

Project: Wallace Residence
Village of Dobbs Ferry, NY

Scope: Detailed Stormwater Analysis to Judson Avenue (Nos. 250 & 256)

Date: June 9, 2023

We provide this detailed analysis, in addition to the conventional stormwater analysis already provided, to address the concern over the potential for excess stormwater in the area of the two houses directly downslope from the proposed new Wallace residence.

The new house and driveway will increase the impervious area on the lot from 1,479 square feet to 2,775 square feet. To mitigate the additional runoff, a new Rain Garden using infiltration is to be provided on the site. The Rain Garden functions to reduce total runoff volume by percolation of a fraction of the runoff into the soil, and also provides detention of the runoff to mitigate any increases in peak flows.

On the attached exhibit we traced the outlet of the Rain Garden to show that any outflow will not impinge on the house structures. It is clear also that runoff from the site will need to travel over 100 feet through dense woods before crossing the downstream property lines.

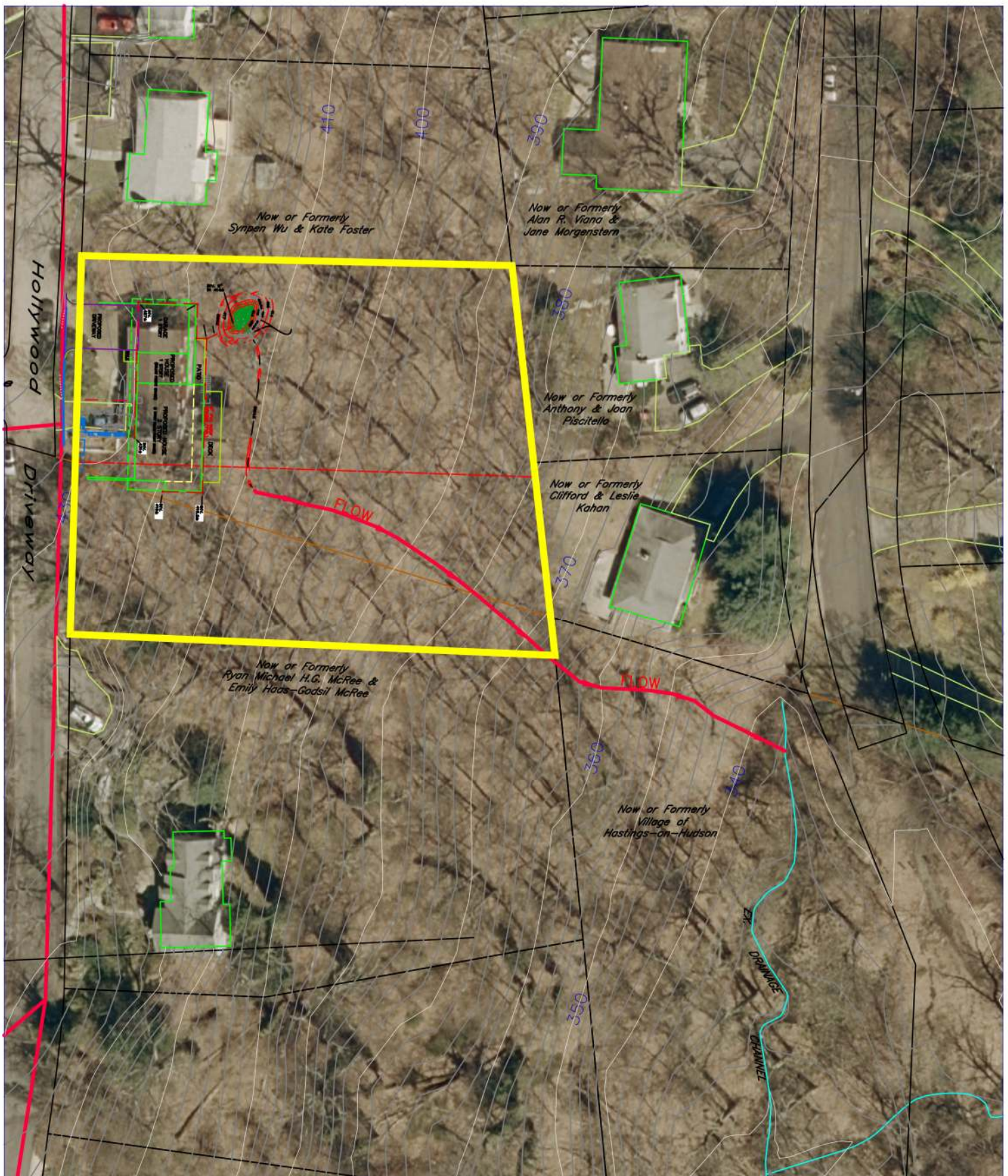
In short, there would be no effect on the houses below as a result of the Rain Garden, nor the construction of the new house.

Based on the computations, the net result of the new construction would be both a reduction in peak flow and a reduction in total volume in the storms up to the 100 year storm as studied. Consequently, there could be no impact downslope.

Submitted by:



Ralph G. Mastromonaco



STORMWATER TRACE ANALYSIS WALLACE RESIDENCE

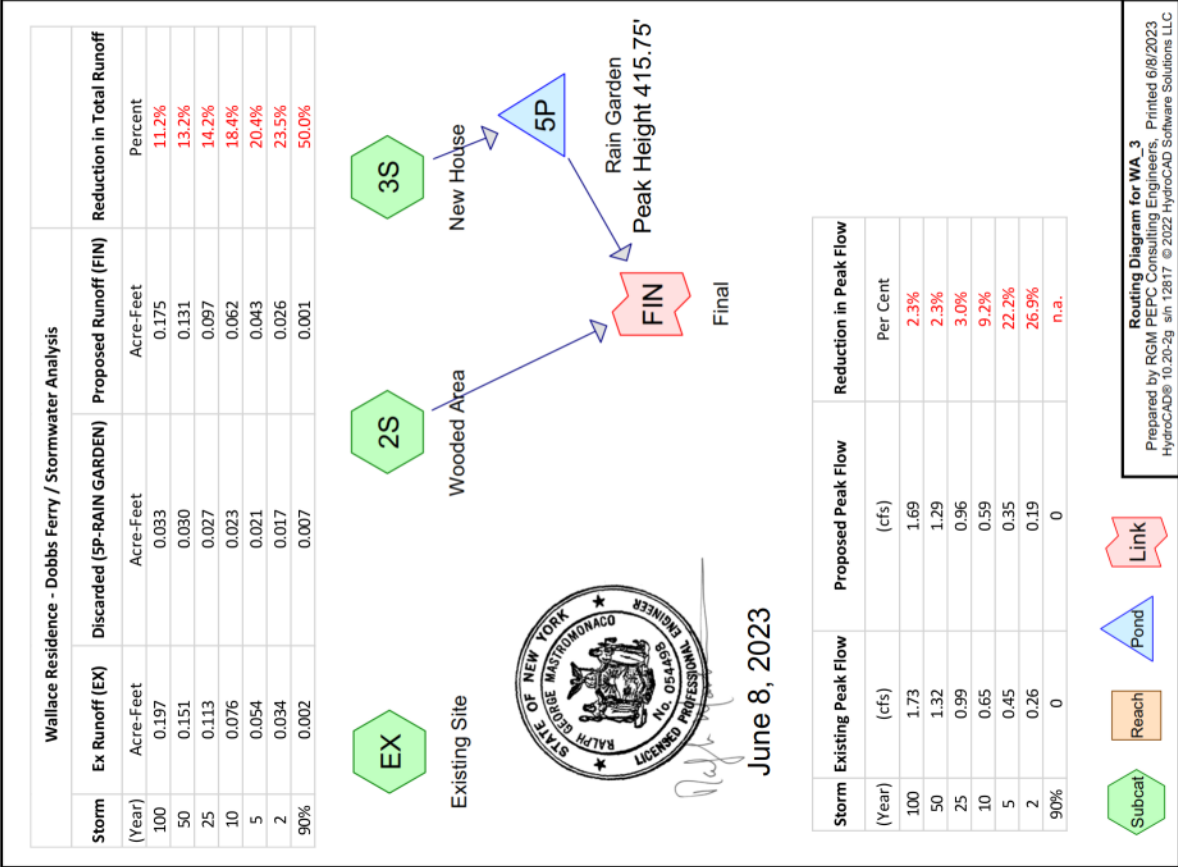
Summary for Subcatchment 2S: Wooded Area

Runoff = 0.19 cfs @ 12.40 hrs, Volume= 0.026 af, Depth> 0.75"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.42"

Area (sf)	CN	Description
17,889	66	Woods, Poor, HSG B
17,889	100.00%	Pervious Area

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



Summary for Subcatchment EX: Existing Site

Runoff = 0.26 cfs @ 12.38 hrs, Volume= 0.034 af, Depth> 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 2-yr Rainfall=3.42"

Area (sf)		CN	Description		
*	19,185	66	Woods, Poor, HSG B		
	1,479	98	IMPERVIOUS		
20,664		68	Weighted Average		
19,185			92.84% Pervious Area		
1,479			7.16% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry,

Summary for Subcatchment 3S: New House

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af, Depth> 3.18"

Routed to Pond 5P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 2-yr Rainfall=3.42"

Area (sf)		CN	Description		
*	2,775	98	IMPERVIOUS		
	2,775		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 0.65" for 2-yr event
Inflow = 0.19 cfs @ 12.40 hrs, Volume= 0.026 af
Primary = 0.19 cfs @ 12.40 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac, 100.00% Impervious, Inflow Depth > 3.18" for 2-yr event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af
Outflow = 0.03 cfs @ 11.70 hrs, Volume= 0.017 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.70 hrs, Volume= 0.017 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 414.83' @ 12.63 hrs Surf.Area= 145 sf Storage= 193 cf
Plug-Flow detention time= 32.9 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (788.8 - 757.9)

Volume		Storage Description			Custom Stage Data (Prismatic) Listed below (Recalc)		
#1	Invert	Avail.Storage	Storage	363 cf			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
413.00	145	0.0	0	0			
413.01	145	50.0	1	1			
414.00	145	50.0	72	73			
414.01	145	100.0	1	74			
416.00	145	100.0	289	363			

Device		Routing	Invert	Outlet Devices
#1	Discarded	413.00'	10.000 in/hr	Exfiltration over Surface area
#2	Primary	415.30'	0.5' long	Sharp-Crested Rectangular Weir 2 End Contraction(s)
Discarded OutFlow Max=0.03 cfs @ 11.70 hrs HW=413.01' (Free Discharge)				
1=Exfiltration (Exfiltration Controls 0.03 cfs)				
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=413.00' (Free Discharge)				
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)				

Summary for Subcatchment 3S: New House

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.021 af, Depth> 4.04"
Routed to Pond SP : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 5-yr Rainfall=4.28"

*	Area (sf)	CN	Description
	2,775	98	IMPERVIOUS
2,775 100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
10.0			
Direct Entry,			

Summary for Subcatchment 2S: Wooded Area

Runoff = 0.35 cfs @ 12.37 hrs, Volume= 0.043 af, Depth> 1.25"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 5-yr Rainfall=4.28"

	Area (sf)	CN	Description
	17,889	66	Woods, Poor, HSG B
17,889 100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
24.0			
Direct Entry,			

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac, 100.00% Impervious, Inflow Depth > 4.04" for 5-yr event
Inflow = 0.23 cfs @ 12.14 hrs, Volume= 0.021 af
Outflow = 0.05 cfs @ 12.60 hrs, Volume= 0.021 af, Atten= 79%, Lag= 27.8 min
Discarded = 0.03 cfs @ 11.65 hrs, Volume= 0.021 af
Primary = 0.02 cfs @ 12.60 hrs, Volume= 0.000 af
Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 415.34' @ 12.60 hrs Surf.Area= 145 sf Storage= 268 cf

Plug-Flow detention time= 46.3 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 45.9 min (799.5 - 753.6)

Volume		Invert	Avail.Storage	Storage Description	Custom Stage Data (Prismatic) Listed below (Recalc)		
#1	413.00'		363 cf				
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
413.00	145	0.0	0	0			
413.01	145	50.0	1	1			
414.00	145	50.0	72	73			
414.01	145	100.0	1	74			
416.00	145	100.0	289	363			

Device Routing		Invert	Outlet Devices
#1	Discarded	413.00'	10.000 in/hr Exfiltration over Surface area
#2	Primary	415.30'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
Discarded OutFlow Max=0.03 cfs @ 11.65 hrs HW=413.01' (Free Discharge)			
1=Exfiltration (Exfiltration Controls 0.03 cfs)			
Primary OutFlow Max=0.02 cfs @ 12.60 hrs HW=415.34' (Free Discharge)			
2=Sharp-Crested Rectangular Weir (Weir Controls 0.02 cfs @ 0.69 fps)			

Summary for Subcatchment EX: Existing Site

Runoff = 0.45 cfs @ 12.36 hrs, Volume= 0.054 af, Depth> 1.38"
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-yr Rainfall=4.28"

Area (sf)		CN	Description
19,185	66	Woods, Poor, HSG B	
1,479	98	IMPERVIOUS	
20,664	68	Weighted Average	
19,185		92.84% Pervious Area	
1,479		7.16% Impervious Area	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
24.0			
Capacity (cfs)			
Description			
Direct Entry.			

Summary for Subcatchment 2S: Wooded Area

Runoff = 0.51 cfs @ 12.36 hrs, Volume= 0.060 af, Depth> 1.76"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.06"

Area (sf)	CN	Description			
17,889	66	Woods, Poor, HSG B			
17,889	100.00% Pervious Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry,

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 1.09" for 5-yr event
Inflow = 0.35 cfs @ 12.37 hrs, Volume= 0.043 af
Primary = 0.35 cfs @ 12.37 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment EX: Existing Site

Runoff = 0.65 cfs @ 12.35 hrs, Volume= 0.076 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 10-yr Rainfall=5.06"

Area (sf)		CN	Description		
*	19,185	66	Woods, Poor, HSG B		
	1,479	98	IMPERVIOUS		
20,664		68	Weighted Average		
19,185			92.84% Pervious Area		
1,479			7.16% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry,

Summary for Subcatchment 3S: New House

Runoff = 0.27 cfs @ 12.14 hrs, Volume= 0.026 af, Depth> 4.82"

Routed to Pond 5P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 10-yr Rainfall=5.06"

Area (sf)		CN	Description		
*	2,775	98	IMPERVIOUS		
	2,775		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 1.57" for 10-yr event
Inflow = 0.59 cfs @ 12.38 hrs, Volume= 0.062 af
Primary = 0.59 cfs @ 12.38 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac, 100.00% Impervious, Inflow Depth > 4.82" for 10-yr event
Inflow = 0.27 cfs @ 12.14 hrs, Volume= 0.026 af
Outflow = 0.12 cfs @ 12.40 hrs, Volume= 0.026 af, Atten= 56%, Lag= 15.8 min
Discarded = 0.03 cfs @ 11.55 hrs, Volume= 0.023 af
Primary = 0.09 cfs @ 12.40 hrs, Volume= 0.002 af
Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 415.45' @ 12.40 hrs Surf.Area= 145 sf Storage= 282 cf
Plug-Flow detention time= 44.5 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 43.4 min (794.1 - 750.7)

Volume						
#1		Invert	Avail.Storage	Storage	Description	
		413.00'	363 cf		Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation	(feet)	Surf.Area	Voids	Inc.Store	Cum.Store	
		(sq-ft)	(%)	(cubic-feet)	(cubic-feet)	
413.00		145	0.0	0	0	
413.01		145	50.0	1	1	
414.00		145	50.0	72	73	
414.01		145	100.0	1	74	
416.00		145	100.0	289	363	

Device			Routing	Invert	Outlet Devices
#1	Discarded	413.00'			
#2	Primary	415.30'			
Discarded OutFlow Max=0.03 cfs @ 11.55 hrs HW=413.01' (Free Discharge)					
1=Exfiltration (Exfiltration Controls 0.03 cfs)					
Primary OutFlow Max=0.08 cfs @ 12.40 hrs HW=415.44' (Free Discharge)					
2=Sharp-Crested Rectangular Weir (Weir Controls 0.08 cfs @ 1.24 fps)					

Summary for Subcatchment 3S: New House

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.032 af, Depth> 6.09"
Routed to Pond SP : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.34"

Area (sf)		CN	Description
*	2,775	98	IMPERVIOUS
2,775		100.00%	Impervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
10.0			Capacity (cfs)
Direct Entry,			

Summary for Subcatchment 2S: Wooded Area

Runoff = 0.79 cfs @ 12.35 hrs, Volume= 0.092 af, Depth> 2.68"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.34"

Area (sf)		CN	Description
	17,889	66	Woods, Poor, HSG B
17,889		100.00%	Pervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
24.0			Capacity (cfs)
Direct Entry,			

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 6.09" for 25-yr event
Inflow = 0.34 cfs @ 12.14 hrs, Volume= 0.032 af
Outflow = 0.24 cfs @ 12.27 hrs, Volume= 0.032 af, Atten= 31%, Lag= 7.9 min
Discarded = 0.03 cfs @ 11.30 hrs, Volume= 0.027 af
Primary = 0.20 cfs @ 12.27 hrs, Volume= 0.005 af
Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 415.57' @ 12.27 hrs Surf.Area= 145 sf Storage= 300 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 41.0 min (788.3 - 747.2)

Volume		Invert	Avail.Storage	Storage Description	Custom Stage Data (Prismatic) Listed below (Recalc)		
#1	413.00'		363 cf				
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
413.00	145	0.0	0	0			
413.01	145	50.0	1	1			
414.00	145	50.0	72	73			
414.01	145	100.0	1	74			
416.00	145	100.0	289	363			

Device Routing		Invert	Outlet Devices
#1	Discarded	413.00'	10,000 in/hr Exfiltration over Surface area
#2	Primary	415.30'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
Discarded OutFlow Max=0.03 cfs @ 11.30 hrs HW=413.01' (Free Discharge)			
1=Exfiltration (Exfiltration Controls 0.03 cfs)			
Primary OutFlow Max=0.19 cfs @ 12.27 hrs HW=415.56' (Free Discharge)			
2=Sharp-Crested Rectangular Weir (Weir Controls 0.19 cfs @ 1.66 fps)			

Summary for Subcatchment EX: Existing Site

Runoff = 0.99 cfs @ 12.35 hrs, Volume= 0.113 af, Depth> 2.87"
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.34"

Area (sf)		CN	Description		
19,185	66	Woods, Poor, HSG B			
*	1,479	98	IMPERVIOUS		
20,664	68	Weighted Average			
19,185		92.84% Pervious Area			
1,479		7.16% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry.

Summary for Subcatchment 2S: Wooded Area

Runoff = 1.08 cfs @ 12.34 hrs, Volume= 0.123 af, Depth> 3.59"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr 50-yr Rainfall=7.51"

Area (sf)	CN	Description
17,889	66	Woods, Poor, HSG B
17,889	100.00%	Pervious Area

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

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 2.45" for 25-yr event
Inflow = 0.96 cfs @ 12.32 hrs, Volume= 0.097 af
Primary = 0.96 cfs @ 12.32 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment EX: Existing Site

Runoff = 1.32 cfs @ 12.34 hrs, Volume= 0.151 af, Depth> 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 50-yr Rainfall=7.51"

Area (sf)		CN	Description
*	19,185	66	Woods, Poor, HSG B
	1,479	98	IMPERVIOUS
20,664		68	Weighted Average
19,185			92.84% Pervious Area
1,479			7.16% Impervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec) Capacity (cfs) Description
24.0			
Direct Entry,			

Summary for Subcatchment 3S: New House

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.039 af, Depth> 7.26"

Routed to Pond 5P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 50-yr Rainfall=7.51"

Area (sf)		CN	Description
*	2,775	98	IMPERVIOUS
	2,775		100.00% Impervious Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec) Capacity (cfs) Description
10.0			
Direct Entry,			

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 3.32" for 50-yr event
 Inflow = 1.29 cfs @ 12.30 hrs, Volume= 0.131 af
 Primary = 1.29 cfs @ 12.30 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
 Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 5P: Rain Garden

Inflow Area =	0.064 ac, 100.00% Impervious,	Inflow Depth > 7.26" for 50-yr event
Inflow =	0.41 cfs @ 12.14 hrs, Volume=	0.039 af
Outflow =	0.34 cfs @ 12.22 hrs, Volume=	0.039 af
Discarded =	0.03 cfs @ 11.05 hrs, Volume=	0.030 af
Primary =	0.31 cfs @ 12.22 hrs, Volume=	0.008 af
Routed to Link FIN: Final		

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 415.67' @ 12.22 hrs Surf.Area= 145 sf Storage= 314 cf

Plug-Flow detention time= 39.9 min calculated for 0.038 af (100% of inflow)
Center-of-Mass det. time= 39.5 min (784.4 - 744.9)

Volume	Invert	Avail. Storage	Storage Description	
#1	413.00'	363 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
413.00	145	0.0	0	0
413.01	145	50.0	1	1
414.00	145	50.0	72	73
414.01	145	100.0	1	74
416.00	145	100.0	289	363

Device	Routing	Invert	Outlet Devices
#1	Discarded	413.00'	10,000 in/hr Exfiltration over Surface area
#2	Primary	415.30'	0.5' long Sharp-Crested Rectangular Weir 2 End Contractions(s)

Discarded OutFlow Max=0.03 cfs @ 11.05 hrs HW=413.01' (Free Discharge)
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.29 cfs @ 12.22 hrs HW=415.65' (Free Discharge)
 2=Sharp-Crested Rectangular Weir (Weir Controls 0.29 cfs @ 1.94 fps)

Summary for Subcatchment 3S: New House

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af, Depth> 8.66"
Routed to Pond SP : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.91"

Area (sf)		CN	Description		
*	2,775	98	IMPERVIOUS		
2,775		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Subcatchment 2S: Wooded Area

Runoff = 1.43 cfs @ 12.34 hrs, Volume= 0.162 af, Depth> 4.74"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.91"

Area (sf)		CN	Description		
	17,889	66	Woods, Poor, HSG B		
17,889		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry,

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac, 100.00% Impervious, Inflow Depth > 8.66" for 100-yr event
Inflow = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af
Outflow = 0.44 cfs @ 12.18 hrs, Volume= 0.046 af, Atten= 9%, Lag= 2.9 min
Discarded = 0.03 cfs @ 10.60 hrs, Volume= 0.033 af
Primary = 0.41 cfs @ 12.18 hrs, Volume= 0.012 af
Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 415.75' @ 12.18 hrs Surf.Area= 145 sf Storage= 326 cf

Plug-Flow detention time= 39.0 min calculated for 0.046 af (100% of inflow)
Center-of-Mass det. time= 38.2 min (781.0 - 742.8)

Volume		Invert	Avail.Storage	Storage Description	Custom Stage Data (Prismatic) Listed below (Recalc)		
#1	413.00'		363 cf				
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
413.00	145	0.0	0	0			
413.01	145	50.0	1	1			
414.00	145	50.0	72	73			
414.01	145	100.0	1	74			
416.00	145	100.0	289	363			

Device Routing		Invert	Outlet Devices
#1	Discarded	413.00'	10,000 in/hr Exfiltration over Surface area
#2	Primary	415.30'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 10.60 hrs HW=413.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.40 cfs @ 12.18 hrs HW=415.74' (Free Discharge)
2=Sharp-Crested Rectangular Weir (Weir Controls 0.40 cfs @ 2.18 fps)

Summary for Subcatchment EX: Existing Site

Runoff = 1.73 cfs @ 12.33 hrs, Volume= 0.197 af, Depth> 4.99"
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.91"

Area (sf)		CN	Description			
19,185	66	Woods, Poor, HSG B				
1,479	98	IMPERVIOUS				
20,664	68	Weighted Average				
19,185		92.84% Pervious Area				
1,479		7.16% Impervious Area				
Tc		Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
24.0						Direct Entry.

Summary for Subcatchment 2S: Wooded Area

Runoff = 0.00 cfs @ 14.90 hrs, Volume= 0.001 af, Depth> 0.04"
Routed to Link FIN : Final

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dl= 0.05 hrs
Type III 24-hr z-90% Rainfall=1.50"

Area (sf)	CN	Description
17,889	66	Woods, Poor, HSG B
17,889	100.00%	Pervious Area
Tc (min)	Length (feet)	Slope (ft/ft)
24.0		Velocity (ft/sec)
		Capacity (cfs)
		Description
		Direct Entry,

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 4.42" for 100-yr event
Inflow = 1.69 cfs @ 12.30 hrs, Volume= 0.175 af
Primary = 1.69 cfs @ 12.30 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment EX: Existing Site

Runoff = 0.00 cfs @ 13.07 hrs, Volume= 0.002 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr z-90% Rainfall=1.50"

Area (sf)		CN	Description		
*	19,185	66	Woods, Poor, HSG B		
	1,479	98	IMPERVIOUS		
20,664		68	Weighted Average		
19,185			92.84% Pervious Area		
1,479			7.16% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0					Direct Entry,

Summary for Subcatchment 3S: New House

Runoff = 0.08 cfs @ 12.14 hrs, Volume= 0.007 af, Depth> 1.28"

Routed to Pond 5P : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr z-90% Rainfall=1.50"

Area (sf)		CN	Description		
*	2,775	98	IMPERVIOUS		
	2,775		100.00% Impervious Area		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Summary for Link FIN: Final

Inflow Area = 0.474 ac, 13.43% Impervious, Inflow Depth > 0.03" for z-90% event
 Inflow = 0.00 cfs @ 14.90 hrs, Volume= 0.001 af
 Primary = 0.00 cfs @ 14.90 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
 Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Pond 5P: Rain Garden

Inflow Area = 0.064 ac, 100.00% Impervious, Inflow Depth > 1.28" for z-90% event
 Inflow = 0.08 cfs @ 12.14 hrs, Volume= 0.007 af
 Outflow = 0.03 cfs @ 12.00 hrs, Volume= 0.007 af, Atten= 57%, Lag= 0.0 min
 Discarded = 0.03 cfs @ 12.00 hrs, Volume= 0.007 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link FIN : Final

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 413.46' @ 12.40 hrs Surf.Area= 145 sf Storage= 34 cf

Plug-Flow detention time= 8.9 min calculated for 0.007 af (99% of inflow)
 Center-of-Mass det. time= 4.1 min (782.3 - 778.2)

Volume		Invert	Avail.Storage	Storage Description	Custom Stage Data (Prismatic) Listed below (Recalc)		
#1		413.00'			363 cf		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
413.00	145	0.0	0	0			
413.01	145	50.0	1	1			
414.00	145	50.0	72	73			
414.01	145	100.0	1	74			
416.00	145	100.0	289	363			

Device Routing		Invert	Outlet Devices
#1	Discarded	413.00'	10.000 in/hr Exfiltration over Surface area
#2	Primary	415.30'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
Discarded Outflow Max=0.03 cfs @ 12.00 hrs HW=413.02' (Free Discharge)			
└─1=Exfiltration (Exfiltration Controls 0.03 cfs)			
Primary Outflow Max=0.00 cfs @ 0.00 hrs HW=413.00' (Free Discharge)			
└─2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)			

Events for Subcatchment 3S: New House

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-yr	3.42	0.18	0.017	3.18
5-yr	4.28	0.23	0.021	4.04
10-yr	5.06	0.27	0.026	4.82
25-yr	6.34	0.34	0.032	6.09
50-yr	7.51	0.41	0.039	7.26
100-yr	8.91	0.48	0.046	8.66
z-90%	1.50	0.08	0.007	1.28

Events for Subcatchment 2S: Wooded Area

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-yr	3.42	0.19	0.026	0.75
5-yr	4.28	0.35	0.043	1.25
10-yr	5.06	0.51	0.060	1.76
25-yr	6.34	0.79	0.092	2.68
50-yr	7.51	1.08	0.123	3.59
100-yr	8.91	1.43	0.162	4.74
z-90%	1.50	0.00	0.001	0.04

Events for Pond 5P: Rain Garden

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2-yr	0.18	0.03	0.03	0.00	414.83	193
5-yr	0.23	0.05	0.03	0.02	415.34	268
10-yr	0.27	0.12	0.03	0.09	415.45	282
25-yr	0.34	0.24	0.03	0.20	415.57	300
50-yr	0.41	0.34	0.03	0.31	415.67	314
100-yr	0.48	0.44	0.03	0.41	415.75	326
z-90%	0.08	0.03	0.03	0.00	413.46	34

Events for Subcatchment EX: Existing Site

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-yr	3.42	0.26	0.034	0.85
5-yr	4.28	0.45	0.054	1.38
10-yr	5.06	0.65	0.076	1.91
25-yr	6.34	0.99	0.113	2.87
50-yr	7.51	1.32	0.151	3.81
100-yr	8.91	1.73	0.197	4.99
z-90%	1.50	0.00	0.002	0.06

Events for Link FIN: Final

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2-yr	0.19	0.19	0.00
5-yr	0.35	0.35	0.00
10-yr	0.59	0.59	0.00
25-yr	0.96	0.96	0.00
50-yr	1.29	1.29	0.00
100-yr	1.69	1.69	0.00
z-90%	0.00	0.00	0.00