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Attachment C – Erosion and Sedimentation Control Plan

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Attachment F – FEMA Map

Attachment G – Stormwater Management Report

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Figure 1

Subdivision Plat

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NOTES TO USERS

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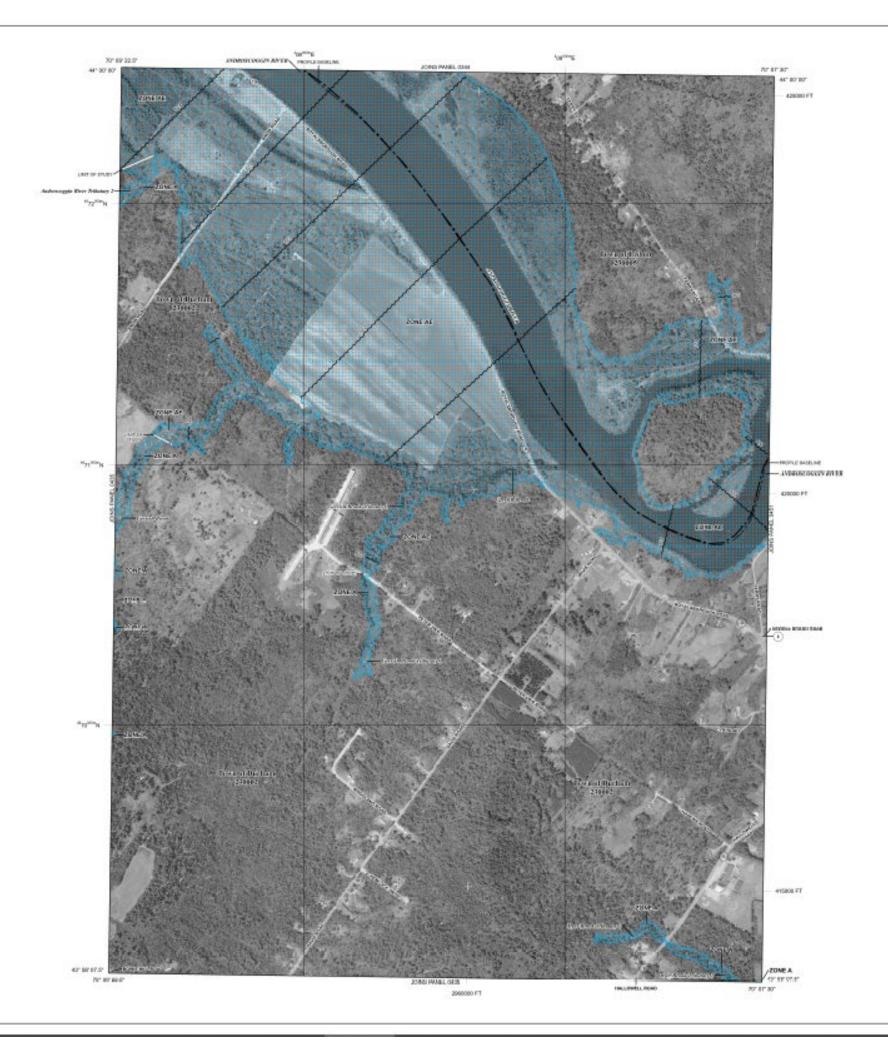
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WAY SCALE 1" + 100"

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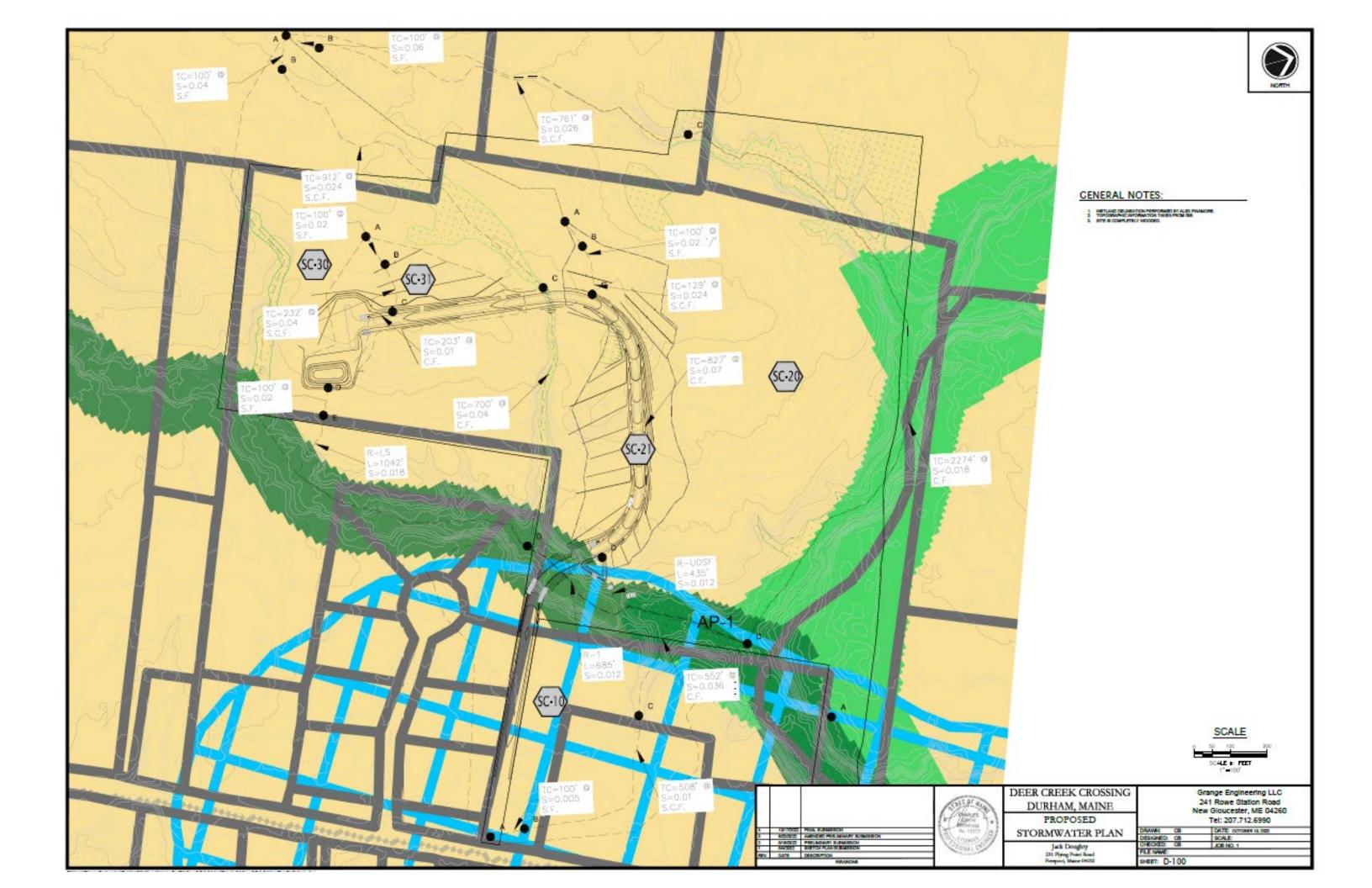
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23001C EFFECTIVE JULYS

Federal Emergency Management



Forested Buffer 1

Impervious Area Captured 0.23 acres

Flow Path Inside Buffer 75 feet

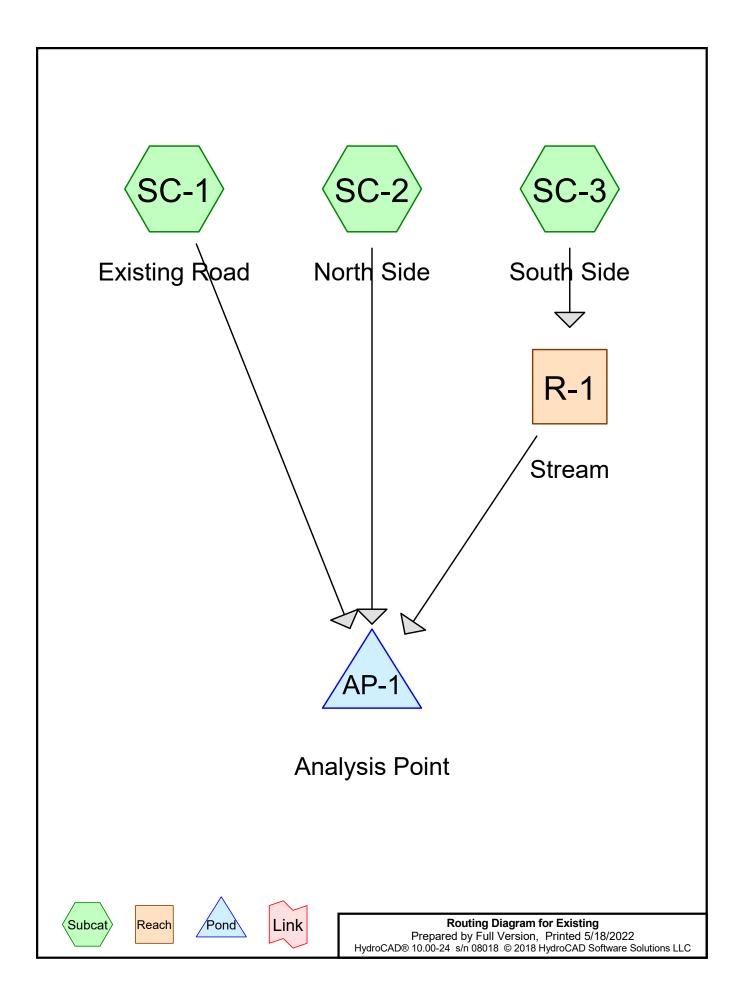
	Bern	n and F	low Pati	<u>Table</u> Length		of Imper	vious are	<u>ea</u>				
1	Length	Berm Length (feet)										
Hydrologic	of Flow		0-8%	Slope		Ĭ	9-15	% Slope				
Soil Group	Path in Buffer (feet)	Per Acre of Impervious Area		Per Acre	Per Acre of Lawn		Per Acre of Impervious Area		Per Acre of Lawn			
	8 3	FB	MB	FB	MB	FB	MB	FB	MB			
	75	75	125	25	35	90	150	30	42			
A	100	65	75	20	25	78	90	24	30			
140.0	150	50	60	15	20	60	72	18	24			
	75	100	150	30	45	120	180	36	54			
В	100	80	100	25	30	96	120	30	36			
	150	65	75	20	25	78	90	24	30			
C	75	125	150	35	45	150	180	42	54			
Sand or	100	100	125	30	35	120	150	36	42			
Sandy Loam	150	75	100	25	30	90	120	30	36			
C Silty Loam, Clay Loam	100	150	200	45	60	180	240	54	72			
or Silty Clay Loam	150	100	150	30	45	120	180	36	54			
D Non- Wetland	150	150	200	45	60	180	240	54	72			

FB = Forest Buffer MB = Meadow Buffer

NOTE: These tables were developed using a 1.25 inch, 24 hour storm of type III distribution, giving a maximum unit flow rate of less than 0.009 cfs per foot.

Berm Length 17.0 feet

A 20-foot level spreader will be built upgradient of Forested Buffer 1.



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Area Listing (all nodes)

Area	CN	Description		
(acres)		(subcatchment-numbers)		
3.712	51	1 acre lots, 20% imp, HSG A (SC-1)		
0.279	98	Impervious (SC-1)		
54.528	30	Woods, Good, HSG A (SC-1, SC-2, SC-3)		
58.519	32	TOTAL AREA		

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Summary for Subcatchment SC-1: Existing Road

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

	Aı	rea (sf)	CN E	Description		
	1	61,691	51 1	acre lots,	20% imp, ł	HSG A
	2	70,129	30 V	Voods, Go	od, HSG A	
*		12,162	98 I	mpervious		
	4	43,982	40 V	Veighted A	verage	
	3	99,482	8	9.98% Per	vious Area	
		44,500	1	0.02% Imp	ervious Ar	ea
	Тс	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	38.4	100	0.0050	0.04		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.6	552	0.0360	15.66	563.79	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
_						n= 0.025 Earth, clean & winding
	55.9	1,160	Total			

Summary for Subcatchment SC-2: North Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

	Α	rea (sf)	CN [Description		
	1,0	73,376	30 \	Noods, Go	od, HSG A	
	1,073,376		,	100.00% Pe	ervious Are	a
	Tc Length Slope Velocity Ca (min) (feet) (ft/ft) (ft/sec)				Capacity (cfs)	Description
	14.2	100	0.0600	0.12		Sheet Flow, A-B
	15.7	761	0.0260	0.81		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
_	00.0	0.405	T.4.1			·

33.3 3,135 Total

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Page 4

Summary for Subcatchment SC-3: South Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

Α	rea (sf)	CN E	escription		
1,0	31,734	30 V	Voods, Go	od, HSG A	
1,0	31,734	1	00.00% Pe	ervious Are	a
 , , ,				Capacity (cfs)	Description
16.7	100	0.0400	0.10		Sheet Flow, A-B
21.8	1,012	0.0240	0.77		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.7	700	0.0400	16.51	594.29	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
39.2	1,812	Total	•		

Summary for Reach R-1: Stream

Inflow Area = 23.685 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'



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Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 1.75% Impervious, Inflow Depth > 0.00" for 2-Year event

Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af

Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

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Summary for Subcatchment SC-1: Existing Road

Runoff = 0.18 cfs @ 13.91 hrs, Volume= 0.117 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN E	escription					
	1	61,691	51 1	1 acre lots, 20% imp, HSG A					
	2	70,129	30 V	Voods, Go	od, HSG A				
*		12,162	98 lı	Impervious					
	4	43,982	40 V	Veighted A	verage				
	3	99,482	8	9.98% Per	vious Area				
		44,500	1	0.02% Imp	ervious Ar	ea			
	Тс	Length	Slope	Velocity	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	38.4	100	0.0050	0.04		Sheet Flow, A-B			
						Woods: Light underbrush n= 0.400 P2= 3.04"			
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C			
						Woodland Kv= 5.0 fps			
	0.6	552	0.0360	15.66	563.79	Channel Flow, C-D			
						Area= 36.0 sf Perim= 22.0' r= 1.64'			
_						n= 0.025 Earth, clean & winding			
	55.9	1,160	Total						

Summary for Subcatchment SC-2: North Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

A	rea (sf)	CN E	Description		
1,0	73,376	30 V	Voods, Go	od, HSG A	
1,0	73,376	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0600	0.12	•	Sheet Flow, A-B
15.7	761	0.0260	0.81		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D
					Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
33.3	3,135	Total			

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Summary for Subcatchment SC-3: South Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN [Description		
	1,0	31,734	30 \	Noods, Go	od, HSG A	
	1,0	31,734	1	100.00% Pe	ervious Are	a
	Tc Length Slope Velocity Capacity (min) (feet) (ft/ft) (ft/sec) (cfs)					Description
	16.7	100	0.0400	0.10		Sheet Flow, A-B
	21.8	1,012	0.0240	0.77		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	0.7	700	0.0400	16.51	594.29	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
	39 2	1 812	Total			

Summary for Reach R-1: Stream

Inflow Area = 23.685 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Year event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'

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Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 1.75% Impervious, Inflow Depth > 0.02" for 10-Year event

Inflow = 0.18 cfs @ 13.91 hrs, Volume= 0.117 af

Primary = 0.18 cfs @ 13.91 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

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Summary for Subcatchment SC-1: Existing Road

Runoff = 0.74 cfs @ 12.93 hrs, Volume= 0.290 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

	A	rea (sf)	CN D	escription		
	1	61,691	51 1	acre lots,	20% imp, H	HSG A
	2	70,129	30 V	Voods, Go	od, HSG A	
*		12,162	98 Ir	mpervious		
	4	43,982	40 V	Veighted A	verage	
	3	99,482		0	vious Area	
		44,500	1	0.02% Imp	pervious Ar	ea
				•		
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	38.4	100	0.0050	0.04		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.6	552	0.0360	15.66	563.79	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
						n= 0.025 Earth, clean & winding
	55.9	1,160	Total			

Summary for Subcatchment SC-2: North Side

Runoff = 0.10 cfs @ 24.00 hrs, Volume= 0.054 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

	Aı	rea (sf)	CN E	Description		
	1,0	73,376	30 V	Voods, Go	od, HSG A	
	1,0	73,376	1	00.00% Pe	ervious Are	a
(n	Tc min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1	14.2	100	0.0600	0.12		Sheet Flow, A-B
1	15.7	761	0.0260	0.81		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
3	33.3	3,135	Total			

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Summary for Subcatchment SC-3: South Side

Runoff = 0.09 cfs @ 24.00 hrs, Volume= 0.051 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

	Α	rea (sf)	CN E	Description		
_	1,0	31,734	30 V	Voods, Go	od, HSG A	
	1,0	31,734	1	00.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	16.7	100	0.0400	0.10		Sheet Flow, A-B
	21.8	1,012	0.0240	0.77		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	0.7	700	0.0400	16.51	594.29	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
	39.2	1.812	Total			-

Summary for Reach R-1: Stream

Inflow Area = 23.685 ac, 0.00% Impervious, Inflow Depth > 0.03" for 25-Year event

Inflow = 0.09 cfs @ 24.00 hrs, Volume= 0.051 af

Outflow = 0.09 cfs @ 24.00 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.77 fps, Min. Travel Time= 14.8 min Avg. Velocity = 0.69 fps, Avg. Travel Time= 16.5 min

Peak Storage= 84 cf @ 24.00 hrs Average Depth at Peak Storage= 0.04'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'



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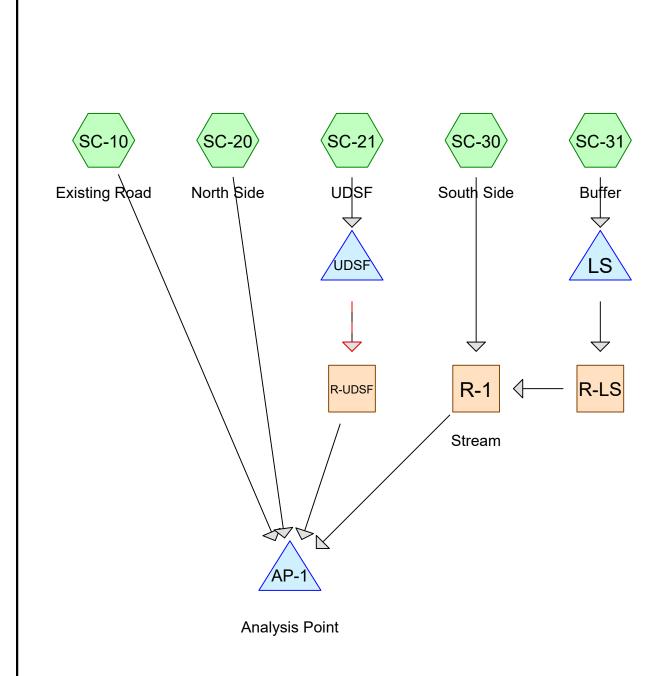
Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 1.75% Impervious, Inflow Depth > 0.08" for 25-Year event

Inflow = 0.74 cfs @ 12.93 hrs, Volume= 0.393 af

Primary = 0.74 cfs (a) 12.93 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs











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Area Listing (all nodes)

Area	CN	Description
(acres)	ı	(subcatchment-numbers)
3.712	51	1 acre lots, 20% imp, HSG A (SC-10)
0.878	98	Impervious (SC-10, SC-21, SC-30, SC-31)
47.401	30	Woods, Good, HSG A (SC-10, SC-20, SC-30)
6.528	32	Woods/grass comb., Good, HSG A (SC-21, SC-31)
58.519	33	TOTAL AREA

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Summary for Subcatchment SC-10: Existing Road

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

	Aı	rea (sf)	CN [Description		
	1	61,691	51 1	acre lots,	20% imp, H	HSG A
	2	70,129	30 V	Voods, Go	od, HSG A	
*		12,162	98 I	mpervious		
443,982 40 Weighted Average						
	3	99,482	8	39.98% Per	vious Area	
		44,500	1	10.02% Imp	ervious Ar	ea
	_					
	Tc	Length	Slope	•	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	38.4	100	0.0050	0.04		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.6	552	0.0360	15.66	563.79	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
						n= 0.025 Earth, clean & winding
	55.9	1,160	Total			

Summary for Subcatchment SC-20: North Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

	Α	rea (sf)	CN	Description		
	9	66,622	30	Woods, Go	od, HSG A	
	9	66,622		100.00% Pe	ervious Are	a
Tc Length (min) (feet)			Slope Velocity Capacity (ft/ft) (ft/sec) (cfs)			Description
	14.2	100	0.0600	0.12		Sheet Flow, A-B
	15.7	761	0.0260	0.81		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
_	00.0	0.405	T.4.1			

33.3 3,135 Total

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Summary for Subcatchment SC-21: UDSF

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

_	Α	rea (sf)	CN E	escription					
	1	94,450	32 Woods/grass comb., Good, HSG A						
*	•	14,455	98 lı	mpervious					
	2	08,905	37 V	Veighted A	verage				
	1	94,450	9	3.08% Per	vious Area				
	14,455 6.92% Impervious Area					a			
	То	Longth	Clana	\/alaaitr	Canacity	Description			
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
_	(min)				(015)				
	22.0	100	0.0200	0.08		Sheet Flow, A-B			
						Woods: Light underbrush n= 0.400 P2= 3.04"			
	2.8	129	0.0240	0.77		Shallow Concentrated Flow, B-C			
						Woodland Kv= 5.0 fps			
	0.6	827	0.0700	24.82	893.38	Channel Flow, C-D			
						Area= 36.0 sf Perim= 22.0' r= 1.64'			
						n= 0.022 Earth, clean & straight			
	25.4	1,056	Total						

Summary for Subcatchment SC-30: South Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

_	Α	rea (sf)	CN E	Description		
	8	28,038	30 V	Voods, Go	od, HSG A	
*		1,776	98 I	mpervious		
	8	29,814	30 V	Veighted A	verage	
	8	28,038	S	9.79% Per	vious Area	
		1,776	C).21% Impe	ervious Area	a e e e e e e e e e e e e e e e e e e e
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	16.7	100	0.0400	0.10		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	21.8	1,012	0.0240	0.77		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.7	700	0.0400	16.51	594.29	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
_						n= 0.025 Earth, clean & winding
	39.2	1,812	Total			

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Summary for Subcatchment SC-31: Buffer

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 2-Year Rainfall=3.04"

	Α	rea (sf)	CN [Description						
		89,906	32 \	32 Woods/grass comb., Good, HSG A						
*		9,866	98 I	mpervious						
		99,772	39 \	Neighted A	verage					
		89,906	Ç	90.11% Pei	rvious Area					
9,866 9.89% Impervious Area				9.89% Impe	ervious Area	a				
	Тс	Length	Slope	•	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	22.0	100	0.0200	0.08		Sheet Flow, A-B				
						Woods: Light underbrush n= 0.400 P2= 3.04"				
	1.3	232	0.0400	3.00		Shallow Concentrated Flow, B-C				
						Grassed Waterway Kv= 15.0 fps				
	0.4	203	0.0100	8.25	297.14	Channel Flow, C-D				
						Area= 36.0 sf Perim= 22.0' r= 1.64'				
_						n= 0.025 Earth, clean & winding				
	23.7	535	Total							

Summary for Reach R-1: Stream

Inflow Area = 21.340 ac, 1.25% Impervious, Inflow Depth = 0.00" for 2-Year event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'



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Summary for Reach R-LS:

Inflow Area = 2.290 ac, 9.89% Impervious, Inflow Depth = 0.00" for 2-Year event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = $0.00 \text{ cfs } \bigcirc 0.00 \text{ hrs}$, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 399.02 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 1,042.0' Slope= 0.0180 '/'

Inlet Invert= 186.00', Outlet Invert= 167.24'



Summary for Reach R-UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth = 0.00" for 2-Year event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = $0.00 \text{ cfs } \bigcirc 0.00 \text{ hrs}$, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity = 0.00 fps, Min. Travel Time = 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 142.58 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 435.0' Slope= 0.0023 '/'

Inlet Invert= 165.00', Outlet Invert= 164.00'

Volume

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Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 2.77% Impervious, Inflow Depth > 0.00" for 2-Year event

Inflow 0.00 cfs @ 24.00 hrs, Volume= 0.000 af

0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min Primary

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Summary for Pond LS:

Inflow Area = 2.290 ac. 9.89% Impervious, Inflow Depth = 0.00" for 2-Year event

0.00 hrs, Volume= 0.000 af Inflow = 0.00 cfs @

0.00 cfs @ 0.00 hrs, Volume= Outflow 0.000 af, Atten= 0%, Lag= 0.0 min =

0.00 hrs, Volume= Primary 0.00 cfs @ 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Starting Elev= 193.00' Surf.Area= 17,006 sf Storage= 84,586 cf

Peak Elev= 193.00' @ 0.00 hrs Surf.Area= 17,006 sf Storage= 84,586 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Avail Storage Storage Description

Center-of-Mass det. time= (not calculated: no inflow)

Invert

VOIGITIC	HIVCH	Avaii. Otoragi	c Otorage	Description		
#1	183.00'	103,599 c	f Custom	Stage Data (Prisma	tic) Listed below (Recalc)	
Elevation (feet)	Surf. <i>l</i> (s		nc.Store ıbic-feet)	Cum.Store (cubic-feet)		
183.00	3	,365	0	0		
184.00	4	,176	3,771	3,771		
186.00	5	.945	10.121	13.892		

183.00	3,365	0	0
184.00	4,176	3,771	3,771
186.00	5,945	10,121	13,892
188.00	8,011	13,956	27,848
190.00	10,369	18,380	46,228
192.00	12,991	23,360	69,588
194.00	21,020	34,011	103,599

Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	20.0' long x 6.0' breadth Broad-Crested Rectangular Weir
	_		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2

2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65

2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=193.00' (Free Discharge) -1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Pond UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth = 0.00" for 2-Year event Inflow 0.00 cfs @ 0.00 hrs. Volume= 0.000 af 0.00 hrs, Volume= Outflow 0.00 cfs @ 0.000 af, Atten= 0%, Lag= 0.0 min = 0.00 hrs, Volume= Primary = 0.00 cfs @ 0.000 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Peak Elev= 165.00' @ 0.00 hrs Surf.Area= 1,159 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

		A '1 O1	01	D : "			
<u>Volume</u>	Invert	Avail.Sto	rage Storage	Description			
#1	165.00'	8,48	35 cf Custon	n Stage Data (Pri	ismatic) Listed below (Recalc)		
	_						
Elevation	on Su	rf.Area	Inc.Store	Cum.Store			
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)			
165.00 1		1,159	0	0			
167.0	00	1,159	2,318	2,318			
170.0	00	2,952	6,167	8,485			
				·			
Device	Routing	Invert	Outlet Device	es			
#1	Primary	165.50'	0.7" Round Culvert				
	,		L= 82.0' CM	IP, projecting, no	headwall, Ke= 0.900		
					164.00' S= 0.0183 '/' Cc= 0.900		
			n= 0.010 PVC, smooth interior, Flow Area= 0.00 sf				
#2	Secondary	168.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir				
	,				0.80 1.00 1.20 1.40 1.60 1.80 2.00		
			` ,	50 4.00 4.50 5			
					70 2.68 2.68 2.66 2.65 2.65 2.65		
			, ,	66 2.68 2.70 2			

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=165.00' (Free Discharge)
—1=Culvert (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=165.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment SC-10: Existing Road

Runoff = 0.18 cfs @ 13.91 hrs, Volume= 0.117 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN D	Description				
	161,691 51 1 acre lots, 20% imp, HSG A							
	2	70,129	30 V	Voods, Go	od, HSG A			
*		12,162	98 Ir	mpervious				
443,982 40 Weighted Average								
	3	99,482	8	9.98% Per	vious Area			
		44,500	1	0.02% Imp	pervious Ar	ea		
	_							
	Tc	Length	Slope	Velocity	Capacity	Description		
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	38.4	100	0.0050	0.04		Sheet Flow, A-B		
						Woods: Light underbrush n= 0.400 P2= 3.04"		
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C		
						Woodland Kv= 5.0 fps		
	0.6	552	0.0360	15.66	563.79	•		
						Area= 36.0 sf Perim= 22.0' r= 1.64'		
_						n= 0.025 Earth, clean & winding		
	55.9	1,160	Total					

Summary for Subcatchment SC-20: North Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

	Α	rea (sf)	CN	Description		
	9	66,622	30	Woods, Go	od, HSG A	
	9	66,622		100.00% Pe	ervious Are	a
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description
	14.2	100	0.0600	0.12		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.04"
	15.7	761	0.0260	0.81		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
	3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64'
_	20.0	0.405	Takal			n= 0.025 Earth, clean & winding

33.3 3,135 Total

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Summary for Subcatchment SC-21: UDSF

Runoff = 0.04 cfs @ 15.61 hrs, Volume= 0.028 af, Depth> 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN E	escription			
	1	194,450 32 Woods/grass comb., Good, HSG A					
*	•	14,455	98 lı	mpervious			
	2	08,905	37 V	Veighted A	verage		
	1	94,450	9	3.08% Per	vious Area		
	14,455 6.92% Impervious Area					a	
	То	Longth	Clana	\/alaaitr	Canacity	Description	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
_	(min)				(015)		
	22.0	100	0.0200	0.08		Sheet Flow, A-B	
						Woods: Light underbrush n= 0.400 P2= 3.04"	
	2.8	129	0.0240	0.77		Shallow Concentrated Flow, B-C	
						Woodland Kv= 5.0 fps	
	0.6	827	0.0700	24.82	893.38	Channel Flow, C-D	
						Area= 36.0 sf Perim= 22.0' r= 1.64'	
						n= 0.022 Earth, clean & straight	
	25.4	1,056	Total				

Summary for Subcatchment SC-30: South Side

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN E	Description		
	8	28,038	30 V	Voods, Go	od, HSG A	
*		1,776	98 lı	mpervious		
	8	29,814	30 V	Veighted A	verage	
	8	28,038	9	9.79% Pei	rvious Area	
	1,776 0.21% Impervious Area).21% Impe	ervious Area	a
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	16.7	100	0.0400	0.10		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	21.8	1,012	0.0240	0.77		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.7	700	0.0400	16.51	594.29	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
_						n= 0.025 Earth, clean & winding
	39.2	1.812	Total			

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Summary for Subcatchment SC-31: Buffer

Runoff = 0.03 cfs @ 13.61 hrs, Volume= 0.022 af, Depth> 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 10-Year Rainfall=4.55"

_	Α	rea (sf)	CN	Description		
-		89,906	32	Woods/gra	ss comb., G	Good, HSG A
*		9,866	98	Impervious		
		99,772	39	Weighted A	verage	
		89,906		90.11% Pei	rvious Area	
		9,866	!	9.89% Impe	ervious Are	a
	Тс	Length	Slope	•	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	22.0	100	0.0200	0.08		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	1.3	232	0.0400	3.00		Shallow Concentrated Flow, B-C
						Grassed Waterway Kv= 15.0 fps
	0.4	203	0.0100	8.25	297.14	•
						Area= 36.0 sf Perim= 22.0' r= 1.64'
_						n= 0.025 Earth, clean & winding
	23.7	535	Total			

Summary for Reach R-1: Stream

Inflow Area = 21.340 ac, 1.25% Impervious, Inflow Depth > 0.01" for 10-Year event

Inflow = 0.03 cfs @ 16.14 hrs, Volume= 0.020 af

Outflow = 0.03 cfs @ 16.47 hrs, Volume= 0.019 af, Atten= 1%, Lag= 20.1 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.61 fps, Min. Travel Time= 18.8 min Avg. Velocity = 0.61 fps, Avg. Travel Time= 18.8 min

Peak Storage= 30 cf @ 16.47 hrs

Average Depth at Peak Storage= 0.01'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'

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Summary for Reach R-LS:

Inflow Area = 2.290 ac, 9.89% Impervious, Inflow Depth > 0.11" for 10-Year event

Inflow = 0.03 cfs @ 15.75 hrs, Volume= 0.021 af

Outflow = 0.03 cfs @ 16.14 hrs, Volume= 0.020 af, Atten= 1%, Lag= 23.4 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.75 fps, Min. Travel Time= 23.0 min Avg. Velocity = 0.75 fps, Avg. Travel Time= 23.0 min

Peak Storage= 38 cf @ 16.14 hrs Average Depth at Peak Storage= 0.01'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 399.02 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 1,042.0' Slope= 0.0180 '/'

Inlet Invert= 186.00', Outlet Invert= 167.24'



Summary for Reach R-UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth > 0.00" for 10-Year event

Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.001 af

Outflow = 0.00 cfs @ 24.00 hrs, Volume= 0.001 af, Atten= 1%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.27 fps, Min. Travel Time= 26.9 min Avg. Velocity = 0.27 fps, Avg. Travel Time= 26.9 min

Peak Storage= 6 cf @ 24.00 hrs Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 142.58 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 435.0' Slope= 0.0023 '/'

Inlet Invert= 165.00', Outlet Invert= 164.00'

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Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 2.77% Impervious, Inflow Depth > 0.03" for 10-Year event

Inflow 0.19 cfs @ 14.10 hrs, Volume= 0.138 af

0.19 cfs @ 14.10 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min Primary

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Summary for Pond LS:

Inflow Area = 2.290 ac, 9.89% Impervious, Inflow Depth > 0.12" for 10-Year event

0.03 cfs @ 13.61 hrs, Volume= Inflow = 0.022 af

Outflow 0.03 cfs @ 15.75 hrs, Volume= 0.021 af, Atten= 12%, Lag= 128.2 min =

0.03 cfs @ 15.75 hrs, Volume= Primary 0.021 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Starting Elev= 193.00' Surf.Area= 17,006 sf Storage= 84,586 cf

Peak Elev= 193.01' @ 15.75 hrs Surf.Area= 17,029 sf Storage= 84,684 cf (98 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 31.5 min (1,097.1 - 1,065.6)

Volume	Invert	Avail.Storage	e Storage	Description
#1	183.00'	103,599 c	f Custom	n Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)			nc.Store bic-feet)	Cum.Store (cubic-feet)

(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
183.00	3,365	0	0
184.00	4,176	3,771	3,771
186.00	5,945	10,121	13,892
188.00	8,011	13,956	27,848
190.00	10,369	18,380	46,228
192.00	12,991	23,360	69,588
194.00	21,020	34,011	103,599

Device	Routing	Invert	Outlet Devices
#1	Primary	193.00'	20.0' long x 6.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65

Primary OutFlow Max=0.02 cfs @ 15.75 hrs HW=193.01' (Free Discharge)

2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

-1=Broad-Crested Rectangular Weir (Weir Controls 0.02 cfs @ 0.18 fps)

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Summary for Pond UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth > 0.07" for 10-Year event
Inflow = 0.04 cfs @ 15.61 hrs, Volume= 0.028 af
Outflow = 0.00 cfs @ 24.00 hrs, Volume= 0.001 af, Atten= 90%, Lag= 503.3 min
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Peak Elev= 165.99' @ 24.00 hrs Surf.Area= 1,159 sf Storage= 1,150 cf

Plug-Flow detention time= 470.1 min calculated for 0.001 af (5% of inflow) Center-of-Mass det. time= 172.7 min (1,287.9 - 1,115.2)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	165.00'	8,48	35 cf Custom	n Stage Data (Pris	smatic) Listed below (Recalc)
Elevatio		ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
165.0		1,159	0	0	
167.0		1,159	2,318	2,318	
170.0	00	2,952	6,167	8,485	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	165.50'	0.7" Round	Culvert	
110	0 1	400 501	Inlet / Outlet In= 0.010 PV	Invert= 165.50' / ´C, smooth interio	headwall, Ke= 0.900 164.00' S= 0.0183 '/' Cc= 0.900 r, Flow Area= 0.00 sf
#2	Secondary	168.50'			ad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			` ,	50 4.00 4.50 5.	
			, •	,	70 2.68 2.68 2.66 2.65 2.65 2.65
			2.65 2.67 2.	66 2.68 2.70 2.	74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 24.00 hrs HW=165.99' (Free Discharge)
—1=Culvert (Barrel Controls 0.00 cfs @ 1.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=165.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Summary for Subcatchment SC-10: Existing Road

Runoff 0.74 cfs @ 12.93 hrs, Volume= 0.290 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

_	Α	rea (sf)	CN D	Description			
	1	61,691	51 1	acre lots,	20% imp, H	HSG A	
	2	70,129	30 V	Voods, Go	od, HSG A		
*		12,162	98 Ir	mpervious			
	443,982 40 Weighted Average						
	3	99,482	8	9.98% Per	vious Area		
		44,500	1	0.02% Imp	pervious Ar	ea	
	_						
	Tc	Length	Slope	Velocity	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	38.4	100	0.0050	0.04		Sheet Flow, A-B	
						Woods: Light underbrush n= 0.400 P2= 3.04"	
	16.9	508	0.0100	0.50		Shallow Concentrated Flow, B-C	
						Woodland Kv= 5.0 fps	
	0.6	552	0.0360	15.66	563.79	•	
						Area= 36.0 sf Perim= 22.0' r= 1.64'	
_						n= 0.025 Earth, clean & winding	
	55.9	1,160	Total				

Summary for Subcatchment SC-20: North Side

0.09 cfs @ 24.00 hrs, Volume= 0.048 af, Depth> 0.03" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

	Area (sf)	CN [Description		
	966,622	30 \	Noods, Go	od, HSG A	
	966,622	•	100.00% Pe	ervious Are	a
Tc (min)		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0600	0.12		Sheet Flow, A-B
15.7	761	0.0260	0.81		Woods: Light underbrush n= 0.400 P2= 3.04" Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
3.4	2,274	0.0180	11.07	398.66	Channel Flow, C-D Area= 36.0 sf Perim= 22.0' r= 1.64' n= 0.025 Earth, clean & winding
	0.40=				

33.3 3,135 Total

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Summary for Subcatchment SC-21: UDSF

Runoff = 0.18 cfs @ 12.68 hrs, Volume= 0.089 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

_	Α	rea (sf)	CN E	escription			
	1	194,450 32 Woods/grass comb., Good, HSG A					
*	•	14,455	98 lı	mpervious			
	2	208,905	37 V	Veighted A	verage		
	1	94,450	9	3.08% Per	vious Area		
	14,455 6.92% Impervious Area					a	
	То	Longth	Clana	\/alaaitr	Canacity	Description	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
_	(min)				(018)		
	22.0	100	0.0200	0.08		Sheet Flow, A-B	
						Woods: Light underbrush n= 0.400 P2= 3.04"	
	2.8	129	0.0240	0.77		Shallow Concentrated Flow, B-C	
						Woodland Kv= 5.0 fps	
	0.6	827	0.0700	24.82	893.38	Channel Flow, C-D	
						Area= 36.0 sf Perim= 22.0' r= 1.64'	
						n= 0.022 Earth, clean & straight	
	25.4	1,056	Total				

Summary for Subcatchment SC-30: South Side

Runoff = 0.08 cfs @ 24.00 hrs, Volume= 0.041 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

_	Α	rea (sf)	CN E	Description		
	8	28,038	30 V	Voods, Go	od, HSG A	
*		1,776	98 lı	mpervious		
	8	29,814	30 V	Veighted A	verage	
	8	28,038	9	9.79% Pei	rvious Area	
	1,776 0.21% Impervious Area).21% Impe	ervious Area	a
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	16.7	100	0.0400	0.10		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 3.04"
	21.8	1,012	0.0240	0.77		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	0.7	700	0.0400	16.51	594.29	Channel Flow, C-D
						Area= 36.0 sf Perim= 22.0' r= 1.64'
_						n= 0.025 Earth, clean & winding
	39.2	1.812	Total			

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Summary for Subcatchment SC-31: Buffer

Runoff 0.17 cfs @ 12.41 hrs, Volume= 0.058 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Type II 24-hr 25-Year Rainfall=5.49"

	Α	rea (sf)	CN [Description					
		89,906	32 \	32 Woods/grass comb., Good, HSG A					
*		9,866	98 I	mpervious					
		99,772	39 \	Neighted A	verage				
		89,906	ç	90.11% Pei	vious Area				
		9,866	9	9.89% Impe	ervious Area	a			
	_				_				
	Tc	Length	Slope		Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	22.0	100	0.0200	0.08		Sheet Flow, A-B			
						Woods: Light underbrush n= 0.400 P2= 3.04"			
	1.3	232	0.0400	3.00		Shallow Concentrated Flow, B-C			
						Grassed Waterway Kv= 15.0 fps			
	0.4	203	0.0100	8.25	297.14	•			
						Area= 36.0 sf Perim= 22.0' r= 1.64'			
_						n= 0.025 Earth, clean & winding			
	23.7	535	Total						

Summary for Reach R-1: Stream

Inflow Area = 21.340 ac, 1.25% Impervious, Inflow Depth > 0.05" for 25-Year event

0.11 cfs @ 13.32 hrs, Volume= 0.11 cfs @ 24.00 hrs, Volume= Inflow 0.095 af

Outflow 0.093 af, Atten= 1%, Lag= 640.6 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.82 fps, Min. Travel Time= 13.9 min Avg. Velocity = 0.77 fps, Avg. Travel Time= 14.8 min

Peak Storage= 94 cf @ 24.00 hrs

Average Depth at Peak Storage= 0.04'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 321.38 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 685.0' Slope= 0.0117 '/'

Inlet Invert= 162.00', Outlet Invert= 154.00'



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Summary for Reach R-LS:

Inflow Area = 2.290 ac, 9.89% Impervious, Inflow Depth > 0.29" for 25-Year event

Inflow = 0.12 cfs @ 12.97 hrs, Volume= 0.055 af

Outflow = 0.11 cfs @ 13.32 hrs, Volume= 0.054 af, Atten= 7%, Lag= 21.3 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.94 fps, Min. Travel Time= 18.5 min Avg. Velocity = 0.77 fps, Avg. Travel Time= 22.4 min

Peak Storage= 125 cf @ 13.32 hrs Average Depth at Peak Storage= 0.04'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 399.02 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 1,042.0' Slope= 0.0180 '/'

Inlet Invert= 186.00', Outlet Invert= 167.24'



Summary for Reach R-UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth > 0.01" for 25-Year event

Inflow = 0.01 cfs @ 24.00 hrs, Volume= 0.004 af

Outflow = 0.01 cfs @ 24.00 hrs, Volume= 0.004 af, Atten= 1%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.27 fps, Min. Travel Time= 26.9 min Avg. Velocity = 0.27 fps, Avg. Travel Time= 26.9 min

Peak Storage= 8 cf @ 24.00 hrs

Average Depth at Peak Storage= 0.01'

Bank-Full Depth= 3.00' Flow Area= 36.0 sf, Capacity= 142.58 cfs

3.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 21.00'

Length= 435.0' Slope= 0.0023 '/'

Inlet Invert= 165.00', Outlet Invert= 164.00'

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Summary for Pond AP-1: Analysis Point

Inflow Area = 58.519 ac, 2.77% Impervious, Inflow Depth > 0.09" for 25-Year event

Inflow = 0.79 cfs @ 13.03 hrs, Volume= 0.435 af

Primary = 0.79 cfs @ 13.03 hrs, Volume= 0.435 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Summary for Pond LS:

Inflow Area = 2.290 ac, 9.89% Impervious, Inflow Depth > 0.31" for 25-Year event

Inflow = 0.17 cfs @ 12.41 hrs, Volume= 0.058 af

Outflow = 0.12 cfs @ 12.97 hrs, Volume= 0.055 af, Atten= 29%, Lag= 33.5 min

Primary = 0.12 cfs @ 12.97 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Starting Elev= 193.00' Surf.Area= 17,006 sf Storage= 84,586 cf

Peak Elev= 193.01' @ 12.97 hrs Surf.Area= 17,063 sf Storage= 84,828 cf (242 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 26.3 min (1,020.2 - 993.8)

Volume	Invert	Avail.Storag	e Storage	e Description
#1	183.00'	103,599	of Custom	m Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)			nc.Store ıbic-feet)	Cum.Store (cubic-feet)

(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
183.00	3,365	0	0
184.00	4,176	3,771	3,771
186.00	5,945	10,121	13,892
188.00	8,011	13,956	27,848
190.00	10,369	18,380	46,228
192.00	12,991	23,360	69,588
194.00	21,020	34,011	103,599

Device	Routing	Invert	Outlet Devices			
#1	Primary	193.00'	20.0' long x 6.0' breadth Broad-Crested Rectangular Weir			
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
			2.50 3.00 3.50 4.00 4.50 5.00 5.50			
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			

2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.08 cfs @ 12.97 hrs HW=193.01' (Free Discharge) 1=Broad-Crested Rectangular Weir (Weir Controls 0.08 cfs @ 0.28 fps)

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Summary for Pond UDSF:

Inflow Area = 4.796 ac, 6.92% Impervious, Inflow Depth > 0.22" for 25-Year event
Inflow = 0.18 cfs @ 12.68 hrs, Volume= 0.089 af
Outflow = 0.01 cfs @ 24.00 hrs, Volume= 0.004 af, Atten= 97%, Lag= 679.5 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs Peak Elev= 167.96' @ 24.00 hrs Surf.Area= 1,732 sf Storage= 3,703 cf

Plug-Flow detention time= 400.4 min calculated for 0.004 af (4% of inflow) Center-of-Mass det. time= 121.0 min (1,143.5 - 1,022.5)

Volume	Invert	Avail.Sto	rage Storage	e Description	
#1	165.00'	8,48	35 cf Custon	n Stage Data (Pri	smatic) Listed below (Recalc)
Elevatio		ırf.Area	Inc.Store	Cum.Store	
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)	
165.0	-	1,159	0	0	
167.0	00	1,159	2,318	2,318	
170.0	00	2,952	6,167	8,485	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	165.50'	0.7" Round	Culvert	
	,		L= 82.0' CM	IP. projecting, no	headwall, Ke= 0.900
					164.00' S= 0.0183 '/' Cc= 0.900
					or, Flow Area= 0.00 sf
#2	Secondary	168.50'			ad-Crested Rectangular Weir
#4	Secondary	100.50			
			` '		0.80 1.00 1.20 1.40 1.60 1.80 2.00
				.50 4.00 4.50 5.	
					70 2.68 2.68 2.66 2.65 2.65 2.65
			2.65 2.67 2	.66 2.68 2.70 2.	74 2.79 2.88

Primary OutFlow Max=0.01 cfs @ 24.00 hrs HW=167.96' (Free Discharge)
1=Culvert (Barrel Controls 0.01 cfs @ 1.91 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=165.00' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

STORMWATER MANAGEMENT PLAN DEER CREEK CROSSING SUBDIVISION DEER CREEK CROSSING, DURHAM

PROJECT NARRATIVE

This Report is prepared to address the General Standards submission requirements of the Maine Department of Environmental Protection (MEDEP) Stormwater Law. The Site was designed to meet the MEDEP Chapter 500 Stormwater Management Rules.

The site is located along the west side of Route 9 (Hallowell Road) in the Town of Durham. The property is in a rural area among single-family residences. Access to the proposed subdivision will be via an existing road that will be improved as part of the project. The name of the access road is Deer Creek Crossing.

CALCULATIONS

Modeling Methodology

The stormwater calculations for this Stormwater Management Report are based on the NRCS soils mapping and their respective Hydrologic Soil Group designation. The various Hydrologic Soil Groups were entered into the HydroCAD stormwater model developed for this report. The ground cover in the pre-development model was "Forest", while the post development model accounted for new impervious surfaces (road, driveways, and houses) and anticipated clearings for lawns. The HydroCAD output for the pre-developed and developed models are provided in Attachment B and C, respectively.

EXISTING SITE CONDITIONS

The site is in the upper reaches of the Dyer Creek watershed which is a tributary to the Androscoggin River Watershed. The runoff from the site was analyzed at a point located in the southeast corner of the site. The site is primarily wooded. The first 600 feet of the proposed road are existing as a gravel road. The entire site drains to the northeast corner where two branches of the stream converge. The existing site has been divided into three subcatchments. One for each of the branches and another for the existing road into the site.

PROPOSED SITE CONDITIONS

The site will continue to drain similarly to the existing conditions. The road will drain to one of two treatment systems, an underdrained soil filter and a forested buffer (via a level spreader). The treatment systems are contained entirely within one of the two large existing subcatchments.

TREATMENT SUMMARY

Runoff from and draining to the road will be captured by vegetated swales. Each swale will run to either a culvert, underdrained soil filter, or level spreader. A Treatment Summary Table and calculations are included at the end of this Section. The Forested buffer is in open space to ensure it is not accidently cleared.

Forested Buffer- A 20-foot-wide level spreader captures the western end of the road and feeds a 75 foot-deep forested buffer

Underdrained Soil Filter- An underdrained soil filter at the northeastern corner of the road captures and treats a large portion of the road and some of the lots.

DETAILS, DESIGNS, AND SPECIFICATIONS

The Forest Buffer and Underdrained Soil Filter were sized in accordance with Chapter 5 and 7 of Maine Department of Environmental Protection Stormwater Best Management Practices Manual.

MAINTENANCE PLAN, INSPECTIONS, AND REQUIREMENTS

Maintenance of the stormwater control measures will be performed by the Owners' designee in conjunction with the Owner.

During construction, the site work contractor (StoneX) will be responsible for all site maintenance.

CONCLUSION

The stormwater management for the Deer Creek Crossing Subdivision was designed in accordance with the MEDEP Chapter 500 requirements. The water quality treatment is provided mainly by a rain garden and series of forested buffers. There will be no adverse impact on adjacent properties as a result of this project.