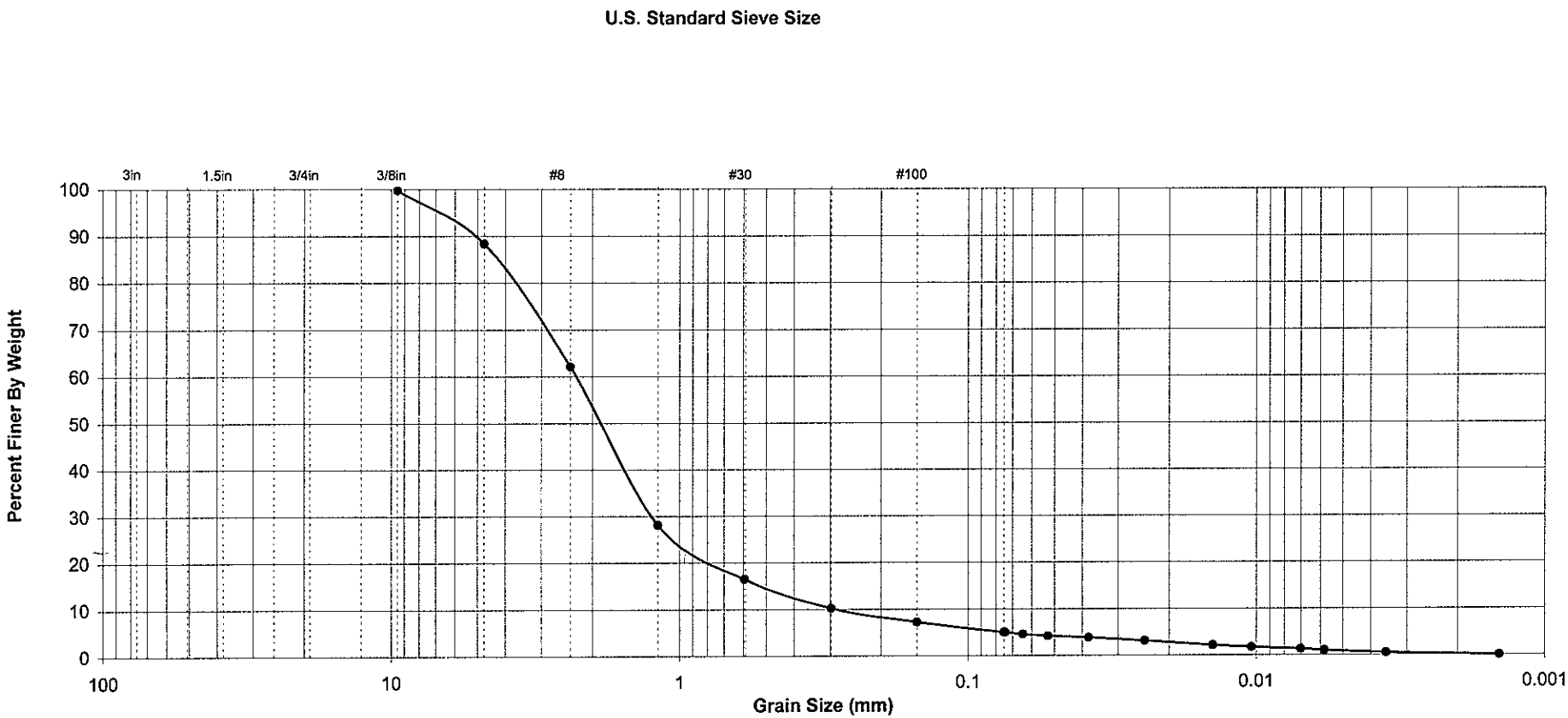
APPENDIX E

GRAIN SIZE ANALYSES

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-11-014 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC 03.005.S									SM	

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-11-014
Sample No. PCC 03.005.S
By LD

Job No. 2001-090
Date 11/15/04

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
2.3	9.52	3/8"	**100**
97.3	4.75	#4	**88**
148.5	2.38	#8	**62**
340.6	1.19	#16	**28**
406.7	0.595	#30	**16**
442.4	0.297	#50	**10**
459.1	0.15	#100	**7**
471.71	0.075	#200	**5**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**22**	-1.7	**6.2**	6.7	0.949545	0.0743	5	5.0
	40	0.07	**22**	-1.7	**5.8**	6.3	0.953042	0.0644	4.6	4.6
	1	0.057	**22**	-1.7	**5.4**	5.9	0.956538	0.0527	4.2	4.2
100	2	0.041	**22**	-1.7	**5**	5.5	0.960035	0.0380	3.8	3.8
100	5	0.026	**22**	-1.7	**4.3**	4.8	0.966154	0.0243	3.1	3.1
100	15	0.015	**22**	-1.7	**3.3**	3.8	0.974895	0.0141	2.1	2.1
100	30	0.011	**22**	-1.7	**2.9**	3.4	0.978392	0.0104	1.7	1.7
100	60	0.0074	**22**	-1.7	**2.5**	3	0.981888	0.00702	1.3	1.3
100	90	0.0061	**22.5**	-1.63	**2.1**	2.6	0.985385	0.00581	0.97	1.0
100	250	0.0037	**23**	-1.55	**1.5**	2	0.990629	0.00354	0.45	0.4
100	1440	0.0015	**21**	-1.88	**1.4**	1.9	0.991503	0.00144	0.02	0.0

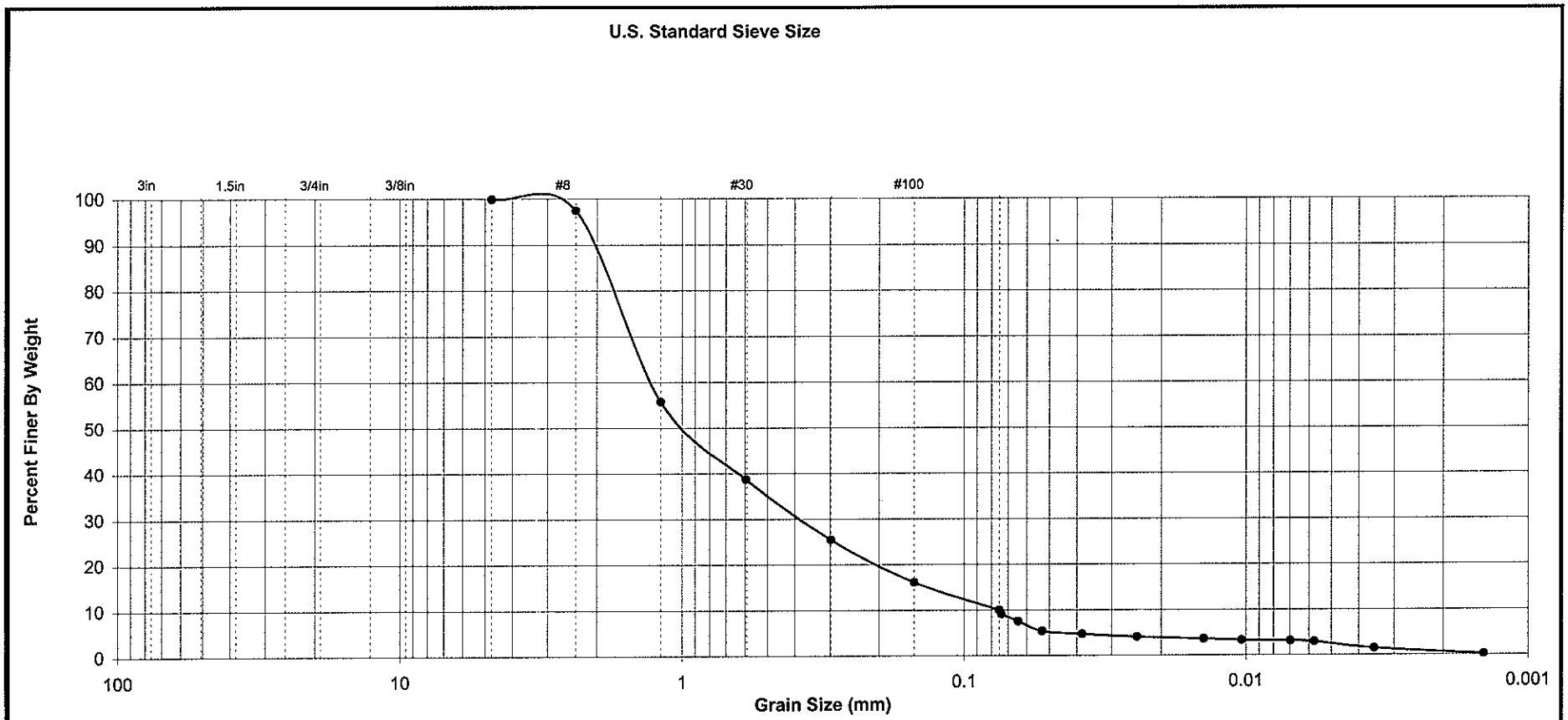
T AVE. = 22.0
Kn = 0.966

Dry Weight (g) = **100**

Total Dry Weight	837.3
- #4Wet Weight	
Water Content	18.6
- #4Dry Weight	500

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-11-014 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC 07.005.S									SM	

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-11-014
Sample No. PCC 07.005.S
By LD

Job No. 2001-090
Date 11/15/04

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0.4	4.75	#4	**100**
10.7	2.38	#8	**97**
185	1.19	#16	**56**
255.9	0.595	#30	**39**
311.3	0.297	#50	**25**
350.5	0.15	#100	**16**
375.94	0.075	#200	**10**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**22**	-1.7	**7**	7.5	0.942552	0.0738	5.8	9.1
	40	0.07	**22**	-1.7	**6**	6.5	0.951294	0.0643	4.8	7.5
	1	0.057	**22**	-1.7	**4.6**	5.1	0.963531	0.0531	3.4	5.3
100	2	0.041	**22**	-1.7	**4.2**	4.7	0.967028	0.0383	3	4.7
100	5	0.026	**22**	-1.7	**3.8**	4.3	0.970524	0.0244	2.6	4.1
100	15	0.015	**22**	-1.7	**3.5**	4	0.973147	0.0141	2.3	3.6
100	30	0.011	**22**	-1.7	**3.3**	3.8	0.974895	0.0104	2.1	3.3
100	60	0.0074	**22**	-1.7	**3.2**	3.7	0.975769	0.00698	2	3.1
100	90	0.0061	**22.5**	-1.63	**3**	3.5	0.977517	0.00576	1.87	2.9
100	250	0.0037	**23**	-1.55	**2**	2.5	0.986259	0.00353	0.95	1.5
100	1440	0.0015	**21**	-1.88	**1.5**	2	0.990629	0.00144	0.12	0.2

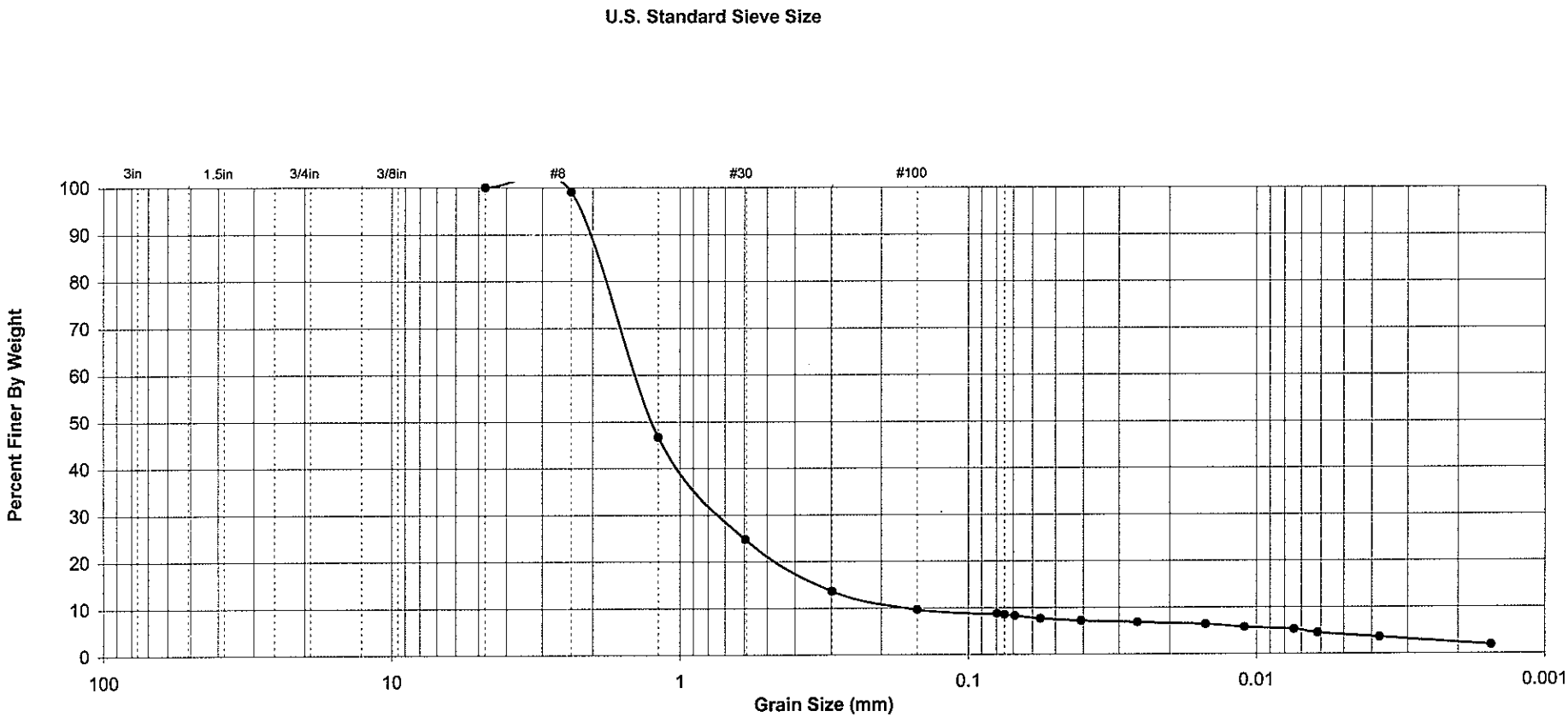
T AVE. = 22.0
Kn = 0.966

Dry Weight (g) = **100**

Total Dry Weight	1
- #4Wet Weight	500
Water Content	19.7
- #4Dry Weight	417.71

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-0074 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC-07-101-L1-L2									SM	
	should be S1-S2									

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-0074
Sample No. PCC-07-101-L1-L2
By LD

Job No. 2001-090
Date 11/30/04

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0	4.75	#4	**100**
3.8	2.38	#8	**99**
213.6	1.19	#16	**47**
301.3	0.595	#30	**25**
345.9	0.297	#50	**14**
361.9	0.15	#100	**10**
366.3	0.075	#200	**9**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**15**	-2.71	**7.7**	8.2	0.936434	0.0796	5.49	8.7
	40	0.07	**15**	-2.71	**7.4**	7.9	0.939056	0.0690	5.19	8.3
	1	0.057	**15**	-2.71	**7**	7.5	0.942552	0.0564	4.79	7.6
100	2	0.041	**15**	-2.71	**6.7**	7.2	0.945175	0.0407	4.49	7.1
100	5	0.026	**15**	-2.71	**6.5**	7	0.946923	0.0259	4.29	6.8
100	15	0.015	**15**	-2.71	**6.2**	6.7	0.949545	0.0150	3.99	6.3
100	30	0.011	**15**	-2.71	**5.8**	6.3	0.953042	0.0110	3.59	5.7
100	60	0.0074	**15**	-2.71	**5.5**	6	0.955664	0.00743	3.29	5.2
100	90	0.0061	**16**	-2.59	**4.9**	5.4	0.960909	0.00615	2.81	4.5
100	250	0.0037	**17**	-2.47	**4.2**	4.7	0.967028	0.00376	2.23	3.5
100	1440	0.0015	**15**	-2.71	**3.4**	3.9	0.974021	0.00153	1.19	1.9

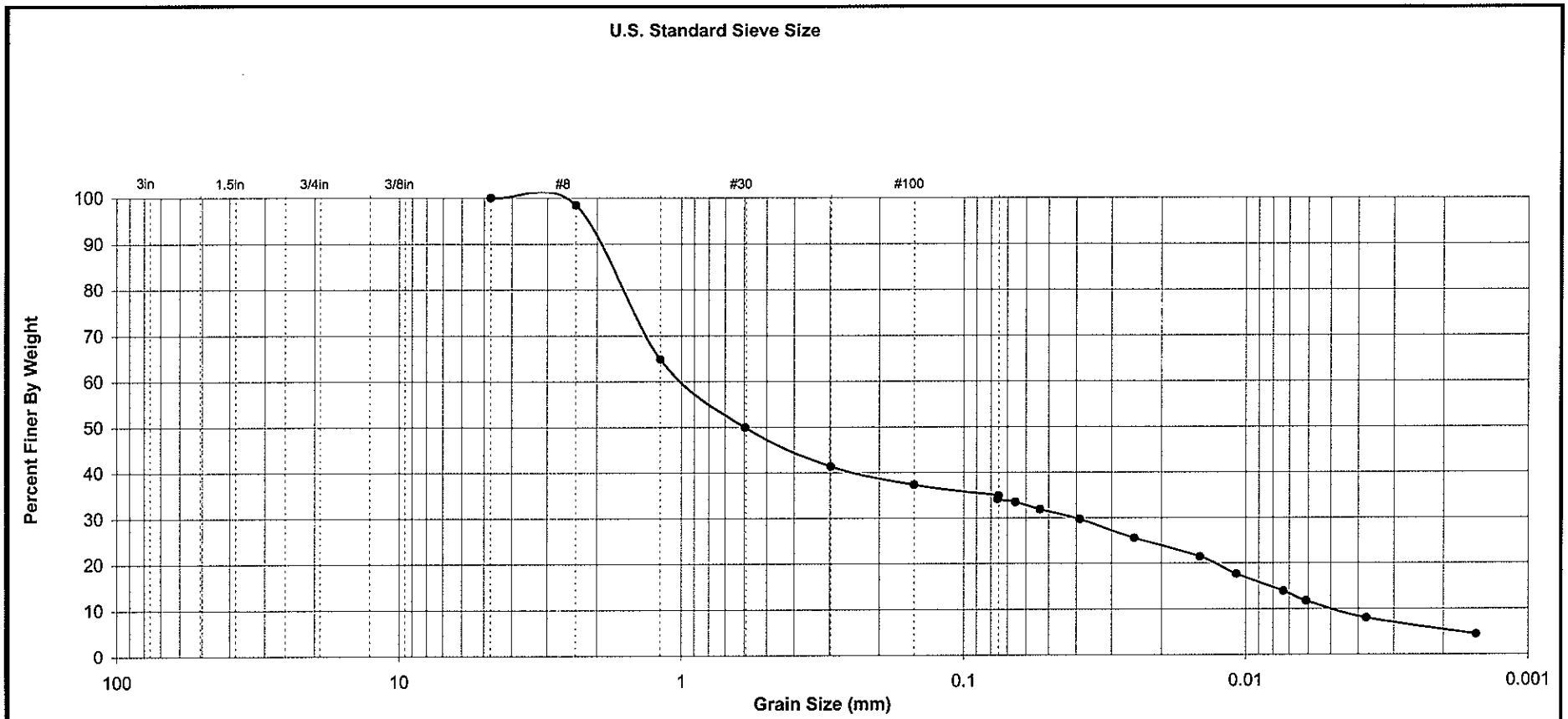
T AVE. = 15.3
Kn = 1.05

Dry Weight (g) = **100**

Total Dry Weight	837.3
- #4Wet Weight	513
Water Content	28.1
- #4Dry Weight	400.47

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-0074 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC-07-101-L3-L4									SM	
G S3-S4										

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GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-0074
Sample No. PCC-07-101-L3-L4
By LD

Job No. 2001-090
Date 11/30/04

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0	4.75	#4	**100**
5.1	2.38	#8	**98**
113.6	1.19	#16	**65**
162	0.595	#30	**50**
189.8	0.297	#50	**41**
202.8	0.15	#100	**37**
210.5	0.075	#200	**35**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**15**	-2.71	**13**	13.5	0.890105	0.0757	10.79	34.1
	40	0.07	**15**	-2.71	**12.8**	13.3	0.891853	0.0656	10.59	33.5
	1	0.057	**15**	-2.71	**12.3**	12.8	0.896224	0.0536	10.09	31.9
100	2	0.041	**15**	-2.71	**11.6**	12.1	0.902343	0.0388	9.39	29.7
100	5	0.026	**15**	-2.71	**10.3**	10.8	0.913706	0.0249	8.09	25.6
100	15	0.015	**15**	-2.71	**9**	9.5	0.92507	0.0146	6.79	21.5
100	30	0.011	**15**	-2.71	**7.8**	8.3	0.935559	0.0108	5.59	17.7
100	60	0.0074	**15**	-2.71	**6.6**	7.1	0.946049	0.00735	4.39	13.9
100	90	0.0061	**16**	-2.59	**5.8**	6.3	0.953042	0.00610	3.71	11.7
100	250	0.0037	**17**	-2.47	**4.5**	5	0.964406	0.00375	2.53	8.0
100	1440	0.0015	**15**	-2.71	**3.6**	4.1	0.972273	0.00153	1.39	4.4

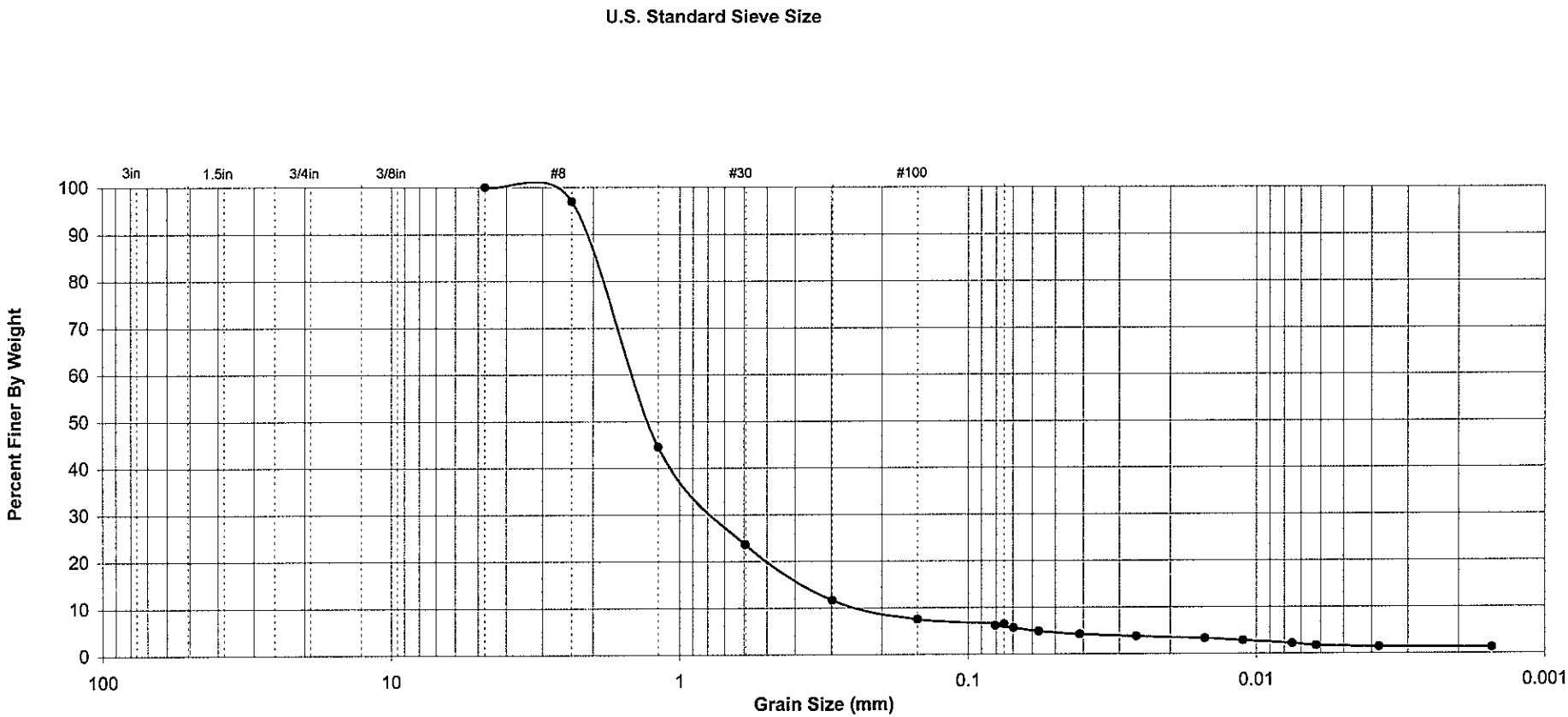
T AVE. = 15.3
Kn = 1.05

Dry Weight (g) = **50**

Total Dry Weight	837.3
- #4Wet Weight	469
Water Content	45
- #4Dry Weight	323.45

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-0074 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC-007-101 #1									SM	

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-0074
Sample No. PCC-007-101 #1
By LD

Job No. 2001-090
Date 1/6/05

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0	4.75	#4	**100**
13.4	2.38	#8	**97**
247.1	1.19	#16	**45**
340.5	0.595	#30	**24**
394.1	0.297	#50	**12**
412.4	0.15	#100	**7**
416.9	0.075	#200	**6**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**16**	-2.59	**6**	6.5	0.951294	0.0804	3.91	6.1
	40	0.07	**16**	-2.59	**5.7**	6.2	0.953916	0.0697	3.61	5.6
	1	0.057	**16**	-2.59	**5.2**	5.7	0.958287	0.0570	3.11	4.8
100	2	0.041	**16**	-2.59	**4.8**	5.3	0.961783	0.0412	2.71	4.2
100	5	0.026	**16**	-2.59	**4.5**	5	0.964406	0.0262	2.41	3.8
100	15	0.015	**16**	-2.59	**4.2**	4.7	0.967028	0.0151	2.11	3.3
100	30	0.011	**16**	-2.59	**3.9**	4.4	0.96965	0.0111	1.81	2.8
100	60	0.0074	**16**	-2.59	**3.5**	4	0.973147	0.00752	1.41	2.2
100	90	0.0061	**16**	-2.59	**3.2**	3.7	0.975769	0.00621	1.11	1.7
100	250	0.0037	**16**	-2.59	**3**	3.5	0.977517	0.00378	0.91	1.4
100	1440	0.0015	**15**	-2.71	**3**	3.5	0.977517	0.00153	0.79	1.2

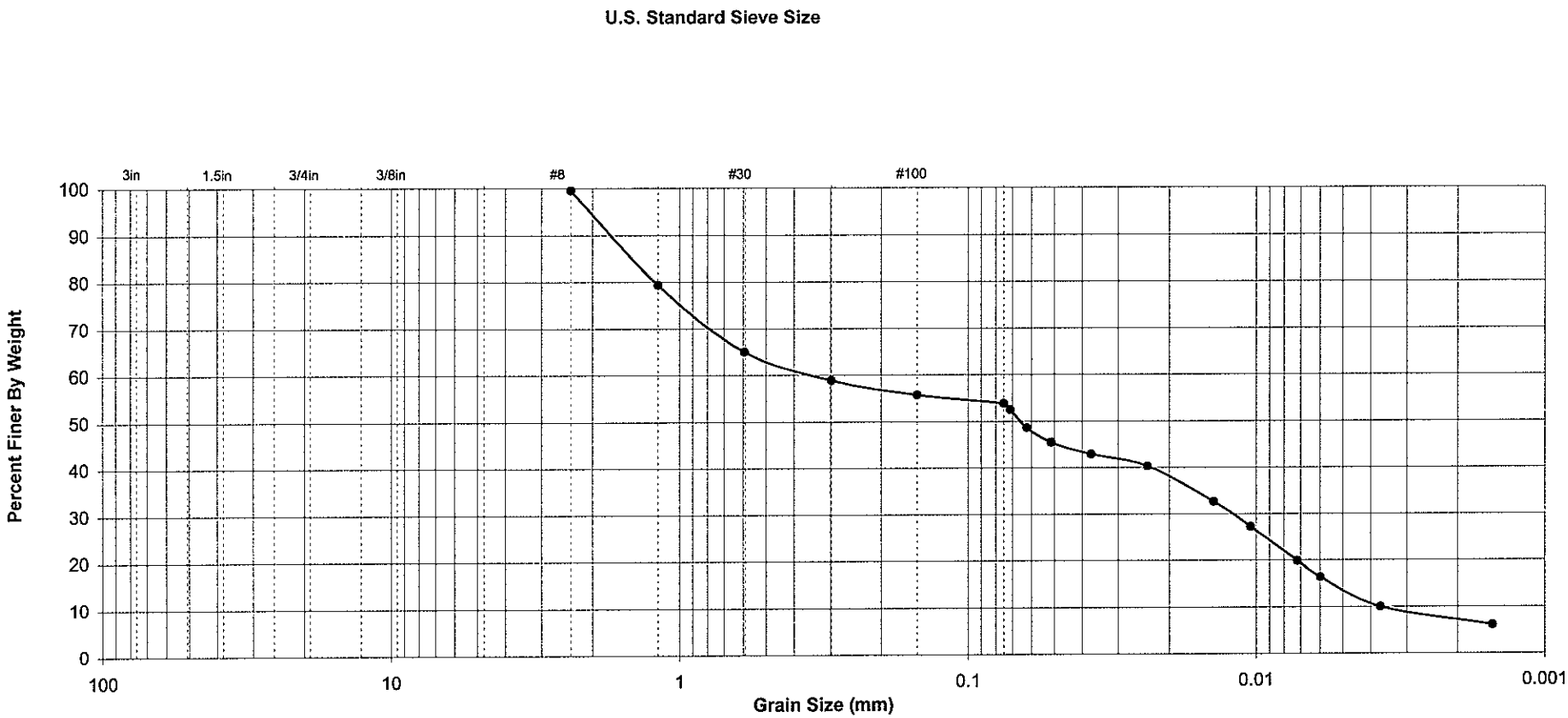
T AVE. = 15.9
Kn = 1.044

Dry Weight (g) = **100**

Total Dry Weight	1
- #4Wet Weight	571
Water Content	20.6
- #4Dry Weight	445.75

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-0074 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC-007-101 #3									ML / SM	

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-0074
Sample No. PCC-007-101 #3
By LD

Job No. 2001-090
Date 1/6/05

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0	4.75	#4	**100**
1.5	2.38	#8	**100**
66.8	1.19	#16	**79**
113.3	0.595	#30	**65**
133.2	0.297	#50	**59**
143.4	0.15	#100	**56**
149.5	0.075	#200	**54**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**16**	-2.59	**18.5**	19	0.842028	0.0712	16.41	52.5
	40	0.07	**16**	-2.59	**17.3**	17.8	0.852517	0.0623	15.21	48.6
	1	0.057	**16**	-2.59	**16.3**	16.8	0.861259	0.0513	14.21	45.4
100	2	0.041	**16**	-2.59	**15.5**	16	0.868252	0.0372	13.41	42.9
100	5	0.026	**16**	-2.59	**14.7**	15.2	0.875245	0.0238	12.61	40.3
100	15	0.015	**16**	-2.59	**12.3**	12.8	0.896224	0.0140	10.21	32.6
100	30	0.011	**16**	-2.59	**10.6**	11.1	0.911084	0.0105	8.51	27.2
100	60	0.0074	**16**	-2.59	**8.3**	8.8	0.931189	0.00719	6.21	19.9
100	90	0.0061	**16**	-2.59	**7.2**	7.7	0.940804	0.00599	5.11	16.3
100	250	0.0037	**16**	-2.59	**5.2**	5.7	0.958287	0.00370	3.11	9.9
100	1440	0.0015	**15**	-2.71	**4.1**	4.6	0.967902	0.00152	1.89	6.0

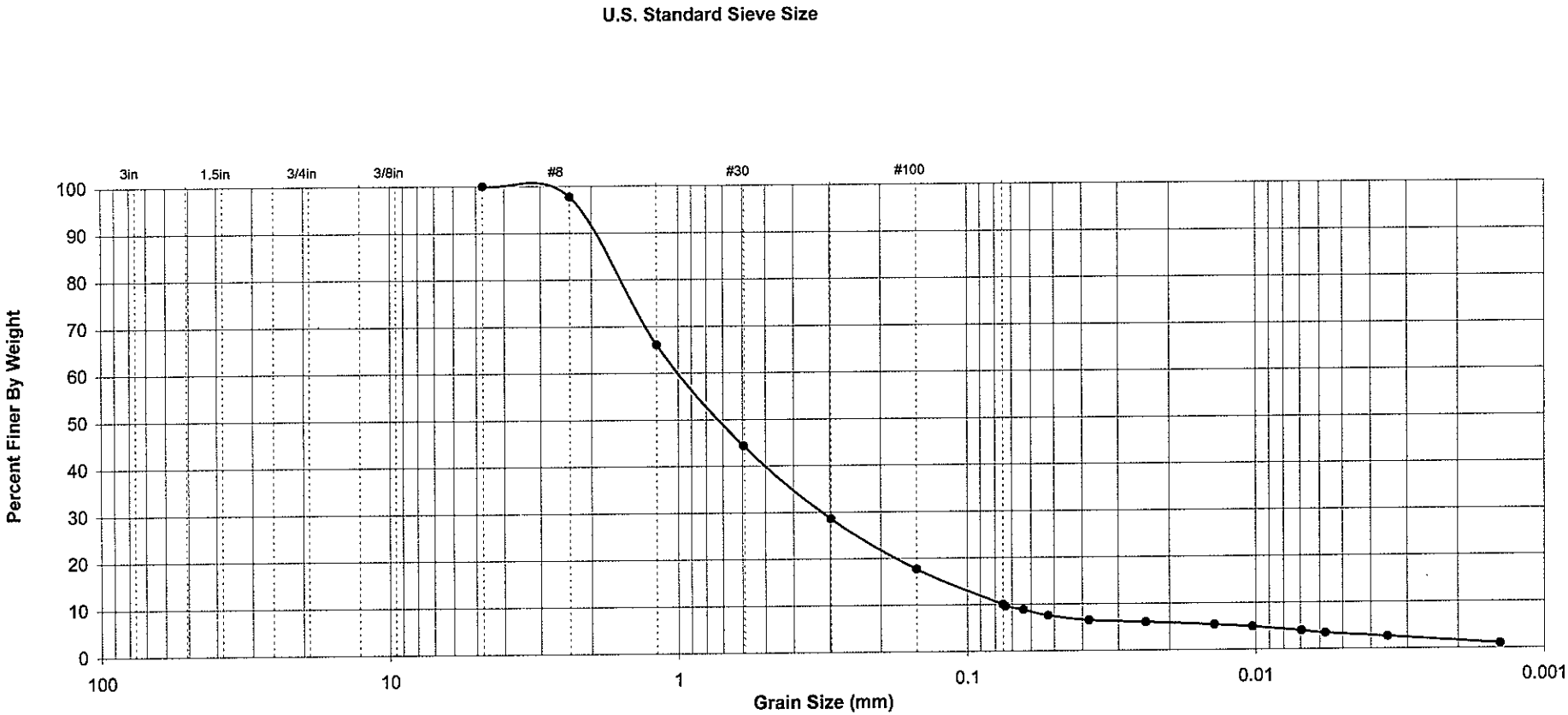
T AVE. = 15.9
Kn = 1.044

Dry Weight (g) = **50**

Total Dry Weight	1
- #4Wet Weight	414.9
Water Content	44.4
- #4Dry Weight	323.89

GRAIN SIZE ANALYSIS - ASTM D 422

BAS # 2004-11-014 _ 2001-090



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeability, K (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
PCC 08.015.S									SM	

GeoLogic Associates

GRAIN SIZE ANALYSIS - ASTM D 422

Project / Client BAS # 2004-11-014
Sample No. PCC 08.015.S
By LD

Job No. 2001-090
Date 11/15/04

Sieve Opening Weight	mm	Sieve Size	% Passing
0	76.2	3"	**100**
0	50.8	2"	**100**
0	38.1	1.5"	**100**
0	25.4	1"	**100**
0	19.1	3/4"	**100**
0	12.7	1/2"	**100**
0	9.52	3/8"	**100**
0	4.75	#4	**100**
6.7	2.38	#8	**98**
100	1.19	#16	**66**
163.8	0.595	#30	**44**
210.3	0.297	#50	**29**
242.3	0.15	#100	**18**
264.87	0.075	#200	**10**

HYDROMETER

	Time	D	Temp.	dT	R	R+C	KL	d (mm)	R+Δr	% Pass
100	30	0.081	**22**	-1.7	**7.3**	7.8	0.93993	0.0735	6.1	9.6
	40	0.07	**22**	-1.7	**6.8**	7.3	0.944301	0.0639	5.6	8.8
	1	0.057	**22**	-1.7	**6**	6.5	0.951294	0.0524	4.8	7.5
100	2	0.041	**22**	-1.7	**5.3**	5.8	0.957413	0.0379	4.1	6.4
100	5	0.026	**22**	-1.7	**5**	5.5	0.960035	0.0241	3.8	6.0
100	15	0.015	**22**	-1.7	**4.6**	5.1	0.963531	0.0140	3.4	5.3
100	30	0.011	**22**	-1.7	**4.3**	4.8	0.966154	0.0103	3.1	4.9
100	60	0.0074	**22**	-1.7	**3.7**	4.2	0.971399	0.00694	2.5	3.9
100	90	0.0061	**22.5**	-1.63	**3.3**	3.8	0.974895	0.00574	2.17	3.4
100	250	0.0037	**23**	-1.55	**2.7**	3.2	0.98014	0.00350	1.65	2.6
100	1440	0.0015	**21**	-1.88	**2**	2.5	0.986259	0.00143	0.62	1.0

T AVE. = 22.0
Kn = 0.966

Dry Weight (g) = **100**

Total Dry Weight	1
- #4Wet Weight	
Water Content	22.3
- #4Dry Weight	294.3