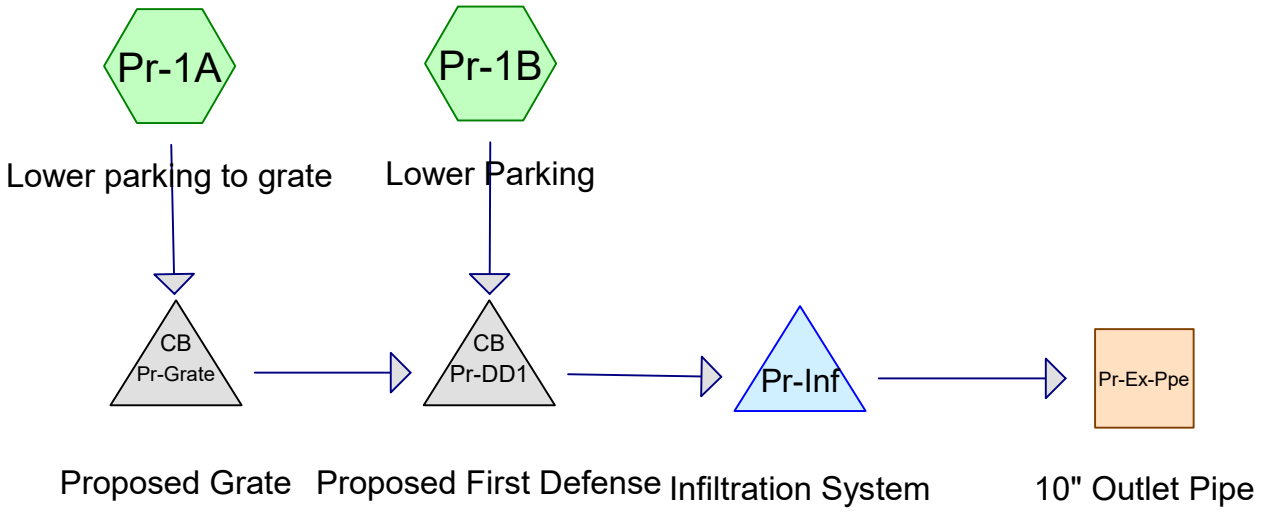


Subcat Reach Pond Link

Routing Diagram for 18-045 Braley Condominiums 5-14-19
Prepared by {enter your company name here}, Printed 5/17/2019

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.041	39	>75% Grass cover, Good, HSG A (Pr-1B)
0.196	98	Paved parking, HSG A (Pr-1A, Pr-1B)
0.237	**88**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.237	HSG A	Pr-1A, Pr-1B
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.237		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.041	0.000	0.000	0.000	0.000	0.041	>75% Grass cover, Good	Pr-1B
0.196	0.000	0.000	0.000	0.000	0.196	Paved parking	Pr-1A, Pr-1B
0.237	**0.000**	**0.000**	**0.000**	**0.000**	**0.237**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	Pr-Ex-Ppe	86.80	84.38	112.0	0.0216	0.010	8.0	0.0	0.0

Time span=0.10-20.00 hrs, dt=0.04 hrs, 499 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 Pr-1A: Lower parking to Runoff Area=0.011 ac 100.00% Impervious Runoff Depth>2.16"
Tc=6.0 min CN=98 Runoff=0.03 cfs 0.002 af

Subcatchment Pr-1B: Lower Parking Runoff Area=9,850 sf 81.73% Impervious Runoff Depth>1.22"
Tc=6.0 min CN=87 Runoff=0.34 cfs 0.023 af

Reach Pr-Ex-Ppe: 10" Outlet Pipe Avg. Flow Depth=0.14' Max Vel=4.13 fps Inflow=0.20 cfs 0.009 af
8.0" Round Pipe n=0.010 L=112.0' S=0.0216 '/' Capacity=2.31 cfs Outflow=0.20 cfs 0.009 af

Pond Pr-DD1: Proposed First Defense Peak Elev=87.32' Inflow=0.37 cfs 0.025 af
Outflow=0.37 cfs 0.025 af

Pond Pr-Grate: Proposed Grate Peak Elev=87.28' Inflow=0.03 cfs 0.002 af
Outflow=0.03 cfs 0.002 af

Pond Pr-Inf: Infiltration System Peak Elev=87.05' Storage=0.008 af Inflow=0.37 cfs 0.025 af
Discarded=0.01 cfs 0.009 af Primary=0.20 cfs 0.009 af Outflow=0.22 cfs 0.018 af

Total Runoff Area = 0.237 ac Runoff Volume = 0.025 af Average Runoff Depth = 1.26"
17.43% Pervious = 0.041 ac 82.57% Impervious = 0.196 ac

Summary for Subcatchment Pr-1A: Lower parking to grate

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Depth> 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 1-Year Rainfall=2.50"

Area (ac)	CN	Description
0.011	98	Paved parking, HSG A
0.011		100.00% Impervious Area

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

Summary for Subcatchment Pr-1B: Lower Parking

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 1-Year Rainfall=2.50"

Area (sf)	CN	Description
8,050	98	Paved parking, HSG A
1,800	39	>75% Grass cover, Good, HSG A
9,850	87	Weighted Average
1,800		18.27% Pervious Area
8,050		81.73% Impervious Area

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

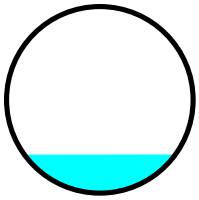
Summary for Reach Pr-Ex-Ppe: 10" Outlet Pipe

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth = 0.46" for 1-Year event
Inflow = 0.20 cfs @ 12.23 hrs, Volume= 0.009 af
Outflow = 0.20 cfs @ 12.24 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Max. Velocity= 4.13 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 1.1 min

Peak Storage= 6 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.31 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 112.0' Slope= 0.0216 '/'
Inlet Invert= 86.80', Outlet Invert= 84.38'



Summary for Pond Pr-DD1: Proposed First Defense

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 1.26" for 1-Year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.32' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	89.30'	**1.0" x 1.0" Horiz. Orifice/Grate X 8.00 columns** X 8 rows C= 0.600 in 24.0" x 24.0" Grate (11% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 12.09 hrs HW=87.32' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.91 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Grate: Proposed Grate

Inflow Area = 0.011 ac,100.00% Impervious, Inflow Depth > 2.16" for 1-Year event
Inflow = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.28' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	88.70'	**0.8" x 4.8" Horiz. Orifice/Grate X 34.00 columns** X 2 rows C= 0.600 in 12.0" x 240.0" Grate (9% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 12.09 hrs HW=87.28' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 0.96 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Inf: Infiltration System

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 1.26" for 1-Year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.22 cfs @ 12.23 hrs, Volume= 0.018 af, Atten= 42%, Lag= 8.4 min
Discarded = 0.01 cfs @ 12.23 hrs, Volume= 0.009 af
Primary = 0.20 cfs @ 12.23 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.05' @ 12.23 hrs Surf.Area= 0.005 ac Storage= 0.008 af

Plug-Flow detention time= 115.9 min calculated for 0.018 af (74% of inflow)
Center-of-Mass det. time= 52.3 min (841.2 - 788.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.80'	0.005 af	**15.00'W x 15.75'L x 3.54'H Field A** 0.019 af Overall - 0.007 af Embedded = 0.012 af x 40.0% Voids
#2A	85.30'	0.007 af	**Cultec R-330** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 6.25'L = 46.6 cf Overall Size= 52.0"W x 30.5"H x 7.50'L with 1.25' Overlap Row Length Adjustment= +1.25' x 7.45 sf x 3 rows
		0.012 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.80'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	84.80'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 83.00'

Discarded OutFlow Max=0.01 cfs @ 12.23 hrs HW=87.04' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.20 cfs @ 12.23 hrs HW=87.05' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.69 fps)

Time span=0.10-20.00 hrs, dt=0.04 hrs, 499 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 Pr-1A: Lower parking to Runoff Area=0.011 ac 100.00% Impervious Runoff Depth>4.35"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment Pr-1B: Lower Parking Runoff Area=9,850 sf 81.73% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=87 Runoff=0.87 cfs 0.060 af

Reach Pr-Ex-Ppe: 10" Outlet Pipe Avg. Flow Depth=0.29' Max Vel=6.16 fps Inflow=0.88 cfs 0.045 af
8.0" Round Pipe n=0.010 L=112.0' S=0.0216 '/' Capacity=2.31 cfs Outflow=0.87 cfs 0.045 af

Pond Pr-DD1: Proposed First Defense Peak Elev=87.53' Inflow=0.92 cfs 0.064 af
Outflow=0.92 cfs 0.064 af

Pond Pr-Grate: Proposed Grate Peak Elev=87.31' Inflow=0.05 cfs 0.004 af
Outflow=0.05 cfs 0.004 af

Pond Pr-Inf: Infiltration System Peak Elev=87.41' Storage=0.010 af Inflow=0.92 cfs 0.064 af
Discarded=0.01 cfs 0.012 af Primary=0.88 cfs 0.045 af Outflow=0.89 cfs 0.056 af

Total Runoff Area = 0.237 ac Runoff Volume = 0.064 af Average Runoff Depth = 3.24"
17.43% Pervious = 0.041 ac 82.57% Impervious = 0.196 ac

Summary for Subcatchment Pr-1A: Lower parking to grate

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.011	98	Paved parking, HSG A
0.011		100.00% Impervious Area

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

Summary for Subcatchment Pr-1B: Lower Parking

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
8,050	98	Paved parking, HSG A
1,800	39	>75% Grass cover, Good, HSG A
9,850	87	Weighted Average
1,800		18.27% Pervious Area
8,050		81.73% Impervious Area

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

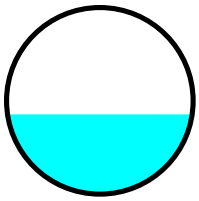
Summary for Reach Pr-Ex-Ppe: 10" Outlet Pipe

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 2.27" for 10-Year event
Inflow = 0.88 cfs @ 12.11 hrs, Volume= 0.045 af
Outflow = 0.87 cfs @ 12.12 hrs, Volume= 0.045 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Max. Velocity= 6.16 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.8 min

Peak Storage= 16 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.31 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 112.0' Slope= 0.0216 '/'
Inlet Invert= 86.80', Outlet Invert= 84.38'



Summary for Pond Pr-DD1: Proposed First Defense

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 3.24" for 10-Year event
Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.92 cfs @ 12.09 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.09 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.53' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	89.30'	**1.0" x 1.0" Horiz. Orifice/Grate X 8.00 columns** X 8 rows C= 0.600 in 24.0" x 24.0" Grate (11% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.90 cfs @ 12.09 hrs HW=87.53' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.47 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Grate: Proposed Grate

Inflow Area = 0.011 ac,100.00% Impervious, Inflow Depth > 4.35" for 10-Year event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.31' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	88.70'	**0.8" x 4.8" Horiz. Orifice/Grate X 34.00 columns** X 2 rows C= 0.600 in 12.0" x 240.0" Grate (9% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=87.31' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.14 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Inf: Infiltration System

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 3.24" for 10-Year event
Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.89 cfs @ 12.11 hrs, Volume= 0.056 af, Atten= 3%, Lag= 1.2 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.012 af
Primary = 0.88 cfs @ 12.11 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.41' @ 12.11 hrs Surf.Area= 0.005 ac Storage= 0.010 af

Plug-Flow detention time= 58.0 min calculated for 0.056 af (88% of inflow)
Center-of-Mass det. time= 20.9 min (788.9 - 768.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.80'	0.005 af	**15.00'W x 15.75'L x 3.54'H Field A** 0.019 af Overall - 0.007 af Embedded = 0.012 af x 40.0% Voids
#2A	85.30'	0.007 af	**Cultec R-330** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 6.25'L = 46.6 cf Overall Size= 52.0"W x 30.5"H x 7.50'L with 1.25' Overlap Row Length Adjustment= +1.25' x 7.45 sf x 3 rows
		0.012 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.80'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	84.80'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 83.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=87.40' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.87 cfs @ 12.11 hrs HW=87.40' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.87 cfs @ 2.63 fps)

Time span=0.10-20.00 hrs, dt=0.04 hrs, 499 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 Pr-1A: Lower parking to Runoff Area=0.011 ac 100.00% Impervious Runoff Depth>5.12"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment Pr-1B: Lower Parking Runoff Area=9,850 sf 81.73% Impervious Runoff Depth>3.90"
Tc=6.0 min CN=87 Runoff=1.05 cfs 0.074 af

Reach Pr-Ex-Ppe: 10" Outlet Pipe Avg. Flow Depth=0.32' Max Vel=6.45 fps Inflow=1.05 cfs 0.058 af
8.0" Round Pipe n=0.010 L=112.0' S=0.0216 '/' Capacity=2.31 cfs Outflow=1.04 cfs 0.058 af

Pond Pr-DD1: Proposed First Defense Peak Elev=87.60' Inflow=1.11 cfs 0.078 af
Outflow=1.11 cfs 0.078 af

Pond Pr-Grate: Proposed Grate Peak Elev=87.32' Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

Pond Pr-Inf: Infiltration System Peak Elev=87.53' Storage=0.010 af Inflow=1.11 cfs 0.078 af
Discarded=0.01 cfs 0.012 af Primary=1.05 cfs 0.058 af Outflow=1.07 cfs 0.071 af

Total Runoff Area = 0.237 ac Runoff Volume = 0.078 af Average Runoff Depth = 3.96"
17.43% Pervious = 0.041 ac 82.57% Impervious = 0.196 ac

Summary for Subcatchment Pr-1A: Lower parking to grate

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.005 af, Depth> 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
0.011	98	Paved parking, HSG A
0.011		100.00% Impervious Area

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

Summary for Subcatchment Pr-1B: Lower Parking

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.60"

Area (sf)	CN	Description
8,050	98	Paved parking, HSG A
1,800	39	>75% Grass cover, Good, HSG A
9,850	87	Weighted Average
1,800		18.27% Pervious Area
8,050		81.73% Impervious Area

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

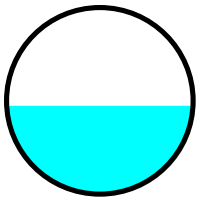
Summary for Reach Pr-Ex-Ppe: 10" Outlet Pipe

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 2.96" for 25-Year event
Inflow = 1.05 cfs @ 12.11 hrs, Volume= 0.058 af
Outflow = 1.04 cfs @ 12.12 hrs, Volume= 0.058 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Max. Velocity= 6.45 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 0.7 min

Peak Storage= 18 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.31 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 112.0' Slope= 0.0216 '/'
Inlet Invert= 86.80', Outlet Invert= 84.38'



Summary for Pond Pr-DD1: Proposed First Defense

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 3.96" for 25-Year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 0.078 af
Outflow = 1.11 cfs @ 12.09 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.11 cfs @ 12.09 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.60' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	89.30'	**1.0" x 1.0" Horiz. Orifice/Grate X 8.00 columns** X 8 rows C= 0.600 in 24.0" x 24.0" Grate (11% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.09 cfs @ 12.09 hrs HW=87.59' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.09 cfs @ 2.62 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Grate: Proposed Grate

Inflow Area = 0.011 ac,100.00% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.005 af
Outflow = 0.06 cfs @ 12.08 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.08 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.32' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	88.70'	**0.8" x 4.8" Horiz. Orifice/Grate X 34.00 columns** X 2 rows C= 0.600 in 12.0" x 240.0" Grate (9% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 12.08 hrs HW=87.32' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.18 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Inf: Infiltration System

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 3.96" for 25-Year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 0.078 af
Outflow = 1.07 cfs @ 12.11 hrs, Volume= 0.071 af, Atten= 4%, Lag= 1.4 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.012 af
Primary = 1.05 cfs @ 12.11 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.53' @ 12.11 hrs Surf.Area= 0.005 ac Storage= 0.010 af

Plug-Flow detention time= 52.4 min calculated for 0.071 af (90% of inflow)
Center-of-Mass det. time= 19.9 min (783.3 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.80'	0.005 af	**15.00'W x 15.75'L x 3.54'H Field A** 0.019 af Overall - 0.007 af Embedded = 0.012 af x 40.0% Voids
#2A	85.30'	0.007 af	**Cultec R-330** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 6.25'L = 46.6 cf Overall Size= 52.0"W x 30.5"H x 7.50'L with 1.25' Overlap Row Length Adjustment= +1.25' x 7.45 sf x 3 rows
		0.012 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.80'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	84.80'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 83.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=87.51' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=1.04 cfs @ 12.11 hrs HW=87.51' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.04 cfs @ 2.97 fps)

Time span=0.10-20.00 hrs, dt=0.04 hrs, 499 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 Pr-1A: Lower parking to Runoff Area=0.011 ac 100.00% Impervious Runoff Depth>6.46"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment Pr-1B: Lower Parking Runoff Area=9,850 sf 81.73% Impervious Runoff Depth>5.18"
Tc=6.0 min CN=87 Runoff=1.38 cfs 0.098 af

Reach Pr-Ex-Ppe: 10" Outlet Pipe Avg. Flow Depth=0.37' Max Vel=6.88 fps Inflow=1.38 cfs 0.083 af
8.0" Round Pipe n=0.010 L=112.0' S=0.0216 '/' Capacity=2.31 cfs Outflow=1.36 cfs 0.083 af

Pond Pr-DD1: Proposed First Defense Peak Elev=87.72' Inflow=1.45 cfs 0.104 af
Outflow=1.45 cfs 0.104 af

Pond Pr-Grate: Proposed Grate Peak Elev=87.34' Inflow=0.07 cfs 0.006 af
Outflow=0.07 cfs 0.006 af

Pond Pr-Inf: Infiltration System Peak Elev=87.80' Storage=0.011 af Inflow=1.45 cfs 0.104 af
Discarded=0.01 cfs 0.013 af Primary=1.38 cfs 0.083 af Outflow=1.39 cfs 0.096 af

Total Runoff Area = 0.237 ac Runoff Volume = 0.104 af Average Runoff Depth = 5.24"
17.43% Pervious = 0.041 ac 82.57% Impervious = 0.196 ac

Summary for Subcatchment Pr-1A: Lower parking to grate

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.006 af, Depth> 6.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
0.011	98	Paved parking, HSG A
0.011		100.00% Impervious Area

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

Summary for Subcatchment Pr-1B: Lower Parking

Runoff = 1.38 cfs @ 12.09 hrs, Volume= 0.098 af, Depth> 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
8,050	98	Paved parking, HSG A
1,800	39	>75% Grass cover, Good, HSG A
9,850	87	Weighted Average
1,800		18.27% Pervious Area
8,050		81.73% Impervious Area

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

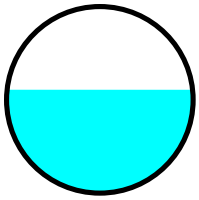
Summary for Reach Pr-Ex-Ppe: 10" Outlet Pipe

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 4.19" for 100-Year event
Inflow = 1.38 cfs @ 12.11 hrs, Volume= 0.083 af
Outflow = 1.36 cfs @ 12.12 hrs, Volume= 0.083 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Max. Velocity= 6.88 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.78 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.31 cfs

8.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 112.0' Slope= 0.0216 '/'
Inlet Invert= 86.80', Outlet Invert= 84.38'



Summary for Pond Pr-DD1: Proposed First Defense

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 5.24" for 100-Year event
Inflow = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af
Outflow = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.72' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.00'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	89.30'	**1.0" x 1.0" Horiz. Orifice/Grate X 8.00 columns** X 8 rows C= 0.600 in 24.0" x 24.0" Grate (11% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.42 cfs @ 12.09 hrs HW=87.71' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.42 cfs @ 2.87 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Grate: Proposed Grate

Inflow Area = 0.011 ac,100.00% Impervious, Inflow Depth > 6.46" for 100-Year event
Inflow = 0.07 cfs @ 12.08 hrs, Volume= 0.006 af
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.34' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**10.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	88.70'	**0.8" x 4.8" Horiz. Orifice/Grate X 34.00 columns** X 2 rows C= 0.600 in 12.0" x 240.0" Grate (9% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=87.34' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.26 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond Pr-Inf: Infiltration System

Inflow Area = 0.237 ac, 82.57% Impervious, Inflow Depth > 5.24" for 100-Year event
Inflow = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af
Outflow = 1.39 cfs @ 12.11 hrs, Volume= 0.096 af, Atten= 4%, Lag= 1.5 min
Discarded = 0.01 cfs @ 12.11 hrs, Volume= 0.013 af
Primary = 1.38 cfs @ 12.11 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 0.10-20.02 hrs, dt= 0.04 hrs
Peak Elev= 87.80' @ 12.11 hrs Surf.Area= 0.005 ac Storage= 0.011 af

Plug-Flow detention time= 44.7 min calculated for 0.096 af (92% of inflow)
Center-of-Mass det. time= 18.4 min (775.3 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.80'	0.005 af	**15.00'W x 15.75'L x 3.54'H Field A** 0.019 af Overall - 0.007 af Embedded = 0.012 af x 40.0% Voids
#2A	85.30'	0.007 af	**Cultec R-330** x 6 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 6.25'L = 46.6 cf Overall Size= 52.0"W x 30.5"H x 7.50'L with 1.25' Overlap Row Length Adjustment= +1.25' x 7.45 sf x 3 rows
		0.012 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.80'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	84.80'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 83.00'

Discarded OutFlow Max=0.01 cfs @ 12.11 hrs HW=87.78' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=1.35 cfs @ 12.11 hrs HW=87.78' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.35 cfs @ 3.88 fps)