

## Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
124,277	58	Woods/grass comb., Good, HSG B (Area -2,Area -3,Area -4,Area -5,Area-1)
47,524	92	Paved roads w/open ditches, 50% imp, HSG C (Area -2,Area -3,Area -4,Area-1)
27,225	98	Paved roads w/curbs & sewers (Area -5)
199,026		TOTAL AREA

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Summary for Subcatchment Area -2: Sta. 815+00 to Sta. 816+00
Runoff = 2.18 cfs @ 12.12 hrs, Volume= 7,100 cf, Depth= 2.08"
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs Type II 24-hr 10-yr Rainfall=5.50"
Area (ac) CN Description
0.217 92 Paved roads w/open ditches, 50% imp, HSG C 0.725 58 Woods/grass comb., Good, HSG B
0.942 66 Weighted Average
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)
19.1 193 0.1000 0.17 Sheet Flow, OVERLAND FLOW
Woods: Light underbrush n= 0.400 P2= 3.20"
Summary for Subcatchment Area -3: Sta. 816+00 to Sta. 817+00
Runoff = 2.62 cfs @ 11.96 hrs, Volume= 5,109 cf, Depth= 2.41"
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs Type II 24-hr 10-yr Rainfall=5.50"
Area (ac) CN Description
0.198 92 Paved roads w/open ditches, 50% imp, HSG C 0.385 58 Woods/grass comb., Good, HSG B
0.583 70 Weighted Average
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)
5.0 Direct Entry,
Summary for Subcatchment Area -4: Sta. 817+00 to Sta. 818+00
Runoff = 1.58 cfs @ 12.11 hrs, Volume= 5,039 cf, Depth= 2.59"
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs Type II 24-hr 10-yr Rainfall=5.50"
Area (ac) CN Description
0.218 92 Paved roads w/open ditches, 50% imp, HSG C 0.318 58 Woods/grass comb., Good, HSG B
0.536 72 Weighted Average
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)
19.1   212   0.1200   0.18   Sheet Flow, OVERLAND FLOW     Woods: Light underbrush   n= 0.400   P2= 3.20"

Type II 24-hr 10-yr Rainfall=5.50"

Ditch @ Sta 814+00 - 820+00 using Reach

## Summary for Subcatchment Area -5: Sta. 818+00 to Sta. 822+00

Runoff = 5.04 cfs @ 12.11 hrs, Volume= 16,055 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs Type II 24-hr 10-yr Rainfall=5.50"

Area	(ac) C	N Des	cription		
0.	625 9	98 Pave	ed roads w	/curbs & se	ewers
1.	026 !	58 Woo	ds/grass c	omb., Goo	d, HSG B
1.	651	73 Weig	ghted Aver	age	
			-	-	
Тс	- 0-	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
19.1	212	0.1200	0.18		Sheet Flow, OVERLAND FLOW Woods: Light underbrush n= 0.400 P2= 3.20"

## Summary for Subcatchment Area-1: Sta. 814+00 to Sta. 815+00

Runoff	=	2.74 cfs @	12.13 hrs,	Volume=
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9,186 cf, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs Type II 24-hr 10-yr Rainfall=5.50"

_	Area	(ac) C	N Des	cription		
	-					nes, 50% imp, HSG C
_	0.	<u>399 5</u>	58 Woo	ods/grass o	<u>comb., Goo</u>	d, HSG B
	0.	857 7	76 Weig	ghted Aver	rage	
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	19.9	188	0.0850	0.16		Sheet Flow, OVERLAND FLOW
	1.1	302	0.0215	4.43	13.29	Woods: Light underbrush n= 0.400 P2= 3.20" Channel Flow, DITCH Area= 3.0 sf Perim= 6.3' r= 0.48' n= 0.030
	21.0	490	Total			

## Summary for Reach 1R: Reach 1

Inflow Area = Inflow = Outflow =	2.74 cfs @	Inflow Depth = 12.13 hrs, Volur 12.16 hrs, Volur	me=	9,186 cf	= 1%, Lag= 1.5 min
Routing by Dyn-Sf Max. Velocity= 2.8 Avg. Velocity = 1.4	84 fps, Min. Tr	ravel Time= 1.9 r	min	s, dt= 0.01 hrs / 3	
Peak Storage= 31 Bank-Full Depth=	-	· •		Storage= 0.56'	

# Ditch @ Sta 814+00 - 820+00 using Reach Type II 24-hr 10-yr Rainfall=5.50" Prepared by {enter your company name here} Printed 7/8/2008 HydroCAD® 8.50 s/n 005675 © 2007 HydroCAD Software Solutions LLC Page 5 0.00' x 1.00' deep channel, n= 0.030 Side Slope Z-value= 3.0 '/' Top Width= 6.00' Length= 325.0' Slope= 0.0191 '/' Inlet Invert= 356.00', Outlet Invert= 349.80' Summary for Reach 2R: (new Reach) 78,364 sf, Inflow Depth = 2.45" Inflow Area = for 10-yr event Inflow = 4.75 cfs @ 12.15 hrs, Volume= 15,980 cf Outflow 4.74 cfs @ 12.16 hrs, Volume= 15,980 cf, Atten= 0%, Lag= 0.6 min = Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Max. Velocity= 3.00 fps, Min. Travel Time= 0.8 min Avg. Velocity = 1.24 fps, Avg. Travel Time= 2.0 min Peak Storage= 238 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.73' Bank-Full Depth= 1.00', Capacity at Bank-Full= 11.15 cfs 0.00' x 1.00' deep channel, n= 0.030 Side Slope Z-value= 3.0 '/' Top Width= 6.00' Length= 151.0' Slope= 0.0152 '/' Inlet Invert= 349.80', Outlet Invert= 347.50'

Summary for Reach 3R: (new Reach)

[80] Warning: Exceeded Pond CD#2 by 1.04' @ 9.73 hrs (2.10 cfs 140,025 cf)

Inflow Area =	103,760 sf, Inflow Depth = 2.98"	for 10-yr event
Inflow =	4.94 cfs @ 12.19 hrs, Volume=	25,783 cf
Outflow =	4.93 cfs @ 12.20 hrs, Volume=	25,783 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Max. Velocity= 3.82 fps, Min. Travel Time= 0.6 min Avg. Velocity = 1.74 fps, Avg. Travel Time= 1.4 min

#### Ditch @ Sta 814+00 - 820+00 using Reach

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Peak Storage= 183 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.66' Bank-Full Depth= 1.00', Capacity at Bank-Full= 15.17 cfs

0.00' x 1.00' deep channel, n= 0.030 Side Slope Z-value= 3.0 '/' Top Width= 6.00' Length= 142.0' Slope= 0.0282 '/' Inlet Invert= 348.50', Outlet Invert= 344.50'

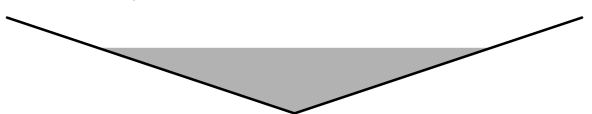
#### Summary for Reach 4R: (new Reach)

Inflow Area =	127,108 sf, Inflow Depth = 2.89"	for 10-yr event
Inflow =	6.34 cfs @ 12.17 hrs, Volume=	30,576 cf
Outflow =	6.32 cfs @ 12.18 hrs, Volume=	30,576 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Max. Velocity= 4.51 fps, Min. Travel Time= 0.5 min Avg. Velocity = 2.00 fps, Avg. Travel Time= 1.2 min

Peak Storage= 208 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.68' Bank-Full Depth= 1.00', Capacity at Bank-Full= 17.42 cfs

0.00' x 1.00' deep channel, n= 0.030 Side Slope Z-value= 3.0 '/' Top Width= 6.00' Length= 148.0' Slope= 0.0372 '/' Inlet Invert= 344.50', Outlet Invert= 339.00'



## Summary for Reach 5R: (new Reach)

Inflow Area =	199,026 sf, Inflow Depth = 2.75"	for 10-yr event
Inflow =	11.13 cfs @ 12.13 hrs, Volume=	45,532 cf
Outflow =	11.07 cfs @ 12.16 hrs, Volume=	45,532 cf, Atten= 1%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Max. Velocity= 5.12 fps, Min. Travel Time= 1.3 min Avg. Velocity = 1.74 fps, Avg. Travel Time= 4.0 min

#### Ditch @ Sta 814+00 - 820+00 using Reach

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Peak Storage= 894 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.58' Bank-Full Depth= 1.00', Capacity at Bank-Full= 34.66 cfs

2.00' x 1.00' deep channel, n= 0.030 Side Slope Z-value= 3.0 '/' Top Width= 8.00' Length= 414.0' Slope= 0.0386 '/' Inlet Invert= 339.00', Outlet Invert= 323.00'

‡

## Summary for Pond CD#1: Check Dam 1

[62] Warning: Exceeded Reach 1R OUTLET depth by 0.60' @ 12.19 hrs

Inflow Area =	37,331 sf, Inflow Depth = 2.95"	for 10-yr event
Inflow =	2.70 cfs @ 12.16 hrs, Volume=	9,186 cf
Outflow =	2.68 cfs @ 12.18 hrs, Volume=	9,186 cf, Atten= 1%, Lag= 1.2 min
Discarded =	0.01 cfs @ 12.18 hrs, Volume=	307 cf
Primary =	2.67 cfs @ 12.18 hrs, Volume=	8,879 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 350.96' @ 12.18 hrs Surf.Area= 427 sf Storage= 237 cf

Plug-Flow detention time= 6.2 min calculated for 9,183 cf (100% of inflow) Center-of-Mass det. time= 6.3 min (847.9 - 841.6)

Volume	Inve	rt Avail.Sto	rage Storage	e Description	
#1	349.8	0' 1,2 <sup>-</sup>	13 cf Pond V	/olume (Prismat	tic)Listed below (Recalc)
Elevatio (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
349.8	1	0	0	0	
350.0	-	55	5	5	
351.0	0	441	248	253	
352.0	00	1,479	960	1,213	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	350.30'	Head (feet) 2.50 3.00 3 Coef. (Englis	0.20 0.40 0.60 .50 4.00 4.50 5	70 2.68 2.68 2.67 2.65 2.65 2.65
#2	Discardeo	d 349.80'		Exfiltration over	

**Discarded OutFlow** Max=0.01 cfs @ 12.18 hrs HW=350.96' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=2.67 cfs @ 12.18 hrs HW=350.96' TW=350.52' (Dynamic Tailwater) **1=Broad-Crested Rectangular Weir** (Weir Controls 2.67 cfs @ 2.02 fps)

#### Summary for Pond CD#2: Check Dam 2

[87] Warning: Oscillations may require Finer Routing or smaller dt [62] Warning: Exceeded Reach 2R OUTLET depth by 1.14' @ 12.25 hrs

Inflow Area =	78,364 sf, Inflow Depth = 2.45"	for 10-yr event
Inflow =	4.74 cfs @ 12.16 hrs, Volume=	15,980 cf
Outflow =	4.60 cfs @ 12.20 hrs, Volume=	15,931 cf, Atten= 3%, Lag= 2.2 min
Discarded =	0.03 cfs @ 12.20 hrs, Volume=	926 cf
Primary =	4.57 cfs @ 12.20 hrs, Volume=	20,674 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 349.35' @ 12.20 hrs Surf.Area= 1,408 sf Storage= 871 cf

Plug-Flow detention time= 19.4 min calculated for 15,931 cf (100% of inflow) Center-of-Mass det. time= 17.5 min ( 868.2 - 850.7 )

Volume	Inve	ert Avail.Sto	rage Storag	ge Description	
#1	347.5	50' 2,1	82 cf Pond	Volume (Prisma	tic)Listed below (Recalc)
Flovetic		Curf Area	In a Chara	Curra Chara	
Elevatio		Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
347.5	50	0	0	0	
348.0	00	164	41	41	
349.0	00	741	453	494	
350.0	00	2,636	1,689	2,182	
		,	,	,	
Device	Routing	Invert	Outlet Devic	ces	
#1	Primary	348.00'	2.0' long x	6.0' breadth Bro	ad-Crested Rectangular Weir
	- 5				0.80 1.00 1.20 1.40 1.60 1.80 2.00
				3.50 4.00 4.50 5	
					70 2.68 2.68 2.67 2.65 2.65 2.65
				2.66 2.67 2.69 2	
		. 0.47 501			
#2	Discarde	ed 347.50'	1.000 in/hr	Exfiltration over	Surface area

**Discarded OutFlow** Max=0.03 cfs @ 12.20 hrs HW=349.35' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=4.57 cfs @ 12.20 hrs HW=349.35' TW=349.16' (Dynamic Tailwater) **1=Broad-Crested Rectangular Weir**(Weir Controls 4.57 cfs @ 1.69 fps)

## Summary for Pond CD#3: Check Dam 3

- [93] Warning: Storage range exceeded by 0.97'
- [90] Warning: Qout>Qin may require Finer Routing or smaller dt
- [87] Warning: Oscillations may require Finer Routing or smaller dt
- [62] Warning: Exceeded Reach 3R OUTLET depth by 0.81' @ 12.19 hrs

Inflow Area =	103,760 sf, Inflow Depth = 2.98"	for 10-yr event
Inflow =	4.93 cfs @ 12.20 hrs, Volume=	25,783 cf
Outflow =	4.94 cfs @ 12.21 hrs, Volume=	25,783 cf, Atten= 0%, Lag= 0.4 min
Discarded =	0.00 cfs @ 10.79 hrs, Volume=	245 cf
Primary =	4.94 cfs @ 12.21 hrs, Volume=	25,538 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 345.97' @ 12.21 hrs Surf.Area= 154 sf Storage= 39 cf

Plug-Flow detention time= 1.6 min calculated for 25,783 cf (100% of inflow) Center-of-Mass det. time= 1.6 min (916.3 - 914.7)

Volume	Inve	ert Avail.Sto	rage Storage Description		
#1	344.5	0' :	39 cf Pond V	Volume (Prismatic)Listed below (Recalc)	
		o ()			
Elevatio		Surf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
344.5	50	0	0	0	
345.0	00	154	39	39	
Device	Routing	Invert	Outlet Device	ces	
#1	Primary	345.00'	2.0' long x	6.0' breadth Broad-Crested Rectangular Weir	
	2		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	3.50 4.00 4.50 5.00 5.50	
			Coef. (Englis	ish) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65	
				2.66 2.67 2.69 2.72 2.76 2.83	
#2	Discarde	d 344.50'		Exfiltration over Surface area	
=					

**Discarded OutFlow** Max=0.00 cfs @ 10.79 hrs HW=345.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.00 cfs)

#### Summary for Pond CD#4: Check Dam 4

[93] Warning: Storage range exceeded by 0.12'

[90] Warning: Qout>Qin may require Finer Routing or smaller dt

[62] Warning: Exceeded Reach 4R OUTLET depth by 1.43' @ 12.17 hrs

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Inflow Area =	127,108 sf, Inflow Depth = 2.89"	for 10-yr event			
Inflow =	6.32 cfs @ 12.18 hrs, Volume=	30,576 cf			
Outflow =	6.34 cfs @ 12.17 hrs, Volume=	30,514 cf, Atten= 0%, Lag= 0.0	0 min		
Discarded =	0.04 cfs @ 12.09 hrs, Volume=	1,036 cf			
Primary =	6.30 cfs @ 12.17 hrs, Volume=	29,478 cf			
Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3					
Peak Elev= 341.12' @ 12.17 hrs Surf.Area= 1,576 sf Storage= 1,245 cf					
Plug-Flow detention time= 11.3 min calculated for 30,504 cf (100% of inflow)					

Type II 24-hr 10-yr Rainfall=5.50"

Center-of-Mass det. time= 10.1 min ( 913.6 - 903.5 )

Ditch @ Sta 814+00 - 820+00 using Reach

Volume	Inve	rt Avail.Sto	rage Stora	age Description	
#1	339.0	0' 1,24	45 cf <b>Pon</b>	d Volume (Prismat	t <b>ic)</b> Listed below (Recalc)
Elevatio (fee 339.0 340.0 341.0	et) 00 00	Surf.Area (sq-ft) 0 457 1,576	Inc.Store (cubic-feet) ( 229 1,017	) (cubic-feet) ) 0 229	
Device	Routing	Invert	Outlet Dev	vices	
#1 Primary 340.00'		Head (fee		ad-Crested Rectangular Weir     0.80   1.00   1.20   1.40   1.60   1.80   2.00     0.00   5.50	
#2	Discardeo	d 339.00'	Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83		

**Discarded OutFlow** Max=0.04 cfs @ 12.09 hrs HW=341.06' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.04 cfs)

**Primary OutFlow** Max=6.30 cfs @ 12.17 hrs HW=341.12' TW=339.58' (Dynamic Tailwater) **1=Broad-Crested Rectangular Weir**(Weir Controls 6.30 cfs @ 2.82 fps)

## Summary for Pond Culvert: Culvert

[62] Warning: Exceeded Reach 5R OUTLET depth by 0.74' @ 12.20 hrs

Inflow Area =	199,026 sf, Inflow Depth = 2.75"	for 10-yr event
Inflow =	11.07 cfs @ 12.16 hrs, Volume=	45,532 cf
Outflow =	10.92 cfs @ 12.18 hrs, Volume=	45,532 cf, Atten= 1%, Lag= 1.7 min
Discarded =	0.03 cfs @ 12.18 hrs, Volume=	1,031 cf
Primary =	10.89 cfs @ 12.18 hrs, Volume=	44,501 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs / 3 Peak Elev= 324.32' @ 12.18 hrs Surf.Area= 1,457 sf Storage= 1,192 cf

Plug-Flow detention time= 3.9 min calculated for 45,532 cf (100% of inflow) Center-of-Mass det. time= 3.9 min ( 889.5 - 885.6 )

#### Ditch @ Sta 814+00 - 820+00 using Reach

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Volume	Inv	ert Avail.Sto	rage Storag	ge Description	
#1	323.0	00' 5,6	19 cf Pond	l Volume (Prismatic)Listed below (Recalc)	
Elevatio (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)		
323.0	/	618	0	0	
324.0	00	992	805	805	
325.0		2,463	1,728	2,533	
326.0	00	3,709	3,086	5,619	
Device	Routing	Invert	Outlet Devi	ices	
#1	Primary	323.00'		2.0' long Culvert	
			Outlet Inver	section conforming to fill, Ke= 0.500 rt= 322.50' S= 0.0156 '/' Cc= 0.900 n= 0.013	
#2	Primary	340.25'		x 6.0' breadth Broad-Crested Rectangular Weir	
				) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00	
				3.50 4.00 4.50 5.00 5.50	
				lish) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65	
<i>щ</i> о	Discorde			2.66 2.67 2.69 2.72 2.76 2.83	
#3	Discarde	ed 323.00'	1.000 In/nr	r Exfiltration over Surface area	
<b>.</b>					

**Discarded OutFlow** Max=0.03 cfs @ 12.18 hrs HW=324.32' (Free Discharge) **3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=10.88 cfs @ 12.18 hrs HW=324.32' (Free Discharge)

-1=Culvert (Barrel Controls 10.88 cfs @ 5.37 fps)

-2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)