

50 YR DETENTION CALCULATIONS

Existing Conditions		
Area	27.24	acres
Time (Tc)	20	minutes
C value	0.35	
I-50yr	7.4	in/hr
Q50 yr	70.55	cfs

Onsite Proposed Conditions		
Area	27.24	acres
Time (Tc)	10.00	minutes
C value	0.50	
I-50yr	9	in/hr
Q50 yr	122.58	cfs

Developed Runoff per Storm Event (Per City of Rockwall Chart - Figure 3.1)				
Time (min.)	I-50 yr	C value	Area (ac)	Runoff (cfs)
10	8.00	0.50	27.24	122.58
15	8.10	0.50	27.24	110.32
20	7.40	0.50	27.24	100.79
30	6.10	0.50	27.24	83.08
40	5.20	0.50	27.24	70.82
50	4.50	0.50	27.24	61.29
60	3.95	0.50	27.24	53.80
70	3.80	0.50	27.24	51.76
80	3.30	0.50	27.24	44.95
90	3.10	0.50	27.24	42.22
100	2.80	0.50	27.24	38.14
110	2.60	0.50	27.24	35.41

25 YR DETENTION CALCULATIONS

Existing Conditions		
Area	27.24	acres
Time (Tc)	20	minutes
C value	0.35	
I-25yr	6.6	in/hr
Q25 yr	62.92	cfs

Onsite Proposed Conditions		
Area	27.24	acres
Time (Tc)	10.00	minutes
C value	0.50	
I-25yr	8.3	in/hr
Q25 yr	113.05	cfs

Developed Runoff per Storm Event (Per City of Rockwall Chart - Figure 3.1)				
Time (min.)	I-25 yr	C value	Area (ac)	Runoff (cfs)
10	8.30	0.50	27.24	113.05
15	7.40	0.50	27.24	100.79
20	6.80	0.50	27.24	92.62
30	5.50	0.50	27.24	74.91
40	4.70	0.50	27.24	64.01
50	4.00	0.50	27.24	54.48
60	3.50	0.50	27.24	47.67
70	3.30	0.50	27.24	44.95
80	3.10	0.50	27.24	42.22
90	2.80	0.50	27.24	38.14
100	2.60	0.50	27.24	35.41
110	2.40	0.50	27.24	32.69

10 YR DETENTION CALCULATIONS

Existing Conditions		
Area	27.24	acres
Time (Tc)	20	minutes
C value	0.35	
I-10yr	5.9	in/hr
Q10 yr	56.25	cfs

Onsite Proposed Conditions		
Area	27.24	acres
Time (Tc)	10	minutes
C value	0.50	
I-10yr	7.1	in/hr
Q10 yr	96.70	cfs

Developed Runoff per Storm Event (Per City of Rockwall Chart - Figure 3.1)				
Time (min.)	I-10 yr	C value	Area (ac)	Runoff (cfs)
10	7.10	0.50	27.24	96.70
15	6.50	0.50	27.24	88.53
20	5.90	0.50	27.24	80.36
30	4.90	0.50	27.24	66.74
40	4.00	0.50	27.24	54.48
50	3.40	0.50	27.24	46.31
60	3.00	0.50	27.24	40.80
70	2.80	0.50	27.24	38.14
80	2.60	0.50	27.24	35.41
90	2.40	0.50	27.24	32.69
100	2.20	0.50	27.24	29.96
110	2.00	0.50	27.24	27.24

5 YR DETENTION CALCULATIONS

Existing Conditions		
Area	27.24	acres
Time (Tc)	20	minutes
C value	0.35	
I-5yr	4.9	in/hr
Q-5 yr	46.72	cfs

Onsite Proposed Conditions		
Area	27.24	acres
Time (Tc)	10	minutes
C value	0.50	
I-5yr	6.1	in/hr
Q-5 yr	83.08	cfs

Developed Runoff per Storm Event (Per City of Rockwall Chart - Figure 3.1)				
Time (min.)	I-5 yr	C value	Area (ac)	Runoff (cfs)
10	6.10	0.50	27.24	83.08
15	5.60	0.50	27.24	76.27
20	4.90	0.50	27.24	66.74
30	4.00	0.50	27.24	54.48
40	3.40	0.50	27.24	46.31
50	2.90	0.50	27.24	39.50
60	2.60	0.50	27.24	35.41
70	2.40	0.50	27.24	32.69
80	2.30	0.50	27.24	29.96
90	2.10	0.50	27.24	28.90
100	1.90	0.50	27.24	25.88
110	1.70	0.50	27.24	23.15

Inflow per Storm Event		
Storm Duration	Runoff	Inflow (ft <sup>3</sup> /s)
10	122.58	73,548
15	110.32	99,290
20	100.79	120,948
30	83.08	149,548
40	70.82	169,978
50	61.29	183,870
60	53.80	193,678
70	51.76	217,375
80	44.95	215,741
90	42.22	227,999
100	38.14	228,816
110	35.41	233,719

Outflow per Storm Event			
Storm Duration	Time	Release	Outflow (ft <sup>3</sup> /s)
10	20.00	70.55	42,331
15	25.00	70.55	52,914
20	30.00	70.55	63,496
30	40.00	70.55	84,662
40	50.00	70.55	105,827
50	60.00	70.55	126,993
60	70.00	70.55	148,158
70	80.00	70.55	169,324
80	90.00	70.55	190,489
90	100.00	70.55	211,655
100	110.00	70.55	232,820
110	120.00	70.55	253,986

Inflow per Storm Event		
Storm Duration	Runoff	Inflow (ft <sup>3</sup> /s)
10	113.05	67,828
15	100.79	90,709
20	92.62	111,139
30	74.91	134,838
40	64.01	153,634
50	54.48	183,440
60	47.67	171,612
70	44.95	188,773
80	42.22	202,666
90	38.14	205,934
100	35.41	212,472
110	32.69	215,741

Outflow per Storm Event			
Storm Duration	Time	Release	Outflow (ft <sup>3</sup> /s)
10	20.00	62.92	37,755
15	25.00	62.92	47,193
20	30.00	62.92	56,632
30	40.00	62.92	75,509
40	50.00	62.92	94,387
50	60.00	62.92	113,264
60	70.00	62.92	132,141
70	80.00	62.92	151,019
80	90.00	62.92	169,896
90	100.00	62.92	188,773
100	110.00	62.92	207,651
110	120.00	62.92	226,528

Inflow per Storm Event		
Storm Duration	Runoff	Inflow (ft <sup>3</sup> /s)
10	96.70	58,021
15	88.53	79,677
20	80.36	96,430
30	66.74	120,128
40	54.48	130,752
50	46.31	138,924
60	40.86	147,096
70	38.14	160,171
80	35.41	169,978
90	32.69	178,515
100	29.96	179,784
110	27.24	179,784

Outflow per Storm Event			
Storm Duration	Time	Release	Outflow (ft <sup>3</sup> /s)
10	20	56.25	33,750
15	25	56.25	42,188
20	30	56.25	50,626
30	40	56.25	67,501
40	50	56.25	84,376
50	60	56.25	101,251
60	70	56.25	118,126
70	80	56.25	135,001
80	90	56.25	151,877
90	100	56.25	168,752
100	110	56.25	185,627
110	120	56.25	202,502

Inflow per Storm Event		
Storm Duration	Runoff	Inflow (ft <sup>3</sup> /s)
10	83.08	49,849
15	76.27	68,645
20	66.74	80,086
30	54.48	98,064
40	46.31	111,139
50	39.50	118,494
60	35.41	127,483
70	32.69	137,290
80	29.96	143,827
90	28.60	154,451
100	25.88	155,268
110	23.15	152,816

Outflow per Storm Event			
Storm Duration	Time	Release	Outflow (ft <sup>3</sup> /s)
10	20	46.72	28,030
15	25	46.72	35,037
20	30	46.72	42,045
30	40	46.72	56,060
40	50	46.72	70,075
50	60	46.72	84,090
60	70	46.72	98,105
70	80	46.72	112,120
80	90	46.72	126,135
90	100	46.72	140,150
100	110	46.72	154,165
110	120	46.72	168,180

Detention Volume			
Storm Event	Inflow	Outflow	Storage (ft <sup>3</sup> )
10	73,548	42,331	31,217
15	99,290	52,914	46,376
20	120,948	63,496	57,449
30	149,548	84,662	64,886
40	169,978	105,827	64,150
50	183,870	126,993	56,877
60	193,678	148,158	45,518
70	217,375	169,324	48,051
80	215,741	190,489	25,251
90	227,999	211,655	16,344
100	228,816	232,820	(4,004)
110	233,719	253,986	(20,267)

Detention Volume Required (ft<sup>3</sup>)  
**64,886**

Detention Volume			
Storm Event	Inflow	Outflow	Storage (ft <sup>3</sup> )
10	67,828	37,755	30,073
15	90,709	47,193	43,516
20	111,139	56,632	54,507
30	134,838	75,509	59,329
40	153,634	94,387	59,247
50	183,440	113,264	50,176
60	171,612	132,141	39,471
70	188,773	151,019	37,755
80	202,666	169,896	32,770
90	205,934	188,773	17,161
100	212,472	207,651	4,821
110	215,741	226,528	(10,787)

Detention Volume Required (ft<sup>3</sup>)  
**59,329**

Detention Volume			
Storm Event	Inflow	Outflow	Storage (ft <sup>3</sup> )
10	58,021	33,750	24,271
15	79,677	42,188	37,489
20	96,430	50,626	45,804
30	120,128	67,501	52,628
40	130,752	84,376	46,376
50	138,924	101,251	37,673
60	147,096	118,126	28,970
70	160,171	135,001	25,170
80	169,978	151,877	18,101
90	178,515	168,752	7,763
100	179,784	185,627	(6,843)
110	179,784	202,502	(22,718)

Detention Volume Required (ft<sup>3</sup>)  
**52,628**

DETENTION VOLUME			
Storm Event	Inflow	Outflow	Storage (ft <sup>3</sup> )
10	49,849	28,030	21,819
15	68,645	35,037	33,607
20	80,086	42,045	38,041
30	98,064	56,060	42,004
40	111,139	70,075	41,064
50	118,494	84,090	34,404
60	127,483	98,105	29,378
70	137,290	112,12	