F11 D002

DRAINAGE AGREEMENT

THIS AGREEMENT, made and entered into this 1st day of December, 1981, by and between the City of Albuquerque, a New Mexico municipal corporation, (CITY) and Ovenwest Corporation, a New Mexico corporation (OVENWEST).

1. Recital. OVENWEST is the owner of the following described parcel of real property:

> La Luz Del Vista Unit 4, as the same is shown and designated on the Plat filed September 15, 1978, in Vol. C-14, Folio 4, in the Office of the County Clerk of Bernalillo County, New Mexico.

OVENWEST has submitted to the CITY, and the CITY has approved with respect to the above-described property, a drainage plan dated May 19, 1979, as a precondition to the CITY'S approval of site plans for development of said property. CITY requires this Agreement in order to grant further approvals of site plans.

2. Final Drainage Plan. Upon completion of all construction contemplated in the May 19, 1979, drainage plan on the above-described property, and before issuance of a final certificate of occupancy on the last building constructed on said property, OVENWEST will prepare and deliver to the CITY an "as built" drainage plan, reflecting actual topographical characteristics and ponding areas of the property after construction. Upon approval of the "as built" drainage plan by the CITY, final certificates of occupancy shall be issued.

3. Binding Effect. This Agreement will be binding on OVENWEST, its successors and assigns.

OVENWEST CORPORATION

By: Ray A. Graham
Ray A. Graham, III, President

CITY OF ALBUQUERQUE

Attest:

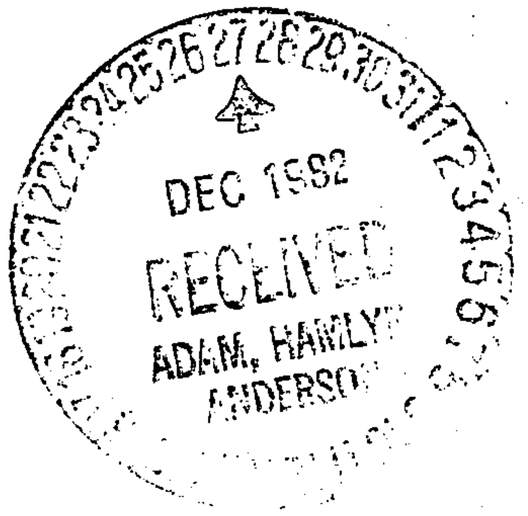
Cenfie Zaldi
~~Deputy~~ City Clerk

By G G Blankenship
James C. Jaramillo
Chief Administrative Officer

BGB Hydrology

REVIEWED BY LEGAL DEPARTMENT

Barbara Stadlerman
Assistant City Attorney



STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 1 day of December, 1981, by Ray A. Graham, III, President of OVENWEST CORPORATION, a New Mexico corporation, on behalf of said corporation.

Mary Ann Blabac
Notary Public

My Commission Expires:

_____

OFFICIAL SEAL
MARY ANN BLABAC
NOTARY PUBLIC - NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires 11/6/85

DRAINAGE REPORT

FOR

LA LUZ DEL OESTE

UNIT 4

MAY, 1979

Prepared By:

T. T. Burnett Engineering, Inc.
120 Morningside Dr. N. E.
Albuquerque, New Mexico 87108

Prepared For:

Ovenwest Corporation
One Loop One
Albuquerque, New Mexico 87120

Jean J. Bordenave, N.M.P.E. & L.S. #5110

DRAINAGE REPORT

FOR

LA LUZ DEL OESTE

UNIT 4

PURPOSE

This report is prepared for presentation to governing agencies and the developer of the described tract as a guide in preparation of drainage facilities and grading plans for the proposed development. Implementation of the recommendations of this report will provide storm water runoff protection for the proposed development, as well as downstream developments, for the 100 year frequency storm. The intent of the proposed drainage management plan will reduce the 100 year storm runoff from the development to a zero discharge. Storm water runoff will be retained in numerous ponds, providing irrigation for natural vegetation.

LOCATION AND TERRAIN

The tract is located near the intersection of Coors Road and Dellyne N. W. (See Plate I for exact location.)

Existing grades vary from four to sixteen percent and slope easterly to Coors Road. Vegetation is relatively sparse and composed primarily of prairie grasses. Topsoils vary from clean sands to silty sands and clay. (See Plates 2-9, 2-A-4 through 19 and 2-B-2 for soils information relevant to this study.)

PROPOSED DEVELOPMENT

The tract will be developed as condominium units. Construction will be phased over a period of several years, with approximately ten units in each phase and approximately ninety-two units total. (See Plate 3 for typical units and yard grading.)

UPLAND DRAINAGE

Drainage from upland areas has been eliminated by the construction of a subdivision (La Mariposa South) on the west. Dellyne Avenue diverts water from the north to Coors Road.

INTERNAL DRAINAGE RECOMMENDATIONS

Due to ideal soil conditions of the tract and the desire of the developer to provide natural irrigation, all 100 year frequency storm water shall be infiltrated within the proposed development upon its completion.

Plates 3 and 4 and computation sheets indicate how the above is to be accomplished. Plate 2-9 indicates extremely high percolation rates and this fact, coupled with proposed landscaping, indicates that proposed infiltration rates of three inches per hour, two inches per hour and one inch per hour for the first half hour, second half hour and thereafter, respectively, are conservative assumptions.

Recommendations of the soils engineer for house pad areas will provide relatively clean sand within the yard pond areas to at least two feet of depth. It is this report's recommendation that, after rough grading of other pond areas, auger holes for soil type determination be made to assure at least two and one-half feet of sand is beneath each pond.

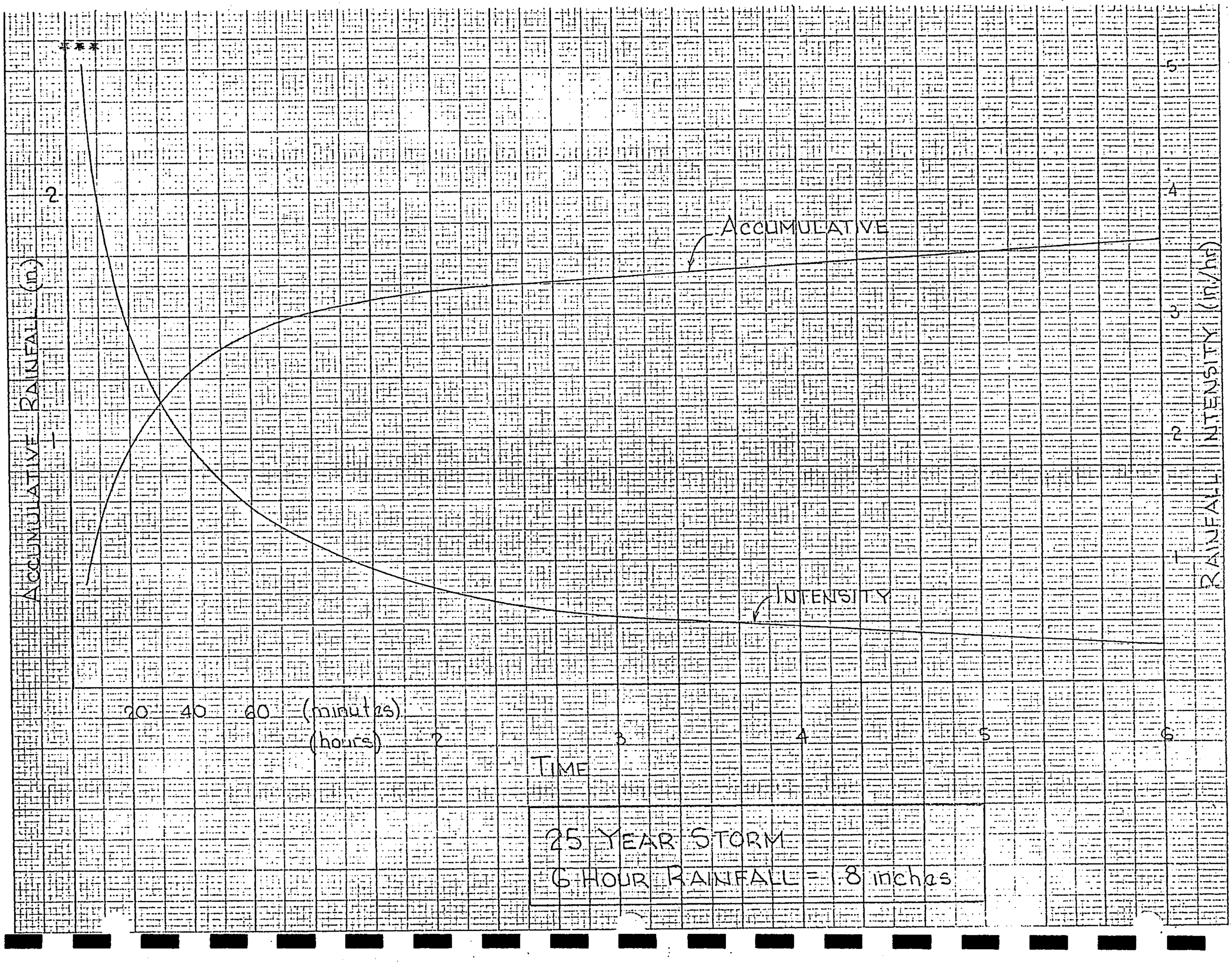
INTERNAL DRAINAGE RECOMMENDATIONS (cont'd.)

No plastic lining within yard ponds will be allowed, and the use of stone or reshaping of ponds shall be limited. Ponds within the yard areas are designed to contain the 100 year storm with a water surface approximately 0.2 of a foot below the living room floor. Weep holes are provided in garden walls at elevations 0.2 of a foot below the living room floor to provide overflow, if needed.

Ponds have been so located as to limit the travel distance and concentration of storm water flows to lessen, if not eliminate, erosion. Removal or revision of these ponds should be done only with concurrence of a person knowledgeable in site darinage.

CONCLUSIONS

Ponds are sized and located to provide storm water protection, erosion protection and natural irrigation. Runoff to Coors Boulevard and adjacent properties from the proposed development will be reduced to zero.


ACCUMULATIVE RAINFALL (in)
RAINFALL INTENSITY (in/hr)
ACCUMULATIVE
INTENSITY
20
40
60
(minutes)
(hours)
TIME
25 YEAR STORM
6 HOUR RAINFALL = 1.8 inches

ACCUMULATIVE RAINFALL (inches)

ACCUMULATIVE

INTENSITY

RAINFALL INTENSITY (in/hr)

20 40 60 (minutes)

(hours) 2 3 4 5 6

TIME

100 YEAR STORM

6 HOUR RAINFALL 2.2 inches

DRAINAGE REPORT
LA LUZ

BASIN 1

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	6500	0.95	6175
Soil Area	9650	0.30	2895
Pond Surface Area	3100	1.00	3100
			12,170

RUNOFF VOLUME

(Effective area/12) Rainfall = 1014 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 750 ♯

Surface Area @full depth=d_f , S_f = 3100 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 750 + 2350\, d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1\sqrt{1 + 0.00836\, V_d}}{3.1333}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 1

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface ③*	Increm. Infilt. ④	Accum. Infilt. ⑤	Storage Volume ⑥
		from Basin(s) ①	from this Basin ②	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	750			
10	0.86		872	872	1422 2094	59	59	813
20	1.27	0	1288	1288	2261 2428	94	153	1135
30	1.50	0	1521	1521	2489 2550	104	257	1264
35	1.59	0	1612	1612	2576 2601	36	293	1320
40	1.67	0	1693	1693	2621 2641	36	329	1364
45	1.75	0	1775	1775	2661 2680	37	366	1408
50	1.81	0	1835	1835	2691 2701	37	404	1432
55	1.86	0	1886	1886	2707 2712	38	441	1445
60	1.90	0	1927	1927	2713 2714	38	479	1448
65	1.93	0	1957	1957	2719 2724	19	498	1460
70	1.95	0	1977	1977	2725 2726	19	517	1461
75	1.96	0	1987	1987	2722 2718	19	536	1452
80	1.965							

② = Runoff Vol x Accum Rainfall

③* @ Storm Duration = 0 min ③* : Initial SF

others : ③ no. @ Dt : ave

DRAINAGE REPORT
LA LUZ

BASIN 2

RUNOFF SOURCE	area ℄	runoff coeff.	effective area ℄
Asphalt Area	4600	0.95	4370
Soil Area	7560	0.30	2268
Pond Surface Area	1440	1.00	1440
			8078.

RUNOFF VOLUME

(Effective area/12) Rainfall = 673. Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 0. ℄

Surface Area @full depth=d_f , S_f = 1440. ℄ , d_f = 1. ft.

Surface Area @ any depth d_d ⇒ $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1440\, d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \sqrt{V_d/720}$

POND INFILTRATION

from $0 \leq$ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from $30 <$ time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from $60 <$ time $< \infty$

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 2 — ½ overflow → 3; ½ " → 4

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume / Overflow
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	0			
10	0.86	0	579	579	1262	631	26	553
20	1.27	0	855	855	1440	1351	56	720 52
30	1.50	0	1010	1010	1440	1440	60	720 147
35	1.59	0	1070	1070	1440	1440	20	720 188
40	1.67	0	1124	1124	1440	1440	20	720 222
45	1.75	0	1178	1178	1440	1440	20	720 255
50	1.81	0	1218	1218	1440	1440	20	720 276
55	1.86	0	1252	1252	1440	1440	20	720 289
60	1.90	0	1279	1279	1440	1440	20	720 296
65	1.93	0	1299	1299	1440	1440	10	720 307
70	1.95	0	1312	1312	1440	1440	10	720 310
75	1.96	0	1319	1319	1440	1440	10	720 307
80	1.965	0	1322	1322	1440		303	720 300

DRAINAGE REPORT
LA LUZ

BASIN 3

RUNOFF SOURCE

	area ft²	runoff coeff.	effective area ft²
Asphalt Area	2,400	0.95	2280
Soil Area	750	0.30	225
Pond Surface Area	900	1.00	900
			3,405

RUNOFF VOLUME

(Effective area/12) Rainfall = 284 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 500 ft²

Surface Area @full depth=d_f , S_f = 900 ft² , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 500 + 400 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00320 V_d}}{0.8000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 3 ½ overflow from 2

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 2	from this Basin	①+②				
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0		500			
					577	24		
10	0.86	0	244	244	653		24	220
					686	29		
20	1.27	26	361	387	719		53	334
					741	31		
30	1.50	74	426	500	763		83	416
					773	11		
35	1.59	94	452	546	782		94	451
					789	11		
40	1.67	111	474	585	796		105	480
					803	11		
45	1.75	128	497	625	810		116	508
					814	11		
50	1.81	138	514	652	818		128	524
					821	11		
55	1.86	145	528	673	823		139	533
					824	11		
60	1.90	148	540	688	824		150	537
					826	6		
65	1.93	154	548	702	828		156	545
					829	6		
70	1.95	155	554	709	829		162	546
					828	6		
75	1.96	154	557	711	827		168	542
80								

DRAINAGE REPORT
LA LUZ

BASIN 4

RUNOFF SOURCE

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	1250	0.95	1188
Soil Area	700	0.30	210
Pond Surface Area	1900	1.00	1900
			3298

RUNOFF VOLUME

(Effective area/12) Rainfall = 275 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1250 ϕ

Surface Area @full depth=d_f , S_f = 1900 ϕ , d_f = 0.5 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1250 + 650 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00166\, V_d}}{1.0400}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN ½ overflow from 2

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 2	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1250			
					1338	56		
10	0.86	0	237	237	1426		56	181
					1461	61		
20	1.27	26	349	375	1495		117	258
					1516	63		
30	1.50	74	413	487	1536		180	306
					1546	21		
35	1.59	94	437	531	1556		201	330
					1563	22		
40	1.67	111	459	570	1570		223	347
					1577	22		
45	1.75	128	481	609	1584		245	364
					1586	22		
50	1.81	138	498	636	1588		267	369
					1587	22		
55	1.86	145	512	657	1586		289	367
					1583	22		
60	1.90	148	523	671	1580		311	359
					1581	11		
65	1.93	154	531	685	1582		322	362
70	1.95							
75	1.96							
80								

DRAINAGE REPORT
LA LUZ

BASIN 5

RUNOFF SOURCE

	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	0	0.95	0
Soil Area	3100	0.30	930
Pond Surface Area	1150	1.00	1150
			2080

RUNOFF VOLUME

2 (Effective area/12) Rainfall = 173 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 750 ϕ

Surface Area @full depth=d_f , S_f = 1150 ϕ , d_f = 0.5 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 750 + 400\, d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o)\, d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00284\, V_d}}{1.0667}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 5

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	750			
					807	34		
10	0.86		149	149	864		34	115
					880	37		
20	1.27		220	220	896		70	150
					897	37		
30	1.50		260	260	898		108	152
					900	12		
35	1.59		275	275	901		120	155
					902	13		
40	1.67		290	290	902		133	157
					903	13		
45	1.75		303	303	903		145	158
					902	13		
50	1.81		313	313	901		158	156
55	1.86							
60	1.90							
65	1.93							
70	1.95							
75	1.96							
80	1.965							

DRAINAGE REPORT
LA LUZ

BASIN 6

RUNOFF SOURCE

RUNOFF SOURCE	area ft	runoff coeff.	effective area ft
Asphalt Area	3250	0.95	3088
Soil Area	7050	0.30	2115
Pond Surface Area	1200	1.00	1200
			6403

RUNOFF VOLUME

2 (Effective area/12) Rainfall = 534 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 850 ft

Surface Area @full depth=d_f , S_f = 1200 ft , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 850 + 350 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00097 V_d}}{0.0118}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 6

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	850 929	39		
10	0.86	0	459	459	1008 1038	43	39	420
20	1.27	0	678	678	1067 1080	45	82	596
30	1.50	0	801	801	1093 1098	15	127	673
35	1.59	0	849	849	1103 1108	15	142	706
40	1.67	0	892	892	1112 1116	16	158	733
45	1.75	0	935	935	1120 1123	16	173	761
50	1.81	0	967	967	1125 1127	16	189	777
55	1.86	0	993	993	1129 1130	16	204	788
60	1.90	0	1015	1015	1131 1132	8	220	794
65	1.93	0	1031	1031	1133 1134	8	228	802
70	1.95	0	1041	1041	1134 1134	8	236	805
75	1.96	0	1047	1047	1133		244	802
80								

DRAINAGE REPORT
LA LUZ

BASIN 7

RUNOFF SOURCE

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	3750	0.95	3563
Soil Area	9350	0.30	2805
Pond Surface Area	1650	1.00	1650
			8018

RUNOFF VOLUME

(Effective area/12) Rainfall = 668 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ♯

Surface Area @full depth=d_f , S_f = 1650 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 600 + 1050 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00583\, V_d}}{1.75}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 7

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	600			
					910	38		
10	0.86	0	574	574	1219		38	537
					1308	54		
20	1.27	0	848	848	1396		92	756
					1431	60		
30	1.50	0	1002	1002	1465		152	850
					1479	21		
35	1.59	0	1062	1062	1493		173	890
					1506	21		
40	1.67	0	1116	1116	1516		193	922
					1527	21		
45	1.75	0	1169	1169	1538		215	955
					1544	21		
50	1.81	0	1209	1209	1550		236	973
					1554	22		
55	1.86	0	1242	1242	1558		258	985
					1560	22		
60	1.90	0	1269	1269	1562		279	990
					1565	11		
65	1.93	0	1289	1289	1568		290	999
					1567	11		
70	1.95	0	1303	1303	1570		301	1002
					1569	11		
75	1.96	0	1309	1309	1567		312	998
80								

DRAINAGE REPORT
LA LUZ

BASIN 8

RUNOFF SOURCE

	area ¢	runoff coeff.	effective area ¢
Asphalt Area	11,100	0.95	10,545
Soil Area	21,400	0.30	6,420
Pond Surface Area	3,600	1.00	3,600
			20,565

RUNOFF VOLUME

2 (Effective area/12) Rainfall = 1714 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 2900 ¢

Surface Area @full depth=d_f , S_f = 3600 ¢ , d_f = 1 ft.

Surface Area @ any depth d_d => $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 2900 + 700 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume $= \dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00017 V_d}}{0.2414}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 8

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	2900 3055	127		
10	0.86	0	1474	1474	3209 3270	136	127	1347
20	1.27	0	2177	2177	3330 3257	140	263	1913
30	1.50	0	2571	2571	3393 3394	47	403	2167
35	1.59	0	2725	2725	3405 3414	47	450	2274
40	1.67	0	2862	2862	3423 3435	48	498	2364
45	1.75	0	3000	3000	3442 3448	48	546	2453
50	1.81	0	3102	3102	3453 3324	48	593	2508
55	1.86	0	3188	3188	3460 3463	48	641	2546
60	1.90	0	3257	3257	3465 3468	24	690	2567
65	1.93	0	3308	3308	3470 3471	24	714	2594
70	1.95	0	3342	3342	3472 3471	24	738	2604
75	1.96	0	3359	3359	3471		762	2597
80								

DRAINAGE REPORT
LA LUZ

BASIN 9

RUNOFF SOURCE

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	4250	0.95	4038
Soil Area	7600	0.30	2280
Pond Surface Area	1900	1.00	1900
			8218

RUNOFF VOLUME

(Effective area/12) Rainfall = 685 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1050 ♯

Surface Area @full depth=d_f , S_f = 1900 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1050 + 850 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00154 V_d}}{0.8095}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 9

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1050 1235	51		
10	0.86	0	589	589	1420 1483	62	51	537
20	1.27	0	870	870	1545 1570	65	113	756
30	1.50	0	1028	1028	1595 1606	22	179	849
35	1.59	0	1089	1089	1616 1625	23	201	888
40	1.67	0	1144	1144	1633 1642	23	224	920
45	1.75	0	1199	1199	1650 1655	23	246	952
50	1.81	0	1240	1240	1659 1662	23	269	970
55	1.86	0	1274	1274	1665 1666	23	292	981
60	1.90	0	1302	1302	1667 1669	12	316	982
65	1.93	0	1322	1322	1671 1672	12	327	995
70	1.95	0	1336	1336	1672 1671	12	339	997
75	1.96	0	1343	1343	1670		350	992
80								

DRAINAGE REPORT
LA LUZ

BASIN 10

RUNOFF SOURCE

	area ft²	runoff coeff.	effective area ft²
Asphalt Area	3000	0.95	2850
Soil Area	5750	0.30	1725
Pond Surface Area	1750	1.00	1750
			6325

RUNOFF VOLUME

(Effective area/12) Rainfall = 527 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 500 ft²

Surface Area @full depth=d_f , S_f = 1750 ft² , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 500 + 1250 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

=

$$\frac{-1 + \sqrt{1 + 0.0100 V_d}}{2.5000}$$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 10

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	500			
					82	34		
10	0.86	0	453	453	1139		34	419
					576	51		
20	1.27	0	669	669	1308		85	584
					1339	56		
30	1.50	0	791	791	1369		141	650
					1382	19		
35	1.59	0	838	838	1395		160	678
					2810	20		
40	1.67	0	880	880	1415		180	701
					1425	20		
45	1.75	0	922	922	1434		199	723
					1439	20		
50	1.81	0	954	954	1444		219	735
					1447	20		
55	1.86	0	980	980	1450		240	741
					1451	20		
60	1.90	0	1001	1001	1451		260	742
					1454	10		
65	1.93	0	1017	1017	1456		270	748
					1456	10		
70	1.95	0	1028	1028	1456		280	748
75	1.96							
80								

DRAINAGE REPORT
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BASIN 11

RUNOFF SOURCE	area ft	runoff coeff.	effective area ft
Asphalt Area	7,600	0.95	7220
Soil Area	13,100	0.30	3930
Pond Surface Area	1,900	1.00	1,900
			13,050

RUNOFF VOLUME

(Effective area/12) Rainfall = 1088 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1100 ft

Surface Area @full depth=d_f , S_f = 1900 ft , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1100 + 800 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00132 V_d}}{0.7273}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 11 overflow → 12

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume / overflow
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1100 / 1359	57		
10	0.86	0	936	936	1617 / 1705	71	57	879
20	1.27	0	1382	1382	1793 / 1831	76	128	1253
30	1.50	0	1632	1632	1869 / 1885	26	204	1427
35	1.59	0	1730	1730	1900 / 1900	26	230	1499
40	1.67	0	1817	1817	1900 / 1900	26	257	1500 60
45	1.75	0	1904	1904	1900 / 1900	26	283	1500 120
50	1.81	0	1969	1969	1900 / 1900	26	309	1500 159
55	1.86	0	2024	2024	1900 / 1900	26	336	1500 187
60	1.90	0	2067	2067	1900 / 1900	13	362	1500 204
65	1.93	0	2100	2100	1900 / 1900	13	375	1500 224
70	1.95	0	2122	2122	1900 / 1900	13	388	1500 232
75	1.96	0	2132	2132	1900		402	1500 230
80								

DRAINAGE REPORT
LA LUZ

BASIN 12

RUNOFF SOURCE

	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	5150	0.95	4893
Soil Area	9150	0.30	2745
Pond Surface Area	2250	1.00	2250
			9888

RUNOFF VOLUME

(Effective area/12) Rainfall = 824 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1250 ϕ

Surface Area @full depth=d_f , S_f = 2250 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d=) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1250 + 1000 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00128 V_d}}{0.8000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
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BASIN 12

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 11	From this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0		1250 1470	61		
10	0.86	0	709	709	1690 1765	74	61	647
20	1.27	0	1046	1046	1840 1870	78	135	912
30	1.50	0	1236	1236	1900 1913	27	213	1023
35	1.59	0	1310	1310	1925 1950	27	239	1071
40	1.67	60	1376	1436	1975 2000	28	266	1170
45	1.75	120	1442	1562	2024 2039	28	294	1268
50	1.81	159	1491	1650	2054 2064	29	322	1328
55	1.86	187	1533	1720	2074 2079	29	351	1368
60	1.90	204	1566	1770	2084 2091	15	380	1390
65	1.93	224	1590	1814	2098 2101	15	395	1420
70	1.95	232	1607	1839	2103 2101	15	409	1430
75	1.96	230	1615	1845	2099		424	1421
80								

DRAINAGE REPORT
LA LUZ

BASIN 13

RUNOFF SOURCE

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	12,250	0.95	11,638
Soil Area	- 19,400	0.30	5,820
Pond Surface Area	3,850	1.00	3,850
			21,308

RUNOFF VOLUME

(Effective area/12) Rainfall = 1776 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 2500 ϕ

Surface Area @full depth=d_f , S_f = 3850 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 2500 + 1350 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00043 V_d}}{0.5400}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 13

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	2500			
					2836	118		
10	0.86	0	1527	1527	3171		118	1409
					3293	137		
20	1.27	0	2256	2256	3413		255	2000
					3465	144		
30	1.50	0	2664	2664	3516		400	2264
					3537	49		
35	1.59	0	2824	2824	3558		449	2375
					3576	50		
40	1.67	0	2966	2966	3593		498	2467
					3611	50		
45	1.75	0	3108	3108	3628		549	2559
					3638	51		
50	1.81	0	3215	3215	3648		599	2615
					3655	51		
55	1.86	0	3303	3303	3662		650	2653
					3666	51		
60	1.90	0	3374	3374	3670		701	2673
					3675	26		
65	1.93	0	3428	3428	3680		726	2701
					3682	26		
70	1.95	0	3463	3463	3684		752	2711
					3683	26		
75	1.96	0	3481	3481	3681		777	2703
80								

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BASIN 14

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	0	0.95	0
Soil Area	8,500	0.30	2550
Pond Surface Area	1,250	1.00	1250
			3800

RUNOFF VOLUME

(Effective area/12) Rainfall = 317 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 750 ϕ

Surface Area @full depth=d_f , S_f = 1250 ϕ , d_f = 0.5 ft.

Surface Area @ any depth d_d : $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 750 + 1000 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

=

$$\frac{-1+\sqrt{1+0.00356\,V_d}}{1.3333}$$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\,tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\,tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\,tS_d$, ft^3

DRAINAGE REPORT
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BASIN 14

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	750 = 884	37		
10	0.86	0	273	273	1017 = 1058	44	37	236
20	1.27	0	403	403	1098 = 1110	46	81	321
30	1.50	0	476	476	1122 = 1128	16	127	348
35	1.59	0	504	504	1133 = 1138	16	143	361
40	1.67	0	529	529	1142 = 1146	16	159	370
45	1.75	0	555	555	1150 = 1151	16	174	380
50	1.81	0	574	574	1152 = 1152	16	190	383
55	1.86	0	590	590	1152 = 1151	16	206	383
60	1.90	0	602	602	1149 = 1150	8	222	379
65	1.93	0	612	612	1151		230	381
70	1.95							
75	1.96							
80								

DRAINAGE REPORT
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BASIN 15

RUNOFF SOURCE

	area ¢	runoff coeff.	effective area ¢
Asphalt Area	7100	0.95	6745
Soil Area	15,150	0.30	4545
Pond Surface Area	2,600	1.00	2600
			13,890

RUNOFF VOLUME

(Effective area/12) Rainfall = 1157.5 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1400 ¢

Surface Area @full depth=d_f , S_f = 2600 ¢ , d_f = 1 ft.

Surface Area @ any depth d_d :) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1400 + 1200 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00122 V_d}}{0.8571}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

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BASIN 15

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1400			
					1722	72		
10	0.86	0	995	995	2044		72	924
					2151	90		
20	1.27	0	1470	1470	2258		161	1309
					2303	96		
30	1.50	0	1736	1736	2347		257	1479
					2365	33		
35	1.59	0	1840	1840	2383		290	1550
					2398	33		
40	1.67	0	1933	1933	2413		324	1610
					2428	34		
45	1.75	0	2026	2026	2442		357	1668
					2451	34		
50	1.81	0	2095	2095	2460		391	1704
					2466	34		
55	1.86	0	2153	2153	2471		426	1727
					2474	34		
60	1.90	0	2199	2199	2477		460	1739
					4962	17		
65	1.93	0	2234	2234	2485		477	1757
					2487	17		
70	1.95	0	2257	2257	2488		494	1763
					2487	17		
75	1.96	0	2269	2269	2485		512	1757
80								

DRAINAGE REPORT
LA LUZ

BASIN 16

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	3900	0.95	3,705
Soil Area	10,000	0.30	3,000
Pond Surface Area	1,900	1.00	1900
			8,605

RUNOFF VOLUME

(Effective area/12) Rainfall = 717 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 900 ϕ

Surface Area @full depth=d_f , S_f = 1900 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 900 + 1000 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

=

$$\frac{-1 + \sqrt{1 + 0.00247\, V_d}}{1.1111}$$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 16

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	900 1148	48		
10	0.86	0	617	617	1396 1475	61	48	569
20	1.27	0	911	911	1553 1585	66	109	801
30	1.50	0	1076	1076	1616 1629	23	175	900
35	1.59	0	1140	1140	1641 1652	23	198	942
40	1.67	0	1197	1197	1662 1673	23	221	977
45	1.75	0	1255	1255	1683 1689	23	244	1011
50	1.81	0	1298	1298	1694 1698	24	268	1030
55	1.86	0	1334	1334	1702 1704	24	291	1043
60	1.90	0	1362	1362	1705 1708	12	315	1048
65	1.93	0	1384	1384	1710 1711	12	327	1057
70	1.95	0	1398	1398	1712 1711	12	339	1060
75	1.96	0	1405	1405	1709		350	1055
80								

DRAINAGE REPORT
LA LUZ

BASIN 17

RUNOFF SOURCE

	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	4900	0.95	4655
Soil Area	10,400	0.30	3120
Pond Surface Area	1,400	1.00	1,400
			9,175

RUNOFF VOLUME

(Effective area/12) Rainfall = 765 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ϕ

Surface Area @full depth=d_f , S_f = 1400 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 600 + 800\, d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o)\, d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00444\, V_d}}{1.3333}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 17 overflow → 18

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				Overflow to Pond 18
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0	0	600			
					882	37		
10	0.86	0	658	658	1163		37	621
					1247	52		
20	1.27	0	972	972	1331		89	882
					1366	57		
30	1.50	0	1148	1148	1400		146	1000
					1400	19		
35	1.59	0	1216	1216	1400		165	1000
					1400	19		
40	1.67	0	1278	1278	1400		185	1000
					1400	19		
45	1.75	0	1339	1339	1400		204	1000
					1400	19		
50	1.81	0	1385	1385	1400		223	1000
					1400	19		
55	1.86	0	1423	1423	1400		243	1000
					1400	19		
60	1.90	0	1454	1454	1400		262	1000
					1400	10		
65	1.93	0	1476	1476	1400		272	1000
					1400	10		
70	1.95	0	1492	1492	1400		282	1000
					1400	10		
75	1.96	0	1499	1499	1400		291	1000
80								

DRAINAGE REPORT
LA LUZ

BASIN 18

RUNOFF SOURCE

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	0	0.95	0
Soil Area	1550	0.30	465
Pond Surface Area	1200	1.00	1200
			1665

RUNOFF VOLUME

(Effective area/12) Rainfall = 139 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 750 ♯

Surface Area @full depth=d_f , S_f = 1200 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d=) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 750 + 450\, d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume $= \dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00160\, V_d}}{0.6000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 18

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 17	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	750			
						776		
10	0.86	0	120	120	801		32	87
						807		
20	1.27	0	177	177	813		34	110
						813		
30	1.50	1	209	210	813		34	109
						827		
35	1.59	51	221	272	841		11	160
						852		
40	1.67	92	232	324	862		12	201
						873		
45	1.75	134	243	377	883		12	242
						889		
50	1.81	161	252	413	895		12	265
						898		
55	1.86	179	259	438	901		12	277
						902		
60	1.90	190	264	454	903		13	281
						906		
65	1.93	204	268	472	909		6	293
						910		
70	1.95	209	271	480	910		6	294
						908		
75	1.96	207	272	479	906		6	287
80								

DRAINAGE REPORT
LA LUZ

BASIN 19

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	8500	0.95	8075
Soil Area	19050	0.30	5715
Pond Surface Area	1200	1.00	1200
			14,990

RUNOFF VOLUME

(Effective area/12) Rainfall = 1249 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ϕ

Surface Area @full depth=d_f , S_f = 1200 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d ⇒ $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 600 + 600 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00333 V_d}}{1.0000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 19

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				Overflow to Pond 20
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0	0	600			
					900	38		
10	0.86	0	1113	1113	1200		38	900 137
					1200	50		
20	1.27	0	1586	1586	1200		88	900 599
					1200	50		
30	1.50	0	1874	1874	1200		138	900 836
					1200	17		
35	1.59	0	1986	1986	1200		154	900 932
					1200	17		
40	1.67	0	2086	2086	1200		171	900 1015
					1200	17		
45	1.75	0	2186	2186	1200		188	900 1099
					1200	17		
50	1.81	0	2261	2261	1200		204	900 1157
					1200	17		
55	1.86	0	2323	2323	1200		221	900 1203
					1200	17		
60	1.90	0	2373	2373	1200		238	900 1236
					1200	8		
65	1.93	0	2411	2411	1200		246	900 1265
					1200	8		
70	1.95	0	2436	2436	1200		254	900 1282
					1200	8		
75	1.96	0	2448	2448	1200		263	900 1286
80								

DRAINAGE REPORT
LA LUZ

BASIN 20

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	3600	0.95	3420
Soil Area	18000	0.30	5400
Pond Surface Area	3750	1.00	3750
			12,570

RUNOFF VOLUME

(Effective area/12) Rainfall = 1047.5 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 2400 ft²

Surface Area @full depth=d_f , S_f = 3750 ft² , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 2400 + 1350 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00047 V_d}}{0.5625}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
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BASIN 20

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 19	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	2400			
10	0.86	137	901	1038	2638 2875	110	110	928
20	1.27	599	1330	1929	3045 3214	127	237	1693
30	1.50	836	1571	2407	3284 3354	137	374	2034
35	1.59	932	1666	2598	3383 3411	47	421	2177
40	1.67	1015	1749	2764	3435 3458	48	468	2296
45	1.75	1099	1833	2932	3482 3505	48	517	2415
50	1.81	1157	1896	3053	3519 3532	49	566	2487
55	1.86	1203	1948	3151	3542 3551	49	615	2537
60	1.90	1236	1990	3226	3556 3561	49	664	2562
65	1.93	1265	2022	3287	3568 3574	25	689	2598
70	1.95	1282	2043	3325	3577 3579	25	714	2611
75	1.96	1286	2053	3339	3577 3575	25	739	2601
80								

DRAINAGE REPORT
LA LUZ

BASIN 21

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	5000	0.95	4750
Soil Area	18,750	0.30	5625
Pond Surface Area	2,750	1.00	2750
			13,125

RUNOFF VOLUME

(Effective area/12) Rainfall = 1094 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1250 ft²

Surface Area @full depth=d_f , S_f = 2750 ft² , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 1250 + 1500 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00192\, V_d}}{1.2000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 21

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1250			
					1647	69		
10	0.86	0	941	941	2044		69	872
					2168	90		
20	1.27	0	1389	1389	2292		159	1230
					2342	98		
30	1.50	0	1641	1641	2391		257	1384
					2411	33		
35	1.59	0	1739	1739	2431		290	1449
					2448	34		
40	1.67	0	1827	1827	2464		324	1503
					2480	34		
45	1.75	0	1915	1915	2496		358	1556
					2505	35		
50	1.81	0	1980	1980	2514		393	1586
					2520	35		
55	1.86	0	2035	2035	2526		428	1606
					2529	35		
60	1.90	0	2079	2079	2531		463	1615
					2536	18		
65	1.93	0	2111	2111	2540		481	1630
					2542	18		
70	1.95	0	2133	2133	2543		499	1634
					2541	18		
75	1.96	0	2144	2144	2539		516	1627
80								

DRAINAGE REPORT
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BASIN 22

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	17,500	0.95	16,625
Soil Area	12,150	0.30	3,645
Pond Surface Area	3600	1.00	3600
			23870

RUNOFF VOLUME

(Effective area/12) Rainfall = 1989 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 2400 ft²

Surface Area @full depth=d_f , S_f = 3600 ft² , d_f = 1 ft.

Surface Area @ any depth d_d ; $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 2400 + 1200 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00042 V_d}}{0.5000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
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BASIN 22

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				Overflow
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	2400			
10	0.86	0	1711	1711	3097	2749 115	115	1596
20	1.27	0	2526	2526	3350	3224 134	249	2277
30	1.50	0	2984	2984	3462	3406 142	391	2593
35	1.59	0	3163	3163	3507	3485 48	439	2724
40	1.67	0	3322	3322	3544	3526 49	488	2834
45	1.75	0	3481	3481	3581	3563 49	538	2943
50	1.81	0	3600	3600	3600	3591 50	587	3000 13
55	1.86	0	3700	3700	3600	3600 50	637	3000 62
60	1.90	0	3779	3779	3600	3600 50	687	3000 92
65	1.93	0	3839	3839	3600	3600 25	712	3000 127
70	1.95	0	3879	3879	3600	3600 25	737	3000 141
75	1.96	0	3898	3898	3600	3600 25	762	3000 136
80	1.965	0	3908	3908	3600	3600 25	787	3000 121

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BASIN 23

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	9000	0.95	8550
Soil Area	11850	0.30	3555
Pond Surface Area	4400	1.00	4400
			16505

RUNOFF VOLUME

(Effective area/12) Rainfall = 1375 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 950 ft²

Surface Area @full depth=d_f , S_f = 4400 ft² , d_f = 1 ft.

Surface Area @ any depth d_d ; $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 950 + 3450 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00036 V_d}}{0.7841}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft³

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BASIN 23

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 22.	From this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	950			
					1934	81		
10	0.86	0	1183	1183	2917		81	1102
					3154	131		
20	1.27	0	1746	1746	3390		212	1535
					3475	145		
30	1.50	0	2063	2063	3560		357	1706
					3596	50		
35	1.59	0	2186	2186	3631		407	1780
					3659	51		
40	1.67	0	2296	2296	3687		458	1839
					3714	52		
45	1.75	0	2406	2406	3741		509	1898
					3761	52		
50	1.81	13	2489	2502	3781		561	1941
					3811	53		
55	1.86	62	2558	2620	3840		614	2006
					3854	54		
60	1.90	92	2613	2705	3868		668	2037
					3890	27		
65	1.93	127	2654	2781	3912		695	2087
					3918	27		
70	1.95	141	2681	2822	3924		722	2101
					3916	27		
75	1.96	136	2695	2831	3908		749	2083
80								

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BASIN 24

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	3,800	0.95	3610
Soil Area	26,500	0.30	7950
Pond Surface Area	2,700	1.00	2700
			14,260

RUNOFF VOLUME

(Effective area/12) Rainfall = 1188 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 950 ft²

Surface Area @full depth=d_f , S_f = 2700 ft² , d_f = 1 ft.

Surface Area @ any depth d_d , $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 950 + 1750 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00388 V_d}}{1.8421}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 24

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	950			
					1507	63		
10	0.86	0	1022	1022	2064		63	959
					2220	92		
20	1.27	0	1509	1509	2375		155	1354
					2437	102		
30	1.50	0	1782	1782	2498		257	1526
					2523	35		
35	1.59	0	1889	1889	2548		292	1598
					2569	36		
40	1.67	0	1984	1984	2589		328	1657
					2609	36		
45	1.75	0	2079	2079	2628		364	1716
					2640	37		
50	1.81	0	2150	2150	2651		400	1750
					2659	37		
55	1.86	0	2210	2210	2666		437	1773
					2670	37		
60	1.90	0	2257	2257	2673		474	1783
					2679	19		
65	1.93	0	2293	2293	2684		493	1800
					2686	19		
70	1.95	0	2317	2317	2687		512	1806
					2685	19		
75	1.96	0	2328	2328	2683		530	1799
80								

DRAINAGE REPORT
LA LUZ

BASIN 25

RUNOFF SOURCE

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	700	0.95	665
Soil Area	13,400	0.30	4,020
Pond Surface Area	1,450	1.00	1450
			6,135

RUNOFF VOLUME

(Effective area/12) Rainfall = 511 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 550 ft²

Surface Area @full depth=d_f , S_f = 1450 ft² , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 550 + 900 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00595 V_d}}{1.6364}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 25

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	550			
					784	33		
10	0.86	0	439	439	1017		33	407
					1086	45		
20	1.27	0	649	649	1154		78	571
					1180	49		
30	1.50	0	767	767	1206		127	640
					1217	17		
35	1.59	0	812	812	1227		144	669
					1236	17		
40	1.67	0	853	853	1245		161	693
					1254	17		
45	1.75	0	894	894	1262		179	716
					1267	18		
50	1.81	0	925	925	1271		196	729
					1274	18		
55	1.86	0	950	950	1276		214	737
					1277	18		
60	1.90	0	971	971	1278		232	740
					1281	9		
65	1.93	0	986	986	1283		240	746
					1284	9		
70	1.95	0	996	996	1284		249	748
					1283	9		
75	1.96	0	1002	1002	1281		258	744
80								

DRAINAGE REPORT
LA LUZ

BASIN 26

RUNOFF SOURCE

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	1,150	0.95	1,092
Soil Area	4,600	0.30	1380
Pond Surface Area	1,400	1.00	1400
			3872

RUNOFF VOLUME

(Effective area/12) Rainfall = 323 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 500 ft²

Surface Area @full depth=d_f , S_f = 1400 ft² , d_f = 1 ft.

Surface Area @ any depth d_d ; $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 500 + 900 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o)\, d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00720 V_d}}{1.8000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN 26

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0	0	500	1		
10	0.86	0	278	278	668 836	28	28	250
20	1.27	0	410	410	885 933	37	65	345
30	1.50	0	485	485	950 966	40	104	380
35	1.59	0	514	514	974 981	14	118	395
40	1.67	0	539	539	987 992	14	132	407
45	1.75	0	565	565	997 1002	14	145	419
50	1.81	0	585	585	1005 1007	14	159	425
55	1.86	0	601	601	1008 1009	14	173	427
60	1.90	0	614	614	1009 1008	14	187	426
65	1.93	0	623	623	1010 1011	7	194	428
70	1.95	0	630	630	1011 1010	7	201	428
75	1.96							
80								

DRAINAGE REPORT
LA LUZ

BASIN 27

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	1950	0.95	1552
Soil Area	12,200	0.30	3660
Pond Surface Area	1,200	1.00	1,200
			6,712

RUNOFF VOLUME

(Effective area/12) Rainfall = 559 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 500 ft²

Surface Area @full depth=d_f , S_f = 1200 ft² , d_f = 1 ft.

Surface Area @ any depth d_d ; $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 500 + 700 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00560 V_d}}{1.4000}$

POND INFILTRATION

from $0 \leq$ time ≤ 30 minutes , t = time in minutes

infiltration = $3.t\, S_d/(12)(60)$

$= 0.00417\, t S_d$, ft³

from $30 <$ time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft³

from $60 <$ time $< \infty$

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft³

DRAINAGE REPORT
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BASIN 27

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	From this Basin	①+②				Overflow
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	500			
10	0.86	0	480	480	939	720	30	451
20	1.27	0	710	710	1070	1005	42	639
30	1.50	0	839	839	1123	1097	46	722
35	1.59	0	889	889	1144	1134	16	756
40	1.67	0	934	934	1161	1153	16	785
45	1.75	0	978	978	1178	1170	16	813
50	1.81	0	1012	1012	1189	1184	16	830
55	1.86	0	1040	1040	1195	1192	17	842
60	1.90	0	1062	1062	1199	1197	17	848
65	1.93	0	1079	1079	1200	1200	9	850	6
70	1.95	0	1090	1090	1200	1200	8	850	9
75	1.96	0	1096	1096	1200	1200	8	850	6
80	1.965	0	1098	1098	1200	1200	8	850	1

DRAINAGE REPORT
LA LUZ

BASIN 28

RUNOFF SOURCE

	area ♯	runoff coeff.	effective area ♯
Asphalt Area	1,850	0.95	1758
Soil Area	16,250	0.30	1875
Pond Surface Area	1850	1.00	1850
			8483

RUNOFF VOLUME

(Effective area/12) Rainfall = 707 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ♯

Surface Area @full depth=d_f , S_f = 1850 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d , $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 600 + 1250 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume $= \dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00694}}{2.0833}$

POND INFILTRATION

from $0 \leq$ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft^3

from $30 <$ time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft^3

from $60 <$ time $< \infty$

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 28

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s) 27.	from this Basin	①+②				
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0	0	600			
					967	40		
10	0.86	0	608	608	1334		40	568
					1434	60		
20	1.27	0	898	898	1534		100	798
					1573	66		
30	1.50	0	1061	1061	1612		166	895
					1628	23		
35	1.59	0	1124	1124	1643		188	936
					1656	23		
40	1.67	0	1181	1181	1668		211	969
					1681	23		
45	1.75	0	1237	1237	1693		235	1003
					1700	24		
50	1.81	0	1280	1280	1707		258	1021
					1711	24		
55	1.86	0	1315	1315	1715		282	1033
					1717	24		
60	1.90	0	1343	1343	1719		306	1037
					1725	12		
65	1.93	6	1365	1371	1730		318	1053
					1732	12		
70	1.95	9	1379	1388	1733		330	1058
					1731	12		
75	1.96	6	1386	1392	1728		342	1050
80								

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BASIN 29

RUNOFF SOURCE	area ☐	runoff coeff.	effective area ☐
Asphalt Area	—	0.95	—
Soil Area	51,800	0.30	15540
Pond Surface Area	10,200	1.00	10200
			25740

RUNOFF VOLUME

(Effective area/12) Rainfall = 2145 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ☐

Surface Area @full depth=d_f , S_f = 10,200 ☐ , d_f = 4.0 ft.

Surface Area @ any depth d_d : $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 600 + 2400 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.01333 V_d}}{4.0000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft³

DRAINAGE REPORT
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BASIN 29

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	600 1788	75		
10	0.86	0	1845	1845	2976 3251	135	75	1770
20	1.27	0	2724	2724	3525 3485	152	210	2514
30	1.50	0	3218	3218	3751 3796	53	362	2856
35	1.59	0	3411	3411	3840 3876	54	414	2996
40	1.67	0	3582	3582	3912 3948	55	468	3114
45	1.75	0	3754	3754	3983 4005	56	523	3231
50	1.81	0	3882	3882	4027 4043	56	579	3304
55	1.86	0	3990	3990	4058 4067	56	635	3355
60	1.90	0	4078	4078	4075 4086	28	691	3384
65	1.93	0	4140	4140	4096 4100	28	720	3420
70	1.95	0	4183	4183	4104 4102	28	748	3435
75	1.96	0	4204	4204	4100		777	3428
80								

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BASIN 30

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	—	0.95	—
Soil Area	11,350	0.30	3,405
Pond Surface Area	1400	1.00	1400
			4,805

RUNOFF VOLUME

(Effective area/12) Rainfall = 400 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 550 ft²

Surface Area @full depth=d_f , S_f = 1,400 ft² ; d_f = 1 ft.

Surface Area @ any depth d_d ; $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 550 + 850 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00562 V_d}}{1.5455}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417 t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278 t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft³

DRAINAGE REPORT
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BASIN 30

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	① + ②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	550			
10	0.86	0	344	344	732 / 914	31	31	314
20	1.27	0	508	508	969 / 1023	40	71	438
30	1.50	0	600	600	1043 / 1063	43	114	486
35	1.59	0	636	636	1071 / 1079	15	129	507
40	1.67	0	668	668	1086 / 1093	15	144	524
45	1.75	0	700	700	1100 / 1106	15	160	541
50	1.81	0	720	720	1109 / 1112	15	175	550
55	1.86	0	744	744	1114 / 1116	15	190	554
60	1.90	0	760	760	1116 / 1116	16	206	554
65	1.93	0	772	772	1118 / 1119	8	214	559
70	1.95	0	780	780	1120 / 1120	8	221	559
75	1.96							
80								

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BASIN 31

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	2750	0.95	2612
Soil Area	29500	0.30	8850
Pond Surface Area	2250	1.00	2250
			13712

RUNOFF VOLUME

(Effective area/12) Rainfall = 1143 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1550 ♯

Surface Area @full depth=d_f , S_f = 2250 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d ⇒ $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1550 + 700 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00058 V_d}}{0.4516}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
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BASIN 31

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1550			
					1734	72		
10	0.86	0	983	983	1918		72	910
					1985	83		
20	1.27	0	1452	1452	2054		155	1296
					2084	87		
30	1.50	0	1715	1715	2113		242	1472
					2125	30		
35	1.59	0	1817	1817	2137		271	1546
					2147	30		
40	1.67	0	1909	1909	2157		301	1607
					2167	30		
45	1.75	0	2000	2000	2177		331	1668
					2183	30		
50	1.81	0	2069	2069	2189		362	1707
					2194	30		
55	1.86	0	2126	2126	2198		392	1733
					2203	31		
60	1.90	0	2172	2172	2208		423	1749
					2208	15		
65	1.93	0	2206	2206	2208		438	1767
					2210	15		
70	1.95	0	2229	2229	2211		453	1775
					2211	15		
75	1.96	0	2240	2240	2210		469	1771
80								

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BASIN 32

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	13,780	0.95	13,091
Soil Area	76,000	0.30	22,800
Pond Surface Area	8250	1.00	8,250
			44,141

RUNOFF VOLUME

(Effective area/12) Rainfall = 3678 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 3750 ϕ

Surface Area @full depth=d_f , S_f = 8250 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 3750 + 4500 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00064 V_d}}{1.2000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN 32

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft³	ft³	ft³	ft²	ft³	ft³	ft³
0	0	0	0	0	3750			
					5063	211		
10	0.86	0	3163	3163	6375		211	2753
					6782	283		
20	1.27	0	4671	4671	7188		493	4178
					7353	306		
30	1.50	0	5517	5517	7519		800	4718
					7585	105		
35	1.59	0	5848	5848	7652		905	4943
					7707	107		
40	1.67	0	6142	6142	7761		1012	5131
					7815	109		
45	1.75	0	6437	6437	7868		1121	5316
					7900	110		
50	1.81	0	6657	6657	7932		1231	5427
					7953	110		
55	1.86	0	6841	6841	7975		1341	5501
					7984	111		
60	1.90	0	6988	6988	1994		1452	5537
					8009	56		
65	1.93	0	7099	7099	8024		1507	5592
					8029	56		
70	1.95	0	7172	7172	8034		1563	5610
					8029	56		
75	1.96	0	7209	7209	8024		1619	5591
80								

DRAINAGE REPORT
LA LUZ

BASIN A

RUNOFF SOURCE

	area ♯	runoff coeff.	effective area ♯
Asphalt Area	11,250	0.95	10,688
Soil Area	27,650	0.30	8,295
Pond Surface Area	3,850	1.00	3850
			22,833

RUNOFF VOLUME

(Effective area/12) Rainfall = 1903 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 2750 ♯

Surface Area @full depth=d_f , S_f = 3850 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d ⇒ $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 2750 + 1100\, d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o)\, d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00029\, V_d}}{0.4000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, tS_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, tS_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, tS_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN A

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	2750 3025	126		
10	0.86	0	1637	1637	3299 3403	142	126	1510
20	1.27	0	2417	2417	3506 3555	148	268	2149
30	1.50	0	2855	2855	3595 3614	50	416	2438
35	1.59	0	3026	3026	3632 3648	51	466	2559
40	1.67	0	3178	3178	3663 3678	51	517	2661
45	1.75	0	3330	3330	3693 3703	51	568	2762
50	1.81	0	3444	3444	3712 3719	52	619	2825
55	1.86	0	3540	3540	3725 3729	52	671	2868
60	1.90	0	3616	3616	3732 3737	26	723	2893
65	1.93	0	3673	3673	3741 3743	26	748	2924
70	1.95	0	3711	3711	3745 3744	26	774	2936
75	1.96	0	3730	3730	3742		800	2929
80								

DRAINAGE REPORT
LA LUZ

BASIN A A

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	10,400	0.95	9880
Soil Area	8,710	0.30	2613
Pond Surface Area	3,040	1.00	3040
			15,533

RUNOFF VOLUME

(Effective area/12) Rainfall = 1294 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1260 ϕ

Surface Area @full depth=d_f , S_f = 3040 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d=) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1260 + 1780\, d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00224\, V_d}}{1.4127}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN A-A

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1260 1780	74		
10	0.86	0	1113	1113	2299 2455	102	74	1039
20	1.27	0	1643	1643	2610 2672	111	176	1467
30	1.50	0	1941	1941	2734 2760	38	288	1654
35	1.59	0	2057	2057	2785 2806	39	326	1732
40	1.67	0	2161	2161	2826 2846	40	365	1797
45	1.75	0	2265	2265	2866 2878	40	405	1861
50	1.81	0	2342	2342	2889 2897	40	445	1898
55	1.86	0	2407	2407	2904 2908	40	485	1923
60	1.90	0	2459	2459	2911 2917	20	525	1934
65	1.93	0	2497	2497	2922 2924	20	545	1953
70	1.95	0	2523	2523	2926 2924	20	566	1958
75	1.96	0	2536	2536	2921		586	1951
80								

DRAINAGE REPORT
LA LUZ

BASIN B

RUNOFF SOURCE

RUNOFF SOURCE	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	1,250	0.95	1188
Soil Area	7,000	0.30	2100
Pond Surface Area	750	1.00	750
			4038

RUNOFF VOLUME

2 (Effective area/12) Rainfall = 336.5 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 500 ϕ

Surface Area @full depth=d_f , S_f = 750 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 500 + 250\, d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o)\, d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.0020\, V_d}}{0.5000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417\, t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278\, t S_d$, ft³

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139\, t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN B

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	500. 560.	23.		
10	0.86	0	289.	289.	619. 641.	27.	23.	266.
20	1.27	0	427.	427.	662. 672.	28.	50.	377.
30	1.50	0	505.	505	681. 685.	10.	78.	427.
35	1.59	0	535.	535	688. 692.	10.	88.	448.
40	1.67	0	562.	562	695. 698.	10.	97.	465.
45	1.75	0	589.	589	701. 703.	10.	107.	482.
50	1.81	0	609.	609	704. 706.	10.	117.	493.
55	1.86	0	626.	626	707. 708.	10.	126.	500.
60	1.90	0	639.	639	708. 709.	5.	136.	503.
65	1.93	0	649.	649.	710. 711.	5.	141.	508.
70	1.95	0	656.	656	711. 711.	5.	146.	510.
75	1.96	0	660.	660	710.		151.	509.
80								

DRAINAGE REPORT
LA LUZ

BASIN C1

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	1500	0.95	1425
Soil Area	3050	0.30	915
Pond Surface Area	700	1.00	700
			3040

RUNOFF VOLUME

(Effective area/12) Rainfall = 253 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 350 ♯

Surface Area @full depth=d_f , S_f = 700 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 350 + 350 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00571 V_d}}{1.0000}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN C,

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	350 431	18		
10	0.86	0	218	218	512 539	22	18	200
20	1.27	0	321	321	565 576	24	40	281
30	1.50	0	380	380	586 591	8	64	316
35	1.59	0	402	402	595 599	8	73	330
40	1.67	0	423	423	602 606	8	81	342
45	1.75	0	443	443	609 611	8	89	354
50	1.81	0	458	458	612 614	9	98	361
55	1.86	0	471	471	615 616	9	106	365
60	1.90	0	481	481	617 618	4 4	115	366
65	1.93	0	488	488	618	4	119	370
70	1.95	0	493	493	618	4	123	371
75	1.96	0	496	496	617 618		128	369
80								

DRAINAGE REPORT
LA LUZ

BASIN C_2

RUNOFF SOURCE

	area ☐'	runoff coeff.	effective area ☐'
Asphalt Area	5750	0.95	5462
Soil Area	9,300	0.30	2790
Pond Surface Area	1,700	1.00	1700
			9952

RUNOFF VOLUME

(Effective area/12) Rainfall = 829 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1050 ☐'

Surface Area @full depth=d_f , S_f = 1700 ☐' , d_f = 1 ft.

Surface Area @ any depth d_d = $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1050 + 650 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2 / 2 d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d / d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00118 V_d}}{0.6191}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d / (12)(60)$

$= 0.00417 t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d / (12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d / (12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN C_2

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	From this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1050 1226	51		
10	0.86	0	713	713	1401 1463	61	51	662
20	1.27	0	1053	1053	1525 1552	65	112	941
30	1.50	0	1244	1244	1578 1589	22	177	1067
35	1.59	0	1318	1318	1599 1608	22	199	1120
40	1.67	0	1384	1384	1617 1626	23	221	1164
45	1.75	0	1451	1451	1635 1640	23	244	1208
50	1.81	0	1500	1500	1645 1649	23	266	1235
55	1.86	0	1542	1542	1653 1655	23	289	1253
60	1.90	0	1575	1575	1657 1660	12	312	1263
65	1.93	0	1600	1600	1662 1663	12	324	1277
70	1.95	0	1617	1617	1664 1664	12	335	1282
75	1.96	0	1625	1625	1665		347	1279
80								

DRAINAGE REPORT
LA LUZ

BASIN D

RUNOFF SOURCE

	area ☐'	runoff coeff.	effective area ☐'
Asphalt Area	5250	0.95	4988
Soil Area	8050	0.30	2415
Pond Surface Area	1700	1.00	1700
			9103

RUNOFF VOLUME

(Effective area/12) Rainfall = 759 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1050 ☐'

Surface Area @full depth=d_f , S_f = 1700 ☐' , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1050 + 650 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00118 V_d}}{0.6191}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417 t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN D

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1050 1212	50		
10	0.86	0	653	653	1373 1430	60	50	602
20	1.27	0	964	964	1487 1511	63	110	853
30	1.50	0	1139	1139	1535 1545	21	173	965
35	1.59	0	1207	1207	1555 1563	22	195	1012
40	1.67	0	1268	1268	1571 1579	22	216	1051
45	1.75	0	1328	1328	1587 1592	22	238	1089
50	1.81	0	1374	1374	1597 1600	22	260	1113
55	1.86	0	1412	1412	1603 1605	22	282	1128
60	1.90	0	1442	1442	1606 1609	11	305	1137
65	1.93	0	1465	1465	1611 1612	11	316	1148
70	1.95	0	1480	1480	1613 1612	11	327	1152
75	1.96	0	1488	1488	1611		338	1149
80								

DRAINAGE REPORT
LA LUZ

BASIN E

RUNOFF SOURCE

RUNOFF SOURCE	area ♯	runoff coeff.	effective area ♯
Asphalt Area	5000	0.95	4750
Soil Area	9300	0.30	2790
Pond Surface Area	1700	1.00	1700
			9240

RUNOFF VOLUME

(Effective area/12) Rainfall = 770 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1050 ♯

Surface Area @full depth=d_f , S_f = 1700 ♯ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 1050 + 650 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00118 V_d}}{0.6191}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417 t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN E

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1050 1214	51		
10	0.86	0	662	662	1378 1436	60	51	612
20	1.27	0	978	978	1493 1518	63	110	868
30	1.50	0	1155	1155	1542 1551	22	174	981
35	1.59	0	1224	1224	1562 1571	22	195	1029
40	1.67	0	1286	1286	1579 1587	22	217	1069
45	1.75	0	1348	1348	1595 1600	22	239	1108
50	1.81	0	1394	1394	1605 1608	22	261	1132
55	1.86	0	1432	1432	1611 1613	22	284	1149
60	1.90	0	1463	1463	1614 1617	11	306	1157
65	1.93	0	1486	1486	1619 1620	11	317	1169
70	1.95	0	1502	1502	1621 1621	11	328	1173
75	1.96	0	1509	1509	1620		340	1169
80								

DRAINAGE REPORT
LA LUZ

BASIN F

RUNOFF SOURCE

	area ϕ	runoff coeff.	effective area ϕ
Asphalt Area	7000	0.95	6650
Soil Area	8260	0.30	2478
Pond Surface Area	2990	1.00	2990
			12,118

RUNOFF VOLUME

(Effective area/12) Rainfall = 1010 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 625 ϕ

Surface Area @full depth=d_f , S_f = 2990 ϕ , d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o) d_d/d_f$

$= 625 + 2365 d_d$

Volume @ any depth = $V_d = \int_o^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o)V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.01211 V_d}}{3.784}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3tS_d/(12)(60)$

$= 0.00417 t S_d$, ft^3

from 30 < time ≤ 60 minutes

infiltration = $2tS_d/(12)(60)$

$= 0.00278 t S_d$, ft^3

from 60 < time < ∞

infiltration = $tS_d/(12)(60)$

$= 0.00139 t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN F

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	625 1342	56		
10	0.86	0	869	869	2058 2229	93	56	813
20	1.27	0	1283	1283	2399 2461	105	149	1134
30	1.50	0	1515	1515	2523 2549	35	251	1263
35	1.59	0	1606	1606	2575 2596	36	287	1319
40	1.67	0	1687	1687	2616 2636	37	323	1364
45	1.75	0	1768	1768	2655 2666	37	359	1408
50	1.81	0	1828	1828	2676 2682	37	396	1431
55	1.86	0	1879	1879	2688 2689	37	434	1445
60	1.90	0	1919	1919	2690 2696	19	471	1448
65	1.93	0	1949	1949	2701 2702	19	490	1459
70	1.95	0	1970	1970	2702 2698	19	508	1461
75	1.96	0	1980	1980	2694		527	1452
80								

DRAINAGE REPORT
LA LUZ

BASIN G

RUNOFF SOURCE

RUNOFF SOURCE	area ft²	runoff coeff.	effective area ft²
Asphalt Area	2250	0.95	2138
Soil Area	8250	0.30	2475
Pond Surface Area	1000	1.00	1000
			5613

RUNOFF VOLUME

(Effective area/12) Rainfall = 468 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 600 ft²

Surface Area @full depth=d_f , S_f = 1000 ft² ; d_f = 1 ft.

Surface Area @ any depth d_d =) $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 600 + 400 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00222 V_d}}{0.6667}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3 t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft³

from 30 < time ≤ 60 minutes

infiltration = $2 t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft³

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft³

DRAINAGE REPORT
LA LUZ

BASIN G

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	600			
					706.	29.		
10	0.86	0	402	402	811.		29.	373.
					848.	35.		
20	1.27	0	594.	594	885.		65.	529.
					901.	38.		
30	1.50	0	702	702	916.		102.	599.
					923.	13.		
35	1.59	0	744.	744	929.		115.	629.
					934.	13.		
40	1.67	0	782.	782	939.		128.	653.
					945.	13.		
45	1.75	0	819.	819	950.		141.	677.
					953.	13.		
50	1.81	0	847.	847	956.		154.	692.
					958.	13.		
55	1.86	0	870.	870	960.		168.	702.
					961.	13.		
60	1.90	0	889.	889	962.		181.	708.
					964.	7.		
65	1.93	0	903.	903	965.		188.	715.
					966.	7.		
70	1.95	0	913.	913	966.		194.	718.
					966.	7.		
75	1.96	0	917	917	966.		201.	716.
80								

DRAINAGE REPORT
LA LUZ

BASIN H

RUNOFF SOURCE

	area ℄	runoff coeff.	effective area ℄
Asphalt Area	8500	0.95	8075
Soil Area	13,500	0.30	4050
Pond Surface Area	3,250	1.00	3250
			15,375

RUNOFF VOLUME

(Effective area/12) Rainfall = 1281 Rainfall

POND PARAMETERS

Surface Area @depth=d_o=0 , S_o = 1500 ℄

Surface Area @full depth=d_f , S_f = 3250 ℄ , d_f = 1 ft.

Surface Area @ any depth d_d : $S_d = S_o + (S_f - S_o)\, d_d/d_f$

$= 1500 + 1750 d_d$

Volume @ any depth = $V_d = \int_0^{d_d} S_d$

$= S_o d_d + (S_f - S_o) d_d^2/2d_f$

Depth @ specific Volume = $\dfrac{-1 + \sqrt{1 + 2(S_f - S_o) V_d/d_f S_o^2}}{(S_f - S_o)/d_f S_o}$

$= \dfrac{-1 + \sqrt{1 + 0.00156}}{1.1667}$

POND INFILTRATION

from 0 ≤ time ≤ 30 minutes , t = time in minutes

infiltration = $3t S_d/(12)(60)$

$= 0.00417\, t S_d$, ft^3.

from 30 < time ≤ 60 minutes

infiltration = $2t S_d/(12)(60)$

$= 0.00278\, t S_d$, ft^3

from 60 < time < ∞

infiltration = $t S_d/(12)(60)$

$= 0.00139\, t S_d$, ft^3

DRAINAGE REPORT
LA LUZ

BASIN H

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface	Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②				
minutes	inches	ft^3	ft^3	ft^3	ft^2	ft^3	ft^3	ft^3
0	0	0	0	0	1500			
					1957.	82.		
10	0.86	0	1102.	1102.	2413.		82.	1020.
					2556.	107.		
20	1.27	0	1627.	1627.	2699.		185.	1439.
					2757.	115.		
30	1.50	0	1922.	1922	2814.		303.	1619.
					2837.	39.		
35	1.59	0	2037.	2037	2860.		342.	1695.
					2879.	40.		
40	1.67	0	2139.	2139	2898.		382.	1757.
					2917.	41.		
45	1.75	0	2242.	2242	2936.		423.	1819.
					2947.	41.		
50	1.81	0	2319.	2319	2957.		464.	1855.
					2964.	41.		
55	1.86	0	2383.	2383.	2970.		505.	1878.
					2973.	41		
60	1.90	0	2434.	2434	2976.		546.	1882.
					2982.	21.		
65	1.93	0	2472.	2472.	2987.		567.	1906.
					2989.	21		
70	1.95	0	2498.	2498	2990.		588.	1911.
					2988.	21.		
75	1.96	0	2511.	2511	2985.		608.	1903.
80								

UNIT A, PATIO POND

Runoff Source

	area ft²	runoff coeff	equiv. area ft²
Roof (living area, flat roof)	2,263	0.90	2037
Patio (brick on sand)	89	0.80	71
Yard	48	0.20	10
Pond	565	1.00	565
			2,683

Pond Parameters

@ $d = 0$, surface area = 166 ft²

@ $d = 0.5$, surface area = 565 ft²

@ $0 \le d \le 0.5$, surface area = $166 + 798d$

, Volume = $166d + 399d^2$, $d = \frac{-1 + \sqrt{1 + 0.0579\sqrt{vol}}}{4.81}$

@ $0.5 \le d$, surface area = 565

, Volume = $183 + 565(d - 0.5) = 565d - 99$

Runoff Volume

$(2683/12)$ Rainfall = $224 \times$ Rainfall, ft³, where rainfall is in inches

Infiltration

3 in./hour 1st half hour

2 in/hour 2nd half hour

1 in/hour thereafter

UNIT A, PATIO POND

100 Year Pond Requirement

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume
minutes	inches	ft^3	ft^2		ft^3	ft^3	ft^3
0	0		166				
10	0.86	193	558	362	15	15	178
20	1.27	284	565	562	23	38	246
30	1.50	336	565	565	23	61	275
35	1.59	356	565	565	8	67	289
40	1.67	374	565	565	8	75	299
50	1.81	405	565	565	16	91	314
60	1.90	426	565	565	16	107	319
65	1.93	432	565	565	4	111	321
70	1.95	437	565	565	4	115	322
75	1.96	439	565	565	4	119	320

25 Year Pond Requirement

0	0		166				
10	0.65	146	488	327	14	14	132
20	0.96	215	560	524	22	36	179
30	1.15	258	565	562	23	59	199
35	1.22	273	565	565	8	67	206
40	1.28	287	665	565	8	75	212
50	1.37	307	565	565	16	91	216
55	1.40	314	565	565	8	99	215
60	1.43	320	565	565	8	107	213
65	1.46	327	565	565	4	111	216
70	1.48	332	565	565	4	115	217
75	1.49	334	565	565	4	119	215

UNIT A POND A-1

RUNOFF SOURCE	Area	Runoff Coeff.	Equiv. Area
Roof	572	0.90	515
Yard	—	—	—
Pond	256	1.00	256
Sidewalk	67	0.95	64
			835 ♯

POND PARAMETERS

@ $d = 0$ Surface Area = 22 ♯

@ $d = 0.5'$ Surface Area = 256 ♯

@ $0 \leq d \leq 0.5'$ Surface Area = $22 + 468d$

Volume : $22d + 234d^2$, $d = \frac{-1 + \sqrt{1 + 1.934\,Vd}}{21.27}$

@ $0.5 < d$ Surface Area = 256

Volume = $69.5 + 256(d - 0.5) = 256d - 58.5$

RUNOFF VOLUME in ft^3, Rainfall - inches

$(835/12)$ Rainfall = 70 x Rainfall

INFILTRATION

3 in/hr	1st half hour
2 in/hr	2nd half hour
1 in/hr	thereafter

UNIT A POND A-1

100 Year Pond Requirement

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume
minutes	inches	ft^3	ft^2		ft^3	ft^3	ft^3
0	0	0	22				
				125	5		
10	0.86	60	227			5	55
				242	10		
20	1.27	89	256			15	74
				256	11		
30	1.50	105	256			26	79
				256	4		
35	1.59	111	256			29	82
				256	4		
40	1.67	117	256			33	84
				256	7		
50	1.81	127	256			40	86
				256	7		
60	1.90	133	256			47	85
				256	2		
65	1.93	135	256			49	86
				256	2		
70	1.95	137	256			51	85
75	1.96						

25 Year Pond Requirement

0	0	0	22				
				109	5		
10	0.65	46	196			5	41
				211	9		
20	0.96	67	225			13	53
				229	10		
30	1.15	81	232			23	57
				234	3		
35	1.22	85	236			26	59
				237	3		
40	1.28	90	237			29	60
				237	7		
50	1.37	96	237			36	59
				235	7		
60	1.43	100	232			42	57
				233	2		
65	1.46	102	233			44	57
				233	2		
70	1.48	104	233			46	57
75	1.49						

UNIT A POND A-2

RUNOFF SOURCE	Area	Runoff Coeff.	Equiv. Area
Roof	—		—
Yard	—		—
Pond	92	1.00	92
Sidewalk	52	0.95	49
			141

POND PARAMETERS

@ $d = 0$ Surface Area = 4

@ $d = 0.5'$ Surface Area = 92

@ $0 \leq d \leq 0.5$ Surface Area = $4 + 176d$

Volume: $4d + 88d^2$, $d = \frac{-1 + \sqrt{1 + 22V_d}}{44}$

@ $\quad d$ Surface Area =

Volume =

RUNOFF VOLUME

$(141/12)$ Rainfall = 12 X Rainfall

INFILTRATION

3 in/hr 1st half hour

2 in/hr 2nd half hour

1 in/hr thereafter

DRAINAGE REPORT
LA LUZ

UNIT-A
BASIN A-2

100 Year Storm Pond Requirement

Storm Duration	Accum. Rainfall	Runoff Volume			Ave. Pond Surface		Increm. Infilt.	Accum. Infilt.	Storage Volume
		from Basin(s)	from this Basin	①+②					
minutes	inches	ft^3	ft^3	ft^3	ft^2		ft^3	ft^3	ft^3
0	0	0	0	0	4				
						30	1		
10	0.86	0	10	10	56			1	9
						60	2		
20	1.27	0	15	15	63			4	11
						63	3		
30	1.50	0	18	18	63			6	11
						64	1		
35	1.59	0	64	64	64			7	11
						64	1		
40	1.67	0	20	20	64			8	11
~~45~~	~~1.75~~					64	2		
50	1.81	0	22	22	63			10	11
~~55~~	~~1.86~~					62	2		
60	1.90	0	23	23	61			12	11
						61	0		
65	1.93	0	23	23	61			12	11
						61	0		
70	1.95	0	23	23	61			12	10
75	1.96								
80									

UNIT B; PATIO POND

Runoff Source

	area ☐'	runoff coeff	equiv. area ☐'
Roof (living area, flat roof)	1756	0.90	1,580
Patio	89	0.80	71
Yard	61	0.20	12
Pond	368	1.00	368
			2,031

Pond Parameters

@ d = 0 , surface area = 78 ☐'

@ d = 0.8' , surface area = 368 ☐'

@ $0 \leq d \leq 0.8'$, surface area = $78 + 363\ d$

, Volume = $78d + 181\ d^2$

@ $0.8 \leq d$, surface area = 368

Volume = $178 + 368(d - 0.8) = 368\ d - 116$

Runoff Volume

(2031/12) Rainfall = 169 × Rainfall, ft^3, where rainfall is in inches

Infiltration

3 in./hr 1st half hour

2 in./hr 2nd half hour

1 in./hr thereafter

UNIT B POND, Patio

100 Year Pond Requirement

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume
minutes	inches	ft^3	ft^2		ft^3	ft^3	ft^3
0	0	0	78				
				202	8		
10	0.86	145	325			8	137
				347	13		
20	1.27	215	368			20	192
				368	15		
30	1.50	254	368			38	215
				368	5		
35	1.59	269	368			43	225
				368	5		
40	1.67	282	368			48	234
				368	10		
50	1.81	306	368			59	247
				368	10		
60	1.90	321	368			69	252
				368	3		
65	1.93	326	368			71	255
				368	3		
70	1.95	330	368			74	256
				368			
75	1.96	331	368		3	77	255

25 Year Pond Requirement

0	0	0	78				
				181	8		
10	0.65	110	284			8	102
				307	13		
20	0.96	162	330			20	142
				340	14		
30	1.15	194	350			34	160
				354	5		
35	1.22	206	357			39	167
				360	5		
40	1.28	216	362			44	172
				365	10		
50	1.37	232	367			55	177
				367	10		
60	1.43	242	367			65	177
				368	3		
65	1.46	247	368			67	179
				368	3		
70	1.48	250	368			70	180
				368	3		
75	1.49	252	368			72	179

UNIT B POND B-1

RUNOFF SOURCE	Area	Runoff Coeff.	Equiv. Area
Roof	572	0.90	515
Yard	—		—
Pond	138	1.00	138
Sidewalk	32	0.95	30
			683

POND PARAMETERS

@ $d = 0$ Surface Area $\cong 0$

@ $d = 0.5'$ Surface Area = 138

@ $0 \leq d \leq 0.5$ Surface Area = $138d/.5 = 276d$

Volume : $138d^2/2(.5) = 138d^2$, $d = \sqrt{Vd/138}$

@ $0.5 \leq d$ Surface Area = 138

Volume = $138(.5)^2 + 138(d-0.5) = 138d - 34.5$

RUNOFF VOLUME

$(683/12)$ Rainfall = $57 \times$ Rainfall

INFILTRATION

3 in/hr 1st half hour

2 in/hr 2nd half hour

1 in/hr thereafter

UNIT B POND B-1

100 Year Pond Requirement

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface		Increm. Infiltration	Accum. Infiltration	Storage Volume	
minutes	inches	ft^3	ft^2		ft^3	ft^3	ft^3 OVER FLOW to B-2	
0	0	0	0	69	3			
10	0.86	49	138	138	6	3	47	
20	1.27	72	138	138	6	9	48	16
30	1.50	86	138	138	2	14	48	23
35	1.59	91	138	138	2	16	48	27
40	1.67	95	138	138	4	18	48	29
50	1.81	103	138	138	4	22	48	33
60	1.90	108	138	138	1	26	48	35
65	1.93	110	138	138	1	27	48	35
70	1.95	111	138	138	1	28	48	36
75	1.96	111	138			29	48	35

25 Year Pond Requirement

0	0	0	0	69	3		
10	0.65	37	137	138	6	3	34
20	0.96	55	138	138	6	9	47
30	1.15	66	138	138	2	14	48 4
35	1.22	70	138	138	2	16	48 6
40	1.28	73	138	138	4	18	48 7
50	1.37	78	138	138	4	22	48 8
60	1.43	82	138	138	1	26	48 8
65	1.46	83	138	138	1	27	48 9
70	1.48	84	138	138	1	28	48 9
75	1.49	85	138			29	46 9

UNIT B POND B-2

RUNOFF SOURCE	Area	Runoff Coeff.	Equiv. Area
Roof	—		
Yard	—		
Pond	143	1.0	143
Sidewalk	70	0.95	67
			210

POND PARAMETERS

@ $d = 0$ Surface Area = 19

@ $d = 0.5$ Surface Area = 143

@ $0 \leq d \leq 0.5$ Surface Area = $19 + 248\,d$

Volume : $19d + 124\,d^2$, $\quad d = \dfrac{-1 + \sqrt{1 + 1.374\,V_d}}{13.053}$

@ d Surface Area =

Volume =

RUNOFF VOLUME

$(210/12)$ Rainfall = 17.5 X Rainfall

INFILTRATION

3 in/hr	1st half hour
2 in/hr	2nd half hour
1 in/hr	thereafter

UNIT B POND B-2

100 Year Pond Requirement

Storm Duration	Rainfall	Runoff Volume	Ave. Pond Surface	Increm. Infiltration	Accum. Infiltration	Storage* Volume
minutes	inches	ft^3 incl. overflow from B-1	ft^2	ft^3	ft^3	ft^3 OVERFLOW
0	0	0	19			
			82 51	2	2	13
10	0.86	15	105	4		
20	1.27	16+22=38	127		6	32
			132	6		
30	1.50	23+26=49	137		12	37
			140	2		
35	1.59	27+28=55	143		14	41 0
			143	2		
40	1.67	29+29=58	143		16	41 2
			143	4		
50	1.81	33+32=65	143		20	41 4
			143	4		
60	1.90	35+33=68	143		24	41 4
			143	1		
65	1.93	35+34=69	143		25	41 3
			143	1		
70	1.95	36+34=70	143		26	41 4
			143	1		
75	1.96	35+34=69	143		27	41 2

25 Year Pond Requirement

0	0	0	19			
			45	2		
10	0.65	11	71		2	9
			75	3		
20	0.96	17	79		5	12
			85	4		
30	1.15	4+20=24	90		9	16
			93	1		
35	1.22	6+21=27	95		10	18
			96	1		
40	1.28	7+22=29	97		11	18
			97	3		
50	1.37	8+24=32	97		14	18
			95	3		
60	1.43	8+25=33	93		16	17
			94	1		
65	1.46	9+26=35	95		17	17
70	1.48					
75	1.49					

* Overflow @ Et.

5.6 Percolation Tests

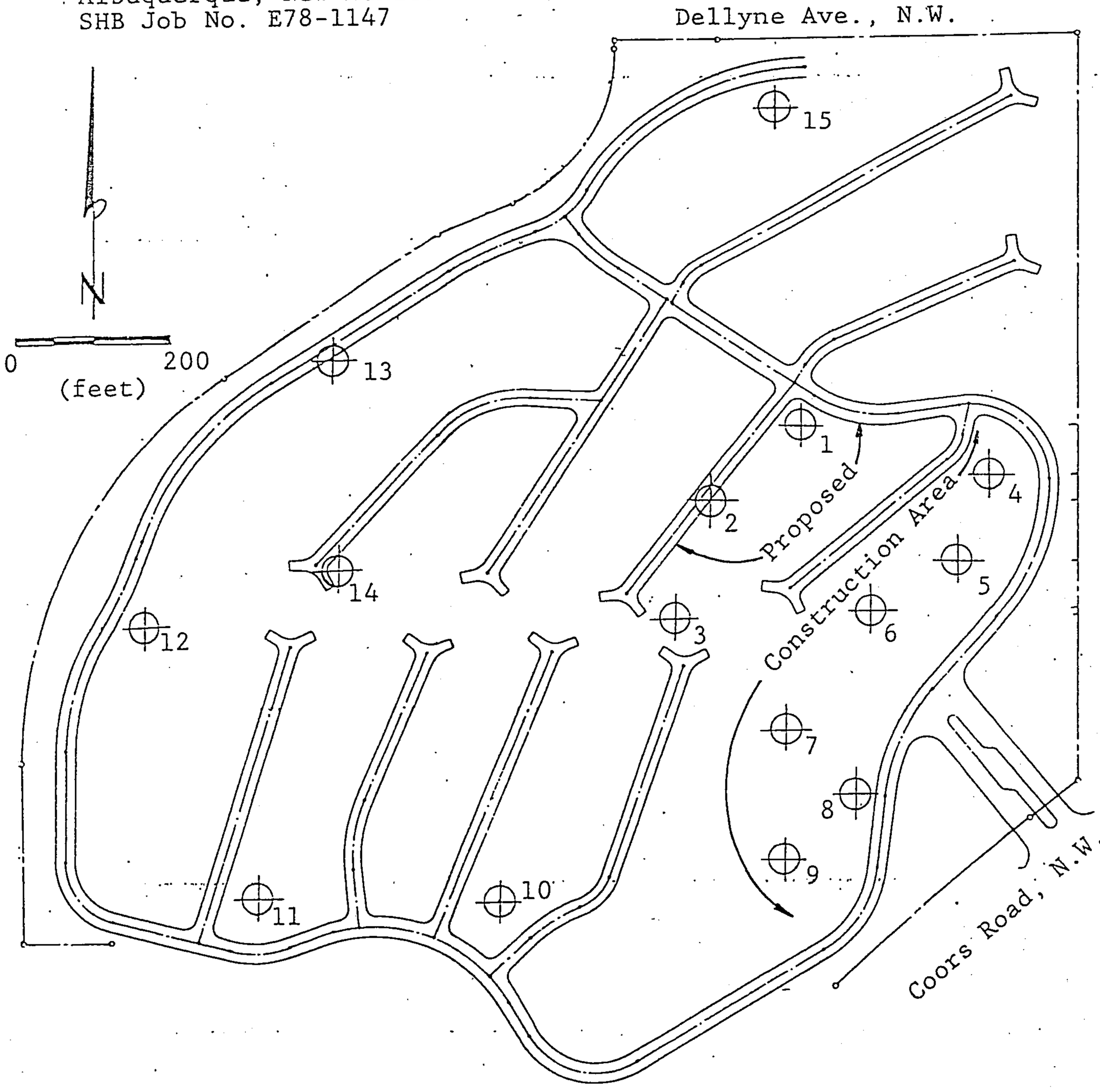
Three percolation tests were performed throughout the site area to provide data for evaluation of surface water infiltration. The tests were performed in general conformance with the U. S. Public Health Service Bulletin No. 526 adjacent to boring numbers 9, 11 & 13. The results of these tests are as follows.

Location	Diameter	Depth	Percolation Rate
Boring 9	6½"	3.5'	.024 minutes/inch
Boring 11	6½"	3.0'	3.33 minutes/inch
Boring 13	6½"	6.5'	2.50 minutes/inch

SITE PLAN

SHOWING LOCATIONS OF TEST BORINGS

La Luz Condominiums
North Coors Road
Albuquerque, New Mexico
SHB Job No. E78-1147



Reference Drawing:
Site Plan Provided by
T.T. Burnett Engineering, Inc.
Not Dated

SERGENT, HAUSKINS & BECKWITH

CONSULTING SOIL AND FOUNDATION ENGINEERS
PHOENIX • ALBUQUERQUE • EL PASO • TUCSON

A-4

[redacted]BU[redacted]ON [redacted]F T[redacted]RE[redacted]TS

Job No. E78-1147

Project La Luz Condominiums

Albuquerque, New Mexico

Material

Source

HOLE NO.	LOCATION	DEPTH	UNIFIED CLASS.	LL	PI	SIEVE ANALYSIS — ACCUM. % PASSING												LAB. NO.
						200	100	40	16	10	4	¼	⅜	¾	1	1½	2	
1	See Site Plan	2½'	SM-SP	NV	NP	11	45	96		98	100							47-1
4	See Site Plan	4½'	SM-SP	NV	NP	7	23	80		100								47-3
5	See Site Plan	2½'	CH	85	54	61	64	79		100								47-4
6	See Site Plan	½'	SM-SP	NV	NP	11	29	84		100								47-5
8	See Site Plan	2½'	SM-SP	NV	NP	11	34	94		100								47-6
10	See Site Plan	4½'	SP	NV	NP	1	12	96		100								47-7
11	See Site Plan	2½'	SM	NV	NP	31	38	64		100								47-8
14	See Site Plan	½'	SM-SP	NV	NP	7	23	72		96	99		100					47-9

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CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICE / HYDROLOGY SECTION

DATE: 3-25-13
CONFERENCE RECAP

ZONE ATLAS PAGE NO: F11
DRAINAGE FILE: Fn-D002
ZONING: _____
DRB:
SUBJECT: Grading and Drainage
STREET ADDRESS (IF KNOWN): _____
SUBDIVISION NAME: La Cluz Del Oeste
APPROVAL REQUESTED:
ATTENDANCE: Guy Jackson Curtis Cherne, Jake Bordenave (for Tetra)
FINDINGS:

a new grading plan and drainage report (supplemental) including new topo (~~Supplemental~~)
are required to plat Tracts K, L, M and N.

A new plan is required due to the age of the grading plan (1979) and that existing grades today are not the same as the existing grades as shown on the approved grading plan.

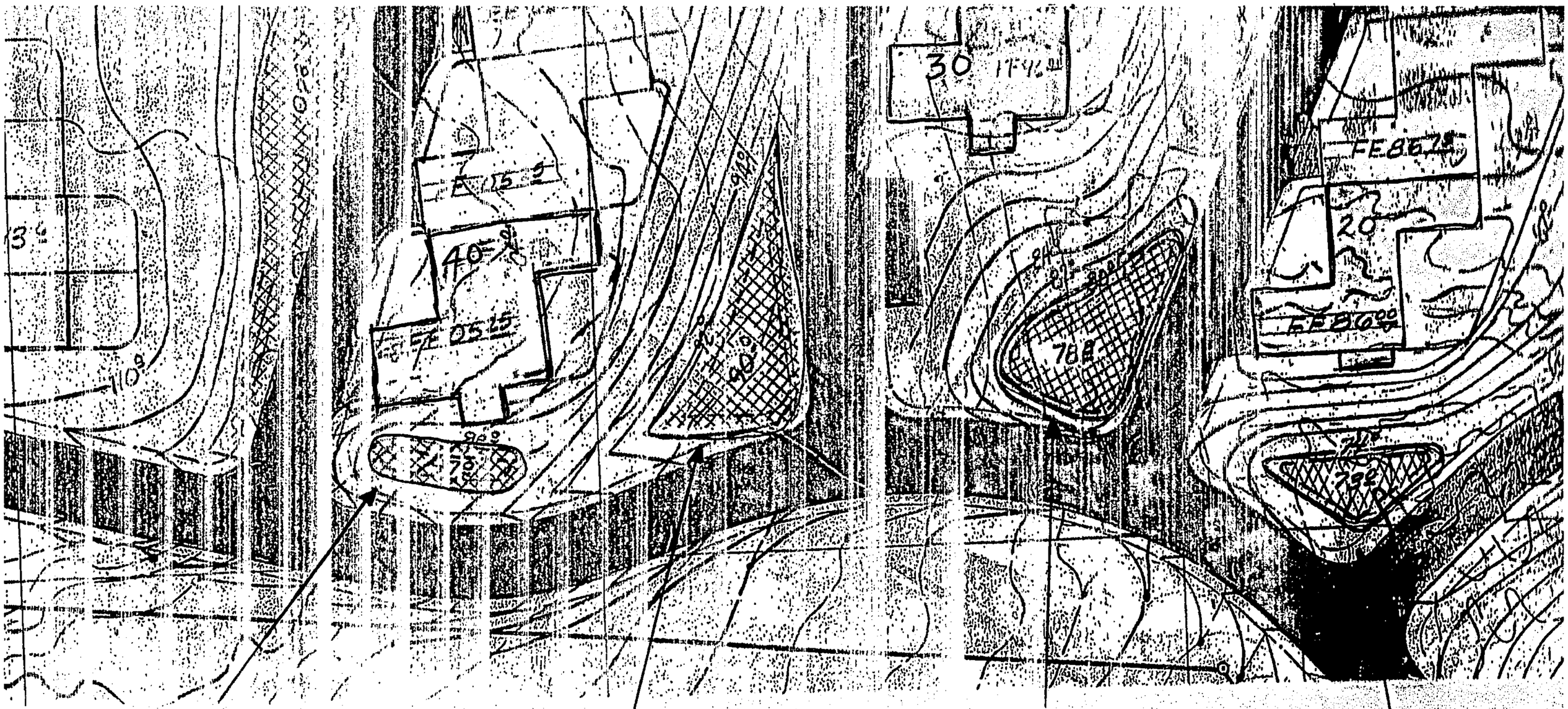
It may be acceptable to provide ponding for the 100 y, - 6 hr storm due to high infiltration rates.

THE UNDERSIGNED AGREES THAT THE ABOVE FINDINGS ARE SUMMARIZED ACCURATELY AND ARE SUBJECT TO CHANGE IF FURTHER INVESTIGATION REVEALS THAT THEY ARE NOT REASONABLE OR THAT THEY ARE BASED ON INACCURATE INFORMATION.

SIGNED: Curtis A Cherne
NAME (PRINT): Curtis A. Cherne

SIGNED:
NAME (PRINT): Guy Jackson

NOTE PLEASE PROVIDE A COPY OF THIS RECAP WITH YOUR DRAINAGE SUBMITTAL.



Storm Catch Basin "A"

Not built (completely missing)

Storm Catch Basin "B"

Much smaller than planned

Not deep enough

Needs a defined flood water access

Storm Catch Basin "C"

Much smaller than planned

Not deep enough

Needs a defined flood water access

Storm Catch Basin "D"

Doesn't look to be a problem

ITEM 1)

Betty Garber 899.4495

Steve Kells

Ross Henke

John Allen

Wally Ford

Lahuz del Sol

Landowners Assn.

3/30/12

Site visit 3-30-12

Rudy and I met with 5 people from the HOA and walked the site. I agreed that the site is an eyesore, dust problem and may attract crime. But there is currently NO drainage problem. The developer recently put up a new 5ft fence and the site was graded with a berm and ponding ~~area~~ area along the eastern edge to protect the existing homes.

Curtis Cline

shall be executed before any benefits of open space designation accrue to the developer. The city's remedies for a developer's failing to meet the obligations of the maintenance agreement include but are not limited to terminating the developer's credit for detached open space. Where appropriate, a developer's obligations may run with the land. Further detailing of these provisions may be adopted as regulations in the city's Development Process Manual. See the Zoning Code, § 14-16-3-8(C).

('74 Code, § 7-9-10) (Ord. 63-1982; Am. Ord. 9-1986)

§ 14-5-2-11 MAINTENANCE RESPONSIBILITY.

(A) Except as otherwise noted herein, all permanent major facilities shall be maintained by the city or other public body. The maintenance of multiple use facilities to which the general public is denied access shall be the responsibility of the owners and shall be performed to City Engineer standards. The City Engineer may allow private maintenance within public right-of-way or easement provided that adequate guarantees and indemnifications are supplied.

(B) Minor facilities shall be maintained by their owners to City Engineer standards.

(C) The maintenance of temporary facilities constructed at private expense (except crossing structures) is the responsibility of the developer until permanent facilities are in place.

(D) The developer shall be responsible for maintaining or replacing temporary crossing structures for a period of six years or until a permanent structure is built, whichever comes first. The city shall maintain temporary crossings which are designed and built such that they may be directly incorporated into the ultimate facilities.

(E) Maintenance and operation of any groundwater cleanup flow connection to any public storm drainage or flood control facility shall be the responsibility of the originator of such a connection. Groundwater cleanup flow connection shall only be allowed by special agreement.

('74 Code, § 7-9-11) (Ord. 63-1982; Am. Ord. 89-1989)

§ 14-5-2-12 GENERAL ADMINISTRATION.

(A) The design, construction and maintenance of all drainage control, flood control and erosion control facilities within the city shall be performed in accordance with procedures, criteria and standards formulated by the City Engineer and in accordance with the policies established in §§ 14-5-2-1 et seq.

(B) All construction activities within the jurisdiction of the city shall conform to the requirements of the City Engineer with respect to drainage control, flood control and erosion control. Original construction and modifications and/or additions to existing structures constituting less than 500 square feet, in plan view, are excluded.

(1) Construction, grading or paving on any lot within the jurisdiction of the city shall not increase the damage potential to upstream, downstream or adjacent properties or public facilities. Damages shall be defined as those caused by flooding from the 100-year design storm and all smaller storms and from erosion and sedimentation resulting from the 10-year design storm and all smaller storms.

(2) During the months of July, August or September, any grading within or adjacent to a watercourse defined as a major facility shall provide for erosion control and the safe passage of the 10-year design storm runoff during the construction phase.

(3) Grading, cut, fill or importation of material in excess of 500 cubic yards or grading of any area of one acre or more shall conform to drainage control, flood control and erosion control policies and to standards, criteria and procedures established by the City Engineer with respect to

CITY OF ALBUQUERQUE

November 12, 2007

Jean J. Bordenave, PE
Bordenave Designs
P.O. Box 91194
Albuquerque, NM 87199

Re: Tracts K, L, M & N Grading and Drainage Plan
Engineer's Stamp dated 11-7-07 (F11/D02)

Dear Mr. Bordenave,

Based upon the information provided in your submittal dated 11-6-07, the above referenced plan is approved for Preliminary Plat action by the DRB. Once that board approves the grading plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. In addition to submitting an NOI to the EPA and preparing a SWPPP, please send a copy of the SWPPP on a CD in .pdf format to the following address:

Department of Municipal Development
Storm Drainage Division
P.O. Box 1293, One Civic Plaza, Rm. 301
Attn: Kathy Verhage
Albuquerque, NM 87103

If you have any questions about this permit, please feel free to call the Municipal Development Department, Hydrology section at 768-3654.

Prior to Release of SIA and Financial Guarantees, an Engineer's Certification of this grading plan will be required.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

4. 099-4495 3:30 pm

~~Brad Bingham~~

Betsy garber

La luz del sol development

cont'd next week

→ better in afternoon

eth 7-23-12

passed Sevilla

next left after Sevilla

Small kiosk

punch # into keypad

5th Sunday meet there then

1. Land has been vandalized and left in a condition that may cause flooding

developer waterman is bankrupt

mound dirt up above her


MINO VIENTO
VISTA DE LUZ DR
COMMON AREA
PRIVATE ACCESS EASEMENT
SWIMMING POOL TRACT
CLUBHOUSE TRACT
COORS
EASEMENT
E11D002
F11D004
N
M
L
K1
C1
D1
H1A
J1A

MUNICIPAL
CALLE
DUETA
AVE
CALLE SEPEDA
LA MARIPOSA
CAMINO VIENTO
CALLE SOLANO
CALLE OLIMPIA
CALLE QUEPASEN RD
SOUTH
UNINCORPORATED
LIMITS
TRAIL
RA-2
TR 1
HORTNERA
QUAKER
LOT 30A
DRAINAGE EASEMENT
TR 2
NORTH VIEW
RAY PENA SUBD
WESTWARD LN
HEIGHTS
JONES
ADD'N
FRIENDLY CT
WESTERN BOUNDARY TOWN OF ALBUQUERQUE GRANT
MUNICIPAL LIMITS
COORS
RD
NW
L.V.R.
TRC
SUBD.
448
S.R.
LA LUZ DEL OESTE UNIT 2 REPLAT
SU-1
PLANNED RESID DEVEL
UNIT 1 REPLAT
UNIT 3
LD-72-450
SP-76-304 AREA D
LA BIENVENIDA PLACE
WEST BANK RD
WEST BANK ESTATES
LANDS OF SUZANNE H POOLE
TR A
UNIVERSITY OF ALBUQUERQUE
SU-1
RIO GRANDE
SLOANE
SUITE
ACRES
CLEVELAND RD
SCALE
LEGAL DESCRIPTION
T 11 N
R 2 E
SEC 35
UNIFORM PROPERTY CODE
1 011-061
APRIL 1979
F·11·Z