

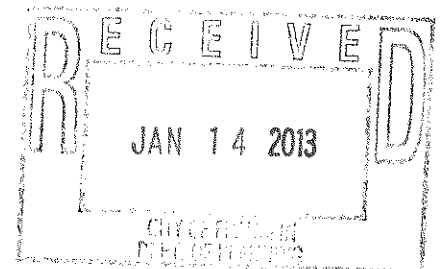
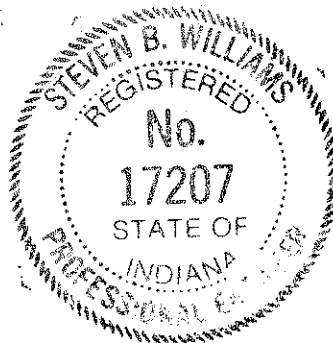
WHITAKER/PICKETT DRAINAGE REPORT

REV. 1-11-13

Whitaker and Pickett properties total 26.83 acres and flow overland west to two 24" CMP'S under Hudson Drive outletting into a one acre wet detention pond constructed with Hudson Commercial Park. Construction is proposed on the 10 acre lot only and the 16.83 acre block is not evaluated in this report at this time. All non-development areas of the 10 acre lot will be converted to a grass cover crop (i.e. clover). The development area includes 1.08 acres of building, concrete aprons, and paved drives. The soils are 30% crosby (type "C") and 70% miami (type "B"). The existing runoff factor of 62 for the 10 acres plus three acres offsite will be for a meadow as it partially is or has all been in the past, maych county ordinance requirements and to provide a conservative existing condition. The future condition runoff factor is 65. The existing time of concentration is 64.8 minutes and the future time of concentration is 27.2 minutes per TR-55 calculations. Utilizing a Huff 2ND Quartile distribution we see the existing peaks are: Q2=0.48cfs(12hr), Q10=2.16cfs(6hr) and Q100=6.06cfs(3hr). The future peaks are: Q2=0.71cfs(12hr), Q10=3.50cfs(2hr) and Q100=10.39cfs(2hr). We will use a 4" diameter inlet with a weir overflow to a 12" diameter outlet for a Q10 of 0.36fs and a Q100 of 2.16cfs with dry detention. I am raising the two weir overflows 6" to compensate for lost storage since the bottom is not flat in a dry basin. For water quality 6" perforated PVC underdrains are proposed in #8 washed stone envelopes 1' deep and a retained 1/2" direct from the 1.08 acre developed area (1960cf) is provided by a 0.75' deep sump storage in the dry pond forcing the first runoff through the stone envelopes. Water Quality is also provided by the existing wet detention pond.

Prepared by:


Steven B. Williams, PELS
1-11-13



FILE COPY

10 AC. 70% Type "B" Maine
30% Type "C" Crosby

Meadow: .70(50) = 40.6
21.3

61.9 or 62 ✓

TYPE "B" 25% HAMM } 9.6 AC.
TYPE "B" 5% BROOKSTON }
TYPE "C" 70% CROSBY = 22.4 AC

R. 4 E.



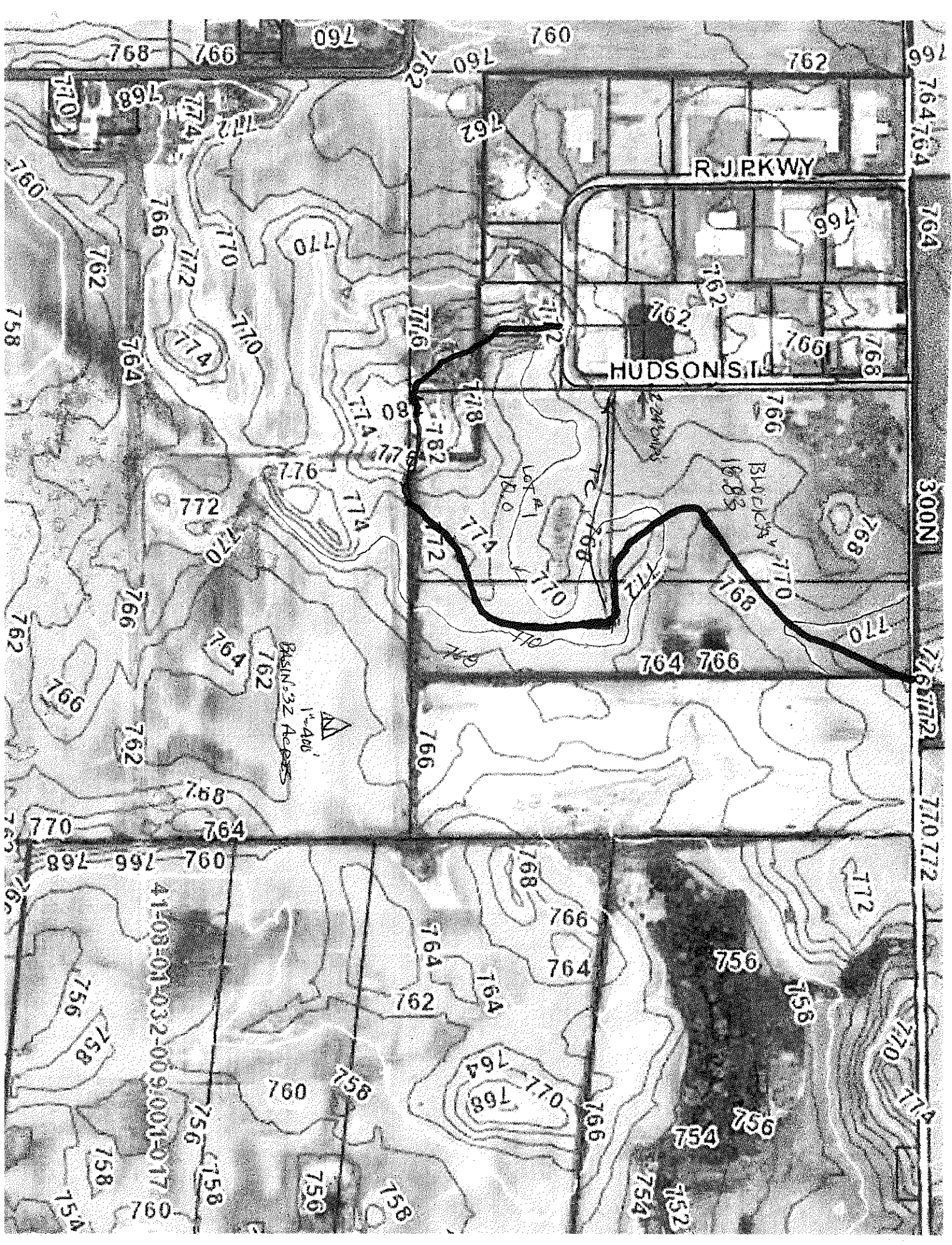


Table 3.9 Curve Numbers for Various Cover and Soil Types [AMC=II] (NEH-4)

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B ¹	C ²	D
Cultivated land: without conservation treatment	72	81	88	91
: with conservation treatment	62	71	78	81
Pasture or range land: poor condition	68	79	86	89
: good condition	39	61	74	80
Meadow: good condition	30	58 (62)	71	78
Wood or Forest land: thin stand, poor cover, no mulch	45	66	77	83
: good cover	25	55	70	77
Open spaces: lawns, parks, golf courses, ceme- teries, etc.				
good condition: grass cover on 75% or more of the area	39	61	74	80
fair condition: grass cover on 50% to 75% of the area	49	69	79	84
Commercial and business areas (85% impervious)	89	92	94	95
Industrial districts (72% impervious)	81	88	91	93
Residential: ¹				
Average lot size		Average % Impervious ²		
1/8 acre or less	65	77	85	90
1/4 acre	38	61	75	87
1/3 acre	30	57	72	81
1/2 acre	25	54	70	85
1 acre	20	51	68	84
Paved parking lots, roofs, driveways, etc. ³	98	98	98	98
Streets and roads:				
paved with curbs and storm sewers ³	98	98	98	98
gravel	76	85	89	91
dirt	72	82	87	89
Urban areas:				
Low density (15-18% impervious surfaces)	69-71	75-78	82-84	86
Medium density (21-27% impervious surfaces)	71-73	77-80	84-86	88
High density (50-75% impervious surfaces)	73-75	79-82	86-88	90

¹Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

²The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

³In some warmer climates of the country a curve number of 95 may be used.

Future 1.08 Ac @ 98 = 105.44
 Pasture 11.92 Ac @ 62 = 739.40
 844.88 = 65

(1) Prevent spread of a fuel spill to structures, passenger loading fingers, or concourses, which could result in the fuel or vapors therefrom reaching a source of ignition or might release dangerous or toxic vapors within the structure itself.

(2) Prevent spread of a fuel spill over large areas of the apron surface and the transmission of vapors, which may expose a number of aircraft or other equipment on the apron.

(3) Provide for the safe disposal of fuel spillage.

These objectives may require consideration of one or several means. For example, the apron should slope away from buildings. Inlets should be located to allow reasonable flexibility in parking of aircraft without the likelihood of aircraft being positioned over inlets. Sections of drainage systems should be isolated at intervals through use of water seal traps or interceptors or separators to prevent transmission of flame or vapor through the system.

TABLE II. Coefficient of roughness

		Coeffic. "n"
PIPE		
Clay, concrete, and asbestos cement		0.012
Corrugated metal		
Fully paved		0.012
25% Paved, 2 3/8 x 1/2 inch corr		0.021
3 x 1 or 6 x 1 inch corr		0.023
6 x 2 or 9 x 2 1/2 inch corr		0.026
Unpaved, 2 3/8 x 1/2 inch corr		0.024
3 x 1 or 6 x 1 inch corr		0.027
6 x 2 or 9 x 2 1/2 inch corr		0.031
2 x 1/2 inch helical corr		
12 inch diameter		0.012
18 inch diameter		0.015
24 inch diameter		0.017
30 inch diameter to 48 inch diameter		0.018 to 0.021
OPEN CHANNELS		
	Maximum Permissible Velocity in Feet/Second	Coeffic. "n"
Paved		
Concrete	20 to 30+	0.011 to 0.020
Asphalt	12 to 15+	0.013 to 0.017
Rubble or Riprap	20 to 25	0.017 to 0.030
Earth		
Bare, sandy silt, weathered	2.0	0.020
Silt clay or soft shale	3.5	0.020
Clay	6.0	0.020
Soft sandstone	8.0	0.020
Clean gravelly soil	6.0	0.025
Natural earth, with vegetation	6.0	0.030 to 0.150*
Turf		
Shallow flow	6.0	0.06 to 0.08
Depth of flow over 1 foot	6.0	0.04 to 0.06

*Will vary with straightness of alignment, smoothness of bed and side slopes, and whether channel has light vegetation or is choked with weeds and brush.

5. The runoff coefficient C is independent of the storm duration for a given watershed and reflects any changes in infiltration rates, soil types and antecedent moisture conditions.

II(a) Determination of a Runoff Coefficient

Values of the runoff coefficient are given Table 3.1 for rural areas and Table 3.2 for urban areas. Table 3.2(a) presents runoff coefficients for particular types of urban areas and Table 3.2(b) gives coefficients which can be used to compute a weighted C based on the actual percentage of lawns, streets, roofs, etc.

Table 3.1 Rural Runoff Coefficients (Schwab et al., 1971)

Vegetation and Topography	Soil Texture		
	Open sandy loam	Clay and silt loam	Tight clay
Woodland			
Flat 0-5% slope	0.10	0.30	0.40
Rolling 5-10% slope	0.25	0.35	0.50
Hilly 10-30% slope	0.30	0.50	0.60
Pasture			
Flat	0.10	0.30	0.40
Rolling	0.16	0.36	0.55
Hilly	0.22	0.42	0.60
Cultivated			
Flat	0.30	0.50	0.60
Rolling	0.40	0.60	0.70
Hilly	0.52	0.72	0.82

As mentioned before, this coefficient represents the runoff-rainfall ratio and includes many factors such as type of cover, soil types, infiltration, evaporation, evapo-transpiration, and any antecedent moisture conditions. It has also been shown that C actually does not remain constant during the storm duration (Horner, 1910). The strong dependence on "engineering judgment" in selecting a runoff coefficient is one of the main weaknesses of the rational method.

For a notched weir in which θ is equal to 90° [that is, $\tan(\theta/2) = 1$], it has been found experimentally that the discharge may be computed by the following equation:

$$Q = 1.38h^{5/2} \quad (\text{SI units}) \quad (3-7)$$

$$Q = 2.5h^{5/2} \quad (\text{U.S. customary units}) \quad (3-7a)$$

For heads lower than about 0.3 m (1 ft), the value of C_d begins to increase, depending on the notch angle. Such depths are not uncommon. If accuracy greater than that of Eq. 3-7 is desired, Eq. 3-6 may be used. A plot of C_d versus h is shown in Ref. 2.

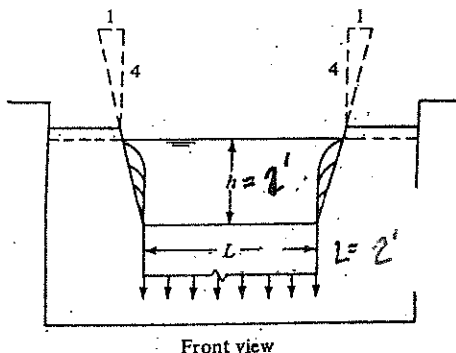
Trapezoidal weirs. The trapezoidal weir differs from the rectangular weir in that the sides are inclined rather than vertical. Usually the sides are given an inclination of 1 (horizontal) to 4 (vertical), because at this angle the slope is just about sufficient to offset the effect of the end contractions. When this is done the weir is known as the Cipolletti weir (see Fig. 3-10). The equation for the Cipolletti weir is

$$Q = 1.859Lh^{3/2} \quad (\text{SI units}) \quad (3-8)$$

$$Q = 3.367Lh^{3/2} \quad (\text{U.S. customary units}) \quad (3-8a)$$

where L = the length of the crest (see Fig. 3-10), m (ft).

Submerged weirs. When the water surface in the channel below the weir is higher than the crest, the weir is said to be submerged or drowned (see Fig. 3-11). Measurements by submerged weirs are much less certain than measurements by weirs with free discharge, but their use is sometimes unavoidable.

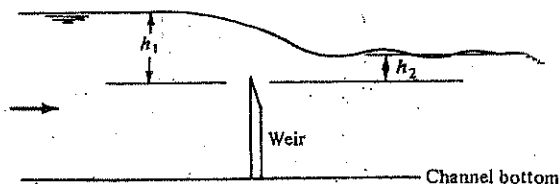


$$\text{PEAK DISCHARGE} = 10.39 \times 1.25 = 12.99 \text{ cfs}$$

WEIR CAPACITY:

$$Q = 3.367(2)(2)^{3/2}$$

$$Q = 6.734 \times 2.828 = 19.04 \text{ cfs}$$



TR55 Tc Worksheet

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

existing 24hr

Storm frequency = yrs

Sheet Flow

Manning's n-value = 0.300
Flow length = 300.0 ft
Two-year 24-hr precip. = 2.64 in
Land slope = 1.0 %

Travel Time = 59.7 min

Shallow Concentrated Flow

Flow length = 500 ft
Watercourse slope = 1.0 %
Surface description = Unpaved
Average velocity = 1.61 ft/s

Travel Time = 5.2 min

Channel Flow

Cross section flow area = 0.0 sqft
Wetted perimeter = 0.0 ft
Channel slope = 0.0 %
Manning's n-value = 0.060
Velocity = 0.00 ft/s
Flow length = 0.0 ft

Travel Time = min

Total Travel Time, Tc = 64.8 min

TR55 Tc Worksheet

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 7

future 24hr

Storm frequency = yrs

Sheet Flow

Manning's n-value = 0.300

Flow length = 50.0 ft

Two-year 24-hr precip. = 2.64 in

Land slope = 1.0 %

Travel Time = 14.2 min

Shallow Concentrated Flow

Flow length = 120 ft

Watercourse slope = 1.0 %

Surface description = Unpaved

Average velocity = 1.61 ft/s

Travel Time = 1.2 min

Channel Flow

Cross section flow area = 20.0 sqft

Wetted perimeter = 40.0 ft

Channel slope = 1.0 %

Manning's n-value = 0.060

Velocity = 1.56 ft/s

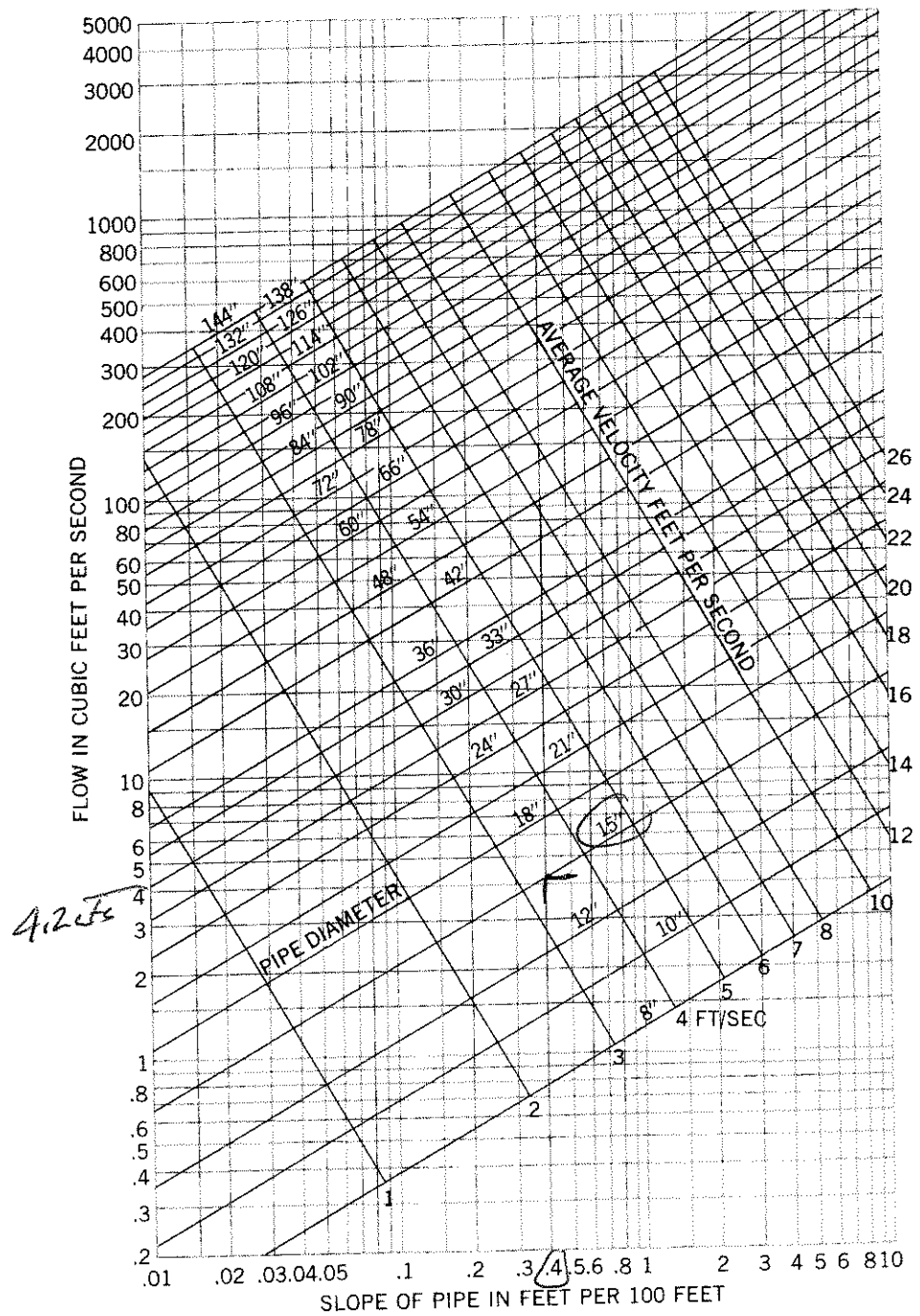
Flow length = 680.0 ft

Travel Time = 7.3 min

Total Travel Time, Tc = 22.7 min

FIGURE 5

FLOW FOR CIRCULAR PIPE FLOWING FULL
BASED ON MANNING'S EQUATION $n=0.013$



Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 14

SOUTH BASIN *To 15' EOP*

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 5.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.52 in
Storm duration = 2 hrs

Peak discharge = 0.19 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 611 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

72	0.02
132	0.13

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 14

SOUTH BASIN

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 5.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.40 in
Storm duration = 2 hrs

Peak discharge = 1.34 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 4,737 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

54	0.15
114	0.86

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 14

SOUTH BASIN

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 5.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.50 in
Storm duration = 2 hrs

Peak discharge = 4.00 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 13,649 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

48	0.41
108	2.24

...End

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	----	----	0.35	----	----	1.35	----	----	3.23	existing 24hr
2	SCS Runoff	----	----	0.48	----	----	1.81	----	----	4.42	existing 12hr
3	SCS Runoff	----	----	0.39	----	----	2.16	----	----	5.64	existing 6hr
4	SCS Runoff	----	----	0.28	----	----	2.02	----	----	6.06	existing 3hr
5	SCS Runoff	----	----	0.15	----	----	1.82	----	----	5.72	existing 2hr
6	SCS Runoff	----	----	0.00	----	----	0.94	----	----	4.10	existing 1hr
7	SCS Runoff	----	----	0.51	----	----	1.75	----	----	3.82	future 24hr
8	SCS Runoff	----	----	0.71	----	----	2.45	----	----	5.51	future 12hr
9	SCS Runoff	----	----	0.66	----	----	3.12	----	----	7.82	future 6hr
10	SCS Runoff	----	----	0.60	----	----	3.49	----	----	9.90	future 3hr
11	SCS Runoff	----	----	0.49	----	----	3.50	----	----	10.39	future 2hr
12	SCS Runoff	----	----	0.15	----	----	2.70	----	----	9.22	future 1hr
13	Reservoir	11	----	0.04	----	----	0.36	----	----	2.16	DRY DETENTION

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.35	6	750	12,490	----	-----	-----	existing 24hr
2	SCS Runoff	0.48	6	438	8,893	----	-----	-----	existing 12hr
3	SCS Runoff	0.39	6	276	3,893	----	-----	-----	existing 6hr
4	SCS Runoff	0.28	6	186	1,476	----	-----	-----	existing 3hr
5	SCS Runoff	0.15	6	144	635	----	-----	-----	existing 2hr
6	SCS Runoff	0.00	6	96	4	----	-----	-----	existing 1hr
7	SCS Runoff	0.51	6	720	16,595	----	-----	-----	future 24hr
8	SCS Runoff	0.71	6	372	12,315	----	-----	-----	future 12hr
9	SCS Runoff	0.66	6	228	6,121	----	-----	-----	future 6hr
10	SCS Runoff	0.60	6	138	2,866	----	-----	-----	future 3hr
11	SCS Runoff	0.49	6	108	1,590	----	-----	-----	future 2hr
12	SCS Runoff	0.15	6	72	254	----	-----	-----	future 1hr
13	Reservoir	0.04	6	156	1,544	11	762.95	1,485	DRY DETENTION
Proj. file: pickett.gpw				Return Period: 2 yr				Run date: 01-09-2013	

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 13

DRY DETENTION

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 11
Max. Elevation = 762.95 ft

Peak discharge = 0.04 cfs
Time interval = 6 min
Reservoir name = dry detention
Max. Storage = 1,485 cuft

Storage Indication method used.

Outflow hydrograph volume = 1,544 cuft

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
120	0.46	762.91	0.02	0.02	----	----	----	----	----	----	----	0.02
180	0.00	762.94	0.04	0.04	----	----	----	----	----	----	----	0.04
240	0.00	762.93	0.03	0.03	----	----	----	----	----	----	----	0.03
300	0.00	762.92	0.03	0.03	----	----	----	----	----	----	----	0.03
360	0.00	762.91	0.03	0.02	----	----	----	----	----	----	----	0.02
420	0.00	762.90	0.02	0.02	----	----	----	----	----	----	----	0.02
480	0.00	762.89	0.02	0.02	----	----	----	----	----	----	----	0.02
540	0.00	762.89	0.02	0.02	----	----	----	----	----	----	----	0.02
600	0.00	762.88	0.02	0.01	----	----	----	----	----	----	----	0.01
660	0.00	762.88	0.02	0.01	----	----	----	----	----	----	----	0.01
720	0.00	762.87	0.01	0.01	----	----	----	----	----	----	----	0.01
780	0.00	762.87	0.01	0.01	----	----	----	----	----	----	----	0.01
840	0.00	762.86	0.01	0.01	----	----	----	----	----	----	----	0.01
900	0.00	762.86	0.01	0.01	----	----	----	----	----	----	----	0.01
960	0.00	762.86	0.01	0.01	----	----	----	----	----	----	----	0.01
1020	0.00	762.86	0.01	0.01	----	----	----	----	----	----	----	0.01
1080	0.00	762.85	0.01	0.01	----	----	----	----	----	----	----	0.01
1140	0.00	762.85	0.01	0.01	----	----	----	----	----	----	----	0.01
1200	0.00	762.85	0.01	0.01	----	----	----	----	----	----	----	0.01
1260	0.00	762.85	0.01	0.01	----	----	----	----	----	----	----	0.01
1320	0.00	762.84	0.01	0.00	----	----	----	----	----	----	----	0.00
1380	0.00	762.84	0.00	0.00	----	----	----	----	----	----	----	0.00

...End

Reservoir Report

Reservoir No. 1 - dry detention

Hydraflow Hydrographs by Intelisolve

Pond Data

Bottom LxW = 120.0 x 81.5 ft Side slope = 4.0:1 Bottom elev. = 762.80 ft Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	762.80	9,780	0	0
0.20	763.00	10,105	1,988	1,988
0.40	763.20	10,435	2,054	4,042
0.60	763.40	10,770	2,120	6,163
0.80	763.60	11,111	2,188	8,351
1.00	763.80	11,456	2,257	10,607
1.20	764.00	11,807	2,326	12,934
1.40	764.20	12,162	2,397	15,330
1.60	764.40	12,523	2,468	17,799
1.80	764.60	12,889	2,541	20,340
2.00	764.80	13,260	2,615	22,955
2.20	765.00	13,636	2,690	25,644
2.40	765.20	14,017	2,765	28,409
2.60	765.40	14,404	2,842	31,252
2.80	765.60	14,795	2,920	34,171
3.00	765.80	15,192	2,999	37,170
3.20	766.00	15,594	3,078	40,248
3.40	766.20	16,001	3,159	43,408
3.60	766.40	16,413	3,241	46,649
3.80	766.60	16,830	3,324	49,973
4.00	766.80	17,252	3,408	53,381

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	4.0	0.0	0.0
Span in	= 12.0	4.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 762.80	762.80	0.00	0.00
Length ft	= 15.0	0.0	0.0	0.0
Slope %	= 0.91	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 2.00	0.00	0.00	0.00
Crest El. ft	= 764.85	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	762.80	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.20	1,988	763.00	0.07	0.07	---	---	0.00	---	---	---	---	0.07
0.40	4,042	763.20	0.20	0.18	---	---	0.00	---	---	---	---	0.18
0.60	6,163	763.40	0.26	0.25	---	---	0.00	---	---	---	---	0.25
0.80	8,351	763.60	0.31	0.31	---	---	0.00	---	---	---	---	0.31
1.00	10,607	763.80	0.38	0.35	---	---	0.00	---	---	---	---	0.35
1.20	12,934	764.00	0.42	0.40	---	---	0.00	---	---	---	---	0.40
1.40	15,330	764.20	0.47	0.44	---	---	0.00	---	---	---	---	0.44
1.60	17,799	764.40	0.47	0.47	---	---	0.00	---	---	---	---	0.47
1.80	20,340	764.60	0.52	0.51	---	---	0.00	---	---	---	---	0.51
2.00	22,955	764.80	0.57	0.54	---	---	0.00	---	---	---	---	0.54
2.20	25,644	765.00	0.88	0.55	---	---	0.30	---	---	---	---	0.85
2.40	28,409	765.20	1.61	0.52	---	---	1.08	---	---	---	---	1.59
2.60	31,252	765.40	2.62	0.50	---	---	2.12	---	---	---	---	2.62
2.80	34,171	765.60	3.84	0.46	---	---	3.38	---	---	---	---	3.84
3.00	37,170	765.80	5.00	0.36	---	---	4.63	---	---	---	---	5.00
3.20	40,248	766.00	5.57	0.30	---	---	5.27	---	---	---	---	5.57
3.40	43,408	766.20	5.99	0.26	---	---	5.73	---	---	---	---	5.99
3.60	46,649	766.40	6.33	0.23	---	---	6.10	---	---	---	---	6.33
3.80	49,973	766.60	6.62	0.20	---	---	6.42	---	---	---	---	6.62
4.00	53,381	766.80	6.88	0.18	---	---	6.69	---	---	---	---	6.88

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	1.35	6	672	42,721	----	-----	-----	existing 24hr
2	SCS Runoff	1.81	6	378	31,229	----	-----	-----	existing 12hr
3	SCS Runoff	2.16	6	234	21,067	----	-----	-----	existing 6hr
4	SCS Runoff	2.02	6	156	12,490	----	-----	-----	existing 3hr
5	SCS Runoff	1.82	6	126	8,893	----	-----	-----	existing 2hr
6	SCS Runoff	0.94	6	84	3,700	----	-----	-----	existing 1hr
7	SCS Runoff	1.75	6	648	50,739	----	-----	-----	future 24hr
8	SCS Runoff	2.45	6	330	37,989	----	-----	-----	future 12hr
9	SCS Runoff	3.12	6	186	26,520	----	-----	-----	future 6hr
10	SCS Runoff	3.49	6	114	16,595	----	-----	-----	future 3hr
11	SCS Runoff	3.50	6	84	12,315	----	-----	-----	future 2hr
12	SCS Runoff	2.70	6	60	5,871	----	-----	-----	future 1hr
13	Reservoir	0.36	6	150	12,258	11	763.83	10,901	DRY DETENTION
Proj. file: pickett.gpw				Return Period: 10 yr				Run date: 01-09-2013	

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 13

DRY DETENTION

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 11
Max. Elevation = 763.83 ft

Peak discharge = 0.36 cfs
Time interval = 6 min
Reservoir name = dry detention
Max. Storage = 10,901 cuft

Storage Indication method used.

Outflow hydrograph volume = 12,258 cuft

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
120	2.03	763.70	0.34	0.33	----	----	----	----	----	----	----	0.33
180	0.00	763.78	0.37	0.35	----	----	----	----	----	----	----	0.35
240	0.00	763.67	0.34	0.32	----	----	----	----	----	----	----	0.32
300	0.00	763.57	0.30	0.30	----	----	----	----	----	----	----	0.30
360	0.00	763.48	0.29	0.27	----	----	----	----	----	----	----	0.27
420	0.00	763.39	0.26	0.25	----	----	----	----	----	----	----	0.25
480	0.00	763.31	0.23	0.22	----	----	----	----	----	----	----	0.22
540	0.00	763.24	0.20	0.20	----	----	----	----	----	----	----	0.20
600	0.00	763.17	0.18	0.18	----	----	----	----	----	----	----	0.18
660	0.00	763.11	0.15	0.15	----	----	----	----	----	----	----	0.15
720	0.00	763.07	0.13	0.12	----	----	----	----	----	----	----	0.12
780	0.00	763.03	0.10	0.09	----	----	----	----	----	----	----	0.09
840	0.00	763.00	0.08	0.08	----	----	----	----	----	----	----	0.08
900	0.00	762.98	0.06	0.06	----	----	----	----	----	----	----	0.06
960	0.00	762.96	0.05	0.05	----	----	----	----	----	----	----	0.05
1020	0.00	762.94	0.04	0.04	----	----	----	----	----	----	----	0.04

...End

Reservoir Report

Reservoir No. 1 - dry detention

Hydraflow Hydrographs by Intellisolve

Pond Data

Bottom LxW = 120.0 x 81.5 ft Side slope = 4.0:1 Bottom elev. = 762.80 ft Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	762.80	9,780	0	0
0.20	763.00	10,105	1,988	1,988
0.40	763.20	10,435	2,054	4,042
0.60	763.40	10,770	2,120	6,163
0.80	763.60	11,111	2,188	8,351
1.00	763.80	11,456	2,257	10,607
1.20	764.00	11,807	2,326	12,934
1.40	764.20	12,162	2,397	15,330
1.60	764.40	12,523	2,468	17,799
1.80	764.60	12,889	2,541	20,340
2.00	764.80	13,260	2,615	22,955
2.20	765.00	13,636	2,690	25,644
2.40	765.20	14,017	2,765	28,409
2.60	765.40	14,404	2,842	31,252
2.80	765.60	14,795	2,920	34,171
3.00	765.80	15,192	2,999	37,170
3.20	766.00	15,594	3,078	40,248
3.40	766.20	16,001	3,159	43,408
3.60	766.40	16,413	3,241	46,649
3.80	766.60	16,830	3,324	49,973
4.00	766.80	17,252	3,408	53,381

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	4.0	0.0	0.0
Span in	= 12.0	4.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 762.80	762.80	0.00	0.00
Length ft	= 15.0	0.0	0.0	0.0
Slope %	= 0.91	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 2.00	0.00	0.00	0.00
Crest El. ft	= 764.85	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft				

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	762.80	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.20	1,988	763.00	0.07	0.07	---	---	0.00	---	---	---	---	0.07
0.40	4,042	763.20	0.20	0.18	---	---	0.00	---	---	---	---	0.18
0.60	6,163	763.40	0.26	0.25	---	---	0.00	---	---	---	---	0.25
0.80	8,351	763.60	0.31	0.31	---	---	0.00	---	---	---	---	0.31
1.00	10,607	763.80	0.38	0.35	---	---	0.00	---	---	---	---	0.35
1.20	12,934	764.00	0.42	0.40	---	---	0.00	---	---	---	---	0.40
1.40	15,330	764.20	0.47	0.44	---	---	0.00	---	---	---	---	0.44
1.60	17,799	764.40	0.47	0.47	---	---	0.00	---	---	---	---	0.47
1.80	20,340	764.60	0.52	0.51	---	---	0.00	---	---	---	---	0.51
2.00	22,955	764.80	0.57	0.54	---	---	0.00	---	---	---	---	0.54
2.20	25,644	765.00	0.88	0.55	---	---	0.30	---	---	---	---	0.85
2.40	28,409	765.20	1.61	0.52	---	---	1.08	---	---	---	---	1.59
2.60	31,252	765.40	2.62	0.50	---	---	2.12	---	---	---	---	2.62
2.80	34,171	765.60	3.84	0.46	---	---	3.38	---	---	---	---	3.84
3.00	37,170	765.80	5.00	0.36	---	---	4.63	---	---	---	---	5.00
3.20	40,248	766.00	5.57	0.30	---	---	5.27	---	---	---	---	5.57
3.40	43,408	766.20	5.99	0.26	---	---	5.73	---	---	---	---	5.99
3.60	46,649	766.40	6.33	0.23	---	---	6.10	---	---	---	---	6.33
3.80	49,973	766.60	6.62	0.20	---	---	6.42	---	---	---	---	6.62
4.00	53,381	766.80	6.88	0.18	---	---	6.69	---	---	---	---	6.88

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	3.23	6	660	98,480	----	-----	-----	existing 24hr
2	SCS Runoff	4.42	6	360	72,457	----	-----	-----	existing 12hr
3	SCS Runoff	5.64	6	216	53,708	----	-----	-----	existing 6hr
4	SCS Runoff	6.06	6	144	37,543	----	-----	-----	existing 3hr
5	SCS Runoff	5.72	6	120	28,994	----	-----	-----	existing 2hr
6	SCS Runoff	4.10	6	78	16,562	----	-----	-----	existing 1hr
7	SCS Runoff	3.82	6	648	110,959	----	-----	-----	future 24hr
8	SCS Runoff	5.51	6	330	83,096	----	-----	-----	future 12hr
9	SCS Runoff	7.82	6	174	62,780	----	-----	-----	future 6hr
10	SCS Runoff	9.90	6	102	45,018	----	-----	-----	future 3hr
11	SCS Runoff	10.39	6	78	35,486	----	-----	-----	future 2hr
12	SCS Runoff	9.22	6	54	21,345	----	-----	-----	future 1hr
13	Reservoir	2.16	6	138	35,420	11	765.32	30,080	DRY DETENTION
Proj. file: pickett.gpw				Return Period: 100 yr				Run date: 01-09-2013	

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intellisolve

Hyd. No. 13

DRY DETENTION

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 11
Max. Elevation = 765.32 ft

Peak discharge = 2.16 cfs
Time interval = 6 min
Reservoir name = dry detention
Max. Storage = 30,080 cuft

Storage Indication method used.

Outflow hydrograph volume = 35,420 cuft

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
120	4.51	765.21	1.65	0.51	----	----	1.14	----	----	----	----	1.65
180	0.00	765.09	1.19	0.54	----	----	0.62	----	----	----	----	1.16
240	0.00	764.88	0.61	0.55	----	----	0.03	----	----	----	----	0.58
300	0.00	764.73	0.56	0.53	----	----	----	----	----	----	----	0.53
360	0.00	764.59	0.52	0.51	----	----	----	----	----	----	----	0.51
420	0.00	764.45	0.50	0.48	----	----	----	----	----	----	----	0.48
480	0.00	764.32	0.47	0.46	----	----	----	----	----	----	----	0.46
540	0.00	764.19	0.44	0.43	----	----	----	----	----	----	----	0.43
600	0.00	764.06	0.42	0.41	----	----	----	----	----	----	----	0.41
660	0.00	763.94	0.38	0.38	----	----	----	----	----	----	----	0.38
720	0.00	763.82	0.38	0.36	----	----	----	----	----	----	----	0.36
780	0.00	763.71	0.34	0.34	----	----	----	----	----	----	----	0.34
840	0.00	763.61	0.32	0.31	----	----	----	----	----	----	----	0.31
900	0.00	763.51	0.30	0.28	----	----	----	----	----	----	----	0.28
960	0.00	763.42	0.26	0.26	----	----	----	----	----	----	----	0.26
1020	0.00	763.34	0.23	0.23	----	----	----	----	----	----	----	0.23

...End

Reservoir Report

Reservoir No. 1 - dry detention

Hydraflow Hydrographs by Intellisolve

Pond Data

Bottom LxW = 120.0 x 81.5 ft Side slope = 4.0:1 Bottom elev. = 762.80 ft Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	762.80	9,780	0	0
0.20	763.00	10,105	1,988	1,988
0.40	763.20	10,435	2,054	4,042
0.60	763.40	10,770	2,120	6,163
0.80	763.60	11,111	2,188	8,351
1.00	763.80	11,456	2,257	10,607
1.20	764.00	11,807	2,326	12,934
1.40	764.20	12,162	2,397	15,330
1.60	764.40	12,523	2,468	17,799
1.80	764.60	12,889	2,541	20,340
2.00	764.80	13,260	2,615	22,955
2.20	765.00	13,636	2,690	25,644
2.40	765.20	14,017	2,765	28,409
2.60	765.40	14,404	2,842	31,252
2.80	765.60	14,795	2,920	34,171
3.00	765.80	15,192	2,999	37,170
3.20	766.00	15,594	3,078	40,248
3.40	766.20	16,001	3,159	43,408
3.60	766.40	16,413	3,241	46,649
3.80	766.60	16,830	3,324	49,973
4.00	766.80	17,252	3,408	53,381

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	4.0	0.0	0.0
Span in	= 12.0	4.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 762.80	762.80	0.00	0.00
Length ft	= 15.0	0.0	0.0	0.0
Slope %	= 0.91	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 2.00	0.00	0.00	0.00
Crest El. ft	= 764.85	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	762.80	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.20	1,988	763.00	0.07	0.07	---	---	0.00	---	---	---	---	0.07
0.40	4,042	763.20	0.20	0.18	---	---	0.00	---	---	---	---	0.18
0.60	6,163	763.40	0.26	0.25	---	---	0.00	---	---	---	---	0.25
0.80	8,351	763.60	0.31	0.31	---	---	0.00	---	---	---	---	0.31
1.00	10,607	763.80	0.38	0.35	---	---	0.00	---	---	---	---	0.35
1.20	12,934	764.00	0.42	0.40	---	---	0.00	---	---	---	---	0.40
1.40	15,330	764.20	0.47	0.44	---	---	0.00	---	---	---	---	0.44
1.60	17,799	764.40	0.47	0.47	---	---	0.00	---	---	---	---	0.47
1.80	20,340	764.60	0.52	0.51	---	---	0.00	---	---	---	---	0.51
2.00	22,955	764.80	0.57	0.54	---	---	0.00	---	---	---	---	0.54
2.20	25,644	765.00	0.88	0.55	---	---	0.30	---	---	---	---	0.85
2.40	28,409	765.20	1.61	0.52	---	---	1.08	---	---	---	---	1.59
2.60	31,252	765.40	2.62	0.50	---	---	2.12	---	---	---	---	2.62
2.80	34,171	765.60	3.84	0.46	---	---	3.38	---	---	---	---	3.84
3.00	37,170	765.80	5.00	0.36	---	---	4.63	---	---	---	---	5.00
3.20	40,248	766.00	5.57	0.30	---	---	5.27	---	---	---	---	5.57
3.40	43,408	766.20	5.99	0.26	---	---	5.73	---	---	---	---	5.99
3.60	46,649	766.40	6.33	0.23	---	---	6.10	---	---	---	---	6.33
3.80	49,973	766.60	6.62	0.20	---	---	6.42	---	---	---	---	6.62
4.00	53,381	766.80	6.88	0.18	---	---	6.69	---	---	---	---	6.88

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

existing 24hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 2.64 in
Storm duration = 24 hrs

Peak discharge = 0.35 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 12,490 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

594	0.04
654	0.23
714	0.33
774	0.34
834	0.33
894	0.32
954	0.29
1014	0.24
1074	0.25
1134	0.20
1194	0.18
1254	0.18
1314	0.18
1374	0.11
1434	0.17
1494	0.08

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intellisolve

Hyd. No. 1

existing 24hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.08 in
Storm duration = 24 hrs

Peak discharge = 1.35 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 42,721 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

504	0.15
564	0.67
624	1.15
684	1.34
744	1.23
804	1.07
864	0.97
924	0.85
984	0.72
1044	0.64
1104	0.62
1164	0.46
1224	0.45
1284	0.46
1344	0.34
1404	0.31
1464	0.40

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

existing 24hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.00 in
Storm duration = 24 hrs

Peak discharge = 3.23 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 98,480 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

438	0.37
498	1.15
558	2.18
618	2.98
678	3.18
738	2.73
798	2.29
858	2.01
918	1.74
978	1.46
1038	1.25
1098	1.23
1158	0.91
1218	0.86
1278	0.87
1338	0.69
1398	0.55
1458	0.79

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

existing 12hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.40 in
Storm duration = 12 hrs

Peak discharge = 0.48 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 8,893 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

324	0.05
384	0.39
444	0.48
504	0.42
564	0.36
624	0.29
684	0.24
744	0.21

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

existing 12hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 12 hrs

Peak discharge = 1.81 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 31,229 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

282	0.26
342	1.53
402	1.75
462	1.45
522	1.10
582	0.88
642	0.71
702	0.54
762	0.38

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

existing 12hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.16 in
Storm duration = 12 hrs

Peak discharge = 4.42 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 72,457 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

246	0.46
306	2.96
366	4.39
426	3.49
486	2.67
546	2.02
606	1.50
666	1.31
726	1.06

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

existing 6hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.98 in
Storm duration = 6 hrs

Peak discharge = 0.39 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 3,893 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

192	0.04
252	0.35
312	0.36
372	0.27
432	0.06

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

existing 6hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.12 in
Storm duration = 6 hrs

Peak discharge = 2.16 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 21,067 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

156	0.23
216	2.02
276	1.76
336	1.14
396	0.64

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intellisolve

Hyd. No. 3

existing 6hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.50 in
Storm duration = 6 hrs

Peak discharge = 5.64 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 53,708 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

144	0.82
204	5.43
264	4.30
324	2.56
384	1.59

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 4

existing 3hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.68 in
Storm duration = 3 hrs

Peak discharge = 0.28 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 1,476 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

120	0.03
180	0.27
240	0.10

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 4

existing 3hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.64 in
Storm duration = 3 hrs

Peak discharge = 2.02 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 12,490 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

90	0.22
150	2.00
210	1.13

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 4

existing 3hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.87 in
Storm duration = 3 hrs

Peak discharge = 6.06 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 37,543 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

84	0.95
144	6.06 <<
204	2.97

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 5

existing 2hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.52 in
Storm duration = 2 hrs

Peak discharge = 0.15 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 635 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

96	0.02
156	0.14

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 5

existing 2hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.40 in
Storm duration = 2 hrs

Peak discharge = 1.82 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 8,893 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

66	0.19
126	1.82 <<
186	0.40

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 5

existing 2hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.50 in
Storm duration = 2 hrs

Peak discharge = 5.72 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 28,994 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

60	0.75
120	5.72 <<
180	1.27

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 6

existing 1hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.25 in
Storm duration = 1 hrs

Peak discharge = 0.00 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 4 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

60	0.00
120	0.00

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 6

existing 1hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.96 in
Storm duration = 1 hrs

Peak discharge = 0.94 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 3,700 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

42	0.12
102	0.78

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 6

existing 1hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 12.75 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.88 in
Storm duration = 1 hrs

Peak discharge = 4.10 cfs
Time interval = 6 min
Curve number = 62
Hydraulic length = 0 ft
Time of conc. (Tc) = 64.8 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 16,562 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

36	0.51
96	3.59

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 7

future 24hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 2.64 in
Storm duration = 24 hrs

Peak discharge = 0.51 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 16,595 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

546	0.07
606	0.34
666	0.48
726	0.51
786	0.45
846	0.41
906	0.36
966	0.30
1026	0.29
1086	0.30
1146	0.21
1206	0.21
1266	0.22
1326	0.13
1386	0.17
1446	0.21

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 7

future 24hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.08 in
Storm duration = 24 hrs

Peak discharge = 1.75 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 50,739 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

456	0.21
516	0.73
576	1.39
636	1.68
696	1.44
756	1.21
816	1.12
876	1.05
936	0.92
996	0.71
1056	0.72
1116	0.50
1176	0.50
1236	0.50
1296	0.51
1356	0.26
1416	0.52

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 7

future 24hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.00 in
Storm duration = 24 hrs

Peak discharge = 3.82 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 110,959 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

384	0.42
444	1.01
504	2.04
564	3.28
624	3.62
684	3.00
744	2.60
804	2.37
864	2.13
924	1.74
984	1.33
1044	1.35
1104	1.05
1164	0.92
1224	0.93
1284	0.94
1344	0.47
1404	0.92

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 8

future 12hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.40 in
Storm duration = 12 hrs

Peak discharge = 0.71 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 12,315 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

294	0.13
354	0.67
414	0.65
474	0.56
534	0.47
594	0.34
654	0.34
714	0.34

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 8

future 12hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 12 hrs

Peak discharge = 2.45 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 37,989 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

246	0.25
306	2.05
366	2.20
426	1.72
486	1.28
546	1.12
606	0.80
666	0.62
726	0.77

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 8

future 12hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.16 in
Storm duration = 12 hrs

Peak discharge = 5.51 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 83,096 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

216	0.62
276	3.80
336	5.39
396	3.81
456	2.91
516	2.12
576	1.49
636	1.49
696	0.94

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 9

future 6hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.98 in
Storm duration = 6 hrs

Peak discharge = 0.66 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 6,121 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

168	0.14
228	0.66 <<
288	0.48
348	0.30

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 9

future 6hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.12 in
Storm duration = 6 hrs

Peak discharge = 3.12 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 26,520 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

138	0.46
198	2.94
258	1.82
318	1.22
378	0.61

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 9

future 6hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.50 in
Storm duration = 6 hrs

Peak discharge = 7.82 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 62,780 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

120	0.87
180	7.66
240	4.52
300	2.51
360	1.89

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 10

future 3hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.68 in
Storm duration = 3 hrs

Peak discharge = 0.60 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 2,866 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

96	0.07
156	0.52

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 10

future 3hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.64 in
Storm duration = 3 hrs

Peak discharge = 3.49 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 16,595 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

78	0.55
138	2.61
198	0.75

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 10

future 3hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.87 in
Storm duration = 3 hrs

Peak discharge = 9.90 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 45,018 cuft

Hydrograph Discharge Table

Time -- Outflow (min cfs)

72	2.20
132	6.52
192	2.36

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 11

future 2hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.52 in
Storm duration = 2 hrs

Peak discharge = 0.49 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 1,590 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

72	0.06
132	0.34

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 11

future 2hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.40 in
Storm duration = 2 hrs

Peak discharge = 3.50 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 12,315 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

54	0.40
114	2.23

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 11

future 2hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.50 in
Storm duration = 2 hrs

Peak discharge = 10.39 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 35,486 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

48	1.06
108	5.82

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 12

future 1hr

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.25 in
Storm duration = 1 hrs

Peak discharge = 0.15 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 254 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

48 0.02

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 12

future 1hr

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 1.96 in
Storm duration = 1 hrs

Peak discharge = 2.70 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 5,871 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

36 0.65

...End

Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 12

future 1hr

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 13.00 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 2.88 in
Storm duration = 1 hrs

Peak discharge = 9.22 cfs
Time interval = 6 min
Curve number = 65
Hydraulic length = 0 ft
Time of conc. (Tc) = 22.7 min
Distribution = Huff-2nd
Shape factor = 484

Hydrograph Volume = 21,345 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

30 1.94

...End