

RANCH TRAIL
5 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.78	Areas 10 & 13 Detained
C =	0.53	COMPOSITE C = .53
Tc =	10	
I5 =	6.1	
Q5 =	2.52174	

Future Conditions (Developed)			Offsite Conditions (Undeveloped)			Bypass		
A =	0.52		A =	0.18		A =		0
Aadj =	0.52							
C =	0.9		C =	0.71		C =		0.9
Tc =	10		Tc =	10		Tc =		10
I5 =	6.1		I5 =	6.1		I5 =		6.1
Q5 =	2.8548		Q5 =	0.77958		Q5 =		0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	6.1	0.9	2.8548	10 min	6.1	0.71	0.77958
15 min	5.5	0.9	2.574	15 min	5.5	0.71	0.7029
20 min	5	0.9	2.34	20 min	5	0.71	0.639
30 min	4	0.9	1.872	30 min	4	0.71	0.5112
40 min	3.4	0.9	1.5912	40 min	3.4	0.71	0.43452
50 min	2.9	0.9	1.3572	50 min	2.9	0.71	0.37062
60 min	2.6	0.9	1.2168	60 min	2.6	0.71	0.33228
70 min	2.4	0.9	1.1232	70 min	2.4	0.71	0.30672
80 min	2.2	0.9	1.0296	80 min	2.2	0.71	0.28116
90 min	2	0.9	0.936	90 min	2	0.71	0.2556
100 min	1.8	0.9	0.8424	100 min	1.8	0.71	0.23004
110 min	1.7	0.9	0.7956	110 min	1.7	0.71	0.21726

Storage Calculations

10 min	Inflow	2180.628	Storage	704.184
	Outflow	1476.444		
15 min	Inflow	2949.21	Storage	1103.655
	Outflow	1845.555		
20 min	Inflow	3574.8	Storage	1360.134
	Outflow	2214.666		
30 min	Inflow	4289.76	Storage	1336.872
	Outflow	2952.888		
40 min	Inflow	4861.728	Storage	1170.618
	Outflow	3691.11		
50 min	Inflow	5183.46	Storage	754.128
	Outflow	4429.332		
60 min	Inflow	5576.688	Storage	409.134
	Outflow	5167.554		
70 min	Inflow	6005.664	Storage	99.888
	Outflow	5905.776		
80 min	Inflow	6291.648	Storage	-352.35
	Outflow	6643.998		
90 min	Inflow	6434.64	Storage	-947.58
	Outflow	7382.22		
100 min	Inflow	6434.64	Storage	-1685.8
	Outflow	8120.442		
110 min	Inflow	6077.16	Storage	-2781.5
	Outflow	8858.664		

RANCH TRAIL
10 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.78	Areas 10 & 13 Detained
C =	0.53	COMPOSITE C = .53
Tc =	10	
I10 =	7.2	
Q10 =	2.97648	

Future Conditions (Developed)			Offsite Conditions (Undeveloped)			Bypass		
A =	0.52		A =	0.18		A =		0
Aadj =	0.52							
C =	0.9		C =	0.71		C =		0.9
Tc =	10		Tc =	10		Tc =		10
I10 =	7.2		I10 =	7.2		I10 =		7.2
Q10 =	3.3696		Q10 =	0.92016		Q10 =		0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	7.2	0.9	3.3696	10 min	7.2	0.71	0.92016
15 min	6.5	0.9	3.042	15 min	6.5	0.71	0.8307
20 min	5.8	0.9	2.7144	20 min	5.8	0.71	0.74124
30 min	4.7	0.9	2.1996	30 min	4.7	0.71	0.60066
40 min	4	0.9	1.872	40 min	4	0.71	0.5112
50 min	3.5	0.9	1.638	50 min	3.5	0.71	0.4473
60 min	3	0.9	1.404	60 min	3	0.71	0.3834
70 min	2.7	0.9	1.2636	70 min	2.7	0.71	0.34506
80 min	2.5	0.9	1.17	80 min	2.5	0.71	0.3195
90 min	2.3	0.9	1.0764	90 min	2.3	0.71	0.29394
100 min	2.2	0.9	1.0296	100 min	2.2	0.71	0.28116
110 min	1.9	0.9	0.8892	110 min	1.9	0.71	0.24282

Storage Calculations

10 min	Inflow	2573.856	Storage	831.168
	Outflow	1742.688		
15 min	Inflow	3485.43	Storage	1307.07
	Outflow	2178.36		
20 min	Inflow	4146.768	Storage	1532.736
	Outflow	2614.032		
30 min	Inflow	5040.468	Storage	1555.092
	Outflow	3485.376		
40 min	Inflow	5719.68	Storage	1362.96
	Outflow	4356.72		
50 min	Inflow	6255.9	Storage	1027.836
	Outflow	5228.064		
60 min	Inflow	6434.64	Storage	335.232
	Outflow	6099.408		
70 min	Inflow	6756.372	Storage	-214.38
	Outflow	6970.752		
80 min	Inflow	7149.6	Storage	-692.496
	Outflow	7842.096		
90 min	Inflow	7399.836	Storage	-1313.6
	Outflow	8713.44		
100 min	Inflow	7864.56	Storage	-1720.22
	Outflow	9584.784		
110 min	Inflow	6792.12	Storage	-3664.01
	Outflow	10456.13		

RANCH TRAIL
25 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.78	Areas 10 & 13 Detained
C =	0.53	COMPOSITE C = .53
Tc =	10	
I25 =	8.2	
Q25 =	3.38988	

Future Conditions (Developed)			Offsite Conditions (Undeveloped)			Bypass		
A =	0.52		A =	0.18		A =		0
Aadj =	0.52							
C =	0.9		C =	0.71		C =		0.9
Tc =	10		Tc =	10		Tc =		10
I25 =	8.2		I25 =	8.2		I25 =		8.2
Q25 =	3.8376		Q25 =	1.04796		Q25 =		0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	8.2	0.9	3.8376	10 min	8.2	0.71	1.04796
15 min	7.5	0.9	3.51	15 min	7.5	0.71	0.9585
20 min	6.7	0.9	3.1356	20 min	6.7	0.71	0.85626
30 min	5.5	0.9	2.574	30 min	5.5	0.71	0.7029
40 min	4.7	0.9	2.1996	40 min	4.7	0.71	0.60066
50 min	4	0.9	1.872	50 min	4	0.71	0.5112
60 min	3.5	0.9	1.638	60 min	3.5	0.71	0.4473
70 min	3.2	0.9	1.4976	70 min	3.2	0.71	0.40896
80 min	2.7	0.9	1.2636	80 min	2.7	0.71	0.34506
90 min	2.5	0.9	1.17	90 min	2.5	0.71	0.3195
100 min	2.4	0.9	1.1232	100 min	2.4	0.71	0.30672
110 min	2.3	0.9	1.0764	110 min	2.3	0.71	0.29394

Storage Calculations

10 min	Inflow	2931.336	Storage	946.608
	Outflow	1984.728		
15 min	Inflow	4021.65	Storage	1540.74
	Outflow	2480.91		
20 min	Inflow	4790.232	Storage	1813.14
	Outflow	2977.092		
30 min	Inflow	5898.42	Storage	1928.964
	Outflow	3969.456		
40 min	Inflow	6720.624	Storage	1758.804
	Outflow	4961.82		
50 min	Inflow	7149.6	Storage	1195.416
	Outflow	5954.184		
60 min	Inflow	7507.08	Storage	560.532
	Outflow	6946.548		
70 min	Inflow	8007.552	Storage	68.64
	Outflow	7938.912		
80 min	Inflow	7721.568	Storage	-1209.71
	Outflow	8931.276		
90 min	Inflow	8043.3	Storage	-1880.34
	Outflow	9923.64		
100 min	Inflow	8579.52	Storage	-2336.48
	Outflow	10916		
110 min	Inflow	8222.04	Storage	-3686.33
	Outflow	11908.37		

RANCH TRAIL
100 YR STORM CALCULATIONS
Present Conditions
Q=CIA

A =	0.78	Areas 10 & 13 (Detained)
C =	0.53	COMPOSITE C = .53
Tc =	10	
I100 =	9.8	
Q100 =	4.05132	

Future Conditions (Developed)			Offsite Conditions (Undeveloped)			Bypass		
A =	0.78		A =	0		A =		0
Aadj =	0.78							
C =	0.9		C =	0.9		C =		0.9
Tc =	10		Tc =	10		Tc =		10
I100 =	9.8		I100 =	9.8		I100 =		9.8
Q100 =	6.8796		Q100 =	0		Q100 =		0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	L	C	Q	Time	L	C	Q
10 min	9.8	0.9	6.8796	10 min	9.8	0.9	0
15 min	9	0.9	6.318	15 min	9	0.9	0
20 min	8.3	0.9	5.8266	20 min	8.3	0.9	0
30 min	6.9	0.9	4.8438	30 min	6.9	0.9	0
40 min	5.8	0.9	4.0716	40 min	5.8	0.9	0
50 min	5	0.9	3.51	50 min	5	0.9	0
60 min	4.5	0.9	3.159	60 min	4.5	0.9	0
70 min	4	0.9	2.808	70 min	4	0.9	0
80 min	3.7	0.9	2.5974	80 min	3.7	0.9	0
90 min	3.5	0.9	2.457	90 min	3.5	0.9	0
100 min	3.4	0.9	2.3868	100 min	3.4	0.9	0
110 min	3.2	0.9	2.2464	110 min	3.2	0.9	0

Storage Calculations

10 min	Inflow	4127.76	Storage	1696.968
	Outflow	2430.792		
15 min	Inflow	5686.2	Storage	2647.71
	Outflow	3038.49		
20 min	Inflow	6991.92	Storage	3345.732
	Outflow	3646.188		
30 min	Inflow	8718.84	Storage	3857.256
	Outflow	4861.584		
40 min	Inflow	9771.84	Storage	3694.86
	Outflow	6076.98		
50 min	Inflow	10530	Storage	3237.624
	Outflow	7292.376		
60 min	Inflow	11372.4	Storage	2864.628
	Outflow	8507.772		
70 min	Inflow	11793.6	Storage	2070.432
	Outflow	9723.168		
80 min	Inflow	12467.52	Storage	1528.956
	Outflow	10938.56		
90 min	Inflow	13267.8	Storage	1113.84
	Outflow	12153.96		
100 min	Inflow	14320.8	Storage	951.444
	Outflow	13369.36		
110 min	Inflow	13478.4	Storage	-1106.35
	Outflow	14584.75		

REVISED TO CONFORM TO CONSTRUCTION RECORDS.

 DATE: 2-17-26



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY W.L. DOUPHRATE II, TEXAS P.E. NO. 60102, F-886, ON DATE: MAY 3, 2024

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DRAINAGE DETENTION CALCULATIONS WEIR NO 4
 RANCH TRAIL OFFICES
 CITY OF ROCKWALL
 ROCKWALL COUNTY, TEXAS

REVISION
W.L.D.
 CHECKED
GC.W.
 DRAWN
 SCALE
 1" = 50' H
 1" = 100' V
 DATE
MAY, 2024
 PROJECT
23028
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