Drainage Computations

for the Proposed Single Family Dwelling, Sports Court and Site Improvements at 28 Beachside Avenue; Westport, CT

Revised: October 7, 2024

July 30, 2024

Prepared for Sound Building, LLC

by Chappa Site Consulting, LLC

CLIENT: Sounding Building, LLC

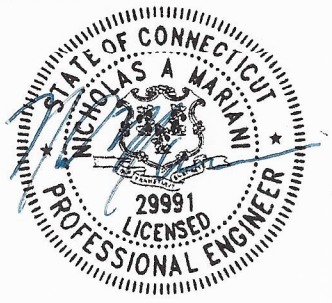
PROPERTY LOCATION: 28 Beachside Avenue; Westport, CT

SOILS: The United States Department of Agriculture, Soil Conservation Service, Soil Survey of Fairfield County, Connecticut indicates that onsite upland soil is Hinckley (HKB), gravelly sandy loam & Ninigret (Nn) fine sandy loam. Based on the soil test results and a site inspection of the proposed construction area, the onsite soil has been considered a hydrological group "B" soil for the purposes of drainage.

EXISTING CONDITIONS: The majority of the vacant 2.289 acre site is lawn and the topography ranges from a level to a moderate slope. The southern portion of the property borders Long Island Sound.

PROPOSAL: The applicant is proposing to construct a single family dwelling and a sports court. The dwelling shall be serviced by a new subsurface sewage disposal system and public water supply A new drive will provide access to the property from Beachside Avenue. The proposed dwelling, patio, louvered pergola, sports court, utility pads and drive have an approximate impervious area of 17,405 s.f..

DRAINAGE: 29 - 1.5' high x 4' wide x 8' long precast concrete galleries and a 9" deep trap rock bed (below the pervious drive) will be installed to collect the post developed stormwater runoff. The proposed stormwater system has been designed to accommodate the additional runoff produced during a 25 year storm. Furthermore in order to remove storm water pollutants and provide water quality treatment the drainage system has been sized to handle the first 1.0" of rainfall from all proposed areas as recommended in the Connecticut Stormwater Quality Manual. The following pages contain the necessary drainage computations. Future development may require additional storm-water runoff retention/detention



Nicholas A. Mariani, P.E. CT REG. NO. 29991

Chappa Site Consulting, LLC
55 Ridgeview Avenue; Trumbull, CT 06611

Client	*Address*	*Project #*
Sound Building, LLC	28 Beachside Avenue; Westport, CT	30463

1. Concrete Gallery & Stone Volume:

Nominal Gallery Dimension = 1.5' High x 4' Wide x 8' Long / Net Volume = 32.2 c.f.*

Calculate 40% Trap Rock Void Ratio:
Sides - (2.0' wide x 2.0' high x 8' long) x 2 sides = 64 x 0.40 = 25.6 c.f.
Bottom - (4.0' wide x 0.5' high x 8' long) = 16 x 0.40 = 6.4 c.f.
Total Trap Rock Void Volume per 8' section = 32.0

Total Gallery & Trap Rock Void Volume per 8' section = 32.2 cf + 32.0 c.f. = **64.2 c.f.**

* Net Volume Taken from Town of Westport Storm Water Drainage Design Standards

2. Galleries Required for storage of first 1"of runoff:

A. New Impervious Area = **17,405 s.f.***

*(This is the area of the Proposed Dwelling, Patio, Louvered Pergola, Sports Court, Utility Pads, Walk & Drive)

B. Volume of runoff from 1" of rainfall

= 17,405 s.f. x (1/12) = 1,450.42 c.f. - **Use 1,451 c.f.**

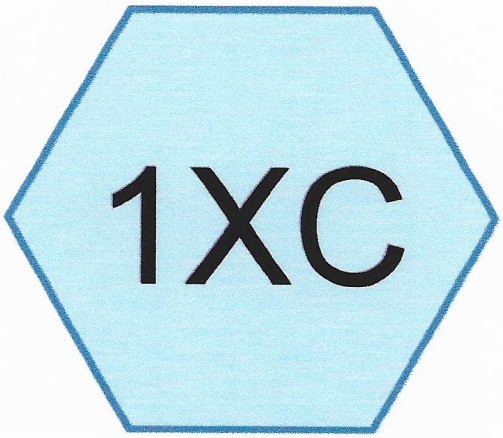
C. Volume Runoff/Gallery Capacity

1,451 ÷ 62.2 c.f. = **23.33 galleries**

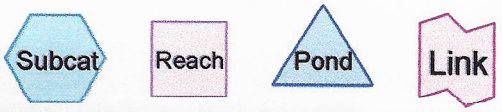
Use 24 galleries or 192 l.f. of 1.5' H x 4' W Gallery

Conclusion:

24 - 1.5' high x 4' wide x 8' long precast concrete galleries will be more than sufficient to handle the first 1" of runoff from the proposed site development, however in order to accommodate the additional runoff produced during a 25 year storm event **29 - 1.5' high x 4' wide x 8' long precast concrete galleries have been proposed.**



EXISTING UPLAND CONDITIONS



Routing Diagram for c30463XCONHYD
Prepared by CHAPPA SITE CONSULTING, LLC, Printed 7/12/2024
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
99,710	61	>75% Grass cover, Good, HSG B (1XC)
99,710	**61**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1XC: EXISTING UPLAND CONDITIONS

Runoff Area=99,710 sf 0.00% Impervious Runoff Depth>2.27"
Flow Length=427' Tc=15.1 min CN=61 Runoff=4.40 cfs 18,860 cf

Total Runoff Area = 99,710 sf Runoff Volume = 18,860 cf Average Runoff Depth = 2.27"
100.00% Pervious = 99,710 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1XC: EXISTING UPLAND CONDITIONS

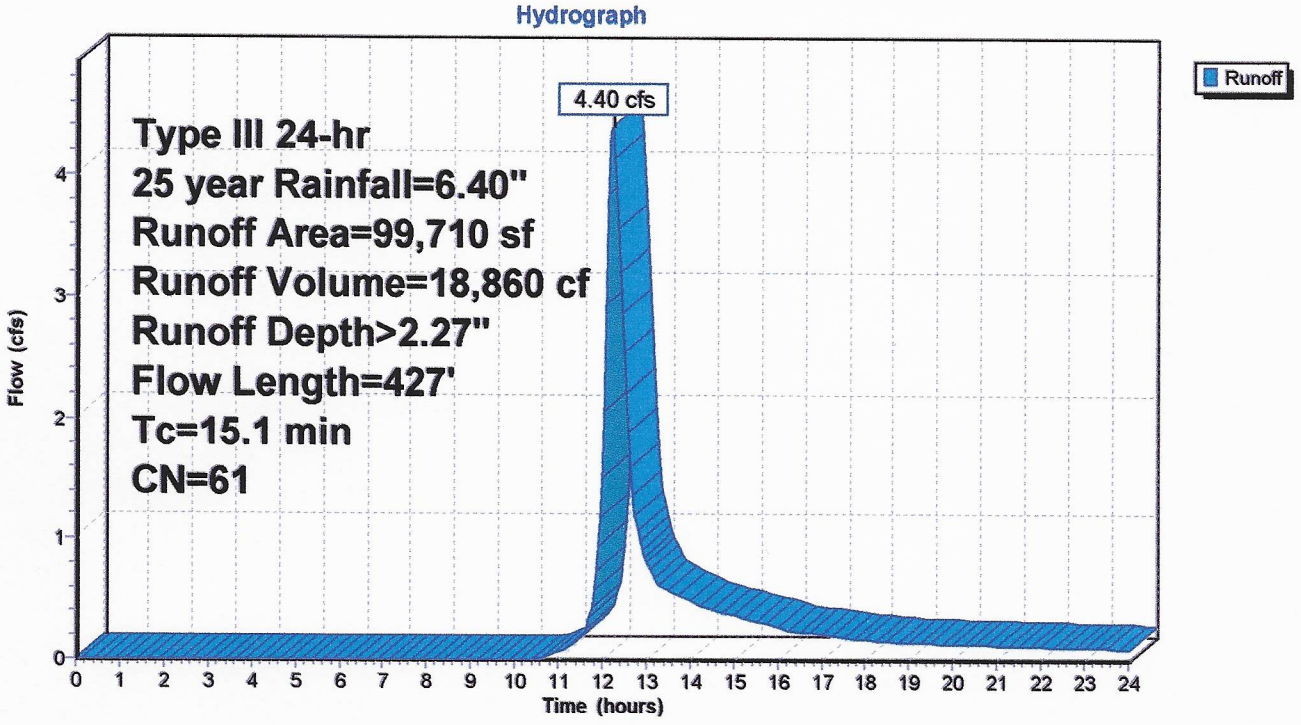
Runoff = 4.40 cfs @ 12.22 hrs, Volume= 18,860 cf, Depth> 2.27"

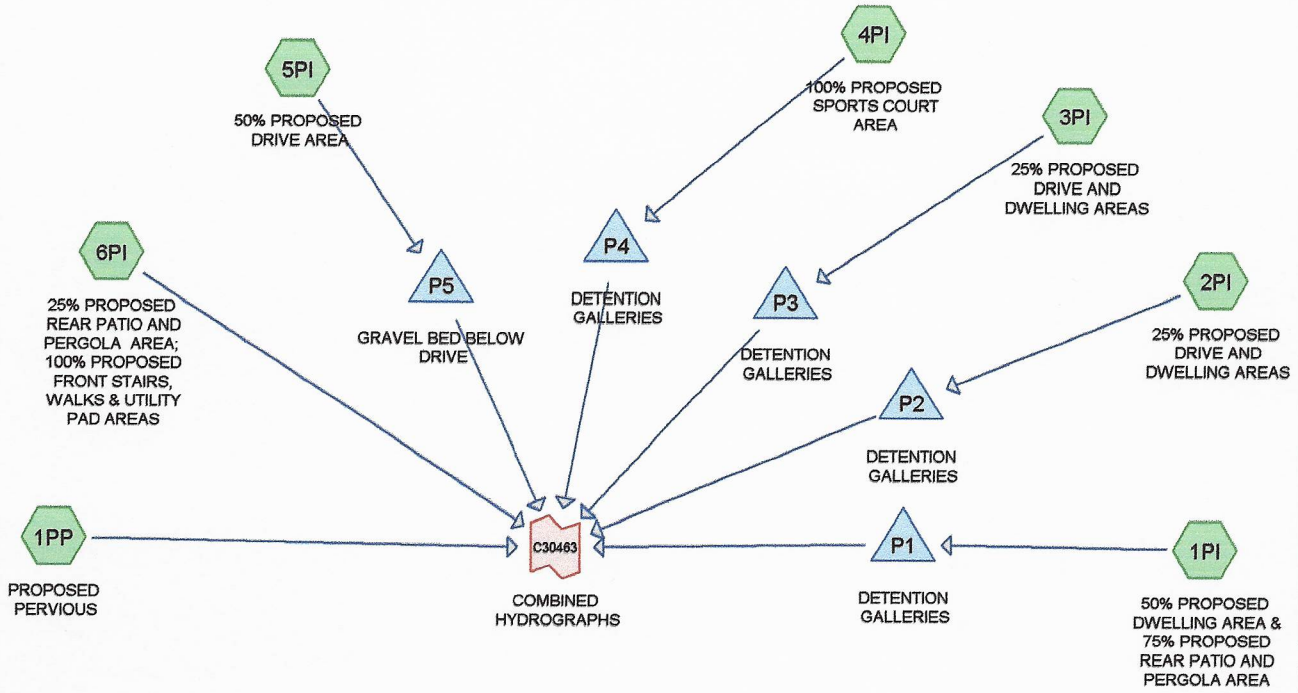
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year Rainfall=6.40"

Area (sf)	CN	Description
99,710	61	>75% Grass cover, Good, HSG B
99,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	122	0.0164	0.17		**Sheet Flow, Existing Conditions A-A** Grass: Short n= 0.150 P2= 3.50"
3.2	305	0.0515	1.59		**Shallow Concentrated Flow, Existing Conditions B-B** Short Grass Pasture Kv= 7.0 fps
15.1	427	Total			

Subcatchment 1XC: EXISTING UPLAND CONDITIONS





Subcat Reach Pond Link

Routing Diagram for C30463-PROPHYD

Prepared by CHAPPA SITE CONSULTING, LLC. Printed 10/7/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
203	98	100% PROPOSED FRONT STAIR AREAS (6PI)
880	98	100% PROPOSED SPORTS COURT AREA (4PI)
100	98	100% PROPOSED UTILITY PAD AREAS (6PI)
150	98	100% PROPOSED WALK AREAS (6PI)
4,776	98	25% PROPOSED DRIVE AREA (2PI, 3PI)
1,925	98	25% PROPOSED DWELLING AREA (2PI, 3PI)
667	98	25% PROPOSED REAR PATIO AND PERGOLA AREA (6PI)
4,776	98	50% PROPOSED DRIVE AREA (5PI)
1,925	98	50% PROPOSED DWELLING AREA (1PI)
2,003	98	75% PROPOSED REAR PATIO AND PERGOLA AREA (1PI)
82,305	61	>75% Grass cover, Good, HSG B (1PP)
99,710	**67**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1PI: 50% PROPOSED DWELLING AREA & 75% Runoff Area=3,928 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.61 cfs 2,016 cf

Subcatchment 1PP: PROPOSED PERVIOUS Runoff Area=82,305 sf 0.00% Impervious Runoff Depth>2.27"
Flow Length=427' Tc=15.1 min CN=61 Runoff=3.63 cfs 15,568 cf

Subcatchment 2PI: 25% PROPOSED DRIVE AND DWELLING AREAS Runoff Area=3,351 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.52 cfs 1,720 cf

Subcatchment 3PI: 25% PROPOSED DRIVE AND DWELLING AREAS Runoff Area=3,350 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.52 cfs 1,720 cf

Subcatchment 4PI: 100% PROPOSED SPORTS COURT AREA Runoff Area=880 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.14 cfs 452 cf

Subcatchment 5PI: 50% PROPOSED DRIVE AREA Runoff Area=4,776 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.74 cfs 2,452 cf

Subcatchment 6PI: 25% PROPOSED REAR PATIO AND PERGOLA Runoff Area=1,120 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.17 cfs 575 cf

Pond P1: DETENTION GALLERIES Peak Elev=17.42' Storage=593 cf Inflow=0.61 cfs 2,016 cf
Outflow=0.09 cfs 2,016 cf

Pond P2: DETENTION GALLERIES Peak Elev=15.66' Storage=509 cf Inflow=0.52 cfs 1,720 cf
Outflow=0.07 cfs 1,720 cf

Pond P3: DETENTION GALLERIES Peak Elev=8.66' Storage=509 cf Inflow=0.52 cfs 1,720 cf
Outflow=0.07 cfs 1,719 cf

Pond P4: DETENTION GALLERIES Peak Elev=6.43' Storage=121 cf Inflow=0.14 cfs 452 cf
Outflow=0.02 cfs 452 cf

Pond P5: GRAVEL BED BELOW DRIVE Peak Elev=4.75' Storage=648 cf Inflow=0.74 cfs 2,452 cf
Outflow=0.11 cfs 2,451 cf

Link C30463: COMBINED HYDROGRAPHS Inflow=3.70 cfs 16,143 cf
Primary=3.70 cfs 16,143 cf

Total Runoff Area = 99,710 sf Runoff Volume = 24,503 cf Average Runoff Depth = 2.95"
82.54% Pervious = 82,305 sf 17.46% Impervious = 17,405 sf

ummary for Subcatchment 1PI: 50% PROPOSED DWELLING AREA & 75% PROPOSED REAR PATIO AND PERGOLA ARE

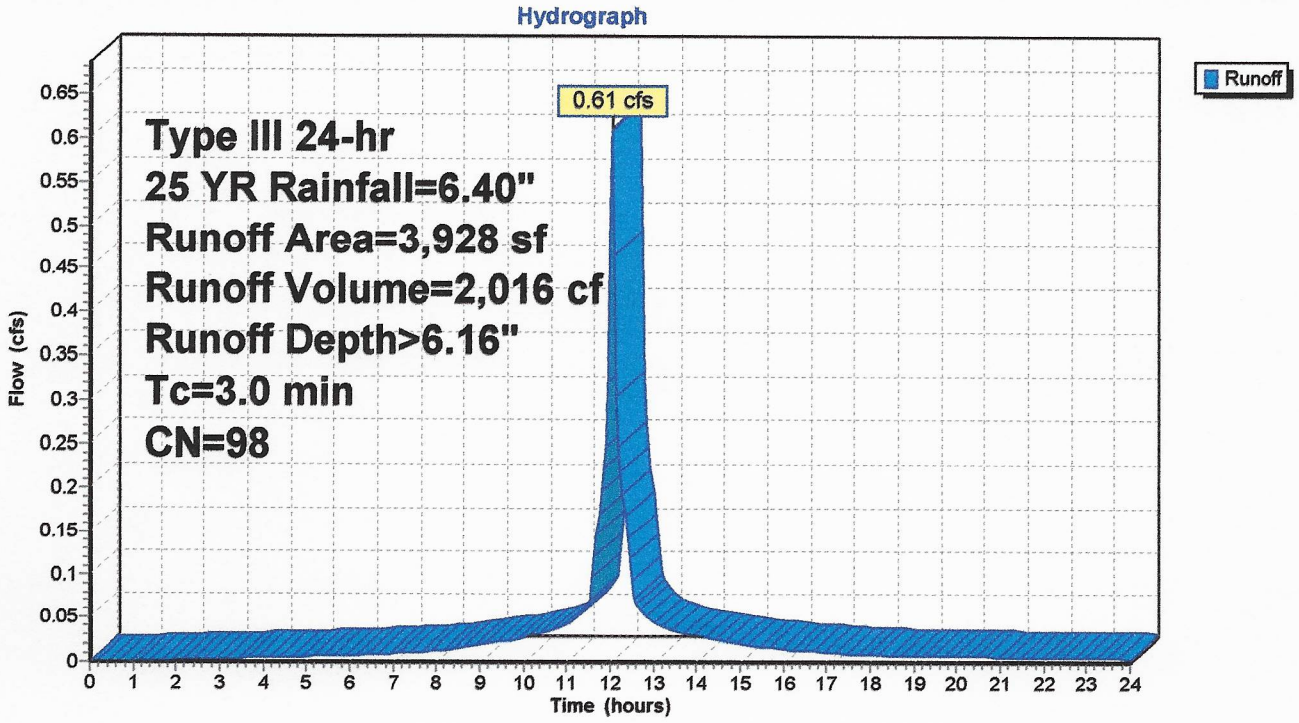
Runoff = 0.61 cfs @ 12.05 hrs, Volume= 2,016 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	1,925	98	50% PROPOSED DWELLING AREA
*	2,003	98	75% PROPOSED REAR PATIO AND PERGOLA AREA
	3,928	98	Weighted Average
	3,928		100.00% Impervious Area

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

Subcatchment 1PI: 50% PROPOSED DWELLING AREA & 75% PROPOSED REAR PATIO AND PERGOLA AREA



Summary for Subcatchment 1PP: PROPOSED PERVIOUS

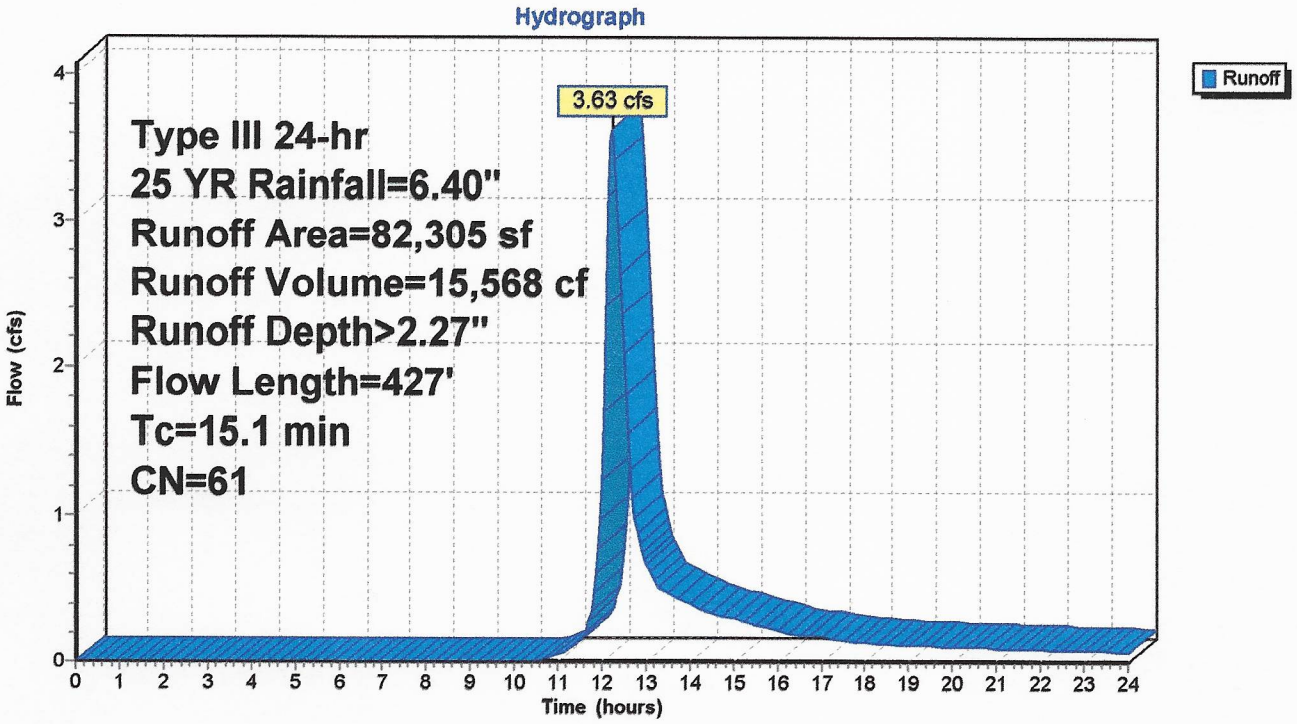
Runoff = 3.63 cfs @ 12.22 hrs, Volume= 15,568 cf, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

Area (sf)	CN	Description
82,305	61	>75% Grass cover, Good, HSG B
82,305		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	122	0.0164	0.17		**Sheet Flow, PROPOSED CONDITIONS A-A** Grass: Short n= 0.150 P2= 3.50"
3.2	305	0.0515	1.59		**Shallow Concentrated Flow, PROPOSED CONDITIONS B-B** Short Grass Pasture Kv= 7.0 fps
15.1	427	Total			

Subcatchment 1PP: PROPOSED PERVIOUS



Summary for Subcatchment 2PI: 25% PROPOSED DRIVE AND DWELLING AREAS

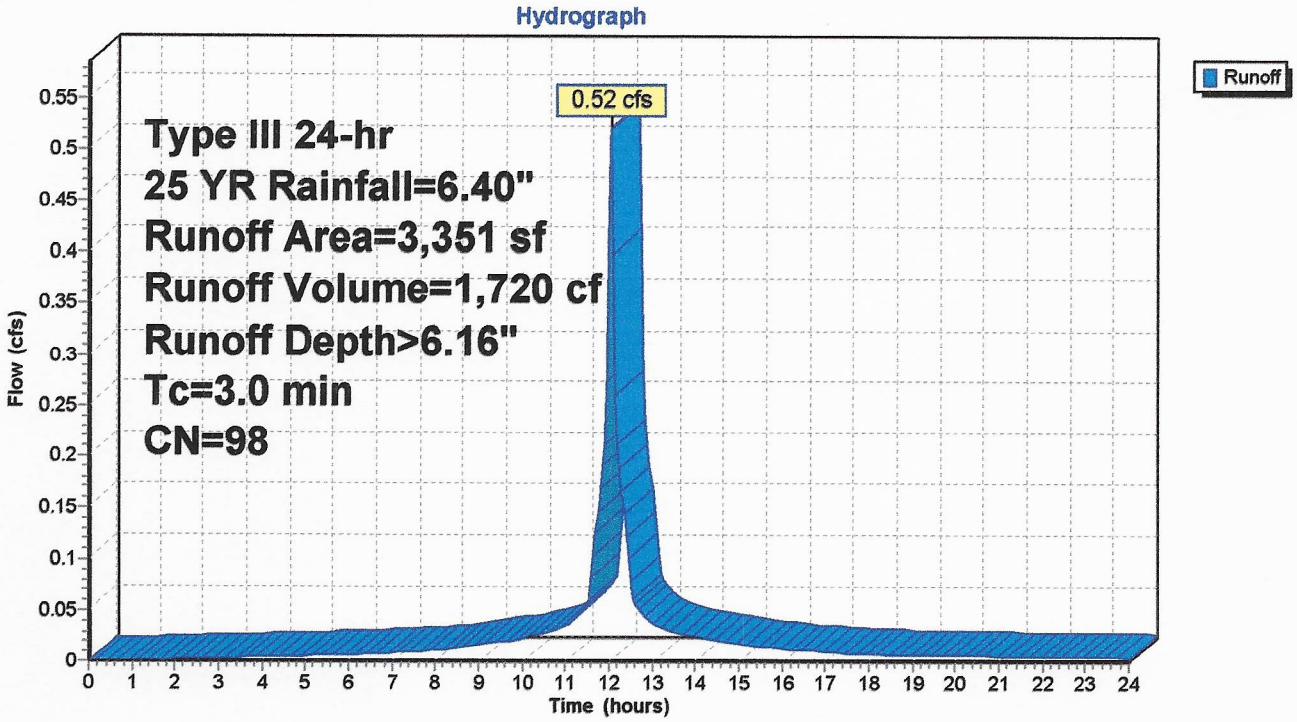
Runoff = 0.52 cfs @ 12.05 hrs, Volume= 1,720 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	2,388	98	25% PROPOSED DRIVE AREA
*	963	98	25% PROPOSED DWELLING AREA
	3,351	98	Weighted Average
	3,351		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0					Direct Entry, PROP COND

Subcatchment 2PI: 25% PROPOSED DRIVE AND DWELLING AREAS



Summary for Subcatchment 3PI: 25% PROPOSED DRIVE AND DWELLING AREAS

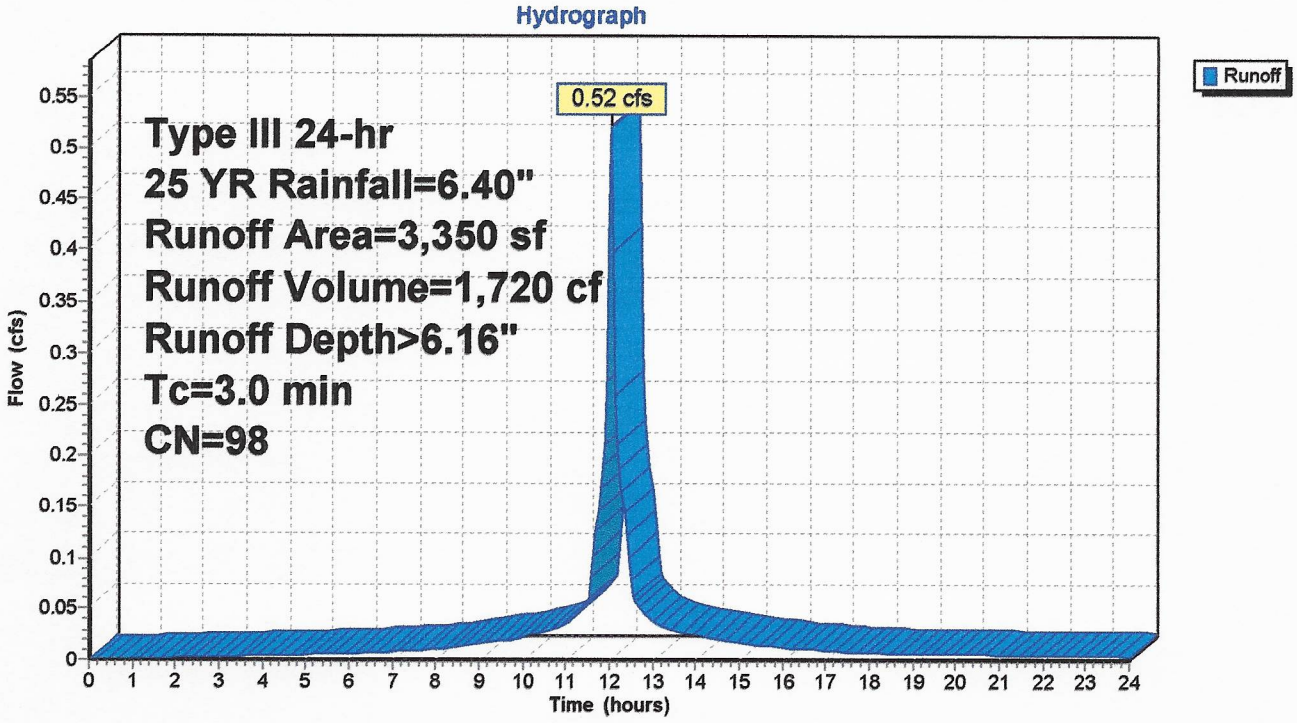
Runoff = 0.52 cfs @ 12.05 hrs, Volume= 1,720 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	2,388	98	25% PROPOSED DRIVE AREA
*	962	98	25% PROPOSED DWELLING AREA
	3,350	98	Weighted Average
	3,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0					Direct Entry, PROP COND

Subcatchment 3PI: 25% PROPOSED DRIVE AND DWELLING AREAS



Summary for Subcatchment 4PI: 100% PROPOSED SPORTS COURT AREA

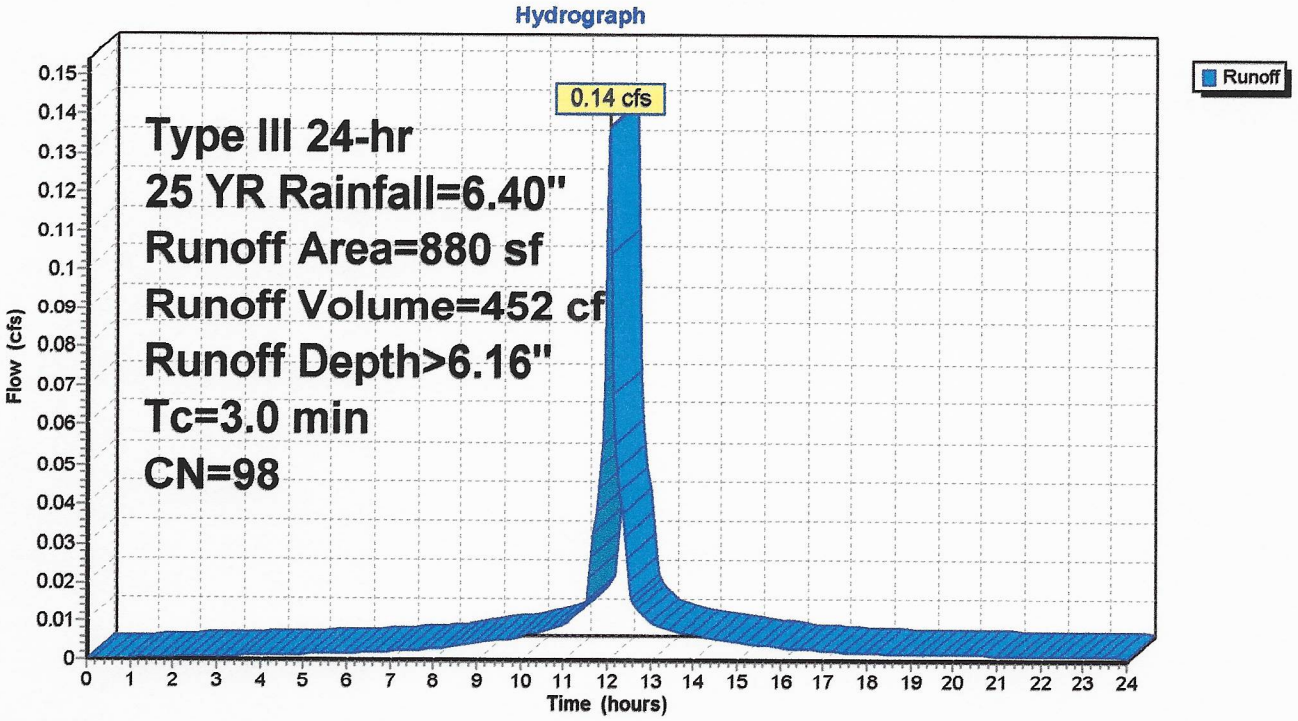
Runoff = 0.14 cfs @ 12.05 hrs, Volume= 452 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	880	98	100% PROPOSED SPORTS COURT AREA
	880		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0					Direct Entry, PROP COND

Subcatchment 4PI: 100% PROPOSED SPORTS COURT AREA



Summary for Subcatchment 5PI: 50% PROPOSED DRIVE AREA

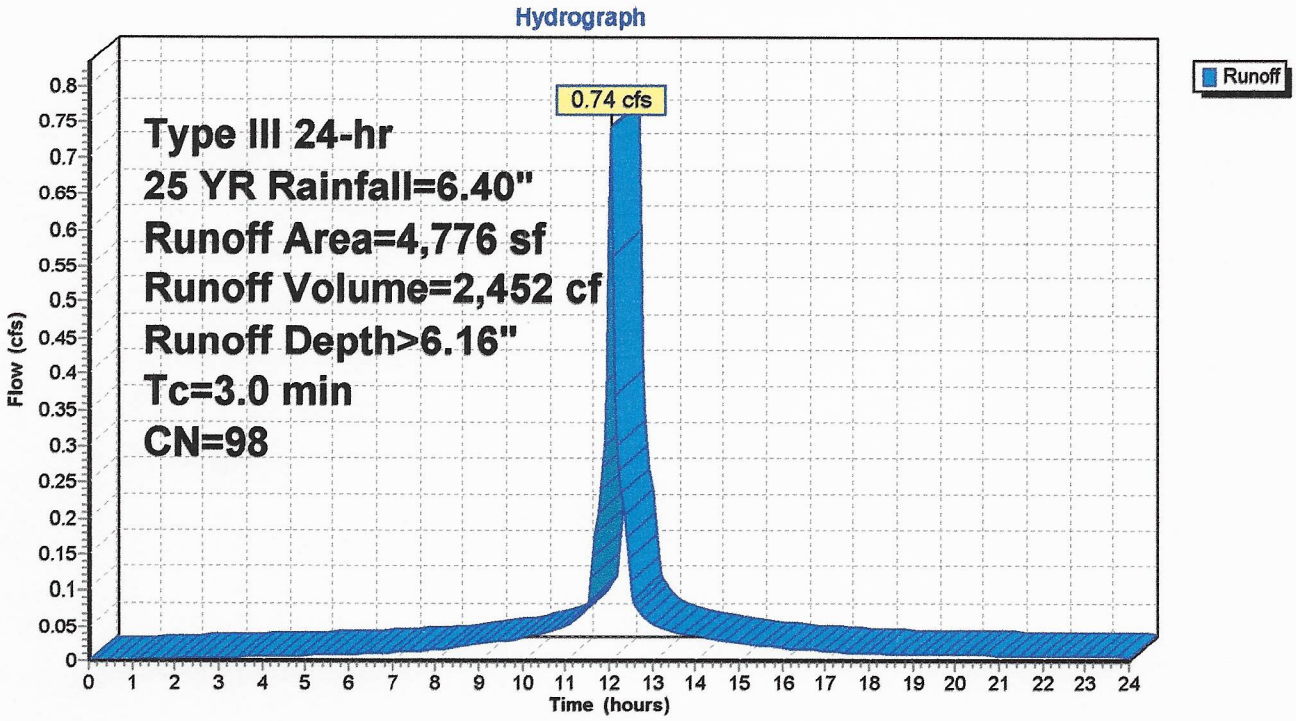
Runoff = 0.74 cfs @ 12.05 hrs, Volume= 2,452 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	4,776	98	50% PROPOSED DRIVE AREA
	4,776		100.00% Impervious Area

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

Subcatchment 5PI: 50% PROPOSED DRIVE AREA



ɔcatchment 6PI: 25% PROPOSED REAR PATIO AND PERGOLA AREA; 100% PROPOSED FRONT STAIRS, WALKS & UTI

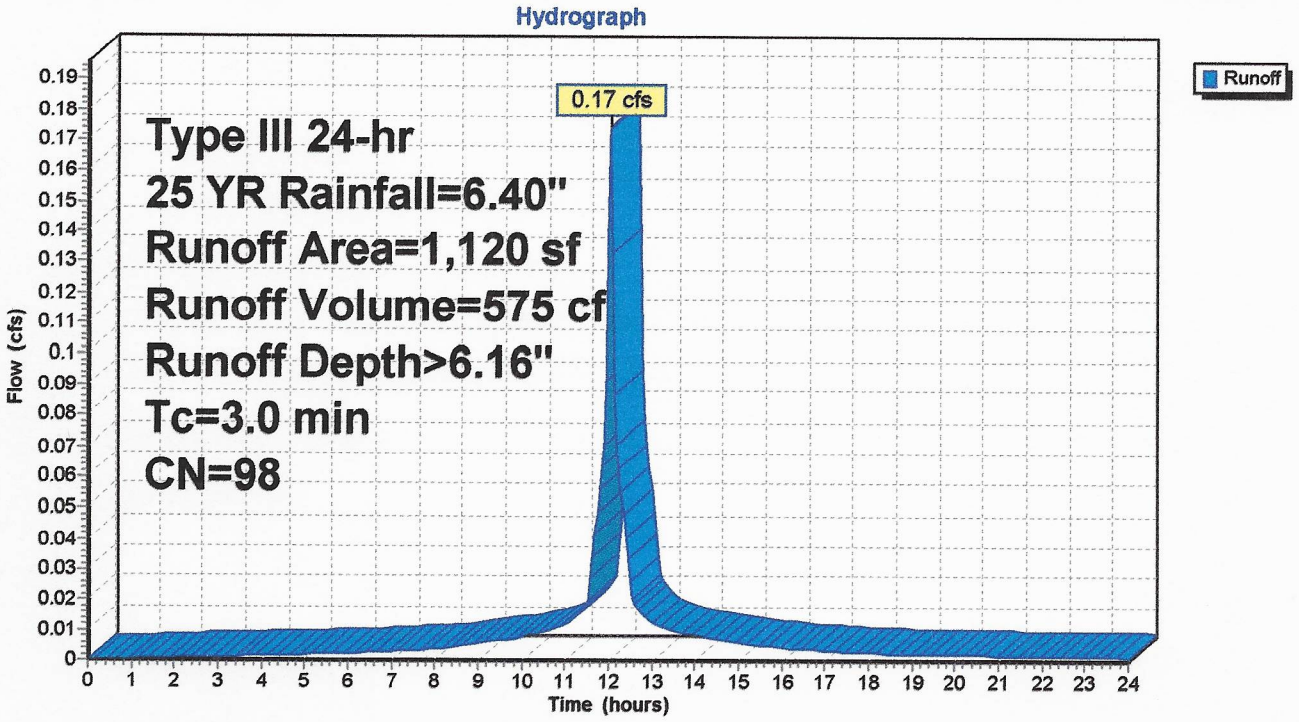
Runoff = 0.17 cfs @ 12.05 hrs, Volume= 575 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (sf)	CN	Description
*	667	98	25% PROPOSED REAR PATIO AND PERGOLA AREA
*	100	98	100% PROPOSED UTILITY PAD AREAS
*	203	98	100% PROPOSED FRONT STAIR AREAS
*	150	98	100% PROPOSED WALK AREAS
	1,120	98	Weighted Average
	1,120		100.00% Impervious Area

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

nent 6PI: 25% PROPOSED REAR PATIO AND PERGOLA AREA; 100% PROPOSED FRONT STAIRS, WALKS & UTILITY P



Summary for Pond P1: DETENTION GALLERIES

Inflow Area = 3,928 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 YR event
Inflow = 0.61 cfs @ 12.05 hrs, Volume= 2,016 cf
Outflow = 0.09 cfs @ 12.52 hrs, Volume= 2,016 cf, Atten= 86%, Lag= 28.3 min
Discarded = 0.09 cfs @ 12.52 hrs, Volume= 2,016 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.42' @ 12.52 hrs Surf.Area= 608 sf Storage= 593 cf

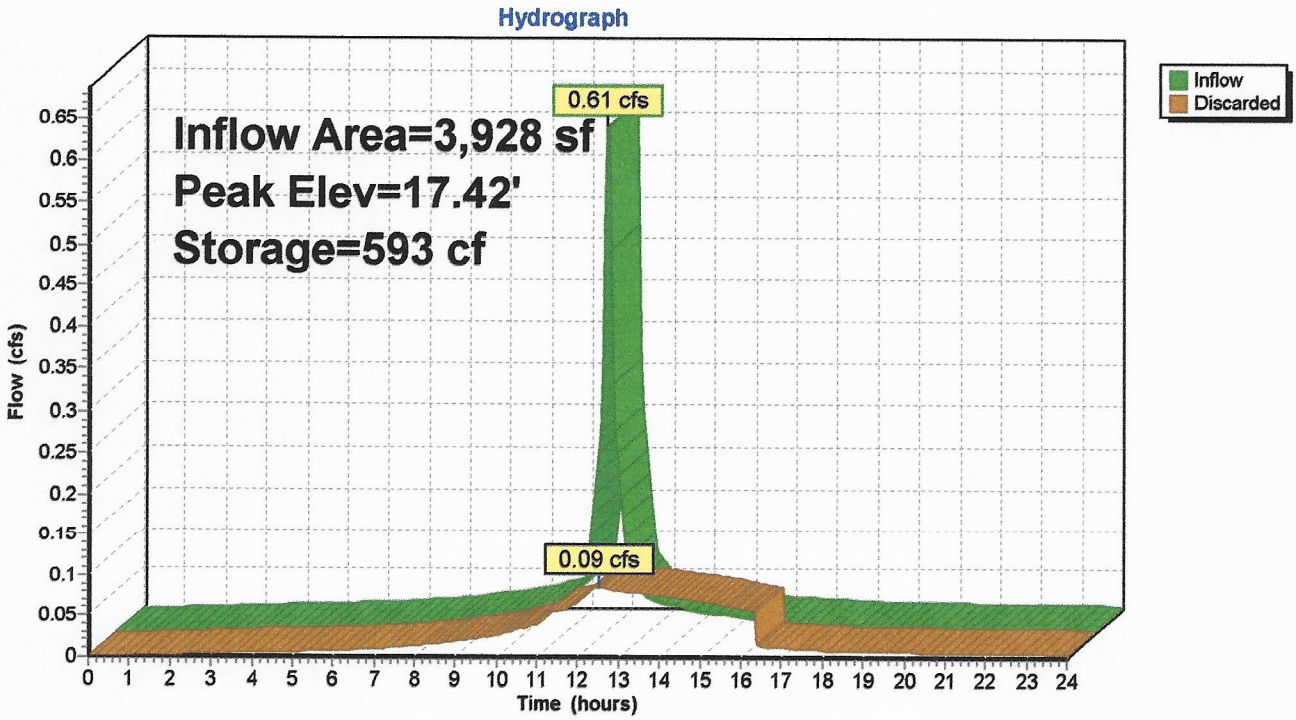
Plug-Flow detention time= 45.5 min calculated for 2,016 cf (100% of inflow)
Center-of-Mass det. time= 45.3 min (786.6 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	15.50'	314 cf	**8.00'W x 76.00'L x 2.00'H Prismatoid** 1,216 cf Overall - 432 cf Embedded = 784 cf x 40.0% Voids
#2	16.00'	290 cf	**Galley 4x8x1.5** x 9 Inside #1 Inside= 42.0"W x 15.0"H => 4.29 sf x 7.50'L = 32.2 cf Outside= 48.0"W x 18.0"H => 6.00 sf x 8.00'L = 48.0 cf
		603 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.50'	**4.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.09 cfs @ 12.52 hrs HW=17.42' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond P1: DETENTION GALLERIES



Summary for Pond P2: DETENTION GALLERIES

Inflow Area = 3,351 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 YR event
Inflow = 0.52 cfs @ 12.05 hrs, Volume= 1,720 cf
Outflow = 0.07 cfs @ 12.54 hrs, Volume= 1,720 cf, Atten= 87%, Lag= 29.8 min
Discarded = 0.07 cfs @ 12.54 hrs, Volume= 1,720 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.66' @ 12.54 hrs Surf.Area= 560 sf Storage= 509 cf

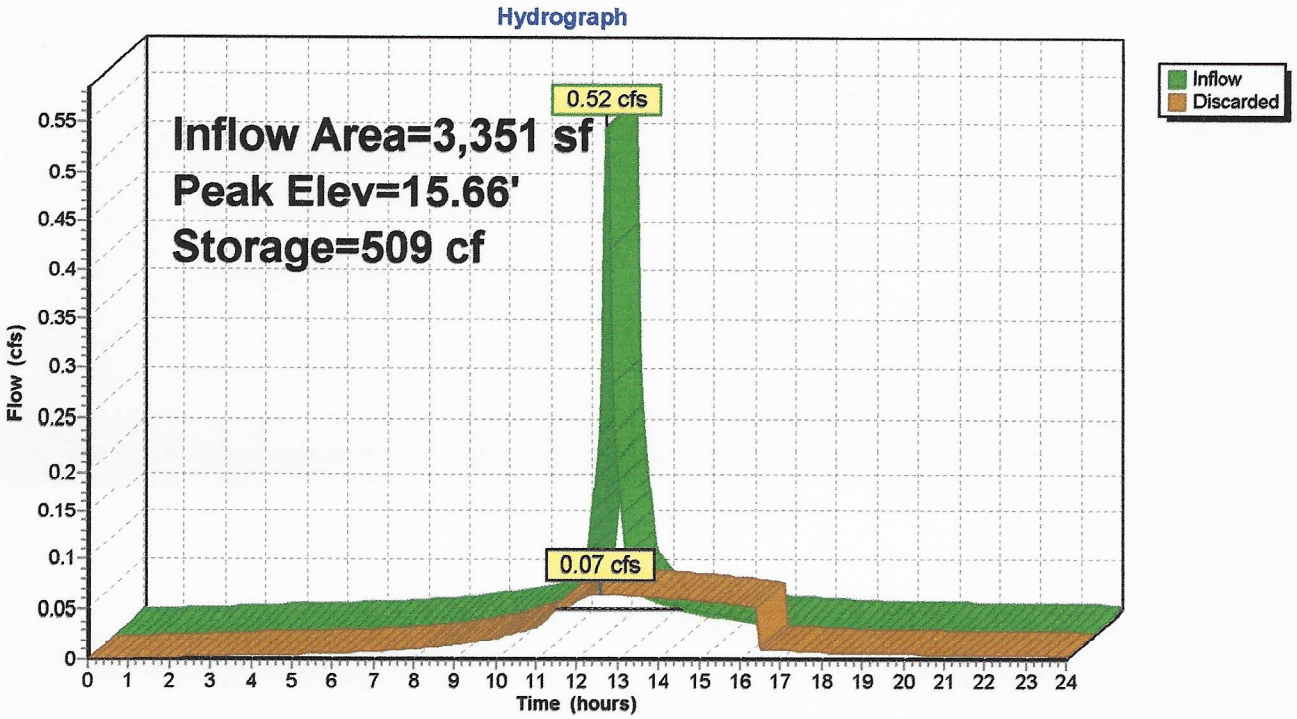
Plug-Flow detention time= 48.2 min calculated for 1,720 cf (100% of inflow)
Center-of-Mass det. time= 48.0 min (789.3 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	275 cf	**20.00'W x 28.00'L x 2.00'H Prismatoid** 1,120 cf Overall - 432 cf Embedded = 688 cf x 40.0% Voids
#2	14.50'	290 cf	**Galley 4x8x1.5** x 9 Inside #1 Inside= 42.0"W x 15.0"H => 4.29 sf x 7.50'L = 32.2 cf Outside= 48.0"W x 18.0"H => 6.00 sf x 8.00'L = 48.0 cf 3 Rows of 3 Chambers
		565 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	14.00'	**4.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.07 cfs @ 12.54 hrs HW=15.66' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond P2: DETENTION GALLERIES



Summary for Pond P3: DETENTION GALLERIES

Inflow Area = 3,350 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 YR event
Inflow = 0.52 cfs @ 12.05 hrs, Volume= 1,720 cf
Outflow = 0.07 cfs @ 12.54 hrs, Volume= 1,719 cf, Atten= 87%, Lag= 29.8 min
Discarded = 0.07 cfs @ 12.54 hrs, Volume= 1,719 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 8.66' @ 12.54 hrs Surf.Area= 560 sf Storage= 509 cf

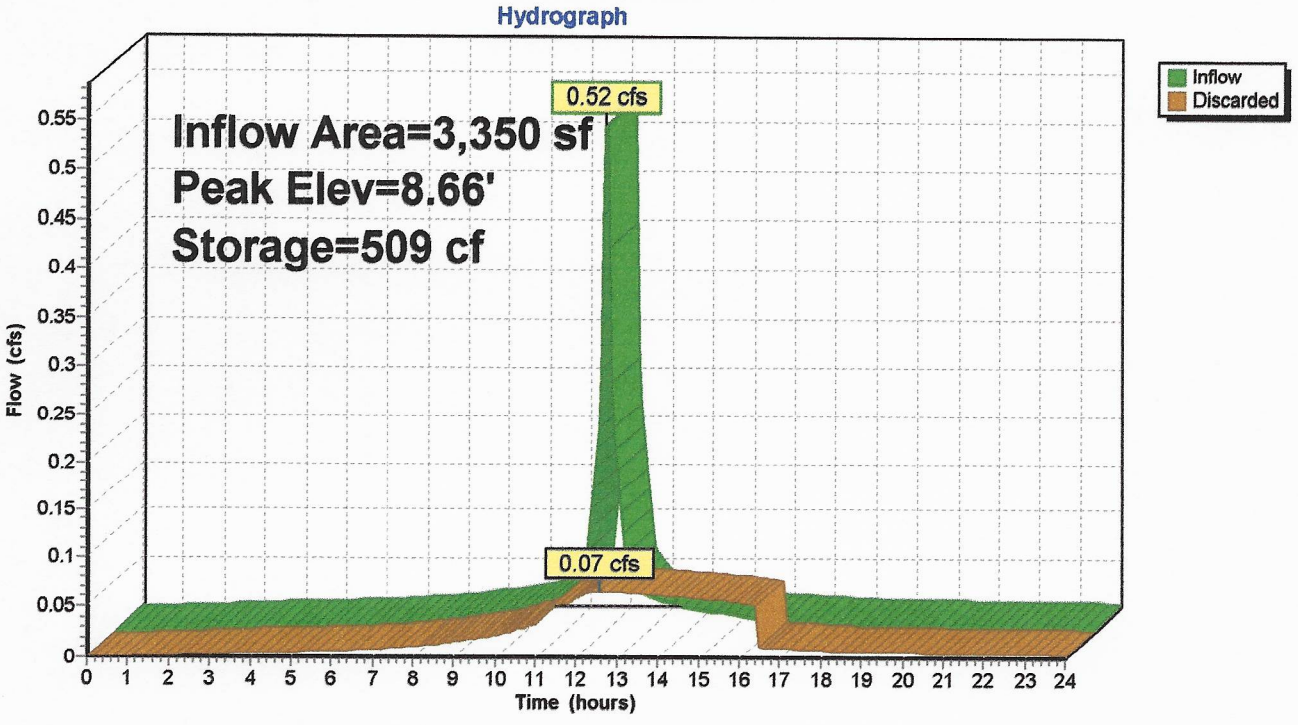
Plug-Flow detention time= 48.2 min calculated for 1,716 cf (100% of inflow)
Center-of-Mass det. time= 48.0 min (789.3 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	7.00'	275 cf	**20.00'W x 28.00'L x 2.00'H Prismatoid** 1,120 cf Overall - 432 cf Embedded = 688 cf x 40.0% Voids
#2	7.50'	290 cf	**Galley 4x8x1.5** x 9 Inside #1 Inside= 42.0"W x 15.0"H => 4.29 sf x 7.50'L = 32.2 cf Outside= 48.0"W x 18.0"H => 6.00 sf x 8.00'L = 48.0 cf 3 Rows of 3 Chambers
		565 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.00'	**4.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.07 cfs @ 12.54 hrs HW=8.66' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond P3: DETENTION GALLERIES



Summary for Pond P4: DETENTION GALLERIES

Inflow Area = 880 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 YR event
Inflow = 0.14 cfs @ 12.05 hrs, Volume= 452 cf
Outflow = 0.02 cfs @ 12.49 hrs, Volume= 452 cf, Atten= 84%, Lag= 26.5 min
Discarded = 0.02 cfs @ 12.49 hrs, Volume= 452 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 6.43' @ 12.49 hrs Surf.Area= 168 sf Storage= 121 cf

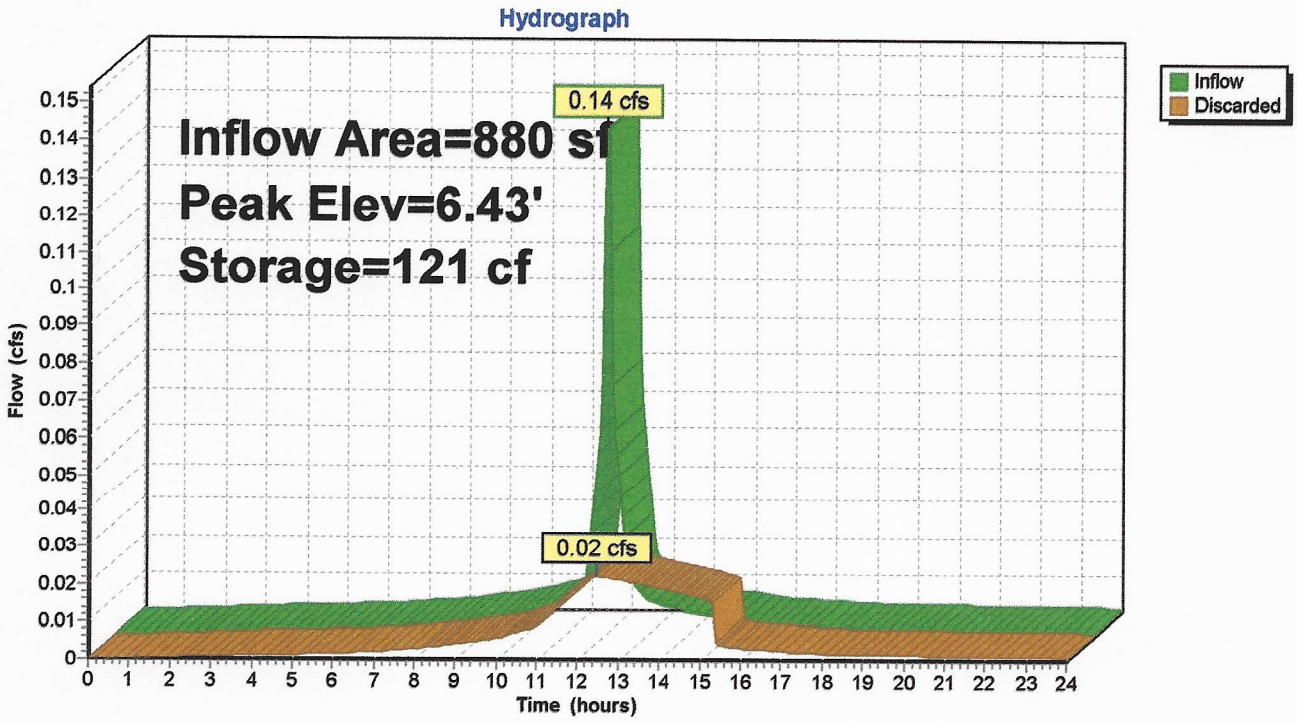
Plug-Flow detention time= 32.4 min calculated for 451 cf (100% of inflow)
Center-of-Mass det. time= 32.2 min (773.5 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	5.00'	96 cf	**14.00'W x 12.00'L x 2.00'H Prismatoid** 336 cf Overall - 96 cf Embedded = 240 cf x 40.0% Voids
#2	5.50'	64 cf	**Galley 4x8x1.5** x 2 Inside #1 Inside= 42.0"W x 15.0"H => 4.29 sf x 7.50'L = 32.2 cf Outside= 48.0"W x 18.0"H => 6.00 sf x 8.00'L = 48.0 cf 2 Rows of 1 Chambers
		160 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	5.00'	**4.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.02 cfs @ 12.49 hrs HW=6.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond P4: DETENTION GALLERIES



Summary for Pond P5: GRAVEL BED BELOW DRIVE

Inflow Area = 4,776 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 YR event
Inflow = 0.74 cfs @ 12.05 hrs, Volume= 2,452 cf
Outflow = 0.11 cfs @ 12.50 hrs, Volume= 2,451 cf, Atten= 85%, Lag= 27.4 min
Discarded = 0.11 cfs @ 12.50 hrs, Volume= 2,451 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 4.75' @ 12.50 hrs Surf.Area= 2,160 sf Storage= 648 cf

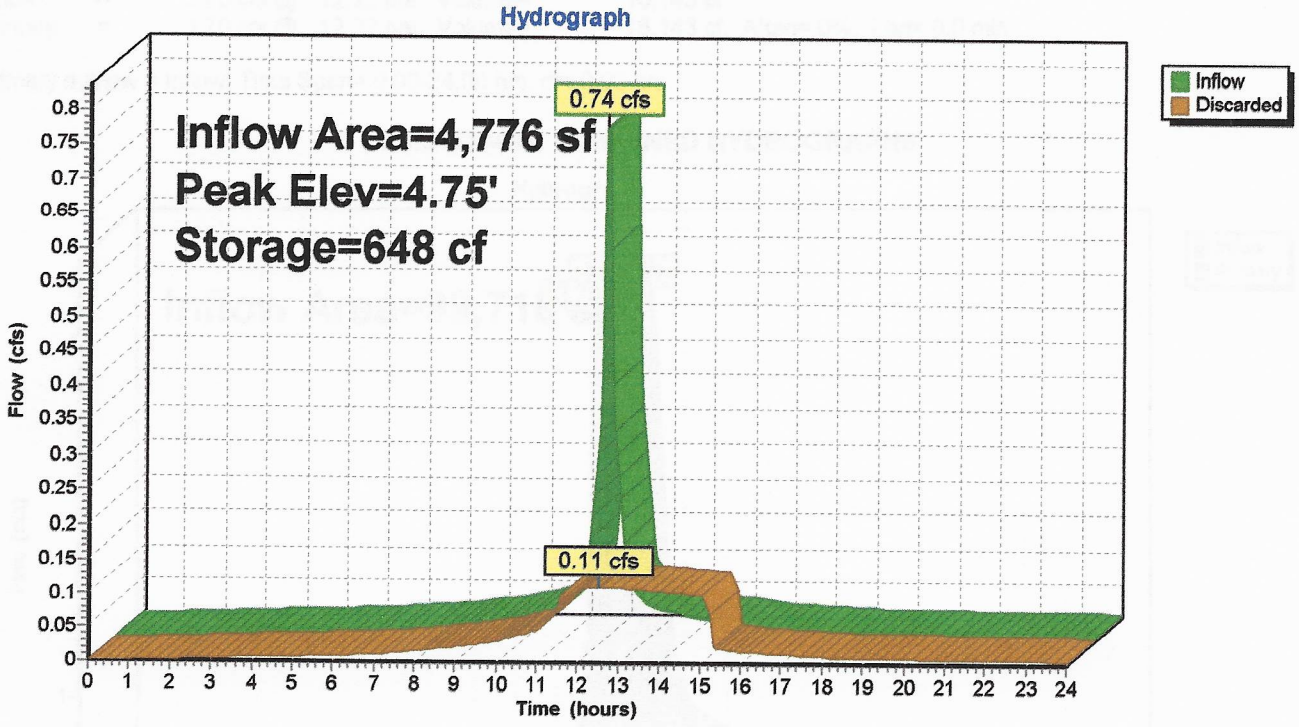
Plug-Flow detention time= 32.0 min calculated for 2,451 cf (100% of inflow)
Center-of-Mass det. time= 31.9 min (773.2 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	648 cf	**12.00'W x 180.00'L x 0.75'H Prismatoid** 1,620 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	4.00'	**2.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.11 cfs @ 12.50 hrs HW=4.75' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Pond P5: GRAVEL BED BELOW DRIVE

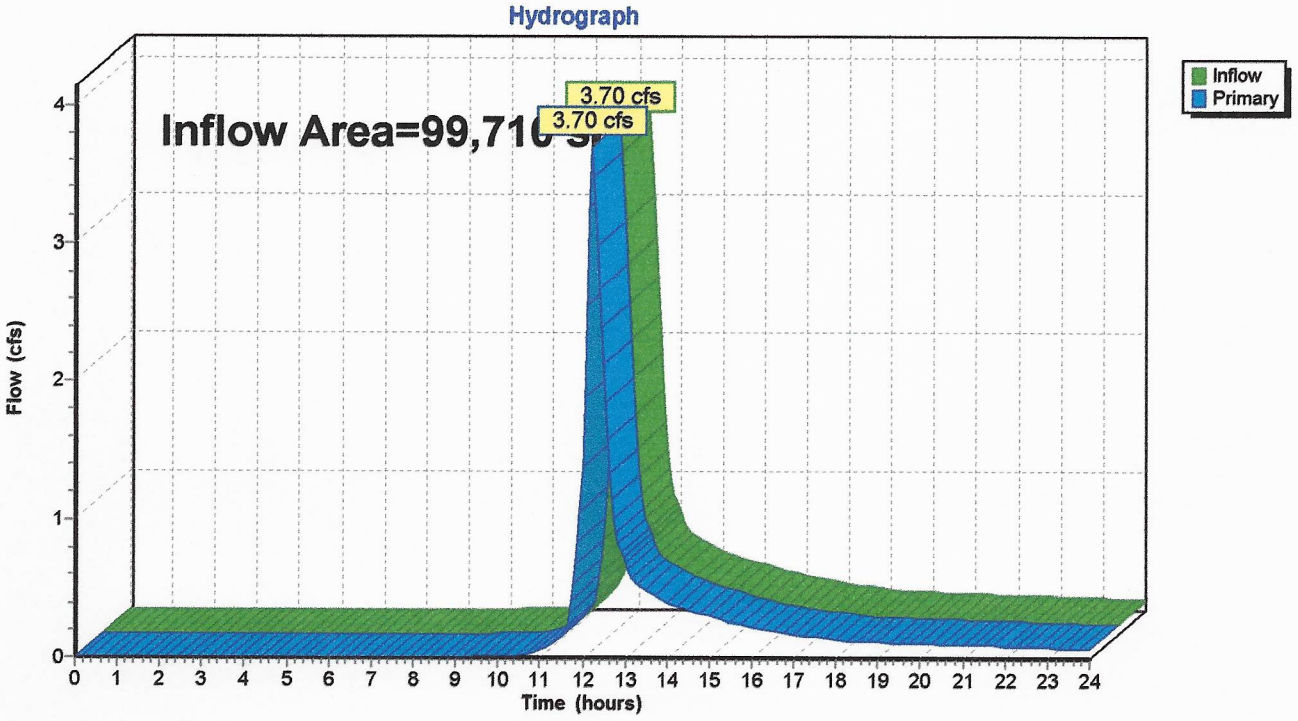


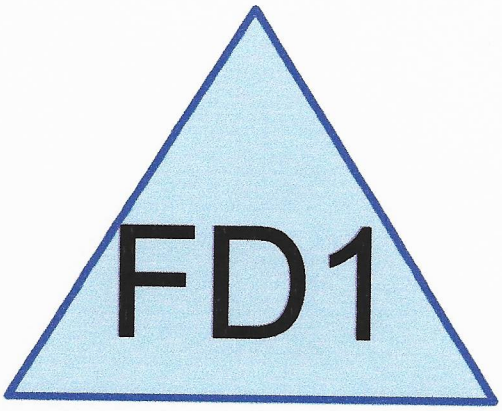
Summary for Link C30463: COMBINED HYDROGRAPHS

Inflow Area = 99,710 sf, 17.46% Impervious, Inflow Depth > 1.94" for 25 YR event
Inflow = 3.70 cfs @ 12.22 hrs, Volume= 16,143 cf
Primary = 3.70 cfs @ 12.22 hrs, Volume= 16,143 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link C30463: COMBINED HYDROGRAPHS





FOOTING DRAIN DISCHARGE (24" GALLERY)

Subcat Reach Pond Link

Routing Diagram for C30463-FTG-DISCHARGE
Prepared by CHAPPA SITE CONSULTING, LLC. Printed 7/29/2024
HydroCAD® 10.00-13 s/n 04134 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	**0**	**TOTAL AREA**

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

Pond FD1: FOOTING DRAIN DISCHARGE (24" GALLERY) Peak Elev=15.01' Storage=0.006 af Inflow=0.05 cfs 0.062 af
Outflow=0.05 cfs 0.056 af

Summary for Pond FD1: FOOTING DRAIN DISCHARGE (24" GALLERY)

Inflow	=	0.05 cfs @	5.00 hrs,	Volume=	0.062 af, Incl. 0.05 cfs Base Flow
Outflow	=	0.05 cfs @	6.05 hrs,	Volume=	0.056 af, Atten= 7%, Lag= 63.0 min
Discarded	=	0.05 cfs @	6.05 hrs,	Volume=	0.056 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.01' @ 20.00 hrs Surf.Area= 0.008 ac Storage= 0.006 af
Flood Elev= 67.50' Surf.Area= 0.008 ac Storage= 0.009 af

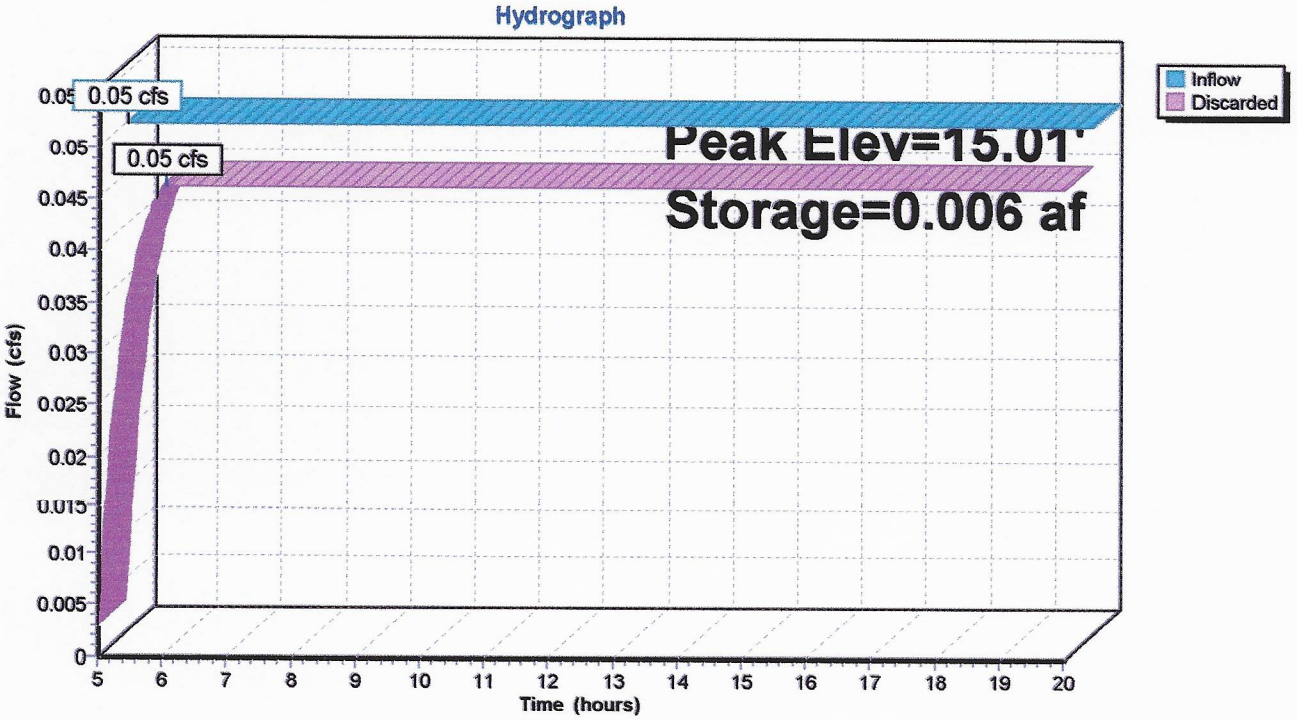
Plug-Flow detention time= 53.5 min calculated for 0.056 af (90% of inflow)
Center-of-Mass det. time= 9.3 min (759.3 - 750.0)

Volume	Invert	Avail.Storage	Storage Description
#1	13.50'	0.005 af	**9.00'W x 37.00'L x 2.50'H Prismatoid** 0.019 af Overall - 0.006 af Embedded = 0.013 af x 40.0% Voids
#2	14.00'	0.004 af	**Galley 4x8x2** x 4 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf
		0.009 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	**6.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 6.05 hrs HW=14.00' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Pond FD1: FOOTING DRAIN DISCHARGE (24" GALLERY)



Town of Westport Department of Public Works
Town Hall, 110 Myrtle Ave.
Westport, Connecticut 06880
(203) 341-1120
By: CHAPPA SITE CONSULTING, LLC
Dated: 7/26/24
Revised: 10/7/24

MS4 Impervious Cover Reduction Worksheet

Address: 28 BEACHSIDE AVENUE
GIS ID #: G05001000
Lot Area: 99,710 SF

Existing Conditions

VACANT PROPERTY

	Area (SF)	
Impervious Items	**Disconnected**	**Connected**
Dwelling		
Garage		
Driveway		
Patio		
Walkway		
Totals	0	0 SF

Proposed Conditions

	Area (SF)	
Impervious Items	**Disconnected**	**Connected**
Dwelling	3,850	0
SPORTS CTGarage	880	0
Driveway	9,552	0
Patio	2,670	0
Walkway	150	0
Totals	17,102	0 SF

Connected Impervious Area Reduction

Existing Connected Impervious Cover 0 SF
Proposed Connected Impervious Cover 0 SF
Reduction 0 SF
Percent Reduction 0