

**RANCH TRAIL
5 YR STORM CALCULATIONS**

Present Conditions
Q=CIA

A =	0.13	Areas 1 & 8 Detained
C =	0.777	Composite C Factor = .777
Tc =	10	
I5 =	6.1	
Q5 =	0.616161	

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.13	A =	0	A =	0
Aadj =	0.13				
C =	0.9	C =	0.9	C =	0.9
Tc =	10	Tc =	10	Tc =	10
I5 =	6.1	I5 =	6.1	I5 =	6.1
Q5 =	0.7137	Q5 =	0	Q5 =	0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	6.1	0.9	0.7137	10 min	6.1	0.9	0
15 min	5.5	0.9	0.6435	15 min	5.5	0.9	0
20 min	5	0.9	0.585	20 min	5	0.9	0
30 min	4	0.9	0.468	30 min	4	0.9	0
40 min	3.4	0.9	0.3978	40 min	3.4	0.9	0
50 min	2.9	0.9	0.3393	50 min	2.9	0.9	0
60 min	2.6	0.9	0.3042	60 min	2.6	0.9	0
70 min	2.4	0.9	0.2808	70 min	2.4	0.9	0
80 min	2.2	0.9	0.2574	80 min	2.2	0.9	0
90 min	2	0.9	0.234	90 min	2	0.9	0
100 min	1.8	0.9	0.2106	100 min	1.8	0.9	0
110 min	1.7	0.9	0.1989	110 min	1.7	0.9	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	428.22	369.6966	58.5234
15 min	579.15	462.1208	117.0293
20 min	702	554.5449	147.4551
30 min	842.4	739.3932	103.0068
40 min	954.72	924.2415	30.4785
50 min	1017.9	1109.09	-91.1898
60 min	1095.12	1293.938	-198.818
70 min	1179.36	1478.786	-299.426
80 min	1235.52	1663.635	-428.115
90 min	1263.6	1848.483	-584.883
100 min	1263.6	2033.331	-769.731
110 min	1193.4	2218.18	-1024.78

**RANCH TRAIL
10 YR STORM CALCULATIONS**

Present Conditions
Q=CIA

A =	0.13	Areas 1 & 8 Detained
C =	0.777	Composite C Factor = .777
Tc =	10	
I10 =	7.2	
Q10 =	0.727272	

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.13	A =	0	A =	0
Aadj =	0.13				
C =	0.9	C =	0.5	C =	0.9
Tc =	10	Tc =	10	Tc =	10
I10 =	7.2	I10 =	7.2	I10 =	7.2
Q10 =	0.8424	Q10 =	0	Q10 =	0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	7.2	0.9	0.8424	10 min	7.2	0.5	0
15 min	6.5	0.9	0.7605	15 min	6.5	0.5	0
20 min	5.8	0.9	0.6786	20 min	5.8	0.5	0
30 min	4.7	0.9	0.5499	30 min	4.7	0.5	0
40 min	4	0.9	0.468	40 min	4	0.5	0
50 min	3.5	0.9	0.4095	50 min	3.5	0.5	0
60 min	3	0.9	0.351	60 min	3	0.5	0
70 min	2.7	0.9	0.3159	70 min	2.7	0.5	0
80 min	2.5	0.9	0.2925	80 min	2.5	0.5	0
90 min	2.3	0.9	0.2691	90 min	2.3	0.5	0
100 min	2.2	0.9	0.2574	100 min	2.2	0.5	0
110 min	1.9	0.9	0.2223	110 min	1.9	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	505.44	436.3632	69.0768
15 min	684.45	545.454	138.996
20 min	814.32	654.5448	159.7752
30 min	989.82	872.7264	117.0936
40 min	1123.2	1090.908	32.292
50 min	1228.5	1309.09	-80.5896
60 min	1263.6	1527.271	-263.671
70 min	1326.78	1745.453	-418.673
80 min	1404	1963.634	-559.634
90 min	1453.14	2181.816	-728.676
100 min	1544.4	2399.998	-855.598
110 min	1333.8	2618.179	-1284.38

**RANCH TRAIL
25 YR STORM CALCULATIONS**

Present Conditions
Q=CIA

A =	0.13	Areas 1 & 8 Detained
C =	0.777	Composite C Factor = .777
Tc =	10	
I25 =	8.2	
Q25 =	0.828282	

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.13	A =	0	A =	0
Aadj =	0.13				
C =	0.9	C =	0.5	C =	0.9
Tc =	10	Tc =	10	Tc =	10
I25 =	8.2	I25 =	8.2	I25 =	8.2
Q25 =	0.9594	Q25 =	0	Q25 =	0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	8.2	0.9	0.9594	10 min	8.2	0.5	0
15 min	7.5	0.9	0.8775	15 min	7.5	0.5	0
20 min	6.7	0.9	0.7839	20 min	6.7	0.5	0
30 min	5.5	0.9	0.6435	30 min	5.5	0.5	0
40 min	4.7	0.9	0.5499	40 min	4.7	0.5	0
50 min	4	0.9	0.468	50 min	4	0.5	0
60 min	3.5	0.9	0.4095	60 min	3.5	0.5	0
70 min	3.2	0.9	0.3744	70 min	3.2	0.5	0
80 min	2.7	0.9	0.3159	80 min	2.7	0.5	0
90 min	2.5	0.9	0.2925	90 min	2.5	0.5	0
100 min	2.4	0.9	0.2808	100 min	2.4	0.5	0
110 min	2.3	0.9	0.2691	110 min	2.3	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	575.64	496.9692	78.6708
15 min	789.75	621.2115	168.5385
20 min	940.68	745.4538	195.2262
30 min	1158.3	993.9384	164.3616
40 min	1319.76	1242.423	77.337
50 min	1404	1490.908	-86.9076
60 min	1474.2	1739.392	-265.192
70 min	1572.48	1987.877	-415.397
80 min	1516.32	2236.361	-720.041
90 min	1579.5	2484.846	-905.346
100 min	1684.8	2733.331	-1048.53
110 min	1614.6	2981.815	-1367.22

**RANCH TRAIL
100 YR STORM CALCULATIONS**

Present Conditions
Q=CIA

A =	0.13	Areas 1 & 8 Detained
C =	0.777	Composite C Factor = .777
Tc =	10	
I100 =	9.8	
Q100 =	0.989898	

Future Conditions (Developed)		Offsite Conditions (Undeveloped)		Bypass	
A =	0.13	A =	0	A =	0
Aadj =	0.13				
C =	0.9	C =	0.5	C =	0.9
Tc =	10	Tc =	10	Tc =	10
I100 =	9.8	I100 =	9.8	I100 =	9.8
Q100 =	1.1466	Q100 =	0	Q100 =	0

Flow for Storm Durations (Developed)				Flow for Storm Durations (Offsite)			
Time	I	C	Q	Time	I	C	Q
10 min	9.8	0.9	1.1466	10 min	9.8	0.5	0
15 min	9	0.9	1.053	15 min	9	0.5	0
20 min	8.3	0.9	0.9711	20 min	8.3	0.5	0
30 min	6.9	0.9	0.8073	30 min	6.9	0.5	0
40 min	5.8	0.9	0.6786	40 min	5.8	0.5	0
50 min	5	0.9	0.585	50 min	5	0.5	0
60 min	4.5	0.9	0.5265	60 min	4.5	0.5	0
70 min	4	0.9	0.468	70 min	4	0.5	0
80 min	3.7	0.9	0.4329	80 min	3.7	0.5	0
90 min	3.5	0.9	0.4095	90 min	3.5	0.5	0
100 min	3.4	0.9	0.3978	100 min	3.3	0.5	0
110 min	3.2	0.9	0.3744	110 min	2.9	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	687.96	593.9388	94.0212
15 min	947.7	742.4235	205.2765
20 min	1165.32	890.9082	274.4118
30 min	1453.14	1187.878	265.2624
40 min	1628.64	1484.847	143.793
50 min	1755	1781.816	-26.8164
60 min	1895.4	2078.786	-183.386
70 min	1965.6	2375.755	-410.155
80 min	2077.92	2672.725	-594.805
90 min	2211.3	2969.694	-758.394
100 min	2386.8	3266.663	-879.863
110 min	2246.4	3563.633	-1317.23

REVISED TO CONFORM TO CONSTRUCTION RECORDS.

W.L.D. DATE: 2-17-26



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY W.L. DOUPHRATE II, TEXAS P.E. NO. 60102, F-986, ON DATE: MAY 3, 2024

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DRAINAGE DETENTION CALCULATIONS WEIR NO 1
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
50