City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 3, 1993

Marvin Kortum
1605 Speakman Dr. SE
Albuquerque, NM 87123

RE: ENGINEER CERTIFICATION FOR GAS STATION, CONVENIENCE STORE AND CAR WASH @ LOUISIANA & SAN ANTONIO (D18-D26A) CERTIFICATION STATEMENT DATED 5/18/93.

Dear Mr. Kortum:

Based on the information provided on your May 19, 1993 submittal, the above referenced site is acceptable for Engineer's Certification. If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineer Associate

BJM/dl/WPHYD/7714

xc: Alan Martinez
File

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 8, 1993

Marvin R. Kortum
1605 Speakman Dr. SE
Albuquerque, NM 87123

RE: REVISED DRAINAGE PLAN FOR GAS STATION, CONVENIENCE STORE AND CAR WASH @ LOUISIANA & SAN ANTONIO (D18-D26A) REVISION DATED 12/28/92.

Dear Mr. Kortum:

Based on the information provided on your December 30, 1992 resubmittal, the above referenced site is approved for Building Permit.

Please be advised that a separate permit is required for construction within City Right-of-Way. A copy of this approval letter must be on hand when applying for the excavation permit.

Also, prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. Certification checklist will be required.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Assistant

BJM/dl/WPHYD/7350

xc: Alan Martinez
File
Darlene Saavedra

¶↕¶↕REVISED DECEMBER 28, 1992
RUNOFF FOR TRACTS CDS-2, NORTH ALBUQUERQUE ACRES SUBDIVISION
(ROBERTS OIL COMPANY GAS STATION AND CAR WASH AT CORNER OF LOUISIANA BLVD. AND SAN ANTONIO, NE)

TABLE A-1-a For east side of lot
Runoff Estimate: For On-site Basin of 0.2296 acres, onto San Antonio Drive

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	10000.00	1.000	0.4	475.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	3500.00	0.350	0.19	242.1
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	6500.00	0.650	0.75	1262.1
TOTALS			10000.00	1.000	0.4	475.0	10000.00	1.000	0.94	1504.2
			0.2296 acre				0.2296 acre			

TABLE A-1-b North and west side of lot
Runoff Estimate: For On-site Basin of 0.5326 acres, onto San Antonio Drive

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	23200.00	1.000	0.9	1102.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	6600.00	0.284	0.37	456.5
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	16600.00	0.716	1.91	3223.2
TOTALS			23200.00	1.000	0.9	1102.0	23200.00	1.000	2.28	3679.7
			0.5326 acre				0.5326 acre			

.94
2.28
1.05

TABLE A-1-c Central and south side of lot
Runoff Estimate: For On-site Basin of 0.2098 acres, onto San Antonio Drive

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	9140.00	1.000	0.3	434.1	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	9140.00	1.000	1.05	1774.7
TOTALS			9140.00	1.000	0.3	434.1	9140.00	1.000	1.05	1774.7
			0.2098 acre				0.2098 acre			

1.05

¶↕¶↕ TABLE G-1 December 28,1992

Approximate Pipe Capacities for Pond Drain Lines

Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

	Manning n	Inlet Surface Elevation	Outlet Surface Elevation	Pipe Length Ft	Hydraulic Slope	Pipe Diameter In.	Area SF	Wetted Perimeter Ft	Hydraulic Radius Ft	Velocity FPS	Capacity CFS
POND A											
1	0.011	31.700	29.47	110	0.0203	4.00	0.087	1.047	0.083	3.669	0.320
2	0.011	32.300	29.47	110	0.0257	4.00	0.087	1.047	0.083	4.134	0.361
3	0.011	32.800	29.47	110	0.0303	4.00	0.087	1.047	0.083	4.484	0.391
4	0.011	33.300	29.47	110	0.0348	4.00	0.087	1.047	0.083	4.809	0.420
5	0.011	33.500	29.47	110	0.0366	4.00	0.087	1.047	0.083	4.933	0.430
									MAXIMUM ALLOWABLE Q=0.45 CFS		
POND B											
1	0.011	30.100	29.32	18	0.0433	4.00	0.087	1.047	0.083	5.365	0.468
2	0.011	31.000	29.32	18	0.0933	4.00	0.087	1.047	0.083	7.873	0.687
3	0.011	32.000	29.32	18	0.1489	4.00	0.087	1.047	0.083	9.944	0.868
4	0.011	32.500	29.32	18	0.1767	4.00	0.087	1.047	0.083	10.832	0.945
5	0.011	33.000	29.32	18	0.2044	4.00	0.087	1.047	0.083	11.653	1.017
									MAXIMUM ALLOWABLE Q=1.10 CFS		

Maximum allowable discharge (Q) based on 2.67 CFS per acre allowed.
Area to drain is .9720 acre; .9720x2.67=2.6 CFS for .9720 acre.

Basin	Area, acre	max discharge Q, CFS	method off release
A-1-a	.2296	.45	pipe drain
A-1-b	.5326	1.10	pipe drain
A-1-c	.2098	1.05	free discharge
Total	.9720	2.60	

FIGURE G

PIPE DISCHARGE VS DEPTH

POND A

VOLUME

33.20
33.00
32.00
31.70
31.00

750
600
500
400
250
200
100
000

0 .2 .3 .4 .5 .6 .7 .8 .9 1.0 CFS

Q 18 24 30 36 42 48 CFM

POND B

VOLUME

33.00
32.00
31.00
30.00

2100
1050
0.00

.2 .4 .5 .6 .7 .8 1.0 CFS

Q CFS 30 36 42 48 54 60 CFM

KEUFFEL & ESSER CO., INC., FERNWOOD, PENNA.
10X10 TO THE INCH 5TH LINE ACCENTED

TABLE H DEcember 28,1992

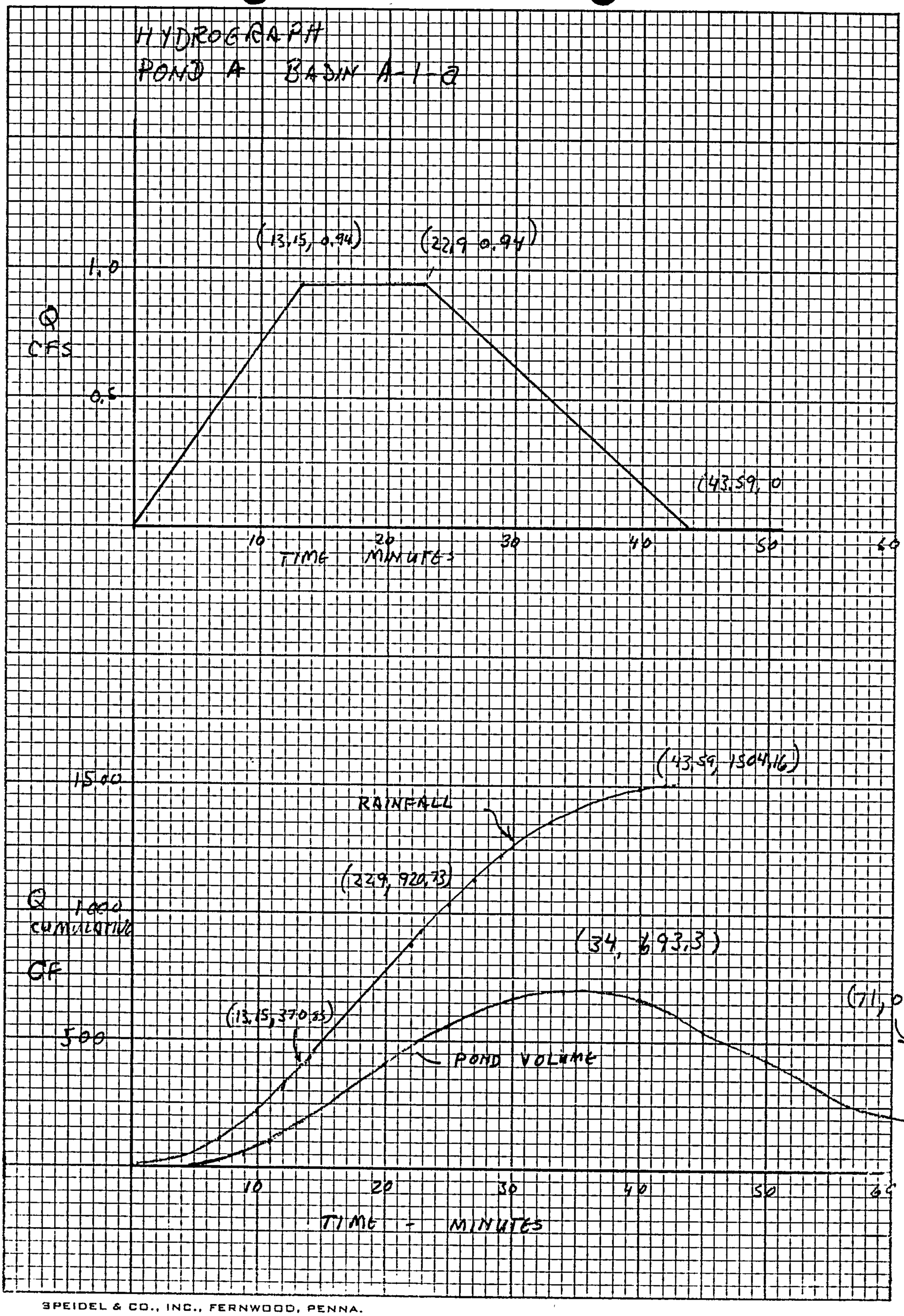
Hydrograph

Excess Precipitation In. Zone 3 Land Treatment				Area in each land treatment SF											
				A		B		C		D		TOTAL	E	Qp	tb	tp	top
A	B	C	D	SF	%	SF	%	SF	%	SF	%	SF		CFS	min.	min.	min.
Table H-1-a																	
0.57	0.83	1.2	2.33	0	0	3500	0.35	0	0	6500	0.65	10000	1.805	0.94	43.59	13.15	9.75
TABLE H-1-b																	
0.57	0.83	1.2	2.33	0	0	6600	0.28	0	0	16600	0.71	23200	1.903	2.28	43.06	12.82	10.73
TABLE H-1-c																	
0.57	0.83	1.2	2.33	0	0	0	0	0	0	9140	1	9140	2.33	1.05	41.34	11.40	15

Hydrograph is based on Revisions to Chapter 22, Section 2 of the DPM, January 1991.

HYDROGRAPH

POND A BASIN A-1-a



SPEIDEL & CO., INC., FERNWOOD, PENNA.
10X10 TO THE INCH 5TH LINE ACCENTED

HYDROGRAPH FOR BASIN A-1-a December 28,1992

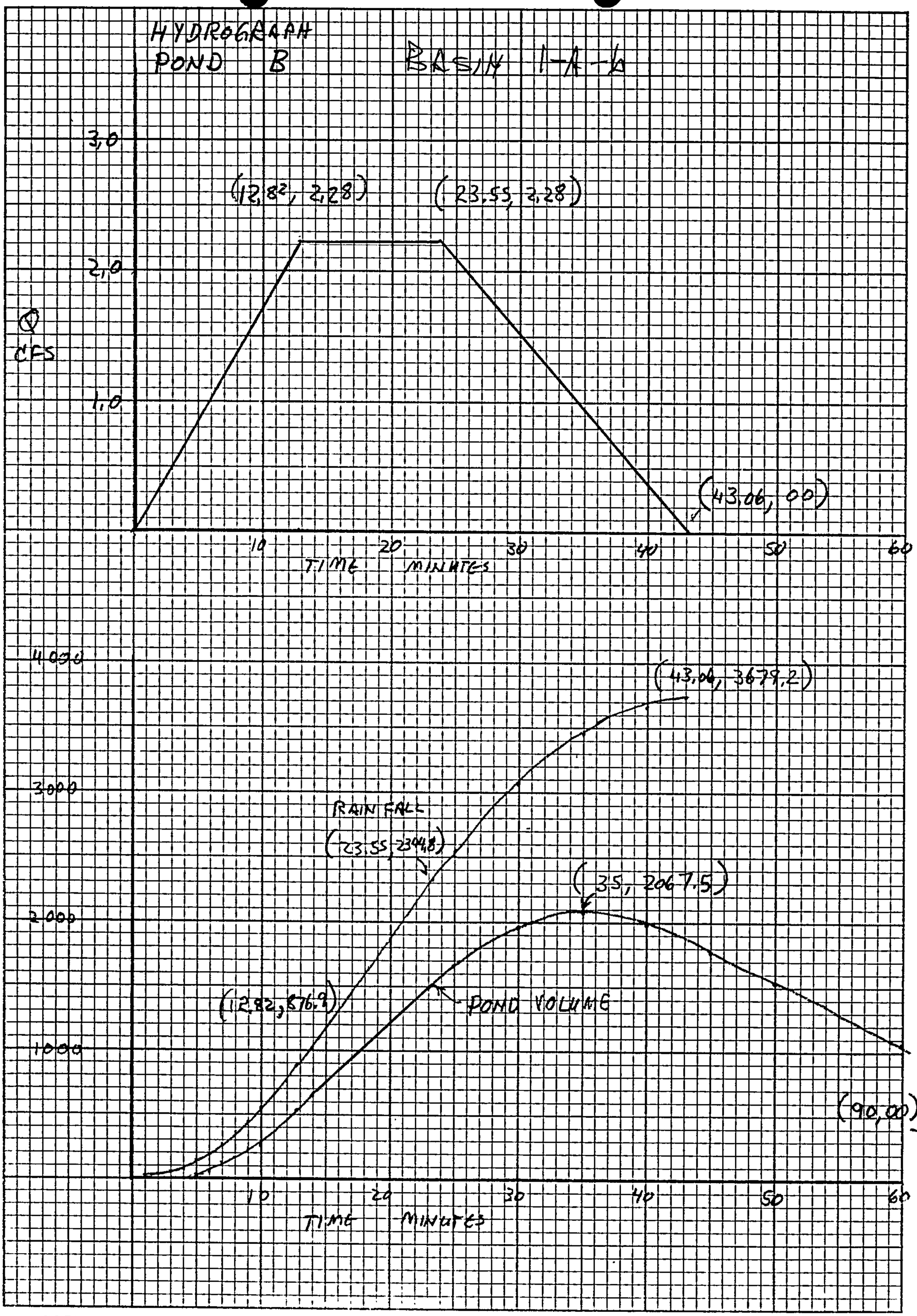
PRECIPITATION, 100 YEAR-6 HOUR STORM

POND REQUIREMENT

Min.	Q CFS	CFM	V Cumulative CF	Increase CF	Pond Drainage Rate CFM	Cummulative to drain CF	Remain in pond CF
1	0.071	4.289	2.144	2.144	19	2.144	-16.856
2	0.143	8.578	8.578	6.433	19	8.578	-12.567
3	0.214	12.867	19.300	10.722	19	19.300	-8.278
4	0.286	17.156	34.312	15.011	19	34.312	-3.989
5	0.357	21.445	53.612	19.300	19	53.312	0.300
6	0.429	25.734	77.202	23.589	19	72.312	4.890
7	0.500	30.023	105.080	27.878	19	91.312	13.768
8	0.572	34.312	137.247	32.167	19	110.312	26.935
9	0.643	38.601	173.703	36.456	19	129.312	44.392
10	0.715	42.890	214.449	40.745	19	148.312	66.137
11	0.786	47.179	259.483	45.034	19	167.312	92.171
12	0.858	51.468	308.806	49.323	20	187.312	121.494
13	0.929	55.757	362.418	53.612	20	207.312	155.106
13.15	0.940	56.400	370.830	8.412	0	207.312	163.518
14	0.940	56.400	418.770	47.940	20	227.312	191.458
15	0.940	56.400	475.170	56.400	21	248.312	226.858
16	0.940	56.400	531.570	56.400	21	269.312	262.258
17	0.940	56.400	587.970	56.400	21	290.312	297.658
18	0.940	56.400	644.370	56.400	22	312.312	332.058
19	0.940	56.400	700.770	56.400	22	334.312	366.458
20	0.940	56.400	757.170	56.400	22	356.312	400.858
21	0.940	56.400	813.570	56.400	22	378.312	435.258
22	0.940	56.400	869.970	56.400	22	400.312	469.658
22.9	0.940	56.400	920.730	50.760	0	400.312	520.418
23	0.935	56.127	926.329	5.599	23	423.312	503.017
24	0.890	53.401	981.094	54.764	23	446.312	534.782
25	0.845	50.675	1033.132	52.038	23	469.312	563.820
26	0.799	47.950	1082.445	49.313	24	493.312	589.133
27	0.754	45.224	1129.031	46.587	24	517.312	611.719
28	0.708	42.498	1172.892	43.861	24	541.312	631.580
29	0.663	39.772	1214.026	41.135	24	565.312	648.715
30	0.617	37.046	1252.435	38.409	24	589.312	663.123
31	0.572	34.320	1288.118	35.683	24	613.312	674.806
32	0.527	31.594	1321.075	32.957	24	637.312	683.763
33	0.481	28.868	1351.305	30.231	24	661.312	689.994
34	0.436	26.142	1378.810	27.505	24	685.312	693.499
35	0.390	23.416	1403.589	24.779	25	710.312	693.277
36	0.345	20.690	1425.642	22.053	25	735.312	690.330
37	0.299	17.964	1444.969	19.327	25	760.312	684.657
38	0.254	15.238	1461.570	16.601	24	784.312	677.259
39	0.209	12.512	1475.445	13.875	24	808.312	667.134
40	0.163	9.786	1486.595	11.149	24	832.312	654.283
41	0.118	7.060	1495.018	8.423	24	856.312	638.706
42	0.072	4.334	1500.715	5.697	24	880.312	620.403
43	0.027	1.608	1503.686	2.971	24	904.312	599.375
43.59	0.000	0.000	1504.161	0.474	23	927.312	576.849
44					23	950.312	553.849
45					23	973.312	530.849
46					23	996.312	507.849
47					22	1018.312	485.849
48					22	1040.312	463.849
49					22	1062.312	441.849
50					22	1084.312	419.849

HYDROGRAPH
POND B

BASIN 1-A-1b



SPEIDEL & CO., INC., FERNWOOD, PENNA.
10X10 TO THE INCH 5TH LINE ACCENTED

¶↕¶↕HYDROGRAPH FOR BASIN A-1-b December 28,1992

PRECIPITATION, 100 YEAR-6 HOUR STORM

Min.	Q CFS	V CFM	Cumulative CF	Increase CF
1	0.178	10.671	5.335	5.335
2	0.356	21.342	21.342	16.006
3	0.534	32.012	48.019	26.677
4	0.711	42.683	85.367	37.348
5	0.889	53.354	133.385	48.019
6	1.067	64.025	192.075	58.690
7	1.245	74.696	261.435	69.360
8	1.423	85.367	341.466	80.031
9	1.601	96.037	432.168	90.702
10	1.778	106.708	533.541	101.373
11	1.956	117.379	645.585	112.044
12	2.134	128.050	768.300	122.715
12.82	2.280	136.800	876.888	108.588
13	2.280	24.624	901.512	24.624
14	2.280	136.800	1038.312	136.800
15	2.280	136.800	1175.112	136.800
16	2.280	136.800	1311.912	136.800
17	2.280	136.800	1448.712	136.800
18	2.280	136.800	1585.512	136.800
19	2.280	136.800	1722.312	136.800
20	2.280	136.800	1859.112	136.800
21	2.280	136.800	1995.912	136.800
22	2.280	136.800	2132.712	136.800
23	2.280	136.800	2269.512	136.800
23.55	2.280	75.240	2344.752	75.240
24	2.227	133.645	2405.602	60.850
25	2.111	126.633	2535.741	130.139
26	1.994	119.621	2658.868	123.127
27	1.877	112.609	2774.983	116.115
28	1.760	105.598	2884.087	109.103
29	1.643	98.586	2986.178	102.092
30	1.526	91.574	3081.258	95.080
31	1.409	84.562	3169.326	88.068
32	1.293	77.550	3250.382	81.056
33	1.176	70.539	3324.427	74.044
34	1.059	63.527	3391.460	67.033
35	0.942	56.515	3451.480	60.021
36	0.825	49.503	3504.490	53.009
37	0.708	42.491	3550.487	45.997
38	0.591	35.480	3589.472	38.986
39	0.474	28.468	3621.446	31.974
40	0.358	21.456	3646.408	24.962
41	0.241	14.444	3664.358	17.950
42	0.124	7.432	3675.297	10.938
43	0.007	0.421	3679.223	3.927
43.06	0.000	0.000	3679.223	0.000
44				
45				
46				
47				
48				
49				
50				

POND REQUIREMENT

Min.	Pond Drainage Rate CFM	Cummulative to drain CF	Remain in pond CF
1	30	5.335	-24.665
2	30	21.342	-13.994
3	30	48.019	-3.323
4	30	78.019	7.348
5	30	108.019	25.367
6	30	138.019	54.056
7	31	169.019	92.417
8	31	200.019	141.448
9	32	232.019	200.150
10	32	264.019	269.523
11	33	297.019	348.566
12	34	331.019	437.281
12.82	35	366.019	510.869
13	0	366.019	535.493
14	36	402.019	636.293
15	37	439.019	736.093
16	38	477.019	834.893
17	39	516.019	932.693
18	40	556.019	1029.493
19	41	597.019	1125.293
20	42	639.019	1220.093
21	43	682.019	1313.893
22	44	726.019	1406.693
23	45	771.019	1498.493
23.55	46	817.019	1527.733
24	0	817.019	1588.583
25	48	865.019	1670.722
26	49	914.019	1744.849
27	50	964.019	1810.964
28	51	1015.019	1869.068
29	51	1066.019	1920.159
30	52	1118.019	1963.239
31	52	1170.019	1999.307
32	53	1223.019	2027.364
33	53	1276.019	2048.408
34	54	1330.019	2061.441
35	54	1384.019	2067.462
36	54	1438.019	2066.471
37	54	1492.019	2058.468
38	54	1546.019	2043.454
39	53	1599.019	2022.428
40	53	1652.019	1994.389
41	53	1705.019	1959.340
42	53	1758.019	1917.278
43	53	1811.019	1868.205
43.06	0	1811.019	1868.205
44	52	1863.019	1816.205
45	51	1914.019	1765.205
46	50	1964.019	1715.205
47	50	2014.019	1665.205
48	49	2063.019	1616.205
49	49	2112.019	1567.205
50	48	2160.019	1519.205

51	46	2208.019	1471.205
52	47	2255.019	1424.205
53	47	2302.019	1377.205
54	46	2348.019	1331.205
55	46	2394.019	1285.205
56	46	2440.019	1239.205
57	45	2485.019	1194.205
58	45	2530.019	1149.205
59	44	2574.019	1105.205
60	44	2618.019	1061.205
61	43	2661.019	1018.205
62	43	2704.019	975.205
63	42	2746.019	933.205
64	42	2788.019	891.205
65	41	2829.019	850.205
66	41	2870.019	809.205
67	40	2910.019	769.205
68	40	2950.019	729.205
69	39	2989.019	690.205
70	39	3028.019	651.205
71	38	3066.019	613.205
72	38	3104.019	575.205
73	37	3141.019	538.205
74	37	3178.019	501.205
75	36	3214.019	465.205
76	35	3249.019	430.205
77	34	3283.019	396.205
78	34	3317.019	362.205
79	33	3350.019	329.205
80	33	3383.019	296.205
81	32	3415.019	264.205
82	32	3447.019	232.205
83	31	3478.019	201.205
84	31	3509.019	170.205
85	31	3540.019	139.205
86	30	3570.019	109.205
87	30	3600.019	79.205
88	30	3630.019	49.205
89	30	3660.019	19.205

¶↕REVISED DECEMBER 15, 1992

RUNOFF FOR TRACTS CDS-2 & CDS-2, NORTH ALBUQUERQUE ACRES SUBDIVISION
(ROBERTS OIL COMPANY GAS STATION AND CAR WASH AT CORNER OF LOUISIANA BLVD. AND SAN ANTONIO, NE)

TABLE A-1
Runoff Estimate: For On-site Basin of 0.9720 acres, onto San Antonio Drive

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	42340.39	1.000	1.6	2011.2	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	7119.50	0.168	0.40	492.4
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	18220.89	0.430	2.10	3537.9
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	17000.00	0.402	1.96	3300.8
TOTALS			42340.39	1.000	1.6	2011.2	42340.39	0.598	4.45	7331.2
									2.49	4030.32
			0.9720 acre				0.9720 acre			

TABLE A-2
Runoff Estimate: For On-site Basin of 0.0689 acres, onto Louisiana Boulevard.

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	3000.00	1.000	0.1	142.5	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	1000.00	0.333	0.06	69.2
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	2000.00	0.667	0.23	388.3
TOTALS			3000.00	1.000	0.1	142.5	3000.00	1.000	0.29	457.5

¶↕¶↕ REVISED DECEMBER 15, 1992

RUNOFF FOR TRACTS ADJACENTY TO CDS-2 & CDS-2, NORTH ALBUQUERQUE ACRES SUBDIVISION
(ROBERTS OIL COMPANY GAS STATION AND CAR WASH AT CORNER OF LOUISIANA BLVD. AND SAN ANTONIO, NE)

TABLE E-1

Runoff Estimate: For On-site Basin of 4.0250 acres, onto Santa Monica Drive, (The north 89 feet of tract CDS and vacant land

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	175330.00	1.000	6.6	8328.2	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	30000.00	0.171	1.67	2075.0
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	145330.00	0.829	16.71	28218.2
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
TOTALS			175330.00	1.000	6.6	8328.2	175330.00	1.000	18.38	30293.2
									18.38	30293.2
			4.0250 acre				4.0250 acre			

TABLE E-2

Runoff Estimate: For On-site Basin of 3.6364 acres, onto Santa Monica Drive, (A 60 feet wide part of the Mobile Home Park, a

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	158400.00	1.000	6.0	7524.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	79200.00	0.500	4.40	5478.0
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	79200.00	0.500	9.11	15378.0
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
TOTALS			158400.00	1.000	6.0	7524.0	158400.00	1.000	13.51	20856.0

									13.51	20856.0
			3.6364 acre				3.6364 acre			

TABLE E-3
Runoff Estimate: For Off-site Basin of 3.6364 acre, Santa Monica Drive righy-of-way, to San Pedro Blvd. 60' x 2640

Runoff Factors Zone 3			CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	158400.00	1.000	6.0	7524.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	26400.00	0.167	1.47	1826.0
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	132000.00	0.833	15.18	25630.0
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
TOTALS			158400.00	1.000	6.0	7524.0	158400.00	1.000	16.65	27456.0
									16.65	27456.0
			3.6364 acre				3.6364 acre			

TABLE E-4
Runoff Estimate: ~~For Off-site Basin of 3.6364 acre, Santa Monica Drive righy-of-way, to San Pedro Blvd.~~ 2640' long x 380' wide M.H Park

Runoff Factors Zone 3			CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	1000000.00	1.000	37.6	47500.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	500000.00	0.500	27.78	34583.3
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	500000.00	0.500	57.51	97083.3
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
TOTALS			1000000.00	1.000	37.6	47500.0	1000000.00	1.000	85.28	131666.7
									85.28	131666.7
			22.9568 acre				22.9568 acre			

SN PEDRO BLVD right of way

TABLE E-5

Runoff Estimate: For Off-site Basin of ~~3.6364~~ acre, Santa Monica Drive righy-of-way, to San Pedro Blvd.

	Runoff Factors Zone 3		CURRENT USE				PROPOSED USE			
Land use	Peak	Total	Area	Percent	Peak Runoff	Total Runoff	Area	Percent	Peak Runoff	Total Runoff
	CFS/acre	inches	SF		CFS	CF	SF		CFS	CF
A	1.64	0.57	158400.00	1.000	6.0	7524.0	0.00	0.000	0.00	0.0
B	2.42	0.83	0.00	0.000	0.0	0.0	26400.00	0.167	1.47	1826.0
C	3.29	1.20	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
D	5.01	2.33	0.00	0.000	0.0	0.0	132000.00	0.833	15.18	25630.0
D to Pond	5.01	2.33	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.0
TOTALS			158400.00	1.000	6.0	7524.0	158400.00	1.000	16.65	27456.0
									16.65	27456.00
			3.6364 acre				3.6364 acre			

450 X 60

47 + 7 = 54

$\sim \frac{450}{2650} \times 16.65 = 2.84$

$\frac{600}{2650} \times 16.65 = 3.8$

$\frac{1250}{2650} \times 16.65 = 7.9$

SAN PEDRO - SAN MARINO TO SANTA MONICA

" SANTA MONICA TO DEL REY AVE

" DEL REY TO N. PINO ARROYO

¶↕¶↕ TABLE F-1

Channel capacities for San Pedro Boulevard from Santa Monica Drive to Del Rey Drive

Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

	Manning n	Ditch Slope (A)	Side slope (B)	Bottom width Ft	Depth Ft	Area SF	Wetted Perimeter Ft	Hydraulic Radius Ft	Velocity FPS	Capacity CFS
SAN PEDRO AT SECTION A-A, FOR .78% SLOPE										
1	0.014	78.000	0	46.5	0.1	4.6	46.700	0.100	6.368	29.611
2	0.014	78.000	0	46.5	0.3	14.0	47.100	0.296	13.171	183.737
3	0.014	78.000	0	46.5	0.5	23.3	47.500	0.489	18.411	428.059
4	0.014	78.000	0	46.5	0.8	37.2	48.100	0.773	24.977	929.129
									REQUIRED Q=	CFS
FLOW ALONG ROAD SURFACE AT SECTION B-B, NORTH OF DEL REY DRIVE CONSIDER AS SHALLOW RECTANGULAR CHANNEL WITH VERTICAL SIDES, NEAR ARROYO										
1	0.014	200.000	0	46.5	0.10	4.6	46.700	0.100	10.197	47.415
2	0.014	200.000	0	46.5	0.30	14.0	47.100	0.296	21.091	294.215
3	0.014	200.000	0	46.5	0.50	23.3	47.500	0.489	29.481	685.443
4	0.014	200.000	0	46.5	0.80	37.2	48.100	0.773	39.995	1487.797
									REQUIRED Q=	CFS
SECTION										
1	0.04	20.000	10	10.0	0.35	4.7	17.035	0.277	2.234	10.558
2	0.04	20.000	10	10.0	0.40	5.6	18.040	0.310	2.409	13.488
3	0.04	20.000	10	10.0	0.50	7.5	20.050	0.374	2.727	20.456
4	0.04	20.000	10	10.0	1.00	20.0	30.100	0.664	4.000	80.010

REQUIRED Q=13.9 CFS DEVELOPED

REQUIRED Q=10.0 CFS UNDEVELOPED

(A) Ft(vertical)/1000 Ft(horizontal)

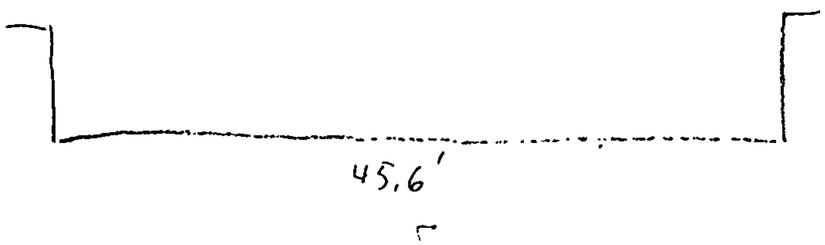
(B) Ft(horizontal)/Ft(vertical)

196.7
215.7 w/20% CLOG

2/0 steps

366,05

385,07



CRITICAL WATER BLOCK AT DEL REY INT.