1.09"
Flow Length=70' Tc=10.2 min CN=73 Runoff=1.74 cfs 6,506 cf

Subcatchment2S: Existing to CB in Runoff Area=91,830 sf 15.50% Impervious Runoff Depth=1.40"
Flow Length=125' Slope=0.0200 '/' Tc=8.4 min CN=78 Runoff=3.28 cfs 10,708 cf

Total Runoff Area = 163,250 sf Runoff Volume = 17,214 cf Average Runoff Depth = 1.27"
91.28% Pervious = 149,020 sf 8.72% Impervious = 14,230 sf

Summary for Subcatchment 1S: Existing to Stone Trench

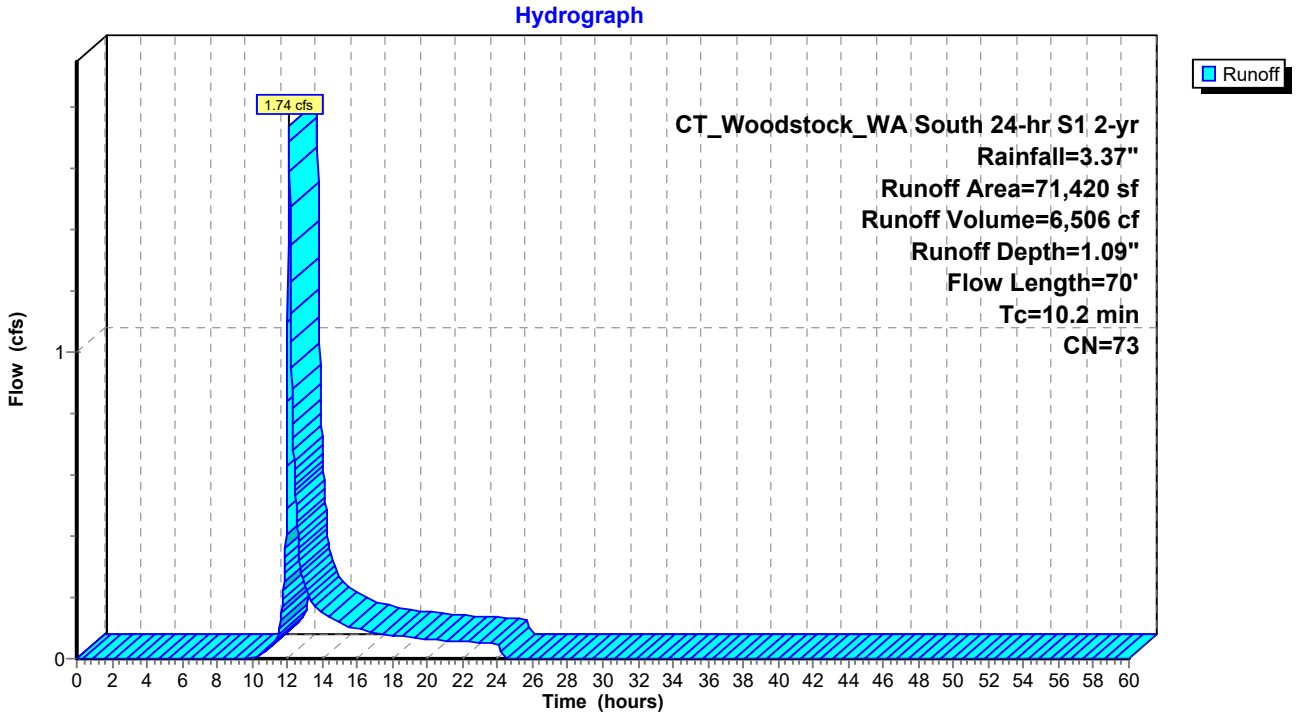
Runoff = 1.74 cfs @ 12.10 hrs, Volume= 6,506 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 2-yr Rainfall=3.37"

Area (sf)	CN	Description
56,820	74	>75% Grass cover, Good, HSG C
14,600	70	Woods, Good, HSG C
71,420	73	Weighted Average
71,420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 1S: Existing to Stone Trench



Summary for Subcatchment 2S: Existing to CB in Parking Area

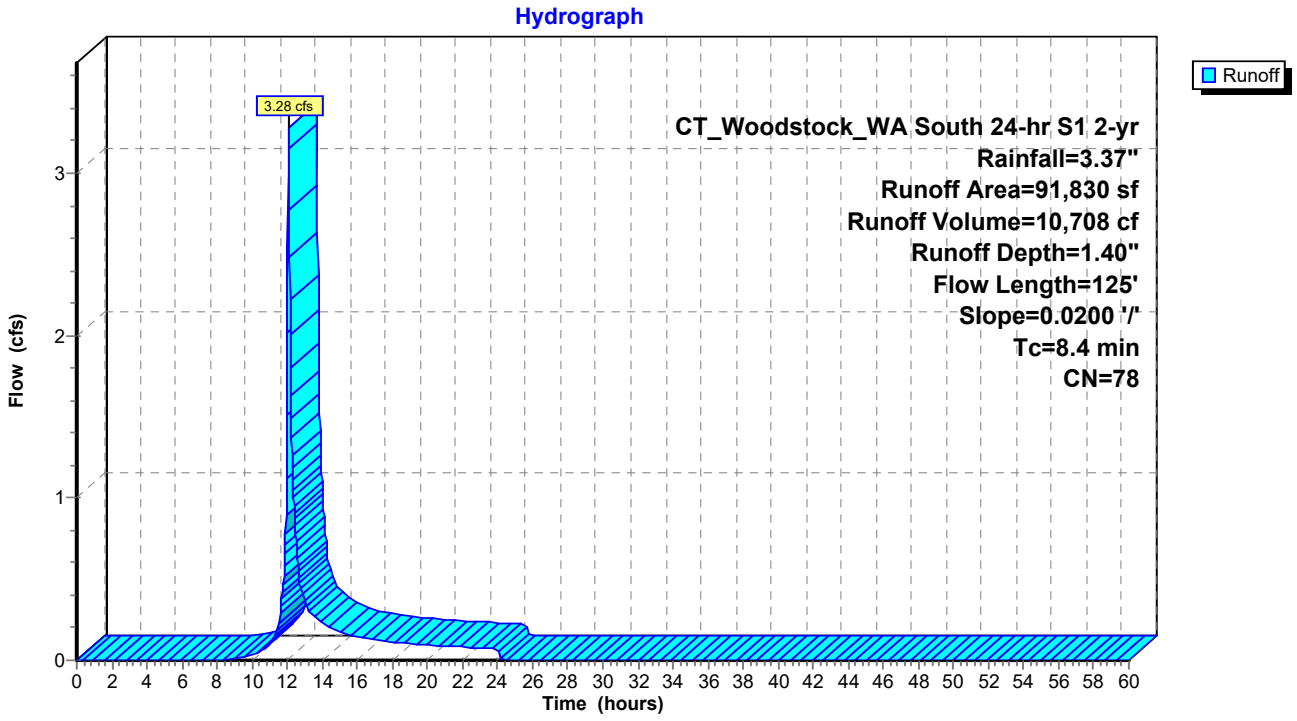
Runoff = 3.28 cfs @ 12.07 hrs, Volume= 10,708 cf, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 2-yr Rainfall=3.37"

	Area (sf)	CN	Description
*	14,230	98	Paved
	77,600	74	>75% Grass cover, Good, HSG C
	91,830	78	Weighted Average
	77,600		84.50% Pervious Area
	14,230		15.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	50	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	125	Total			

Subcatchment 2S: Existing to CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Existing to Stone Trench Runoff Area=71,420 sf 0.00% Impervious Runoff Depth=2.37"
Flow Length=70' Tc=10.2 min CN=73 Runoff=3.91 cfs 14,135 cf

Subcatchment2S: Existing to CB in Runoff Area=91,830 sf 15.50% Impervious Runoff Depth=2.81"
Flow Length=125' Slope=0.0200 '/' Tc=8.4 min CN=78 Runoff=6.57 cfs 21,533 cf

Total Runoff Area = 163,250 sf Runoff Volume = 35,668 cf Average Runoff Depth = 2.62"
91.28% Pervious = 149,020 sf 8.72% Impervious = 14,230 sf

Summary for Subcatchment 1S: Existing to Stone Trench

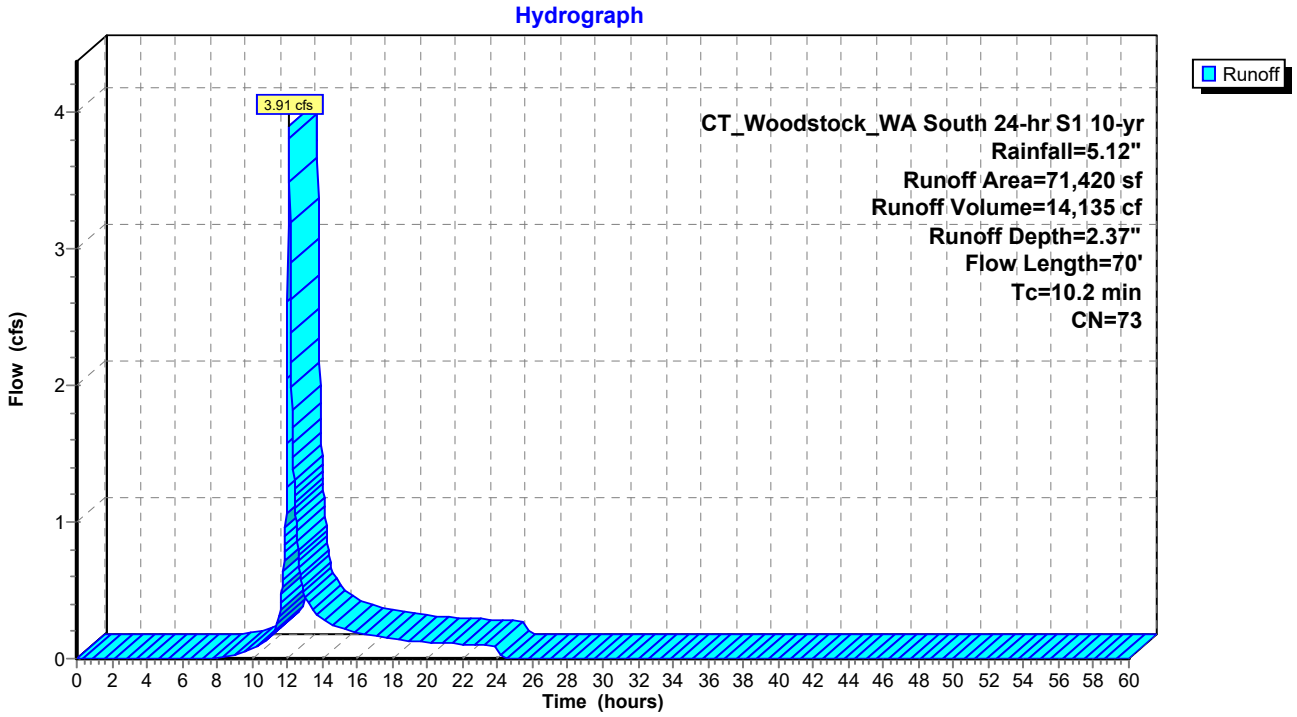
Runoff = 3.91 cfs @ 12.09 hrs, Volume= 14,135 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 10-yr Rainfall=5.12"

Area (sf)	CN	Description
56,820	74	>75% Grass cover, Good, HSG C
14,600	70	Woods, Good, HSG C
71,420	73	Weighted Average
71,420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 1S: Existing to Stone Trench



Summary for Subcatchment 2S: Existing to CB in Parking Area

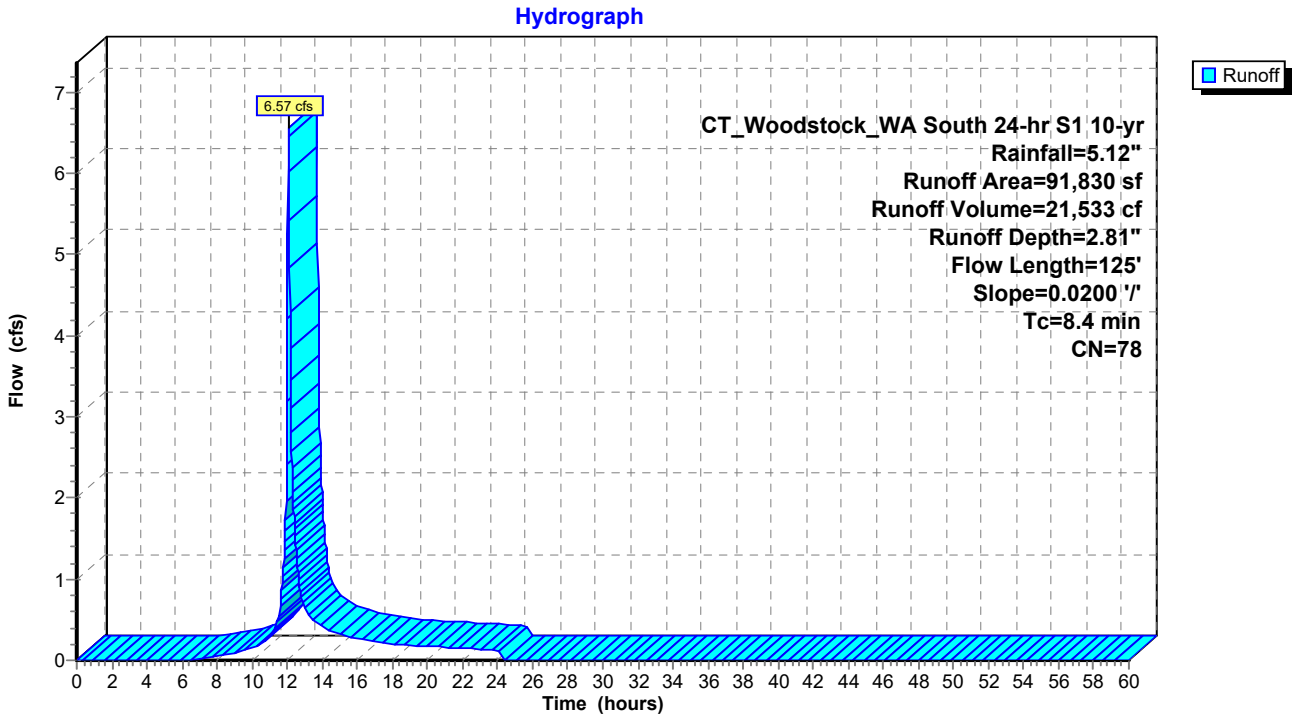
Runoff = 6.57 cfs @ 12.07 hrs, Volume= 21,533 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 10-yr Rainfall=5.12"

	Area (sf)	CN	Description
*	14,230	98	Paved
	77,600	74	>75% Grass cover, Good, HSG C
	91,830	78	Weighted Average
	77,600		84.50% Pervious Area
	14,230		15.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	50	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	125	Total			

Subcatchment 2S: Existing to CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Existing to Stone Trench Runoff Area=71,420 sf 0.00% Impervious Runoff Depth=3.27"
Flow Length=70' Tc=10.2 min CN=73 Runoff=5.38 cfs 19,474 cf

Subcatchment2S: Existing to CB in Runoff Area=91,830 sf 15.50% Impervious Runoff Depth=3.77"
Flow Length=125' Slope=0.0200 '/' Tc=8.4 min CN=78 Runoff=8.73 cfs 28,880 cf

Total Runoff Area = 163,250 sf Runoff Volume = 48,354 cf Average Runoff Depth = 3.55"
91.28% Pervious = 149,020 sf 8.72% Impervious = 14,230 sf

Summary for Subcatchment 1S: Existing to Stone Trench

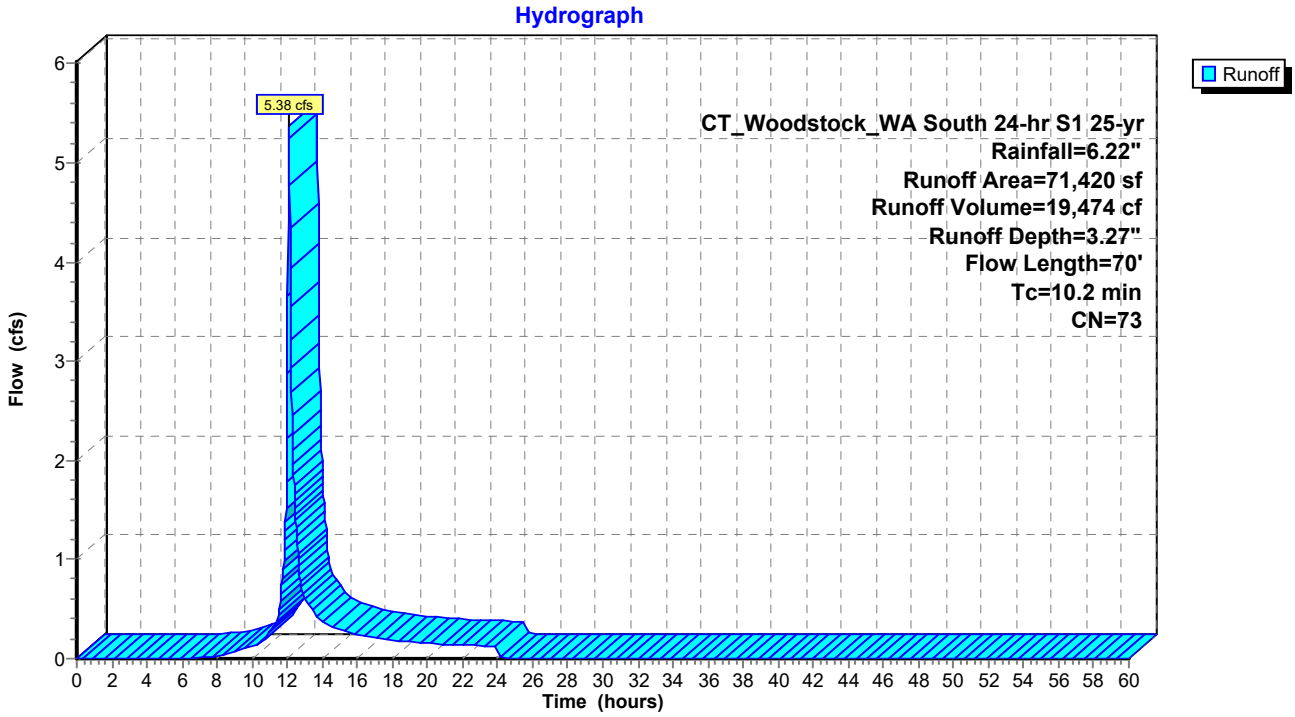
Runoff = 5.38 cfs @ 12.09 hrs, Volume= 19,474 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 25-yr Rainfall=6.22"

Area (sf)	CN	Description
56,820	74	>75% Grass cover, Good, HSG C
14,600	70	Woods, Good, HSG C
71,420	73	Weighted Average
71,420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 1S: Existing to Stone Trench



Summary for Subcatchment 2S: Existing to CB in Parking Area

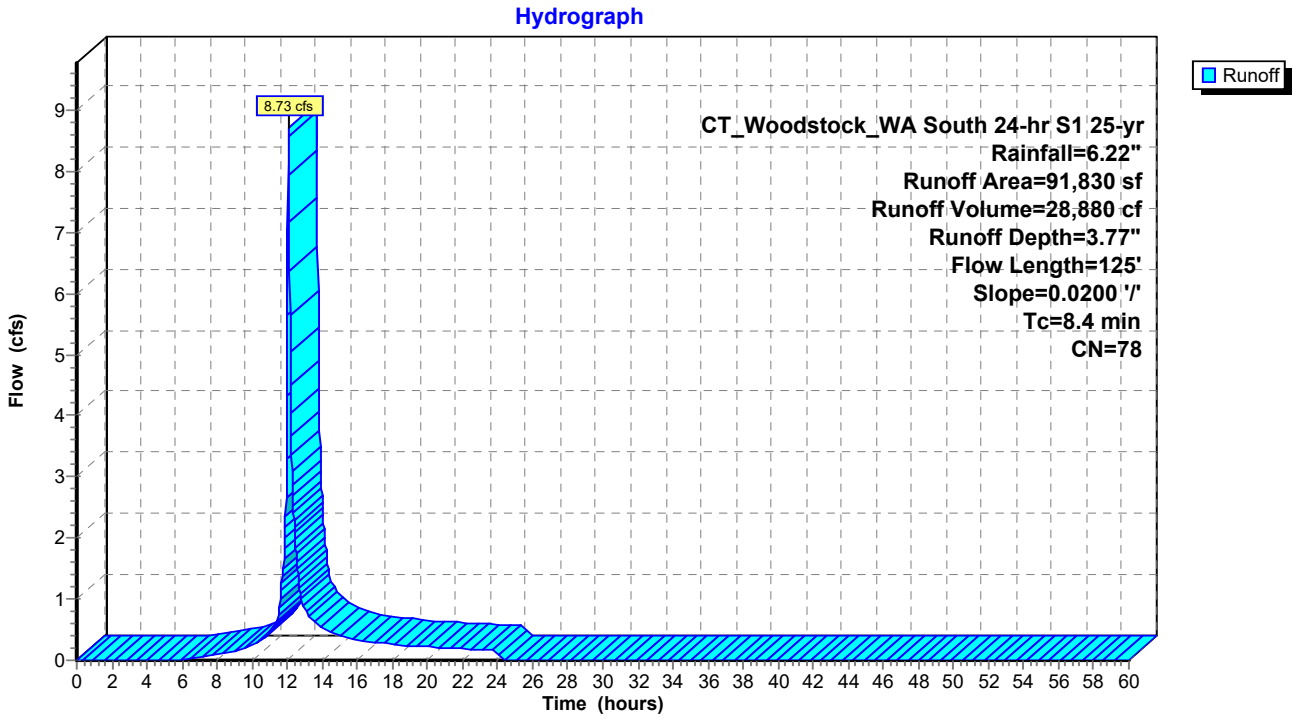
Runoff = 8.73 cfs @ 12.07 hrs, Volume= 28,880 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 25-yr Rainfall=6.22"

	Area (sf)	CN	Description
*	14,230	98	Paved
	77,600	74	>75% Grass cover, Good, HSG C
	91,830	78	Weighted Average
	77,600		84.50% Pervious Area
	14,230		15.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	50	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	125	Total			

Subcatchment 2S: Existing to CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Existing to Stone Trench Runoff Area=71,420 sf 0.00% Impervious Runoff Depth=4.72"
Flow Length=70' Tc=10.2 min CN=73 Runoff=7.73 cfs 28,100 cf

Subcatchment2S: Existing to CB in Runoff Area=91,830 sf 15.50% Impervious Runoff Depth=5.30"
Flow Length=125' Slope=0.0200 '/' Tc=8.4 min CN=78 Runoff=12.08 cfs 40,548 cf

Total Runoff Area = 163,250 sf Runoff Volume = 68,648 cf Average Runoff Depth = 5.05"
91.28% Pervious = 149,020 sf 8.72% Impervious = 14,230 sf

Summary for Subcatchment 1S: Existing to Stone Trench

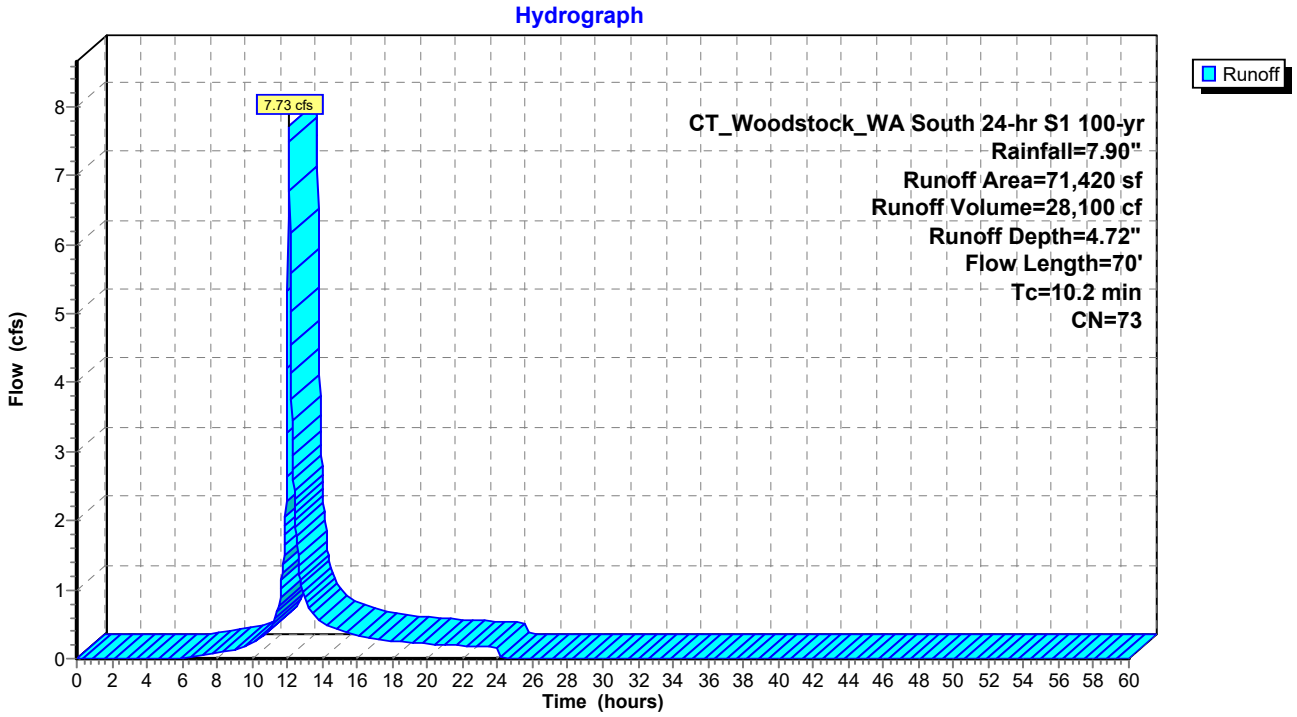
Runoff = 7.73 cfs @ 12.09 hrs, Volume= 28,100 cf, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 100-yr Rainfall=7.90"

Area (sf)	CN	Description
56,820	74	>75% Grass cover, Good, HSG C
14,600	70	Woods, Good, HSG C
71,420	73	Weighted Average
71,420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 1S: Existing to Stone Trench



Summary for Subcatchment 2S: Existing to CB in Parking Area

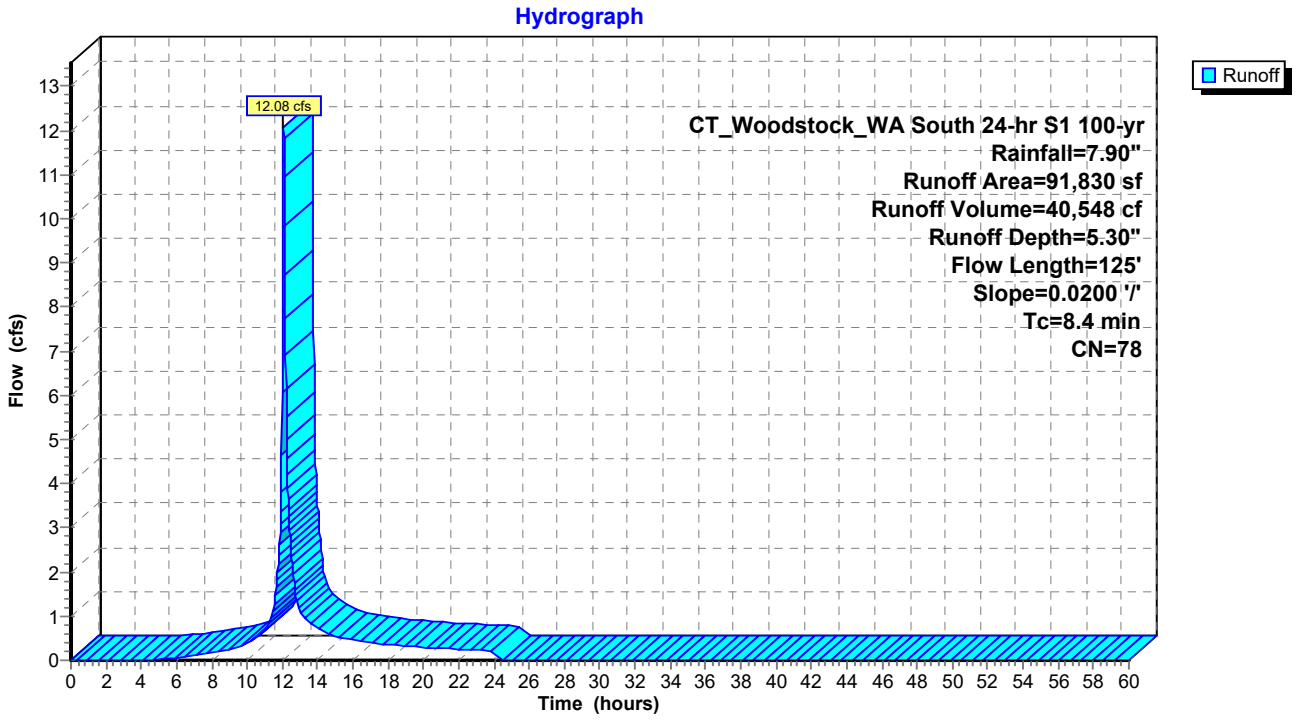
Runoff = 12.08 cfs @ 12.07 hrs, Volume= 40,548 cf, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 100-yr Rainfall=7.90"

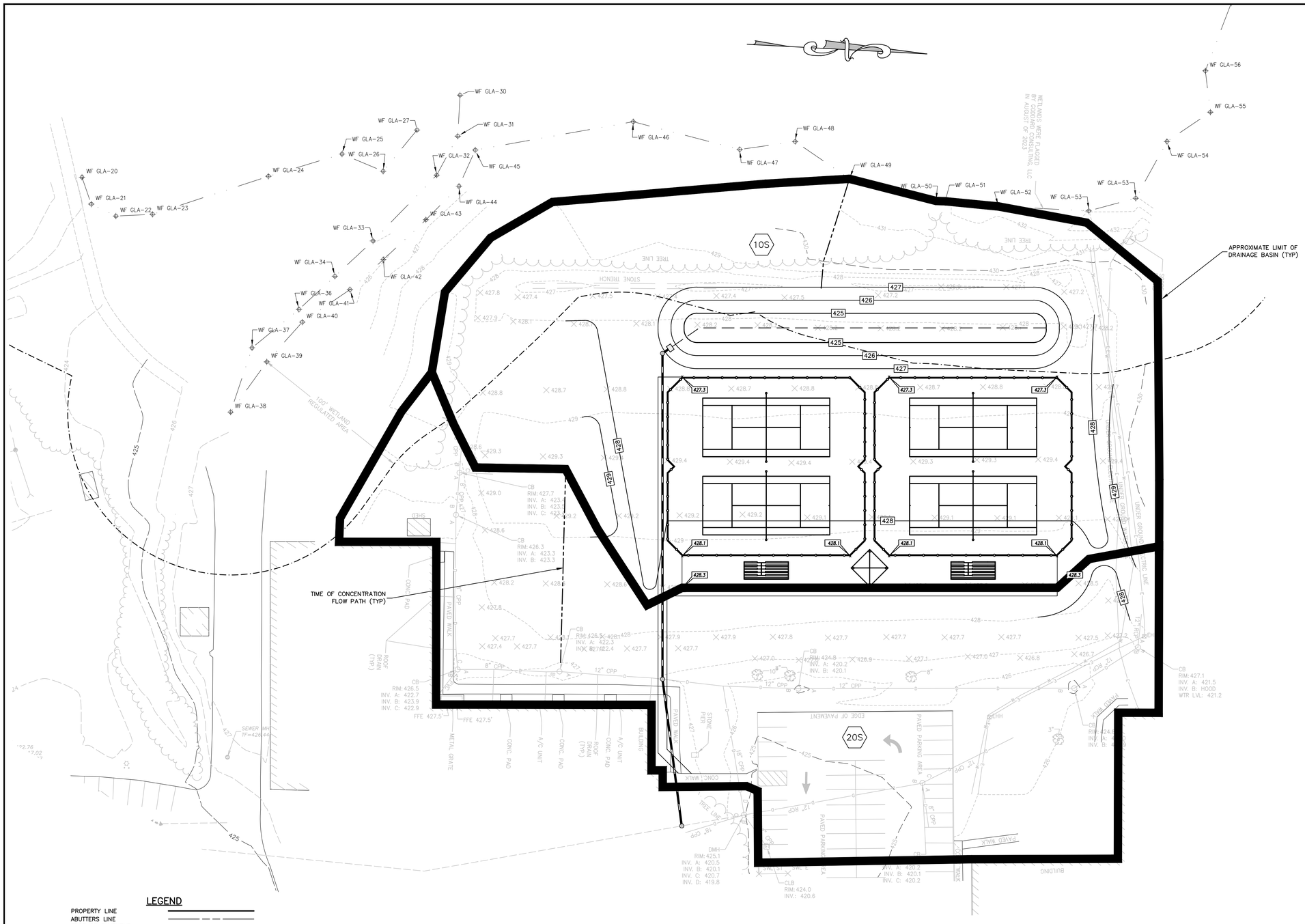
	Area (sf)	CN	Description
*	14,230	98	Paved
	77,600	74	>75% Grass cover, Good, HSG C
	91,830	78	Weighted Average
	77,600		84.50% Pervious Area
	14,230		15.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	50	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	125	Total			

Subcatchment 2S: Existing to CB in Parking Area



PROPOSED CONDITIONS DRAINAGE CALCULATIONS



LEGEND

- PROPERTY LINE
- ABUTTERS LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- EXISTING CONTOUR — 425
- LIMITS OF INLAND WETLANDS — WF 100
- FENCE
- TREE LINE
- OVERHEAD WIRES — O/W
- NOW OR FORMERLY — N/F
- UTILITY POLE
- BOUNDARY POINT
- IRON MONUMENT
- CONNECTICUT HIGHWAY DEPARTMENT MONUMENT(CHD)

30 15 0 30
GRAPHIC SCALE IN FEET

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN
PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

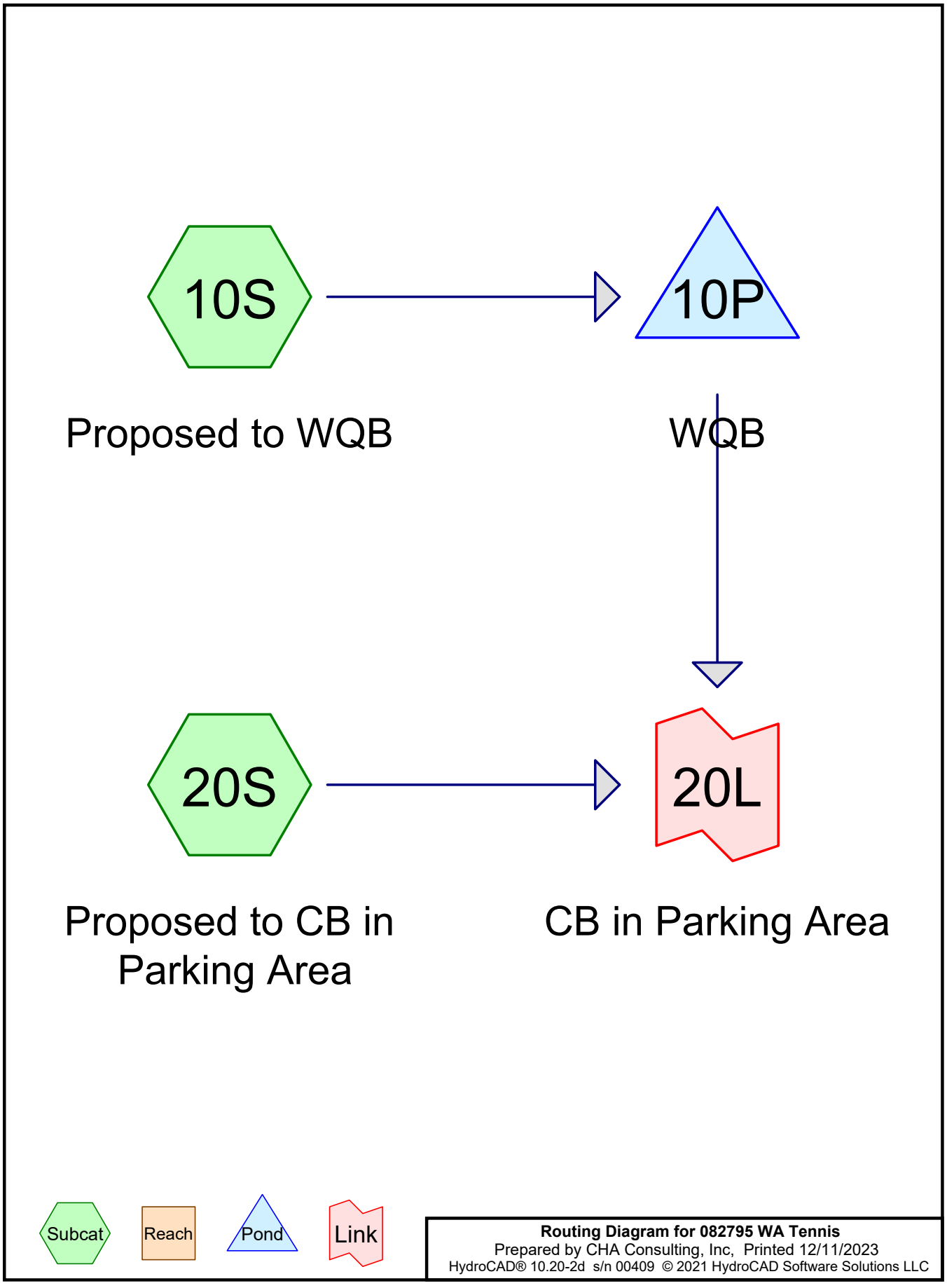
No.	Submittal / Revision	App'd.	By	Date

PROPOSED CONDITIONS
DRAINAGE BASIN MAP

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	1" = 30'

Drawing No.:

SHEET 2



Routing Diagram for 082795 WA Tennis
Prepared by CHA Consulting, Inc, Printed 12/11/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	CT_Woodstock_WA South 24-hr S1	2-yr	Default	24.00	1	3.37	2
2	10-yr	CT_Woodstock_WA South 24-hr S1	10-yr	Default	24.00	1	5.12	2
3	25-yr	CT_Woodstock_WA South 24-hr S1	25-yr	Default	24.00	1	6.22	2
4	100-yr	CT_Woodstock_WA South 24-hr S1	100-yr	Default	24.00	1	7.90	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
99,915	74	>75% Grass cover, Good, HSG C (10S, 20S)
16,085	98	Paved (20S)
32,650	98	Tennis Courts & Sidewalk (10S)
14,600	70	Woods, Good, HSG C (10S)
163,250	**81**	**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Proposed to WQB Runoff Area=93,830 sf 34.80% Impervious Runoff Depth=1.68"
Flow Length=70' Tc=10.2 min CN=82 Runoff=3.76 cfs 13,104 cf

Subcatchment20S: Proposed to CB in Runoff Area=69,420 sf 23.17% Impervious Runoff Depth=1.53"
Flow Length=120' Slope=0.0200 '/' Tc=8.4 min CN=80 Runoff=2.75 cfs 8,873 cf

Pond 10P: WQB Peak Elev=425.79' Storage=4,227 cf Inflow=3.76 cfs 13,104 cf
Outflow=0.39 cfs 13,104 cf

Link 20L: CB in Parking Area Inflow=3.10 cfs 21,978 cf
Primary=3.10 cfs 21,978 cf

Total Runoff Area = 163,250 sf Runoff Volume = 21,977 cf Average Runoff Depth = 1.62"
70.15% Pervious = 114,515 sf 29.85% Impervious = 48,735 sf

Summary for Subcatchment 10S: Proposed to WQB

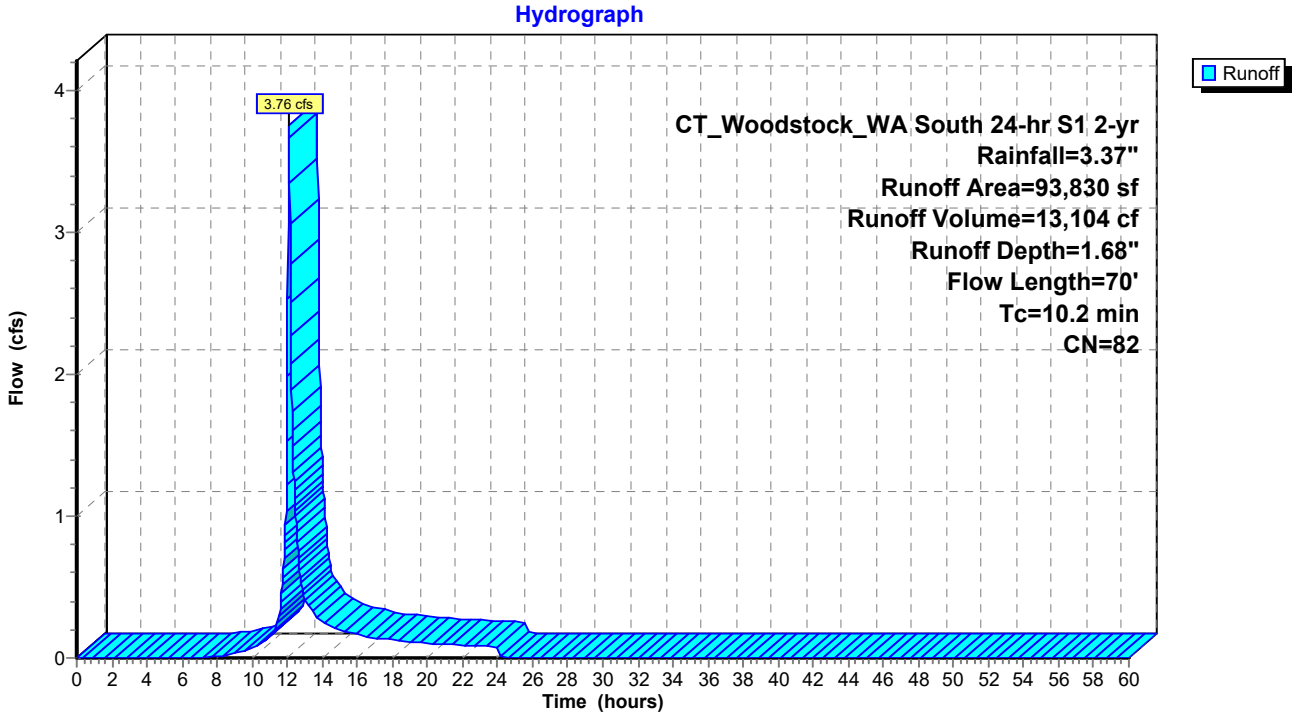
Runoff = 3.76 cfs @ 12.09 hrs, Volume= 13,104 cf, Depth= 1.68"
Routed to Pond 10P : WQB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 2-yr Rainfall=3.37"

	Area (sf)	CN	Description
*	32,650	98	Tennis Courts & Sidewalk
	46,580	74	>75% Grass cover, Good, HSG C
	14,600	70	Woods, Good, HSG C
	93,830	82	Weighted Average
	61,180		65.20% Pervious Area
	32,650		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 10S: Proposed to WQB



Summary for Subcatchment 20S: Proposed to CB in Parking Area

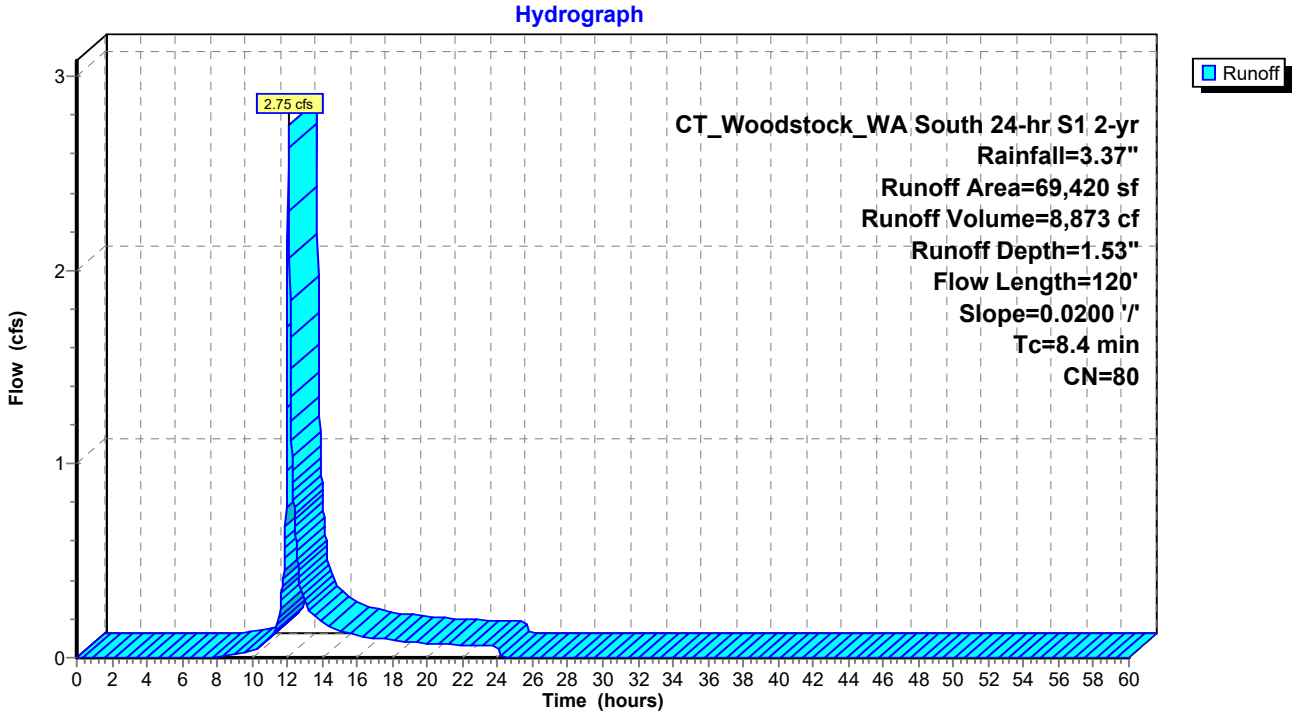
Runoff = 2.75 cfs @ 12.07 hrs, Volume= 8,873 cf, Depth= 1.53"
Routed to Link 20L : CB in Parking Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 2-yr Rainfall=3.37"

	Area (sf)	CN	Description
*	16,085	98	Paved
	53,335	74	>75% Grass cover, Good, HSG C
	69,420	80	Weighted Average
	53,335		76.83% Pervious Area
	16,085		23.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	120	Total			

Subcatchment 20S: Proposed to CB in Parking Area



Summary for Pond 10P: WQB

[44] Hint: Outlet device #3 is below defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=118)

Inflow Area = 93,830 sf, 34.80% Impervious, Inflow Depth = 1.68" for 2-yr event
Inflow = 3.76 cfs @ 12.09 hrs, Volume= 13,104 cf
Outflow = 0.39 cfs @ 13.14 hrs, Volume= 13,104 cf, Atten= 90%, Lag= 62.8 min
Primary = 0.39 cfs @ 13.14 hrs, Volume= 13,104 cf
Routed to Link 20L : CB in Parking Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 425.79' @ 13.14 hrs Surf.Area= 6,930 sf Storage= 4,227 cf
Flood Elev= 427.00' Surf.Area= 12,220 sf Storage= 15,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 89.0 min (949.5 - 860.6)

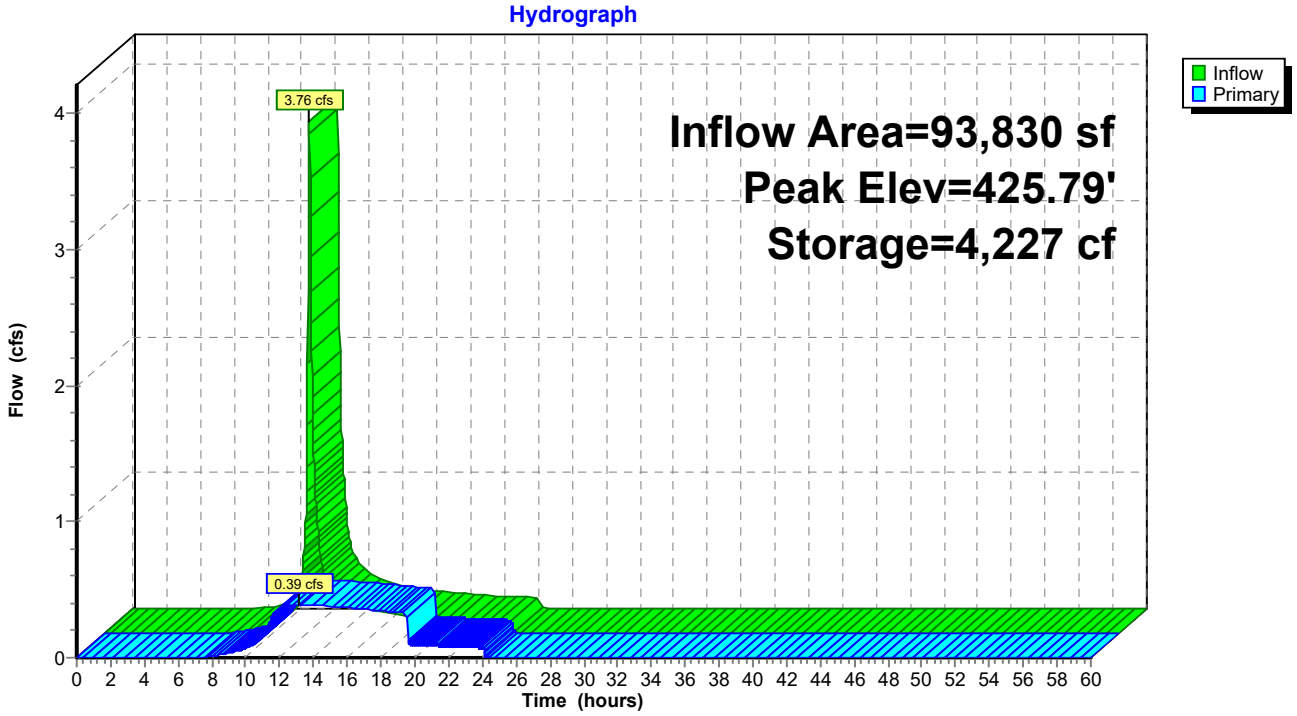
Volume	Invert	Avail.Storage	Storage Description
#1	425.00'	15,774 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
425.00	3,950	467.0	0	0	3,950
426.00	7,880	517.2	5,803	5,803	7,912
427.00	12,220	567.5	9,971	15,774	12,288

Device	Routing	Invert	Outlet Devices
#1	Primary	422.90'	**12.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 422.90' / 420.70' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	426.50'	**16.2" x 27.7" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	423.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 13.14 hrs HW=425.79' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.39 cfs of 4.12 cfs potential flow)
↑**2=Orifice/Grate** (Controls 0.00 cfs)
3=Orifice/Grate (Orifice Controls 0.39 cfs @ 7.86 fps)

Pond 10P: WQB

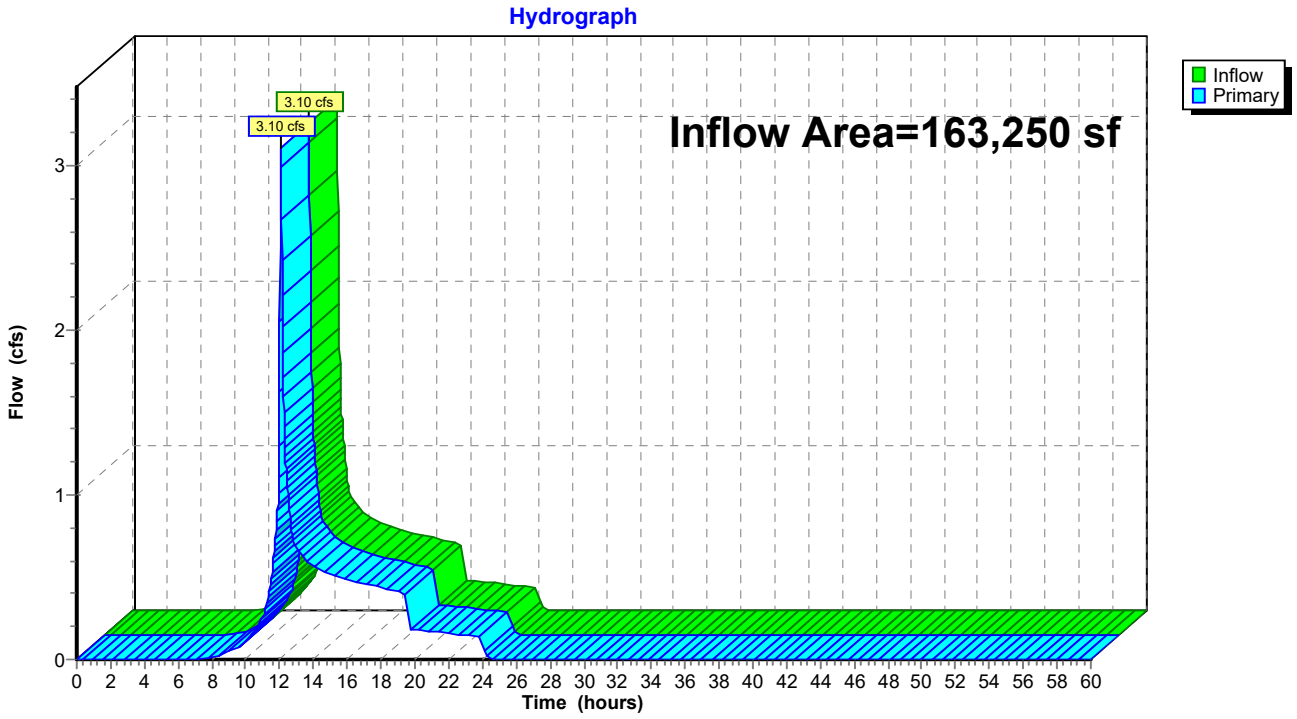

Hydrograph
Inflow Area=93,830 sf
Peak Elev=425.79'
Storage=4,227 cf
3.76 cfs
0.39 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Link 20L: CB in Parking Area

Inflow Area = 163,250 sf, 29.85% Impervious, Inflow Depth = 1.62" for 2-yr event
Inflow = 3.10 cfs @ 12.07 hrs, Volume= 21,978 cf
Primary = 3.10 cfs @ 12.07 hrs, Volume= 21,978 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link 20L: CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Proposed to WQB Runoff Area=93,830 sf 34.80% Impervious Runoff Depth=3.19"
Flow Length=70' Tc=10.2 min CN=82 Runoff=6.99 cfs 24,917 cf

Subcatchment20S: Proposed to CB in Runoff Area=69,420 sf 23.17% Impervious Runoff Depth=3.00"
Flow Length=120' Slope=0.0200 '/' Tc=8.4 min CN=80 Runoff=5.30 cfs 17,342 cf

Pond 10P: WQB Peak Elev=426.49' Storage=10,138 cf Inflow=6.99 cfs 24,917 cf
Outflow=0.43 cfs 24,917 cf

Link 20L: CB in Parking Area Inflow=5.68 cfs 42,259 cf
Primary=5.68 cfs 42,259 cf

Total Runoff Area = 163,250 sf Runoff Volume = 42,259 cf Average Runoff Depth = 3.11"
70.15% Pervious = 114,515 sf 29.85% Impervious = 48,735 sf

Summary for Subcatchment 10S: Proposed to WQB

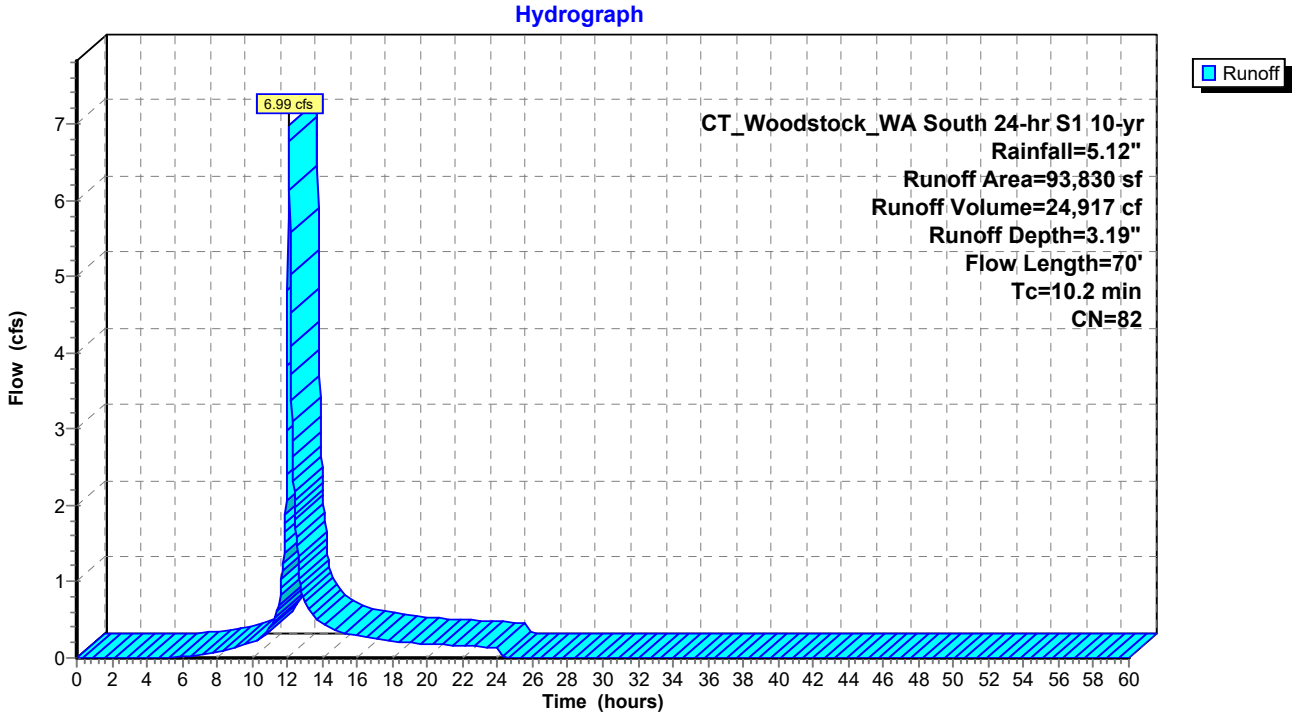
Runoff = 6.99 cfs @ 12.09 hrs, Volume= 24,917 cf, Depth= 3.19"
Routed to Pond 10P : WQB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 10-yr Rainfall=5.12"

	Area (sf)	CN	Description
*	32,650	98	Tennis Courts & Sidewalk
	46,580	74	>75% Grass cover, Good, HSG C
	14,600	70	Woods, Good, HSG C
	93,830	82	Weighted Average
	61,180		65.20% Pervious Area
	32,650		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 10S: Proposed to WQB



Summary for Subcatchment 20S: Proposed to CB in Parking Area

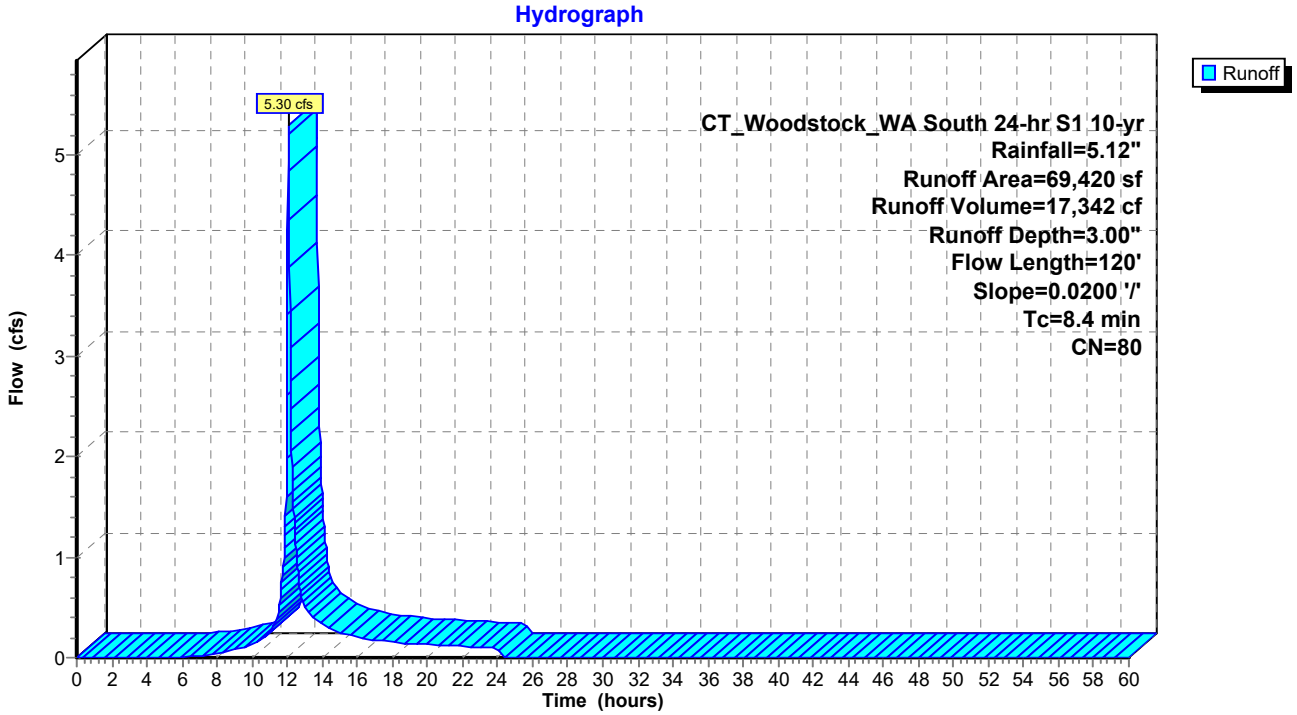
Runoff = 5.30 cfs @ 12.07 hrs, Volume= 17,342 cf, Depth= 3.00"
Routed to Link 20L : CB in Parking Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 10-yr Rainfall=5.12"

	Area (sf)	CN	Description
*	16,085	98	Paved
	53,335	74	>75% Grass cover, Good, HSG C
	69,420	80	Weighted Average
	53,335		76.83% Pervious Area
	16,085		23.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	120	Total			

Subcatchment 20S: Proposed to CB in Parking Area



Summary for Pond 10P: WQB

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 93,830 sf, 34.80% Impervious, Inflow Depth = 3.19" for 10-yr event
Inflow = 6.99 cfs @ 12.09 hrs, Volume= 24,917 cf
Outflow = 0.43 cfs @ 14.17 hrs, Volume= 24,917 cf, Atten= 94%, Lag= 124.7 min
Primary = 0.43 cfs @ 14.17 hrs, Volume= 24,917 cf
Routed to Link 20L : CB in Parking Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 426.49' @ 14.17 hrs Surf.Area= 9,884 sf Storage= 10,138 cf
Flood Elev= 427.00' Surf.Area= 12,220 sf Storage= 15,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 232.4 min (1,071.0 - 838.7)

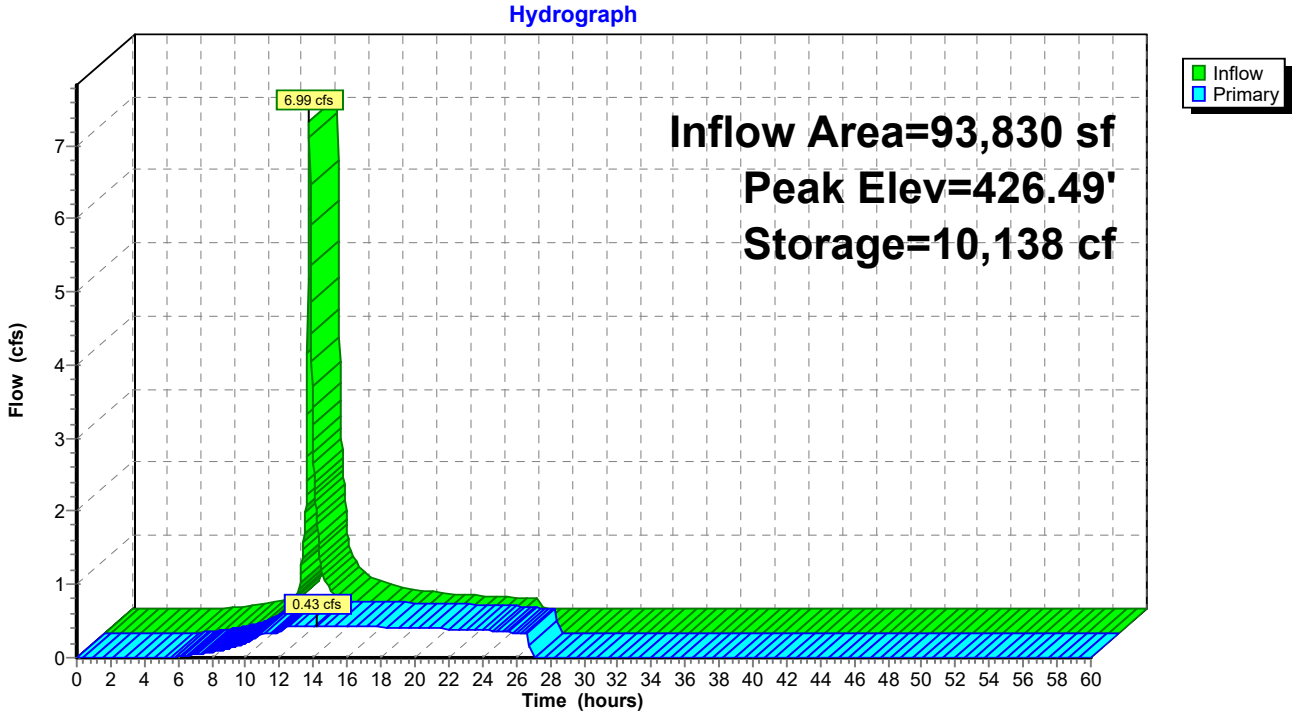
Volume	Invert	Avail.Storage	Storage Description
#1	425.00'	15,774 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
425.00	3,950	467.0	0	0	3,950
426.00	7,880	517.2	5,803	5,803	7,912
427.00	12,220	567.5	9,971	15,774	12,288

Device	Routing	Invert	Outlet Devices
#1	Primary	422.90'	**12.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 422.90' / 420.70' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	426.50'	**16.2" x 27.7" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	423.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.43 cfs @ 14.17 hrs HW=426.49' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.43 cfs of 4.46 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.83 fps)

Pond 10P: WQB

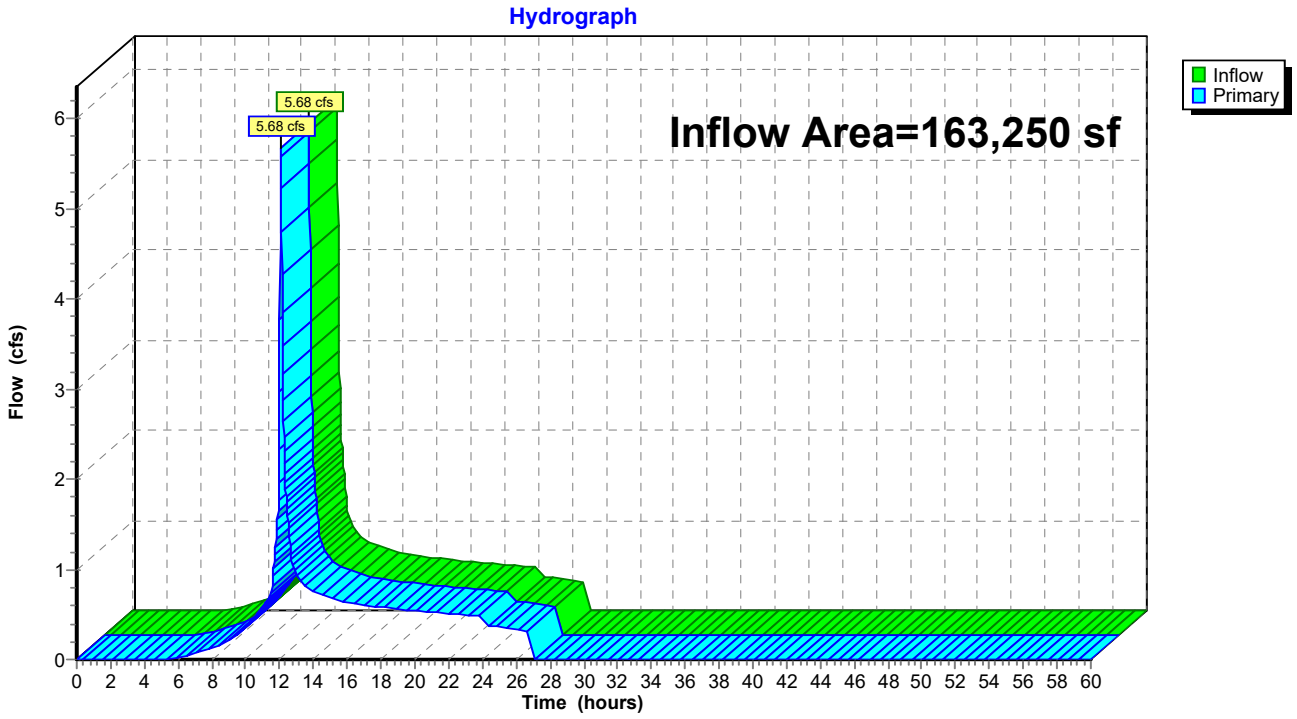

Hydrograph
Inflow Area=93,830 sf
Peak Elev=426.49'
Storage=10,138 cf
6.99 cfs
0.43 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Link 20L: CB in Parking Area

Inflow Area = 163,250 sf, 29.85% Impervious, Inflow Depth = 3.11" for 10-yr event
Inflow = 5.68 cfs @ 12.07 hrs, Volume= 42,259 cf
Primary = 5.68 cfs @ 12.07 hrs, Volume= 42,259 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link 20L: CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Proposed to WQB Runoff Area=93,830 sf 34.80% Impervious Runoff Depth=4.19"
Flow Length=70' Tc=10.2 min CN=82 Runoff=9.05 cfs 32,762 cf

Subcatchment20S: Proposed to CB in Runoff Area=69,420 sf 23.17% Impervious Runoff Depth=3.98"
Flow Length=120' Slope=0.0200 '/' Tc=8.4 min CN=80 Runoff=6.95 cfs 23,026 cf

Pond 10P: WQB Peak Elev=426.63' Storage=11,621 cf Inflow=9.05 cfs 32,762 cf
Outflow=1.62 cfs 32,772 cf

Link 20L: CB in Parking Area Inflow=7.34 cfs 55,798 cf
Primary=7.34 cfs 55,798 cf

Total Runoff Area = 163,250 sf Runoff Volume = 55,788 cf Average Runoff Depth = 4.10"
70.15% Pervious = 114,515 sf 29.85% Impervious = 48,735 sf

Summary for Subcatchment 10S: Proposed to WQB

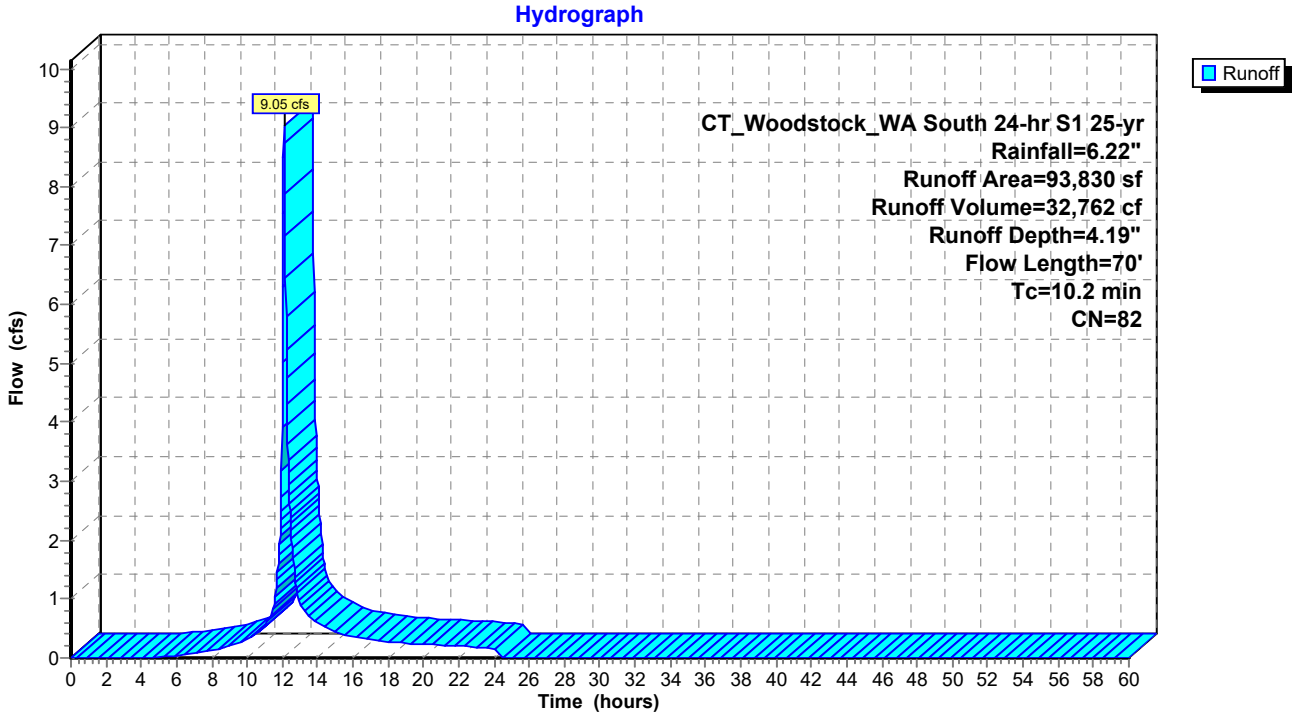
Runoff = 9.05 cfs @ 12.09 hrs, Volume= 32,762 cf, Depth= 4.19"
Routed to Pond 10P : WQB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 25-yr Rainfall=6.22"

	Area (sf)	CN	Description
*	32,650	98	Tennis Courts & Sidewalk
	46,580	74	>75% Grass cover, Good, HSG C
	14,600	70	Woods, Good, HSG C
	93,830	82	Weighted Average
	61,180		65.20% Pervious Area
	32,650		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 10S: Proposed to WQB



Summary for Subcatchment 20S: Proposed to CB in Parking Area

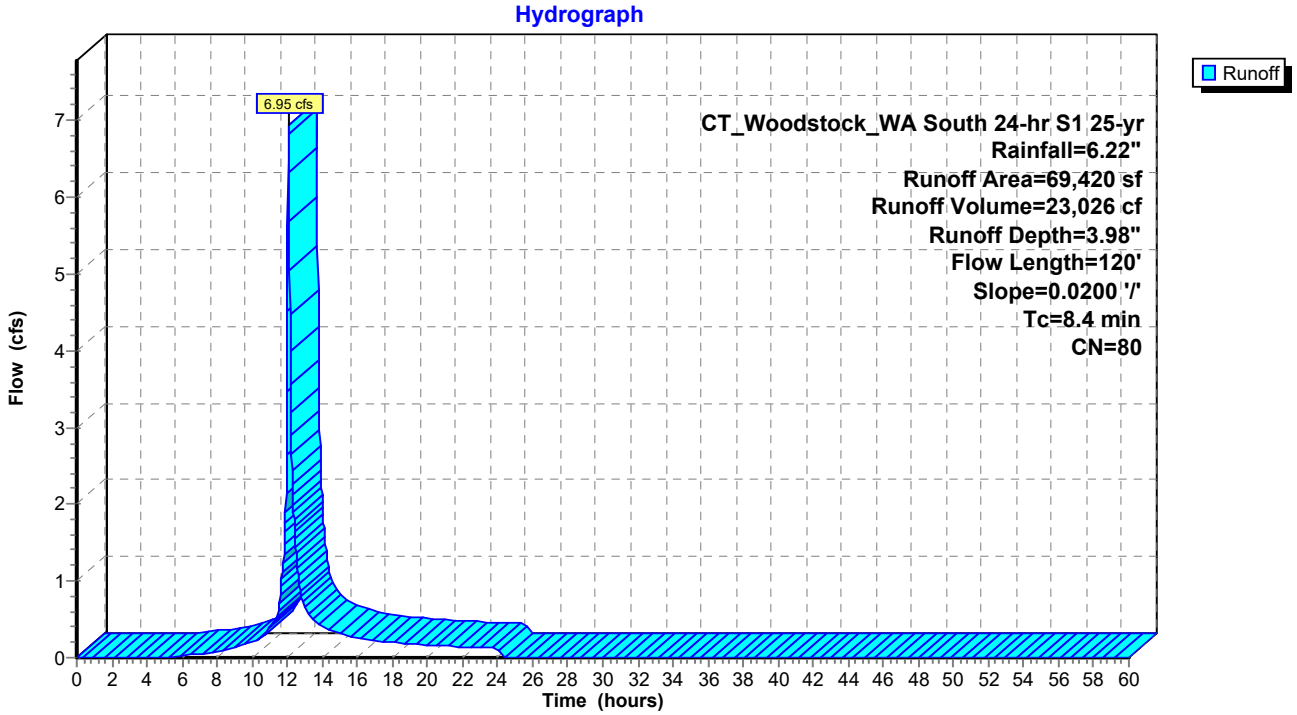
Runoff = 6.95 cfs @ 12.07 hrs, Volume= 23,026 cf, Depth= 3.98"
Routed to Link 20L : CB in Parking Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 25-yr Rainfall=6.22"

	Area (sf)	CN	Description
*	16,085	98	Paved
	53,335	74	>75% Grass cover, Good, HSG C
	69,420	80	Weighted Average
	53,335		76.83% Pervious Area
	16,085		23.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	120	Total			

Subcatchment 20S: Proposed to CB in Parking Area



Summary for Pond 10P: WQB

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 93,830 sf, 34.80% Impervious, Inflow Depth = 4.19" for 25-yr event
Inflow = 9.05 cfs @ 12.09 hrs, Volume= 32,762 cf
Outflow = 1.62 cfs @ 12.63 hrs, Volume= 32,772 cf, Atten= 82%, Lag= 32.3 min
Primary = 1.62 cfs @ 12.63 hrs, Volume= 32,772 cf
Routed to Link 20L : CB in Parking Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 426.63' @ 12.63 hrs Surf.Area= 10,523 sf Storage= 11,621 cf
Flood Elev= 427.00' Surf.Area= 12,220 sf Storage= 15,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 216.8 min (1,045.8 - 829.0)

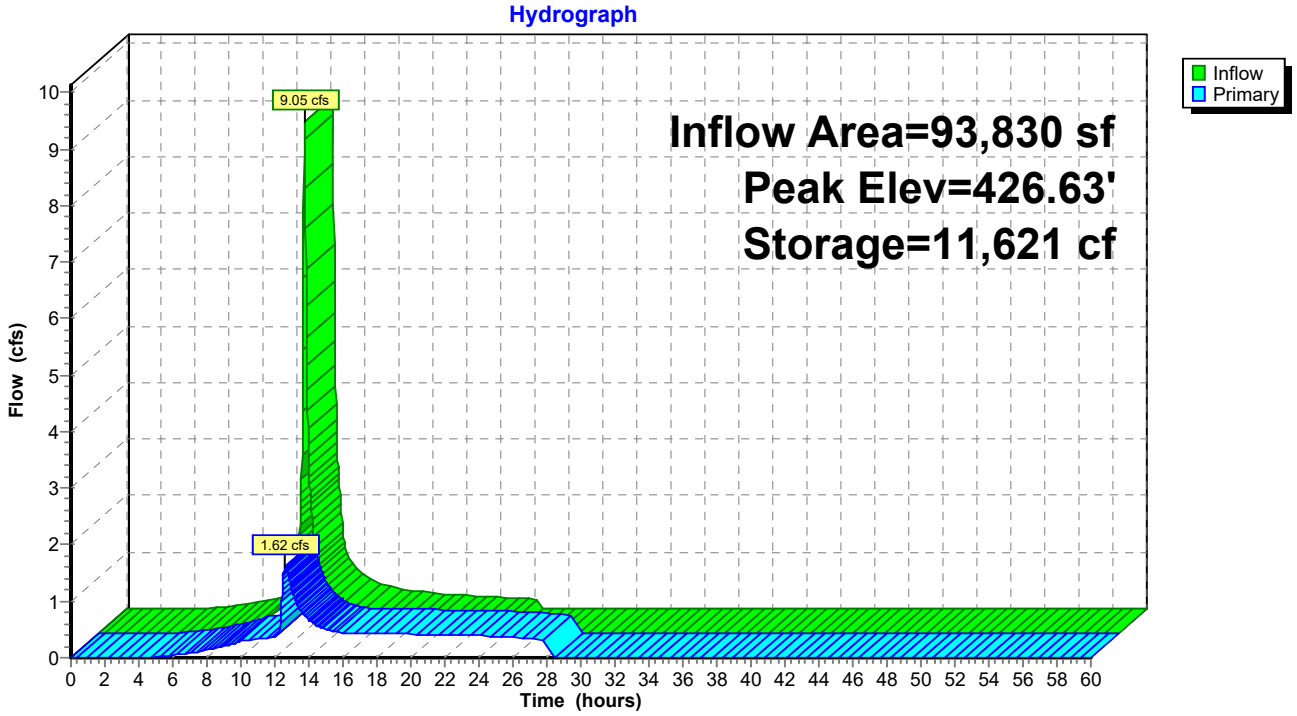
Volume	Invert	Avail.Storage	Storage Description
#1	425.00'	15,774 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
425.00	3,950	467.0	0	0	3,950
426.00	7,880	517.2	5,803	5,803	7,912
427.00	12,220	567.5	9,971	15,774	12,288

Device	Routing	Invert	Outlet Devices
#1	Primary	422.90'	**12.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 422.90' / 420.70' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	426.50'	**16.2" x 27.7" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	423.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 12.63 hrs HW=426.63' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.62 cfs of 4.53 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.18 cfs @ 1.20 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.44 cfs @ 9.02 fps)

Pond 10P: WQB

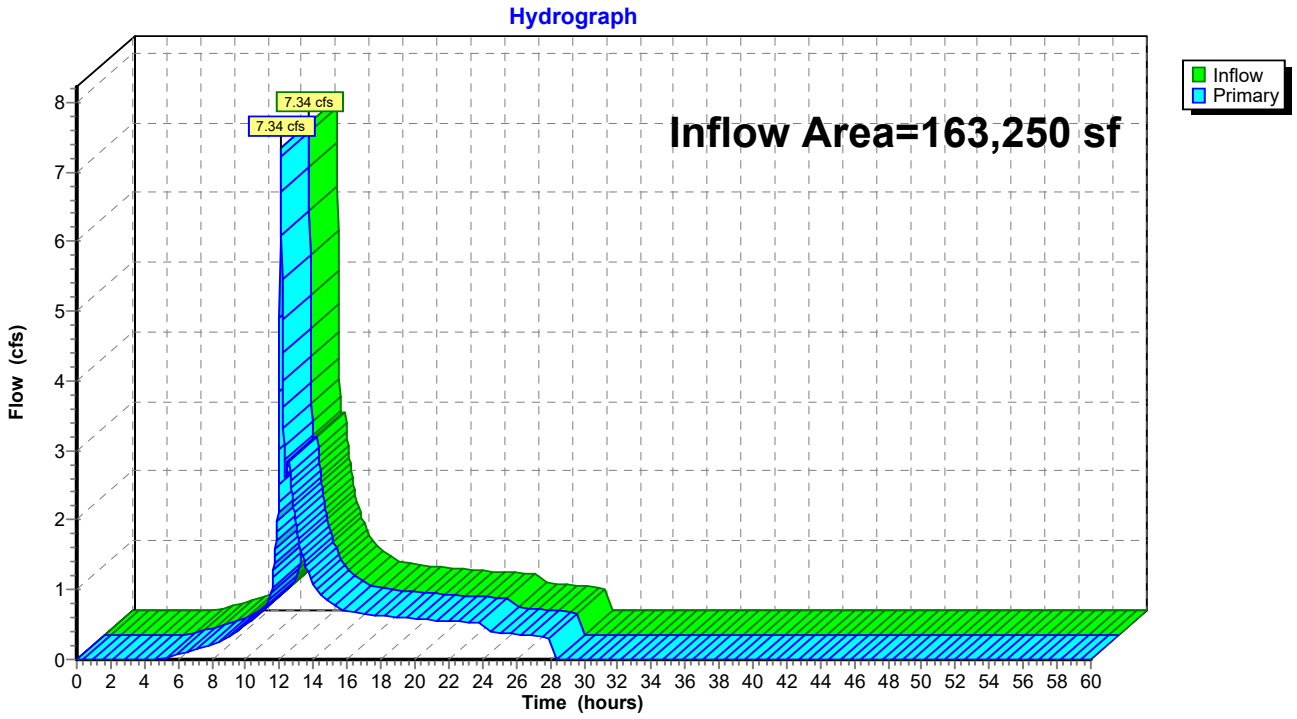

Hydrograph
Inflow
Primary
9.05 cfs
1.62 cfs
Inflow Area=93,830 sf
Peak Elev=426.63'
Storage=11,621 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Link 20L: CB in Parking Area

Inflow Area = 163,250 sf, 29.85% Impervious, Inflow Depth = 4.10" for 25-yr event
Inflow = 7.34 cfs @ 12.07 hrs, Volume= 55,798 cf
Primary = 7.34 cfs @ 12.07 hrs, Volume= 55,798 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link 20L: CB in Parking Area



Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Proposed to WQB Runoff Area=93,830 sf 34.80% Impervious Runoff Depth=5.76"
Flow Length=70' Tc=10.2 min CN=82 Runoff=12.22 cfs 45,076 cf

Subcatchment20S: Proposed to CB in Runoff Area=69,420 sf 23.17% Impervious Runoff Depth=5.53"
Flow Length=120' Slope=0.0200 '/' Tc=8.4 min CN=80 Runoff=9.49 cfs 31,999 cf

Pond 10P: WQB Peak Elev=426.81' Storage=13,531 cf Inflow=12.22 cfs 45,076 cf
Outflow=4.57 cfs 45,080 cf

Link 20L: CB in Parking Area Inflow=9.91 cfs 77,079 cf
Primary=9.91 cfs 77,079 cf

Total Runoff Area = 163,250 sf Runoff Volume = 77,075 cf Average Runoff Depth = 5.67"
70.15% Pervious = 114,515 sf 29.85% Impervious = 48,735 sf

Summary for Subcatchment 10S: Proposed to WQB

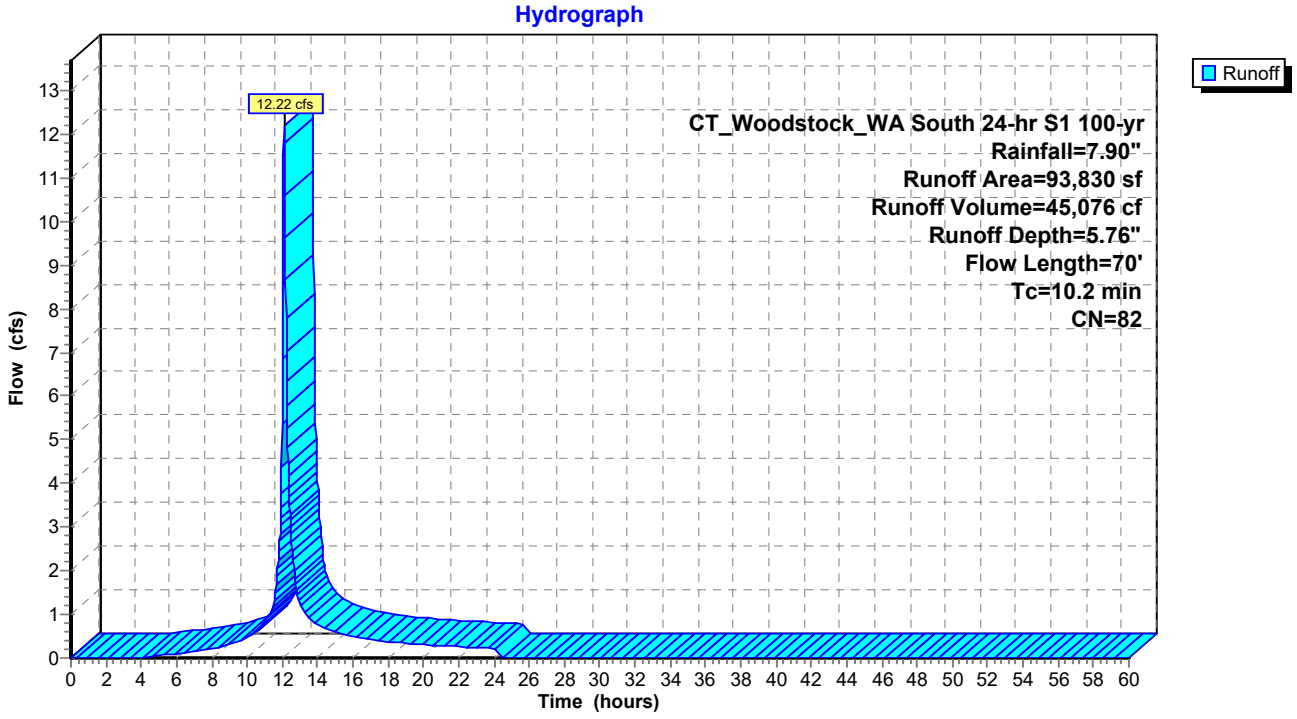
Runoff = 12.22 cfs @ 12.09 hrs, Volume= 45,076 cf, Depth= 5.76"
Routed to Pond 10P : WQB

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 100-yr Rainfall=7.90"

	Area (sf)	CN	Description
*	32,650	98	Tennis Courts & Sidewalk
	46,580	74	>75% Grass cover, Good, HSG C
	14,600	70	Woods, Good, HSG C
	93,830	82	Weighted Average
	61,180		65.20% Pervious Area
	32,650		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0320	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
0.2	20	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	70	Total			

Subcatchment 10S: Proposed to WQB



Summary for Subcatchment 20S: Proposed to CB in Parking Area

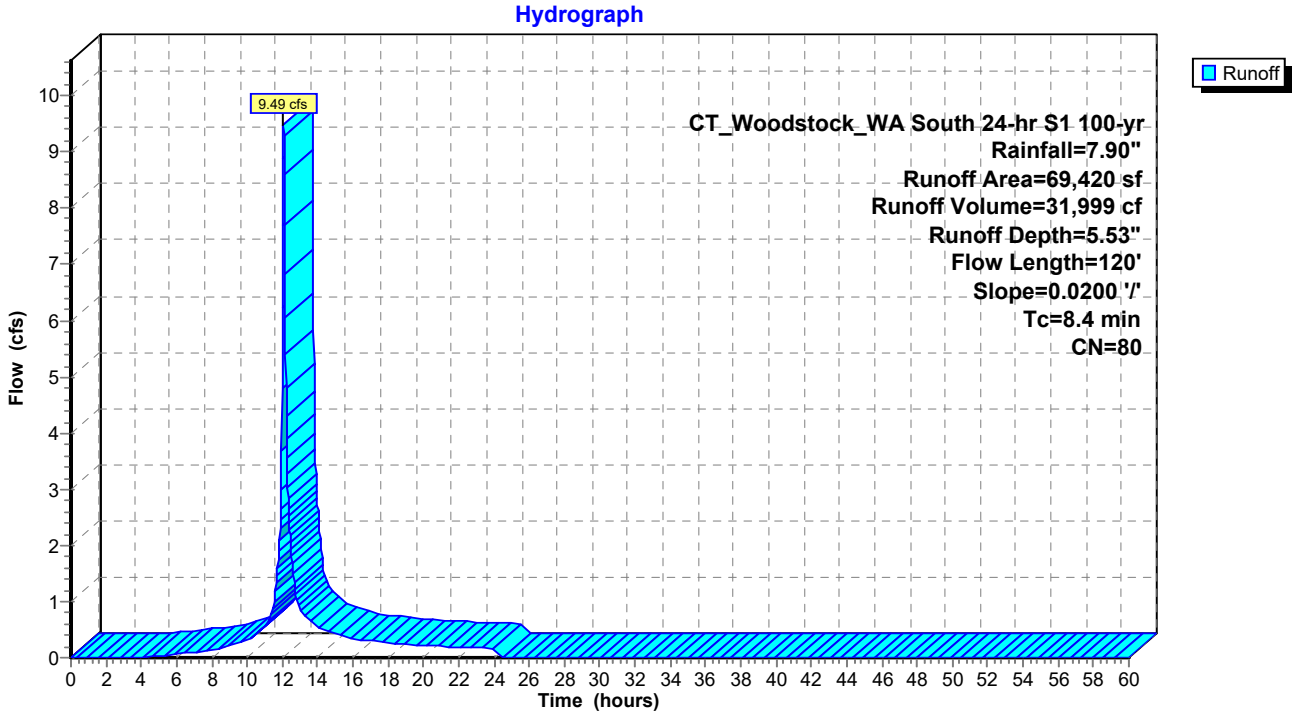
Runoff = 9.49 cfs @ 12.07 hrs, Volume= 31,999 cf, Depth= 5.53"
Routed to Link 20L : CB in Parking Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
CT_Woodstock_WA South 24-hr S1 100-yr Rainfall=7.90"

	Area (sf)	CN	Description
*	16,085	98	Paved
	53,335	74	>75% Grass cover, Good, HSG C
	69,420	80	Weighted Average
	53,335		76.83% Pervious Area
	16,085		23.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.8	45	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.4	120	Total			

Subcatchment 20S: Proposed to CB in Parking Area



Summary for Pond 10P: WQB

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 93,830 sf, 34.80% Impervious, Inflow Depth = 5.76" for 100-yr event
Inflow = 12.22 cfs @ 12.09 hrs, Volume= 45,076 cf
Outflow = 4.57 cfs @ 12.32 hrs, Volume= 45,080 cf, Atten= 63%, Lag= 13.6 min
Primary = 4.57 cfs @ 12.32 hrs, Volume= 45,080 cf
Routed to Link 20L : CB in Parking Area

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 426.81' @ 12.32 hrs Surf.Area= 11,319 sf Storage= 13,531 cf
Flood Elev= 427.00' Surf.Area= 12,220 sf Storage= 15,774 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 188.8 min (1,006.2 - 817.5)

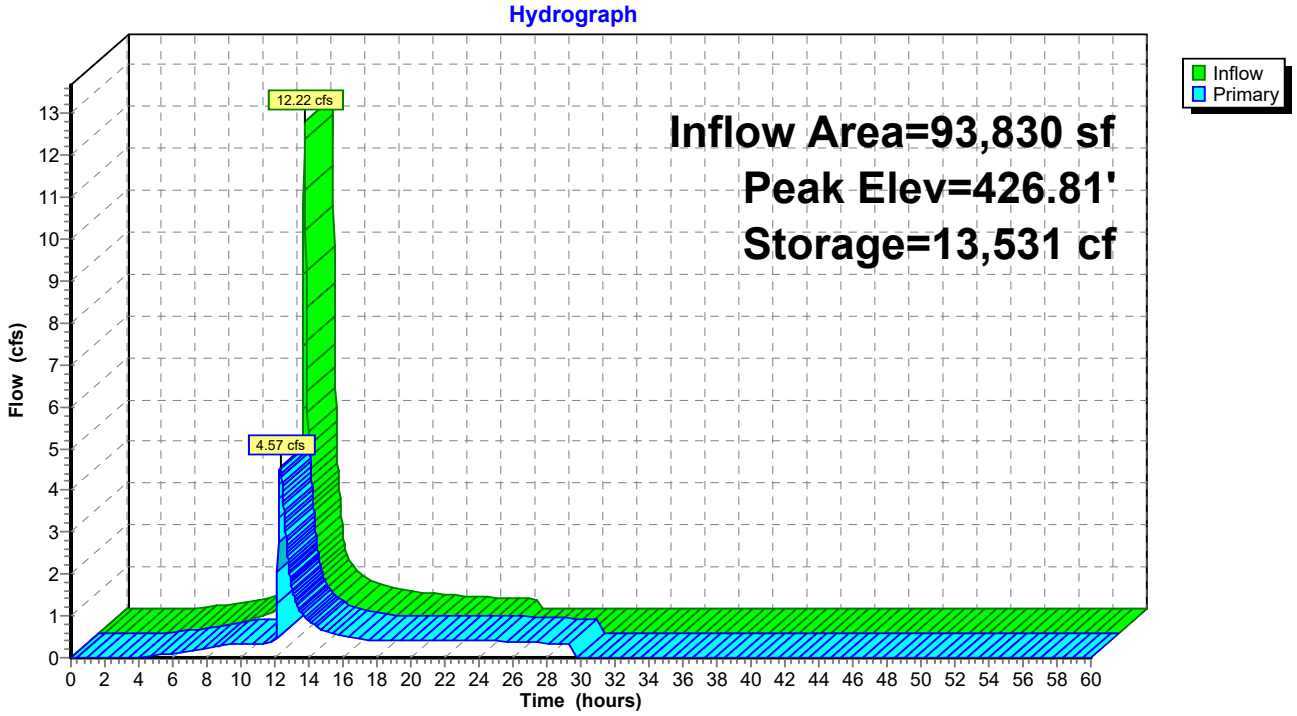
Volume	Invert	Avail.Storage	Storage Description
#1	425.00'	15,774 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
425.00	3,950	467.0	0	0	3,950
426.00	7,880	517.2	5,803	5,803	7,912
427.00	12,220	567.5	9,971	15,774	12,288

Device	Routing	Invert	Outlet Devices
#1	Primary	422.90'	**12.0" Round Culvert** L= 301.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 422.90' / 420.70' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	426.50'	**16.2" x 27.7" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	423.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.57 cfs @ 12.32 hrs HW=426.81' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.57 cfs of 4.61 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 4.11 cfs @ 1.82 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.24 fps)

Pond 10P: WQB

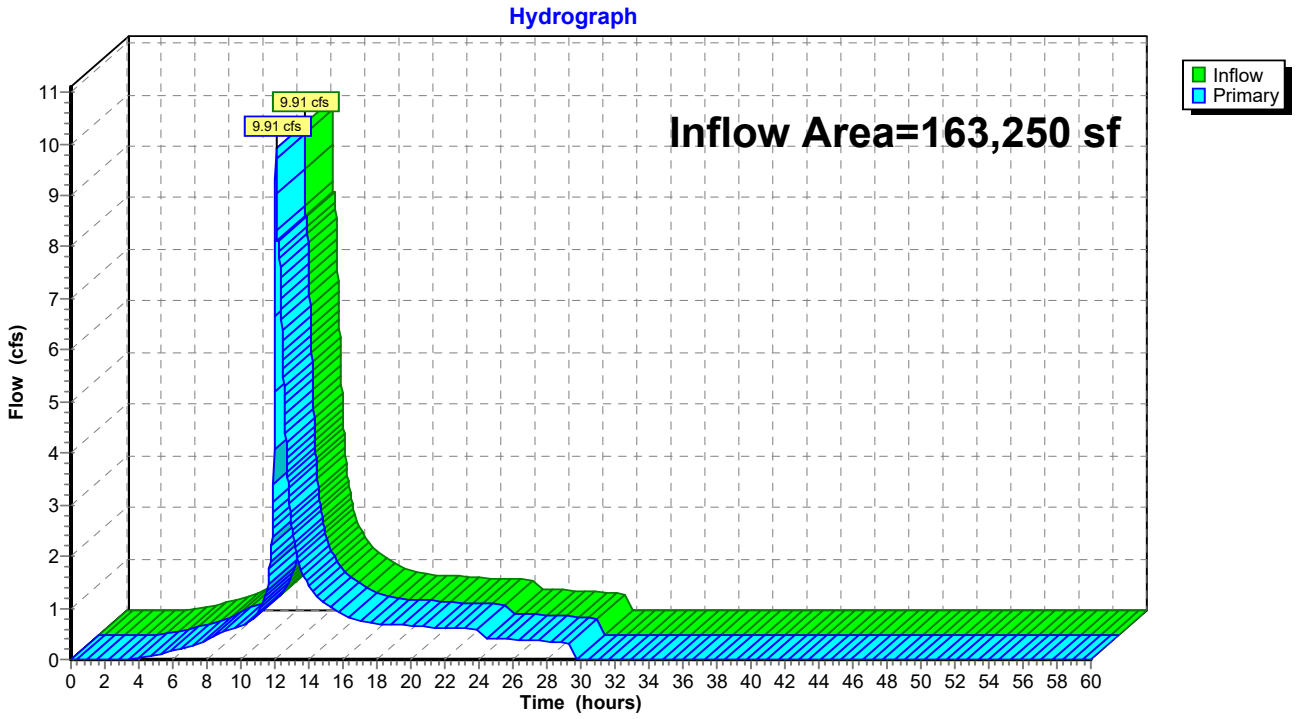

Hydrograph
Inflow
Primary
12.22 cfs
4.57 cfs
Inflow Area=93,830 sf
Peak Elev=426.81'
Storage=13,531 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Link 20L: CB in Parking Area

Inflow Area = 163,250 sf, 29.85% Impervious, Inflow Depth = 5.67" for 100-yr event
Inflow = 9.91 cfs @ 12.07 hrs, Volume= 77,079 cf
Primary = 9.91 cfs @ 12.07 hrs, Volume= 77,079 cf, Atten= 0%, Lag= 0.0 min

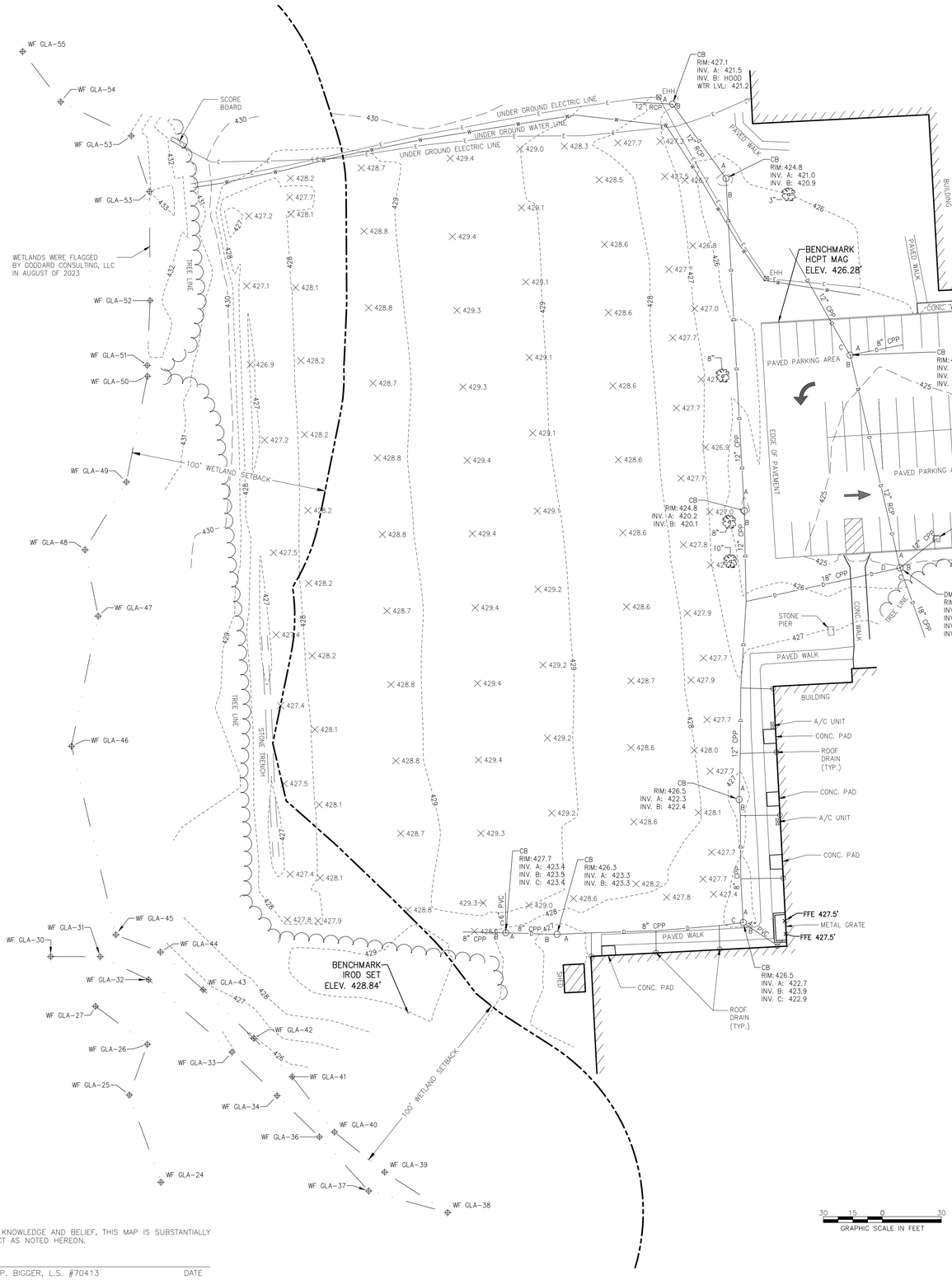
Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link 20L: CB in Parking Area



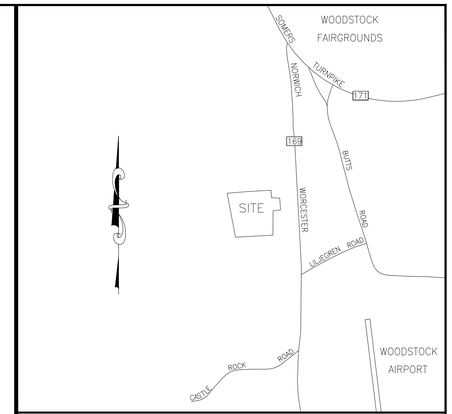
DESIGN PLANS

(Includes Construction Period Pollution Prevention Plan, Erosion & Sedimentation Control Plan, and Post Construction Operation & Maintenance Plan)



TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

CRAIG P. BIGGER, L.S. #70413 DATE



LOCATION MAP SCALE 1"=1000'

MAP REFERENCES

1. "TOPOGRAPHIC MAP PREPARED FOR HYDE SCHOOL AT SOUTH WOODSTOCK, INC. #124 ROUTE 169 WOODSTOCK, CT, EXISTING CONDITIONS", SCALE: 1"=40', DATE: FEB. 16, 2006, LAST REVISED 4/10/06, SHEET 1 OF 1, PREPARED BY CME ASSOCIATES, INC.

NOTES

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS PREPARED AND ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996 AND AS AMENDED ON OCTOBER 26, 2018.

THE TYPE OF SURVEY PERFORMED IS A TOPOGRAPHIC SURVEY CONFORMING TO THE STANDARDS OF ACCURACY FOR A HORIZONTAL CLASS A-2 AND VERTICAL CLASS T-2 AND IS A RESURVEY OF THE SUBJECT PROPERTY.

THIS SURVEY WAS PREPARED TO DEPICT THE EXISTING CONDITIONS OF THE SUBJECT PROPERTY.

2. THE SUBJECT PARCEL WAS CONVEYED TO WOODSTOCK ACADEMY, THROUGH A CONVEYANCE DATED ON 6/15/2015, AND IS RECORDED IN VOLUME 623, PAGE 382 OF THE WOODSTOCK LAND RECORDS.

3. THE SUBJECT PROPERTY IS SHOWN ON THE WOODSTOCK TAX ASSESSOR MAP No. 6395 AS LOT 11 OF BLOCK 64 AND HAS BEEN ASSIGNED ADDRESS OF 150 ROUTE 169, WOODSTOCK, CONNECTICUT.

4. NORTH IS BASED ON CONNECTICUT STATE PLANE COORDINATE, NAD83 OBTAINED BY GPS OBSERVATIONS AT THE TIME OF THE SURVEY.

5. ELEVATIONS ARE BASED ON VERTICAL DATUM NAVD88.

6. TOTAL AREA OF PROPERTY = 119.01± ACRES

7. SITE IS LOCATED IN ZONE COMMUNITY DISTRICT.

8. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES OR GOVERNMENTAL AGENCIES, FROM PAROL TESTIMONY AND FROM OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO CHA. THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.

LEGEND

- TREE — DECIDUOUS TREE
- CB — ROUND CATCH BASIN
- CB — SQUARE CATCH BASIN
- MHST — STORM MANHOLE
- EHH — ELECTRIC HAND HOLE
- BUILDING LINE
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- TREE LINE
- E — E — E — ELECTRIC LINE
- W — W — W — WATER LINE

APPROVED BY THE WOODSTOCK PLANNING & ZONING COMMISSION

APPLICATION: #_____

APPROVED ON: _____

CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA

SITE DEVELOPMENT PLAN PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169, WOODSTOCK, CONNECTICUT

No.	Submittal / Revision	App'd.	By	Date

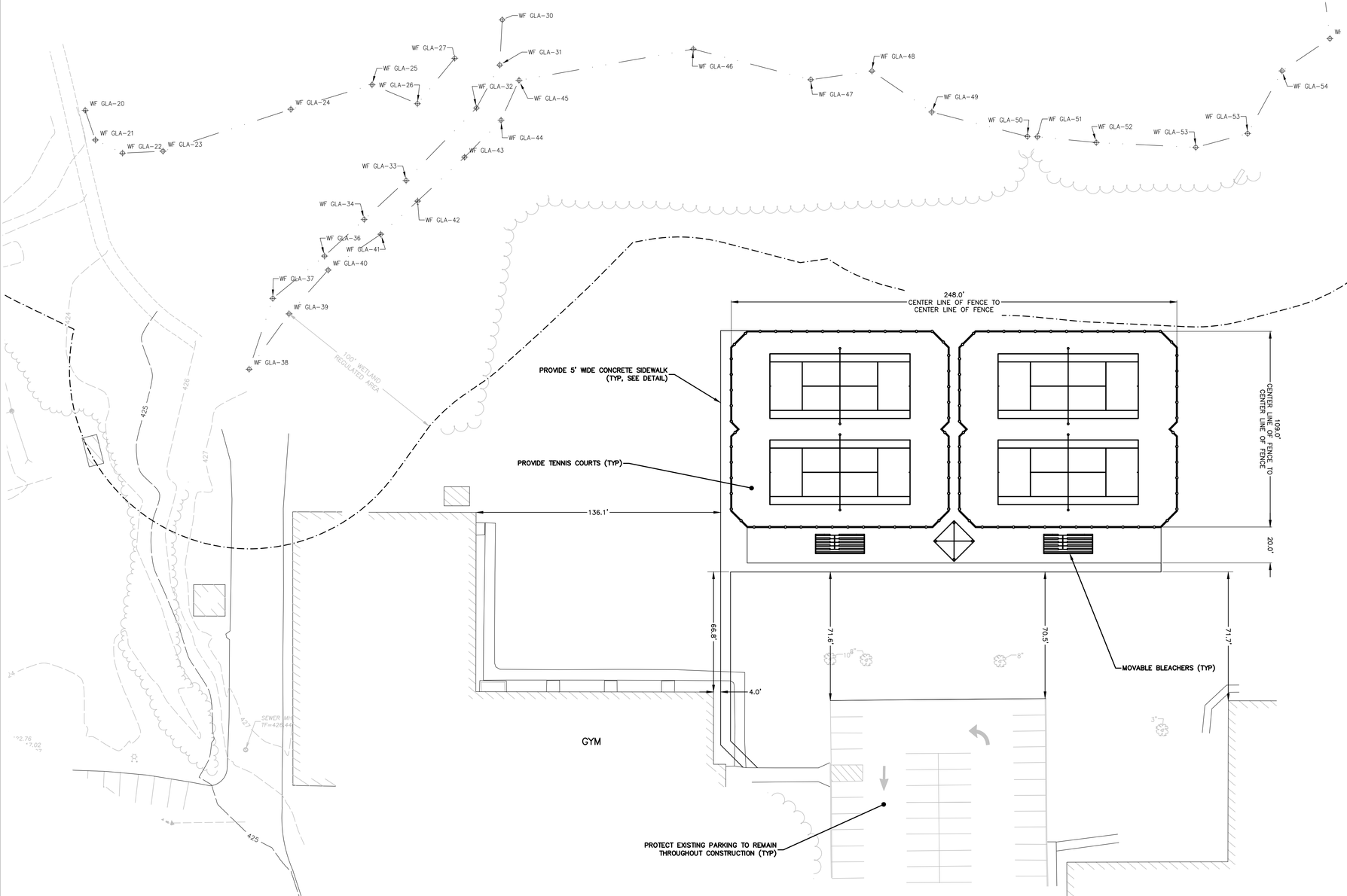
EXISTING CONDITIONS

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	1" = 30'

Drawing No.:

SHEET 1

DIMENSIONAL REQUIREMENTS COMMUNITY DISTRICT (NON–RESIDENTIAL / COMMERCIAL USE)		
ZONING CRITERIA	REQUIRED	PROVIDED
LOT AREA	1.25 AC	±119 AC
LOT FRONTAGE	150'	±1763'
LOT COVERAGE	50%	<10%
FRONT YARD SETBACK	60'	±97' (EXISTING NO CHANGE)
SIDE YARD SETBACK	40'	±75' (EXISTING NO CHANGE)
REAR YARD SETBACK	40'	>2,000' (EXISTING NO CHANGE)
BUILDING HEIGHT	35'	EXISTING NO CHANGE



LEGEND

PROPERTY LINE	
ABUTTERS LINE	
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
EXISTING CONTOUR	425
LIMITS OF INLAND WETLANDS	WF 100
FENCE	X X X
TREE LINE	
OVERHEAD WIRES	O/H
NOW OR FORMERLY	N/F
UTILITY POLE	
BOUNDARY POINT	
IRON MONUMENT	
CONNECTICUT HIGHWAY DEPARTMENT MONUMENT(CHD)	

30 15 0 30
GRAPHIC SCALE IN FEET

APPROVED BY THE WOODSTOCK PLANNING & ZONING COMMISSION

APPLICATION: #_____

APPROVED ON: _____

CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

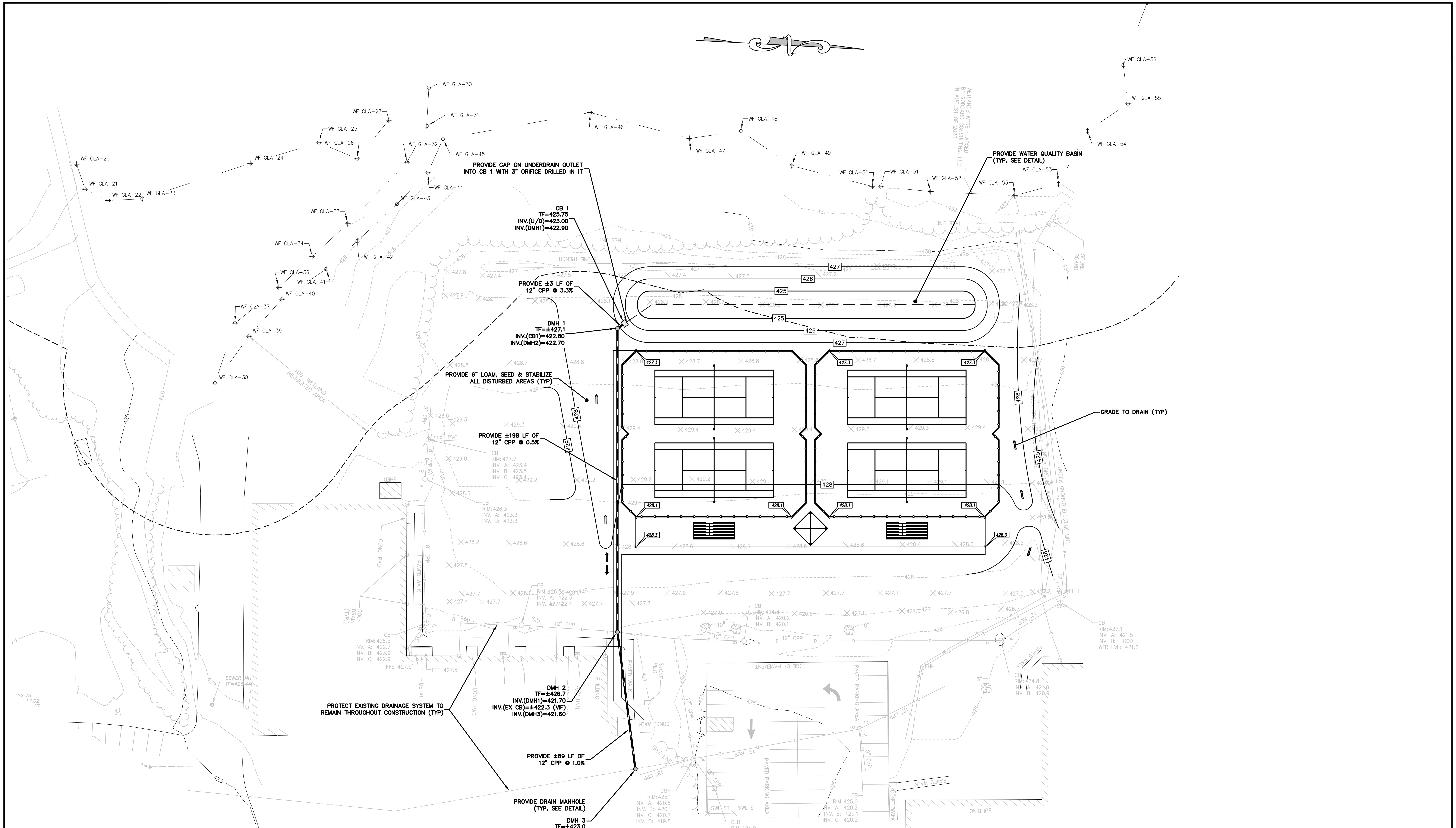
No.	Submittal / Revision	App'd	By	Date

SITE LAYOUT

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	1" = 30'

Drawing No.:

SHEET 2



LEGEND

PROPERTY LINE	
ABUTTERS LINE	
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
EXISTING CONTOUR	425
LIMITS OF INLAND WETLANDS	WF 100
FENCE	
TREE LINE	
OVERHEAD WIRES	O/W
NOW OR FORMERLY	N/F
UTILITY POLE	
BOUNDARY POINT	
IRON MONUMENT	
CONNECTICUT HIGHWAY DEPARTMENT MONUMENT(CHD)	

30 15 0 30
GRAPHIC SCALE IN FEET

APPROVED BY THE WOODSTOCK PLANNING & ZONING COMMISSION

APPLICATION: #________________

APPROVED ON:________________

CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169, WOODSTOCK, CONNECTICUT

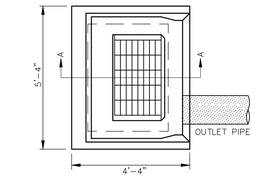
No.	Submittal / Revision	App'd.	By	Date

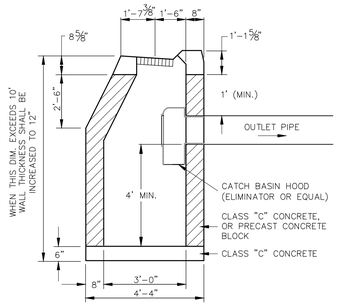
SITE GRADING & DRAINAGE

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	1" = 30'

Drawing No.:

SHEET 3

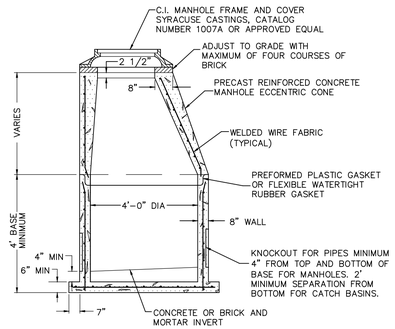




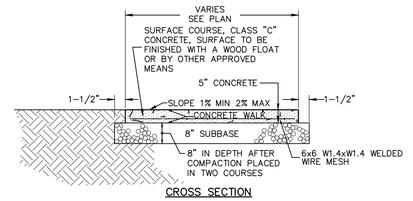
SECTION A–A

TYPE "C" CATCH BASIN
NOT TO SCALE

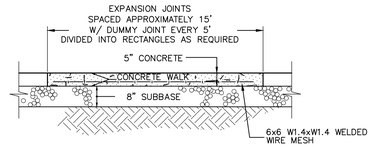
NOTE: ALL CATCH BASINS SHALL BE PROVIDED WITH A HOODED OUTLET.



DRAINAGE MANHOLE CROSS SECTION
NOT TO SCALE

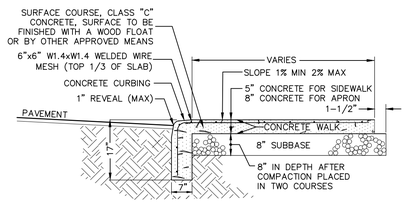


CROSS SECTION

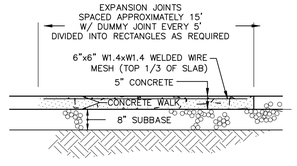


LONGITUDINAL SECTION

CONCRETE SIDEWALK
NOT TO SCALE

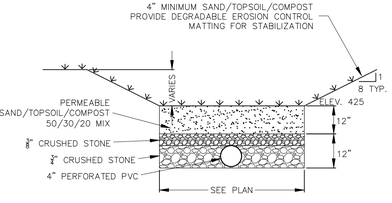


DEPRESSED CURB CROSS SECTION



LONGITUDINAL SECTION

CONCRETE SIDEWALK WITH MONOLITHIC CONCRETE CURBING
NOT TO SCALE



NOTES:

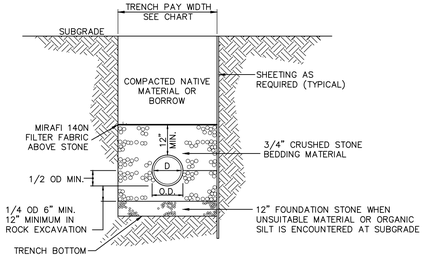
1.) SAND/TOPSOIL/COMPOST MIXTURE SHALL BE PLACED OVER THE ENTIRE WATER QUALITY BASIN FLOOR.

2.) SAND/TOPSOIL/COMPOST MIXTURE SHALL NOT BE COMPACTED AND THE ENTIRE WATER QUALITY BASIN SHALL BE PROTECTED FROM HEAVY EQUIPMENT TRAFFIC THROUGHOUT CONSTRUCTION.

2.) THE CONTRACTOR SHALL BE LIABLE FOR THE REPLACEMENT OF THE SAND/TOPSOIL/COMPOST MIXTURE IF E&S CONTROLS ARE NOT INSTALLED & MAINTAINED AS INDICATED.

WATER QUALITY BASIN
NOT TO SCALE

PIPE DIAMETER	MAXIMUM TRENCH WIDTH
6"	2'–6"
8"	3'–0"
10"	3'–0"
12"	3'–0"
15"	3'–3"
18"	3'–6"
21"	4'–0"
24"	4'–6"
30"	5'–0"



TRENCH SECTION FOR STORM DRAINS
NOT TO SCALE

APPROVED BY THE WOODSTOCK
PLANNING & ZONING COMMISSION

APPLICATION: #_____

APPROVED ON: _____

_____
CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN
PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

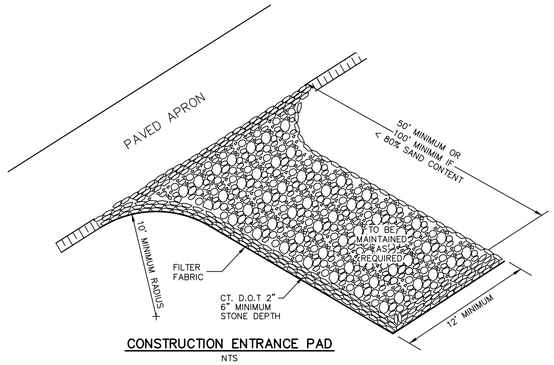
No.	Submittal / Revision	App'd.	By	Date

CONSTRUCTION DETAILS

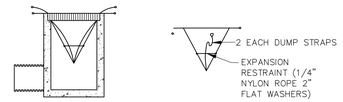
Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	AS NOTED

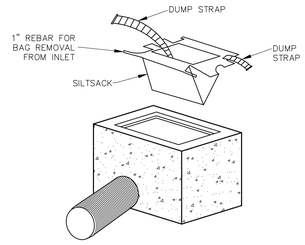
Drawing No.:

SHEET 5

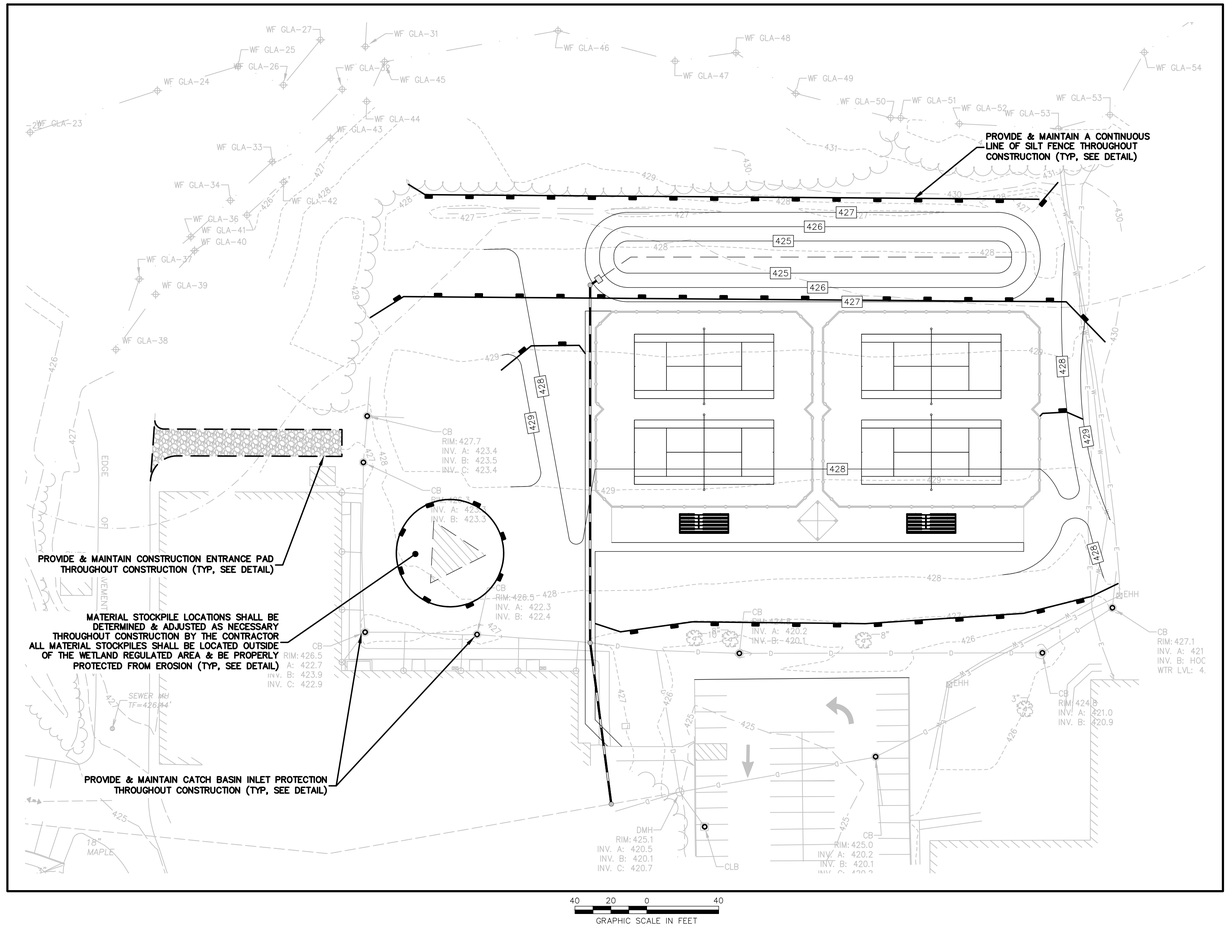


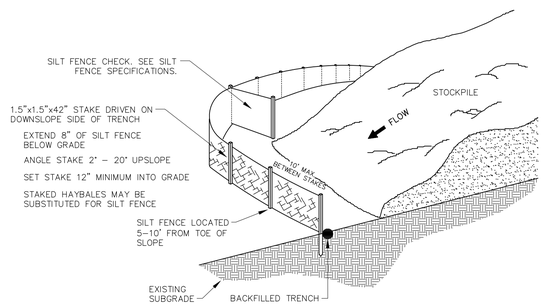
CONSTRUCTION ENTRANCE PAD
NTS



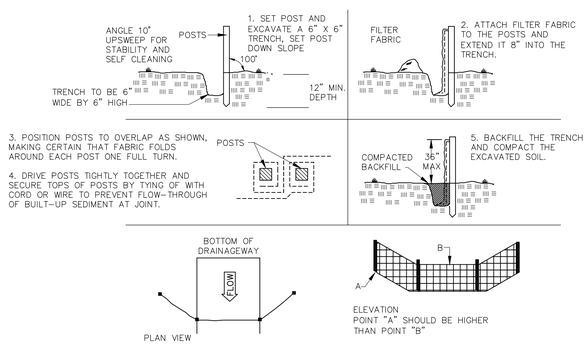


INLET SEDIMENT CONTROL DEVICE
NOT TO SCALE





SILT FENCE AT TOE OF SLOPE APPLICATION
NOT TO SCALE



PLACEMENT AND CONSTRUCTION OF A SILT FENCE
NOT TO SCALE

APPROVED BY THE WOODSTOCK
PLANNING & ZONING COMMISSION

APPLICATION: #_____

APPROVED ON: _____

_____
CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN
PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

No.	Submittal / Revision	App'd.	By	Date

EROSION & SEDIMENT CONTROL

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	AS NOTED

Drawing No.:

SHEET 6

EROSION AND SEDIMENTATION CONTROL NARRATIVE & NOTES

PROJECT NARRATIVE

THIS PROJECT CONSISTS OF THE CONSTRUCTION OF NEW TENNIS COURTS ON THE ±119 ACRE WOODSTOCK ACADEMY SOUTH CAMPUS. THE LOCATION OF THE SITE IS ON THE WEST SIDE OF ROUTE 169 JUST NORTH OF THE INTERSECTION OF LILJEGREN ROAD. THIS PROJECT WILL CONSIST OF TENNIS COURTS, DRAINAGE PIPING AND STRUCTURES.

IT IS ANTICIPATED THAT APPROXIMATELY 2.9 ACRES OF THE 119 ACRE SITE WILL BE DISTURBED DURING THE CONSTRUCTION OF THE FACILITY.

THE PROJECT SHALL BE DEVELOPED IN A SINGLE PHASE, HOWEVER, DISTURBED AREAS SHALL BE STABILIZED AT MILESTONE POINTS DURING CONSTRUCTION. ALL WORK SHALL BE SCHEDULED SUCH THAT STABILIZATION COINCIDES WITH THE ABILITY TO VEGETATE DISTURBED AREAS, APRIL 1 THROUGH JUNE 15 AND AUGUST 15 THROUGH OCTOBER 1.

THIS PROJECT REQUIRES THE FOLLOWING PERMITS:
INLAND WETLANDS & WATERCOURSES (WORK IN REGULATED AREA)
PLANNING & ZONING SPECIAL PERMIT (SITE PLAN MODIFICATION)

ESTIMATED CONSTRUCTION SCHEDULE

A. INSTALL EROSION AND SEDIMENT CONTROL SYSTEMS – MAY 2024

B. ROUGH GRADE SITE – JUNE 2024

C. INSTALL STORMWATER AND UTILITY SYSTEMS – JULY 2024

D. CONSTRUCT TENNIS COURTS, ACCESS ROADWAYS & PARKING – AUGUST 2024

E. FINISH GRADE SITE AND INSTALL LANDSCAPING – SEPTEMBER 2024

GENERAL NOTES

A. ELEVATIONS ARE BASED ON NAVD88.

B. ALL UTILITIES SHALL BE APPROVED BY LOCAL UTILITY COMPANIES PRIOR TO CONSTRUCTION; ALL UTILITIES SHALL BE CONSTRUCTED TO UTILITY COMPANY SPECIFICATIONS.

C. ALL CONSTRUCTION SHALL BE TO TOWN SPECIFICATIONS & REGULATIONS.

D. NO CHANGES CAN BE MADE TO THESE PLANS WITHOUT THE TOWN'S APPROVAL.

E. CONTRACTOR SHALL OBTAIN ALL REQUIRED LOCAL & STATE PERMITS PRIOR TO BEGINNING ANY CONSTRUCTION.

F. FIELD CHANGES SHALL HAVE PRIOR APPROVAL OF THE TOWN.

G. CATCH BASIN TOPS SHALL NOT BE CEMENTED DOWN UNTIL FINAL GRADES ARE SET.

H. UNLESS OTHERWISE NOTED OR SPECIFIED, ALL ROADWAYS & STORM DRAINAGE SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE STATE OF CONNECTICUT, D.O.T. "STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION, FORM 818" AND ALL SUPPLEMENTS THERETO. SIMILARLY PERTINENT CONSTRUCTION DETAILS THAT ARE NOT INCLUDED WITH THESE DRAWINGS SHALL CONFORM TO THE STATE OF CONNECTICUT, D.O.T. STANDARD ROADWAY DRAWINGS.

I. CONTRACTOR SHALL NOTIFY THE TOWN OF CONSTRUCTION SCHEDULE SO THAT INSPECTION MAY BE PROVIDED.

J. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED ON PLANS HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES OR GOVERNMENTAL AGENCIES, FROM PAROL TESTIMONY, FIELD MEASUREMENTS AND FROM OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO CHA THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION.

K. CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TWO (2) WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.

SEEDING SPECIFICATIONS

A. IF GROUND HAS BEEN PREVIOUSLY MULCHED, MULCH MUST BE REMOVED OR ADDITIONAL NITROGEN MUST BE ADDED.

B. REMOVE ALL SURFACE STONES 2" OR LARGER AS WELL AS ALL DEBRIS SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, CLUMPS, OR OTHER UNSUITABLE MATERIAL.

C. APPLY FERTILIZER AT 7.5 POUNDS PER 1,000 SQUARE FEET AND LIME AT 200 POUNDS PER 1,000 SQUARE FEET UNLESS SOIL TESTING FOR REQUIREMENTS IS PERFORMED.

D. NO MOWING IS TO BE UNDERTAKEN UNTIL THE MAJORITY OF THE VEGETATION IS AT LEAST 6" HIGH. MOWING SHOULD CUT THE TOP 1/3 OF VEGETATION. DO NOT UNDER ANY CIRCUMSTANCES CUT VEGETATION BELOW 3".

E. DO NOT APPLY ANY FORM OF WEED CONTROL UNTIL GRASS HAS BEEN MOWED AT LEAST 4 TIMES.

F. THESE SEEDING MEASURES ARE NOT TO BE USED ON SLOPES IN EXCESS OF 2:1 GRADING.

G. PERMANENT SEEDING MEASURES ARE TO BE USED INSTEAD OF TEMPORARY SEEDING MEASURES WHERE WORK IS TO BE SUSPENDED FOR A PERIOD OF TIME LONGER THAN 1 YEAR.

H. IF THERE IS NO EROSION, BUT SEED SURVIVAL IS LESS THAN 100 PLANTS PER SQUARE FOOT AFTER 4 WEEKS OF GROWTH, RE-SEED AS PLANTING SEASON ALLOWS.

CONSTRUCTION SEQUENCE

A. STAKEOUT LIMIT OF DISTURBANCE.

B. HOLD A PRECONSTRUCTION MEETING.

C. CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TWO (2) WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.

D. INSTALL THE CONSTRUCTION ENTRANCE.

E. INSTALL PERIMETER FILTER (SILT FENCE)

F. PERFORM ALL NECESSARY CLEARING AND GRUBBING OPERATIONS.

G. EXCAVATE & DISPOSE OF ALL STUMPS OFF SITE.

H. STRIP ALL TOPSOIL WITHIN THE FOOTPRINT OF THE CONSTRUCTION SITE. STOCKPILE ALL TOPSOIL IN AN APPROVED AREA AND SECURE WITH EROSION AND SEDIMENT CONTROLS.

I. ROUGH GRADE SITE.

J. PRIOR TO INSTALLATION OF SURFACE WATER CONTROLS SUCH AS TEMPORARY DIVERSIONS AND STONE DIKES, INSPECT EXISTING CONDITIONS TO ENSURE DISCHARGE LOCATIONS ARE STABLE. IF NOT STABLE, REVIEW DISCHARGE CONDITIONS WITH THE DESIGN ENGINEER AND IMPLEMENT ADDITIONAL STABILIZATION MEASURES PRIOR TO INSTALLING WATER SURFACE CONTROLS.

K. STABILIZE CUT AND FILL SLOPES.

L. INSTALL DRAINAGE SYSTEM.

M. CONSTRUCT TENNIS COURTS.

N. FINISH GRADE REMAINDER OF SITE.

O. PLACE TOPSOIL WHERE REQUIRED.

P. FINISH GRADE SIDE SLOPES, SEED AND MULCH.

Q. COMPLETE THE BALANCE OF SITE WORK AND STABILIZATION OF ALL OTHER DISTURBED AREAS.

R. ALL REMAINING EXPOSED AREAS SHALL BE LOAMED, SEEDED AND MULCHED OR SODDED WITHIN 14 DAYS OF FINAL GRADING.

S. AFTER SITE IS FULLY STABILIZED REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS.

T. CONTRACTOR TO REMOVE ANY ACCUMULATED SEDIMENT FROM DRAINAGE STRUCTURES OR BASINS.

NOTE: SEVERAL OF THE ABOVE ACTIVITIES MAY BE DONE SIMULTANEOUSLY.

SILT FENCE SPECIFICATIONS

A. SYNTHETIC FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER, ETHYLENE, OR SIMILAR FILAMENTS AND SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE FOLLOWING MINIMUM REQUIREMENTS:

1. FILTERING EFFICIENCY	75 PERCENT (MIN)
2. GRAB TENSILE STRENGTH	100 POUNDS
3. ELONGATION AT FAILURE	15 PERCENT
4. MULLEN BURST STRENGTH	250 POUNDS PER SQUARE INCH
5. PUNCTURE STRENGTH	50 POUNDS
6. APPARENT OPENING SIZE	0.60mm< X <0.90mm
7. FLOW RATE	0.2 GALLONS PER SQUARE FOOT PER MINUTE
8. PERMITTIVITY	0.05 PER SECOND (MIN)
9. ULTRAVIOLET RADIATION STABILITY	70 PERCENT AFTER 500 HOURS OF EXPOSURE (MIN)

B. STAKES ARE TO BE MADE OUT OF HARDWOOD WITH A MINIMUM CROSS SECTIONAL AREA OF 1.5 SQUARE INCHES OR STEEL POSTS WITH A MINIMUM WEIGHT OF 0.5 POUNDS PER LINEAR FOOT.

C. TORN OR PUNCTURED GEOTEXTILES SHALL NOT BE USED.

D. ON SLOPES WHERE SURFACE FLOW FOLLOWS THE SILT FENCE LINE, PERPENDICULAR SILT FENCE CHECKS SHALL BE INSTALLED AT 50 FOOT INTERVALS.

E. LINES OF SILT FENCE SHOULD FOLLOW CONTOUR LINES 5-10 FEET DOWN GRADIENT FROM THE SLOPE. WHERE CONTOUR LINES CAN NOT BE FOLLOWED PERPENDICULAR WINGS SHOULD BE PLACED AT 50 FOOT INTERVALS.

EROSION & SEDIMENT CONTROL OPERATIONS AND MAINTENANCE

A. EROSION AND SEDIMENTATION CONTROL AND RESTORATION MEASURES SHALL CONFORM TO THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL", PUBLISHED BY THE CONNECTICUT COUNCIL OF SOIL AND WATER CONSERVATION AND THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION; AND TO TOWN REGULATIONS.

B. INSTALLATION OF SEDIMENT AND EROSION CONTROLS SUCH AS WATTLES AND SILT FENCES SHALL BE ESTABLISHED PRIOR TO COMMENCING ANY LAND DISTURBANCE ACTIVITIES.

C. ALL STOCKPILED MATERIAL SHALL BE RINGED WITH WATTLES OR SILT FENCES. ANY MATERIAL TO BE STOCKPILED LONGER THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING OR JUTE NETTING.

D. PAVEMENT AND CURBING SHOULD BE INSTALLED AS SOON AS POSSIBLE AFTER STORM DRAINAGE IS INSTALLED.

E. CATCH BASINS SHALL BE PROTECTED FROM SEDIMENTATION UNTIL ALL AREAS ARE PERMANENTLY VEGETATED OR STABILIZED.

F. CATCH BASIN SUMPS SHALL BE CLEANED OF SILT PERIODICALLY DURING CONSTRUCTION.

G. WATTLES OR SILT FENCE SHALL BE PLACED 5-10 FEET FROM THE TOE OF ALL CRITICAL SLOPES AS SHOWN ON THE PLAN. THESE SHALL BE CHECKED BY THE CONTRACTOR REGULARLY AND REPAIRED WHENEVER THEY FAIL TO ENSURE CLEAN RUN-OFF FROM THE SITE.

H. ADDITIONAL CONTROL MEASURES IF REQUESTED BY THE TOWN SHALL BE INSTALLED IMMEDIATELY UPON REQUEST.

I. ALL DISTURBED AREAS SHALL BE PROTECTED WITH A MINIMUM VEGETATION COVER AS SHOWN IN ACCOMPANYING CHART.

J. THE CONTRACTOR SHALL PLAN ALL LAND DISTURBING ACTIVITIES IN A MANNER AS TO MINIMIZE THE EXTENT OF THE DISTURBED AREAS.

K. THE CONTRACTOR SHALL MAKE DAILY INSPECTIONS OF THE SITE TO INSURE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES AND WILL IMMEDIATELY MAKE NECESSARY REPAIRS IF REQUIRED BY THE TOWN.

L. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED AT A MINIMUM OF ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.1 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS.

M. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE REPLACED WITHIN 24 HOURS OF AN OBSERVED FAILURE.

N. ALL CONSTRUCTION TRAFFIC SHALL ENTER AND LEAVE BY THE DESIGNATED ENTRANCE. THIS ENTRANCE SHALL BE CONSTRUCTED OF CRUSHED STONE TO HELP FREE TIRES OF SOIL WHEN LEAVING THE SITE. THE CONTRACTOR SHALL INSTRUCT ALL VEHICLE DRIVERS TO CLEAN SOIL MATERIAL FROM TIRES IN FRONT OF THE SITE. ALL SOIL, MISCELLANEOUS DEBRIS, OR OTHER MATERIAL SPILLED, DUMPED OR OTHERWISE DEPOSITED ON PUBLIC STREETS, HIGHWAYS, SIDEWALKS OR OTHER PUBLIC THOROUGHFARES DURING TRANSIT TO OR FROM THE SITE SHALL BE REMOVED PROMPTLY.

O. THE CONTRACTOR HEREBY ACKNOWLEDGES HIS RESPONSIBILITY TO INSTALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES ON THIS SITE AND THAT HIS FAILURE TO INSTALL AND MAINTAIN THESE DEVICES COULD RESULT IN FINES OR SUSPENSION OF WORK BY THE CITY/TOWN.

P. MINIMIZE OR ELIMINATE ANY UNNECESSARY LAND DISTURBANCE OR CLEARING.

PERSON RESPONSIBLE FOR MAINTAINING
CONTROL MEASURES DURING CONSTRUCTION.

NAME _____

ADDRESS _____

TELEPHONE # _____

MAINTENANCE LOG

LOCATION	DESCRIPTION	DATE	INITIALS

PROJECT DATES DATE INITIALS

PROJECT GROUNDBREAKING

FINAL STABILIZATION

STORMWATER OPERATION AND MAINTENANCE

STORMWATER FACILITY
OPERATION AND MAINTENANCE PLAN:

CONSTRUCTION PHASE

GENERAL PROVISIONS:

1. CONTRACTOR TO INSTALL AND MAINTAIN DRAINAGE FACILITIES AS SHOWN ON THE PLAN SET.
2. PRIOR TO CONSTRUCTION, ALL EROSION/SILTATION CONTROL DEVICES SHOWN ON THE PLAN SHALL BE INSTALLED. TO PREVENT SILT INTRUSION INTO THE DRAINAGE SYSTEM DURING CONSTRUCTION, THE CONTRACTOR IS TO INSTALL INLET PROTECTION AT ALL CATCH BASINS AND SET SILT FENCE AT ALL SLOPES WHICH MAY ERODE IN THE DIRECTION OF ANY OPEN DRAINAGE FACILITIES. SUCH PREVENTIVE MEASURES ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
3. EROSION CONTROLS ARE TO BE INSPECTED ON A DAILY BASIS. UPON DISCOVERY, THE CONTRACTOR SHALL REMOVE ANY SEDIMENT FROM AN EROSION CONTROL STRUCTURE.
4. ALL EXPOSED SOILS SHALL BE IMMEDIATELY STABILIZED TO PREVENT EROSION.
5. UPON INSTALLATION OF CATCH BASINS, INLET PROTECTION SHALL BE INSTALLED AND MAINTAINED UNTIL READY FOR PAVING.
6. PRIOR TO CONSTRUCTION OF IMPERVIOUS AREAS, ALL DRAINAGE STRUCTURES AND PIPES SHALL BE INSTALLED AND INSPECTED FOR PROPER FUNCTION. DURING CONSTRUCTION OF OTHER SITE FEATURES, DRAINAGE FACILITIES SHALL BE INSPECTED ON A DAILY BASIS AND CLEANED/REPAIRED IMMEDIATELY UPON DISCOVERY OF SEDIMENT BUILD-UP OR DAMAGE.
7. AFTER PAVING IS INSTALLED, IT SHALL BE SWEPT CLEAN ON A MONTHLY BASIS.

CATCH BASIN SUMPS:

1. CONTRACTOR TO INSPECT WEEKLY OR AFTER EACH 0.5 INCH RAIN EVENT AND CLEAN AS NEEDED.
2. CONTRACTOR SHALL CLEAN SUMPS AFTER SITE IS COMPLETELY STABILIZED AND PRIOR TO TRANSFER TO OWNER.

WATER QUALITY BASIN:

1. WATER QUALITY BASIN UNDERDRAIN SHALL NOT BE INSTALLED UNTIL CONTRIBUTING DRAINAGE AREAS ARE VEGETATED OR OTHERWISE STABLE & ANY ACCUMULATED SEDIMENT HAS BEEN REMOVED AND DISPOSED OF.
2. CONTRACTOR TO INSPECT WEEKLY OR AFTER EACH 0.5 INCH RAIN EVENT.
3. INSPECTIONS SHOULD FOCUS ON THE DURATION OF STANDING WATER IN THE BASIN. (PONDING AFTER 48 HOURS INDICATES POSSIBLE CLOGGING OF THE BOTTOM OF THE BASIN)
4. CONTRACTOR SHALL CLEAN INSPECT DETENTION SYSTEM AFTER SITE IS COMPLETELY STABILIZED AND PRIOR TO TRANSFER TO OWNER.

POST-DEVELOPMENT PHASE

FOLLOWING ACCEPTANCE OF THE PROJECT FROM THE CONTRACTOR, THE OWNER SHALL BE RESPONSIBLE FOR ALL POST-DEVELOPMENT INSPECTIONS, OPERATION & MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM AS DETAILED BELOW:

GENERAL PROVISIONS:

SNOW STOCKPILING:

SNOW ACCUMULATIONS REMOVED FROM STREETS AND PARKING LOTS SHALL BE PLACED IN UPLAND AREAS, WHERE SAND AND DEBRIS WILL REMAIN AFTER SNOW MELT FOR LATER REMOVAL. CARE SHOULD BE TAKEN NOT TO DEPOSIT SNOW IN THE IMMEDIATE VICINITY OF CATCH BASINS, DRAINAGE SWALES, OR SLOPES LEADING TO BODIES OF WATER, AND DRINKING WATER WELL SUPPLIES.

PAVEMENT SWEEPING:

STREETS AND PARKING LOTS SHOULD BE SWEPT CLEAN AT LEAST TWICE ANNUALLY, WITH ONE SWEEPING PREFERABLY OCCURRING IMMEDIATELY AFTER WINTER SNOW MELT AND BEFORE SPRING RAINS. SWEEPING DURING THIS PERIOD CAPTURES PEAK SEDIMENT LOADS AND EXTENDS THE SERVICE LIFE OF THE STORM WATER MANAGEMENT SYSTEM.

CATCH BASIN SUMPS:

CATCH BASINS SHALL BE INSPECTED BI-ANNUALLY AND CLEANED AT LEAST ANNUALLY, AFTER THE SNOW AND ICE SEASON, AND AS SOON AS POSSIBLE BEFORE SPRING RAINS. IN GENERAL, A CATCH BASIN SHOULD BE CLEANED IF THE DEPTH OF DEPOSITS IS GREATER THAN ONE HALF THE SUMP DEPTH. IF A CATCH BASIN SIGNIFICANTLY EXCEEDS THIS STANDARD THEN MORE FREQUENT CLEANINGS SHALL BE SCHEDULED. IN AREAS WITH HIGHER POLLUTANT LOADINGS OR DISCHARGES INTO SENSITIVE BODIES OF WATER, MORE FREQUENT CLEANINGS WILL BE NECESSARY.

WATER QUALITY BASIN

WATER QUALITY BASIN SHALL BE INSPECTED AT LEAST TWICE ANNUALLY AND AFTER ALL MAJOR STORMS TO ENSURE THAT IT IS OPERATING AS INTENDED. PRETREATMENT BMP'S SHALL BE INSPECTED AND CLEANED DURING THE REGULAR BI-ANNUAL INSPECTIONS. POTENTIAL PROBLEMS THAT SHOULD BE CHECKED INCLUDE:

- PONDING
- EROSION
- CLOGGING OF INLET AND OUTLET PIPES

ANY NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY. TRASH SHALL BE REMOVED AND THE BANKS, OF BASINS, MOWED AT LEAST TWICE PER YEAR. (MOWING SHOULD BE PERFORMED WHEN GROUND IS DRY TO AVOID RUTS AND COMPACTION) SEDIMENT SHALL BE REMOVED FROM THE BASIN AND PRETREATMENT AREA AS NECESSARY, AND AT LEAST ONCE EVERY FIVE YEARS.

APPROVED BY THE WOODSTOCK
PLANNING & ZONING COMMISSION

APPLICATION: #_____

APPROVED ON: _____

_____
CHAIRMAN OR SECRETARY SIGNATURE DATE

CHA
400 Capital Boulevard, Suite 301
Rocky Hill, CT 06067
860-257-4557 | www.chacompanies.com

SITE DEVELOPMENT PLAN
PREPARED FOR:

WOODSTOCK ACADEMY

150 ROUTE 169,
WOODSTOCK, CONNECTICUT

No.	Submittal / Revision	App'd.	By	Date

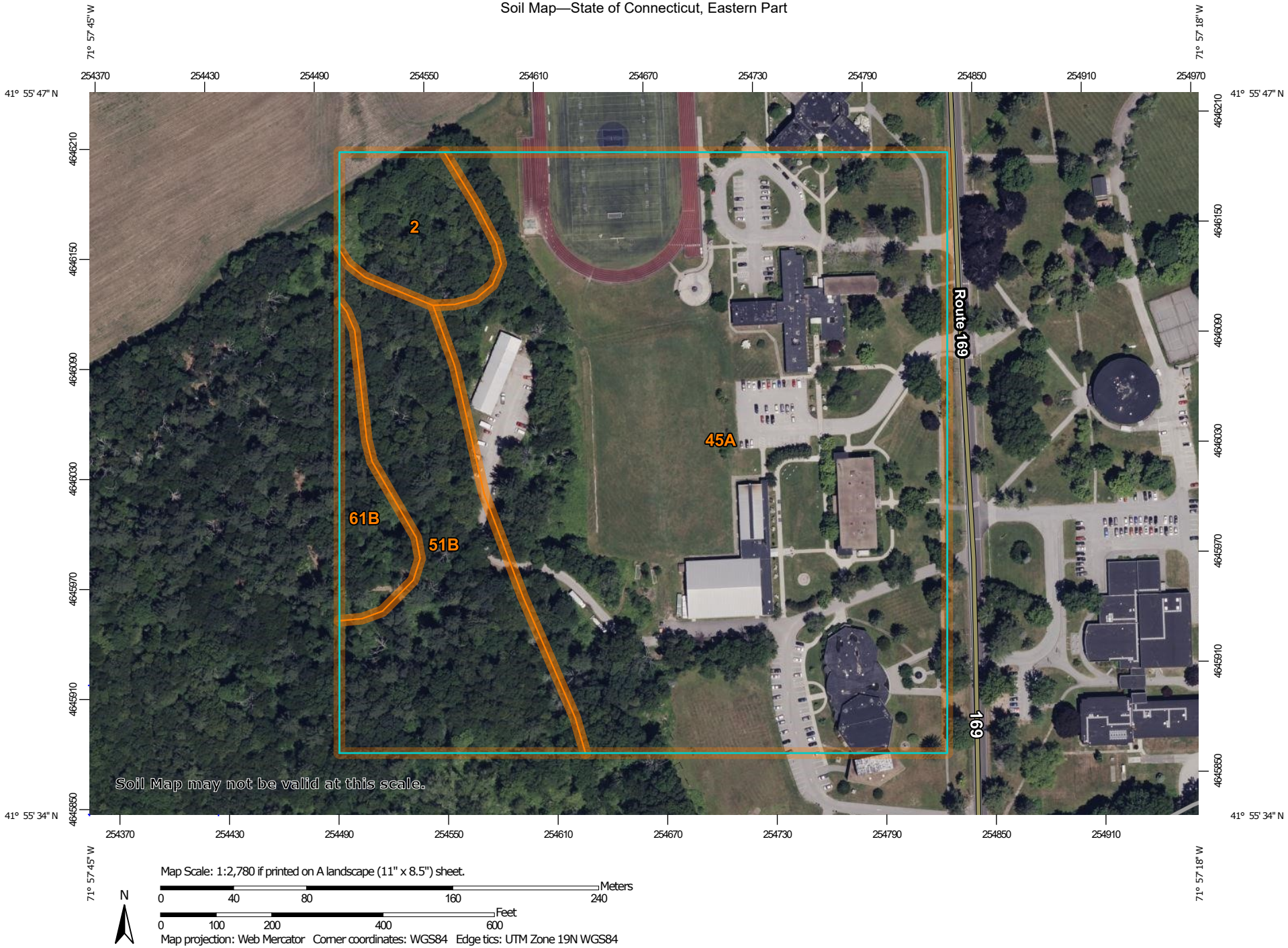
CONSTRUCTION DETAILS

Designed By:	Drawn By:	Checked By:
PMP	ZBC/PMP	CB/CEE
Issue Date:	Project No:	Scale:
12/11/2023	082795	AS NOTED

Drawing No.:

SHEET 7

SOILS MAPPING



Map Scale: 1:2,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut, Eastern Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Ridgebury fine sandy loam, 0 to 3 percent slopes	1.4	5.3%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	20.0	74.0%
51B	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	4.7	17.2%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	0.9	3.5%
Totals for Area of Interest		**27.1**	**100.0%**

Hydrologic Soil Group—State of Connecticut, Eastern Part

Map Scale: 1:2,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N 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 1:12,000.

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: State of Connecticut, Eastern Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Jun 14, 2022—Jul 1, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Ridgebury fine sandy loam, 0 to 3 percent slopes	D	1.4	5.3%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	C/D	20.0	74.0%
51B	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	B/D	4.7	17.2%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	B	0.9	3.5%
Totals for Area of Interest			**27.1**	**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

HYDROLOGIC DATA

NOAA Atlas 14, Volume 10, Version 3
Location name: Woodstock, Connecticut, USA*
Latitude: 41.9268°, Longitude: -71.9581°
Elevation: 422.61 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.333** (0.260-0.423)	**0.395** (0.308-0.503)	**0.497** (0.386-0.635)	**0.581** (0.449-0.747)	**0.698** (0.521-0.934)	**0.787** (0.575-1.07)	**0.878** (0.622-1.24)	**0.977** (0.659-1.41)	**1.12** (0.723-1.67)	**1.23** (0.776-1.87)
10-min	**0.471** (0.368-0.600)	**0.560** (0.436-0.713)	**0.705** (0.547-0.901)	**0.824** (0.636-1.06)	**0.989** (0.739-1.32)	**1.12** (0.815-1.52)	**1.24** (0.881-1.75)	**1.38** (0.934-2.00)	**1.58** (1.02-2.37)	**1.74** (1.10-2.65)
15-min	**0.554** (0.433-0.705)	**0.658** (0.513-0.839)	**0.828** (0.644-1.06)	**0.970** (0.749-1.25)	**1.16** (0.869-1.56)	**1.31** (0.959-1.79)	**1.46** (1.04-2.06)	**1.63** (1.10-2.36)	**1.86** (1.21-2.78)	**2.04** (1.29-3.12)
30-min	**0.775** (0.605-0.986)	**0.920** (0.717-1.17)	**1.16** (0.899-1.48)	**1.36** (1.05-1.74)	**1.63** (1.22-2.17)	**1.83** (1.34-2.50)	**2.04** (1.45-2.88)	**2.27** (1.53-3.29)	**2.60** (1.68-3.89)	**2.85** (1.81-4.36)
60-min	**0.996** (0.777-1.27)	**1.18** (0.922-1.51)	**1.49** (1.16-1.90)	**1.74** (1.34-2.24)	**2.09** (1.56-2.79)	**2.35** (1.72-3.21)	**2.63** (1.86-3.70)	**2.92** (1.97-4.23)	**3.33** (2.16-4.99)	**3.66** (2.32-5.59)
2-hr	**1.27** (1.00-1.61)	**1.51** (1.18-1.91)	**1.88** (1.47-2.39)	**2.19** (1.71-2.80)	**2.63** (1.98-3.51)	**2.94** (2.18-4.02)	**3.29** (2.37-4.68)	**3.70** (2.50-5.33)	**4.34** (2.82-6.45)	**4.88** (3.10-7.40)
3-hr	**1.47** (1.16-1.85)	**1.73** (1.36-2.19)	**2.17** (1.70-2.74)	**2.52** (1.97-3.21)	**3.02** (2.29-4.03)	**3.38** (2.51-4.62)	**3.78** (2.74-5.39)	**4.28** (2.90-6.14)	**5.06** (3.30-7.51)	**5.75** (3.65-8.68)
6-hr	**1.87** (1.48-2.34)	**2.21** (1.75-2.78)	**2.78** (2.19-3.50)	**3.25** (2.55-4.11)	**3.89** (2.97-5.17)	**4.37** (3.27-5.94)	**4.89** (3.57-6.94)	**5.56** (3.77-7.92)	**6.61** (4.31-9.74)	**7.53** (4.80-11.3)
12-hr	**2.35** (1.87-2.92)	**2.81** (2.23-3.50)	**3.56** (2.82-4.45)	**4.18** (3.30-5.26)	**5.05** (3.86-6.64)	**5.68** (4.26-7.65)	**6.37** (4.66-8.95)	**7.22** (4.93-10.2)	**8.54** (5.60-12.5)	**9.68** (6.20-14.4)
24-hr	**2.79** (2.24-3.45)	**3.37** (2.70-4.18)	**4.33** (3.45-5.38)	**5.12** (4.06-6.40)	**6.22** (4.77-8.13)	**7.02** (5.29-9.39)	**7.90** (5.78-11.0)	**8.95** (6.13-12.6)	**10.5** (6.93-15.3)	**11.9** (7.64-17.6)
2-day	**3.15** (2.54-3.86)	**3.84** (3.09-4.72)	**4.97** (3.99-6.13)	**5.91** (4.72-7.33)	**7.21** (5.57-9.37)	**8.17** (6.18-10.9)	**9.21** (6.78-12.7)	**10.5** (7.19-14.6)	**12.4** (8.15-17.8)	**14.0** (9.00-20.6)
3-day	**3.41** (2.76-4.17)	**4.16** (3.36-5.10)	**5.40** (4.35-6.63)	**6.42** (5.14-7.93)	**7.83** (6.07-10.1)	**8.87** (6.73-11.8)	**10.0** (7.39-13.8)	**11.4** (7.84-15.8)	**13.5** (8.90-19.4)	**15.2** (9.83-22.3)
4-day	**3.65** (2.96-4.45)	**4.45** (3.60-5.43)	**5.76** (4.65-7.06)	**6.85** (5.49-8.44)	**8.35** (6.48-10.8)	**9.45** (7.19-12.5)	**10.7** (7.89-14.7)	**12.1** (8.36-16.8)	**14.4** (9.50-20.6)	**16.3** (10.5-23.8)
7-day	**4.31** (3.51-5.23)	**5.22** (4.25-6.34)	**6.70** (5.43-8.16)	**7.92** (6.39-9.71)	**9.62** (7.50-12.4)	**10.9** (8.30-14.3)	**12.2** (9.08-16.7)	**13.9** (9.61-19.2)	**16.4** (10.9-23.4)	**18.6** (12.0-27.0)
10-day	**4.99** (4.08-6.04)	**5.95** (4.86-7.21)	**7.53** (6.12-9.15)	**8.83** (7.14-10.8)	**10.6** (8.31-13.6)	**12.0** (9.16-15.6)	**13.4** (9.96-18.2)	**15.1** (10.5-20.8)	**17.8** (11.8-25.2)	**20.0** (13.0-28.9)
20-day	**7.16** (5.89-8.61)	**8.19** (6.73-9.86)	**9.87** (8.08-11.9)	**11.3** (9.16-13.7)	**13.2** (10.3-16.6)	**14.6** (11.2-18.8)	**16.2** (11.9-21.5)	**17.8** (12.4-24.3)	**20.1** (13.5-28.4)	**22.0** (14.3-31.6)
30-day	**9.00** (7.43-10.8)	**10.0** (8.29-12.0)	**11.8** (9.66-14.2)	**13.2** (10.8-16.0)	**15.2** (11.9-19.0)	**16.7** (12.8-21.2)	**18.2** (13.4-23.8)	**19.7** (13.8-26.7)	**21.7** (14.6-30.4)	**23.2** (15.1-33.2)
45-day	**11.3** (9.34-13.4)	**12.4** (10.2-14.7)	**14.1** (11.6-16.9)	**15.6** (12.8-18.8)	**17.6** (13.8-21.8)	**19.2** (14.7-24.2)	**20.7** (15.2-26.8)	**22.1** (15.5-29.8)	**23.7** (16.0-33.1)	**24.9** (16.2-35.5)
60-day	**13.2** (10.9-15.7)	**14.3** (11.8-17.0)	**16.1** (13.3-19.2)	**17.6** (14.4-21.1)	**19.6** (15.5-24.2)	**21.3** (16.3-26.7)	**22.8** (16.7-29.3)	**24.1** (17.0-32.4)	**25.6** (17.3-35.6)	**26.5** (17.4-37.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

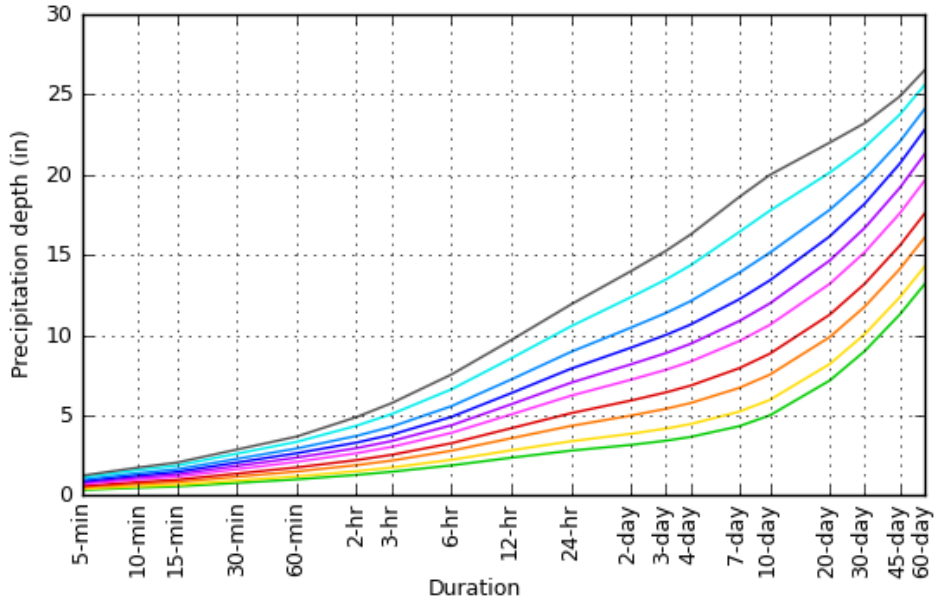
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

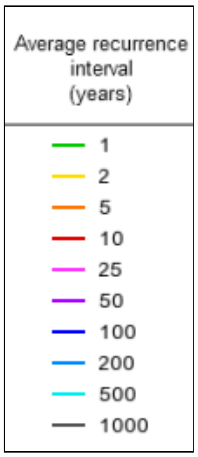
Please refer to NOAA Atlas 14 document for more information.

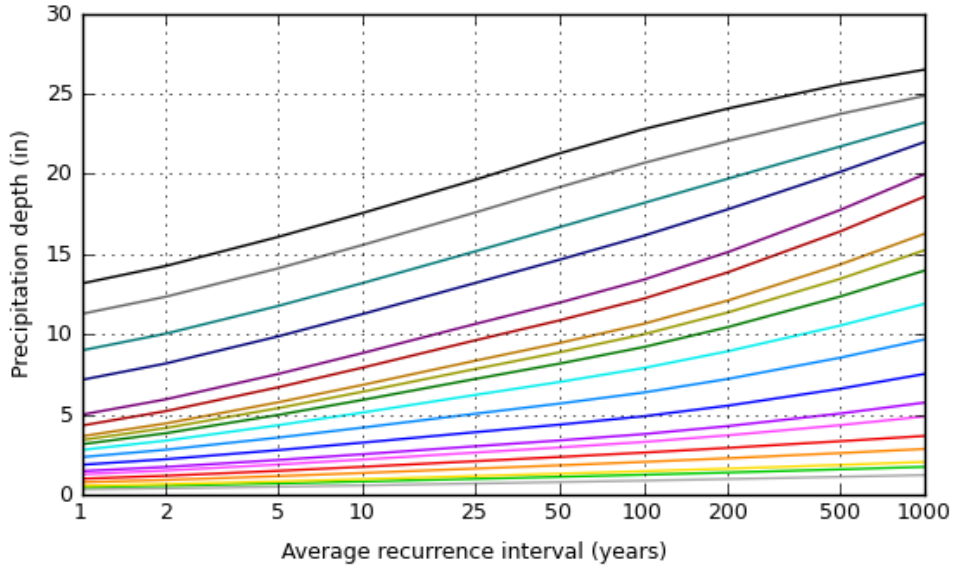
Back to Top

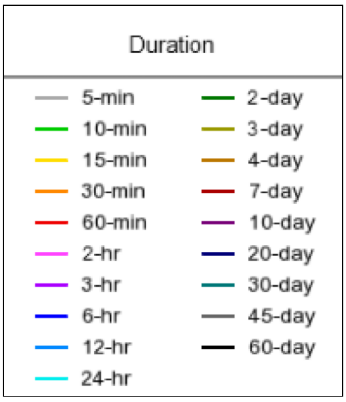
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.9268°, Longitude: -71.9581°









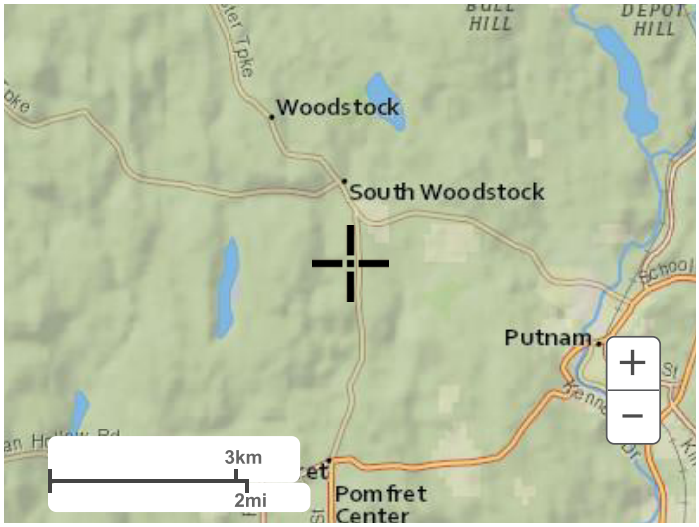
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Jun 18 12:27:13 2021

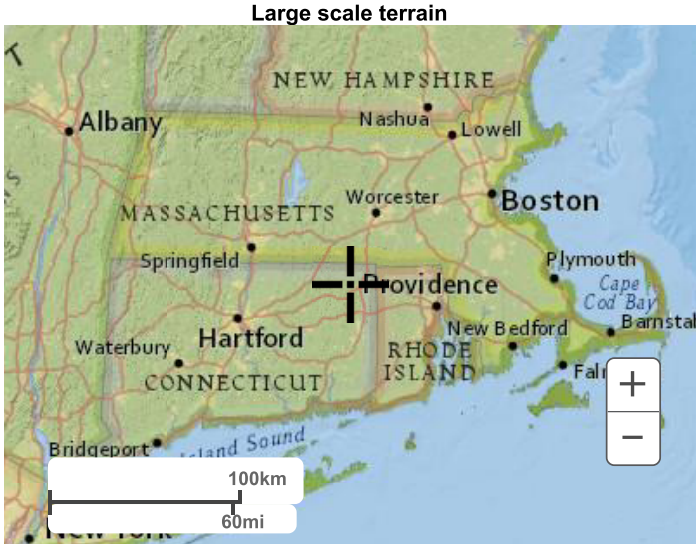
Back to Top

Maps & aerials

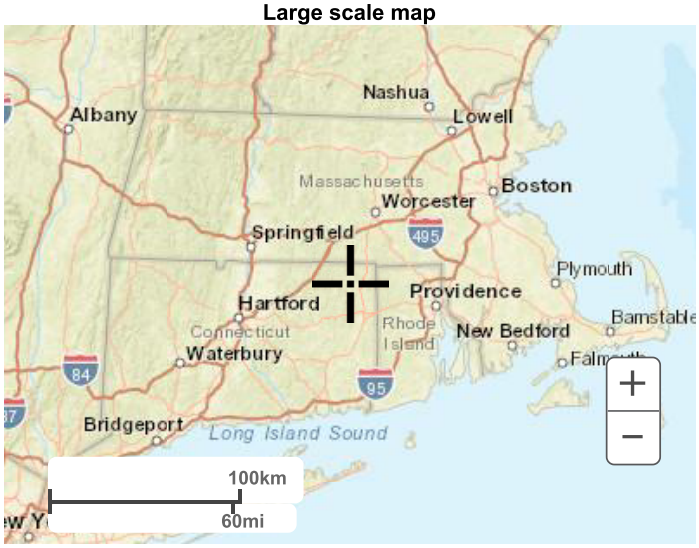
Small scale terrain



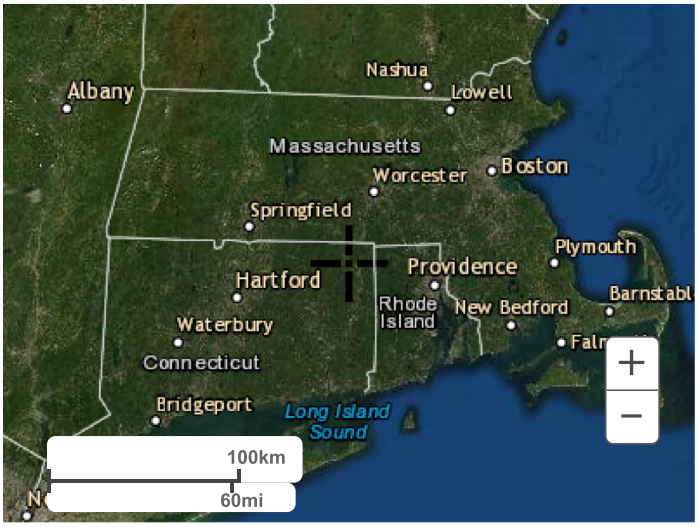
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 10, Version 3
Location name: Woodstock, Connecticut, USA*
Latitude: 41.9268°, Longitude: -71.9581°
Elevation: 422.61 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.00** (3.12-5.08)	**4.74** (3.70-6.04)	**5.96** (4.63-7.62)	**6.97** (5.39-8.96)	**8.38** (6.25-11.2)	**9.44** (6.90-12.9)	**10.5** (7.46-14.9)	**11.7** (7.91-17.0)	**13.4** (8.68-20.0)	**14.7** (9.31-22.5)
10-min	**2.83** (2.21-3.60)	**3.36** (2.62-4.28)	**4.23** (3.28-5.41)	**4.94** (3.82-6.35)	**5.93** (4.43-7.94)	**6.69** (4.89-9.13)	**7.46** (5.29-10.5)	**8.30** (5.60-12.0)	**9.48** (6.15-14.2)	**10.4** (6.59-15.9)
15-min	**2.22** (1.73-2.82)	**2.63** (2.05-3.36)	**3.31** (2.58-4.24)	**3.88** (3.00-4.99)	**4.66** (3.48-6.22)	**5.24** (3.84-7.15)	**5.85** (4.15-8.26)	**6.51** (4.39-9.42)	**7.44** (4.82-11.1)	**8.17** (5.17-12.5)
30-min	**1.55** (1.21-1.97)	**1.84** (1.43-2.34)	**2.31** (1.80-2.96)	**2.71** (2.09-3.48)	**3.25** (2.43-4.35)	**3.66** (2.68-5.00)	**4.09** (2.90-5.77)	**4.55** (3.07-6.58)	**5.19** (3.37-7.77)	**5.71** (3.61-8.71)
60-min	**0.996** (0.777-1.27)	**1.18** (0.922-1.51)	**1.49** (1.16-1.90)	**1.74** (1.34-2.24)	**2.09** (1.56-2.79)	**2.35** (1.72-3.21)	**2.63** (1.86-3.70)	**2.92** (1.97-4.23)	**3.33** (2.16-4.99)	**3.66** (2.32-5.59)
2-hr	**0.638** (0.500-0.806)	**0.752** (0.590-0.953)	**0.941** (0.735-1.20)	**1.10** (0.852-1.40)	**1.31** (0.990-1.75)	**1.47** (1.09-2.01)	**1.64** (1.19-2.34)	**1.85** (1.25-2.67)	**2.17** (1.41-3.23)	**2.44** (1.55-3.70)
3-hr	**0.489** (0.385-0.616)	**0.577** (0.454-0.728)	**0.721** (0.565-0.912)	**0.840** (0.655-1.07)	**1.00** (0.761-1.34)	**1.13** (0.837-1.54)	**1.26** (0.914-1.79)	**1.43** (0.965-2.04)	**1.69** (1.10-2.50)	**1.91** (1.22-2.89)
6-hr	**0.312** (0.247-0.391)	**0.370** (0.293-0.463)	**0.464** (0.366-0.584)	**0.542** (0.425-0.686)	**0.650** (0.495-0.863)	**0.729** (0.546-0.992)	**0.817** (0.597-1.16)	**0.928** (0.630-1.32)	**1.10** (0.720-1.63)	**1.26** (0.802-1.89)
12-hr	**0.195** (0.155-0.242)	**0.233** (0.185-0.290)	**0.295** (0.234-0.369)	**0.347** (0.274-0.436)	**0.419** (0.320-0.551)	**0.471** (0.354-0.635)	**0.529** (0.387-0.743)	**0.600** (0.409-0.849)	**0.709** (0.465-1.04)	**0.804** (0.514-1.20)
24-hr	**0.116** (0.093-0.144)	**0.141** (0.113-0.174)	**0.180** (0.144-0.224)	**0.213** (0.169-0.266)	**0.259** (0.199-0.339)	**0.293** (0.220-0.391)	**0.329** (0.241-0.458)	**0.373** (0.255-0.524)	**0.439** (0.289-0.639)	**0.496** (0.318-0.734)
2-day	**0.066** (0.053-0.080)	**0.080** (0.064-0.098)	**0.104** (0.083-0.128)	**0.123** (0.098-0.153)	**0.150** (0.116-0.195)	**0.170** (0.129-0.226)	**0.192** (0.141-0.265)	**0.218** (0.150-0.304)	**0.257** (0.170-0.372)	**0.291** (0.187-0.428)
3-day	**0.047** (0.038-0.058)	**0.058** (0.047-0.071)	**0.075** (0.060-0.092)	**0.089** (0.071-0.110)	**0.109** (0.084-0.141)	**0.123** (0.094-0.163)	**0.139** (0.103-0.192)	**0.158** (0.109-0.220)	**0.187** (0.124-0.269)	**0.212** (0.137-0.310)
4-day	**0.038** (0.031-0.046)	**0.046** (0.038-0.057)	**0.060** (0.048-0.074)	**0.071** (0.057-0.088)	**0.087** (0.068-0.112)	**0.098** (0.075-0.130)	**0.111** (0.082-0.153)	**0.126** (0.087-0.175)	**0.150** (0.099-0.214)	**0.170** (0.109-0.248)
7-day	**0.026** (0.021-0.031)	**0.031** (0.025-0.038)	**0.040** (0.032-0.049)	**0.047** (0.038-0.058)	**0.057** (0.045-0.074)	**0.065** (0.049-0.085)	**0.073** (0.054-0.100)	**0.083** (0.057-0.114)	**0.098** (0.065-0.139)	**0.111** (0.072-0.161)
10-day	**0.021** (0.017-0.025)	**0.025** (0.020-0.030)	**0.031** (0.026-0.038)	**0.037** (0.030-0.045)	**0.044** (0.035-0.057)	**0.050** (0.038-0.065)	**0.056** (0.041-0.076)	**0.063** (0.044-0.087)	**0.074** (0.049-0.105)	**0.083** (0.054-0.121)
20-day	**0.015** (0.012-0.018)	**0.017** (0.014-0.021)	**0.021** (0.017-0.025)	**0.023** (0.019-0.028)	**0.027** (0.022-0.035)	**0.031** (0.023-0.039)	**0.034** (0.025-0.045)	**0.037** (0.026-0.051)	**0.042** (0.028-0.059)	**0.046** (0.030-0.066)
30-day	**0.012** (0.010-0.015)	**0.014** (0.011-0.017)	**0.016** (0.013-0.020)	**0.018** (0.015-0.022)	**0.021** (0.017-0.026)	**0.023** (0.018-0.029)	**0.025** (0.019-0.033)	**0.027** (0.019-0.037)	**0.030** (0.020-0.042)	**0.032** (0.021-0.046)
45-day	**0.010** (0.009-0.012)	**0.011** (0.009-0.014)	**0.013** (0.011-0.016)	**0.014** (0.012-0.017)	**0.016** (0.013-0.020)	**0.018** (0.014-0.022)	**0.019** (0.014-0.025)	**0.020** (0.014-0.028)	**0.022** (0.015-0.031)	**0.023** (0.015-0.033)
60-day	**0.009** (0.008-0.011)	**0.010** (0.008-0.012)	**0.011** (0.009-0.013)	**0.012** (0.010-0.015)	**0.014** (0.011-0.017)	**0.015** (0.011-0.019)	**0.016** (0.012-0.020)	**0.017** (0.012-0.022)	**0.018** (0.012-0.025)	**0.018** (0.012-0.026)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

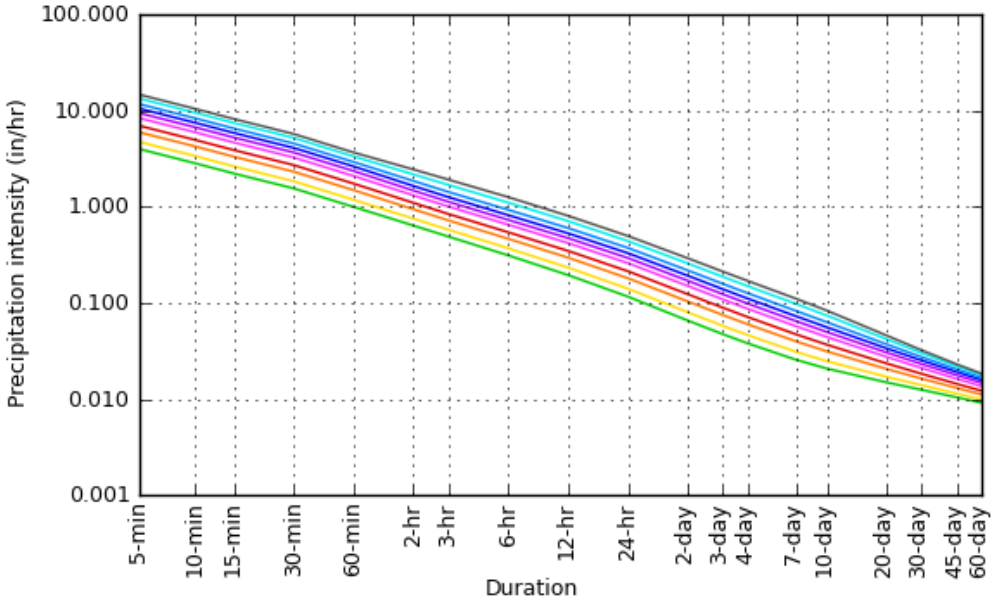
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

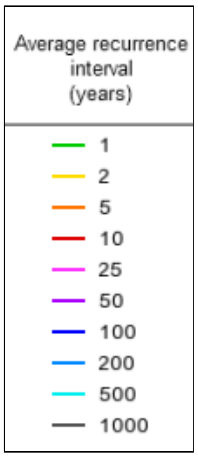
Please refer to NOAA Atlas 14 document for more information.

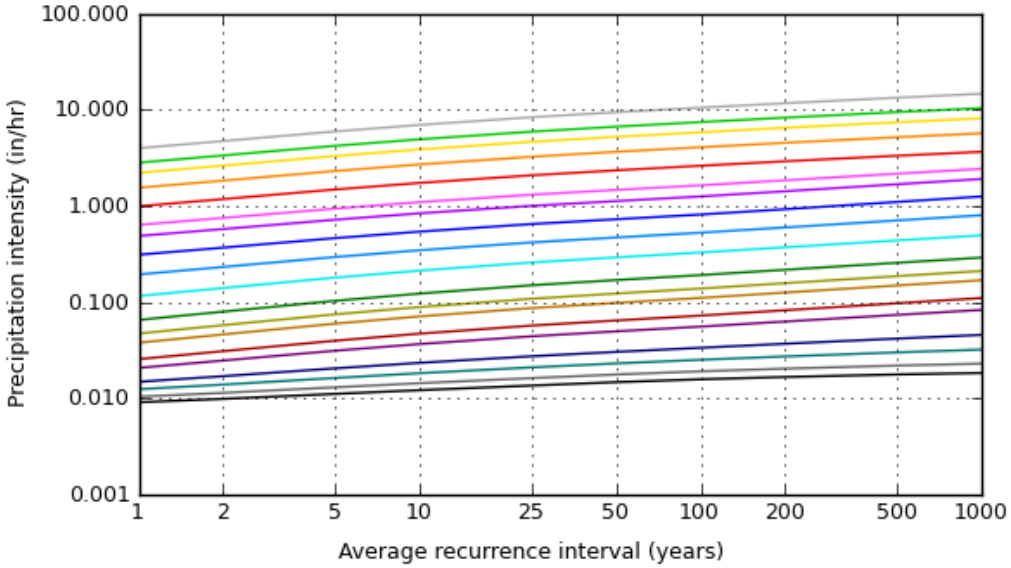
Back to Top

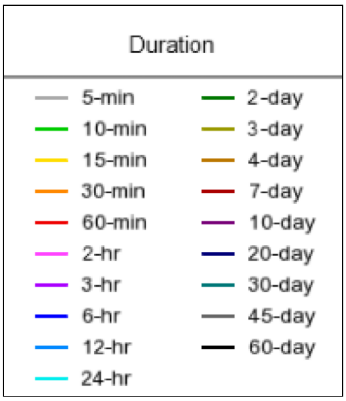
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.9268°, Longitude: -71.9581°









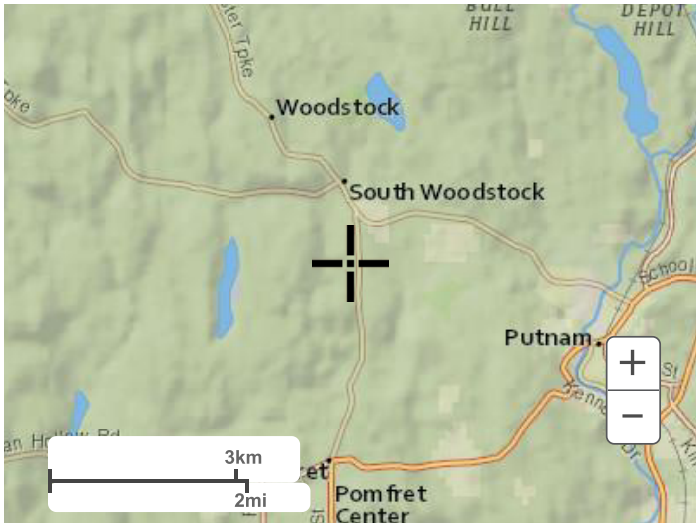
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Jun 18 12:28:28 2021

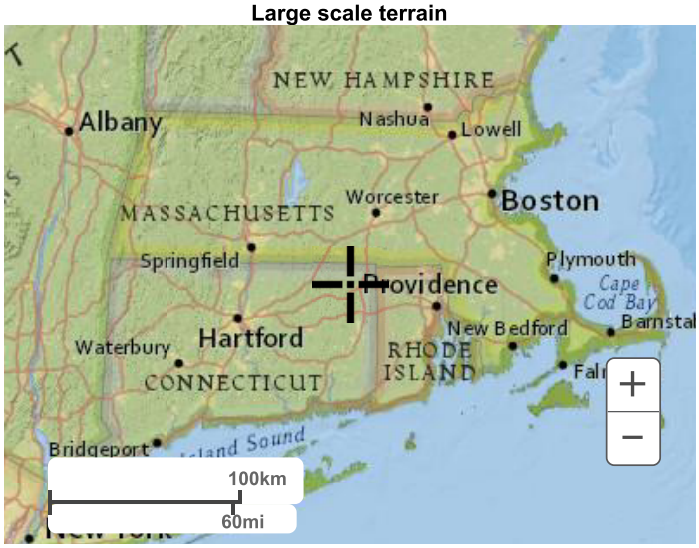
Back to Top

Maps & aerials

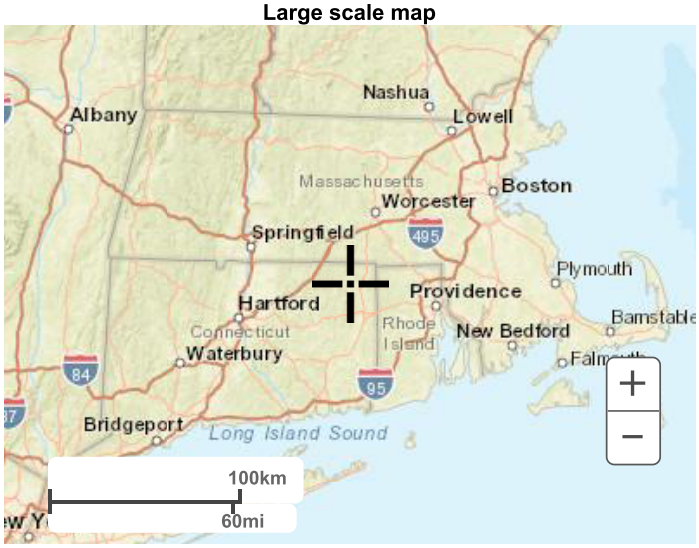
Small scale terrain



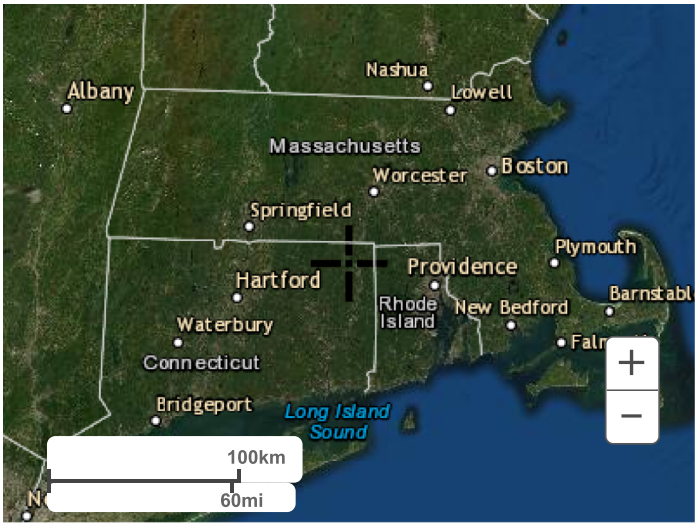
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov