Attachment 8

Computations Using HydroCAD: Post-development

25-year, 24-hour Design Storm

100-year, 24-hour Storm

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: Runoff Area=1.090 ac Runoff Depth=3.51"
Tc=2.0 min CN=80 Runoff=7.12 cfs 0.319 af

Subcatchment 101: Runoff Area=1.460 ac Runoff Depth=3.51"
Tc=2.0 min CN=80 Runoff=9.54 cfs 0.427 af

Subcatchment 102: Runoff Area=1.600 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=10.41 cfs 0.468 af

Subcatchment 103: Runoff Area=1.520 ac Runoff Depth=3.51"
Tc=2.0 min CN=80 Runoff=9.93 cfs 0.445 af

Subcatchment 104: Runoff Area=1.580 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=10.28 cfs 0.462 af

Subcatchment 105: Runoff Area=1.400 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=9.11 cfs 0.410 af

Subcatchment 106: Runoff Area=1.610 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=10.48 cfs 0.471 af

Subcatchment 107: Runoff Area=1.370 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=8.92 cfs 0.401 af

Subcatchment 108: Runoff Area=1.130 ac Runoff Depth=3.51"
Tc=2.0 min CN=80 Runoff=7.38 cfs 0.331 af

Subcatchment 109: Runoff Area=1.070 ac Runoff Depth=3.51"
Tc=2.0 min CN=80 Runoff=6.99 cfs 0.313 af

Subcatchment 110: Runoff Area=1.200 ac Runoff Depth=3.51"
Tc=2.1 min CN=80 Runoff=7.81 cfs 0.351 af

Subcatchment 200: Runoff Area=2.760 ac Runoff Depth=3.51"
Tc=4.7 min CN=80 Runoff=17.35 cfs 0.808 af

Subcatchment 201: Runoff Area=4.490 ac Runoff Depth=3.51"
Tc=4.0 min CN=80 Runoff=28.99 cfs 1.314 af

Subcatchment 202: Runoff Area=10.060 ac Runoff Depth=3.51"
Tc=7.3 min CN=80 Runoff=58.20 cfs 2.944 af

Subcatchment 203: Runoff Area=11.710 ac Runoff Depth=3.51"
Tc=12.6 min CN=80 Runoff=56.80 cfs 3.427 af

Subcatchment 204: Runoff Area=10.360 ac Runoff Depth=3.51"
Tc=10.4 min CN=80 Runoff=53.75 cfs 3.032 af

Subcatchment 205: Runoff Area=5.330 ac Runoff Depth=3.51"
Tc=5.2 min CN=80 Runoff=32.79 cfs 1.560 af

Subcatchment 206: Runoff Area=4.870 ac Runoff Depth=3.51"
Tc=4.3 min CN=80 Runoff=31.11 cfs 1.425 af

Subcatchment 207: Runoff Area=5.860 ac Runoff Depth=3.51"
Tc=5.3 min CN=80 Runoff=35.90 cfs 1.715 af

Subcatchment 208: Runoff Area=8.330 ac Runoff Depth=3.51"
Tc=9.5 min CN=80 Runoff=44.70 cfs 2.438 af

Subcatchment 209: Runoff Area=7.410 ac Runoff Depth=3.51"
Tc=7.9 min CN=80 Runoff=42.09 cfs 2.168 af

Subcatchment 210: Runoff Area=6.500 ac Runoff Depth=3.51"
Tc=5.2 min CN=80 Runoff=39.99 cfs 1.902 af

Subcatchment Pond1: Runoff Area=6.870 ac Runoff Depth=5.46"
Tc=2.0 min CN=98 Runoff=59.07 cfs 3.127 af

Subcatchment Road1: Runoff Area=0.300 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=2.70 cfs 0.137 af

Subcatchment Road10: Runoff Area=0.270 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=2.43 cfs 0.123 af

Subcatchment Road11: Runoff Area=0.300 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=2.70 cfs 0.137 af

Subcatchment Road2: Runoff Area=0.390 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.51 cfs 0.178 af

Subcatchment Road3: Runoff Area=0.400 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.60 cfs 0.182 af

Subcatchment Road4: Runoff Area=0.380 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.42 cfs 0.173 af

Subcatchment Road5: Runoff Area=0.400 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.60 cfs 0.182 af

Subcatchment Road6: Runoff Area=0.360 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.24 cfs 0.164 af

Subcatchment Road7: Runoff Area=0.430 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.87 cfs 0.196 af

Subcatchment Road8: Runoff Area=0.360 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=3.24 cfs 0.164 af

Subcatchment Road9: Runoff Area=0.290 ac Runoff Depth=5.46"
Tc=1.0 min CN=98 Runoff=2.61 cfs 0.132 af

Reach C1: culvert Peak Depth=2.11' Max Vel=16.5 fps Inflow=332.62 cfs 28.896 af
D=48.0" n=0.013 L=54.2' S=0.0199 '/' Capacity=608.30 cfs Outflow=332.41 cfs 28.896 af

Reach R1: Peak Depth=1.57' Max Vel=9.6 fps Inflow=143.35 cfs 9.158 af
n=0.030 L=617.6' S=0.0351 '/' Capacity=536.55 cfs Outflow=139.50 cfs 9.158 af

Reach R10: Peak Depth=1.27' Max Vel=5.0 fps Inflow=57.43 cfs 3.336 af
n=0.030 L=578.9' S=0.0120 '/' Capacity=313.17 cfs Outflow=54.71 cfs 3.336 af

Reach R11: Peak Depth=1.28' Max Vel=8.6 fps Inflow=96.78 cfs 5.993 af
n=0.030 L=655.3' S=0.0348 '/' Capacity=534.29 cfs Outflow=93.72 cfs 5.993 af

Reach R2: Peak Depth=2.62' Max Vel=6.8 fps Inflow=216.31 cfs 19.739 af
n=0.030 L=822.6' S=0.0100 '/' Capacity=285.99 cfs Outflow=213.01 cfs 19.738 af

Reach R3: Peak Depth=2.49' Max Vel=6.4 fps Inflow=200.54 cfs 14.876 af
n=0.030 L=870.4' S=0.0093 '/' Capacity=288.98 cfs Outflow=194.36 cfs 14.876 af

Reach R4: Peak Depth=2.23' Max Vel=6.0 fps Inflow=153.80 cfs 10.799 af
n=0.030 L=828.1' S=0.0095 '/' Capacity=278.89 cfs Outflow=148.17 cfs 10.799 af

Reach R5: Peak Depth=1.71' Max Vel=6.0 fps Inflow=104.36 cfs 7.149 af
n=0.030 L=869.2' S=0.0126 '/' Capacity=321.50 cfs Outflow=100.50 cfs 7.149 af

Reach R6: Peak Depth=1.56' Max Vel=5.2 fps Inflow=79.37 cfs 4.945 af
n=0.030 L=777.2' S=0.0104 '/' Capacity=291.88 cfs Outflow=75.51 cfs 4.945 af

Reach R7: Peak Depth=1.27' Max Vel=4.7 fps Inflow=56.26 cfs 2.947 af
n=0.030 L=908.9' S=0.0103 '/' Capacity=291.30 cfs Outflow=51.19 cfs 2.947 af

Reach R8: Peak Depth=0.53' Max Vel=2.9 fps Inflow=12.05 cfs 0.565 af
n=0.030 L=767.1' S=0.0103 '/' Capacity=290.87 cfs Outflow=10.01 cfs 0.565 af

Reach R9: Peak Depth=0.47' Max Vel=2.8 fps Inflow=9.92 cfs 0.463 af
n=0.030 L=611.2' S=0.0113 '/' Capacity=304.79 cfs Outflow=8.74 cfs 0.463 af

Pond SP: Stormwater Pond Peak Elev=762.77' Storage=32.023 af Inflow=340.48 cfs 32.024 af
Outflow=0.00 cfs 0.000 af

Subcatchment 100:

Runoff = 7.12 cfs @ 11.92 hrs, Volume= 0.319 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.090	80	>75% Grass cover, Good, HSG D

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

Subcatchment 101:

Runoff = 9.54 cfs @ 11.92 hrs, Volume= 0.427 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.460	80	>75% Grass cover, Good, HSG D

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

Subcatchment 102:

Runoff = 10.41 cfs @ 11.92 hrs, Volume= 0.468 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.600	80	>75% Grass cover, Good, HSG D

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

Subcatchment 103:

Runoff = 9.93 cfs @ 11.92 hrs, Volume= 0.445 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.520	80	>75% Grass cover, Good, HSG D

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

Subcatchment 104:

Runoff = 10.28 cfs @ 11.92 hrs, Volume= 0.462 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.580	80	>75% Grass cover, Good, HSG D

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

Subcatchment 105:

Runoff = 9.11 cfs @ 11.92 hrs, Volume= 0.410 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.400	80	>75% Grass cover, Good, HSG D

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

Subcatchment 106:

Runoff = 10.48 cfs @ 11.92 hrs, Volume= 0.471 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.610	80	>75% Grass cover, Good, HSG D

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

Subcatchment 107:

Runoff = 8.92 cfs @ 11.92 hrs, Volume= 0.401 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.370	80	>75% Grass cover, Good, HSG D

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

Subcatchment 108:

Runoff = 7.38 cfs @ 11.92 hrs, Volume= 0.331 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.130	80	>75% Grass cover, Good, HSG D

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

Subcatchment 109:

Runoff = 6.99 cfs @ 11.92 hrs, Volume= 0.313 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.070	80	>75% Grass cover, Good, HSG D

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

Subcatchment 110:

Runoff = 7.81 cfs @ 11.92 hrs, Volume= 0.351 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
1.200	80	>75% Grass cover, Good, HSG D

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

Subcatchment 200:

Runoff = 17.35 cfs @ 11.95 hrs, Volume= 0.808 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
2.760	80	>75% Grass cover, Good, HSG D

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

Subcatchment 201:

Runoff = 28.99 cfs @ 11.94 hrs, Volume= 1.314 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
4.490	80	>75% Grass cover, Good, HSG D

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

Subcatchment 202:

Runoff = 58.20 cfs @ 11.99 hrs, Volume= 2.944 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
10.060	80	>75% Grass cover, Good, HSG D

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

Subcatchment 203:

Runoff = 56.80 cfs @ 12.04 hrs, Volume= 3.427 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
11.710	80	>75% Grass cover, Good, HSG D

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

Subcatchment 204:

Runoff = 53.75 cfs @ 12.02 hrs, Volume= 3.032 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
10.360	80	>75% Grass cover, Good, HSG D

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

Subcatchment 205:

Runoff = 32.79 cfs @ 11.96 hrs, Volume= 1.560 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
5.330	80	>75% Grass cover, Good, HSG D

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

Subcatchment 206:

Runoff = 31.11 cfs @ 11.95 hrs, Volume= 1.425 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
4.870	80	>75% Grass cover, Good, HSG D

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

Subcatchment 207:

Runoff = 35.90 cfs @ 11.96 hrs, Volume= 1.715 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
5.860	80	>75% Grass cover, Good, HSG D

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

Subcatchment 208:

Runoff = 44.70 cfs @ 12.01 hrs, Volume= 2.438 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
8.330	80	>75% Grass cover, Good, HSG D

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

Subcatchment 209:

Runoff = 42.09 cfs @ 11.99 hrs, Volume= 2.168 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
7.410	80	>75% Grass cover, Good, HSG D

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

Subcatchment 210:

Runoff = 39.99 cfs @ 11.96 hrs, Volume= 1.902 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
6.500	80	>75% Grass cover, Good, HSG D

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

Subcatchment Pond1:

Runoff = 59.07 cfs @ 11.91 hrs, Volume= 3.127 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
6.870	98	Paved parking & roofs

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

Subcatchment Road1:

Runoff = 2.70 cfs @ 11.90 hrs, Volume= 0.137 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs

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

Subcatchment Road10:

Runoff = 2.43 cfs @ 11.90 hrs, Volume= 0.123 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.270	98	Paved parking & roofs

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

Subcatchment Road11:

Runoff = 2.70 cfs @ 11.90 hrs, Volume= 0.137 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs

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

Subcatchment Road2:

Runoff = 3.51 cfs @ 11.90 hrs, Volume= 0.178 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.390	98	Paved parking & roofs

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

Subcatchment Road3:

Runoff = 3.60 cfs @ 11.90 hrs, Volume= 0.182 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.400	98	Paved parking & roofs

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

Subcatchment Road4:

Runoff = 3.42 cfs @ 11.90 hrs, Volume= 0.173 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.380	98	Paved parking & roofs

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

Subcatchment Road5:

Runoff = 3.60 cfs @ 11.90 hrs, Volume= 0.182 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.400	98	Paved parking & roofs

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

Subcatchment Road6:

Runoff = 3.24 cfs @ 11.90 hrs, Volume= 0.164 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.360	98	Paved parking & roofs

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

Subcatchment Road7:

Runoff = 3.87 cfs @ 11.90 hrs, Volume= 0.196 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.430	98	Paved parking & roofs

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

Subcatchment Road8:

Runoff = 3.24 cfs @ 11.90 hrs, Volume= 0.164 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.360	98	Paved parking & roofs

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

Subcatchment Road9:

Runoff = 2.61 cfs @ 11.90 hrs, Volume= 0.132 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=5.70"

Area (ac)	CN	Description
0.290	98	Paved parking & roofs

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

Reach C1: culvert

Inflow Area = 96.590 ac, Inflow Depth = 3.59"
Inflow = 332.62 cfs @ 12.06 hrs, Volume= 28.896 af
Outflow = 332.41 cfs @ 12.06 hrs, Volume= 28.896 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 16.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.4 fps, Avg. Travel Time= 0.2 min

Peak Depth= 2.11' @ 12.06 hrs
Capacity at bank full= 608.30 cfs
Inlet Invert= 759.39', Outlet Invert= 758.31'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 54.2' Slope= 0.0199 '/'

Reach R1:

Inflow Area = 30.650 ac, Inflow Depth = 3.59"
Inflow = 143.35 cfs @ 11.98 hrs, Volume= 9.158 af
Outflow = 139.50 cfs @ 12.02 hrs, Volume= 9.158 af, Atten= 3%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.6 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 4.7 min

Peak Depth= 1.57' @ 12.00 hrs
Capacity at bank full= 536.55 cfs
Inlet Invert= 786.58', Outlet Invert= 764.91'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 617.6' Slope= 0.0351 '/'

Reach R10:

Inflow Area = 11.090 ac, Inflow Depth = 3.61"
Inflow = 57.43 cfs @ 11.99 hrs, Volume= 3.336 af
Outflow = 54.71 cfs @ 12.05 hrs, Volume= 3.336 af, Atten= 5%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 8.6 min

Peak Depth= 1.27' @ 12.02 hrs
Capacity at bank full= 313.17 cfs
Inlet Invert= 816.31', Outlet Invert= 809.39'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 578.9' Slope= 0.0120 '/'

Reach R11:

Inflow Area = 20.000 ac, Inflow Depth = 3.60"
Inflow = 96.78 cfs @ 12.00 hrs, Volume= 5.993 af
Outflow = 93.72 cfs @ 12.04 hrs, Volume= 5.993 af, Atten= 3%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 5.6 min

Peak Depth= 1.28' @ 12.02 hrs
Capacity at bank full= 534.29 cfs
Inlet Invert= 809.39', Outlet Invert= 786.59'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 655.3' Slope= 0.0348 '/'

Reach R2:

Inflow Area = 65.940 ac, Inflow Depth = 3.59"
Inflow = 216.31 cfs @ 12.13 hrs, Volume= 19.739 af
Outflow = 213.01 cfs @ 12.16 hrs, Volume= 19.738 af, Atten= 2%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.8 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 7.9 min

Peak Depth= 2.62' @ 12.14 hrs
Capacity at bank full= 285.99 cfs
Inlet Invert= 773.10', Outlet Invert= 764.90'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 822.6' Slope= 0.0100 '/'

Reach R3:

Inflow Area = 49.540 ac, Inflow Depth = 3.60"
Inflow = 200.54 cfs @ 12.08 hrs, Volume= 14.876 af
Outflow = 194.36 cfs @ 12.15 hrs, Volume= 14.876 af, Atten= 3%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.4 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 9.5 min

Peak Depth= 2.49' @ 12.11 hrs
Capacity at bank full= 288.98 cfs
Inlet Invert= 781.20', Outlet Invert= 773.10'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 21.00'
Length= 870.4' Slope= 0.0093 '/'

Reach R4:

Inflow Area = 35.830 ac, Inflow Depth = 3.62"
Inflow = 153.80 cfs @ 12.04 hrs, Volume= 10.799 af
Outflow = 148.17 cfs @ 12.11 hrs, Volume= 10.799 af, Atten= 4%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 9.8 min

Peak Depth= 2.23' @ 12.07 hrs
Capacity at bank full= 278.89 cfs
Inlet Invert= 789.05', Outlet Invert= 781.20'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 828.1' Slope= 0.0095 '/'

Reach R5:

Inflow Area = 23.570 ac, Inflow Depth = 3.64"
Inflow = 104.36 cfs @ 11.99 hrs, Volume= 7.149 af
Outflow = 100.50 cfs @ 12.06 hrs, Volume= 7.149 af, Atten= 4%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 10.5 min

Peak Depth= 1.71' @ 12.02 hrs
Capacity at bank full= 321.50 cfs
Inlet Invert= 800.00', Outlet Invert= 789.05'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 869.2' Slope= 0.0126 '/'

Reach R6:

Inflow Area = 16.260 ac, Inflow Depth = 3.65"
Inflow = 79.37 cfs @ 11.97 hrs, Volume= 4.945 af
Outflow = 75.51 cfs @ 12.05 hrs, Volume= 4.945 af, Atten= 5%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 11.3 min

Peak Depth= 1.56' @ 12.01 hrs
Capacity at bank full= 291.88 cfs
Inlet Invert= 805.92', Outlet Invert= 797.85'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 777.2' Slope= 0.0104 '/'

Reach R7:

Inflow Area = 9.630 ac, Inflow Depth = 3.67"
Inflow = 56.26 cfs @ 11.95 hrs, Volume= 2.947 af
Outflow = 51.19 cfs @ 12.04 hrs, Volume= 2.947 af, Atten= 9%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 15.1 min

Peak Depth= 1.27' @ 11.99 hrs
Capacity at bank full= 291.30 cfs
Inlet Invert= 815.32', Outlet Invert= 805.92'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 908.9' Slope= 0.0103 '/'

Reach R8:

Inflow Area = 1.730 ac, Inflow Depth = 3.92"
Inflow = 12.05 cfs @ 11.91 hrs, Volume= 0.565 af
Outflow = 10.01 cfs @ 12.02 hrs, Volume= 0.565 af, Atten= 17%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.6 fps, Avg. Travel Time= 19.8 min

Peak Depth= 0.53' @ 11.95 hrs
Capacity at bank full= 290.87 cfs
Inlet Invert= 823.23', Outlet Invert= 815.32'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 767.1' Slope= 0.0103 '/'

Reach R9:

Inflow Area = 1.420 ac, Inflow Depth = 3.91"
Inflow = 9.92 cfs @ 11.91 hrs, Volume= 0.463 af
Outflow = 8.74 cfs @ 12.00 hrs, Volume= 0.463 af, Atten= 12%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.6 fps, Avg. Travel Time= 16.0 min

Peak Depth= 0.47' @ 11.94 hrs
Capacity at bank full= 304.79 cfs
Inlet Invert= 823.23', Outlet Invert= 816.31'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 611.2' Slope= 0.0113 '/'

Pond SP: Stormwater Pond

Inflow Area = 103.460 ac, Inflow Depth = 3.71"
Inflow = 340.48 cfs @ 12.05 hrs, Volume= 32.024 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 762.77' @ 30.00 hrs Surf.Area= 5.322 ac Storage= 32.023 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	62.383 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
756.00	4.158	0.000	0.000
758.00	4.488	8.646	8.646
760.00	4.829	9.317	17.963
762.00	5.182	10.011	27.974
764.00	5.545	10.727	38.701
766.00	5.920	11.465	50.166
768.00	6.297	12.217	62.383

Pond SP: Stormwater Pond

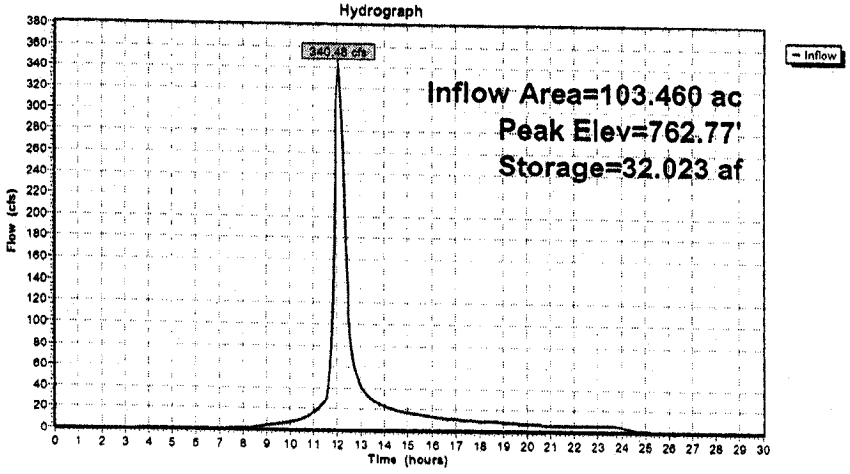
Inflow Area = 103.460 ac, Inflow Depth = 3.71"
Inflow = 340.48 cfs @ 12.05 hrs, Volume= 32.024 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 762.77' @ 30.00 hrs Surf.Area= 5,322 ac Storage= 32.023 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	62.383 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
756.00	4.158	0.000	0.000
758.00	4.488	8.646	8.646
760.00	4.829	9.317	17.963
762.00	5.182	10.011	27.974
764.00	5.545	10.727	38.701
766.00	5.920	11.465	50.166
768.00	6.297	12.217	62.383

Pond SP: Stormwater Pond



Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 010: Runoff Area=5.320 ac Runoff Depth>2.83"
Tc=13.9 min CN=73 Runoff=20.15 cfs 1.255 af

Subcatchment 011: Runoff Area=4.380 ac Runoff Depth>2.83"
Tc=14.0 min CN=73 Runoff=16.53 cfs 1.034 af

Subcatchment 012: Runoff Area=9.360 ac Runoff Depth>2.83"
Tc=21.1 min CN=73 Runoff=28.47 cfs 2.204 af

Subcatchment 013: Runoff Area=7.000 ac Runoff Depth>2.83"
Tc=15.2 min CN=73 Runoff=25.33 cfs 1.651 af

Subcatchment 014: Runoff Area=11.310 ac Runoff Depth>2.83"
Tc=13.1 min CN=73 Runoff=44.02 cfs 2.670 af

Subcatchment 015: Runoff Area=13.200 ac Runoff Depth>2.83"
Tc=16.6 min CN=73 Runoff=45.85 cfs 3.113 af

Subcatchment 016: Runoff Area=5.380 ac Runoff Depth>2.83"
Tc=11.6 min CN=73 Runoff=21.99 cfs 1.270 af

Subcatchment 017: Runoff Area=5.080 ac Runoff Depth>2.83"
Tc=10.4 min CN=73 Runoff=21.54 cfs 1.200 af

Subcatchment 018: Runoff Area=2.360 ac Runoff Depth>2.84"
Tc=9.0 min CN=73 Runoff=10.57 cfs 0.558 af

Subcatchment 019: Runoff Area=5.590 ac Runoff Depth>2.83"
Flow Length=1,210' Tc=18.4 min CN=73 Runoff=18.39 cfs 1.317 af

Subcatchment 020: Runoff Area=0.960 ac Runoff Depth>2.84"
Tc=5.2 min CN=73 Runoff=4.86 cfs 0.227 af

Subcatchment 021: Runoff Area=4.240 ac Runoff Depth>2.84"
Tc=8.3 min CN=73 Runoff=19.50 cfs 1.002 af

Subcatchment 022: Runoff Area=3.690 ac Runoff Depth>2.84"
Tc=4.3 min CN=73 Runoff=19.45 cfs 0.873 af

Subcatchment 023: Runoff Area=0.810 ac Runoff Depth>2.84"
Tc=4.1 min CN=73 Runoff=4.30 cfs 0.192 af

Subcatchment 024: Runoff Area=1.640 ac Runoff Depth>2.84"
Tc=8.7 min CN=73 Runoff=7.43 cfs 0.388 af

Subcatchment 025: Runoff Area=1.680 ac Runoff Depth>2.84"
Tc=8.3 min CN=73 Runoff=7.73 cfs 0.397 af

Subcatchment 026: Runoff Area=1.230 ac Runoff Depth>2.84"
Tc=6.3 min CN=73 Runoff=6.02 cfs 0.291 af

Subcatchment 027: Runoff Area=2.060 ac Runoff Depth>2.84"
Tc=8.9 min CN=73 Runoff=9.26 cfs 0.487 af

Subcatchment 028: Runoff Area=0.390 ac Runoff Depth>2.84"
Tc=2.8 min CN=73 Runoff=2.14 cfs 0.092 af

Subcatchment 029: Runoff Area=1.820 ac Runoff Depth>2.83"
Tc=12.2 min CN=73 Runoff=7.30 cfs 0.430 af

Subcatchment 030: Runoff Area=1.250 ac Runoff Depth>2.83"
Tc=11.5 min CN=73 Runoff=5.13 cfs 0.295 af

Subcatchment 031: Runoff Area=0.450 ac Runoff Depth>2.84"
Tc=2.8 min CN=73 Runoff=2.47 cfs 0.107 af

Subcatchment 032: Runoff Area=4.840 ac Runoff Depth>2.83"
Tc=14.2 min CN=73 Runoff=18.14 cfs 1.142 af

Subcatchment 033: Runoff Area=1.760 ac Runoff Depth>2.84"
Tc=3.5 min CN=73 Runoff=9.55 cfs 0.417 af

Subcatchment 034: Runoff Area=1.640 ac Runoff Depth>2.83"
Tc=9.9 min CN=73 Runoff=7.09 cfs 0.387 af

Subcatchment 035: Runoff Area=0.790 ac Runoff Depth>2.82"
Flow Length=340' Tc=25.1 min CN=73 Runoff=2.17 cfs 0.186 af

Subcatchment 036: Runoff Area=0.140 ac Runoff Depth>2.84"
Flow Length=130' Tc=1.8 min CN=73 Runoff=0.76 cfs 0.033 af

Subcatchment ROAD12: Runoff Area=0.230 ac Runoff Depth>5.27"
Flow Length=480' Tc=3.1 min CN=98 Runoff=1.99 cfs 0.101 af

Reach C2: culvert Peak Depth=1.11' Max Vel=8.2 fps Inflow=19.59 cfs 1.253 af
D=36.0" n=0.013 L=69.8' S=0.0100 '/' Capacity=66.79 cfs Outflow=19.53 cfs 1.253 af

Reach C3: culvert Peak Depth=1.36' Max Vel=13.8 fps Inflow=43.26 cfs 3.231 af
D=36.0" n=0.013 L=69.8' S=0.0234 '/' Capacity=101.93 cfs Outflow=43.19 cfs 3.230 af

Reach C4: culvert Peak Depth=1.26' Max Vel=8.7 fps Inflow=24.57 cfs 1.647 af
D=36.0" n=0.013 L=63.5' S=0.0099 '/' Capacity=66.44 cfs Outflow=24.49 cfs 1.647 af

Reach C5: culvert Peak Depth=2.24' Max Vel=11.9 fps Inflow=86.59 cfs 5.769 af
D=48.0" n=0.013 L=80.0' S=0.0100 '/' Capacity=143.64 cfs Outflow=86.30 cfs 5.768 af

Reach C6: culvert Peak Depth=1.80' Max Vel=11.2 fps Inflow=123.53 cfs 11.401 af
D=48.0" n=0.013 L=80.4' S=0.0106 '/' Capacity=295.39 cfs Outflow=123.48 cfs 11.399 af

Reach C7: culvert Peak Depth=1.25' Max Vel=14.1 fps Inflow=141.62 cfs 12.990 af
D=48.0" n=0.013 L=160.0' S=0.0241 '/' Capacity=669.33 cfs Outflow=140.82 cfs 12.987 af

Reach C8: culvert Peak Depth=1.23' Max Vel=14.4 fps Inflow=140.77 cfs 13.017 af
D=48.0" n=0.013 L=60.0' S=0.0257 '/' Capacity=690.38 cfs Outflow=140.71 cfs 13.016 af

Reach RN1: Peak Depth=0.54' Max Vel=9.1 fps Inflow=20.15 cfs 1.255 af
n=0.030 L=528.7' S=0.1133 '/' Capacity=259.53 cfs Outflow=19.59 cfs 1.253 af

Reach RN10: Peak Depth=0.88' Max Vel=8.8 fps Inflow=37.64 cfs 2.464 af
n=0.030 L=627.6' S=0.0625 '/' Capacity=192.74 cfs Outflow=36.67 cfs 2.460 af

Reach RN11: Peak Depth=0.91' Max Vel=9.9 fps Inflow=44.06 cfs 3.017 af
n=0.030 L=378.5' S=0.0760 '/' Capacity=212.47 cfs Outflow=43.39 cfs 3.014 af

Reach RN12: Peak Depth=1.89' Max Vel=8.4 fps Inflow=123.48 cfs 11.399 af
n=0.030 L=430.0' S=0.0229 '/' Capacity=1,005.31 cfs Outflow=122.81 cfs 11.386 af

Reach RN13: Peak Depth=1.75' Max Vel=7.1 fps Inflow=93.86 cfs 8.393 af
n=0.030 L=246.6' S=0.0179 '/' Capacity=890.17 cfs Outflow=93.10 cfs 8.386 af

Reach RN14: Peak Depth=1.82' Max Vel=6.7 fps Inflow=95.09 cfs 8.185 af
n=0.030 L=712.3' S=0.0155 '/' Capacity=1,031.01 cfs Outflow=93.22 cfs 8.166 af

Reach RN15: Peak Depth=1.32' Max Vel=8.0 fps Inflow=93.79 cfs 7.209 af
n=0.030 L=1,158.2' S=0.0282 '/' Capacity=451.72 cfs Outflow=90.89 cfs 7.183 af

Reach RN16: Peak Depth=1.72' Max Vel=5.6 fps Inflow=92.65 cfs 6.345 af
n=0.030 L=311.5' S=0.0104 '/' Capacity=274.05 cfs Outflow=90.87 cfs 6.336 af

Reach RN17: Peak Depth=1.05' Max Vel=3.2 fps Inflow=7.43 cfs 0.388 af
n=0.030 L=416.6' S=0.0117 '/' Capacity=117.14 cfs Outflow=6.87 cfs 0.387 af

Reach RN18: Peak Depth=0.54' Max Vel=3.3 fps Inflow=7.73 cfs 0.397 af
n=0.030 L=392.0' S=0.0149 '/' Capacity=735.37 cfs Outflow=7.19 cfs 0.396 af

Reach RN19: Peak Depth=0.50' Max Vel=6.6 fps Inflow=13.30 cfs 0.779 af
n=0.030 L=391.7' S=0.0639 '/' Capacity=2,352.84 cfs Outflow=12.89 cfs 0.778 af

Reach RN2: Peak Depth=0.74' Max Vel=4.9 fps Inflow=16.53 cfs 1.034 af
n=0.030 L=432.3' S=0.0231 '/' Capacity=117.25 cfs Outflow=15.94 cfs 1.031 af

Reach RN20: Peak Depth=2.37' Max Vel=4.7 fps Inflow=86.23 cfs 6.964 af
n=0.030 L=229.0' S=0.0060 '/' Capacity=38,244.53 cfs Outflow=85.46 cfs 6.957 af

Reach RN21: Peak Depth=1.86' Max Vel=8.0 fps Inflow=101.17 cfs 8.515 af
n=0.030 L=872.8' S=0.0231 '/' Capacity=2,841.91 cfs Outflow=99.45 cfs 8.495 af

Reach RN22: Peak Depth=1.08' Max Vel=5.4 fps Inflow=118.74 cfs 10.135 af
n=0.030 L=465.1' S=0.0129 '/' Capacity=704.13 cfs Outflow=117.29 cfs 10.111 af

Reach RN23: Peak Depth=0.89' Max Vel=5.8 fps Inflow=19.53 cfs 1.253 af
n=0.030 L=116.9' S=0.0289 '/' Capacity=271.53 cfs Outflow=19.35 cfs 1.253 af

Reach RN24: Peak Depth=2.03' Max Vel=8.6 fps Inflow=140.82 cfs 12.987 af
n=0.030 L=91.5' S=0.0224 '/' Capacity=995.23 cfs Outflow=140.67 cfs 12.984 af

Reach RN3: Peak Depth=1.26' Max Vel=6.3 fps Inflow=43.91 cfs 3.235 af
n=0.030 L=371.4' S=0.0215 '/' Capacity=113.14 cfs Outflow=43.26 cfs 3.231 af

Reach RN4: Peak Depth=0.69' Max Vel=8.4 fps Inflow=25.33 cfs 1.651 af
n=0.030 L=731.1' S=0.0727 '/' Capacity=207.86 cfs Outflow=24.57 cfs 1.647 af

Reach RN5: Peak Depth=1.55' Max Vel=8.0 fps Inflow=76.24 cfs 5.794 af
n=0.030 L=591.7' S=0.0281 '/' Capacity=312.31 cfs Outflow=74.96 cfs 5.784 af

Reach RN6: Peak Depth=1.11' Max Vel=7.3 fps Inflow=44.02 cfs 2.670 af
n=0.030 L=947.6' S=0.0337 '/' Capacity=141.62 cfs Outflow=41.85 cfs 2.661 af

Reach RN7: Peak Depth=1.12' Max Vel=7.7 fps Inflow=45.85 cfs 3.113 af
n=0.030 L=490.9' S=0.0368 '/' Capacity=147.95 cfs Outflow=44.78 cfs 3.108 af

Reach RN8: downchute Peak Depth=1.37' Max Vel=10.9 fps Inflow=86.30 cfs 5.768 af
n=0.050 L=69.0' S=0.1664 '/' Capacity=188.67 cfs Outflow=85.91 cfs 5.767 af

Reach RN9: Peak Depth=0.92' Max Vel=4.6 fps Inflow=21.99 cfs 1.270 af
n=0.030 L=855.7' S=0.0162 '/' Capacity=98.04 cfs Outflow=20.59 cfs 1.264 af

Total Runoff Area = 98.600 ac Runoff Volume = 23.318 af Average Runoff Depth = 2.84"

Subcatchment 010:

Runoff = 20.15 cfs @ 12.06 hrs, Volume= 1.255 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
5.320	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 011:

Runoff = 16.53 cfs @ 12.06 hrs, Volume= 1.034 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
4.380	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 012:

Runoff = 28.47 cfs @ 12.14 hrs, Volume= 2.204 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
9.360	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 013:

Runoff = 25.33 cfs @ 12.08 hrs, Volume= 1.651 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
7.000	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 014:

Runoff = 44.02 cfs @ 12.05 hrs, Volume= 2.670 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
11.310	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 015:

Runoff = 45.85 cfs @ 12.09 hrs, Volume= 3.113 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
13.200	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 016:

Runoff = 21.99 cfs @ 12.04 hrs, Volume= 1.270 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
5.380	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 017:

Runoff = 21.54 cfs @ 12.02 hrs, Volume= 1.200 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
5.080	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 018:

Runoff = 10.57 cfs @ 12.01 hrs, Volume= 0.558 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
2.360	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 019:

Runoff = 18.39 cfs @ 12.11 hrs, Volume= 1.317 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
5.590	73	Woods/grass comb., Poor, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	300	0.0930	0.4		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
1.4	180	0.0890	2.1		**Shallow Concentrated Flow, Shallow Flow** Short Grass Pasture Kv= 7.0 fps
3.3	590	0.1800	3.0		**Shallow Concentrated Flow, Shallow Flow segment 2** Short Grass Pasture Kv= 7.0 fps
1.3	140	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.4	1,210	Total			

Subcatchment 020:

Runoff = 4.86 cfs @ 11.96 hrs, Volume= 0.227 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.960	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 021:

Runoff = 19.50 cfs @ 12.00 hrs, Volume= 1.002 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
4.240	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 022:

Runoff = 19.45 cfs @ 11.95 hrs, Volume= 0.873 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
3.690	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 023:

Runoff = 4.30 cfs @ 11.95 hrs, Volume= 0.192 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.810	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 024:

Runoff = 7.43 cfs @ 12.00 hrs, Volume= 0.388 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.640	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 025:

Runoff = 7.73 cfs @ 12.00 hrs, Volume= 0.397 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.680	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 026:

Runoff = 6.02 cfs @ 11.98 hrs, Volume= 0.291 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.230	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 027:

Runoff = 9.26 cfs @ 12.00 hrs, Volume= 0.487 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
2.060	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 028:

Runoff = 2.14 cfs @ 11.93 hrs, Volume= 0.092 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.390	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 029:

Runoff = 7.30 cfs @ 12.04 hrs, Volume= 0.430 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.820	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 030:

Runoff = 5.13 cfs @ 12.04 hrs, Volume= 0.295 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.250	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 031:

Runoff = 2.47 cfs @ 11.93 hrs, Volume= 0.107 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.450	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 032:

Runoff = 18.14 cfs @ 12.06 hrs, Volume= 1.142 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
4.840	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 033:

Runoff = 9.55 cfs @ 11.94 hrs, Volume= 0.417 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.760	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 034:

Runoff = 7.09 cfs @ 12.02 hrs, Volume= 0.387 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
1.640	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 035:

Runoff = 2.17 cfs @ 12.19 hrs, Volume= 0.186 af, Depth> 2.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.790	73	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.4	300	0.0170	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.7	40	0.0170	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.1	340	Total			

Subcatchment 036:

Runoff = 0.76 cfs @ 11.92 hrs, Volume= 0.033 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.140	73	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	40	0.2500	0.4		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.1	90	0.0440	12.9	905.39	**Channel Flow, channel** Area= 70.0 sf Perim= 50.4' r= 1.39' n= 0.030
1.8	130	Total			

Subcatchment ROAD12:

Runoff = 1.99 cfs @ 11.93 hrs, Volume= 0.101 af, Depth> 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 Y 24 H Rainfall=5.70"

Area (ac)	CN	Description
0.230	98	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0100	0.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
2.9	470	0.0170	2.7	0.54	**Channel Flow,** Area= 0.2 sf Perim= 2.6' r= 0.08' n= 0.013
3.1	480	Total			

Reach C2: culvert

Inflow Area = 5.320 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 19.59 cfs @ 12.09 hrs, Volume= 1.253 af
Outflow = 19.53 cfs @ 12.09 hrs, Volume= 1.253 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.11' @ 12.09 hrs
Capacity at bank full= 66.79 cfs
Inlet Invert= 768.08', Outlet Invert= 767.38'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 69.8' Slope= 0.0100 '/'

Reach C3: culvert

Inflow Area = 13.740 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 43.26 cfs @ 12.16 hrs, Volume= 3.231 af
Outflow = 43.19 cfs @ 12.16 hrs, Volume= 3.230 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.36' @ 12.16 hrs
Capacity at bank full= 101.93 cfs
Inlet Invert= 810.00', Outlet Invert= 808.37'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 69.8' Slope= 0.0234 '/'

Reach C4: culvert

Inflow Area = 7.000 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 24.57 cfs @ 12.12 hrs, Volume= 1.647 af
Outflow = 24.49 cfs @ 12.12 hrs, Volume= 1.647 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.7 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.26' @ 12.12 hrs
Capacity at bank full= 66.44 cfs
Inlet Invert= 808.75', Outlet Invert= 808.12'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 63.5' Slope= 0.0099 '/'

Reach C5: culvert

Inflow Area = 24.510 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 86.59 cfs @ 12.12 hrs, Volume= 5.769 af
Outflow = 86.30 cfs @ 12.12 hrs, Volume= 5.768 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.3 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.24' @ 12.12 hrs
Capacity at bank full= 143.64 cfs
Inlet Invert= 829.92', Outlet Invert= 829.12'
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 80.0' Slope= 0.0100 '/'

Reach C6: culvert

Inflow Area = 48.670 ac, Inflow Depth > 2.81" for 25 Y 24 H event
Inflow = 123.53 cfs @ 12.17 hrs, Volume= 11.401 af
Outflow = 123.48 cfs @ 12.17 hrs, Volume= 11.399 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.2 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.3 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.80' @ 12.17 hrs
Capacity at bank full= 295.39 cfs
Inlet Invert= 766.18', Outlet Invert= 765.33'
A factor of 2.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 80.4' Slope= 0.0106 '/'

Reach C7: culvert

Inflow Area = 55.280 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 141.62 cfs @ 12.17 hrs, Volume= 12.990 af
Outflow = 140.82 cfs @ 12.18 hrs, Volume= 12.987 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.1 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 0.6 min

Peak Depth= 1.25' @ 12.18 hrs
Capacity at bank full= 669.33 cfs
Inlet Invert= 755.50', Outlet Invert= 751.64'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 160.0' Slope= 0.0241 '/'

Reach C8: culvert

Inflow Area = 55.420 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 140.77 cfs @ 12.19 hrs, Volume= 13.017 af
Outflow = 140.71 cfs @ 12.19 hrs, Volume= 13.016 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.4 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.23' @ 12.19 hrs
Capacity at bank full= 690.38 cfs
Inlet Invert= 749.59', Outlet Invert= 748.05'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013
Length= 60.0' Slope= 0.0257 '/'

Reach RN1:

Inflow Area = 5.320 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 20.15 cfs @ 12.06 hrs, Volume= 1.255 af
Outflow = 19.59 cfs @ 12.09 hrs, Volume= 1.253 af, Atten= 3%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.1 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 3.3 min

Peak Depth= 0.54' @ 12.07 hrs
Capacity at bank full= 259.53 cfs
Inlet Invert= 828.00', Outlet Invert= 768.08'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 528.7' Slope= 0.1133 '/'

Reach RN10:

Inflow Area = 10.460 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 37.64 cfs @ 12.06 hrs, Volume= 2.464 af
Outflow = 36.67 cfs @ 12.10 hrs, Volume= 2.460 af, Atten= 3%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 3.7 min

Peak Depth= 0.88' @ 12.08 hrs
Capacity at bank full= 192.74 cfs
Inlet Invert= 834.16', Outlet Invert= 794.93'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 627.6' Slope= 0.0625 '/'

Reach RN11:

Inflow Area = 12.820 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 44.06 cfs @ 12.07 hrs, Volume= 3.017 af
Outflow = 43.39 cfs @ 12.09 hrs, Volume= 3.014 af, Atten= 2%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.91' @ 12.08 hrs
Capacity at bank full= 212.47 cfs
Inlet Invert= 794.93', Outlet Invert= 766.18'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 378.5' Slope= 0.0760 '/'

Reach RN12:

Inflow Area = 48.670 ac, Inflow Depth > 2.81" for 25 Y 24 H event
Inflow = 123.48 cfs @ 12.17 hrs, Volume= 11.399 af
Outflow = 122.81 cfs @ 12.20 hrs, Volume= 11.386 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.4 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.89' @ 12.18 hrs
Capacity at bank full= 1,005.31 cfs
Inlet Invert= 765.33', Outlet Invert= 755.50'
4.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 430.0' Slope= 0.0229 '/'

Reach RN13:

Inflow Area = 35.850 ac, Inflow Depth > 2.81" for 25 Y 24 H event
Inflow = 93.86 cfs @ 12.25 hrs, Volume= 8.393 af
Outflow = 93.10 cfs @ 12.26 hrs, Volume= 8.386 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.1 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 1.6 min

Peak Depth= 1.75' @ 12.26 hrs
Capacity at bank full= 890.17 cfs
Inlet Invert= 770.60', Outlet Invert= 766.18'
4.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 246.6' Slope= 0.0179 '/'

Reach RN14:

Inflow Area = 34.890 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 95.09 cfs @ 12.20 hrs, Volume= 8.185 af
Outflow = 93.22 cfs @ 12.25 hrs, Volume= 8.166 af, Atten= 2%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.7 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 4.8 min

Peak Depth= 1.82' @ 12.23 hrs
Capacity at bank full= 1,031.01 cfs
Inlet Invert= 781.64', Outlet Invert= 770.60'
4.00' x 5.50' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 712.3' Slope= 0.0155 '/'

Reach RN15:

Inflow Area = 30.650 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 93.79 cfs @ 12.14 hrs, Volume= 7.209 af
Outflow = 90.89 cfs @ 12.21 hrs, Volume= 7.183 af, Atten= 3%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 7.4 min

Peak Depth= 1.32' @ 12.17 hrs
Capacity at bank full= 451.72 cfs
Inlet Invert= 814.27', Outlet Invert= 781.64'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 1,158.2' Slope= 0.0282 '/'

Reach RN16:

Inflow Area = 26.960 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 92.65 cfs @ 12.12 hrs, Volume= 6.345 af
Outflow = 90.87 cfs @ 12.15 hrs, Volume= 6.336 af, Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.6 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 2.9 min

Peak Depth= 1.72' @ 12.13 hrs
Capacity at bank full= 274.05 cfs
Inlet Invert= 817.50', Outlet Invert= 814.27'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 311.5' Slope= 0.0104 '/'

Reach RN17:

Inflow Area = 1.640 ac, Inflow Depth > 2.84" for 25 Y 24 H event
Inflow = 7.43 cfs @ 12.00 hrs, Volume= 0.388 af
Outflow = 6.87 cfs @ 12.07 hrs, Volume= 0.387 af, Atten= 8%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 5.6 min

Peak Depth= 1.05' @ 12.03 hrs
Capacity at bank full= 117.14 cfs
Inlet Invert= 822.36', Outlet Invert= 817.50'
0.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 416.6' Slope= 0.0117 '/'

Reach RN18:

Inflow Area = 1.680 ac, Inflow Depth > 2.84" for 25 Y 24 H event
Inflow = 7.73 cfs @ 12.00 hrs, Volume= 0.397 af
Outflow = 7.19 cfs @ 12.05 hrs, Volume= 0.396 af, Atten= 7%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 6.6 min

Peak Depth= 0.54' @ 12.02 hrs
Capacity at bank full= 735.37 cfs
Inlet Invert= 822.36', Outlet Invert= 816.53'
3.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 23.00'
Length= 392.0' Slope= 0.0149 '/'

Reach RN19:

Inflow Area = 3.300 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 13.30 cfs @ 11.99 hrs, Volume= 0.779 af
Outflow = 12.89 cfs @ 12.02 hrs, Volume= 0.778 af, Atten= 3%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 3.0 min

Peak Depth= 0.50' @ 12.01 hrs
Capacity at bank full= 2,352.84 cfs
Inlet Invert= 816.53', Outlet Invert= 791.50'
3.00' x 6.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 27.00'
Length= 391.7' Slope= 0.0639 '/'

Reach RN2:

Inflow Area = 4.380 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 16.53 cfs @ 12.06 hrs, Volume= 1.034 af
Outflow = 15.94 cfs @ 12.11 hrs, Volume= 1.031 af, Atten= 4%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 4.8 min

Peak Depth= 0.74' @ 12.08 hrs
Capacity at bank full= 117.25 cfs
Inlet Invert= 828.00', Outlet Invert= 818.00'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 432.3' Slope= 0.0231 '/'

Reach RN20:

Inflow Area = 29.620 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 86.23 cfs @ 12.13 hrs, Volume= 6.964 af
Outflow = 85.46 cfs @ 12.16 hrs, Volume= 6.957 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 2.37' @ 12.14 hrs
Capacity at bank full= 38,244.53 cfs
Inlet Invert= 791.50', Outlet Invert= 790.12'
3.00' x 29.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 119.00'
Length= 229.0' Slope= 0.0060 '/'

Reach RN21:

Inflow Area = 36.220 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 101.17 cfs @ 12.13 hrs, Volume= 8.515 af
Outflow = 99.45 cfs @ 12.19 hrs, Volume= 8.495 af, Atten= 2%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 4.7 min

Peak Depth= 1.86' @ 12.16 hrs
Capacity at bank full= 2,841.91 cfs
Inlet Invert= 790.12', Outlet Invert= 770.00'
3.00' x 8.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 35.00'
Length= 872.8' Slope= 0.0231 '/'

Reach RN22:

Inflow Area = 43.180 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 118.74 cfs @ 12.16 hrs, Volume= 10.135 af
Outflow = 117.29 cfs @ 12.20 hrs, Volume= 10.111 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 4.8 min

Peak Depth= 1.08' @ 12.17 hrs
Capacity at bank full= 704.13 cfs
Inlet Invert= 770.00', Outlet Invert= 764.00'
18.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 30.00'
Length= 465.1' Slope= 0.0129 '/'

Reach RN23:

Inflow Area = 5.320 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 19.53 cfs @ 12.09 hrs, Volume= 1.253 af
Outflow = 19.35 cfs @ 12.10 hrs, Volume= 1.253 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.89' @ 12.10 hrs
Capacity at bank full= 271.53 cfs
Inlet Invert= 767.38', Outlet Invert= 764.00'
2.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 116.9' Slope= 0.0289 '/'

Reach RN24:

Inflow Area = 55.280 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 140.82 cfs @ 12.18 hrs, Volume= 12.987 af
Outflow = 140.67 cfs @ 12.19 hrs, Volume= 12.984 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.03' @ 12.19 hrs
Capacity at bank full= 995.23 cfs
Inlet Invert= 751.64', Outlet Invert= 749.59'
4.00' x 5.00' deep channel, n= 0.030
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 91.5' Slope= 0.0224 '/'

Reach RN3:

Inflow Area = 13.740 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 43.91 cfs @ 12.13 hrs, Volume= 3.235 af
Outflow = 43.26 cfs @ 12.16 hrs, Volume= 3.231 af, Atten= 1%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.3 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 2.8 min

Peak Depth= 1.26' @ 12.14 hrs
Capacity at bank full= 113.14 cfs
Inlet Invert= 818.00', Outlet Invert= 810.00'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 371.4' Slope= 0.0215 '/'

Reach RN4:

Inflow Area = 7.000 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 25.33 cfs @ 12.08 hrs, Volume= 1.651 af
Outflow = 24.57 cfs @ 12.12 hrs, Volume= 1.647 af, Atten= 3%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.4 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 4.8 min

Peak Depth= 0.69' @ 12.09 hrs
Capacity at bank full= 207.86 cfs
Inlet Invert= 861.90', Outlet Invert= 808.75'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 731.1' Slope= 0.0727 '/'

Reach RN5:

Inflow Area = 24.620 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 76.24 cfs @ 12.12 hrs, Volume= 5.794 af
Outflow = 74.96 cfs @ 12.16 hrs, Volume= 5.784 af, Atten= 2%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.0 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 3.4 min

Peak Depth= 1.55' @ 12.14 hrs
Capacity at bank full= 312.31 cfs
Inlet Invert= 808.12', Outlet Invert= 791.50'
3.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 15.00'
Length= 591.7' Slope= 0.0281 '/'

Reach RN6:

Inflow Area = 11.310 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 44.02 cfs @ 12.05 hrs, Volume= 2.670 af
Outflow = 41.85 cfs @ 12.12 hrs, Volume= 2.661 af, Atten= 5%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.3 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 6.7 min

Peak Depth= 1.11' @ 12.08 hrs
Capacity at bank full= 141.62 cfs
Inlet Invert= 861.90', Outlet Invert= 829.92'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 947.6' Slope= 0.0337 '/'

Reach RN7:

Inflow Area = 13.200 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 45.85 cfs @ 12.09 hrs, Volume= 3.113 af
Outflow = 44.78 cfs @ 12.12 hrs, Volume= 3.108 af, Atten= 2%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.7 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 3.2 min

Peak Depth= 1.12' @ 12.11 hrs
Capacity at bank full= 147.95 cfs
Inlet Invert= 848.00', Outlet Invert= 829.92'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 490.9' Slope= 0.0368 '/'

Reach RN8: downchute

Inflow Area = 24.510 ac, Inflow Depth > 2.82" for 25 Y 24 H event
Inflow = 86.30 cfs @ 12.12 hrs, Volume= 5.768 af
Outflow = 85.91 cfs @ 12.13 hrs, Volume= 5.767 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.7 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.37' @ 12.12 hrs
Capacity at bank full= 188.67 cfs
Inlet Invert= 829.12', Outlet Invert= 817.64'
3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 69.0' Slope= 0.1664 '/'

Reach RN9:

Inflow Area = 5.380 ac, Inflow Depth > 2.83" for 25 Y 24 H event
Inflow = 21.99 cfs @ 12.04 hrs, Volume= 1.270 af
Outflow = 20.59 cfs @ 12.12 hrs, Volume= 1.264 af, Atten= 6%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.6 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 10.0 min

Peak Depth= 0.92' @ 12.07 hrs
Capacity at bank full= 98.04 cfs
Inlet Invert= 848.00', Outlet Invert= 834.16'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 855.7' Slope= 0.0162 '/'

Written by: Sowmya Bulusu / Alexander Maestre Date: 12/07/06 Reviewed by: Ganesh Gopalakrishnan Date: 12/13/06

Client: TVA Project: Kingston Fossil Plant Gypsum Disposal Facility Project/Proposal No.: GR3731 Task No.: 06

100-year, 24-hour Storm

Subcatchment Road7: Runoff Area=0.430 ac Runoff Depth=6.46"
Tc=1.0 min CN=98 Runoff=4.55 cfs 0.232 af

Subcatchment Road8: Runoff Area=0.360 ac Runoff Depth=6.46"
Tc=1.0 min CN=98 Runoff=3.81 cfs 0.194 af

Subcatchment Road9: Runoff Area=0.290 ac Runoff Depth=6.46"
Tc=1.0 min CN=98 Runoff=3.07 cfs 0.156 af

Reach C1: culvert Peak Depth=2.47' Max Vel=17.5 fps Inflow=427.95 cfs 36.224 af
D=48.0" n=0.013 L=54.2' S=0.0199 '/' Capacity=608.30 cfs Outflow=427.71 cfs 36.224 af

Reach R1: Peak Depth=1.77' Max Vel=10.3 fps Inflow=181.03 cfs 11.483 af
n=0.030 L=617.6' S=0.0351 '/' Capacity=536.55 cfs Outflow=176.47 cfs 11.483 af

Reach R10: Peak Depth=1.43' Max Vel=5.4 fps Inflow=71.73 cfs 4.179 af
n=0.030 L=578.9' S=0.0120 '/' Capacity=313.17 cfs Outflow=68.39 cfs 4.179 af

Reach R11: Peak Depth=1.44' Max Vel=9.1 fps Inflow=121.67 cfs 7.510 af
n=0.030 L=655.3' S=0.0348 '/' Capacity=534.29 cfs Outflow=117.85 cfs 7.510 af

Reach R2: Peak Depth=2.95' Max Vel=7.2 fps Inflow=276.89 cfs 24.742 af
n=0.030 L=822.6' S=0.0100 '/' Capacity=285.99 cfs Outflow=275.23 cfs 24.742 af

Reach R3: Peak Depth=2.81' Max Vel=6.9 fps Inflow=255.40 cfs 18.637 af
n=0.030 L=870.4' S=0.0093 '/' Capacity=288.98 cfs Outflow=247.61 cfs 18.637 af

Reach R4: Peak Depth=2.51' Max Vel=6.5 fps Inflow=195.62 cfs 13.521 af
n=0.030 L=828.1' S=0.0095 '/' Capacity=278.89 cfs Outflow=188.61 cfs 13.521 af

Reach R5: Peak Depth=1.94' Max Vel=6.5 fps Inflow=133.14 cfs 8.942 af
n=0.030 L=869.2' S=0.0126 '/' Capacity=321.50 cfs Outflow=128.19 cfs 8.942 af

Reach R6: Peak Depth=1.76' Max Vel=5.6 fps Inflow=100.79 cfs 6.183 af
n=0.030 L=777.2' S=0.0104 '/' Capacity=291.88 cfs Outflow=95.84 cfs 6.183 af

Reach R7: Peak Depth=1.43' Max Vel=5.0 fps Inflow=70.29 cfs 3.680 af
n=0.030 L=908.9' S=0.0103 '/' Capacity=291.30 cfs Outflow=64.83 cfs 3.680 af

Reach R8: Peak Depth=0.60' Max Vel=3.1 fps Inflow=14.79 cfs 0.698 af
n=0.030 L=767.1' S=0.0103 '/' Capacity=290.87 cfs Outflow=12.53 cfs 0.698 af

Reach R9: Peak Depth=0.54' Max Vel=3.0 fps Inflow=12.18 cfs 0.572 af
n=0.030 L=611.2' S=0.0113 '/' Capacity=304.79 cfs Outflow=10.96 cfs 0.572 af

Pond SP: Stormwater Pond Peak Elev=764.21' Storage=39.882 af Inflow=438.14 cfs 39.923 af
24.0" x 100.0' Culvert Outflow=0.14 cfs 0.071 af

Subcatchment 100:

Runoff = 8.86 cfs @ 11.92 hrs, Volume= 0.401 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.090	80	>75% Grass cover, Good, HSG D

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

Subcatchment 101:

Runoff = 11.86 cfs @ 11.92 hrs, Volume= 0.538 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.460	80	>75% Grass cover, Good, HSG D

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

Subcatchment 102:

Runoff = 12.95 cfs @ 11.92 hrs, Volume= 0.589 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.600	80	>75% Grass cover, Good, HSG D

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

Subcatchment 103:

Runoff = 12.35 cfs @ 11.92 hrs, Volume= 0.560 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.520	80	>75% Grass cover, Good, HSG D

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

Subcatchment 104:

Runoff = 12.79 cfs @ 11.92 hrs, Volume= 0.582 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.580	80	>75% Grass cover, Good, HSG D

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

Subcatchment 105:

Runoff = 11.33 cfs @ 11.92 hrs, Volume= 0.515 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.400	80	>75% Grass cover, Good, HSG D

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

Subcatchment 106:

Runoff = 13.03 cfs @ 11.92 hrs, Volume= 0.593 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.610	80	>75% Grass cover, Good, HSG D

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

Subcatchment 107:

Runoff = 11.09 cfs @ 11.92 hrs, Volume= 0.504 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.370	80	>75% Grass cover, Good, HSG D

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

Subcatchment 108:

Runoff = 9.18 cfs @ 11.92 hrs, Volume= 0.416 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.130	80	>75% Grass cover, Good, HSG D

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

Subcatchment 109:

Runoff = 8.69 cfs @ 11.92 hrs, Volume= 0.394 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.070	80	>75% Grass cover, Good, HSG D

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

Subcatchment 110:

Runoff = 9.71 cfs @ 11.92 hrs, Volume= 0.442 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
1.200	80	>75% Grass cover, Good, HSG D

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

Subcatchment 200:

Runoff = 21.60 cfs @ 11.95 hrs, Volume= 1.016 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
2.760	80	>75% Grass cover, Good, HSG D

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

Subcatchment 201:

Runoff = 36.06 cfs @ 11.94 hrs, Volume= 1.653 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
4.490	80	>75% Grass cover, Good, HSG D

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

Subcatchment 202:

Runoff = 72.49 cfs @ 11.98 hrs, Volume= 3.704 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
10.060	80	>75% Grass cover, Good, HSG D

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

Subcatchment 203:

Runoff = 70.94 cfs @ 12.04 hrs, Volume= 4.312 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
11.710	80	>75% Grass cover, Good, HSG D

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

Subcatchment 204:

Runoff = 67.09 cfs @ 12.02 hrs, Volume= 3.815 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
10.360	80	>75% Grass cover, Good, HSG D

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

Subcatchment 205:

Runoff = 40.84 cfs @ 11.96 hrs, Volume= 1.963 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
5.330	80	>75% Grass cover, Good, HSG D

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

Subcatchment 206:

Runoff = 38.70 cfs @ 11.95 hrs, Volume= 1.793 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
4.870	80	>75% Grass cover, Good, HSG D

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

Subcatchment 207:

Runoff = 44.71 cfs @ 11.96 hrs, Volume= 2.158 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
5.860	80	>75% Grass cover, Good, HSG D

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

Subcatchment 208:

Runoff = 55.77 cfs @ 12.01 hrs, Volume= 3.067 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
8.330	80	>75% Grass cover, Good, HSG D

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

Subcatchment 209:

Runoff = 52.45 cfs @ 11.99 hrs, Volume= 2.728 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
7.410	80	>75% Grass cover, Good, HSG D

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

Subcatchment 210:

Runoff = 49.80 cfs @ 11.96 hrs, Volume= 2.393 af, Depth= 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
6.500	80	>75% Grass cover, Good, HSG D

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

Subcatchment Pond1:

Runoff = 69.51 cfs @ 11.91 hrs, Volume= 3.699 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
6.870	98	Paved parking & roofs

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

Subcatchment Road1:

Runoff = 3.18 cfs @ 11.90 hrs, Volume= 0.162 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs

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

Subcatchment Road10:

Runoff = 2.86 cfs @ 11.90 hrs, Volume= 0.145 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.270	98	Paved parking & roofs

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

Subcatchment Road11:

Runoff = 3.18 cfs @ 11.90 hrs, Volume= 0.162 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs

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

Subcatchment Road2:

Runoff = 4.13 cfs @ 11.90 hrs, Volume= 0.210 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.390	98	Paved parking & roofs

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

Subcatchment Road3:

Runoff = 4.23 cfs @ 11.90 hrs, Volume= 0.215 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.400	98	Paved parking & roofs

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

Subcatchment Road4:

Runoff = 4.02 cfs @ 11.90 hrs, Volume= 0.205 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.380	98	Paved parking & roofs

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

Subcatchment Road5:

Runoff = 4.23 cfs @ 11.90 hrs, Volume= 0.215 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.400	98	Paved parking & roofs

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

Subcatchment Road6:

Runoff = 3.81 cfs @ 11.90 hrs, Volume= 0.194 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.360	98	Paved parking & roofs

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

Subcatchment Road7:

Runoff = 4.55 cfs @ 11.90 hrs, Volume= 0.232 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.430	98	Paved parking & roofs

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

Subcatchment Road8:

Runoff = 3.81 cfs @ 11.90 hrs, Volume= 0.194 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.360	98	Paved parking & roofs

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

Subcatchment Road9:

Runoff = 3.07 cfs @ 11.90 hrs, Volume= 0.156 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=6.70"

Area (ac)	CN	Description
0.290	98	Paved parking & roofs

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

Reach C1: culvert

Inflow Area = 96.590 ac, Inflow Depth = 4.50"
Inflow = 427.95 cfs @ 12.06 hrs, Volume= 36.224 af
Outflow = 427.71 cfs @ 12.06 hrs, Volume= 36.224 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.7 fps, Avg. Travel Time= 0.2 min

Peak Depth= 2.47' @ 12.06 hrs
Capacity at bank full= 608.30 cfs
Inlet Invert= 759.39', Outlet Invert= 758.31'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 54.2' Slope= 0.0199 '/'

Reach R1:

Inflow Area = 30.650 ac, Inflow Depth = 4.50"
Inflow = 181.03 cfs @ 11.98 hrs, Volume= 11.483 af
Outflow = 176.47 cfs @ 12.01 hrs, Volume= 11.483 af, Atten= 3%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.3 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.4 fps, Avg. Travel Time= 4.3 min

Peak Depth= 1.77' @ 12.00 hrs
Capacity at bank full= 536.55 cfs
Inlet Invert= 786.58', Outlet Invert= 764.91'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 617.6' Slope= 0.0351 '/'

Reach R10:

Inflow Area = 11.090 ac, Inflow Depth = 4.52"
Inflow = 71.73 cfs @ 11.99 hrs, Volume= 4.179 af
Outflow = 68.39 cfs @ 12.04 hrs, Volume= 4.179 af, Atten= 5%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.4 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 8.0 min

Peak Depth= 1.43' @ 12.01 hrs
Capacity at bank full= 313.17 cfs
Inlet Invert= 816.31', Outlet Invert= 809.39'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 578.9' Slope= 0.0120 '/'

Reach R11:

Inflow Area = 20.000 ac, Inflow Depth = 4.51"
Inflow = 121.67 cfs @ 12.00 hrs, Volume= 7.510 af
Outflow = 117.85 cfs @ 12.04 hrs, Volume= 7.510 af, Atten= 3%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.1 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 5.2 min

Peak Depth= 1.44' @ 12.02 hrs
Capacity at bank full= 534.29 cfs
Inlet Invert= 809.39', Outlet Invert= 786.59'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 655.3' Slope= 0.0348 '/'

Reach R2:

Inflow Area = 65.940 ac, Inflow Depth = 4.50"
Inflow = 276.89 cfs @ 12.09 hrs, Volume= 24.742 af
Outflow = 275.23 cfs @ 12.14 hrs, Volume= 24.742 af, Atten= 1%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 7.3 min

Peak Depth= 2.95' @ 12.11 hrs
Capacity at bank full= 285.99 cfs
Inlet Invert= 773.10', Outlet Invert= 764.90'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 822.6' Slope= 0.0100 '/'

Reach R3:

Inflow Area = 49.540 ac, Inflow Depth = 4.51"
Inflow = 255.40 cfs @ 12.08 hrs, Volume= 18.637 af
Outflow = 247.61 cfs @ 12.14 hrs, Volume= 18.637 af, Atten= 3%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 8.8 min

Peak Depth= 2.81' @ 12.10 hrs
Capacity at bank full= 288.98 cfs
Inlet Invert= 781.20', Outlet Invert= 773.10'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 21.00'
Length= 870.4' Slope= 0.0093 '/'

Reach R4:

Inflow Area = 35.830 ac, Inflow Depth = 4.53"
Inflow = 195.62 cfs @ 12.04 hrs, Volume= 13.521 af
Outflow = 188.61 cfs @ 12.10 hrs, Volume= 13.521 af, Atten= 4%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.5 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 9.0 min

Peak Depth= 2.51' @ 12.06 hrs
Capacity at bank full= 278.89 cfs
Inlet Invert= 789.05', Outlet Invert= 781.20'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 828.1' Slope= 0.0095 '/'

Reach R5:

Inflow Area = 23.570 ac, Inflow Depth = 4.55"
Inflow = 133.14 cfs @ 11.99 hrs, Volume= 8.942 af
Outflow = 128.19 cfs @ 12.06 hrs, Volume= 8.942 af, Atten= 4%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.5 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 9.8 min

Peak Depth= 1.94' @ 12.02 hrs
Capacity at bank full= 321.50 cfs
Inlet Invert= 800.00', Outlet Invert= 789.05'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 869.2' Slope= 0.0126 '/'

Reach R6:

Inflow Area = 16.260 ac, Inflow Depth = 4.56"
Inflow = 100.79 cfs @ 11.97 hrs, Volume= 6.183 af
Outflow = 95.84 cfs @ 12.04 hrs, Volume= 6.183 af, Atten= 5%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.6 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 10.5 min

Peak Depth= 1.76' @ 12.00 hrs
Capacity at bank full= 291.88 cfs
Inlet Invert= 805.92', Outlet Invert= 797.85'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 777.2' Slope= 0.0104 '/'

Reach R7:

Inflow Area = 9.630 ac, Inflow Depth = 4.59"
Inflow = 70.29 cfs @ 11.95 hrs, Volume= 3.680 af
Outflow = 64.83 cfs @ 12.04 hrs, Volume= 3.680 af, Atten= 8%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 14.1 min

Peak Depth= 1.43' @ 11.98 hrs
Capacity at bank full= 291.30 cfs
Inlet Invert= 815.32', Outlet Invert= 805.92'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 908.9' Slope= 0.0103 '/'

Reach R8:

Inflow Area = 1.730 ac, Inflow Depth = 4.84"
Inflow = 14.79 cfs @ 11.91 hrs, Volume= 0.698 af
Outflow = 12.53 cfs @ 12.01 hrs, Volume= 0.698 af, Atten= 15%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.1 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 18.7 min

Peak Depth= 0.60' @ 11.95 hrs
Capacity at bank full= 290.87 cfs
Inlet Invert= 823.23', Outlet Invert= 815.32'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 3.0 2.0 '/' Top Width= 20.53'
Length= 767.1' Slope= 0.0103 '/'

Reach R9:

Inflow Area = 1.420 ac, Inflow Depth = 4.84"
Inflow = 12.18 cfs @ 11.91 hrs, Volume= 0.572 af
Outflow = 10.96 cfs @ 12.00 hrs, Volume= 0.572 af, Atten= 10%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 15.1 min

Peak Depth= 0.54' @ 11.94 hrs
Capacity at bank full= 304.79 cfs
Inlet Invert= 823.23', Outlet Invert= 816.31'
5.53' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 3.0 '/' Top Width= 20.53'
Length= 611.2' Slope= 0.0113 '/'

Pond SP: Stormwater Pond

Inflow Area = 103.460 ac, Inflow Depth = 4.63"
Inflow = 438.14 cfs @ 12.04 hrs, Volume= 39.923 af
Outflow = 0.14 cfs @ 26.12 hrs, Volume= 0.071 af, Atten= 100%, Lag= 845.0 min
Primary = 0.14 cfs @ 26.12 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 764.21' @ 26.12 hrs Surf.Area= 5.585 ac Storage= 39.882 af
Plug-Flow detention time= 1,476.5 min calculated for 0.071 af (0% of inflow)
Center-of-Mass det. time= 803.0 min (1,615.1 - 812.1)

Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	62.383 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
756.00	4.158	0.000	0.000
758.00	4.488	8.646	8.646
760.00	4.829	9.317	17.963
762.00	5.182	10.011	27.974
764.00	5.545	10.727	38.701
766.00	5.920	11.465	50.166
768.00	6.297	12.217	62.383

Device	Routing	Invert	Outlet Devices
#1	Primary	764.00'	**24.0" x 100.0' long Culvert X 2.00** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 764.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean

Primary OutFlow Max=0.13 cfs @ 26.12 hrs HW=764.21' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.13 cfs @ 0.5 fps)

Pond SP: Stormwater Pond

Inflow Area = 103.460 ac, Inflow Depth = 4.63"
Inflow = 438.14 cfs @ 12.04 hrs, Volume= 39.923 af
Outflow = 0.14 cfs @ 26.12 hrs, Volume= 0.071 af, Atten= 100%, Lag= 845.0 min
Primary = 0.14 cfs @ 26.12 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 764.21' @ 26.12 hrs Surf.Area= 5.585 ac Storage= 39.882 af
Plug-Flow detention time= 1,476.5 min calculated for 0.071 af (0% of inflow)
Center-of-Mass det. time= 803.0 min (1,615.1 - 812.1)

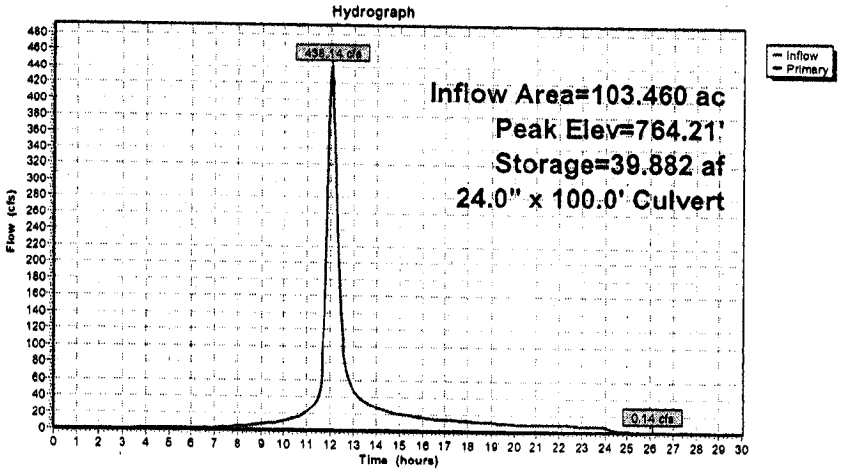
Volume	Invert	Avail.Storage	Storage Description
#1	756.00'	62.383 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

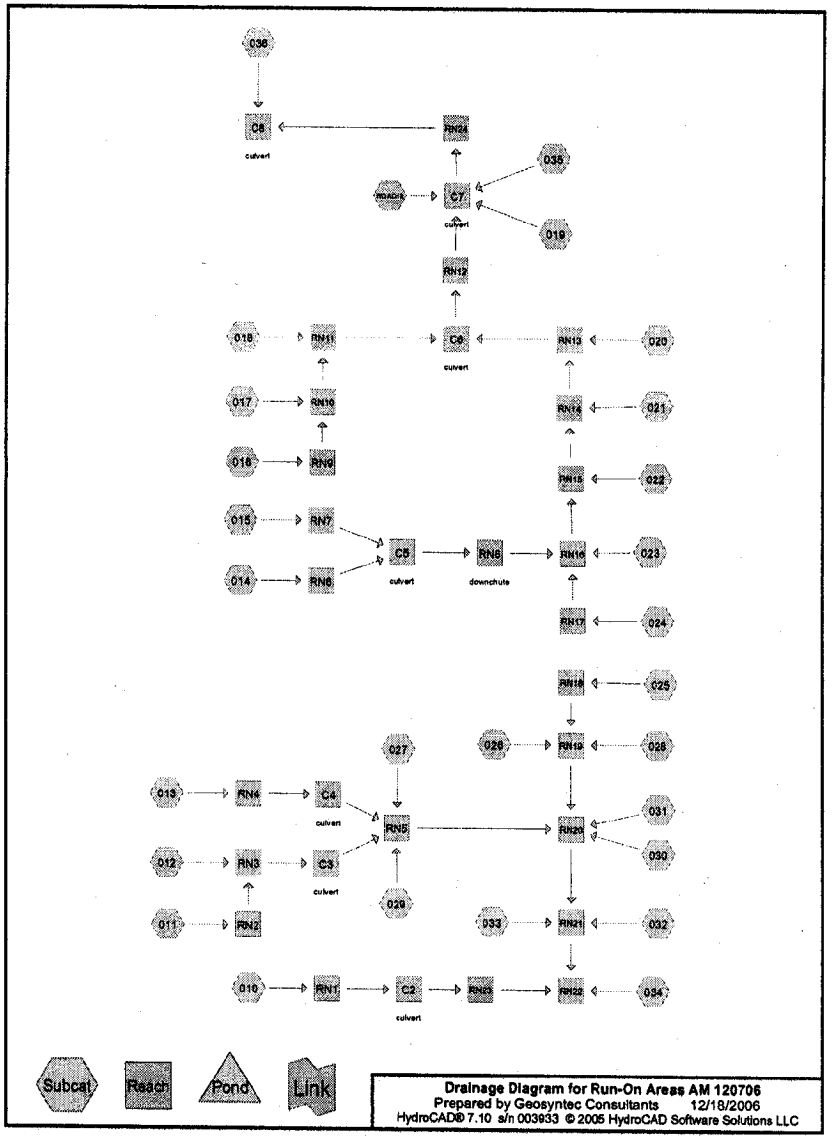
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
756.00	4.158	0.000	0.000
758.00	4.488	8.646	8.646
760.00	4.829	9.317	17.963
762.00	5.182	10.011	27.974
764.00	5.545	10.727	38.701
766.00	5.920	11.465	50.166
768.00	6.297	12.217	62.383

Device	Routing	Invert	Outlet Devices
#1	Primary	764.00'	**24.0" x 100.0' long Culvert X 2.00** RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 764.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean

Primary OutFlow Max=0.13 cfs @ 26.12 hrs HW=764.21' (Free Discharge)
1=Culvert (Barrel Controls 0.13 cfs @ 0.5 fps)

Pond SP: Stormwater Pond





Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 010: Runoff Area=5.320 ac Runoff Depth>3.67"
Tc=13.9 min CN=73 Runoff=26.07 cfs 1.625 af

Subcatchment 011: Runoff Area=4.380 ac Runoff Depth>3.67"
Tc=14.0 min CN=73 Runoff=21.39 cfs 1.338 af

Subcatchment 012: Runoff Area=9.360 ac Runoff Depth>3.66"
Tc=21.1 min CN=73 Runoff=36.96 cfs 2.854 af

Subcatchment 013: Runoff Area=7.000 ac Runoff Depth>3.66"
Tc=15.2 min CN=73 Runoff=32.85 cfs 2.138 af

Subcatchment 014: Runoff Area=11.310 ac Runoff Depth>3.67"
Tc=13.1 min CN=73 Runoff=56.93 cfs 3.456 af

Subcatchment 015: Runoff Area=13.200 ac Runoff Depth>3.66"
Tc=16.6 min CN=73 Runoff=59.39 cfs 4.030 af

Subcatchment 016: Runoff Area=5.380 ac Runoff Depth>3.67"
Tc=11.6 min CN=73 Runoff=28.40 cfs 1.645 af

Subcatchment 017: Runoff Area=5.080 ac Runoff Depth>3.67"
Tc=10.4 min CN=73 Runoff=27.82 cfs 1.553 af

Subcatchment 018: Runoff Area=2.360 ac Runoff Depth>3.67"
Tc=9.0 min CN=73 Runoff=13.63 cfs 0.722 af

Subcatchment 019: Runoff Area=5.590 ac Runoff Depth>3.66"
Flow Length=1,210' Tc=18.4 min CN=73 Runoff=23.85 cfs 1.706 af

Subcatchment 020: Runoff Area=0.960 ac Runoff Depth>3.67"
Tc=5.2 min CN=73 Runoff=6.26 cfs 0.294 af

Subcatchment 021: Runoff Area=4.240 ac Runoff Depth>3.67"
Tc=8.3 min CN=73 Runoff=25.14 cfs 1.297 af

Subcatchment 022: Runoff Area=3.690 ac Runoff Depth>3.68"
Tc=4.3 min CN=73 Runoff=25.01 cfs 1.130 af

Subcatchment 023: Runoff Area=0.810 ac Runoff Depth>3.68"
Tc=4.1 min CN=73 Runoff=5.53 cfs 0.248 af

Subcatchment 024: Runoff Area=1.640 ac Runoff Depth>3.67"
Tc=8.7 min CN=73 Runoff=9.58 cfs 0.502 af

Subcatchment 025: Runoff Area=1.680 ac Runoff Depth>3.67"
Tc=8.3 min CN=73 Runoff=9.96 cfs 0.514 af

Subcatchment 026: Runoff Area=1.230 ac Runoff Depth>3.67"
Tc=6.3 min CN=73 Runoff=7.75 cfs 0.377 af

Subcatchment 027: Runoff Area=2.060 ac Runoff Depth>3.67"
Tc=8.9 min CN=73 Runoff=11.95 cfs 0.630 af

Subcatchment 028: Runoff Area=0.390 ac Runoff Depth>3.68"
Tc=2.8 min CN=73 Runoff=2.75 cfs 0.119 af

Subcatchment 029: Runoff Area=1.820 ac Runoff Depth>3.67"
Tc=12.2 min CN=73 Runoff=9.43 cfs 0.556 af

Subcatchment 030: Runoff Area=1.250 ac Runoff Depth>3.67"
Tc=11.5 min CN=73 Runoff=6.62 cfs 0.382 af

Subcatchment 031: Runoff Area=0.450 ac Runoff Depth>3.68"
Tc=2.8 min CN=73 Runoff=3.17 cfs 0.138 af

Subcatchment 032: Runoff Area=4.640 ac Runoff Depth>3.67"
Tc=14.2 min CN=73 Runoff=23.48 cfs 1.478 af

Subcatchment 033: Runoff Area=1.760 ac Runoff Depth>3.68"
Tc=3.5 min CN=73 Runoff=12.26 cfs 0.539 af

Subcatchment 034: Runoff Area=1.640 ac Runoff Depth>3.67"
Tc=9.9 min CN=73 Runoff=9.15 cfs 0.502 af

Subcatchment 035: Runoff Area=0.790 ac Runoff Depth>3.65"
Flow Length=340' Tc=25.1 min CN=73 Runoff=2.81 cfs 0.241 af

Subcatchment 036: Runoff Area=0.140 ac Runoff Depth>3.68"
Flow Length=130' Tc=1.8 min CN=73 Runoff=0.98 cfs 0.043 af

Subcatchment ROAD12: Runoff Area=0.230 ac Runoff Depth>6.22"
Flow Length=480' Tc=3.1 min CN=98 Runoff=2.34 cfs 0.119 af

Reach C2: culvert Peak Depth=1.28' Max Vel=8.8 fps Inflow=25.38 cfs 1.623 af
D=36.0" n=0.013 L=69.8' S=0.0100 '/' Capacity=66.79 cfs Outflow=25.31 cfs 1.623 af

Reach C3: culvert Peak Depth=1.59' Max Vel=14.8 fps Inflow=56.11 cfs 4.184 af
D=36.0" n=0.013 L=69.8' S=0.0234 '/' Capacity=101.93 cfs Outflow=56.03 cfs 4.184 af

Reach C4: culvert Peak Depth=1.46' Max Vel=9.3 fps Inflow=31.89 cfs 2.133 af
D=36.0" n=0.013 L=63.5' S=0.0099 '/' Capacity=66.44 cfs Outflow=31.79 cfs 2.133 af

Reach C5: culvert Peak Depth=2.66' Max Vel=12.6 fps Inflow=112.30 cfs 7.470 af
D=48.0" n=0.013 L=80.0' S=0.0100 '/' Capacity=143.64 cfs Outflow=111.95 cfs 7.469 af

Reach C6: culvert Peak Depth=2.14' Max Vel=12.1 fps Inflow=165.23 cfs 14.773 af
D=48.0" n=0.013 L=80.4' S=0.0106 '/' Capacity=295.39 cfs Outflow=165.16 cfs 14.771 af

Reach C7: culvert Peak Depth=1.46' Max Vel=15.3 fps Inflow=189.56 cfs 16.822 af
D=48.0" n=0.013 L=160.0' S=0.0241 '/' Capacity=669.33 cfs Outflow=189.29 cfs 16.818 af

Reach C8: culvert Peak Depth=1.43' Max Vel=15.6 fps Inflow=189.13 cfs 16.857 af
D=48.0" n=0.013 L=60.0' S=0.0257 '/' Capacity=690.38 cfs Outflow=189.01 cfs 16.856 af

Reach RN1: Peak Depth=0.62' Max Vel=9.8 fps Inflow=26.07 cfs 1.625 af
n=0.030 L=528.7' S=0.1133 '/' Capacity=259.53 cfs Outflow=25.38 cfs 1.623 af

Reach RN10: Peak Depth=1.02' Max Vel=9.5 fps Inflow=49.44 cfs 3.191 af
n=0.030 L=627.6' S=0.0625 '/' Capacity=192.74 cfs Outflow=48.15 cfs 3.186 af

Reach RN11: Peak Depth=1.06' Max Vel=10.7 fps Inflow=58.11 cfs 3.908 af
n=0.030 L=378.5' S=0.0760 '/' Capacity=212.47 cfs Outflow=57.18 cfs 3.905 af

Reach RN12: Peak Depth=2.18' Max Vel=9.0 fps Inflow=165.16 cfs 14.771 af
n=0.030 L=430.0' S=0.0229 '/' Capacity=1,005.31 cfs Outflow=164.12 cfs 14.756 af

Reach RN13: Peak Depth=2.00' Max Vel=7.6 fps Inflow=122.83 cfs 10.876 af
n=0.030 L=246.6' S=0.0179 '/' Capacity=890.17 cfs Outflow=122.13 cfs 10.868 af

Reach RN14: Peak Depth=2.08' Max Vel=7.3 fps Inflow=124.10 cfs 10.604 af
n=0.030 L=712.3' S=0.0155 '/' Capacity=1,031.01 cfs Outflow=122.00 cfs 10.582 af

Reach RN15: Peak Depth=1.52' Max Vel=8.7 fps Inflow=121.75 cfs 9.337 af
n=0.030 L=1,158.2' S=0.0282 '/' Capacity=451.72 cfs Outflow=118.29 cfs 9.307 af

Reach RN16: Peak Depth=1.98' Max Vel=6.1 fps Inflow=120.22 cfs 8.217 af
n=0.030 L=311.5' S=0.0104 '/' Capacity=274.05 cfs Outflow=117.93 cfs 8.207 af

Reach RN17: Peak Depth=1.15' Max Vel=3.4 fps Inflow=9.58 cfs 0.502 af
n=0.030 L=416.6' S=0.0117 '/' Capacity=117.14 cfs Outflow=8.90 cfs 0.501 af

Reach RN18: Peak Depth=0.63' Max Vel=3.6 fps Inflow=9.96 cfs 0.514 af
n=0.030 L=392.0' S=0.0149 '/' Capacity=735.37 cfs Outflow=9.30 cfs 0.513 af

Reach RN19: Peak Depth=0.58' Max Vel=7.2 fps Inflow=17.38 cfs 1.009 af
n=0.030 L=391.7' S=0.0639 '/' Capacity=2,352.84 cfs Outflow=16.88 cfs 1.007 af

Reach RN2: Peak Depth=0.85' Max Vel=5.3 fps Inflow=21.39 cfs 1.338 af
n=0.030 L=432.3' S=0.0231 '/' Capacity=117.25 cfs Outflow=20.66 cfs 1.335 af

Reach RN20: Peak Depth=2.68' Max Vel=5.0 fps Inflow=112.83 cfs 9.019 af
n=0.030 L=229.0' S=0.0060 '/' Capacity=38,244.53 cfs Outflow=111.72 cfs 9.011 af

Reach RN21: Peak Depth=2.12' Max Vel=8.6 fps Inflow=132.96 cfs 11.029 af
n=0.030 L=872.8' S=0.0231 '/' Capacity=2,841.91 cfs Outflow=130.65 cfs 11.006 af

Reach RN22: Peak Depth=1.27' Max Vel=6.0 fps Inflow=156.55 cfs 13.129 af
n=0.030 L=465.1' S=0.0129 '/' Capacity=704.13 cfs Outflow=154.60 cfs 13.102 af

Reach RN23: Peak Depth=1.02' Max Vel=6.2 fps Inflow=25.31 cfs 1.623 af
n=0.030 L=116.9' S=0.0289 '/' Capacity=271.53 cfs Outflow=25.11 cfs 1.622 af

Reach RN24: Peak Depth=2.34' Max Vel=9.3 fps Inflow=189.29 cfs 16.818 af
n=0.030 L=91.5' S=0.0224 '/' Capacity=995.23 cfs Outflow=189.01 cfs 16.815 af

Reach RN3: Peak Depth=1.43' Max Vel=6.7 fps Inflow=57.06 cfs 4.189 af
n=0.030 L=371.4' S=0.0215 '/' Capacity=113.14 cfs Outflow=56.11 cfs 4.184 af

Reach RN4: Peak Depth=0.79' Max Vel=9.0 fps Inflow=32.85 cfs 2.138 af
n=0.030 L=731.1' S=0.0727 '/' Capacity=207.86 cfs Outflow=31.89 cfs 2.133 af

Reach RN5: Peak Depth=1.76' Max Vel=8.6 fps Inflow=99.38 cfs 7.503 af
n=0.030 L=591.7' S=0.0281 '/' Capacity=312.31 cfs Outflow=97.74 cfs 7.492 af

Reach RN6: Peak Depth=1.27' Max Vel=7.9 fps Inflow=56.93 cfs 3.456 af
n=0.030 L=947.6' S=0.0337 '/' Capacity=141.62 cfs Outflow=54.25 cfs 3.446 af

Reach RN7: Peak Depth=1.28' Max Vel=8.3 fps Inflow=59.39 cfs 4.030 af
n=0.030 L=490.9' S=0.0368 '/' Capacity=147.95 cfs Outflow=58.12 cfs 4.024 af

Reach RN8: downchute Peak Depth=1.56' Max Vel=11.7 fps Inflow=111.95 cfs 7.469 af
n=0.050 L=69.0' S=0.1664 '/' Capacity=188.67 cfs Outflow=111.63 cfs 7.468 af

Reach RN9: Peak Depth=1.06' Max Vel=5.0 fps Inflow=28.40 cfs 1.645 af
n=0.030 L=855.7' S=0.0162 '/' Capacity=98.04 cfs Outflow=26.82 cfs 1.638 af

Total Runoff Area = 98.600 ac Runoff Volume = 30.175 af Average Runoff Depth = 3.67"

Subcatchment 010:

Runoff = 26.07 cfs @ 12.06 hrs, Volume= 1.625 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
5.320	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 011:

Runoff = 21.39 cfs @ 12.06 hrs, Volume= 1.338 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
4.380	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 012:

Runoff = 36.96 cfs @ 12.14 hrs, Volume= 2.854 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
9.360	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 013:

Runoff = 32.85 cfs @ 12.07 hrs, Volume= 2.138 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
7.000	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 014:

Runoff = 56.93 cfs @ 12.05 hrs, Volume= 3.456 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
11.310	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 015:

Runoff = 59.39 cfs @ 12.09 hrs, Volume= 4.030 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
13.200	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 016:

Runoff = 28.40 cfs @ 12.03 hrs, Volume= 1.645 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
5.380	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 017:

Runoff = 27.82 cfs @ 12.02 hrs, Volume= 1.553 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
5.080	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 018:

Runoff = 13.63 cfs @ 12.00 hrs, Volume= 0.722 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
2.360	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 019:

Runoff = 23.85 cfs @ 12.11 hrs, Volume= 1.706 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
5.590	73	Woods/grass comb., Poor, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	300	0.0930	0.4		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
1.4	180	0.0890	2.1		**Shallow Concentrated Flow, Shallow Flow** Short Grass Pasture Kv= 7.0 fps
3.3	590	0.1800	3.0		**Shallow Concentrated Flow, Shallow Flow segment 2** Short Grass Pasture Kv= 7.0 fps
1.3	140	0.0700	1.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.4	1,210	Total			

Subcatchment 020:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.26 cfs @ 11.96 hrs, Volume= 0.294 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.960	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 021:

Runoff = 25.14 cfs @ 12.00 hrs, Volume= 1.297 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
4.240	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 022:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 25.01 cfs @ 11.95 hrs, Volume= 1.130 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
3.690	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 023:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 5.53 cfs @ 11.95 hrs, Volume= 0.248 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.810	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 024:

Runoff = 9.58 cfs @ 12.00 hrs, Volume= 0.502 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.640	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 025:

Runoff = 9.96 cfs @ 12.00 hrs, Volume= 0.514 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.680	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 026:

Runoff = 7.75 cfs @ 11.98 hrs, Volume= 0.377 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.230	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 027:

Runoff = 11.95 cfs @ 12.00 hrs, Volume= 0.630 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
2.060	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 028:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.75 cfs @ 11.93 hrs, Volume= 0.119 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.390	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 029:

Runoff = 9.43 cfs @ 12.04 hrs, Volume= 0.556 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.820	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 030:

Runoff = 6.62 cfs @ 12.03 hrs, Volume= 0.382 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.250	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 031:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.17 cfs @ 11.93 hrs, Volume= 0.138 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.450	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 032:

Runoff = 23.48 cfs @ 12.06 hrs, Volume= 1.478 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
4.840	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 033:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 12.26 cfs @ 11.94 hrs, Volume= 0.539 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.760	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 034:

Runoff = 9.15 cfs @ 12.01 hrs, Volume= 0.502 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
1.640	73	Woods/grass comb., Poor, HSG B

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

Subcatchment 035:

Runoff = 2.81 cfs @ 12.19 hrs, Volume= 0.241 af, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.790	73	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.4	300	0.0170	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.7	40	0.0170	0.9		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.1	340	Total			

Subcatchment 036:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.98 cfs @ 11.92 hrs, Volume= 0.043 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.140	73	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	40	0.2500	0.4		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.1	90	0.0440	12.9	905.39	**Channel Flow, channel** Area= 70.0 sf Perim= 50.4' r= 1.39' n= 0.030
1.8	130	Total			

Subcatchment ROAD12:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.34 cfs @ 11.93 hrs, Volume= 0.119 af, Depth> 6.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Y 24 H Rainfall=6.70"

Area (ac)	CN	Description
0.230	98	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	10	0.0100	0.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.40"
2.9	470	0.0170	2.7	0.54	**Channel Flow,** Area= 0.2 sf Perim= 2.6' r= 0.08' n= 0.013
3.1	480	Total			

Reach C2: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 2% of Reach RN1 bottom

Inflow Area = 5.320 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 25.38 cfs @ 12.09 hrs, Volume= 1.623 af
Outflow = 25.31 cfs @ 12.09 hrs, Volume= 1.623 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 0.4 min

Peak Depth= 1.28' @ 12.09 hrs
Capacity at bank full= 66.79 cfs
Inlet Invert= 768.08', Outlet Invert= 767.38'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 69.8' Slope= 0.0100 '/'

Reach C3: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 20% of Reach RN3 bottom

Inflow Area = 13.740 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 56.11 cfs @ 12.15 hrs, Volume= 4.184 af
Outflow = 56.03 cfs @ 12.15 hrs, Volume= 4.184 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.3 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.59' @ 12.15 hrs
Capacity at bank full= 101.93 cfs
Inlet Invert= 810.00', Outlet Invert= 808.37'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 69.8' Slope= 0.0234 '/'

Reach C4: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 3% of Reach RN4 bottom

Inflow Area = 7.000 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 31.89 cfs @ 12.11 hrs, Volume= 2.133 af
Outflow = 31.79 cfs @ 12.12 hrs, Volume= 2.133 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.46' @ 12.12 hrs
Capacity at bank full= 66.44 cfs
Inlet Invert= 808.75', Outlet Invert= 808.12'
36.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 63.5' Slope= 0.0099 '/'

Reach C5: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 8% of Reach RN6 bottom
[61] Hint: Submerged 15% of Reach RN7 bottom

Inflow Area = 24.510 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 112.30 cfs @ 12.11 hrs, Volume= 7.470 af
Outflow = 111.95 cfs @ 12.12 hrs, Volume= 7.469 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.6 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.66' @ 12.12 hrs
Capacity at bank full= 143.64 cfs
Inlet Invert= 829.92', Outlet Invert= 829.12'
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 80.0' Slope= 0.0100 '/'

Reach C6: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 7% of Reach RN11 bottom
[61] Hint: Submerged 48% of Reach RN13 bottom

Inflow Area = 48.670 ac, Inflow Depth > 3.64" for 100 Y 24 H event
Inflow = 165.23 cfs @ 12.15 hrs, Volume= 14.773 af
Outflow = 165.16 cfs @ 12.16 hrs, Volume= 14.771 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.1 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.6 fps, Avg. Travel Time= 0.3 min

Peak Depth= 2.14' @ 12.15 hrs
Capacity at bank full= 295.39 cfs
Inlet Invert= 766.18', Outlet Invert= 765.33'
A factor of 2.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 80.4' Slope= 0.0106 '/'

Reach C7: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 15% of Reach RN12 bottom

Inflow Area = 55.280 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 189.56 cfs @ 12.16 hrs, Volume= 16.822 af
Outflow = 189.29 cfs @ 12.17 hrs, Volume= 16.818 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.3 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.1 fps, Avg. Travel Time= 0.5 min

Peak Depth= 1.46' @ 12.17 hrs
Capacity at bank full= 669.33 cfs
Inlet Invert= 755.50', Outlet Invert= 751.64'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013 Concrete pipe, straight & clean
Length= 160.0' Slope= 0.0241 '/'

Reach C8: culvert

[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 70% of Reach RN24 bottom

Inflow Area = 55.420 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 189.13 cfs @ 12.17 hrs, Volume= 16.857 af
Outflow = 189.01 cfs @ 12.17 hrs, Volume= 16.856 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 15.6 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.2 fps, Avg. Travel Time= 0.2 min

Peak Depth= 1.43' @ 12.17 hrs
Capacity at bank full= 690.38 cfs
Inlet Invert= 749.59', Outlet Invert= 748.05'
A factor of 3.00 has been applied to the supplied storage and discharge data
48.0" Diameter Pipe, n= 0.013
Length= 60.0' Slope= 0.0257 '/'

Reach RN1:

Inflow Area = 5.320 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 26.07 cfs @ 12.06 hrs, Volume= 1.625 af
Outflow = 25.38 cfs @ 12.09 hrs, Volume= 1.623 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.8 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 3.1 min

Peak Depth= 0.62' @ 12.07 hrs
Capacity at bank full= 259.53 cfs
Inlet Invert= 828.00', Outlet Invert= 768.08'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 528.7' Slope= 0.1133 '/'

Reach RN10:

[61] Hint: Submerged 7% of Reach RN9 bottom

Inflow Area = 10.460 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 49.44 cfs @ 12.06 hrs, Volume= 3.191 af
Outflow = 48.15 cfs @ 12.09 hrs, Volume= 3.186 af, Atten= 3%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.5 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 3.5 min

Peak Depth= 1.02' @ 12.07 hrs
Capacity at bank full= 192.74 cfs
Inlet Invert= 834.16', Outlet Invert= 794.93'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 627.6' Slope= 0.0625 '/'

Reach RN11:

[61] Hint: Submerged 3% of Reach RN10 bottom

Inflow Area = 12.820 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 58.11 cfs @ 12.07 hrs, Volume= 3.908 af
Outflow = 57.18 cfs @ 12.09 hrs, Volume= 3.905 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.7 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.4 fps, Avg. Travel Time= 1.9 min

Peak Depth= 1.06' @ 12.07 hrs
Capacity at bank full= 212.47 cfs
Inlet Invert= 794.93', Outlet Invert= 766.18'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 378.5' Slope= 0.0760 '/'

Reach RN12:

[62] Warning: Submerged 33% of Reach C6 inlet

Inflow Area = 48.670 ac, Inflow Depth > 3.64" for 100 Y 24 H event
Inflow = 165.16 cfs @ 12.16 hrs, Volume= 14.771 af
Outflow = 164.12 cfs @ 12.18 hrs, Volume= 14.756 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.0 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 2.1 min

Peak Depth= 2.18' @ 12.16 hrs
Capacity at bank full= 1,005.31 cfs
Inlet Invert= 765.33', Outlet Invert= 755.50'
4.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 430.0' Slope= 0.0229 '/'

Reach RN13:

[61] Hint: Submerged 18% of Reach RN14 bottom

Inflow Area = 35.850 ac, Inflow Depth > 3.64" for 100 Y 24 H event
Inflow = 122.83 cfs @ 12.23 hrs, Volume= 10.876 af
Outflow = 122.13 cfs @ 12.24 hrs, Volume= 10.868 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.6 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.5 min

Peak Depth= 2.00' @ 12.24 hrs
Capacity at bank full= 890.17 cfs
Inlet Invert= 770.60', Outlet Invert= 766.18'
4.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 246.6' Slope= 0.0179 '/'

Reach RN14:

[61] Hint: Submerged 6% of Reach RN15 bottom

Inflow Area = 34.890 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 124.10 cfs @ 12.19 hrs, Volume= 10.604 af
Outflow = 122.00 cfs @ 12.23 hrs, Volume= 10.582 af, Atten= 2%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.3 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 2.6 fps, Avg. Travel Time= 4.5 min

Peak Depth= 2.08' @ 12.20 hrs
Capacity at bank full= 1,031.01 cfs
Inlet Invert= 781.64', Outlet Invert= 770.60'
4.00' x 5.50' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 26.00'
Length= 712.3' Slope= 0.0155 '/'

Reach RN15:

[61] Hint: Submerged 47% of Reach RN16 bottom

Inflow Area = 30.650 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 121.75 cfs @ 12.14 hrs, Volume= 9.337 af
Outflow = 118.29 cfs @ 12.20 hrs, Volume= 9.307 af, Atten= 3%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.7 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 7.0 min

Peak Depth= 1.52' @ 12.16 hrs
Capacity at bank full= 451.72 cfs
Inlet Invert= 814.27', Outlet Invert= 781.64'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 1,158.2' Slope= 0.0282 '/'

Reach RN16:

[61] Hint: Submerged 40% of Reach RN17 bottom
[61] Hint: Submerged 16% of Reach RN8 bottom

Inflow Area = 26.960 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 120.22 cfs @ 12.11 hrs, Volume= 8.217 af
Outflow = 117.93 cfs @ 12.14 hrs, Volume= 8.207 af, Atten= 2%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.1 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.98' @ 12.12 hrs
Capacity at bank full= 274.05 cfs
Inlet Invert= 817.50', Outlet Invert= 814.27'
6.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 311.5' Slope= 0.0104 '/'

Reach RN17:

Inflow Area = 1.640 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 9.58 cfs @ 12.00 hrs, Volume= 0.502 af
Outflow = 8.90 cfs @ 12.06 hrs, Volume= 0.501 af, Atten= 7%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.4 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 5.3 min

Peak Depth= 1.15' @ 12.03 hrs
Capacity at bank full= 117.14 cfs
Inlet Invert= 822.36', Outlet Invert= 817.50'
0.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 416.6' Slope= 0.0117 '/'

Reach RN18:

Inflow Area = 1.680 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 9.96 cfs @ 12.00 hrs, Volume= 0.514 af
Outflow = 9.30 cfs @ 12.05 hrs, Volume= 0.513 af, Atten= 7%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 6.3 min

Peak Depth= 0.63' @ 12.02 hrs
Capacity at bank full= 735.37 cfs
Inlet Invert= 822.36', Outlet Invert= 816.53'
3.00' x 5.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 23.00'
Length= 392.0' Slope= 0.0149 '/'

Reach RN19:

[61] Hint: Submerged 10% of Reach RN18 bottom

Inflow Area = 3.300 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 17.38 cfs @ 11.99 hrs, Volume= 1.009 af
Outflow = 16.88 cfs @ 12.02 hrs, Volume= 1.007 af, Atten= 3%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 2.9 min

Peak Depth= 0.58' @ 12.00 hrs
Capacity at bank full= 2,352.84 cfs
Inlet Invert= 816.53', Outlet Invert= 791.50'
3.00' x 6.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 27.00'
Length= 391.7' Slope= 0.0639 '/'

Reach RN2:

Inflow Area = 4.380 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 21.39 cfs @ 12.06 hrs, Volume= 1.338 af
Outflow = 20.66 cfs @ 12.10 hrs, Volume= 1.335 af, Atten= 3%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 4.5 min

Peak Depth= 0.85' @ 12.08 hrs
Capacity at bank full= 117.25 cfs
Inlet Invert= 828.00', Outlet Invert= 818.00'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 432.3' Slope= 0.0231 '/'

Reach RN20:

[61] Hint: Submerged 11% of Reach RN19 bottom
[61] Hint: Submerged 16% of Reach RN5 bottom

Inflow Area = 29.620 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 112.83 cfs @ 12.12 hrs, Volume= 9.019 af
Outflow = 111.72 cfs @ 12.15 hrs, Volume= 9.011 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 1.9 min

Peak Depth= 2.68' @ 12.13 hrs
Capacity at bank full= 38,244.53 cfs
Inlet Invert= 791.50', Outlet Invert= 790.12'
3.00' x 29.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 119.00'
Length= 229.0' Slope= 0.0060 '/'

Reach RN21:

[62] Warning: Submerged 3% of Reach RN20 inlet

Inflow Area = 36.220 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 132.96 cfs @ 12.12 hrs, Volume= 11.029 af
Outflow = 130.65 cfs @ 12.17 hrs, Volume= 11.006 af, Atten= 2%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 3.3 fps, Avg. Travel Time= 4.5 min

Peak Depth= 2.12' @ 12.15 hrs
Capacity at bank full= 2,841.91 cfs
Inlet Invert= 790.12', Outlet Invert= 770.00'
3.00' x 8.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 35.00'
Length= 872.8' Slope= 0.0231 '/'

Reach RN22:

[61] Hint: Submerged 6% of Reach RN21 bottom
[63] Warning: Exceeded Reach RN23 inflow depth by 3.09' @ 12.30 hrs

Inflow Area = 43.180 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 156.55 cfs @ 12.15 hrs, Volume= 13.129 af
Outflow = 154.60 cfs @ 12.18 hrs, Volume= 13.102 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 4.5 min

Peak Depth= 1.27' @ 12.16 hrs
Capacity at bank full= 704.13 cfs
Inlet Invert= 770.00', Outlet Invert= 764.00'
18.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 30.00'
Length= 465.1' Slope= 0.0129 '/'

Reach RN23:

[62] Warning: Submerged 11% of Reach C2 inlet

Inflow Area = 5.320 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 25.31 cfs @ 12.09 hrs, Volume= 1.623 af
Outflow = 25.11 cfs @ 12.10 hrs, Volume= 1.622 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 1.0 min

Peak Depth= 1.02' @ 12.09 hrs
Capacity at bank full= 271.53 cfs
Inlet Invert= 767.38', Outlet Invert= 764.00'
2.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 116.9' Slope= 0.0289 '/'

Reach RN24:

[61] Hint: Submerged 61% of Reach C7 bottom

Inflow Area = 55.280 ac, Inflow Depth > 3.65" for 100 Y 24 H event
Inflow = 189.29 cfs @ 12.17 hrs, Volume= 16.818 af
Outflow = 189.01 cfs @ 12.17 hrs, Volume= 16.815 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.3 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 0.5 min

Peak Depth= 2.34' @ 12.17 hrs
Capacity at bank full= 995.23 cfs
Inlet Invert= 751.64', Outlet Invert= 749.59'
4.00' x 5.00' deep channel, n= 0.030
Side Slope Z-value= 2.0 '/' Top Width= 24.00'
Length= 91.5' Slope= 0.0224 '/'

Reach RN3:

[61] Hint: Submerged 14% of Reach RN2 bottom

Inflow Area = 13.740 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 57.06 cfs @ 12.12 hrs, Volume= 4.189 af
Outflow = 56.11 cfs @ 12.15 hrs, Volume= 4.184 af, Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.7 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 2.7 min

Peak Depth= 1.43' @ 12.13 hrs
Capacity at bank full= 113.14 cfs
Inlet Invert= 818.00', Outlet Invert= 810.00'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 371.4' Slope= 0.0215 '/'

Reach RN4:

Inflow Area = 7.000 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 32.85 cfs @ 12.07 hrs, Volume= 2.138 af
Outflow = 31.89 cfs @ 12.11 hrs, Volume= 2.133 af, Atten= 3%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.0 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 4.5 min

Peak Depth= 0.79' @ 12.09 hrs
Capacity at bank full= 207.86 cfs
Inlet Invert= 861.90', Outlet Invert= 808.75'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 731.1' Slope= 0.0727 '/'

Reach RN5:

[61] Hint: Submerged 92% of Reach C3 bottom
[62] Warning: Submerged 37% of Reach C4 inlet

Inflow Area = 24.620 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 99.38 cfs @ 12.12 hrs, Volume= 7.503 af
Outflow = 97.74 cfs @ 12.15 hrs, Volume= 7.492 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 3.2 min

Peak Depth= 1.76' @ 12.13 hrs
Capacity at bank full= 312.31 cfs
Inlet Invert= 808.12', Outlet Invert= 791.50'
3.00' x 3.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 15.00'
Length= 591.7' Slope= 0.0281 '/'

Reach RN6:

Inflow Area = 11.310 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 56.93 cfs @ 12.05 hrs, Volume= 3.456 af
Outflow = 54.25 cfs @ 12.11 hrs, Volume= 3.446 af, Atten= 5%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.9 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 6.3 min

Peak Depth= 1.27' @ 12.08 hrs
Capacity at bank full= 141.62 cfs
Inlet Invert= 861.90', Outlet Invert= 829.92'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 947.6' Slope= 0.0337 '/'

Reach RN7:

Inflow Area = 13.200 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 59.39 cfs @ 12.09 hrs, Volume= 4.030 af
Outflow = 58.12 cfs @ 12.12 hrs, Volume= 4.024 af, Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.3 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 3.0 min

Peak Depth= 1.28' @ 12.10 hrs
Capacity at bank full= 147.95 cfs
Inlet Invert= 848.00', Outlet Invert= 829.92'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 490.9' Slope= 0.0368 '/'

Reach RN8: downchute

[62] Warning: Submerged 19% of Reach C5 inlet

Inflow Area = 24.510 ac, Inflow Depth > 3.66" for 100 Y 24 H event
Inflow = 111.95 cfs @ 12.12 hrs, Volume= 7.469 af
Outflow = 111.63 cfs @ 12.12 hrs, Volume= 7.468 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.7 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.56' @ 12.12 hrs
Capacity at bank full= 188.67 cfs
Inlet Invert= 829.12', Outlet Invert= 817.64'
3.00' x 2.00' deep channel, n= 0.050 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 69.0' Slope= 0.1664 '/'

Reach RN9:

Inflow Area = 5.380 ac, Inflow Depth > 3.67" for 100 Y 24 H event
Inflow = 28.40 cfs @ 12.03 hrs, Volume= 1.645 af
Outflow = 26.82 cfs @ 12.12 hrs, Volume= 1.638 af, Atten= 6%, Lag= 4.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 9.4 min

Peak Depth= 1.06' @ 12.07 hrs
Capacity at bank full= 98.04 cfs
Inlet Invert= 848.00', Outlet Invert= 834.16'
3.00' x 2.00' deep channel, n= 0.030 Rubble masonry, cemented
Side Slope Z-value= 2.0 '/' Top Width= 11.00'
Length= 855.7' Slope= 0.0162 '/'

Attachment 9

Sediment Storage Volume

Written by: Sowmya Bulusu / Alexander Maestre Date: 12/07/06 Reviewed by: Ganesh Gopalakrishnan Date: 12/13/06

Client: TVA Project: Kingston Fossil Plant Gypsum Disposal Facility Project/Proposal No.: GR3731 Task No.: 06

SEDIMENT STORAGE VOLUME

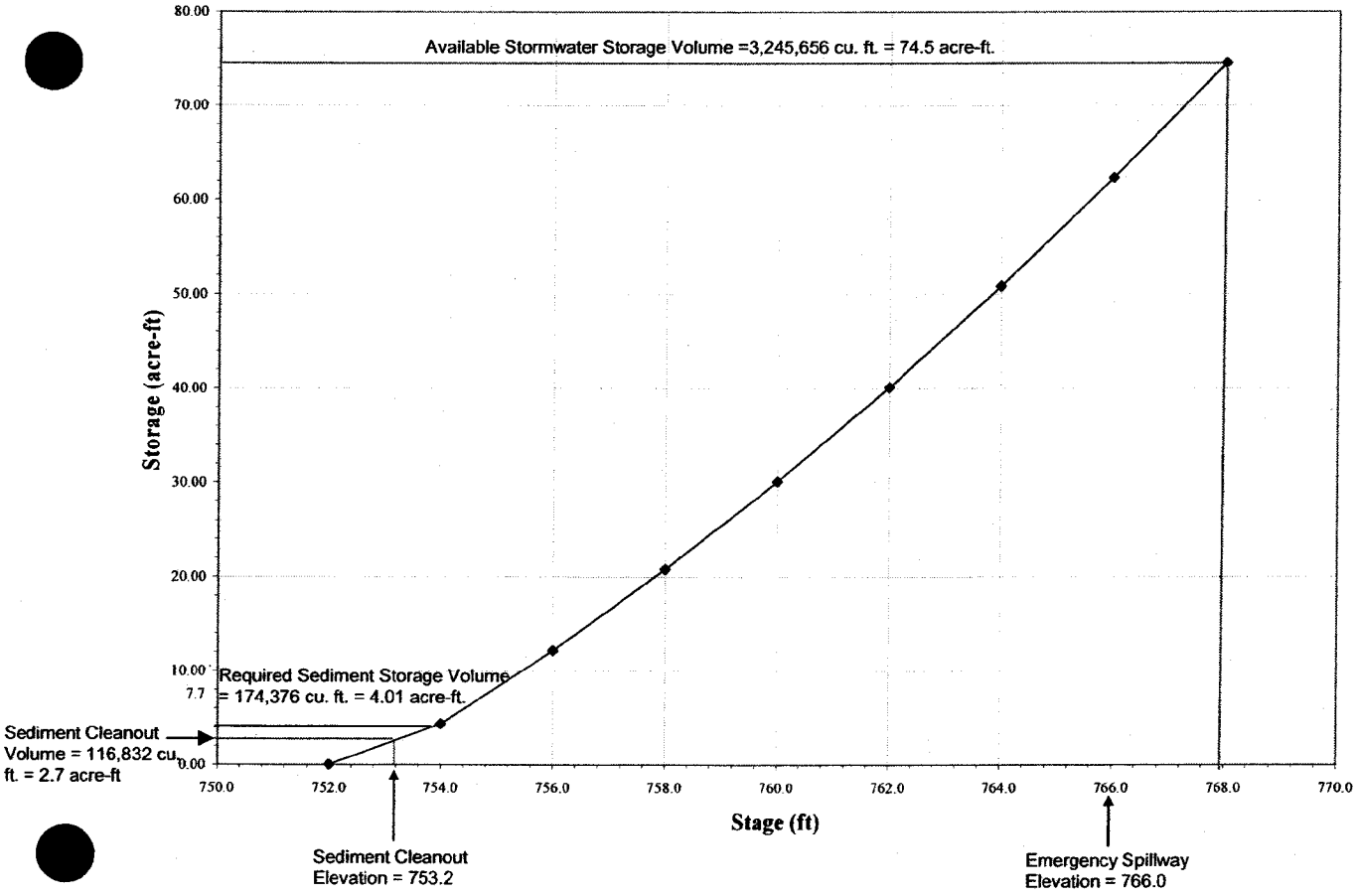
The stormwater pond is designed to hold 67 cubic yards per acre of drainage area (sediment storage volume) and the calculated runoff volume from a 25-year 24-hour design storm without the water elevation reaching the elevation of the emergency spillway. For the 100-year 24-hour storm event, the water elevation reaches the emergency spillway, and a small discharge (0.14 cfs) occurs through it.

Required Sediment Storage Volume = 67 cubic yards / acre of disturbed area

Stormwater Pond (SP):

Total disturbed area flowing to stormwater pond= 96.6 acres

∴ Required Sediment Storage Volume = 6472.2 cubic-yards
= 174,749 cubic-ft. = 4.01 acre-ft.
< Available Stormwater Storage Volume, OK



Based on the stage storage relationship shown above, for the Stormwater Pond:

Sediment Cleanout Volume = 0.67 * Required Sediment Storage Volume
= 0.67 x 174,376 cubic-ft
= 116,832 cubic-ft. = 2.68 acre-ft.

Sediment Cleanout Elevation = 753.2 ft.

Written by: Sowmya Bulusu / Alexander Maestre Date: 12/07/06 Reviewed by: Ganesh Gopalakrishnan Date: 12/13/06

Client: TVA Project: Kingston Fossil Plant Gypsum Disposal Facility Project/Proposal No.: GR3731 Task No.: 06

Attachment 10

Design of Drainage Benches

Written by: Sowmya Bulusu / Alexander Maestre Date: 12/07/06 Reviewed by: Ganesh Gopalakrishnan Date: 12/13/06

Client: TVA Project: Kingston Fossil Plant Gypsum Disposal Facility Project/Proposal No.: GR3731 Task No.: 06

DESIGN OF DRAINAGE BENCH

METHODOLOGY

The drainage bench design is checked for the critical bench (i.e., the drainage bench with the maximum discharge). In order to determine the location of the critical bench, the peak discharge from each Subarea located on the final cover during a 25-year 24-hour storm (computed using HydroCAD) is plotted against the plan area of the Subarea. As indicated in Figure 1, a linear relationship is observed between area and peak discharge.

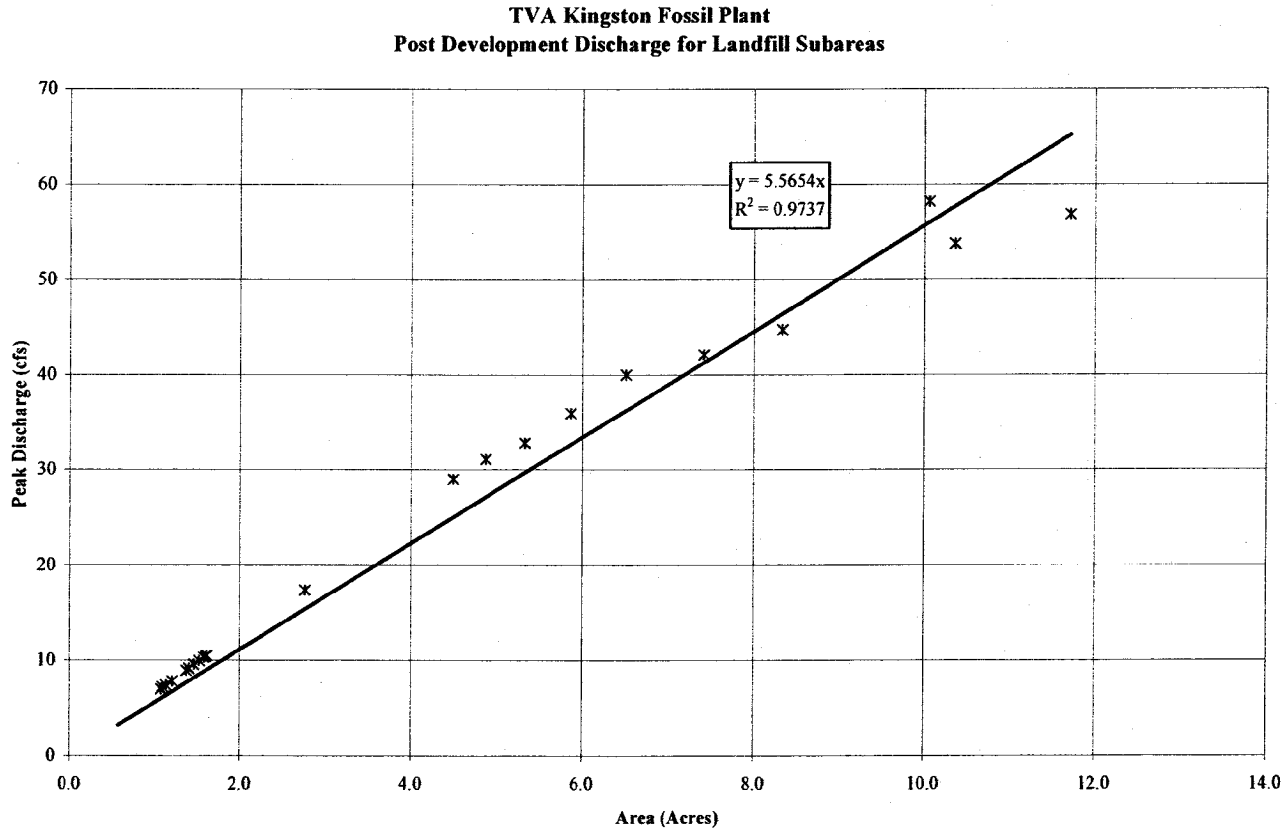


Figure 1. Post Development Discharge for Final Cover Subareas.

Based on the observed linear relationship, the location of the critical bench is estimated as the bench with the largest contributing cover area. The location is shown on the attached Figure 2. The linear relationship is used to estimate the peak discharge in the critical bench during a 25-year 24-hour storm.

Contributing final cover area for the critical bench = 2.33 acres

Based on the Relation Shown above:
During a 25-year 24-hour storm, peak bench flow = 2.33 acres * 5.57 cfs/acre = 12.98 cfs

The flow capacity of the bench is calculated using Manning's equation for open channel flow.
As indicated below:
Bench capacity at full flow depth = 83.9 cfs > 12.98 cfs ==> OK
At design discharge,
Flow depth = 0.75 ft ==> Freeboard = 1.5 – 0.75 = 0.75 ft. = 9 in.

Written by: Sowmya Bulusu / Alexander Maestre Date: 12/07/06 Reviewed by: Ganesh Gopalakrishnan Date: 12/13/06

Client: TVA Project: Kingston Fossil Plant Gypsum Disposal Facility Project/Proposal No.: GR3731 Task No.: 06

Design/Check: Trapezoidal/Triangular Channel

Methodology: Manning's Equation

Project: TVA Kingston Fossil Plant

Ditch ID: **Drainage Bench**

Peak Discharge, Q_{max} =	12.98	cfs
Bottom Width, B =	0.00	ft
Left Side Slope, Z_1 =	10.00	horizontal : 1 vertical
Right Side Slope, Z_2 =	3.00	horizontal : 1 vertical
Manning's Roughness Coeff., n =	0.0300	
Longitudinal Channel Slope, S_o =	0.0200	ft/ft
Rip-Rap size needed, d_{50} =	2.0379	inches
mpirical Manning's Roughness Coeff., n =		

Depth of Flow Y ft	Area of Flow A ft^2	Wetted Perimeter P ft	Hydraulic Radius R=A/P ft	Channel Slope ft/ft	Average Velocity V ft/s	Discharge (Flow Rate) Q=AV ft^3/s	Avg. Tractive Stress τ_o lb/ft^2	Comments
0.00	0.00	0.00	0.00	0.020	0.00	0.0	0.00	
0.13	0.10	1.65	0.06	0.020	1.09	0.1	0.08	
0.25	0.41	3.30	0.12	0.020	1.74	0.7	0.15	
0.38	0.91	4.95	0.18	0.020	2.28	2.1	0.23	
0.50	1.63	6.61	0.25	0.020	2.76	4.5	0.31	
0.63	2.54	8.26	0.31	0.020	3.20	8.1	0.38	
0.75	3.66	9.91	0.37	0.020	3.61	13.2	0.46	
0.88	4.98	11.56	0.43	0.020	4.00	19.9	0.54	
1.00	6.50	13.21	0.49	0.020	4.38	28.4	0.61	
1.13	8.23	14.86	0.55	0.020	4.73	38.9	0.69	
1.25	10.16	16.52	0.61	0.020	5.08	51.6	0.77	
1.38	12.29	18.17	0.68	0.020	5.41	66.5	0.84	
1.50	14.63	19.82	0.74	0.020	5.74	83.9	0.92	
0.75	3.61	9.84	0.37	0.020	3.60	12.98	0.46	DESIGN Q