Existing and Proposed Conditions

Falconeiri Construction, Inc. requests permission to develop the property at 18 Elm Street as a single-family residence.

The lot is approximately 72,800 sf and is located in the Residence A District. It is an irregularly shaped lot bound by Main Street to the north, Elm Street and private properties to the west, town and state properties to the south, and private residential properties on the remaining sides. The lot is accessed from Elm Street, and there is no street access along Main Street. It is currently developed with a hard packed gravel driveway, A hard packed gravel parking area and lawn, with wooded areas around the perimeter. Most of the lot slopes down to a low area in the eastern corner (rear portion) of the lot. A small portion of the lot slopes down to Elm Street. The entire lot lies within FEMA Zone X. No wetland areas or their buffer zones and no overlay districts have been identified within the lot.

The proposed work includes the construction of a single-family dwelling and attached garage, a paved driveway and paved parking court, a rear patio and retaining wall, and other hardscape and landscape features. The proposed work increases the impervious area by approximately 8,030 sf. The overall topography is maintained, with most of the lot sloping down to the low area in the eastern corner, and a small area sloping down to Elm Street.

NRCS Soil Survey online data identifies the soils on site as excessively drained/very low runoff Quonset sandy loams, with 0-3% or 8-15% slopes. On site test pit data indicate several feet of fill with coarse sand below under the existing parking area, where the dwelling and paved parking are proposed. A second test pit determined loamy sands with medium sands and coarse sand and gravel beyond the parking area. A soils were used for modeling purposes.

Approximately 50,140 sf of the lot was modelled for stormwater analysis. This area includes the limit of work as well as undisturbed areas to understand runoff and drainage patterns onsite. Two subcatchment areas were modeled for the existing and proposed conditions to determine runoff conditions to Elm Street and to the low point in the rear yard. The HydroCAD results and subcatchment areas are provided in Section IV of this report.

The proposed project complies with the MA Stormwater Management Guidelines as follows:

Standard 1: No New Stormwater Conveyances of Untreated Stormwater or Erosion Offsite

The proposed modifications include new stormwater treatment that will improve the quality of the existing stormwater drainage. A portion of the roof leaders from the proposed dwelling and the runoff from the auto court are directed to a 10'X25' subsurface infiltration system located in the rear yard. A portion of the driveway runoff is directed to another 10'X18' subsurface infiltration system located in front of the dwelling. Runoff from the sport court and some of the surrounding area is directed to a 2'X2' gravel trench that surrounds the sport court. This results in matched or reduced peak flow and volume for the for all design storms under the proposed conditions. The gravel trenches that line the paved driveway were not modelled in hydroCAD, but will provide additional storage and exfiltration, which is expected to further reduce peak flow and volume offsite.

Standard 2: Peak Rate Attenuation

The existing and proposed site conditions were modelled in HydroCad for the 2, 10 and 100 year, 24-hour design storm events. The intensity of these rain events is 3.20", 4.65" and 6.80" respectively.

The overall peak rate and volume of runoff is matched or reduced for both subcatchments for all design storm events in the proposed design. This data is summarized below, and the HydroCAD report can be found in section IV:

Subcatchment 1 (740 sf) – to Elm St

Storm	Existing Conditions (cfs, af)	Post-Development Conditions (cfs, af)
2-Year-24 Hour (3.2")	0.01 cfs , 0.001 af	0.01 cfs , 0.001 af
10-Year-24 Hour (4.65")	0.03 cfs , 0.002 af	0.03 cfs , 0.002 af
100-Year-24 Hour (6.80")	0.06 cfs , 0.004 af	0.06 cfs , 0.004 af

Subcatchment 2 (49,400 sf) – to rear yard

Storm	Existing Conditions (cfs, af)	Post-Development Conditions (cfs, af)
2-Year-24 Hour (3.2")	0.00 cfs , 0.001 af	0.00 cfs , 0.001 af
10-Year-24 Hour (4.65")	0.05 cfs , 0.018 af	0.02 cfs , 0.010 af
100-Year-24 Hour (6.80")	0.65 cfs , 0.079 af	0.65 cfs , 0.057 af

Standard 3: Recharge and Discharge Volume

The applicant proposes adequate infiltration for the lot as required by the Massachusetts Stormwater Handbook as follows:

Existing Impervious Area = 0 ft^2
Proposed Impervious Area = 11,905 ft^2
Increase in impervious area = 11,905 ft^2

A soils require 0.60" x impervious area of runoff to be recharged:
(0.60"/12" per ft)(11,905 ft^2) = 595 ft^3

The subsurface infiltration systems have a combined storage capacity of 180+252 = 432 cf

The gravel trench around the sport court has a storage capacity of:
2' X 2' X 250' X (40% voids) = 400 cf

The combined capacity of these 3 structures is = 432 + 400 = 832 cfs
which exceeds the required volume. The runoff stored in the gravel trenches along the driveway below the invert of the outlet pipe will provide additional recharge.

Standard 4: Water Quality

The required Water Quality Volume (WQV) is calculated as follows:

Existing impervious vehicular areas: 0 sf Proposed
impervious vehicular areas: 4,010 sf
Net increase of pavement: 4,010 sf

WQV is calculated by multiplying 0.5 inch of runoff by the net increase in paved areas as follows:

WQV = (4,010 ft^2)(0.5in)/(12 in/ft) = 167 ft^3

Quarterly driveway and auto court sweeping will be performed, according to the long-term O&M plan. The gravel trenches along the driveway and autocourt provide pretreatment prior to discharge into theinfiltration systems. The storage volume of the gravel trenches is:

(170'L + 66'L) X 1.25'W X 1.5' D* (40% voids) = 177 ft^3 This standard is met.

Standard 5: Land Uses with Higher Pollutant Loads (LUHPPLs)

The use of the property (residential) does not constitute a higher potential pollutant load use. This Standard 5 does not pertain to this project.

Standard 6: Critical Areas

The locus site is not located in a critical area.

Standard 7: Redevelopment

This project is considered redevelopment of an existing, residential lot.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

The Operation and Maintenance Plan included with this submittal will ensure proper maintenance of the proposed pollution, erosion and sedimentation measures proposed during construction.

Standard 9: Long Term Operation and Maintenance Plan

The Long-Term Operation and Maintenance Plan is included within the Operation and Maintenance Plan enclosed in this submittal to ensure the proposed drainage improvements are maintained as intended.

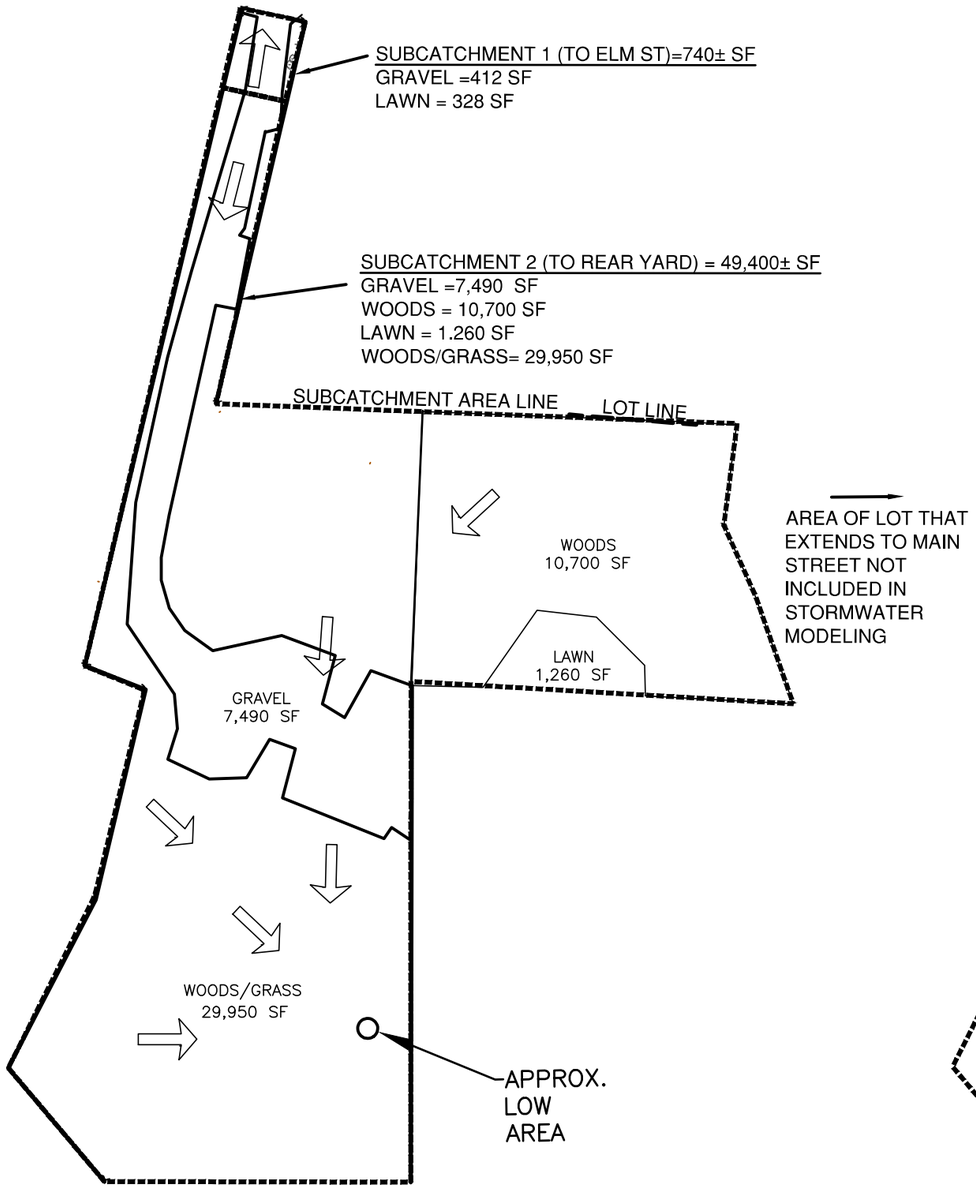
Standard 10: Prohibition of Illicit Discharges

Routine visual inspections are scheduled as part of the Operations and Maintenance Plan to prevent illicit discharges into the stormwater system. Furthermore, an Illicit Compliance Statement is included in this submittal.

HYDROCAD MODELLING AREAS
REVISED FOR SPORTS COURT 12/30/25

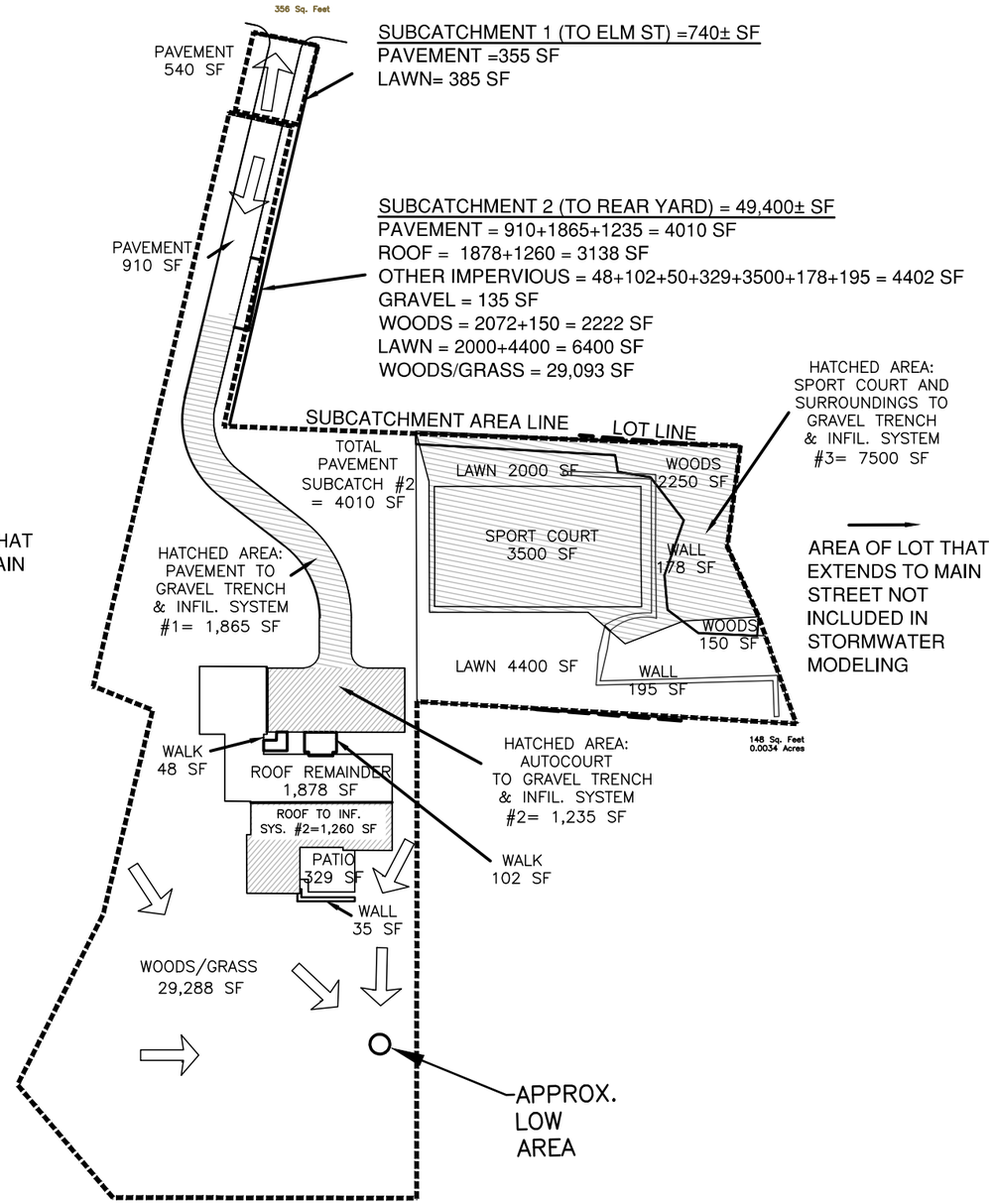
EXISTING CONDITIONS - LOT 2 ELM ST.

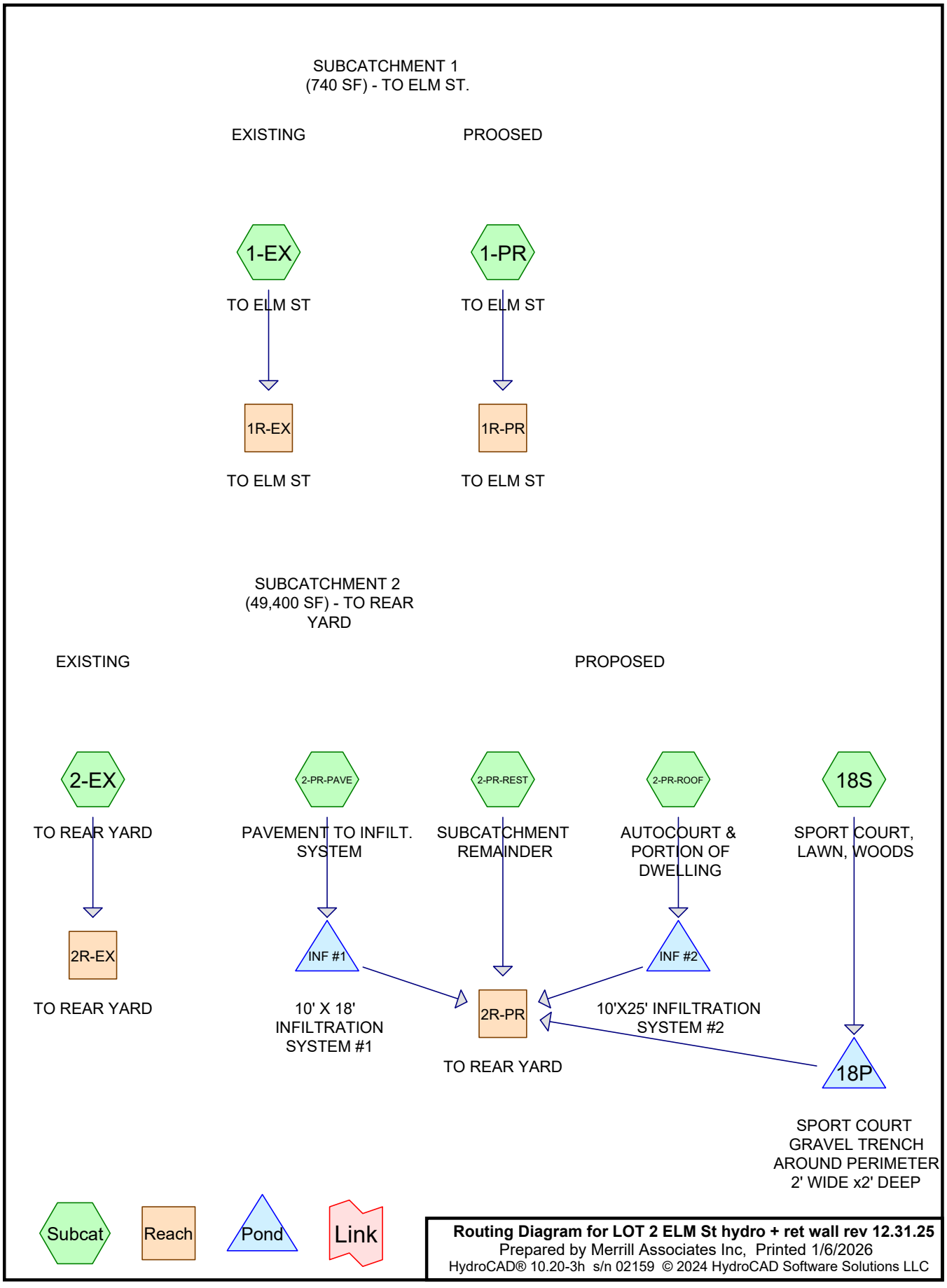
TOTAL LOT AREA = 72,777± SF
AREA FOR STORMWATER ANALYSIS = 50,140 SF



PROPOSED CONDITIONS - LOT 2 ELM ST.

TOTAL LOT AREA = 72,777± SF
AREA FOR STORMWATER ANALYSIS = 50,140 SF




SUBCATCHMENT 1
(740 SF) - TO ELM ST.
EXISTING
PROOSED
1-EX
TO ELM ST
1R-EX
TO ELM ST
1-PR
TO ELM ST
1R-PR
TO ELM ST
SUBCATCHMENT 2
(49,400 SF) - TO REAR YARD
EXISTING
PROPOSED
2-EX
TO REAR YARD
2R-EX
TO REAR YARD
2-PR-PAVE
PAVEMENT TO INFILT. SYSTEM
INF #1
10' X 18' INFILTRATION SYSTEM #1
2-PR-REST
SUBCATCHMENT REMAINDER
2R-PR
TO REAR YARD
2-PR-ROOF
AUTOCOURT & PORTION OF DWELLING
INF #2
10'X25' INFILTRATION SYSTEM #2
18S
SPORT COURT, LAWN, WOODS
18P
SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP
Subcat
Reach
Pond
Link
Routing Diagram for LOT 2 ELM St hydro + ret wall rev 12.31.25
Prepared by Merrill Associates Inc, Printed 1/6/2026
HydroCAD® 10.20-3h s/n 02159 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year Event	Type III 24-hr		Default	24.00	1	3.20	2
2	10 Year Event	Type III 24-hr		Default	24.00	1	4.65	2
3	100 Year Event	Type III 24-hr		Default	24.00	1	6.80	2

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1-EX: TO ELM ST Runoff Area=740 sf 0.00% Impervious Runoff Depth=0.69"
Tc=5.0 min CN=67 Runoff=0.01 cfs 0.001 af

Subcatchment1-PR: TO ELM ST Runoff Area=740 sf 47.97% Impervious Runoff Depth=0.69"
Tc=5.0 min CN=67 Runoff=0.01 cfs 0.001 af

Subcatchment2-EX: TO REAR YARD Runoff Area=49,400 sf 0.00% Impervious Runoff Depth=0.01"
Tc=5.0 min CN=41 Runoff=0.00 cfs 0.001 af

Subcatchment2-PR-PAVE: PAVEMENT TO Runoff Area=1,865 sf 100.00% Impervious Runoff Depth=2.97"
Tc=0.0 min CN=98 Runoff=0.16 cfs 0.011 af

Subcatchment2-PR-REST: Runoff Area=37,290 sf 9.42% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment2-PR-ROOF: AUTOCOURT Runoff Area=2,495 sf 100.00% Impervious Runoff Depth=2.97"
Tc=5.0 min CN=98 Runoff=0.18 cfs 0.014 af

Subcatchment18S: SPORT COURT, LAWN, Runoff Area=7,750 sf 47.46% Impervious Runoff Depth=0.60"
Tc=5.0 min CN=65 Runoff=0.10 cfs 0.009 af

Reach 1R-EX: TO ELM ST Inflow=0.01 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Reach 1R-PR: TO ELM ST Inflow=0.01 cfs 0.001 af
Outflow=0.01 cfs 0.001 af

Reach 2R-EX: TO REAR YARD Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Reach 2R-PR: TO REAR YARD Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 18P: SPORT COURT GRAVEL TRENCH Peak Elev=113.02' Storage=5 cf Inflow=0.10 cfs 0.009 af
Discarded=0.10 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.009 af

Pond INF #1: 10' X 18' INFILTRATIONSYSTEM Peak Elev=106.73' Storage=86 cf Inflow=0.16 cfs 0.011 af
Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond INF #2: 10'X25' INFILTRATIONSYSTEM Peak Elev=101.16' Storage=110 cf Inflow=0.18 cfs 0.014 af
Discarded=0.05 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.014 af

Summary for Subcatchment 1-EX: TO ELM ST

Runoff = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Depth= 0.69"
Routed to Reach 1R-EX : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	412	90	GRAVEL
	328	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	740		100.00% Pervious Area

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

Summary for Subcatchment 1-PR: TO ELM ST

Runoff = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Depth= 0.69"
Routed to Reach 1R-PR : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	355	98	PAVEMENT
	385	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	385		52.03% Pervious Area
	355		47.97% Impervious Area

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

Summary for Subcatchment 2-EX: TO REAR YARD

Runoff = 0.00 cfs @ 22.65 hrs, Volume= 0.001 af, Depth= 0.01"
Routed to Reach 2R-EX : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	7,490	90	GRAVEL
	29,950	32	Woods/grass comb., Good, HSG A
	1,260	39	>75% Grass cover, Good, HSG A
	10,700	30	Woods, Good, HSG A
	49,400	41	Weighted Average
	49,400		100.00% Pervious Area

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

Summary for Subcatchment 2-PR-PAVE: PAVEMENT TO INFILT. SYSTEM

Runoff = 0.16 cfs @ 12.00 hrs, Volume= 0.011 af, Depth= 2.97"
Routed to Pond INF #1 : 10' X 18' INFILTRATION SYSTEM #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	1,865	98	PAVEMENT
	1,865		100.00% Impervious Area

Summary for Subcatchment 2-PR-REST: SUBCATCHMENT REMAINDER

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 2R-PR : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	1,878	98	ROOF REMAINDER
*	910	98	PAVEMEMT
*	529	98	OTHER IMP
*	135	90	GRAVEL PARKING
	29,093	32	Woods/grass comb., Good, HSG A
	4,400	39	>75% Grass cover, Good, HSG A
	150	30	Woods, Good, HSG A
*	195	98	Ret Wall
	37,290	39	Weighted Average
	33,778		90.58% Pervious Area
	3,512		9.42% Impervious Area

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

Summary for Subcatchment 2-PR-ROOF: AUTOCOURT & PORTION OF DWELLING

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth= 2.97"
Routed to Pond INF #2 : 10'X25' INFILTRATION SYSTEM #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	1,260	98	ROOF
*	1,235	98	PAVEMENT (AUTOCOURT)
	2,495	98	Weighted Average
	2,495		100.00% Impervious Area

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

Summary for Subcatchment 18S: SPORT COURT, LAWN, WOODS

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 0.60"
Routed to Pond 18P : SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Event Rainfall=3.20"

	Area (sf)	CN	Description
*	3,500	98	SPORT COURT
	2,000	39	>75% Grass cover, Good, HSG A
	2,072	30	Woods, Good, HSG A
*	178	98	Retaining Wall
	7,750	65	Weighted Average
	4,072		52.54% Pervious Area
	3,678		47.46% Impervious Area

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

Summary for Reach 1R-EX: TO ELM ST

Inflow Area = 0.017 ac, 0.00% Impervious, Inflow Depth = 0.69" for 2 Year Event event
Inflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 1R-PR: TO ELM ST

Inflow Area = 0.017 ac, 47.97% Impervious, Inflow Depth = 0.69" for 2 Year Event event
Inflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.09 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-EX: TO REAR YARD

Inflow Area = 1.134 ac, 0.00% Impervious, Inflow Depth = 0.01" for 2 Year Event event
Inflow = 0.00 cfs @ 22.65 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 22.65 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-PR: TO REAR YARD

Inflow Area = 1.134 ac, 23.38% Impervious, Inflow Depth = 0.00" for 2 Year Event event
Inflow = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 18P: SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Inflow Area = 0.178 ac, 47.46% Impervious, Inflow Depth = 0.60" for 2 Year Event event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.009 af, Atten= 6%, Lag= 0.0 min
Discarded = 0.10 cfs @ 12.09 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.02' @ 12.12 hrs Surf.Area= 500 sf Storage= 5 cf

Plug-Flow detention time= 0.7 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (895.1 - 894.4)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	400 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 1,000 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	500	250.0	0	0	500
115.00	500	250.0	1,000	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	113.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	114.80'	**250.0' long x 18.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.10 cfs @ 12.09 hrs HW=113.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=113.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF #1: 10' X 18' INFILTRATION SYSTEM #1

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 0.16 cfs @ 12.00 hrs, Volume= 0.011 af
Outflow = 0.03 cfs @ 11.68 hrs, Volume= 0.011 af, Atten= 79%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.68 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 106.73' @ 12.35 hrs Surf.Area= 180 sf Storage= 86 cf

Plug-Flow detention time= 11.8 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 11.8 min (762.6 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1	105.80'	121 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 360 cf Overall - 58 cf Embedded = 302 cf x 40.0% Voids
#2	106.30'	58 cf	**Cultec C-100** x 4 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	107.80'	1 cf	**0.50'D x 1.50'H Vertical Cone/Cylinder** x 3
		180 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.80	180	56.0	0	0	180
107.80	180	56.0	360	360	292

Device	Routing	Invert	Outlet Devices
#1	Discarded	105.80'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	109.20'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 11.68 hrs HW=105.84' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=105.80' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond INF #2: 10'X25' INFILTRATION SYSTEM #2

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 2.97" for 2 Year Event event
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.05 cfs @ 11.77 hrs, Volume= 0.014 af, Atten= 74%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.77 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 101.16' @ 12.42 hrs Surf.Area= 250 sf Storage= 110 cf

Plug-Flow detention time= 10.8 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 10.7 min (766.2 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	100.30'	166 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 500 cf Overall - 86 cf Embedded = 414 cf x 40.0% Voids
#2	100.80'	86 cf	**Cultec C-100** x 6 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	102.30'	1 cf	**0.50'D x 1.30'H Vertical Cone/Cylinder** x 3
		252 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.30	250	70.0	0	0	250
102.30	250	70.0	500	500	390

Device	Routing	Invert	Outlet Devices
#1	Discarded	100.30'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	103.70'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.05 cfs @ 11.77 hrs HW=100.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=100.30' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1-EX: TO ELM ST Runoff Area=740 sf 0.00% Impervious Runoff Depth=1.56"
Tc=5.0 min CN=67 Runoff=0.03 cfs 0.002 af

Subcatchment1-PR: TO ELM ST Runoff Area=740 sf 47.97% Impervious Runoff Depth=1.56"
Tc=5.0 min CN=67 Runoff=0.03 cfs 0.002 af

Subcatchment2-EX: TO REAR YARD Runoff Area=49,400 sf 0.00% Impervious Runoff Depth=0.19"
Tc=5.0 min CN=41 Runoff=0.05 cfs 0.018 af

Subcatchment2-PR-PAVE: PAVEMENT TO Runoff Area=1,865 sf 100.00% Impervious Runoff Depth=4.41"
Tc=0.0 min CN=98 Runoff=0.24 cfs 0.016 af

Subcatchment2-PR-REST: Runoff Area=37,290 sf 9.42% Impervious Runoff Depth=0.13"
Tc=5.0 min CN=39 Runoff=0.02 cfs 0.010 af

Subcatchment2-PR-ROOF: AUTOCOURT Runoff Area=2,495 sf 100.00% Impervious Runoff Depth=4.41"
Tc=5.0 min CN=98 Runoff=0.27 cfs 0.021 af

Subcatchment18S: SPORT COURT, LAWN, Runoff Area=7,750 sf 47.46% Impervious Runoff Depth=1.43"
Tc=5.0 min CN=65 Runoff=0.29 cfs 0.021 af

Reach 1R-EX: TO ELM ST Inflow=0.03 cfs 0.002 af
Outflow=0.03 cfs 0.002 af

Reach 1R-PR: TO ELM ST Inflow=0.03 cfs 0.002 af
Outflow=0.03 cfs 0.002 af

Reach 2R-EX: TO REAR YARD Inflow=0.05 cfs 0.018 af
Outflow=0.05 cfs 0.018 af

Reach 2R-PR: TO REAR YARD Inflow=0.02 cfs 0.010 af
Outflow=0.02 cfs 0.010 af

Pond 18P: SPORT COURT GRAVEL TRENCH Peak Elev=113.69' Storage=139 cf Inflow=0.29 cfs 0.021 af
Discarded=0.10 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.021 af

Pond INF #1: 10' X 18' INFILTRATION Peak Elev=107.69' Storage=170 cf Inflow=0.24 cfs 0.016 af
Discarded=0.03 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.016 af

Pond INF #2: 10'X25' INFILTRATION SYSTEM Peak Elev=102.00' Storage=221 cf Inflow=0.27 cfs 0.021 af
Discarded=0.05 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.021 af

Summary for Subcatchment 1-EX: TO ELM ST

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Depth= 1.56"
Routed to Reach 1R-EX : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	412	90	GRAVEL
	328	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	740		100.00% Pervious Area

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

Summary for Subcatchment 1-PR: TO ELM ST

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Depth= 1.56"
Routed to Reach 1R-PR : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	355	98	PAVEMENT
	385	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	385		52.03% Pervious Area
	355		47.97% Impervious Area

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

Summary for Subcatchment 2-EX: TO REAR YARD

Runoff = 0.05 cfs @ 12.45 hrs, Volume= 0.018 af, Depth= 0.19"
Routed to Reach 2R-EX : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	7,490	90	GRAVEL
	29,950	32	Woods/grass comb., Good, HSG A
	1,260	39	>75% Grass cover, Good, HSG A
	10,700	30	Woods, Good, HSG A
	49,400	41	Weighted Average
	49,400		100.00% Pervious Area

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

Summary for Subcatchment 2-PR-PAVE: PAVEMENT TO INFILT. SYSTEM

Runoff = 0.24 cfs @ 12.00 hrs, Volume= 0.016 af, Depth= 4.41"
Routed to Pond INF #1 : 10' X 18' INFILTRATION SYSTEM #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	1,865	98	PAVEMENT
	1,865		100.00% Impervious Area

Summary for Subcatchment 2-PR-REST: SUBCATCHMENT REMAINDER

Runoff = 0.02 cfs @ 13.78 hrs, Volume= 0.010 af, Depth= 0.13"
Routed to Reach 2R-PR : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	1,878	98	ROOF REMAINDER
*	910	98	PAVEMEMT
*	529	98	OTHER IMP
*	135	90	GRAVEL PARKING
	29,093	32	Woods/grass comb., Good, HSG A
	4,400	39	>75% Grass cover, Good, HSG A
	150	30	Woods, Good, HSG A
*	195	98	Ret Wall
	37,290	39	Weighted Average
	33,778		90.58% Pervious Area
	3,512		9.42% Impervious Area

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

Summary for Subcatchment 2-PR-ROOF: AUTOCOURT & PORTION OF DWELLING

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 4.41"
Routed to Pond INF #2 : 10'X25' INFILTRATION SYSTEM #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	1,260	98	ROOF
*	1,235	98	PAVEMENT (AUTOCOURT)
	2,495	98	Weighted Average
	2,495		100.00% Impervious Area

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

Summary for Subcatchment 18S: SPORT COURT, LAWN, WOODS

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 1.43"
Routed to Pond 18P : SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Event Rainfall=4.65"

	Area (sf)	CN	Description
*	3,500	98	SPORT COURT
	2,000	39	>75% Grass cover, Good, HSG A
	2,072	30	Woods, Good, HSG A
*	178	98	Retaining Wall
	7,750	65	Weighted Average
	4,072		52.54% Pervious Area
	3,678		47.46% Impervious Area

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

Summary for Reach 1R-EX: TO ELM ST

Inflow Area = 0.017 ac, 0.00% Impervious, Inflow Depth = 1.56" for 10 Year Event event
Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 1R-PR: TO ELM ST

Inflow Area = 0.017 ac, 47.97% Impervious, Inflow Depth = 1.56" for 10 Year Event event
Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-EX: TO REAR YARD

Inflow Area = 1.134 ac, 0.00% Impervious, Inflow Depth = 0.19" for 10 Year Event event
Inflow = 0.05 cfs @ 12.45 hrs, Volume= 0.018 af
Outflow = 0.05 cfs @ 12.45 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-PR: TO REAR YARD

Inflow Area = 1.134 ac, 23.38% Impervious, Inflow Depth = 0.10" for 10 Year Event event
Inflow = 0.02 cfs @ 13.78 hrs, Volume= 0.010 af
Outflow = 0.02 cfs @ 13.78 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 18P: SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Inflow Area = 0.178 ac, 47.46% Impervious, Inflow Depth = 1.43" for 10 Year Event event
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.10 cfs @ 11.97 hrs, Volume= 0.021 af, Atten= 67%, Lag= 0.0 min
Discarded = 0.10 cfs @ 11.97 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 113.69' @ 12.44 hrs Surf.Area= 500 sf Storage= 139 cf

Plug-Flow detention time= 7.2 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 7.2 min (871.7 - 864.6)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	400 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 1,000 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	500	250.0	0	0	500
115.00	500	250.0	1,000	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	113.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	114.80'	**250.0' long x 18.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.10 cfs @ 11.97 hrs HW=113.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=113.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond INF #1: 10' X 18' INFILTRATION SYSTEM #1

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 4.41" for 10 Year Event event
Inflow = 0.24 cfs @ 12.00 hrs, Volume= 0.016 af
Outflow = 0.03 cfs @ 11.59 hrs, Volume= 0.016 af, Atten= 85%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.59 hrs, Volume= 0.016 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 107.69' @ 12.44 hrs Surf.Area= 180 sf Storage= 170 cf

Plug-Flow detention time= 25.8 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (769.5 - 743.7)

Volume	Invert	Avail.Storage	Storage Description
#1	105.80'	121 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 360 cf Overall - 58 cf Embedded = 302 cf x 40.0% Voids
#2	106.30'	58 cf	**Cultec C-100** x 4 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	107.80'	1 cf	**0.50'D x 1.50'H Vertical Cone/Cylinder** x 3
		180 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.80	180	56.0	0	0	180
107.80	180	56.0	360	360	292

Device	Routing	Invert	Outlet Devices
#1	Discarded	105.80'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	109.20'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 11.59 hrs HW=105.84' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=105.80' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond INF #2: 10'X25' INFILTRATION SYSTEM #2

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 4.41" for 10 Year Event event
Inflow = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af
Outflow = 0.05 cfs @ 11.67 hrs, Volume= 0.021 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.67 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 102.00' @ 12.51 hrs Surf.Area= 250 sf Storage= 221 cf

Plug-Flow detention time= 23.8 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 23.8 min (772.1 - 748.3)

Volume	Invert	Avail.Storage	Storage Description
#1	100.30'	166 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 500 cf Overall - 86 cf Embedded = 414 cf x 40.0% Voids
#2	100.80'	86 cf	**Cultec C-100** x 6 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	102.30'	1 cf	**0.50'D x 1.30'H Vertical Cone/Cylinder** x 3
		252 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.30	250	70.0	0	0	250
102.30	250	70.0	500	500	390

Device	Routing	Invert	Outlet Devices
#1	Discarded	100.30'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	103.70'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.05 cfs @ 11.67 hrs HW=100.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=100.30' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1-EX: TO ELM ST Runoff Area=740 sf 0.00% Impervious Runoff Depth=3.15"
Tc=5.0 min CN=67 Runoff=0.06 cfs 0.004 af

Subcatchment1-PR: TO ELM ST Runoff Area=740 sf 47.97% Impervious Runoff Depth=3.15"
Tc=5.0 min CN=67 Runoff=0.06 cfs 0.004 af

Subcatchment2-EX: TO REAR YARD Runoff Area=49,400 sf 0.00% Impervious Runoff Depth=0.84"
Tc=5.0 min CN=41 Runoff=0.65 cfs 0.079 af

Subcatchment2-PR-PAVE: PAVEMENT TO Runoff Area=1,865 sf 100.00% Impervious Runoff Depth=6.56"
Tc=0.0 min CN=98 Runoff=0.35 cfs 0.023 af

Subcatchment2-PR-REST: Runoff Area=37,290 sf 9.42% Impervious Runoff Depth=0.70"
Tc=5.0 min CN=39 Runoff=0.32 cfs 0.050 af

Subcatchment2-PR-ROOF: AUTOCOURT Runoff Area=2,495 sf 100.00% Impervious Runoff Depth=6.56"
Tc=5.0 min CN=98 Runoff=0.40 cfs 0.031 af

Subcatchment18S: SPORT COURT, LAWN, Runoff Area=7,750 sf 47.46% Impervious Runoff Depth=2.95"
Tc=5.0 min CN=65 Runoff=0.63 cfs 0.044 af

Reach 1R-EX: TO ELM ST Inflow=0.06 cfs 0.004 af
Outflow=0.06 cfs 0.004 af

Reach 1R-PR: TO ELM ST Inflow=0.06 cfs 0.004 af
Outflow=0.06 cfs 0.004 af

Reach 2R-EX: TO REAR YARD Inflow=0.65 cfs 0.079 af
Outflow=0.65 cfs 0.079 af

Reach 2R-PR: TO REAR YARD Inflow=0.65 cfs 0.057 af
Outflow=0.65 cfs 0.057 af

Pond 18P: SPORT COURT GRAVEL TRENCH Peak Elev=114.80' Storage=361 cf Inflow=0.63 cfs 0.044 af
Discarded=0.10 cfs 0.039 af Primary=0.27 cfs 0.004 af Outflow=0.37 cfs 0.044 af

Pond INF #1: 10' X 18' INFILTRATION Peak Elev=109.30' Storage=180 cf Inflow=0.35 cfs 0.023 af
Discarded=0.03 cfs 0.021 af Primary=0.33 cfs 0.003 af Outflow=0.37 cfs 0.023 af

Pond INF #2: 10'X25' INFILTRATION SYSTEM Peak Elev=103.70' Storage=252 cf Inflow=0.40 cfs 0.031 af
Discarded=0.05 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.028 af

Summary for Subcatchment 1-EX: TO ELM ST

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 3.15"
Routed to Reach 1R-EX : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	412	90	GRAVEL
	328	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	740		100.00% Pervious Area

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

Summary for Subcatchment 1-PR: TO ELM ST

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 3.15"
Routed to Reach 1R-PR : TO ELM ST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	355	98	PAVEMENT
	385	39	>75% Grass cover, Good, HSG A
	740	67	Weighted Average
	385		52.03% Pervious Area
	355		47.97% Impervious Area

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

Summary for Subcatchment 2-EX: TO REAR YARD

Runoff = 0.65 cfs @ 12.11 hrs, Volume= 0.079 af, Depth= 0.84"
Routed to Reach 2R-EX : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	7,490	90	GRAVEL
	29,950	32	Woods/grass comb., Good, HSG A
	1,260	39	>75% Grass cover, Good, HSG A
	10,700	30	Woods, Good, HSG A
	49,400	41	Weighted Average
	49,400		100.00% Pervious Area

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

Summary for Subcatchment 2-PR-PAVE: PAVEMENT TO INFILT. SYSTEM

Runoff = 0.35 cfs @ 12.00 hrs, Volume= 0.023 af, Depth= 6.56"
Routed to Pond INF #1 : 10' X 18' INFILTRATION SYSTEM #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	1,865	98	PAVEMENT
	1,865		100.00% Impervious Area

Summary for Subcatchment 2-PR-REST: SUBCATCHMENT REMAINDER

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 0.050 af, Depth= 0.70"
Routed to Reach 2R-PR : TO REAR YARD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	1,878	98	ROOF REMAINDER
*	910	98	PAVEMEMT
*	529	98	OTHER IMP
*	135	90	GRAVEL PARKING
	29,093	32	Woods/grass comb., Good, HSG A
	4,400	39	>75% Grass cover, Good, HSG A
	150	30	Woods, Good, HSG A
*	195	98	Ret Wall
	37,290	39	Weighted Average
	33,778		90.58% Pervious Area
	3,512		9.42% Impervious Area

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

Summary for Subcatchment 2-PR-ROOF: AUTOCOURT & PORTION OF DWELLING

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 6.56"
Routed to Pond INF #2 : 10'X25' INFILTRATION SYSTEM #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	1,260	98	ROOF
*	1,235	98	PAVEMENT (AUTOCOURT)
	2,495	98	Weighted Average
	2,495		100.00% Impervious Area

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

Summary for Subcatchment 18S: SPORT COURT, LAWN, WOODS

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.044 af, Depth= 2.95"
Routed to Pond 18P : SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Event Rainfall=6.80"

	Area (sf)	CN	Description
*	3,500	98	SPORT COURT
	2,000	39	>75% Grass cover, Good, HSG A
	2,072	30	Woods, Good, HSG A
*	178	98	Retaining Wall
	7,750	65	Weighted Average
	4,072		52.54% Pervious Area
	3,678		47.46% Impervious Area

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

Summary for Reach 1R-EX: TO ELM ST

Inflow Area = 0.017 ac, 0.00% Impervious, Inflow Depth = 3.15" for 100 Year Event event
Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 1R-PR: TO ELM ST

Inflow Area = 0.017 ac, 47.97% Impervious, Inflow Depth = 3.15" for 100 Year Event event
Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-EX: TO REAR YARD

Inflow Area = 1.134 ac, 0.00% Impervious, Inflow Depth = 0.84" for 100 Year Event event
Inflow = 0.65 cfs @ 12.11 hrs, Volume= 0.079 af
Outflow = 0.65 cfs @ 12.11 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach 2R-PR: TO REAR YARD

Inflow Area = 1.134 ac, 23.38% Impervious, Inflow Depth = 0.60" for 100 Year Event event
Inflow = 0.65 cfs @ 12.19 hrs, Volume= 0.057 af
Outflow = 0.65 cfs @ 12.19 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 18P: SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEEP

Inflow Area = 0.178 ac, 47.46% Impervious, Inflow Depth = 2.95" for 100 Year Event event
Inflow = 0.63 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.37 cfs @ 12.19 hrs, Volume= 0.044 af, Atten= 42%, Lag= 6.7 min
Discarded = 0.10 cfs @ 11.74 hrs, Volume= 0.039 af
Primary = 0.27 cfs @ 12.19 hrs, Volume= 0.004 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 114.80' @ 12.19 hrs Surf.Area= 500 sf Storage= 361 cf

Plug-Flow detention time= 23.3 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 22.2 min (864.7 - 842.5)

Volume	Invert	Avail.Storage	Storage Description
#1	113.00'	400 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 1,000 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
113.00	500	250.0	0	0	500
115.00	500	250.0	1,000	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	113.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	114.80'	**250.0' long x 18.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.10 cfs @ 11.74 hrs HW=113.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.10 cfs @ 12.19 hrs HW=114.80' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.14 fps)

Summary for Pond INF #1: 10' X 18' INFILTRATION SYSTEM #1

Inflow Area = 0.043 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 0.35 cfs @ 12.00 hrs, Volume= 0.023 af
Outflow = 0.37 cfs @ 12.03 hrs, Volume= 0.023 af, Atten= 0%, Lag= 1.9 min
Discarded = 0.03 cfs @ 12.03 hrs, Volume= 0.021 af
Primary = 0.33 cfs @ 12.03 hrs, Volume= 0.003 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 109.30' @ 12.03 hrs Surf.Area= 181 sf Storage= 180 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 24.8 min (762.6 - 737.8)

Volume	Invert	Avail.Storage	Storage Description
#1	105.80'	121 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 360 cf Overall - 58 cf Embedded = 302 cf x 40.0% Voids
#2	106.30'	58 cf	**Cultec C-100** x 4 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	107.80'	1 cf	**0.50'D x 1.50'H Vertical Cone/Cylinder** x 3
		180 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
105.80	180	56.0	0	0	180
107.80	180	56.0	360	360	292

Device	Routing	Invert	Outlet Devices
#1	Discarded	105.80'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	109.20'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.03 cfs @ 12.03 hrs HW=109.30' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.30 cfs @ 12.03 hrs HW=109.29' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 1.00 fps)

Summary for Pond INF #2: 10'X25' INFILTRATION SYSTEM #2

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 6.56" for 100 Year Event event
Inflow = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af
Outflow = 0.05 cfs @ 12.24 hrs, Volume= 0.028 af, Atten= 88%, Lag= 10.2 min
Discarded = 0.05 cfs @ 12.12 hrs, Volume= 0.028 af
Primary = 0.00 cfs @ 12.24 hrs, Volume= 0.000 af
Routed to Reach 2R-PR : TO REAR YARD

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 103.70' @ 12.24 hrs Surf.Area= 251 sf Storage= 252 cf

Plug-Flow detention time= 82.3 min calculated for 0.028 af (89% of inflow)
Center-of-Mass det. time= 29.5 min (771.9 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1	100.30'	166 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 500 cf Overall - 86 cf Embedded = 414 cf x 40.0% Voids
#2	100.80'	86 cf	**Cultec C-100** x 6 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 2 rows
#3	102.30'	1 cf	**0.50'D x 1.30'H Vertical Cone/Cylinder** x 3
		252 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.30	250	70.0	0	0	250
102.30	250	70.0	500	500	390

Device	Routing	Invert	Outlet Devices
#1	Discarded	100.30'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	103.70'	**6.0" Horiz. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.05 cfs @ 12.12 hrs HW=103.48' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 12.24 hrs HW=103.70' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.00 cfs @ 0.03 fps)

Stage-Area-Storage for Pond INF #1: 10' X 18' INFILTRATION SYSTEM #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
105.80	180	0
105.85	180	4
105.90	180	7
105.95	180	11
106.00	180	14
106.05	180	18
106.10	180	22
106.15	180	25
106.20	180	29
106.25	180	32
106.30	180	36
106.35	180	42
106.40	180	48
106.45	180	54
106.50	180	60
106.55	180	66
106.60	180	72
106.65	180	77
106.70	180	83
106.75	180	89
106.80	180	94
106.85	180	100
106.90	180	105
106.95	180	111
107.00	180	116
107.05	180	121
107.10	180	126
107.15	180	131
107.20	180	135
107.25	180	139
107.30	180	143
107.35	180	146
107.40	180	150
107.45	180	153
107.50	180	157
107.55	180	161
107.60	180	164
107.65	180	168
107.70	180	171
107.75	180	175
107.80	**181**	179
107.85	181	179
107.90	181	179
107.95	181	179
108.00	181	179
108.05	181	179
108.10	181	179
108.15	181	179
108.20	181	179
108.25	181	179
108.30	181	179
108.35	181	179
108.40	181	179
108.45	181	179
108.50	181	179
108.55	181	179
108.60	181	179
108.65	181	179
108.70	181	179
108.75	181	179
108.80	181	179
108.85	181	179
108.90	181	179
108.95	181	179
109.00	181	179
109.05	181	179
109.10	181	179
109.15	181	179
109.20	181	179
109.25	181	179
109.30	181	**180**

Stage-Area-Storage for Pond INF #2: 10'X25' INFILTRATION SYSTEM #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
100.30	250	0
100.35	250	5
100.40	250	10
100.45	250	15
100.50	250	20
100.55	250	25
100.60	250	30
100.65	250	35
100.70	250	40
100.75	250	45
100.80	250	50
100.85	250	59
100.90	250	67
100.95	250	76
101.00	250	84
101.05	250	92
101.10	250	101
101.15	250	109
101.20	250	117
101.25	250	125
101.30	250	133
101.35	250	141
101.40	250	149
101.45	250	157
101.50	250	164
101.55	250	171
101.60	250	178
101.65	250	185
101.70	250	191
101.75	250	196
101.80	250	201
101.85	250	206
101.90	250	211
101.95	250	216
102.00	250	221
102.05	250	226
102.10	250	231
102.15	250	236
102.20	250	241
102.25	250	246
102.30	**251**	251
102.35	251	251
102.40	251	251
102.45	251	251
102.50	251	251
102.55	251	252
102.60	251	252
102.65	251	252
102.70	251	252
102.75	251	252
102.80	251	252
102.85	251	252
102.90	251	252
102.95	251	252
103.00	251	252
103.05	251	252
103.10	251	252
103.15	251	252
103.20	251	252
103.25	251	252
103.30	251	252
103.35	251	252
103.40	251	252
103.45	251	252
103.50	251	252
103.55	251	252
103.60	251	**252**
103.65	251	252
103.70	251	252
103.75	251	252
103.80	251	252

Stage-Area-Storage for Pond 18P: SPORT COURT GRAVEL TRENCH AROUND PERIMETER 2' WIDE x2' DEE

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
113.00	**500**	0
113.02	500	4
113.04	500	8
113.06	500	12
113.08	500	16
113.10	500	20
113.12	500	24
113.14	500	28
113.16	500	32
113.18	500	36
113.20	500	40
113.22	500	44
113.24	500	48
113.26	500	52
113.28	500	56
113.30	500	60
113.32	500	64
113.34	500	68
113.36	500	72
113.38	500	76
113.40	500	80
113.42	500	84
113.44	500	88
113.46	500	92
113.48	500	96
113.50	500	100
113.52	500	104
113.54	500	108
113.56	500	112
113.58	500	116
113.60	500	120
113.62	500	124
113.64	500	128
113.66	500	132
113.68	500	136
113.70	500	140
113.72	500	144
113.74	500	148
113.76	500	152
113.78	500	156
113.80	500	160
113.82	500	164
113.84	500	168
113.86	500	172
113.88	500	176
113.90	500	180
113.92	500	184
113.94	500	188
113.96	500	192
113.98	500	196
114.00	500	200
114.02	500	204
114.04	500	208
114.06	500	212
114.08	500	216
114.10	500	220
114.12	500	224
114.14	500	228
114.16	500	232
114.18	500	236
114.20	500	240
114.22	500	244
114.24	500	248
114.26	500	252
114.28	500	256
114.30	500	260
114.32	500	264
114.34	500	268
114.36	500	272
114.38	500	276
114.40	500	280
114.42	500	284
114.44	500	288
114.46	500	292
114.48	500	296
114.50	500	300
114.52	500	304
114.54	500	308
114.56	500	312
114.58	500	316
114.60	500	320
114.62	500	324
114.64	500	328
114.66	500	332
114.68	500	336
114.70	500	340
114.72	500	344
114.74	500	348
114.76	500	352
114.78	500	356
114.80	500	360
114.82	500	364
114.84	500	368
114.86	500	372
114.88	500	376
114.90	500	380
114.92	500	384
114.94	500	388
114.96	500	392
114.98	500	396
115.00	500	**400**