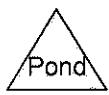
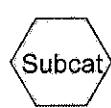
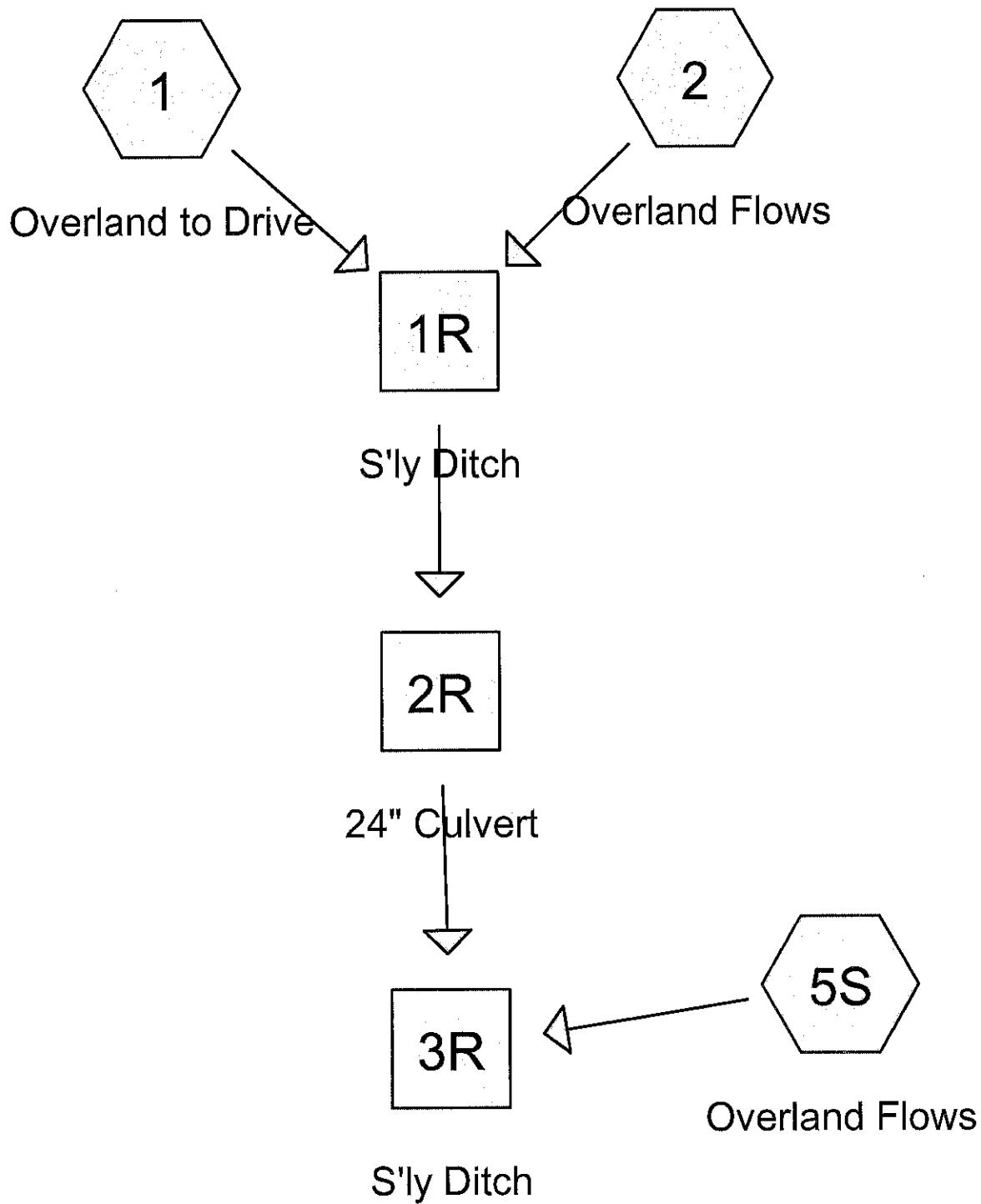


HydroCAD Data



PRE-DEVELOPMENT

DRAINAGE CALCULATIONS



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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NRCC 24-hr	D	Default	24.00	1	3.09	2
2	10-Year	NRCC 24-hr	D	Default	24.00	1	4.65	2
3	25-Year	NRCC 24-hr	D	Default	24.00	1	5.87	2
4	100-Year	NRCC 24-hr	D	Default	24.00	1	8.36	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
9,500	39	>75% Grass cover, Good, HSG A (1, 2)
279,675	48	Brush, Poor, HSG A (1, 2, 5S)
5,325	72	Dirt roads, HSG A (1, 2, 5S)
71,115	36	Woods, Fair, HSG A (1, 2, 5S)
365,615	46	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
365,615	HSG A	1, 2, 5S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
365,615		TOTAL AREA

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 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 1: Overland to Drive

Runoff Area=39,730 sf 0.00% Impervious Runoff Depth=0.06"
Flow Length=195' Tc=6.0 min CN=47 Runoff=0.01 cfs 190 cf

Subcatchment 2: Overland Flows

Runoff Area=190,495 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=230' Tc=6.1 min CN=46 Runoff=0.02 cfs 701 cf

Subcatchment 5S: Overland Flows

Runoff Area=135,390 sf 0.00% Impervious Runoff Depth=0.03"
Flow Length=390' Tc=10.1 min CN=45 Runoff=0.01 cfs 365 cf

Reach 1R: S'ly Ditch

Avg. Flow Depth=0.10' Max Vel=0.09 fps Inflow=0.03 cfs 891 cf
n=0.100 L=750.0' S=0.0007 '/' Capacity=58.69 cfs Outflow=0.03 cfs 811 cf

Reach 2R: 24" Culvert

Avg. Flow Depth=0.07' Max Vel=0.78 fps Inflow=0.03 cfs 811 cf

24.0" Round Pipe n=0.012 L=105.0' S=0.0023 '/' Capacity=11.72 cfs Outflow=0.03 cfs 809 cf

Reach 3R: S'ly Ditch

Avg. Flow Depth=0.15' Max Vel=0.07 fps Inflow=0.04 cfs 1,175 cf
n=0.100 L=700.0' S=0.0003 '/' Capacity=38.78 cfs Outflow=0.03 cfs 783 cf

Total Runoff Area = 365,615 sf Runoff Volume = 1,256 cf Average Runoff Depth = 0.04"
100.00% Pervious = 365,615 sf 0.00% Impervious = 0 sf

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NRCC 24-hr D 2-Year Rainfall=3.09"

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Summary for Subcatchment 1: Overland to Drive

Runoff = 0.01 cfs @ 21.62 hrs, Volume= 190 cf, Depth= 0.06"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=3.09"

Area (sf)	CN	Description
2,875	36	Woods, Fair, HSG A
30,260	48	Brush, Poor, HSG A
5,075	39	>75% Grass cover, Good, HSG A
1,520	72	Dirt roads, HSG A
39,730	47	Weighted Average
39,730		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0060	0.21		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.1	95	0.0200	1.41		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.3	50	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.3	195				Total, Increased to minimum Tc = 6.0 min

Summary for Subcatchment 2: Overland Flows

Runoff = 0.02 cfs @ 24.01 hrs, Volume= 701 cf, Depth= 0.04"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=3.09"

Area (sf)	CN	Description
38,225	36	Woods, Fair, HSG A
144,680	48	Brush, Poor, HSG A
4,425	39	>75% Grass cover, Good, HSG A
3,165	72	Dirt roads, HSG A
190,495	46	Weighted Average
190,495		100.00% Pervious Area

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NRCC 24-hr D 2-Year Rainfall=3.09"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.0240	0.37		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.7	115	0.0120	1.10		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.1	45	0.0013	0.36		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	20	0.2700	5.20		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.1	230				Total

Summary for Subcatchment 5S: Overland Flows

Runoff = 0.01 cfs @ 24.02 hrs, Volume= 365 cf, Depth= 0.03"
 Routed to Reach 3R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 2-Year Rainfall=3.09"

Area (sf)	CN	Description
30,015	36	Woods, Fair, HSG A
104,735	48	Brush, Poor, HSG A
640	72	Dirt roads, HSG A
135,390	45	Weighted Average
135,390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.0200	0.35		Sheet Flow, Fallow n= 0.050 P2= 3.00"
0.2	30	0.1100	3.32		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.4	280	0.0040	0.63		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	30	0.1600	4.00		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
10.1	390				Total

Summary for Reach 1R: S'ly Ditch

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth = 0.05" for 2-Year event
 Inflow = 0.03 cfs @ 24.01 hrs, Volume= 891 cf
 Outflow = 0.03 cfs @ 26.46 hrs, Volume= 811 cf, Atten= 3%, Lag= 146.8 min
 Routed to Reach 2R : 24" Culvert

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.09 fps, Min. Travel Time= 145.5 min

Avg. Velocity = 0.07 fps, Avg. Travel Time= 179.0 min

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NRCC 24-hr D 2-Year Rainfall=3.09"

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Peak Storage= 238 cf @ 24.03 hrs

Average Depth at Peak Storage= 0.10' , Surface Width= 3.30'

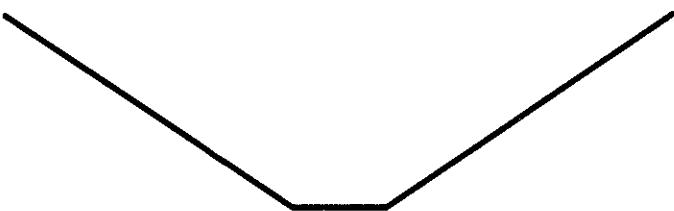
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 58.69 cfs

3.00' x 6.00' deep channel, $n= 0.100$ Earth, dense brush, high stage

Side Slope Z-value= 1.5 ' Top Width= 21.00'

Length= 750.0' Slope= 0.0007 '

Inlet Invert= 224.00', Outlet Invert= 223.46'



Summary for Reach 2R: 24" Culvert

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth > 0.04" for 2-Year event

Inflow = 0.03 cfs @ 26.46 hrs, Volume= 811 cf

Outflow = 0.03 cfs @ 26.51 hrs, Volume= 809 cf, Atten= 0%, Lag= 3.0 min

Routed to Reach 3R : S'ly Ditch

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.78 fps, Min. Travel Time= 2.3 min

Avg. Velocity = 0.63 fps, Avg. Travel Time= 2.8 min

Peak Storage= 4 cf @ 26.47 hrs

Average Depth at Peak Storage= 0.07' , Surface Width= 0.74'

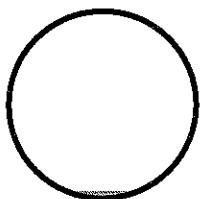
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 11.72 cfs

24.0" Round Pipe

$n= 0.012$ Concrete pipe, finished

Length= 105.0' Slope= 0.0023 '

Inlet Invert= 223.46', Outlet Invert= 223.22'



Summary for Reach 3R: S'ly Ditch

Inflow Area = 365,615 sf, 0.00% Impervious, Inflow Depth > 0.04" for 2-Year event

Inflow = 0.04 cfs @ 24.02 hrs, Volume= 1,175 cf

Outflow = 0.03 cfs @ 26.88 hrs, Volume= 783 cf, Atten= 14%, Lag= 171.3 min

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NRCC 24-hr D 2-Year Rainfall=3.09"

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Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.07 fps, Min. Travel Time= 165.0 min

Avg. Velocity = 0.06 fps, Avg. Travel Time= 212.0 min

Peak Storage= 334 cf @ 24.13 hrs

Average Depth at Peak Storage= 0.15', Surface Width= 3.44'

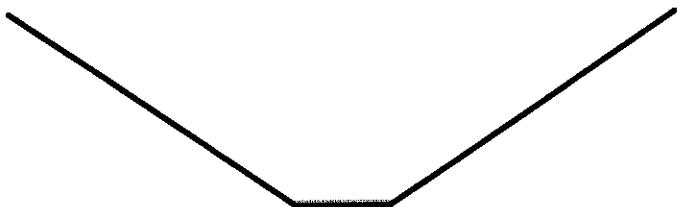
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 38.78 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 '/' Top Width= 21.00'

Length= 700.0' Slope= 0.0003 '/'

Inlet Invert= 223.22', Outlet Invert= 223.00'



Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 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 1: Overland to Drive

Runoff Area=39,730 sf 0.00% Impervious Runoff Depth=0.42"
Flow Length=195' Tc=6.0 min CN=47 Runoff=0.16 cfs 1,389 cf

Subcatchment 2: Overland Flows

Runoff Area=190,495 sf 0.00% Impervious Runoff Depth=0.38"
Flow Length=230' Tc=6.1 min CN=46 Runoff=0.52 cfs 5,992 cf

Subcatchment 5S: Overland Flows

Runoff Area=135,390 sf 0.00% Impervious Runoff Depth=0.34"
Flow Length=390' Tc=10.1 min CN=45 Runoff=0.23 cfs 3,804 cf

Reach 1R: S'ly Ditch

Avg. Flow Depth=0.39' Max Vel=0.19 fps Inflow=0.67 cfs 7,381 cf
n=0.100 L=750.0' S=0.0007 '/' Capacity=58.69 cfs Outflow=0.26 cfs 7,290 cf

Reach 2R: 24" Culvert

Avg. Flow Depth=0.20' Max Vel=1.52 fps Inflow=0.26 cfs 7,290 cf
24.0" Round Pipe n=0.012 L=105.0' S=0.0023 '/' Capacity=11.72 cfs Outflow=0.26 cfs 7,288 cf

Reach 3R: S'ly Ditch

Avg. Flow Depth=0.55' Max Vel=0.15 fps Inflow=0.37 cfs 11,092 cf
n=0.100 L=700.0' S=0.0003 '/' Capacity=38.78 cfs Outflow=0.31 cfs 10,706 cf

Total Runoff Area = 365,615 sf Runoff Volume = 11,185 cf Average Runoff Depth = 0.37"
100.00% Pervious = 365,615 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1: Overland to Drive

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 1,389 cf, Depth= 0.42"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.65"

Area (sf)	CN	Description
2,875	36	Woods, Fair, HSG A
30,260	48	Brush, Poor, HSG A
5,075	39	>75% Grass cover, Good, HSG A
1,520	72	Dirt roads, HSG A
39,730	47	Weighted Average
39,730		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0060	0.21		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.1	95	0.0200	1.41		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.3	50	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.3	195	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2: Overland Flows

Runoff = 0.52 cfs @ 12.17 hrs, Volume= 5,992 cf, Depth= 0.38"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.65"

Area (sf)	CN	Description
38,225	36	Woods, Fair, HSG A
144,680	48	Brush, Poor, HSG A
4,425	39	>75% Grass cover, Good, HSG A
3,165	72	Dirt roads, HSG A
190,495	46	Weighted Average
190,495		100.00% Pervious Area

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NRCC 24-hr D 10-Year Rainfall=4.65"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.0240	0.37		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.7	115	0.0120	1.10		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.1	45	0.0013	0.36		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	20	0.2700	5.20		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.1	230	Total			

Summary for Subcatchment 5S: Overland Flows

Runoff = 0.23 cfs @ 12.36 hrs, Volume= 3,804 cf, Depth= 0.34"
 Routed to Reach 3R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 10-Year Rainfall=4.65"

Area (sf)	CN	Description
30,015	36	Woods, Fair, HSG A
104,735	48	Brush, Poor, HSG A
640	72	Dirt roads, HSG A
135,390	45	Weighted Average
135,390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.0200	0.35		Sheet Flow, Fallow n= 0.050 P2= 3.00"
0.2	30	0.1100	3.32		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.4	280	0.0040	0.63		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	30	0.1600	4.00		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
10.1	390	Total			

Summary for Reach 1R: S'ly Ditch

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth = 0.38" for 10-Year event
 Inflow = 0.67 cfs @ 12.17 hrs, Volume= 7,381 cf
 Outflow = 0.26 cfs @ 14.60 hrs, Volume= 7,290 cf, Atten= 62%, Lag= 145.9 min
 Routed to Reach 2R : 24" Culvert

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.19 fps, Min. Travel Time= 67.4 min

Avg. Velocity = 0.13 fps, Avg. Travel Time= 96.6 min

Peak Storage= 1,042 cf @ 13.48 hrs

Average Depth at Peak Storage= 0.39' , Surface Width= 4.16'

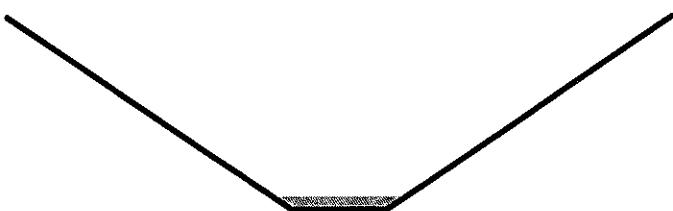
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 58.69 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 '/ Top Width= 21.00'

Length= 750.0' Slope= 0.0007 '/

Inlet Invert= 224.00', Outlet Invert= 223.46'



Summary for Reach 2R: 24" Culvert

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth > 0.38" for 10-Year event

Inflow = 0.26 cfs @ 14.60 hrs, Volume= 7,290 cf

Outflow = 0.26 cfs @ 14.64 hrs, Volume= 7,288 cf, Atten= 0%, Lag= 2.0 min

Routed to Reach 3R : S'ly Ditch

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.52 fps, Min. Travel Time= 1.2 min

Avg. Velocity = 1.13 fps, Avg. Travel Time= 1.5 min

Peak Storage= 18 cf @ 14.62 hrs

Average Depth at Peak Storage= 0.20' , Surface Width= 1.21'

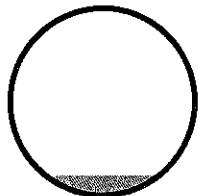
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 11.72 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 105.0' Slope= 0.0023 '/

Inlet Invert= 223.46', Outlet Invert= 223.22'



Summary for Reach 3R: S'ly Ditch

Inflow Area = 365,615 sf, 0.00% Impervious, Inflow Depth > 0.36" for 10-Year event

Inflow = 0.37 cfs @ 14.53 hrs, Volume= 11,092 cf

Outflow = 0.31 cfs @ 17.24 hrs, Volume= 10,706 cf, Atten= 15%, Lag= 162.6 min

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NRCC 24-hr D 10-Year Rainfall=4.65"

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Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.15 fps, Min. Travel Time= 78.8 min

Avg. Velocity = 0.12 fps, Avg. Travel Time= 101.0 min

Peak Storage= 1,466 cf @ 15.93 hrs

Average Depth at Peak Storage= 0.55', Surface Width= 4.64'

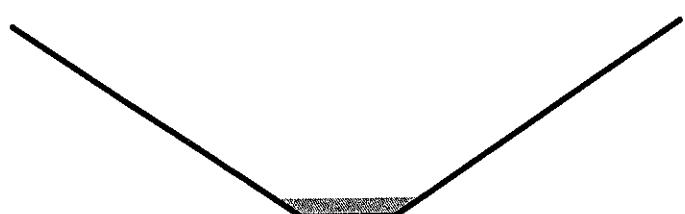
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 38.78 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 '/' Top Width= 21.00'

Length= 700.0' Slope= 0.0003 '/'

Inlet Invert= 223.22', Outlet Invert= 223.00'



25-YEAR Pre-Development - Detailed

Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 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 1: Overland to Drive

Runoff Area=39,730 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=195' Tc=6.0 min CN=47 Runoff=0.65 cfs 2,905 cf

Subcatchment 2: Overland Flows

Runoff Area=190,495 sf 0.00% Impervious Runoff Depth=0.81"
Flow Length=230' Tc=6.1 min CN=46 Runoff=2.71 cfs 12,904 cf

Subcatchment 5S: Overland Flows

Runoff Area=135,390 sf 0.00% Impervious Runoff Depth=0.75"
Flow Length=390' Tc=10.1 min CN=45 Runoff=1.32 cfs 8,461 cf

Reach 1R: S'ly Ditch

Avg. Flow Depth=0.77' Max Vel=0.27 fps Inflow=3.36 cfs 15,809 cf
n=0.100 L=750.0' S=0.0007 '/' Capacity=58.69 cfs Outflow=0.87 cfs 15,715 cf

Reach 2R: 24" Culvert

Avg. Flow Depth=0.37' Max Vel=2.18 fps Inflow=0.87 cfs 15,715 cf

24.0" Round Pipe n=0.012 L=105.0' S=0.0023 '/' Capacity=11.72 cfs Outflow=0.87 cfs 15,713 cf

Reach 3R: S'ly Ditch

Avg. Flow Depth=1.01' Max Vel=0.20 fps Inflow=1.32 cfs 24,174 cf
n=0.100 L=700.0' S=0.0003 '/' Capacity=38.78 cfs Outflow=0.93 cfs 23,803 cf

Total Runoff Area = 365,615 sf Runoff Volume = 24,270 cf Average Runoff Depth = 0.80"
100.00% Pervious = 365,615 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1: Overland to Drive

Runoff = 0.65 cfs @ 12.14 hrs, Volume= 2,905 cf, Depth= 0.88"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 25-Year Rainfall=5.87"

Area (sf)	CN	Description
2,875	36	Woods, Fair, HSG A
30,260	48	Brush, Poor, HSG A
5,075	39	>75% Grass cover, Good, HSG A
1,520	72	Dirt roads, HSG A
39,730	47	Weighted Average
39,730		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0060	0.21		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.1	95	0.0200	1.41		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.3	50	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.3	195	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2: Overland Flows

Runoff = 2.71 cfs @ 12.15 hrs, Volume= 12,904 cf, Depth= 0.81"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 25-Year Rainfall=5.87"

Area (sf)	CN	Description
38,225	36	Woods, Fair, HSG A
144,680	48	Brush, Poor, HSG A
4,425	39	>75% Grass cover, Good, HSG A
3,165	72	Dirt roads, HSG A
190,495	46	Weighted Average
190,495		100.00% Pervious Area

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NRCC 24-hr D 25-Year Rainfall=5.87"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.0240	0.37		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.7	115	0.0120	1.10		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.1	45	0.0013	0.36		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	20	0.2700	5.20		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.1	230	Total			

Summary for Subcatchment 5S: Overland Flows

Runoff = 1.32 cfs @ 12.20 hrs, Volume= 8,461 cf, Depth= 0.75"
 Routed to Reach 3R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 25-Year Rainfall=5.87"

Area (sf)	CN	Description
30,015	36	Woods, Fair, HSG A
104,735	48	Brush, Poor, HSG A
640	72	Dirt roads, HSG A
135,390	45	Weighted Average
135,390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.0200	0.35		Sheet Flow, Fallow n= 0.050 P2= 3.00"
0.2	30	0.1100	3.32		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.4	280	0.0040	0.63		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	30	0.1600	4.00		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
10.1	390	Total			

Summary for Reach 1R: S'ly Ditch

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth = 0.82" for 25-Year event
 Inflow = 3.36 cfs @ 12.15 hrs, Volume= 15,809 cf
 Outflow = 0.87 cfs @ 13.41 hrs, Volume= 15,715 cf, Atten= 74%, Lag= 75.7 min
 Routed to Reach 2R : 24" Culvert

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.27 fps, Min. Travel Time= 46.4 min

Avg. Velocity = 0.16 fps, Avg. Travel Time= 78.4 min

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NRCC 24-hr D 25-Year Rainfall=5.87"

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Peak Storage= 2,414 cf @ 12.64 hrs

Average Depth at Peak Storage= 0.77', Surface Width= 5.32'

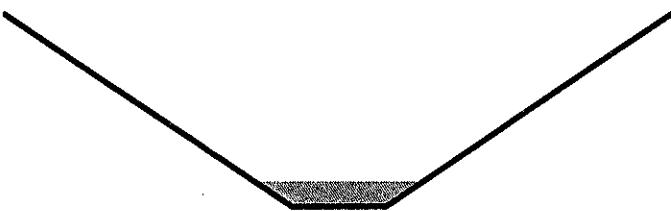
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 58.69 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 ' Top Width= 21.00'

Length= 750.0' Slope= 0.0007 '

Inlet Invert= 224.00', Outlet Invert= 223.46'

**Summary for Reach 2R: 24" Culvert**

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth > 0.82" for 25-Year event

Inflow = 0.87 cfs @ 13.41 hrs, Volume= 15,715 cf

Outflow = 0.87 cfs @ 13.43 hrs, Volume= 15,713 cf, Atten= 0%, Lag= 1.4 min

Routed to Reach 3R : S'ly Ditch

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.18 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.36 fps, Avg. Travel Time= 1.3 min

Peak Storage= 42 cf @ 13.42 hrs

Average Depth at Peak Storage= 0.37', Surface Width= 1.55'

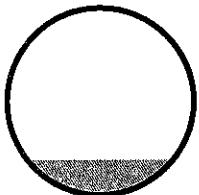
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 11.72 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 105.0' Slope= 0.0023 '

Inlet Invert= 223.46', Outlet Invert= 223.22'

**Summary for Reach 3R: S'ly Ditch**

Inflow Area = 365,615 sf, 0.00% Impervious, Inflow Depth > 0.79" for 25-Year event

Inflow = 1.32 cfs @ 12.20 hrs, Volume= 24,174 cf

Outflow = 0.93 cfs @ 15.23 hrs, Volume= 23,803 cf, Atten= 30%, Lag= 181.6 min

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NRCC 24-hr D 25-Year Rainfall=5.87"

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Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.20 fps, Min. Travel Time= 57.0 min

Avg. Velocity = 0.14 fps, Avg. Travel Time= 80.8 min

Peak Storage= 3,175 cft @ 14.28 hrs

Average Depth at Peak Storage= 1.01', Surface Width= 6.02'

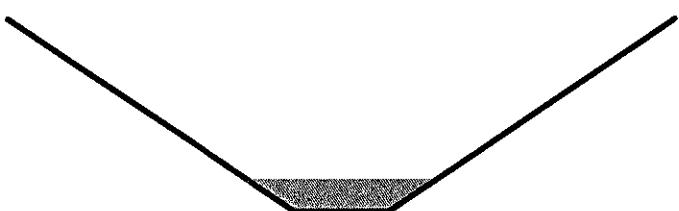
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 38.78 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 '/' Top Width= 21.00'

Length= 700.0' Slope= 0.0003 '/'

Inlet Invert= 223.22', Outlet Invert= 223.00'



Time span=1.00-30.00 hrs, dt=0.01 hrs, 2901 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 1: Overland to Drive

Runoff Area=39,730 sf 0.00% Impervious Runoff Depth=2.14"
Flow Length=195' Tc=6.0 min CN=47 Runoff=2.03 cfs 7,099 cf

Subcatchment 2: Overland Flows

Runoff Area=190,495 sf 0.00% Impervious Runoff Depth=2.04"
Flow Length=230' Tc=6.1 min CN=46 Runoff=9.07 cfs 32,325 cf

Subcatchment 5S: Overland Flows

Runoff Area=135,390 sf 0.00% Impervious Runoff Depth=1.93"
Flow Length=390' Tc=10.1 min CN=45 Runoff=5.02 cfs 21,768 cf

Reach 1R: S'ly Ditch

Avg. Flow Depth=1.72' Max Vel=0.41 fps Inflow=11.10 cfs 39,423 cf
n=0.100 L=750.0' S=0.0007 '/' Capacity=58.69 cfs Outflow=3.94 cfs 39,322 cf

Reach 2R: 24" Culvert

Avg. Flow Depth=0.80' Max Vel=3.36 fps Inflow=3.94 cfs 39,322 cf
24.0" Round Pipe n=0.012 L=105.0' S=0.0023 '/' Capacity=11.72 cfs Outflow=3.93 cfs 39,320 cf

Reach 3R: S'ly Ditch

Avg. Flow Depth=2.03' Max Vel=0.30 fps Inflow=5.09 cfs 61,088 cf
n=0.100 L=700.0' S=0.0003 '/' Capacity=38.78 cfs Outflow=3.64 cfs 60,715 cf

Total Runoff Area = 365,615 sf Runoff Volume = 61,191 cf Average Runoff Depth = 2.01"
100.00% Pervious = 365,615 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1: Overland to Drive

Runoff = 2.03 cfs @ 12.14 hrs, Volume= 7,099 cf, Depth= 2.14"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 100-Year Rainfall=8.36"

Area (sf)	CN	Description
2,875	36	Woods, Fair, HSG A
30,260	48	Brush, Poor, HSG A
5,075	39	>75% Grass cover, Good, HSG A
1,520	72	Dirt roads, HSG A
39,730	47	Weighted Average
39,730		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0060	0.21		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.1	95	0.0200	1.41		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.3	50	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
5.3	195	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2: Overland Flows

Runoff = 9.07 cfs @ 12.14 hrs, Volume= 32,325 cf, Depth= 2.04"
 Routed to Reach 1R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 100-Year Rainfall=8.36"

Area (sf)	CN	Description
38,225	36	Woods, Fair, HSG A
144,680	48	Brush, Poor, HSG A
4,425	39	>75% Grass cover, Good, HSG A
3,165	72	Dirt roads, HSG A
190,495	46	Weighted Average
190,495		100.00% Pervious Area

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NRCC 24-hr D 100-Year Rainfall=8.36"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	50	0.0240	0.37		Sheet Flow, Fallow n= 0.050 P2= 3.00"
1.7	115	0.0120	1.10		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
2.1	45	0.0013	0.36		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	20	0.2700	5.20		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.1	230	Total			

Summary for Subcatchment 5S: Overland Flows

Runoff = 5.02 cfs @ 12.18 hrs, Volume= 21,768 cf, Depth= 1.93"
 Routed to Reach 3R : S'ly Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs
 NRCC 24-hr D 100-Year Rainfall=8.36"

Area (sf)	CN	Description
30,015	36	Woods, Fair, HSG A
104,735	48	Brush, Poor, HSG A
640	72	Dirt roads, HSG A
135,390	45	Weighted Average
135,390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	50	0.0200	0.35		Sheet Flow, Fallow n= 0.050 P2= 3.00"
0.2	30	0.1100	3.32		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.4	280	0.0040	0.63		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
0.1	30	0.1600	4.00		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
10.1	390	Total			

Summary for Reach 1R: S'ly Ditch

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth = 2.05" for 100-Year event
 Inflow = 11.10 cfs @ 12.14 hrs, Volume= 39,423 cf
 Outflow = 3.94 cfs @ 12.84 hrs, Volume= 39,322 cf, Atten= 65%, Lag= 41.8 min
 Routed to Reach 2R : 24" Culvert

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.41 fps, Min. Travel Time= 30.5 min

Avg. Velocity = 0.20 fps, Avg. Travel Time= 63.6 min

Peak Storage= 7,197 cf @ 12.33 hrs

Average Depth at Peak Storage= 1.72', Surface Width= 8.16'

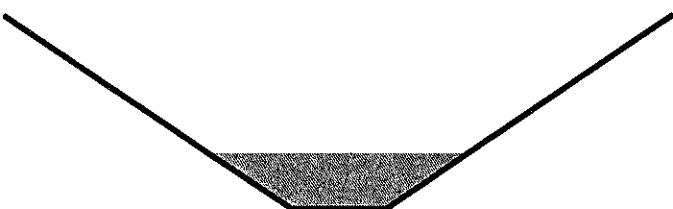
Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 58.69 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 ' Top Width= 21.00'

Length= 750.0' Slope= 0.0007 '/

Inlet Invert= 224.00', Outlet Invert= 223.46'



Summary for Reach 2R: 24" Culvert

Inflow Area = 230,225 sf, 0.00% Impervious, Inflow Depth > 2.05" for 100-Year event

Inflow = 3.94 cfs @ 12.84 hrs, Volume= 39,322 cf

Outflow = 3.93 cfs @ 12.85 hrs, Volume= 39,320 cf, Atten= 0%, Lag= 0.9 min

Routed to Reach 3R : S'ly Ditch

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.36 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 1.65 fps, Avg. Travel Time= 1.1 min

Peak Storage= 123 cf @ 12.84 hrs

Average Depth at Peak Storage= 0.80', Surface Width= 1.96'

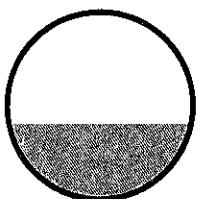
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 11.72 cfs

24.0" Round Pipe

n= 0.012 Concrete pipe, finished

Length= 105.0' Slope= 0.0023 '/

Inlet Invert= 223.46', Outlet Invert= 223.22'



Summary for Reach 3R: S'ly Ditch

Inflow Area = 365,615 sf, 0.00% Impervious, Inflow Depth > 2.00" for 100-Year event

Inflow = 5.09 cfs @ 12.18 hrs, Volume= 61,088 cf

Outflow = 3.64 cfs @ 13.97 hrs, Volume= 60,715 cf, Atten= 28%, Lag= 106.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-30.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.30 fps, Min. Travel Time= 39.4 min

Avg. Velocity = 0.18 fps, Avg. Travel Time= 65.8 min

Peak Storage= 8,610 cf @ 13.31 hrs

Average Depth at Peak Storage= 2.03', Surface Width= 9.10'

Bank-Full Depth= 6.00' Flow Area= 72.0 sf, Capacity= 38.78 cfs

3.00' x 6.00' deep channel, n= 0.100 Earth, dense brush, high stage

Side Slope Z-value= 1.5 ' Top Width= 21.00'

Length= 700.0' Slope= 0.0003 '

Inlet Invert= 223.22', Outlet Invert= 223.00'

