

RANCH TRAIL
5 YR STORM CALCULATIONS
Present Conditions
Q=CIA
A = 0.004 Area 20 Detained
C = 0.35
Tc = 10
I5 = 6.1
Q5 = 0.00854

Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass
A = 0.004 A = 0 A = 0
Aadj = 0.004
C = 0.9 C = 0.5 C = 0.9
Tc = 10 Tc = 10 Tc = 10
I5 = 6.1 I5 = 6.1 I5 = 6.1
Q5 = 0.02196 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	0.02196	10 min	6.1	0.5	0
15 min	5.5	0.9	0.0198	15 min	5.5	0.5	0
20 min	5	0.9	0.018	20 min	5	0.5	0
30 min	4	0.9	0.0144	30 min	4	0.5	0
40 min	3.4	0.9	0.01224	40 min	3.4	0.5	0
50 min	2.9	0.9	0.01044	50 min	2.9	0.5	0
60 min	2.6	0.9	0.00936	60 min	2.6	0.5	0
70 min	2.4	0.9	0.00864	70 min	2.4	0.5	0
80 min	2.2	0.9	0.00792	80 min	2.2	0.5	0
90 min	2	0.9	0.0072	90 min	2	0.5	0
100 min	1.8	0.9	0.00648	100 min	1.8	0.5	0
110 min	1.7	0.9	0.00612	110 min	1.7	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	13.176	5.124	8.052
15 min	17.82	6.405	11.415
20 min	21.6	7.686	13.914
30 min	25.92	10.248	15.672
40 min	29.376	12.81	16.566
50 min	31.32	15.372	15.948
60 min	33.696	17.934	15.762
70 min	36.288	20.496	15.792
80 min	38.016	23.058	14.958
90 min	38.88	25.62	13.26
100 min	38.88	28.182	10.698
110 min	36.72	30.744	5.976

RANCH TRAIL
10 YR STORM CALCULATIONS
Present Conditions
Q=CIA
A = 0.004 Area 20 Detained
C = 0.35
Tc = 10
I10 = 7.2
Q10 = 0.01008

Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass
A = 0.004 A = 0 A = 0
Aadj = 0.004
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 = 0.02592 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	0.02592	10 min	7.2	0.5	0
15 min	6.5	0.9	0.0234	15 min	6.5	0.5	0
20 min	5.8	0.9	0.02088	20 min	5.8	0.5	0
30 min	4.7	0.9	0.01692	30 min	4.7	0.5	0
40 min	4	0.9	0.0144	40 min	4	0.5	0
50 min	3.5	0.9	0.0126	50 min	3.5	0.5	0
60 min	3	0.9	0.0108	60 min	3	0.5	0
70 min	2.7	0.9	0.00972	70 min	2.7	0.5	0
80 min	2.5	0.9	0.009	80 min	2.5	0.5	0
90 min	2.3	0.9	0.00828	90 min	2.3	0.5	0
100 min	2.2	0.9	0.00792	100 min	2.2	0.5	0
110 min	1.9	0.9	0.00684	110 min	1.9	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	15.552	6.048	9.504
15 min	21.06	7.56	13.5
20 min	25.056	9.072	15.984
30 min	30.456	12.096	18.36
40 min	34.56	15.12	19.44
50 min	37.8	18.144	19.656
60 min	38.88	21.168	17.712
70 min	40.824	24.192	16.632
80 min	43.2	27.216	15.984
90 min	44.712	30.24	14.472
100 min	47.52	33.264	14.256
110 min	41.04	36.288	4.752

RANCH TRAIL
25 YR STORM CALCULATIONS
Present Conditions
Q=CIA
A = 0.004 Area 20 Detained
C = 0.35
Tc = 10
I25 = 8.2
Q25 = 0.01148

Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass
A = 0.004 A = 0 A = 0
Aadj = 0.004
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 = 0.02952 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	0.02952	10 min	8.2	0.5	0
15 min	7.5	0.9	0.027	15 min	7.5	0.5	0
20 min	6.7	0.9	0.02412	20 min	6.7	0.5	0
30 min	5.5	0.9	0.0198	30 min	5.5	0.5	0
40 min	4.7	0.9	0.01692	40 min	4.7	0.5	0
50 min	4	0.9	0.0144	50 min	4	0.5	0
60 min	3.5	0.9	0.0126	60 min	3.5	0.5	0
70 min	3.2	0.9	0.01152	70 min	3.2	0.5	0
80 min	2.7	0.9	0.00972	80 min	2.7	0.5	0
90 min	2.5	0.9	0.009	90 min	2.5	0.5	0
100 min	2.4	0.9	0.00864	100 min	2.4	0.5	0
110 min	2.3	0.9	0.00828	110 min	2.3	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	17.712	6.888	10.824
15 min	24.3	8.61	15.69
20 min	28.944	10.332	18.612
30 min	35.64	13.776	21.864
40 min	40.608	17.22	23.388
50 min	43.2	20.664	22.536
60 min	45.36	24.108	21.252
70 min	48.384	27.552	20.832
80 min	46.656	30.996	15.66
90 min	48.6	34.44	14.16
100 min	51.84	37.884	13.956
110 min	49.68	41.328	8.352

RANCH TRAIL
100 YR STORM CALCULATIONS
Present Conditions
Q=CIA
A = 0.004 Area 20 Detained
C = 0.35
Tc = 10
I100 = 9.8
Q100 = 0.01372

Future Conditions (Developed) Offsite Conditions (Undeveloped) Bypass
A = 0.004 A = 0 A = 0
Aadj = 0.004
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 = 0.03528 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	0.03528	10 min	9.8	0.5	0
15 min	9	0.9	0.0324	15 min	9	0.5	0
20 min	8.3	0.9	0.02988	20 min	8.3	0.5	0
30 min	6.9	0.9	0.02484	30 min	6.9	0.5	0
40 min	5.8	0.9	0.02088	40 min	5.8	0.5	0
50 min	5	0.9	0.018	50 min	5	0.5	0
60 min	4.5	0.9	0.0162	60 min	4.5	0.5	0
70 min	4	0.9	0.0144	70 min	4	0.5	0
80 min	3.7	0.9	0.01332	80 min	3.7	0.5	0
90 min	3.5	0.9	0.0126	90 min	3.5	0.5	0
100 min	3.4	0.9	0.01224	100 min	3.3	0.5	0
110 min	3.2	0.9	0.01152	110 min	2.9	0.5	0

Storage Calculations

Time	Inflow	Outflow	Storage
10 min	21.168	8.232	12.936
15 min	29.16	10.29	18.87
20 min	35.856	12.348	23.508
30 min	44.712	16.464	28.248
40 min	50.112	20.58	29.532
50 min	54	24.696	29.304
60 min	58.32	28.812	29.508
70 min	60.48	32.928	27.552
80 min	63.936	37.044	26.892
90 min	68.04	41.16	26.88
100 min	73.44	45.276	28.164
110 min	69.12	49.392	19.728

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. 67022, F-986, ON DATE: MAY 3, 2024

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DRAINAGE DETENTION CALCULATIONS WEIR NO 3
RANCH TRAIL OFFICES
CITY OF ROCKWALL
ROCKWALL COUNTY, TEXAS

REVISION
W.L.D.
CHECKED
G.C.W.
DRAWN
SCALE
1" = 20' H
1" = 40' V
MAY, 2024
DATE
23028
PROJECT
52