POND # 2

FREQUENCY = 10 YEAR

I. VOLUME REQUIRED

PRESENT CONDITION

Td = 20 DESIGN TIME

C = 0.35
I = 5.68 IN/HR
A = 16.09 ACRES

Q = C*I*A = 31.98 CFS

PROPOSED CONDITION

Td = 10 DESIGN TIME

C = 0.90
I = 7.19 IN/HR
A = 16.09 ACRES

Q = C*I*A = 104.12 CFS

MAX. RELEASE RATE = PRESENT CONDITION–DIRECT DISCHARGE
MAX. RELEASE RATE = 31.98 – 0.26 = 31.72 CFS

TIME	INTENSITY	DISCHARGE	INFLOW	OUTFLOW	STORAGE	
10	7.19	104.83	62,898.12	19,323.36	43,574.76	
15	6.35	92.58	83,324.76	24,154.20	59,170.50	
20	5.68	82.81	99,377.28	28,985.04	70,392.24	
25	5.14	74.94	112,411.80	33,815.88	78,595.92	
30	4.7	68.53	123,346.80	38,646.72	84,700.08	
35	4.33	63.13	132,575.94	43,477.56	89,098.38	
40	4.01	58.47	140,317.92	48,308.40	92,009.52	
45	3.73	54.38	146,835.18	53,139.24	93,695.94	
50	3.5	51.03	153,090.00	57,970.08	95,119.92	
55	3.29	47.97	158,295.06	62,800.92	95,494.14	MAX
60	3.1	45.20	162,712.80	67,631.76	95,081.04	
70	2.78	40.53	170,236.08	77,293.44	92,942.64	
80	2.53	36.89	177,059.52	86,955.12	90,104.40	
90	2.32	33.83	182,658.24	96,616.80	86,041.44	

II. VOLUME PROVIDED

POND # 2

ELEV	AREA	AVE. AREA	VOLUME	CUM. VOL.	
541	55,631.71	53,465.45	53,465.45	170,439.65	
540	51,299.18	49,244.35	49,244.35	116,974.20	10 YEAR W.S ELEV. 539.56
539	47,189.52	45,249.81	45,249.81	67,729.85	
538	43,310.09	22,480.05	22,480.05	22,480.05	
537	1,650.01				

H = TOTAL HEAD = 539.56 – 536.68 =2.88

Q = 2.5 * 2.88^2.5 * TAN 68.9/2 =24.15 CFS

FREQUENCY = 25 YEAR

I. VOLUME REQUIRED

PRESENT CONDITION

Td = 20 DESIGN TIME

C = 0.35
I = 6.61 IN/HR
A = 16.09 ACRES

Q = C*I*A = 37.22 CFS

PROPOSED CONDITION

Td = 10 DESIGN TIME

C = 0.90
I = 8.22 IN/HR
A = 16.09 ACRES

Q = C*I*A = 119.03 CFS

MAX. RELEASE RATE = PRESENT CONDITION–DIRECT DISCHARGE
MAX. RELEASE RATE = 37.22 – 0.29 = 36.93 CFS

TIME	INTENSITY	DISCHARGE	INFLOW	OUTFLOW	STORAGE	
10	8.22	119.85	71,908.56	22,487.22	49,421.34	
15	7.33	106.87	96,184.26	28,109.03	68,075.24	
20	6.61	96.37	115,648.56	33,730.83	81,917.73	
25	6.01	87.63	131,438.70	39,352.64	92,086.07	
30	5.50	80.19	144,342.00	44,974.44	99,367.56	
35	5.07	73.92	155,233.26	50,596.25	104,637.02	
40	4.69	68.38	164,112.48	56,218.05	107,894.43	
45	4.37	63.71	172,029.42	61,839.86	110,189.57	
50	4.08	59.49	178,459.20	67,461.66	110,997.54	
55	3.83	55.84	184,276.62	73,083.47	111,193.16	MAX
60	3.60	52.49	188,956.80	78,705.27	110,251.53	
70	3.21	46.80	196,567.56	89,948.88	106,618.68	
80	2.90	42.28	202,953.60	101,192.49	101,761.11	
90	2.64	38.49	207,852.48	112,436.10	95,416.38	

II. VOLUME PROVIDED

POND # 2

ELEV	AREA	AVE. AREA	VOLUME	CUM. VOL.	
541	55,631.71	53,465.45	53,465.45	170,439.65	
540	51,299.18	49,244.35	49,244.35	116,974.20	25 YEAR W.S ELEV. 539.88
539	47,189.52	45,249.81	45,249.81	67,729.85	
538	43,310.09	22,480.05	22,480.05	22,480.05	
537	1,650.01				

H = TOTAL HEAD = 539.88 – 536.68 =3.20

Q = 2.5 * 3.20^2.5 * TAN 68.9/2 =31.43 CFS

FREQUENCY = 50 YEAR

I. VOLUME REQUIRED

PRESENT CONDITION

Td = 20 DESIGN TIME

C = 0.35
I = 7.42 IN/HR
A = 16.09 ACRES

Q = C*I*A = 41.78 CFS

PROPOSED CONDITION

Td = 10 DESIGN TIME

C = 0.90
I = 9.01 IN/HR
A = 16.09 ACRES

Q = C*I*A = 130.47 CFS

MAX. RELEASE RATE = PRESENT CONDITION–DIRECT DISCHARGE
MAX. RELEASE RATE = 41.78 – 0.32 = 41.46 CFS

TIME	INTENSITY	DISCHARGE	INFLOW	OUTFLOW	STORAGE	
10	9.01	131.37	78,819.48	25,242.64	53,576.64	
15	8.16	118.97	107,075.52	31,553.55	75,521.97	
20	7.42	108.18	129,820.32	37,864.26	91,956.06	
25	6.77	98.71	148,059.90	44,174.97	103,884.93	
30	6.20	90.40	162,712.80	50,485.68	112,227.12	
35	5.70	83.11	174,522.80	56,796.39	117,726.21	
40	5.25	76.55	183,708.00	63,107.10	120,600.90	
45	4.86	70.86	191,318.76	69,417.81	121,900.95	MAX
50	4.50	65.61	196,830.00	75,728.52	121,101.48	
55	4.19	61.09	201,597.66	82,039.23	119,558.43	
60	3.90	56.86	204,703.20	88,349.94	116,353.26	
70	3.41	49.72	208,814.76	100,971.36	107,843.40	
80	3.00	43.74	209,952.00	113,592.78	96,359.22	
90	2.66	38.78	209,427.12	126,214.20	83,212.92	

II. VOLUME PROVIDED

POND # 2

ELEV	AREA	AVE. AREA	VOLUME	CUM. VOL.	
541	55,631.71	53,465.45	53,465.45	170,439.65	
540	51,299.18	49,244.35	49,244.35	116,974.20	50 YEAR W.S ELEV. 540.09
539	47,189.52	45,249.81	45,249.81	67,729.85	
538	43,310.09	22,480.05	22,480.05	22,480.05	
537	1,650.01				

H = TOTAL HEAD = 540.09– 536.68 =3.41

Q = 2.5 * 3.41^2.5 * TAN 68.9/2 =36.84 CFS

FREQUENCY = 100 YEAR

I. VOLUME REQUIRED

PRESENT CONDITION

Td = 20 DESIGN TIME

C = 0.35
I = 8.30 IN/HR
A = 16.09 ACRES

Q = C*I*A = 46.74 CFS

PROPOSED CONDITION

Td = 10 DESIGN TIME

C = 0.90
I = 9.80 IN/HR
A = 16.09 ACRES

Q = C*I*A = 141.91 CFS

MAX. RELEASE RATE = PRESENT CONDITION–DIRECT DISCHARGE
MAX. RELEASE RATE = 46.74 – 0.32 = 46.42 CFS

TIME	INTENSITY	DISCHARGE	INFLOW	OUTFLOW	STORAGE	
10	9.80	142.88	85,730.40	28,236.60	57,493.80	
15	9.00	131.22	118,098.00	35,295.75	82,802.25	
20	8.30	121.01	145,216.80	42,354.90	102,861.90	
25	7.50	109.35	164,025.00	49,414.05	114,610.95	
30	7.10	103.52	186,332.40	56,473.20	129,859.20	
35	6.40	93.31	195,955.20	63,532.35	132,422.85	
40	5.90	86.02	206,452.80	70,591.50	135,861.30	
45	5.40	78.73	212,576.40	77,650.65	134,925.75	
50	5.00	72.90	218,700.00	84,709.80	133,990.20	
55	4.80	69.98	230,947.20	91,768.95	139,178.25	MAX
60	4.50	65.61	236,196.00	98,828.10	137,367.90	
70	4.00	58.32	244,944.00	112,946.40	131,997.60	
80	3.70	53.95	258,940.80	127,064.70	131,876.10	
90	3.40	49.57	267,688.80	141,183.00	126,505.80	

II. VOLUME PROVIDED

POND # 2

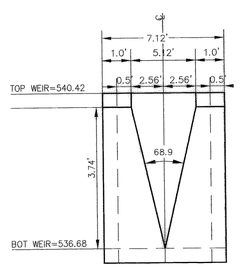
ELEV	AREA	AVE. AREA	VOLUME	CUM. VOL.	
541	55,631.71	53,465.45	53,465.45	170,439.65	
540	51,299.18	49,244.35	49,244.35	116,974.20	100 YEAR W.S ELEV. 540.42
539	47,189.52	45,249.81	45,249.81	67,729.85	
538	43,310.09	22,480.05	22,480.05	22,480.05	
537	1,650.01				

H = TOTAL HEAD = 540.42– 536.68 =3.74

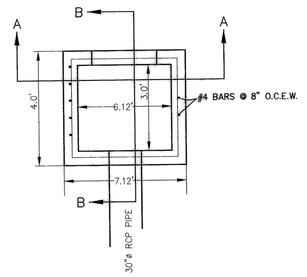
Q = 2.5 * 3.74^2.5 * TAN 68.9/2 =46.42 CFS

V–NOTCH CALCULATIONS
Q = 2.5*H^2.5 * TAN Ø/2

Q = DISCHARGE
H = HEAD ON WEIR = W.S ELEV. – F.L ELEV
O = ANGLE OF NOTCH IN DEGREES



SECTION "A–A"
NTS



PLAN
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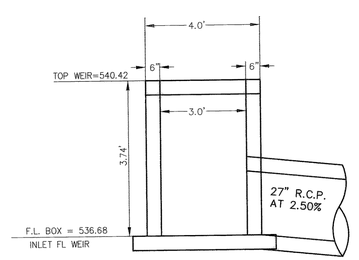

SECTION "B–B"
NTS

REVISED TO CONFORM TO CONSTRUCTION RECORDS.
DATE: 12/9/04

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DETENTION POND CALCULATIONS (POND # 2)
ROCKWALL CROSSING
CITY OF ROCKWALL
ROCKWALL COUNTY, TEXAS

2	12/9/04
1	10/22/04
REVISION	
W.L.D.	
CHECKED	
K.E.B.	
DRAWN	
10/15/04	
DATE	
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PROJECT	
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OF	
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