GRAIN SIZE ANALYSIS

(HYDROMETER)

HIDROSUELOS CIA. LTDA.

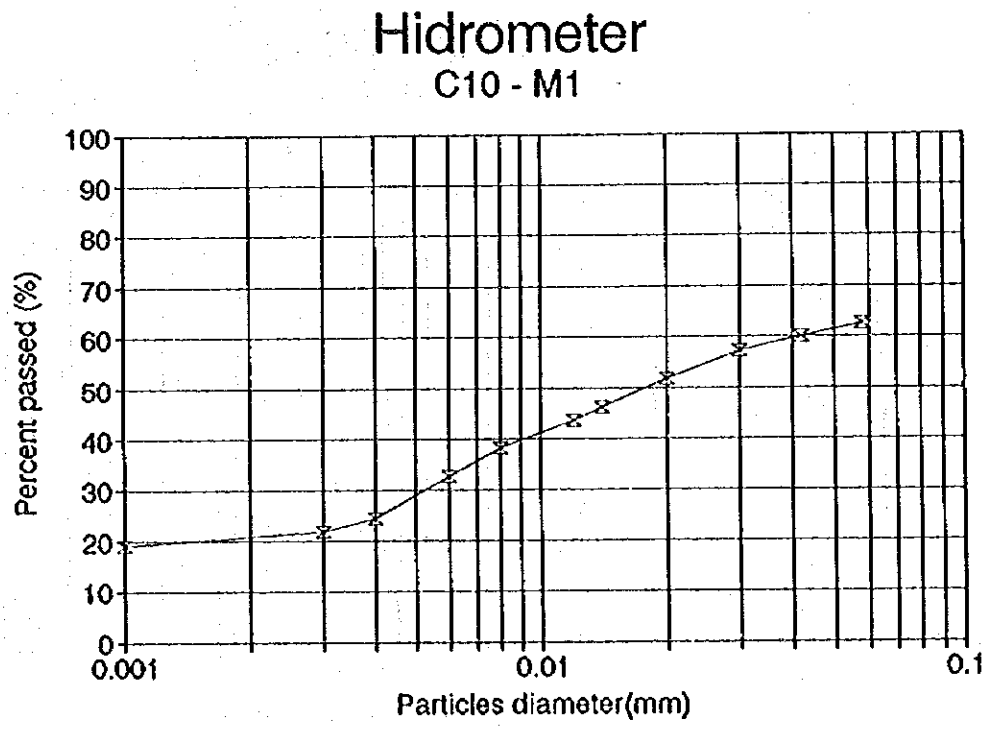
HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal ablerto/Open Channel		
CALICATA No./PIT No.	C-10	MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPT	0.50 - 1.40	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	CALC./CALCULATED BY:	F.V.

CONSTANTES/Ktes:		Gs=	2.768	gr/cm^3
K16=	0.0139	%Pass.No.10:	100	%
		Ws=	57.46	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	9:10	16.00	1.026	0.00534	1.021	8.91	0.058	62.67
1		16.00	1.027	0.00534	1.022	9.20	0.042	59.94
2		16.00	1.026	0.00534	1.021	9.40	0.030	57.22
5		16.00	1.024	0.00534	1.019	10.00	0.020	51.77
10		16.00	1.022	0.00534	1.017	10.50	0.014	46.32
15		16.00	1.021	0.00534	1.016	10.70	0.012	43.60
30		16.00	1.019	0.00534	1.014	11.30	0.008	38.15
60		16.00	1.017	0.00534	1.012	11.80	0.006	32.70
120		16.00	1.014	0.00534	1.009	12.60	0.004	24.52
180		16.00	1.013	0.00534	1.008	12.90	0.003	21.80
1440		16.00	1.012	0.00534	1.007	13.10	0.001	19.07



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

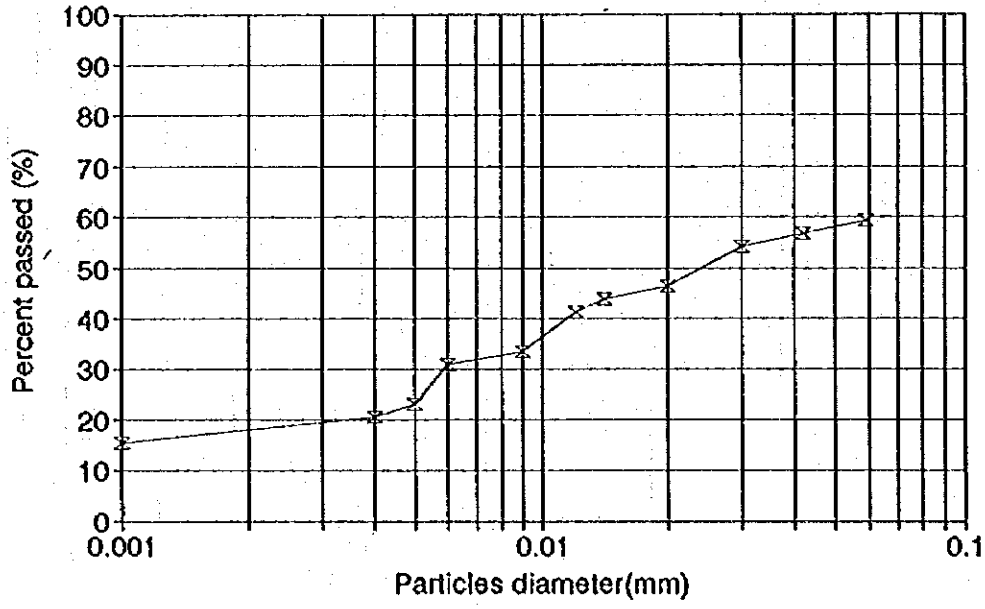
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-10	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00 - 3.00	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.727	gr/cm^3	
K16=	0.014	%Pass.No.10:	100	%	
K17=	0.0138	Ws=	61.07	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	9:25	16.00	1.028	0.00534	1.023	8.89	0.059	59.47
1		16.00	1.027	0.00534	1.022	9.16	0.042	56.88
2		16.00	1.026	0.00534	1.021	9.42	0.030	54.30
5		16.00	1.023	0.00534	1.018	10.21	0.020	46.54
10		16.00	1.022	0.00534	1.017	10.48	0.014	43.96
15		16.00	1.021	0.00534	1.016	10.74	0.012	41.37
30		16.00	1.018	0.00534	1.013	11.54	0.009	33.61
60		16.00	1.017	0.00534	1.012	11.80	0.006	31.03
120		16.00	1.014	0.00534	1.009	12.60	0.005	23.27
180		17.00	1.013	0.00508	1.008	12.86	0.004	20.68
1440		17.00	1.011	0.00508	1.006	13.39	0.001	15.51

Hidrometer

C10 - M2



HIDROSUELOS CIA. LTDA.

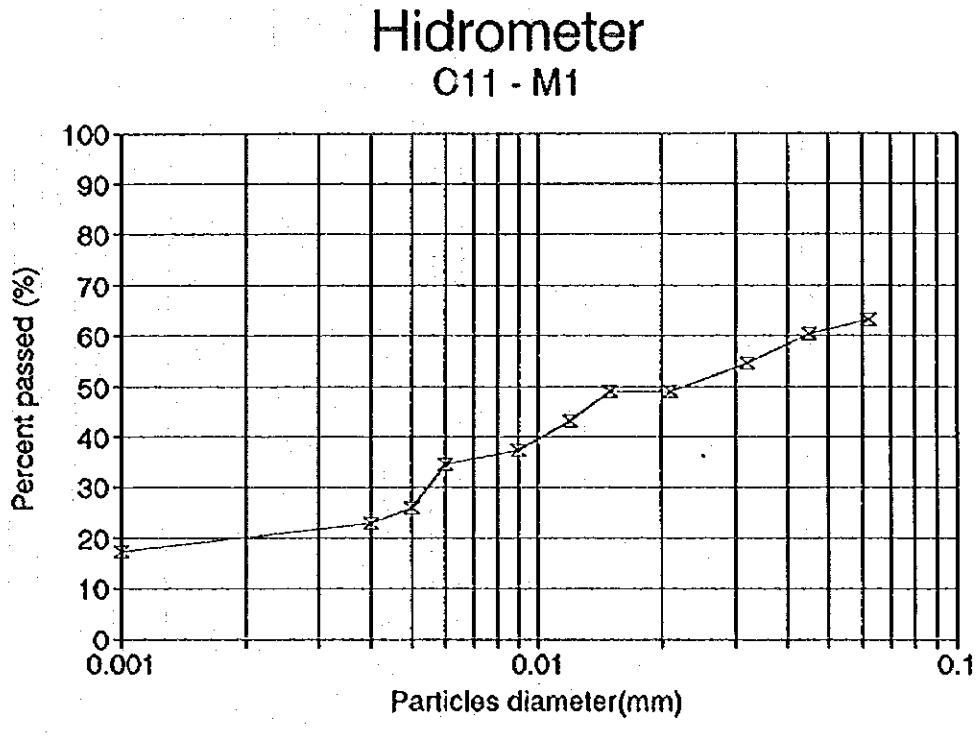
HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-11	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.55-1.60m	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.606	gr/cm^3
K16= 0.0145		%Pass.No.10:	100	%
		Ws=	56.37	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1027	0.00534	1.022	9.16	0.062	63.33
1		16.00	1026	0.00534	1.021	9.42	0.045	60.45
2		16.00	1024	0.00534	1.019	9.95	0.032	54.69
5		16.00	1022	0.00534	1.017	10.48	0.021	48.94
10		16.00	1022	0.00534	1.017	10.48	0.015	48.94
15		16.00	1020	0.00534	1.015	11.01	0.012	43.18
30		16.00	1018	0.00534	1.013	11.54	0.009	37.42
60		16.00	1017	0.00534	1.012	11.80	0.006	34.54
120		16.00	1014	0.00534	1.009	12.60	0.005	25.91
180		16.00	1013	0.00534	1.008	12.86	0.004	23.03
1440		16.00	1011	0.00534	1.006	13.39	0.001	17.27



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-12	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.60-1.60m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

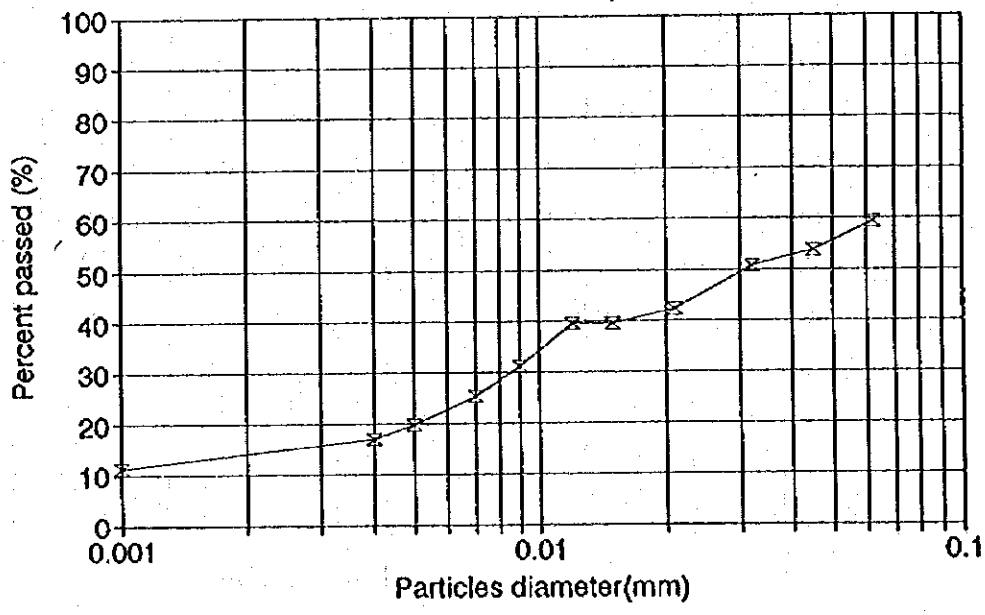
CONSTANTES/Ktes:		Gs=	2.68	gr/cm^3
K16=	0.0142	%Pass.No.10:	100	%
K17=	0.014	Ws=	56.46	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	9:20	16.00	1026	0.00534	1.021	9.42	0.062	59.33
1		16.00	1024	0.00534	1.019	9.95	0.045	53.68
2		16.00	1023	0.00534	1.018	10.21	0.032	50.86
5		16.00	1020	0.00534	1.015	11.01	0.021	42.38
10		16.00	1019	0.00534	1.014	11.27	0.015	39.56
15		16.00	1019	0.00534	1.014	11.27	0.012	39.56
30		16.00	1016	0.00534	1.011	12.07	0.009	31.08
60	10:20	16.00	1014	0.00534	1.009	12.60	0.007	25.43
120		16.00	1012	0.00534	1.007	13.12	0.005	19.76
180		17.00	1011	0.00508	1.006	13.39	0.004	16.95
1440		17.00	1009	0.00508	1.004	13.92	0.001	11.30

Hidrometer

C12 - M1



HIDROSUELOS CIA. LTDA.

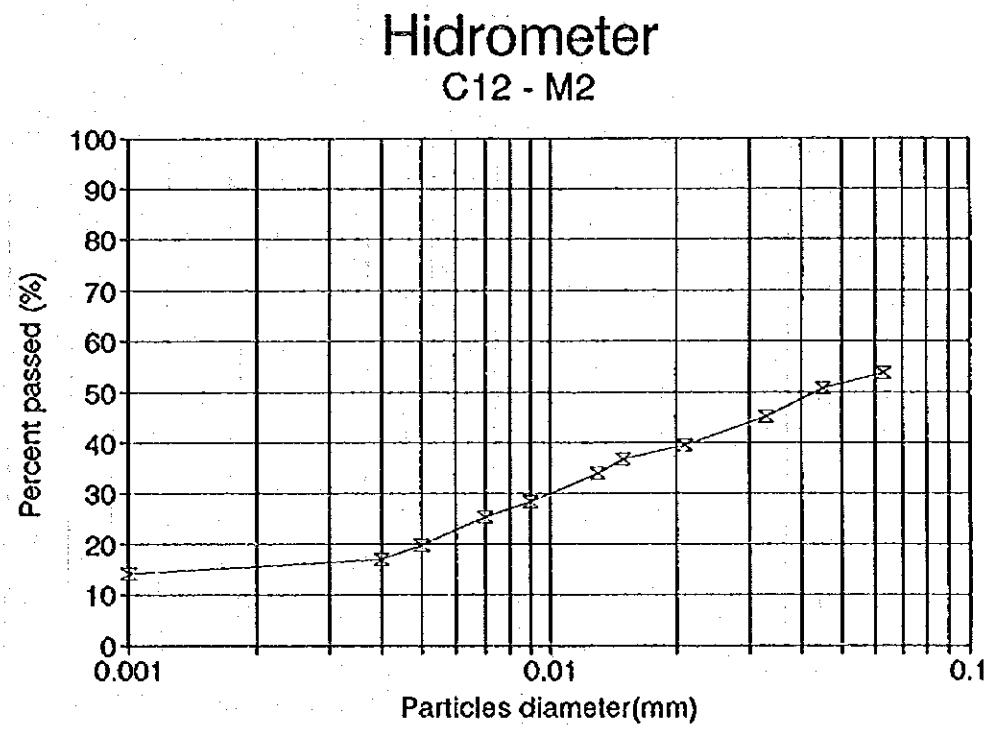
HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal ablerto/Open Channel		
CALICATA No./PIT No.	C-12	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-3.60m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.683	gr/cm^3
K16=	0.0142	%Pass.No.10:	100	%
K17=	0.014	Ws=	56.42	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	9:30	16.00	1024	0.00534	1.019	9.95	0.063	53.69
1		16.00	1023	0.00534	1.018	10.21	0.045	50.86
2		16.00	1021	0.00534	1.016	10.74	0.033	45.21
5		16.00	1019	0.00534	1.014	11.27	0.021	39.56
10		16.00	1018	0.00534	1.013	11.54	0.015	36.73
15		16.00	1017	0.00534	1.012	11.80	0.013	33.91
30		16.00	1015	0.00534	1.010	12.33	0.009	28.26
60	10:30	16.00	1014	0.00534	1.009	12.60	0.007	25.43
120		16.00	1012	0.00534	1.007	13.12	0.005	19.78
180		17.00	1011	0.00508	1.006	13.39	0.004	16.95
1440		17.00	1010	0.00508	1.005	13.65	0.001	14.13



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-13	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.80-2.00m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

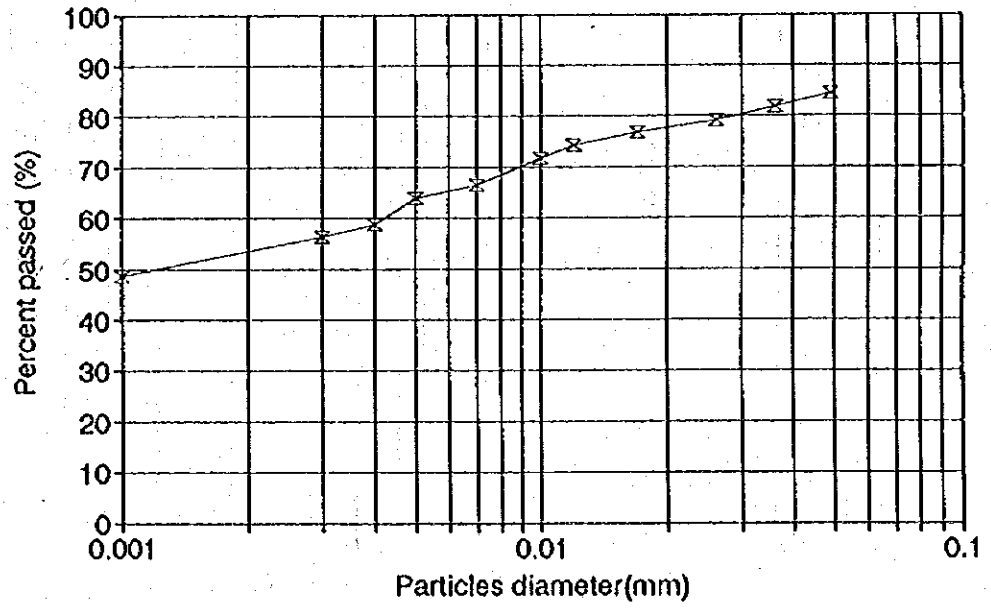
CONSTANTES/Ktes:			Gs=	2.743	gr/cm^3
K16=	0.014	K18= 0.1362	%Pass.No.10:	100	%
K17=	0.0138		Ws=	61.53	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	15:05	16.00	1038	0.00534	1.033	6.25	0.049	84.40
1		16.00	1037	0.00534	1.032	6.51	0.036	81.84
2		16.00	1036	0.00534	1.031	6.78	0.026	79.29
5		16.00	1035	0.00534	1.030	7.04	0.017	76.73
10		16.00	1034	0.00534	1.029	7.30	0.012	74.17
15		16.00	1033	0.00534	1.028	7.57	0.010	71.61
30		17.00	1031	0.00508	1.026	8.10	0.007	66.50
60		17.00	1030	0.00508	1.025	8.36	0.005	63.94
120		17.00	1028	0.00508	1.023	8.89	0.004	58.83
180		18.00	1027	0.00482	1.022	9.16	0.003	56.27
1440		17.00	1024	0.00508	1.019	9.95	0.001	48.60

Hidrometer

C13 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-13	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-3.50m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes: Gs= 2.622 gr/cm^3

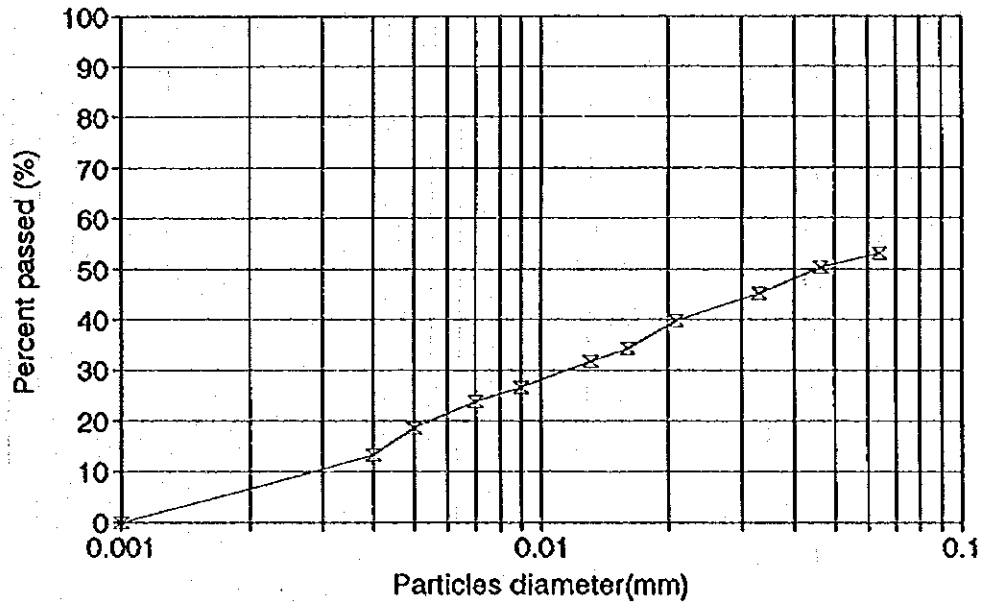
K16= 0.0145 K18= 0.01412 %Pass.No.10: 100 %

K17= 0.0143 Ws= 60.95 gr HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	14:00	16.00	1025	0.00534	1.020	9.69	0.064	53.04
1		16.00	1024	0.00534	1.019	9.95	0.046	50.39
2		16.00	1022	0.00534	1.017	10.48	0.033	45.09
5		16.00	1020	0.00534	1.015	11.01	0.021	39.78
10		16.00	1018	0.00534	1.013	11.54	0.016	34.48
15		16.00	1017	0.00534	1.012	11.80	0.013	31.83
30		16.00	1015	0.00534	1.010	12.33	0.009	26.52
60		16.00	1014	0.00534	1.009	12.60	0.007	23.87
120		16.00	1012	0.00534	1.007	13.12	0.005	18.57
180		18.00	1010	0.00502	1.005	13.65	0.004	13.26
1440		17.00	1004	0.00508	1.000	15.24	0.001	0.00

Hidrometer

C13 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

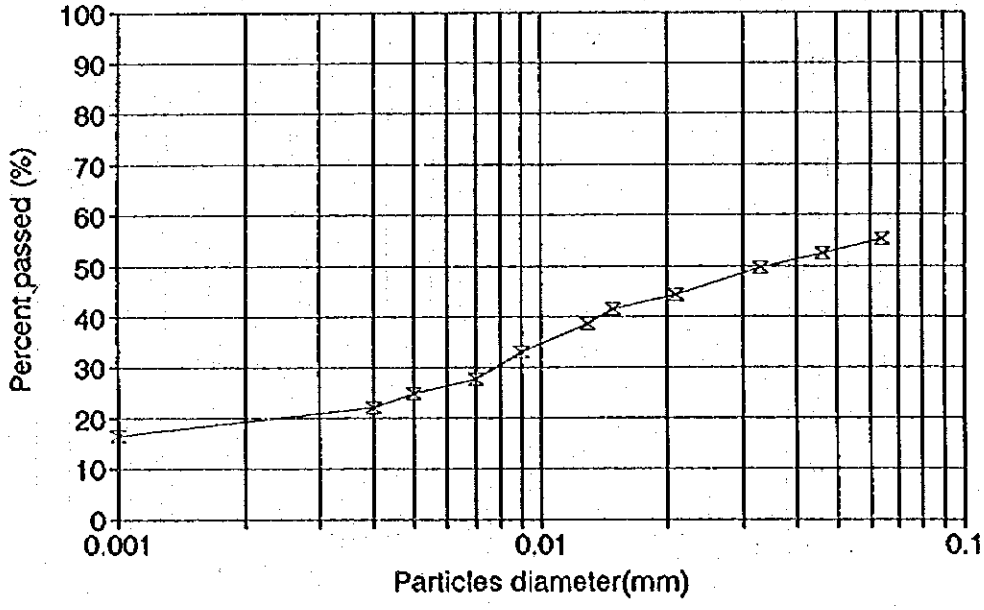
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-14	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.90-1.90m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.598	gr/cm^3	
K16= 0.0146	K18= 0.01421	%Pass.No.10:	100	%	
K17= 0.0144		Ws=	58.79	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	13:50	16.00	1025	0.00534	1.020	9.69	0.064	55.31
1		16.00	1024	0.00534	1.019	9.95	0.046	52.54
2		16.00	1023	0.00534	1.018	10.21	0.033	49.78
5		16.00	1021	0.00534	1.016	10.74	0.021	44.25
10		16.00	1020	0.00534	1.015	11.01	0.015	41.48
15		16.00	1019	0.00534	1.014	11.27	0.013	38.72
30		17.00	1017	0.00508	1.012	11.80	0.009	33.18
60		17.00	1015	0.00508	1.010	12.33	0.007	27.65
120		17.00	1014	0.00508	1.009	12.60	0.005	24.80
180		18.00	1013	0.00502	1.008	12.86	0.004	22.12
1440		17.00	1011	0.00508	1.006	13.39	0.001	16.59

Hidrometer

C14 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

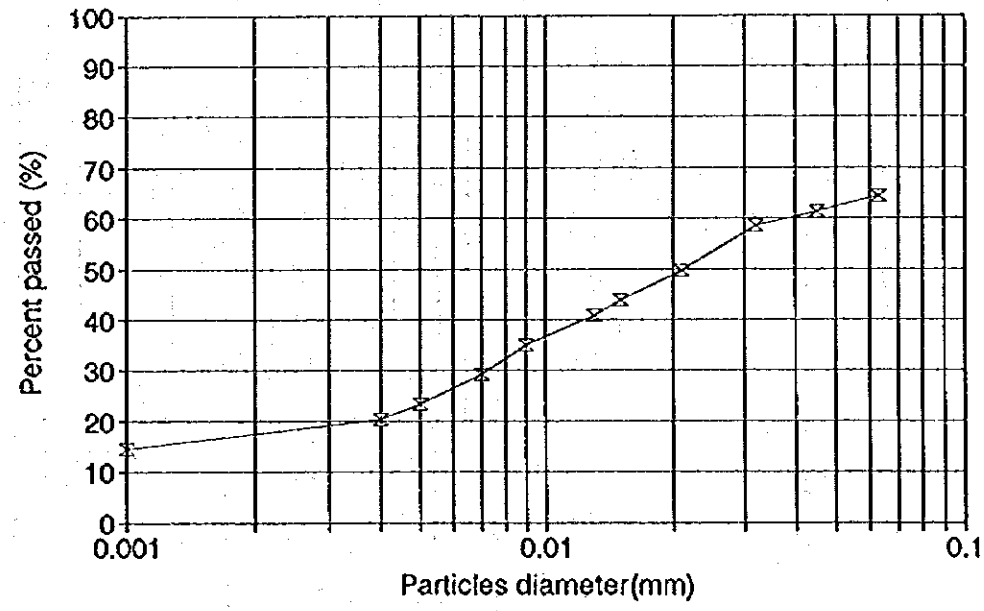
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-14	MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPT	2.00-3.50m.	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	CALC./CALCULATED BY:	F.V.

CONSTANTES/Ktes:		Gs	2.565	gr/cm^3	
K16=	0.0148 K18= 0.01438	%Pass.No.10:	100	%	
K17=	0.0146	Ws=	56.11	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	14:00	16.00	1027	0.00534	1.022	9.16	0.063	64.26
1		16.00	1026	0.00534	1.021	9.42	0.045	61.34
2		16.00	1025	0.00534	1.020	9.69	0.032	58.42
5		16.00	1022	0.00534	1.017	10.48	0.021	49.66
10		16.00	1020	0.00534	1.015	11.01	0.015	43.82
15		16.00	1019	0.00534	1.014	11.27	0.013	40.89
30		17.00	1017	0.00508	1.012	11.80	0.009	35.05
60		17.00	1015	0.00508	1.010	12.33	0.007	29.21
120		17.00	1013	0.00508	1.008	12.86	0.005	23.37
180		18.00	1012	0.00502	1.007	13.12	0.004	20.45
1440		17.00	1010	0.00508	1.005	13.65	0.001	14.61

Hidrometer

C14 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

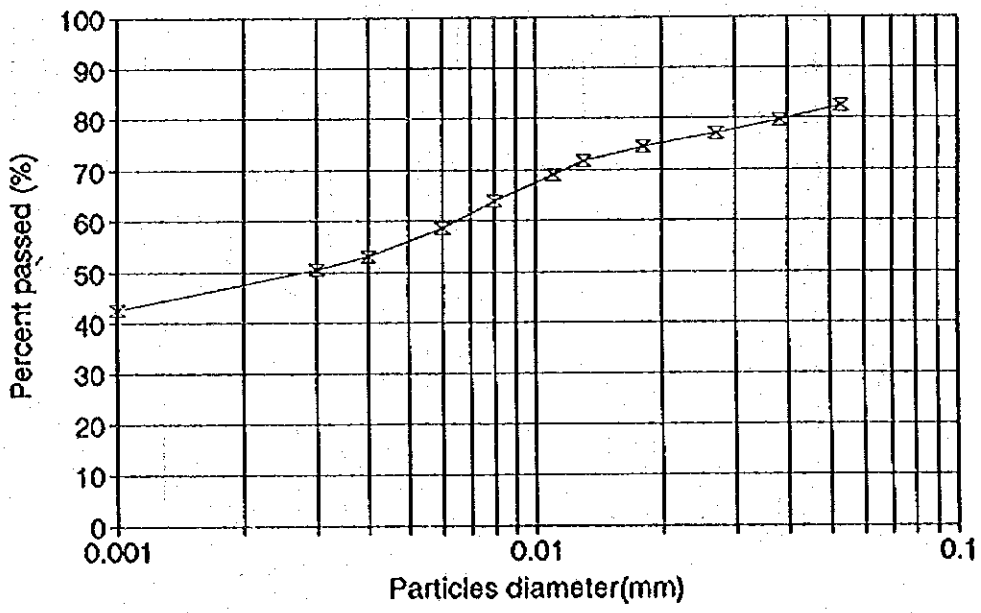
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-15	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.40-1.00m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.658	gr/cm^3	
K16= 0.0143	K18= 0.01395	%Pass.No.10:	100	%	
K17= 0.0141		Ws=	60.31	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	13:45	16.00	1036	0.00534	1.031	6.78	0.053	82.40
1		16.00	1035	0.00534	1.030	7.04	0.038	79.74
2		16.00	1034	0.00534	1.029	7.30	0.027	77.09
5		16.00	1033	0.00534	1.028	7.57	0.018	74.43
10		16.00	1032	0.00534	1.027	7.83	0.013	71.72
15		16.00	1031	0.00534	1.026	8.10	0.011	69.11
30		17.00	1029	0.00508	1.024	8.63	0.008	63.80
60		17.00	1027	0.00508	1.022	9.16	0.006	58.48
120		17.00	1025	0.00508	1.020	9.69	0.004	53.16
180		18.00	1024	0.00482	1.019	9.95	0.003	50.51
1440		17.00	1021	0.00508	1.016	10.74	0.001	42.53

Hidrometer

C15 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

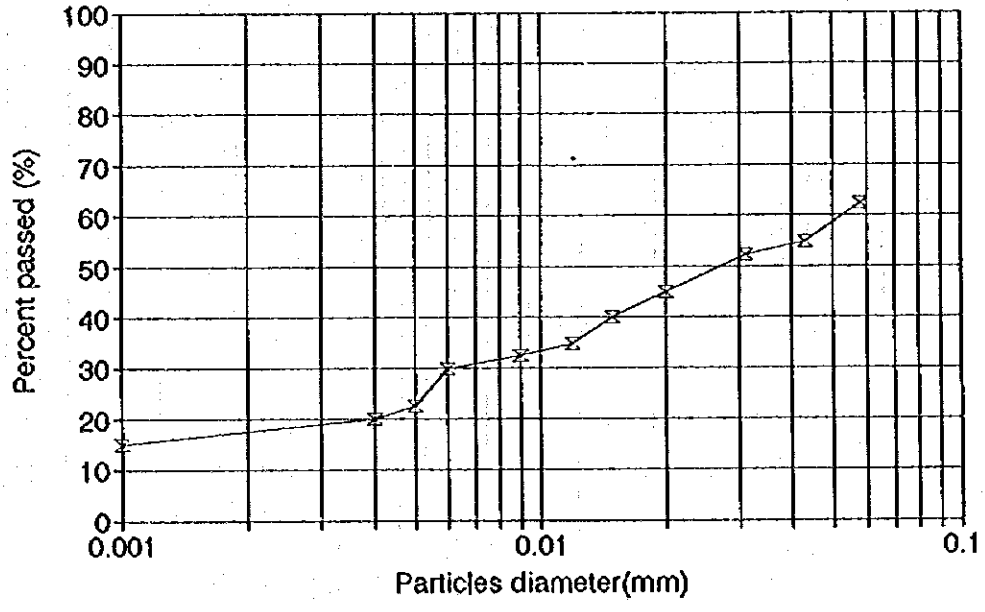
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-15	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	1.20-1.60m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.698	gr/cm^3
K16= 0.0141		%Pass.No.10:	100	%
K17= 0.014		Ws=	63.74	gr
				HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	12:20	16.00	1030	0.00534	1.025	8.36	0.058	62.32
1		16.00	1027	0.00534	1.022	9.16	0.043	54.84
2		16.00	1026	0.00534	1.021	9.42	0.031	52.35
5		16.00	1023	0.00534	1.018	10.21	0.020	44.87
10		16.00	1021	0.00534	1.016	10.74	0.015	39.89
15		16.00	1019	0.00534	1.014	11.27	0.012	34.90
30		17.00	1018	0.00508	1.013	11.54	0.009	32.41
60		17.00	1017	0.00508	1.012	11.80	0.006	29.91
120		17.00	1014	0.00508	1.009	12.60	0.005	22.44
180		17.00	1013	0.00508	1.008	12.86	0.004	19.94
1440		17.00	1011	0.00508	1.006	13.39	0.001	14.96

Hidrometer

C15 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-16	MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPT	0.65-1.80m.	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	CALC./CALCULATED BY:	F.V.

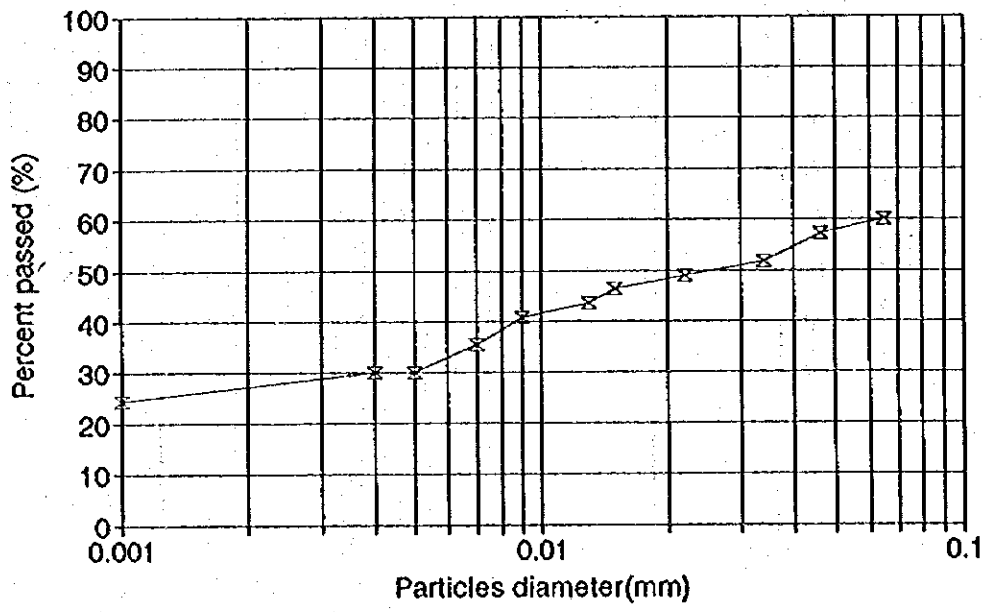
CONSTANTES/Ktes:		Gs=	2.457	gr/cm^3
K16=	0.0151	%Pass.No.10:	100	%
K17=	0.015	Ws=	61.86	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	12:05	16.00	1027	0.00534	1.022	9.16	0.065	59.97
1		16.00	1026	0.00534	1.021	9.42	0.046	57.25
2		16.00	1024	0.00534	1.019	9.95	0.034	51.80
5		16.00	1023	0.00534	1.018	10.21	0.022	49.07
10		16.00	1022	0.00534	1.017	10.48	0.015	46.34
15		16.00	1021	0.00534	1.016	10.74	0.013	43.62
30		16.00	1020	0.00534	1.015	11.01	0.009	40.89
60		17.00	1018	0.00508	1.013	11.54	0.007	35.44
120		17.00	1016	0.00508	1.011	12.07	0.005	29.99
180		17.00	1016	0.00508	1.011	12.07	0.004	29.99
1440		17.00	1014	0.00508	1.009	12.60	0.001	24.53

Hidrometer

C16 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

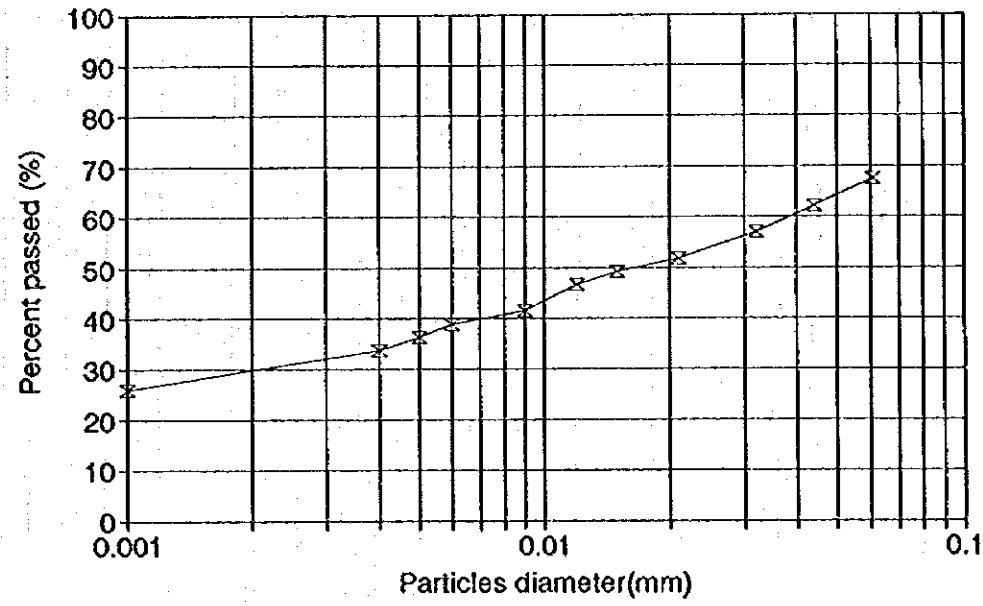
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal Abierto/Open Channel		
CALICATA No./PIT No.	C-16	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-3.50m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:	Gs	2.457	gr/cm^3	
K16= 0.0151	%Pass.No.10:	100	%	
K17= 0.015	Ws=	66.36	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	12:10	16.00	1.031	0.00534	1.026	8.10	0.061	67.46
1		16.00	1.029	0.00534	1.024	8.63	0.044	62.27
2		16.00	1.027	0.00534	1.022	9.16	0.032	57.08
5		16.00	1.025	0.00534	1.020	9.69	0.021	51.89
10		16.00	1.024	0.00534	1.019	9.95	0.015	49.30
15		16.00	1.023	0.00534	1.018	10.21	0.012	46.70
30		17.00	1.021	0.00508	1.016	10.74	0.009	41.51
60		17.00	1.02	0.00508	1.015	11.01	0.006	38.92
120		17.00	1.019	0.00508	1.014	11.27	0.005	36.32
180		17.00	1.018	0.00508	1.013	11.54	0.004	33.73
1440		17.00	1.015	0.00508	1.010	12.33	0.001	25.95

Hidrometer

C16 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-17	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.40-1.60m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

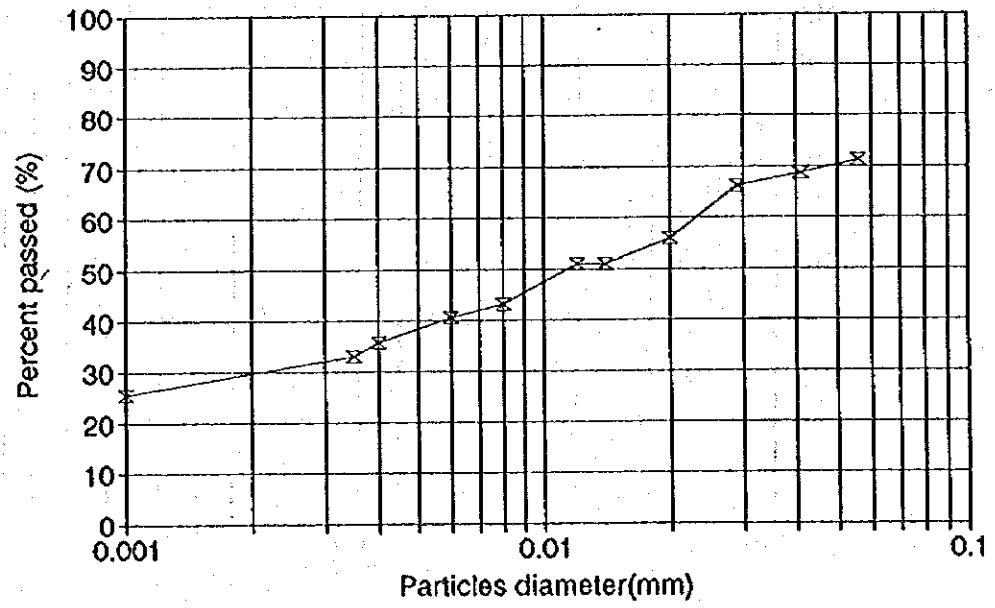
CONSTANTES/Ktes:		Gs=	2.623	gr/cm^3
K16= 0.0145		%Pass.No.10:	100	%
K17= 0.0143		Ws=	63.49	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	12:15	16.00	1033	0.00534	1.028	7.57	0.056	71.27
1		16.00	1032	0.00534	1.027	7.83	0.041	68.75
2		16.00	1031	0.00534	1.026	8.10	0.029	66.18
5		16.00	1027	0.00534	1.022	9.16	0.020	56.00
10		16.00	1025	0.00534	1.020	9.69	0.014	50.91
15		16.00	1025	0.00534	1.020	9.69	0.012	50.91
30		17.00	1022	0.00508	1.017	10.48	0.008	43.27
60	13:15	17.00	1021	0.00508	1.016	10.74	0.006	40.73
120		17.00	1019	0.00508	1.014	11.27	0.004	35.64
180		17.00	1018	0.00508	1.013	11.54	0.004	33.09
1440		17.00	1015	0.00508	1.010	12.33	0.001	25.46

Hidrometer

C17 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-17	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-3.00m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

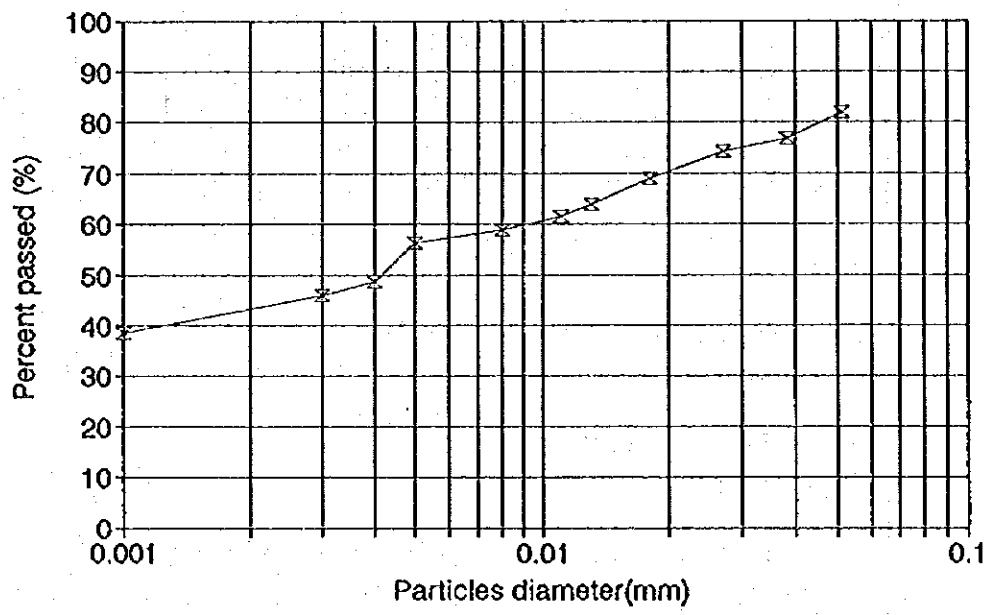
CONSTANTES/Ktes:		Gs=	2.681	gr/cm^3
K16=	0.0142	%Pass.No.10:	100	%
K17=	0.014	Ws=	62.3	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	12:25	16.00	1037	0.00534	1.032	6.51	0.051	81.92
1		16.00	1035	0.00534	1.030	7.04	0.038	76.80
2		16.00	1034	0.00534	1.029	7.30	0.027	74.24
5		16.00	1032	0.00534	1.027	7.83	0.018	69.12
10		16.00	1030	0.00534	1.025	8.36	0.013	64.00
15		16.00	1029	0.00534	1.024	8.63	0.011	61.44
30		17.00	1028	0.00508	1.023	8.89	0.008	58.88
60	13:25	17.00	1027	0.00508	1.022	9.16	0.005	56.32
120		17.00	1024	0.00508	1.019	9.95	0.004	48.64
180		17.00	1023	0.00508	1.018	10.21	0.003	46.08
1440		17.00	1020	0.00508	1.015	11.01	0.001	38.40

Hidrometer

C17 - M2



HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-10	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.50 - 1.40	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	18.27	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	166.92	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7682	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-10	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.00	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	24.27	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	176.82	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7270	gr/cm ^ 3

53

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-11	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.65 - 1.60	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	14.49	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	170.33	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6061	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-12	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.60 - 1.60	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	22.67	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	169.46	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6797	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-12	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.60	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	22.66	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	175.79	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6831	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-13	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.60 - 2.00	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	28.12	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	179.27	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7434	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-13	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.50	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	30.6	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	174.18	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6221	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-14	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.90 - 1.90	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	25.15	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	176.92	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.5981	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-14	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.50	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	13.44	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	169.6	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.5649	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-15	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.40 - 1.00	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	21.05	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	174.58	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6578	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-15	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	1.20 - 1.60	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	24.9	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	170.92	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6977	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-16	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.85 - 1.80	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	26.26	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	177.7	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6365	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-16	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.50	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C: b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO c=Dry soil weight:	26.9	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	171.2	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.4566	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-17	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.40 - 1.60	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C: b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO c=Dry soil weight:	18.07	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	172.63	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6226	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.

GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-17	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.00	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	23.83	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	176.34	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6805	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.

GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-18	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.30 - 1.60	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	23.2	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	169.94	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7262	gr/cm ^ 3

6 o

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-16	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 3.50	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	24.82	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	177.13	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7155	gr/cm ^3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-19	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	1.10 - 1.70	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	26.25	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	177.92	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6978	gr/cm ^3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.:	C-19	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 4.00	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	18.64	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	166.74	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6070	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-20	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.35 - 1.10	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C, +/- 1°C:		
b= Picnometer weight filled of detilled water 20°C, +/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	18.23	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C, +/-1°C		
d=Picnometer weight filled with soil and water, 20°C, +/- 1°C	172.8	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6497	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-21	MUESTRA No./SAMPLE No	M-1
PROFUNDIDAD/DEPTH:	0.40 - 1.00	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:
b= Picnometer weight filled of detilled water 20°C,+/-1°C **161.4 gr.**

c=PESO DEL SUELO SECADO AL HORNO
c=Dry soil weight: **22.24 gr.**

d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C **175.32 gr**

GRAVEDAD ESPECIFICA/Specific gravity: **2.6731 gr/cm ^ 3**

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-21	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	1.10 - 2.15	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:
b= Picnometer weight filled of detilled water 20°C,+/-1°C **155.25 gr.**

c=PESO DEL SUELO SECADO AL HORNO
c=Dry soil weight: **27.36 gr.**

d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C **172 gr**

GRAVEDAD ESPECIFICA/Specific gravity: **2.5787 gr/cm ^ 3**

HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

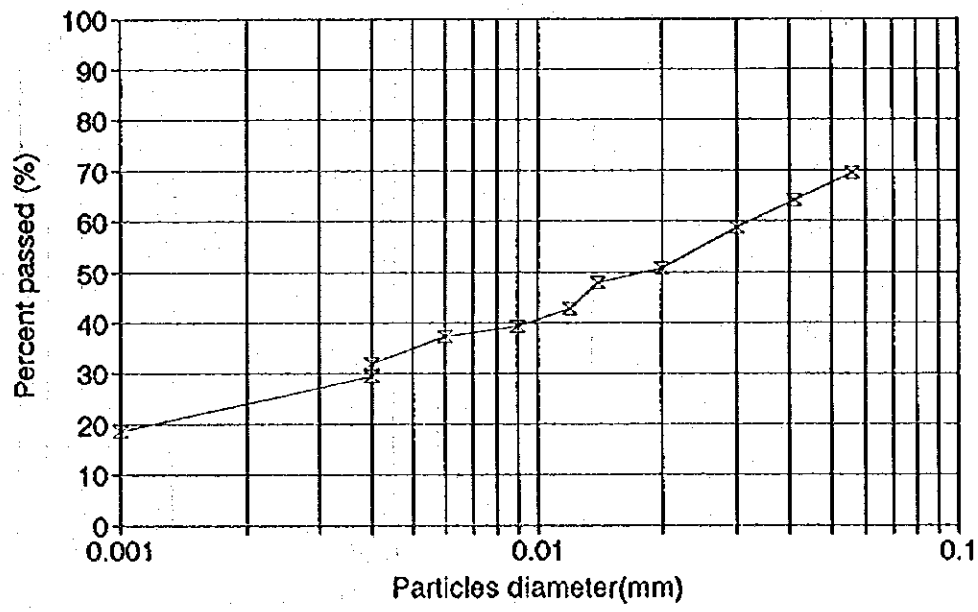
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal Abierto/Open Channel		
CALICATA No./PIT No.	C-18	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.30-1.60m	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.726 gr/cm^3	
k 16=	0.014	%Pass.No.10:	100 %	
K 17=	0.0138	Ws=	59.15 gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1031	0.00534	1.026	8.10	0.056	69.42
1		16.00	1029	0.00534	1.024	8.63	0.041	64.08
2		16.00	1027	0.00534	1.022	9.16	0.030	58.74
5		16.00	1024	0.00534	1.019	9.95	0.020	50.73
10		16.00	1023	0.00534	1.018	10.21	0.014	48.06
15		16.00	1021	0.00534	1.016	10.74	0.012	42.72
30		16.00	1019	0.00534	1.011	11.27	0.009	39.37
60		16.00	1019	0.00534	1.014	11.27	0.006	37.38
120		16.00	1017	0.00534	1.012	11.80	0.004	32.04
180		17.00	1016	0.00508	1.011	12.07	0.004	29.37
1440		16.00	1012	0.00534	1.007	13.12	0.001	18.69

Hidrometer

C18 - M1



64

HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal Abierto/Open Channel		
CALICATA No./PIT No.	C-18	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-3.50m	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

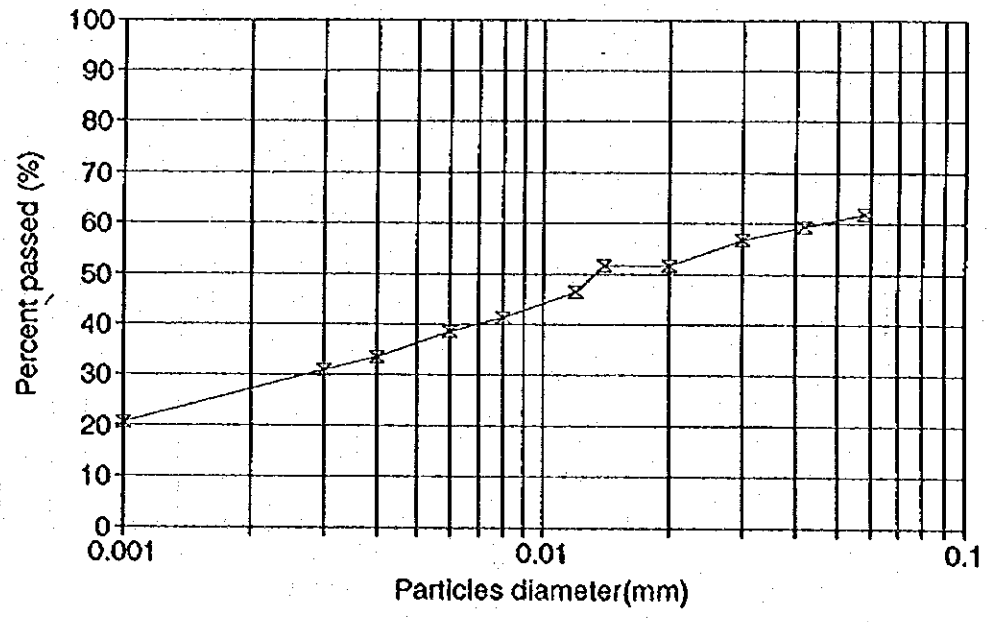
CONSTANTES/Ktes:		Gs=	2.72	gr/cm^3
K 16=	0.0141	%Pass.No.10:	100	%
K 17=	0.0139	Ws=	61.19	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1029	0.00534	1.024	8.63	0.058	62.03
1		16.00	1028	0.00534	1.023	8.89	0.042	59.44
2		16.00	1027	0.00534	1.022	9.16	0.030	56.86
5		16.00	1025	0.00534	1.020	9.69	0.020	51.69
10		16.00	1025	0.00534	1.020	9.69	0.014	51.69
15		16.00	1023	0.00534	1.018	10.21	0.012	46.52
30		16.00	1021	0.00534	1.016	10.74	0.008	41.35
60		16.00	1020	0.00534	1.015	11.01	0.006	38.77
120		16.00	1018	0.00534	1.013	11.54	0.004	33.60
180		17.00	1017	0.00508	1.012	11.80	0.003	31.01
1440		16.00	1013	0.00534	1.008	12.86	0.001	20.68

Hidrometer

C18 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-19	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	1.10-1.70m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

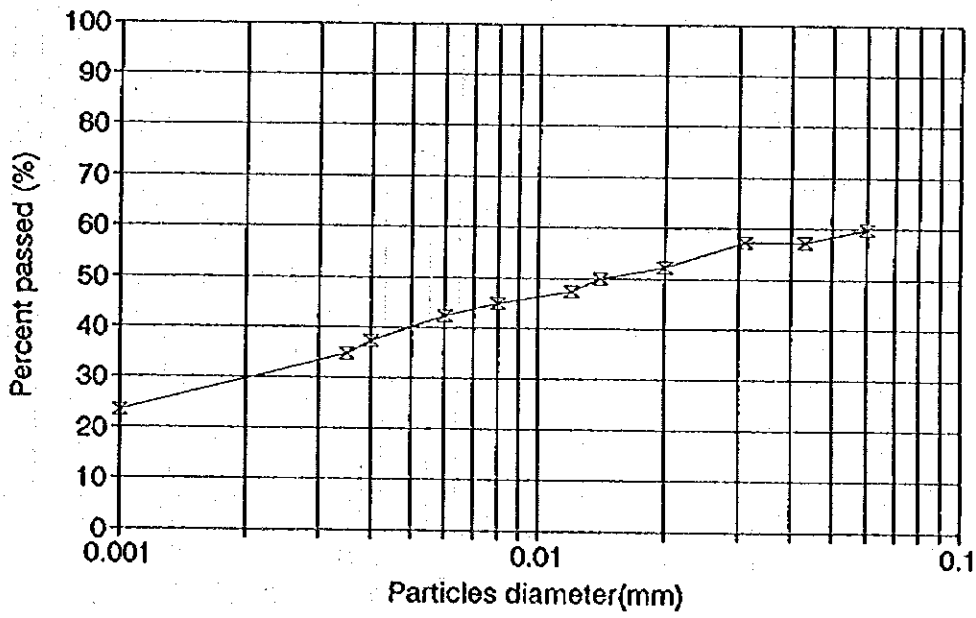
CONSTANTES/Ktes:		Gs=	2.618	gr/cm^3
K16=	0.0145	%Pass.No.10:	100	%
K17=	0.0143	Ws=	64.97	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	11:25	16.00	1029	0.00534	1.024	8.63	0.060	59.77
1		16.00	1028	0.00534	1.023	8.89	0.043	57.28
2		16.00	1028	0.00534	1.023	8.89	0.031	57.28
5		16.00	1026	0.00534	1.021	9.42	0.020	52.30
10		16.00	1025	0.00534	1.020	9.69	0.014	49.81
15		16.00	1024	0.00534	1.019	9.95	0.012	47.32
30		16.00	1023	0.00534	1.018	10.21	0.008	44.83
60		16.00	1022	0.00534	1.017	10.48	0.006	42.34
120		16.00	1020	0.00534	1.015	11.01	0.004	37.36
180		17.00	1019	0.00508	1.014	11.27	0.004	34.87
1440		16.00	1016	0.00534	1.011	12.07	0.001	23.39

Hidrometer

C19 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Canal abierto/Open Channel		
CALICATA No./PIT No.	C-19	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-4.00m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

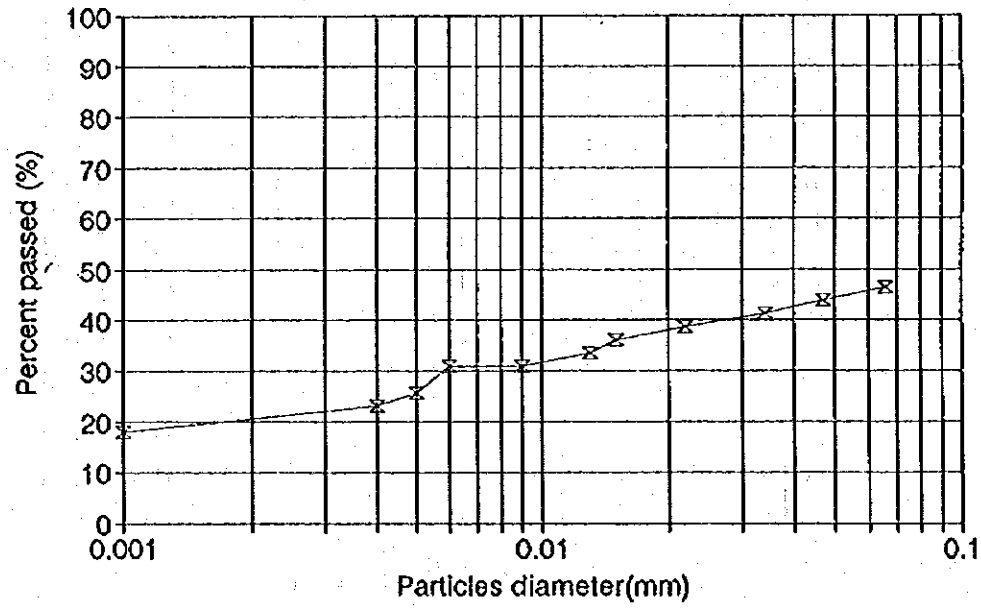
CONSTANTES/Ktes:		Gs=	2.607	gr/cm^3
K16= 0.0145		%Pass.No.10:	100	%
K17= 0.0144		Ws=	62.87	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	11:30	16.00	1023	0.00534	1.018	10.21	0.066	46.45
1		16.00	1022	0.00534	1.017	10.48	0.047	43.87
2		16.00	1021	0.00534	1.016	10.74	0.034	41.29
5		16.00	1020	0.00534	1.015	11.01	0.022	38.71
10		16.00	1019	0.00534	1.014	11.27	0.015	36.13
15		16.00	1018	0.00534	1.013	11.54	0.013	33.54
30		16.00	1017	0.00534	1.012	11.80	0.009	30.96
60		16.00	1017	0.00534	1.012	11.80	0.006	30.96
120		16.00	1015	0.00534	1.010	12.33	0.005	25.80
180		17.00	1014	0.00508	1.009	12.60	0.004	23.22
1440		16.00	1012	0.00534	1.007	13.12	0.001	18.06

Hidrometer

C19 - M2



17

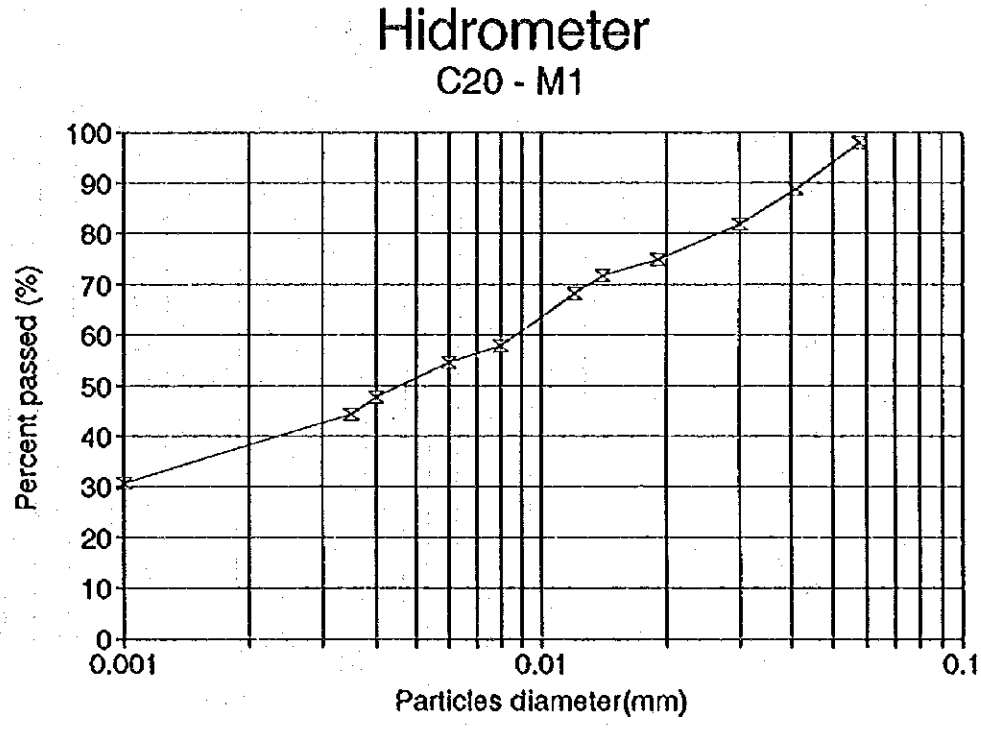
HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmision Line		
CALICATA No./PIT No.	C-20	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.35-1.10m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.65	gr/cm^3	
K16=	0.0144	%Pass.No.10:	100	%	
K17=	0.0142	Ws=	61.45	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	11:30	16.00	1031	0.00534	1.026	8.10	0.058	97.95
1		16.00	1031	0.00534	1.026	8.10	0.041	88.64
2		16.00	1029	0.00534	1.024	8.63	0.030	81.82
5		16.00	1027	0.00534	1.022	9.16	0.019	75.00
10		16.00	1026	0.00534	1.021	9.42	0.014	71.59
15		16.00	1025	0.00534	1.020	9.69	0.012	68.18
30		16.00	1022	0.00534	1.017	10.48	0.008	57.95
60		16.00	1021	0.00534	1.016	10.74	0.006	54.54
120		16.00	1019	0.00534	1.014	11.27	0.004	47.73
180		17.00	1018	0.00508	1.013	11.54	0.004	44.32
1440		16.00	1014	0.00534	1.009	12.60	0.001	30.68



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

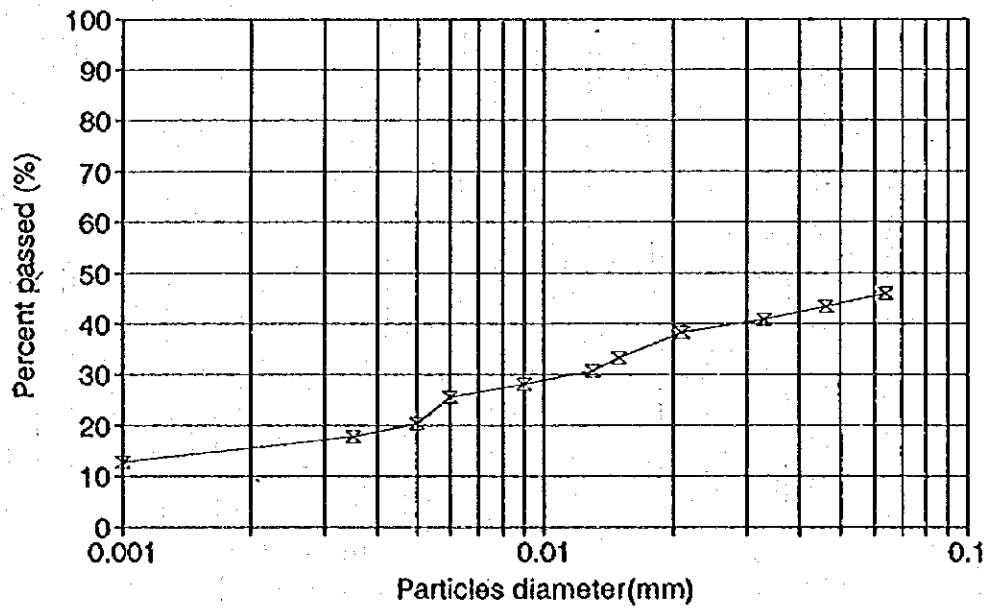
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmision Line		
CALICATA No./PIT No.	C-21	**MUESTRA No./SAMPLE No.:**	M-1
PROFUNDIDAD/DEPT	0.40-1.00m.	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.673	gr/cm^3	
K16=	0.0143	%Pass.No.10:	100	%	
K17=	0.0141	Ws=	62.49	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	10:30	16.00	1023	0.00534	1.018	10.21	0.064	46.02
1		16.00	1022	0.00534	1.017	10.48	0.046	43.47
2		16.00	1021	0.00534	1.016	10.74	0.033	40.91
5		16.00	1020	0.00534	1.015	11.01	0.021	38.35
10		16.00	1018	0.00534	1.013	11.54	0.015	33.24
15		16.00	1017	0.00534	1.012	11.80	0.013	30.68
30		16.00	1016	0.00534	1.011	12.07	0.009	28.12
60		17.00	1015	0.00508	1.010	12.33	0.006	25.57
120		17.00	1013	0.00508	1.008	12.86	0.005	20.45
180		17.00	1012	0.00508	1.007	13.12	0.004	17.80
1440		17.00	1010	0.00508	1.005	13.65	0.001	12.78

Hidrometer

C21 - M1



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

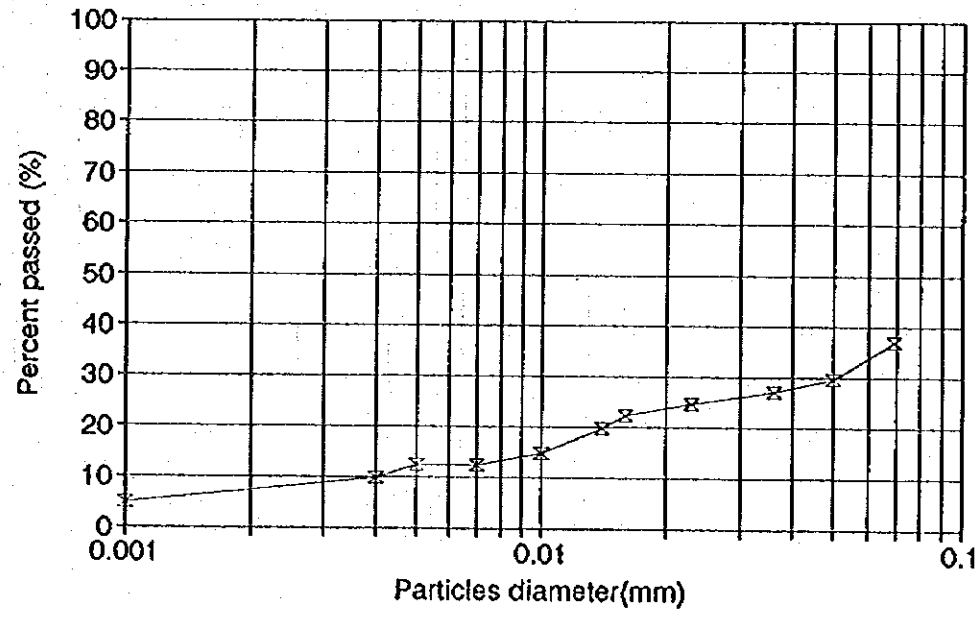
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.	C-21	MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPT	1.00-2.15m	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	CALC./CALCULATED BY:	F.V.

CONSTANTES/Ktes:		Gs=	2.579	gr/cm^3	
k 16=	0.0147	%Pass.No.10:	100	%	
K 17=	0.0145	Ws=	66.18	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1020	0.00534	1.015	11.01	0.069	37.02
1		16.00	1017	0.00534	1.012	11.80	0.050	29.62
2		16.00	1016	0.00534	1.011	12.07	0.036	27.15
5		16.00	1015	0.00534	1.010	12.33	0.023	24.68
10		16.00	1014	0.00534	1.009	12.60	0.016	22.21
15		16.00	1013	0.00534	1.008	12.86	0.014	19.74
30		16.00	1011	0.00534	1.006	13.39	0.010	14.81
60		17.00	1010	0.00508	1.005	13.65	0.007	12.34
120		17.00	1010	0.00508	1.005	13.65	0.005	12.34
180		17.00	1009	0.00508	1.004	13.92	0.004	9.87
1440		17.00	1007	0.00508	1.002	14.45	0.001	4.94

Hidrometer

C21 - M2



>0

HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.	C-22	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	1.00-2.35m	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

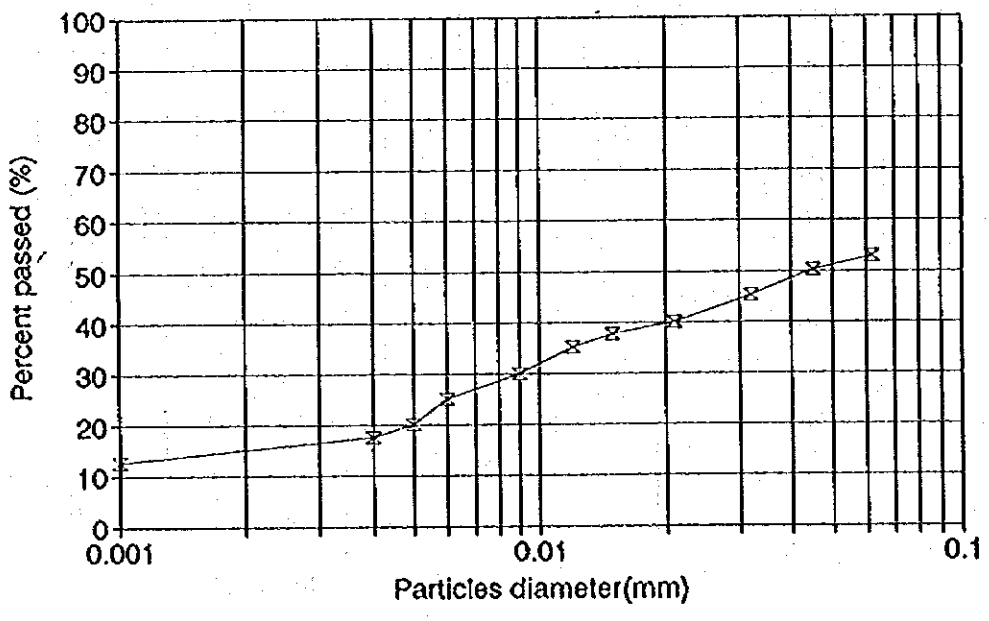
CONSTANTES/Ktes:		Gs=	2.659	gr/cm^3
k 16=	0.0143	%Pass.No.10:	100	%
K 17=	0.0141	Ws=	63.74	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1026	0.00534	1.021	9.42	0.062	52.81
1		16.00	1025	0.00534	1.020	9.69	0.045	50.29
2		16.00	1023	0.00534	1.018	10.21	0.032	45.26
5		16.00	1021	0.00534	1.016	10.74	0.021	40.23
10		16.00	1020	0.00534	1.015	11.01	0.015	37.72
15		16.00	1019	0.00534	1.014	11.27	0.012	35.20
30		16.00	1017	0.00534	1.012	11.80	0.009	30.17
60		17.00	1015	0.00508	1.010	12.33	0.006	25.15
120		17.00	1013	0.00508	1.008	12.86	0.005	20.12
180		17.00	1013	0.00508	1.007	13.12	0.004	17.60
1440		17.00	1010	0.00508	1.005	13.65	0.001	12.57

Hidrometer

C22 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

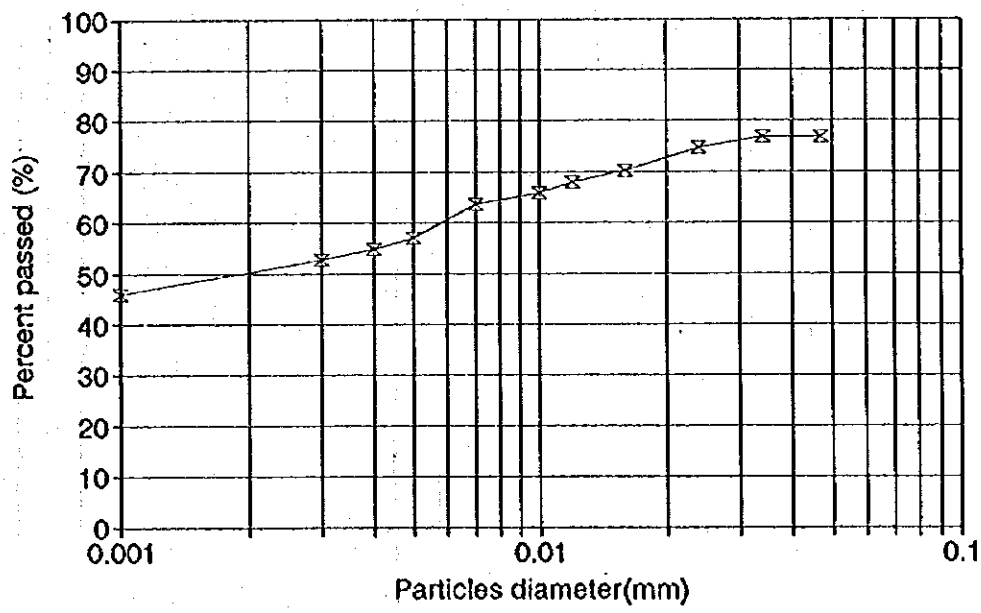
PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.	C-23	**MUESTRA No./SAMPLE No.:**	M-2
PROFUNDIDAD/DEPT	2.00-2.80m	**FECHA/DATE:**	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	**CALC./CALCULATED BY:**	F.V.

CONSTANTES/Ktes:		Gs=	2.733	gr/cm^3	
k 16=	0.014	%Pass.No.10:	100	%	
K 17=	0.0138	Ws=	71.87	gr	HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5		16.00	1040	0.00534	1.035	5.72	0.047	76.80
1		16.00	1040	0.00534	1.035	5.72	0.034	76.80
2		16.00	1039	0.00534	1.034	5.98	0.024	74.61
5		16.00	1037	0.00534	1.032	6.51	0.016	70.22
10		16.00	1036	0.00534	1.031	6,78	0.012	68.02
15		16.00	1035	0.00534	1.030	7.04	0.010	65.83
30		16.00	1034	0.00534	1.029	7.30	0.007	63.63
60		17.00	1031	0.00508	1.026	8.10	0.005	57.05
120		17.00	1030	0.00508	1.025	8.36	0.004	54.86
180		17.00	1029	0.00508	1.024	8.63	0.003	52.66
1440		17.00	1026	0.00508	1.021	9.42	0.001	46.08

Hidrometer

C23 - M2



HIDROSUELOS CIA. LTDA.

HIDROMETRO/HIDROMETER

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.	C-24	MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPT	2.50-3.50m.	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY	G.S.	CALC./CALCULATED BY:	F.V.

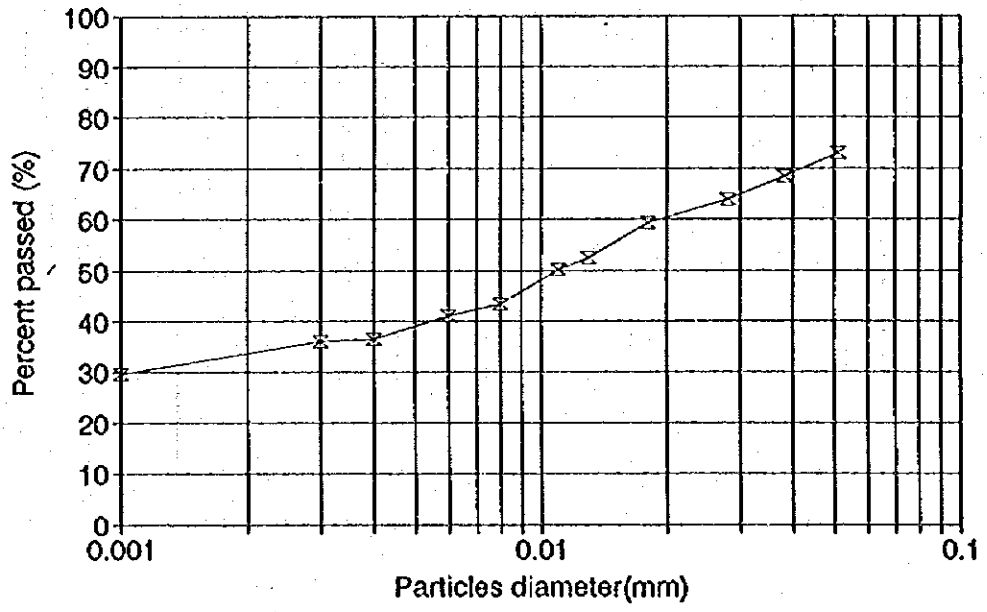
CONSTANTES/Ktes:		Gs	2.681	gr/cm^3
K16=	0.0142	%Pass.No.10:	100	%
K17=	0.014	Ws=	69.89	gr

HIDRM.No 151-H

TIME (min)	HOUR	TEMP °C	Hidrom.read	CORRECCIO Correction	R	L	D	%PASS. CORR.
0.5	10:50	16.00	1.037	0.00534	1.032	6.51	0.051	73.02
1		16.00	1.035	0.00534	1.030	7.04	0.038	68.46
2		16.00	1.033	0.00534	1.028	7.57	0.028	63.90
5		16.00	1.031	0.00534	1.026	8.10	0.018	59.33
10		16.00	1.028	0.00534	1.023	8.89	0.013	52.49
15		16.00	1.027	0.00534	1.022	9.16	0.011	50.20
30		16.00	1.024	0.00534	1.019	9.95	0.008	43.36
60		17.00	1.023	0.00508	1.018	10.21	0.006	41.08
120		17.00	1.021	0.00508	1.016	10.74	0.004	36.51
180		17.00	1.021	0.00508	1.016	10.74	0.003	36.00
1440		17.00	1.018	0.00508	1.013	11.54	0.001	29.67

Hidrometer

C24 - M2



UNDISTURBED SAMPLE

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

Quito, enero de 1994

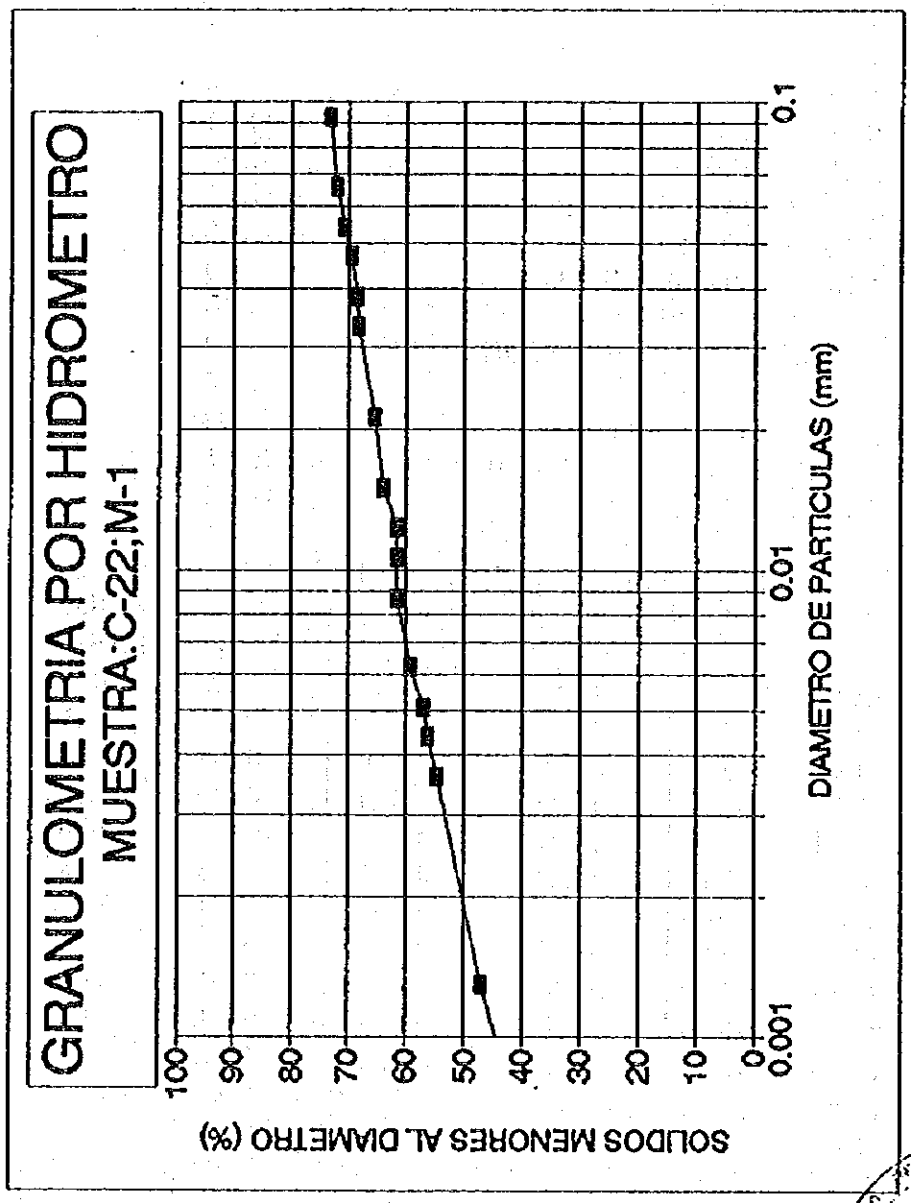
ENVIO # =	2
MUESTRA:	C-22; M-1
PROFUNDIAD (m)=	0.60-0.90
HIDROMETRO No.=	877286
TEMPERATURA (?C) =	14.00
CORRECCION POR MENISCO Cm =	1.00
CORRECCION POR DEFLOCULANTE Cd =	6.50
CORRECCION POR TEMPERATURA mT =	-1.30
PESO DE SOLIDOS Ws =	31.20
DENSIDAD DE SOLIDOS Gs =	2.832
VISCOSIDAD DINAMICA DEL AGUA ? =	1.194E-05
DENSIDAD DEL AGUA Sw =	0.9993

GRANULOMETRIA HIDROMETRO

TIEMPO (min)	LECTURA R'H	RH	H (cm)	V (cm/s)	D (mm)	% QUE PASA
0.25	30.6	31.60	11.04	0.7363	0.093	73.39
0.5	30.2	31.20	11.11	0.3703	0.066	72.16
0.75	29.8	30.80	11.17	0.2483	0.054	70.93
1	29.4	30.40	11.24	0.1873	0.047	69.69
1.5	29.0	30.00	11.30	0.1256	0.038	68.46
2	28.9	29.90	11.32	0.0943	0.033	68.15
5	28.0	29.00	11.46	0.0382	0.021	65.38
10	27.5	28.50	11.54	0.0192	0.015	63.83
15	26.8	27.80	11.65	0.0129	0.012	61.68
20	26.7	27.70	11.67	0.0097	0.011	61.37
30	26.7	27.70	11.67	0.0065	0.009	61.37
60	26.0	27.00	11.78	0.0033	0.006	59.21
90	25.3	26.30	11.89	0.0022	0.005	57.05
120	25.0	26.00	11.94	0.0017	0.004	56.13
180	24.5	25.50	12.02	0.0011	0.004	54.58
1440	22.0	23.00	12.42	0.0001	0.001	46.87
2880	21.0	22.00	12.58	0.0001	0.001	43.79

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"



ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

Quito, enero de 1994

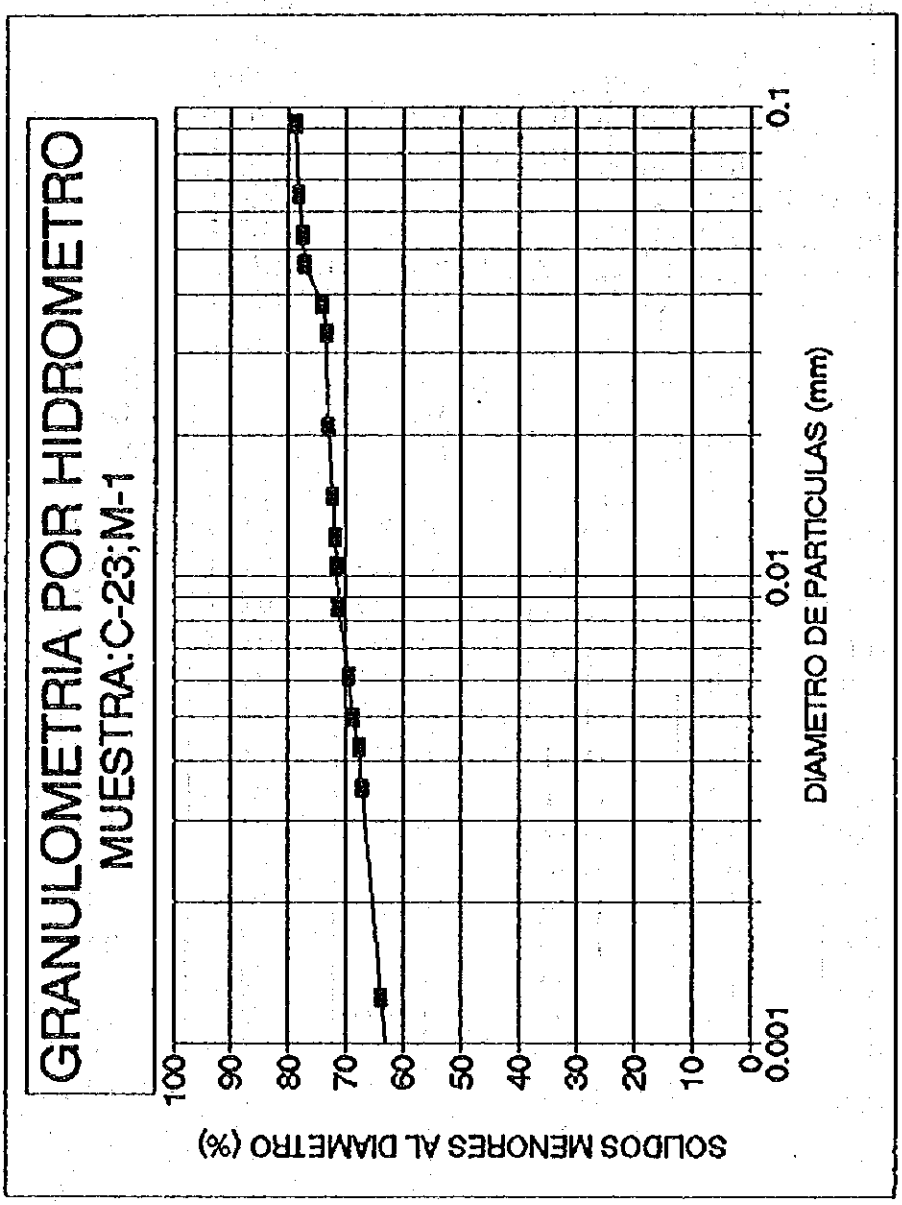
ENVIO # =	2
MUESTRA:	C-23;M-1
PROFUNDIAD (m)=	1.20-1.50
HIDROMETRO No.=	877286
TEMPERATURA (?C) =	14.00
CORRECCION POR MENISCO Cm =	1.00
CORRECCION POR DEFLOCULANTE Cd =	6.50
CORRECCION POR TEMPERATURA mT =	-1.30
PESO DE SOLIDOS Ws =	27.70
DENSIDAD DE SOLIDOS Gs =	2.878
VISCOSIDAD DINAMICA DEL AGUA ? =	1.194E-05
DENSIDAD DEL AGUA Sw =	0.9993

GRANULOMETRIA HIDROMETRO

TIEMPO (min)	LECTURA R'H	RH	H (cm)	V (cm/s)	D (mm)	% QUE PASA
0.25	29.7	30.70	11.19	0.7459	0.092	78.85
0.5	29.5	30.50	11.22	0.3740	0.065	78.17
0.75	29.3	30.30	11.25	0.2500	0.053	77.48
1	29.2	30.20	11.27	0.1878	0.046	77.13
1.5	28.3	29.30	11.41	0.1268	0.038	74.03
2	28.1	29.10	11.44	0.0954	0.033	73.35
5	28.0	29.00	11.46	0.0382	0.021	73.00
10	27.8	28.80	11.49	0.0192	0.015	72.31
15	27.7	28.70	11.51	0.0128	0.012	71.97
20	27.6	28.60	11.52	0.0096	0.010	71.62
30	27.5	28.50	11.54	0.0064	0.009	71.28
60	27.0	28.00	11.62	0.0032	0.006	69.56
90	26.8	27.80	11.65	0.0022	0.005	68.87
120	26.5	27.50	11.70	0.0016	0.004	67.84
180	26.3	27.30	11.73	0.0011	0.004	67.15
1440	25.3	26.30	11.89	0.0001	0.001	63.70
2880	25.1	26.10	11.92	0.0001	0.001	63.01

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"



78

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

Quito, enero de 1994

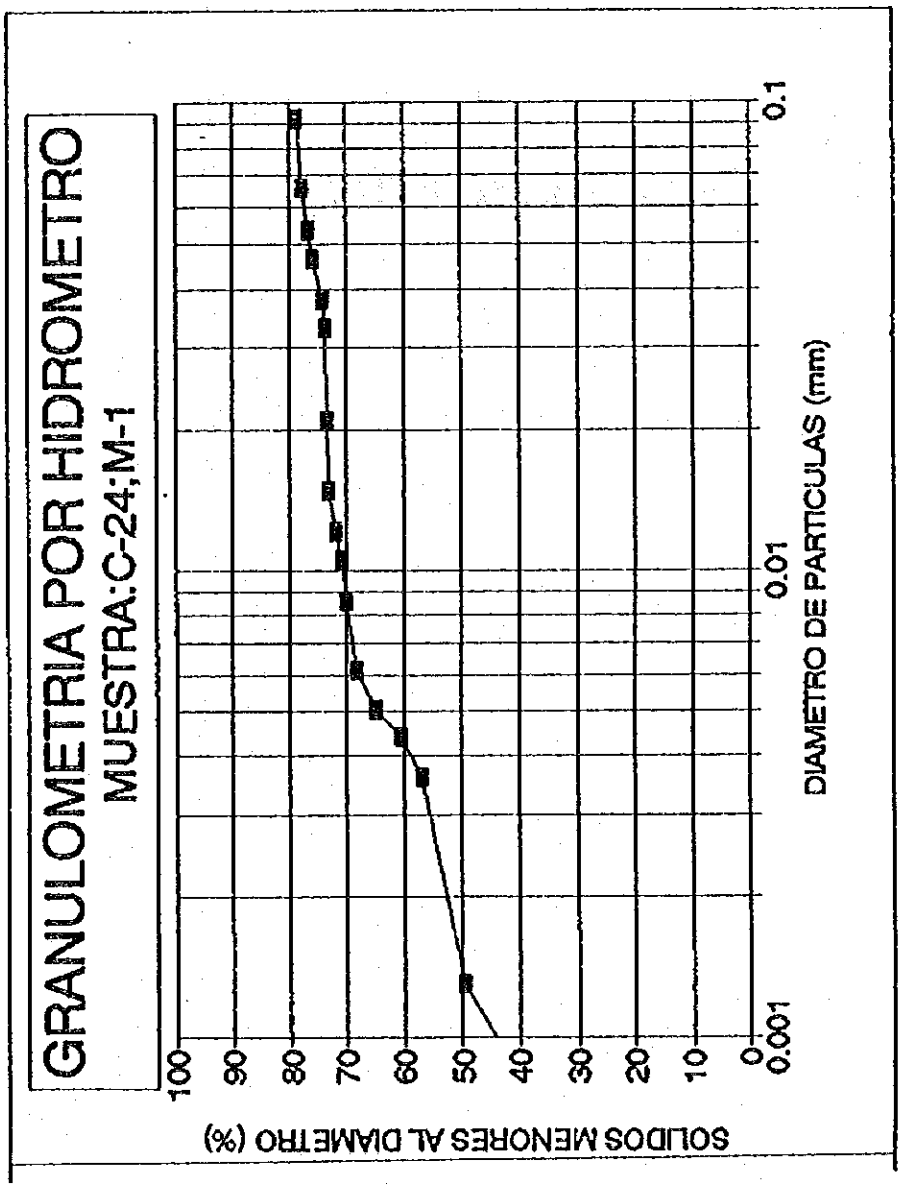
ENVIO # =	2
MUESTRA:	C-24;M-1
PROFUNDIAD (m)=	1.50-1.80
HIDROMETRO No.=	877286
TEMPERATURA (?C) =	14.00
CORRECCION POR MENISCO Cm =	1.00
CORRECCION POR DEFLOCULANTE Cd =	6.50
CORRECCION POR TEMPERATURA mT =	-1.30
PESO DE SOLIDOS Ws =	31.50
DENSIDAD DE SOLIDOS Gs =	2.803
VISCOSIDAD DINAMICA DEL AGUA ? =	1.194E-05
DENSIDAD DEL AGUA Sw =	0.9993

GRANULOMETRIA HIDROMETRO

TIEMPO (min)	LECTURA R'H	RH	H (cm)	V (cm/s)	D (mm)	% QUE PASA
0.25	32.5	33.50	10.74	0.7160	0.092	78.94
0.5	32.1	33.10	10.80	0.3601	0.065	77.72
0.75	31.8	32.80	10.85	0.2412	0.054	76.79
1	31.5	32.50	10.90	0.1817	0.047	75.87
1.5	31.0	32.00	10.98	0.1220	0.038	74.34
2	30.8	31.80	11.01	0.0918	0.033	73.72
5	30.7	31.70	11.03	0.0368	0.021	73.41
10	30.6	31.60	11.04	0.0184	0.015	73.11
15	30.2	31.20	11.11	0.0123	0.012	71.88
20	29.8	30.80	11.17	0.0093	0.011	70.65
30	29.6	30.60	11.20	0.0062	0.009	70.04
60	29.0	30.00	11.30	0.0031	0.006	68.19
90	28.0	29.00	11.46	0.0021	0.005	65.12
120	26.5	27.50	11.70	0.0016	0.004	60.51
180	25.3	26.30	11.89	0.0011	0.004	56.83
1440	22.9	23.90	12.28	0.0001	0.001	49.46
2880	20.8	21.80	12.61	0.0001	0.001	43.00

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"



SPECIFIC GRAVITY

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-22	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	1.00 - 1.35	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.45	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	24.54	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	176.76	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6587	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasin		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-23	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.00 - 2.80	FECHA/DATE:	Enero94/Jan.94
ENSAYADO/PERFORM.	G.S.	CALCULO/CALCULATED B	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	161.4	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	19.05	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	173.48	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.7331	gr/cm ^ 3

HIDROSUELOS CIA. LTDA.

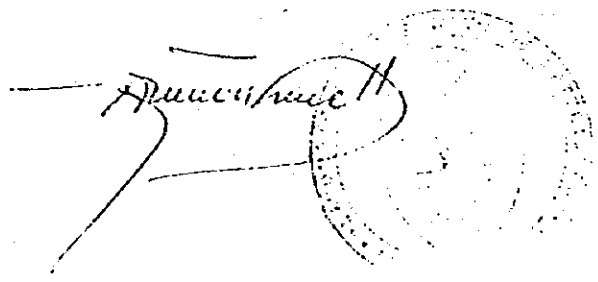
GRAVEDAD ESPECIFICA / SPECIFIC GRAVITY

PROYECTO/PROJECT:	Trasvases/Trasbasins		
LOCALIZACION/SITE:	Linea Transmision/Transmission Line		
CALICATA No./PIT No.:	C-24	MUESTRA No./SAMPLE No	M-2
PROFUNDIDAD/DEPTH:	2.50 - 3.50	FECHA/DATE:	Enero94/Jan.94
ENSAY./PERFORM.BY:	G.S.	CALC./CALCULATED BY:	F.V.

SUELOS/Soils

b= PESO DEL PICNOMETRO LLENO DE AGUA DESTILADA A 20°C,+/- 1°C:		
b= Picnometer weight filled of detilled water 20°C,+/-1°C	155.25	gr.
c=PESO DEL SUELO SECADO AL HORNO		
c=Dry soil weight:	22.87	gr.
d=PESO DEL PICNOMETRO LLENO CON SUELO Y AGUA A 20°C,+/-1°C		
d=Picnometer weight filled with soil and water, 20°C,+/- 1°C	169.59	gr
GRAVEDAD ESPECIFICA/Specific gravity:	2.6811	gr/cm ^ 3

UNDISTURBED SAMPLE



UNIT WEIGHT

HIDROSUELOS CIA. LTDA.

UNIT DENSITY

PROJECT: Trasbasins TESTED BY: G.S.

DATE: JANUARY-1994 CALCULATED BY: F.V.

SAMPLE No.	SITE	DEPTH	DIAMETER cm.	HEIGHT cm.	VOL cm^3	WEIGHT gr	MOISTURE %	&m gr/cm^3
C10 - M1	OPEN CHANNEL	0.50-1.40m	6.35	2.54	80.44	123.88	43.85	1.540
C10 - M2	OPEN CHANNEL	2.00-3.00m	6.35	2.54	80.44	123.72	43.12	1.538
C11 - M1	OPEN CHANNEL	0.55-1.60m	6.35	2.54	80.44	125.33	44.10	1.558
C12 - M1	OPEN CHANNEL	0.60-1.60m	6.35	2.54	80.44	127.09	40.12	1.580
C12 - M2	OPEN CHANNEL	2.00-3.60m	6.35	2.54	80.44	123.88	41.36	1.540
C13 - M1	OPEN CHANNEL	0.80-2.00m	6.35	2.54	80.44	125.97	35.50	1.566
C14 - M1	OPEN CHANNEL	0.90-1.90m	6.35	2.54	80.44	122.11	35.52	1.518
C14 - M2	OPEN CHANNEL	2.00-3.50m	6.35	2.54	80.44	122.51	37.06	1.523
C15 - M1	OPEN CHANNEL	0.40-1.00m	6.35	2.54	80.44	112.54	33.91	1.399
C15 - M2	OPEN CHANNEL	1.20-1.60m	6.35	2.54	80.44	112.62	33.19	1.400
C16 - M1	OPEN CHANNEL	0.85-1.80m	6.35	2.54	80.44	130.88	31.82	1.627
C16 - M2	OPEN CHANNEL	2.00-3.50m	6.35	2.54	80.44	132.08	31.43	1.642
C17 - M1	OPEN CHANNEL	0.40-1.60m	6.35	2.54	80.44	120.50	31.56	1.498
C17 - M2	OPEN CHANNEL	2.00-3.00m	6.35	2.54	80.44	120.34	31.82	1.496
C18 - M1	OPEN CHANNEL	0.30-1.60m	6.35	2.54	80.44	122.91	32.83	1.528
C18 - M2	OPEN CHANNEL	2.00-3.50m	6.35	2.54	80.44	122.83	40.22	1.527
C19 - M1	OPEN CHANNEL	1.10-1.70m	6.35	2.54	80.44	114.47	28.71	1.423
C19 - M2	OPEN CHANNEL	2.00-4.00m	6.35	2.54	80.44	114.47	28.61	1.423
C20 - M1	TRANSMISSION LINE	0.35-1.10m	6.35	2.54	80.44	123.96	35.52	1.541
C21 - M1	TRANSMISSION LINE	0.40-1.00m	6.35	2.54	80.44	134.17	29.96	1.668
C21 - M2	TRANSMISSION LINE	1.10-2.15m	6.35	2.54	80.44	134.33	30.10	1.670
C22 - M2	TRANSMISSION LINE	1.00-2.35m	6.35	2.54	80.44	133.53	28.16	1.660
C23 - M2	TRANSMISSION LINE	2.00-2.80m	6.35	2.54	80.44	134.33	29.80	1.670
C24 - M2	TRANSMISSION LINE	2.50-3.50m	6.35	2.54	80.44	133.53	31.12	1.660

** VALUES UNDER COMPACTION CONDITIONS

HIDROSUELOS CIA. LTDA.

SATURED SPECIFIC WEIGHT

PROJECT: TRASBASINS

DATE: JANUARY-1994 CALCULATED BY: FV

SAMPLE No.	SITE	DEPTH	Gs gr/cm3	&d gr/cm3	e	&sat gr/cm3
C10 - M1	OPEN CHANNEL	0.50-1.40m	2.768	1.070	1.587	1.683
C11 - M1	OPEN CHANNEL	0.55-1.60m	2.606	1.070	1.436	1.659
C12 - M1	OPEN CHANNEL	0.60-1.60m	2.679	1.130	1.371	1.708
C12 - M2	OPEN CHANNEL	2.00-3.60m	2.683	1.090	1.461	1.694
C13 - M1	OPEN CHANNEL	0.80-2.00m	2.743	1.190	1.325	1.750
C14 - M1	OPEN CHANNEL	0.90-1.90m	2.598	1.160	1.240	1.714
C14 - M2	OPEN CHANNEL	2.00-3.50m	2.565	1.160	1.211	1.708
C15 - M1	OPEN CHANNEL	0.40-1.00m	2.658	1.060	1.508	1.661
C16 - M1	OPEN CHANNEL	0.85-1.80m	2.636	1.280	1.059	1.794
C16 - M2	OPEN CHANNEL	2.00-3.50m	2.456	1.280	0.919	1.759
C17 - M1	OPEN CHANNEL	0.40-1.60m	2.623	1.160	1.261	1.718
C18 - M1	OPEN CHANNEL	0.30-1.60m	2.726	1.190	1.291	1.753
C18 - M2	OPEN CHANNEL	2.00-3.50m	2.715	1.120	1.424	1.707
C19 - M1	OPEN CHANNEL	1.10-1.70m	2.698	1.320	1.044	1.831
C19 - M2	OPEN CHANNEL	2.00-4.00m	2.607	1.390	0.876	1.857
C20 - M1	TRANSMISSION LINE	0.35-1.10m	2.649	1.170	1.264	1.728
C21 - M1	TRANSMISSION LINE	0.40-1.00m	2.673	1.320	1.025	1.826
C22 - M1	TRANSMISSION LINE	0.60-0.90m	2.632	1.160	1.441	1.750
C23 - M1	TRANSMISSION LINE	1.20-1.50m	2.678	1.160	1.481	1.757
C24 - M1	TRANSMISSION LINE	1.50-1.80m	2.803	1.310	1.140	1.843

** DATAS IN COMPACTION CONDITIONS

UNDISTURBED SAMPLE

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

SOLICITADO POR: HIDROSUELOS
ENVIO: 2
FECHA: ENERO 1994

PESO UNITARIO			
MUESTRA	C-22 ; M-1	C-23 ; M-1	C-24 ; M-1
PROFUNDIDAD	0.60-0.90	1.20-1.50	1.50-1.80
Diam. Sup. (cm)	3.63	3.61	3.65
Diam. Med. (cm)	3.63	3.61	3.62
Diam. Inf. (cm)	3.64	3.62	3.66
Altura (cm)	7.95	7.96	8.00
Peso Natural (gr)	137.74	140.170	137.110
Peso Seco (gr)	97.60	97.95	95
W%	41.13	43.10	44.33
P.Unit. nat. (gr/cm3)	1.673	1.719	1.655
P.Unit. seco (gr/cm3)	1.185	1.201	1.146

Ing. German Luna H.
JEFE DEL LABORATORIO

90

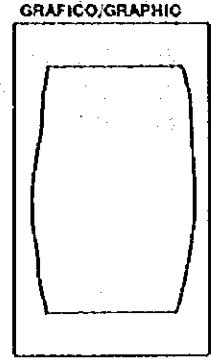
UNCONFINED COMPRESSION

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-10
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.50 - 1.40 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	108.66	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.533	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.058	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	14	4.62	0.18	9.97	0.46
10	25	8.25	0.36	9.99	0.83
20	38	12.54	0.71	10.03	1.25
30	47	15.51	1.07	10.06	1.54
40	52	17.16	1.43	10.10	1.70
50	54	17.82	1.78	10.13	1.76
60	56	18.48	2.14	10.17	1.82
70	56	18.48	2.50	10.21	1.81
80	54	17.82	2.85	10.25	1.74
90					
100					
125					
150					
175					
200					
250					

Cap. No.	320
Wcap.+SH	128.57
Wcap.+SS	94.99
Wcap.	20.20
w%	44.90

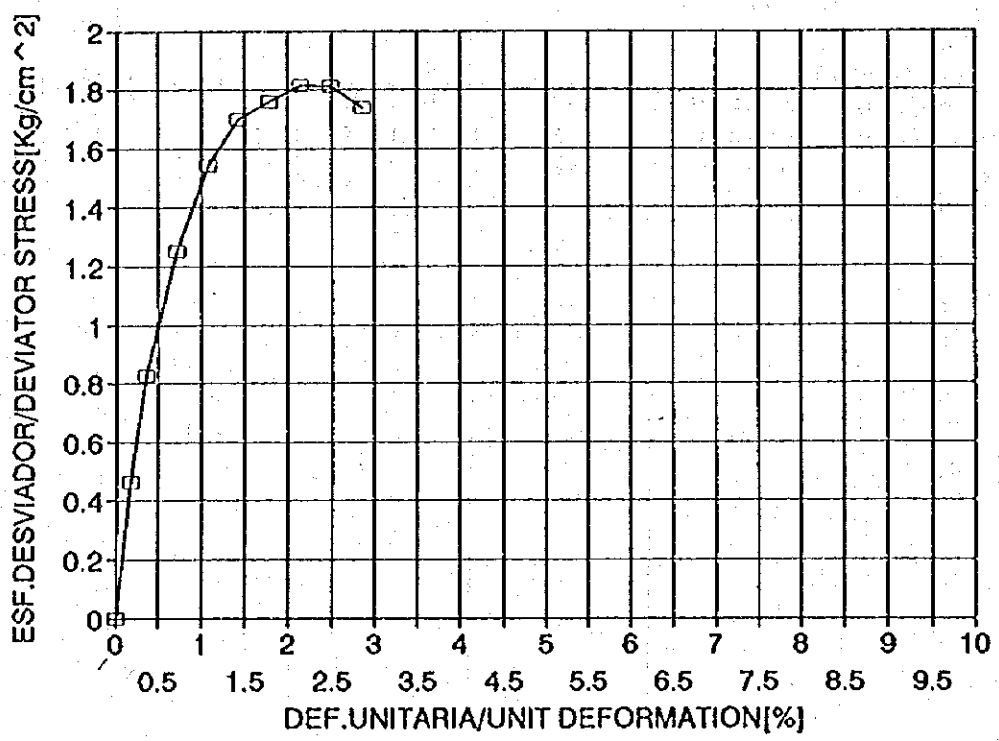
92

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-10
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.50 - 1.40 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



qu= 1.82 Kg/cm^2

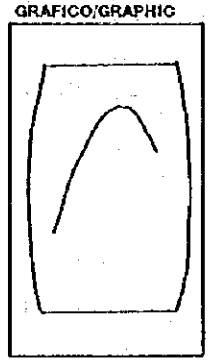
93

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-11
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.55-1.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	110.28	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.556	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.099	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 inch	DIAL CARGA LOAD DIAL x 1E-4 inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	10	3.3	0.18	9.97	0.33
10	18	5.94	0.36	9.99	0.59
20	30	9.9	0.71	10.03	0.99
30	40	13.2	1.07	10.06	1.31
40	45	14.85	1.43	10.10	1.47
50	50	16.5	1.78	10.13	1.63
60	52	17.16	2.14	10.17	1.69
70	52	17.16	2.50	10.21	1.68
80	52	17.16	2.85	10.25	1.67
90	49	16.17	3.21	10.28	1.57
100					
125					
150					
175					
200					
250					

Cap. No.	334
Wcap.+SH	131.49
Wcap.+SS	98.80
Wcap.	20.28
w%	41.63

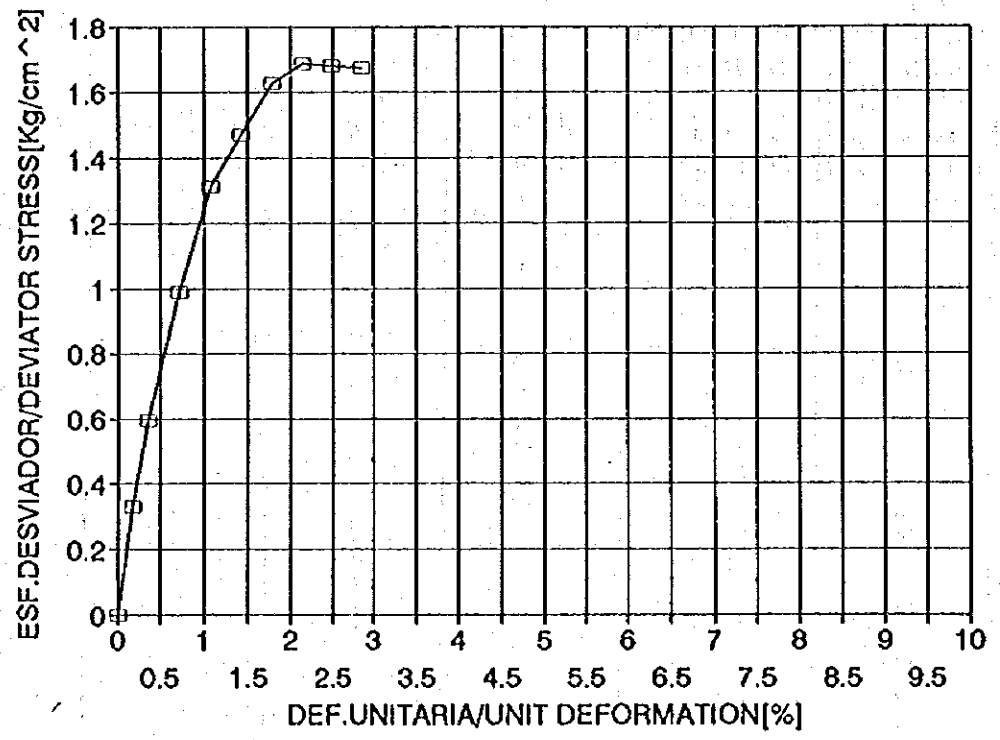
96

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-11
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.55-1.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



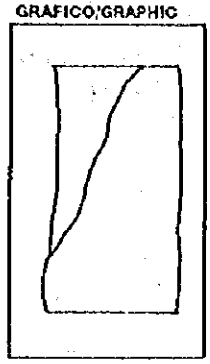
qu= 1.70Kg/cm ^ 2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-12
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-3.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	109.67	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.547	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.094	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	20	6.6	0.18	9.97	0.66
10	33	10.89	0.36	9.99	1.09
20	50	16.5	0.71	10.03	1.65
30	60	19.8	1.07	10.06	1.97
40	63	20.79	1.43	10.10	2.06
50	66	21.78	1.78	10.13	2.15
60	67	22.11	2.14	10.17	2.17
70	63	20.79	2.50	10.21	2.04
80					
90					
100					
125					
150					
175					
200					
250					

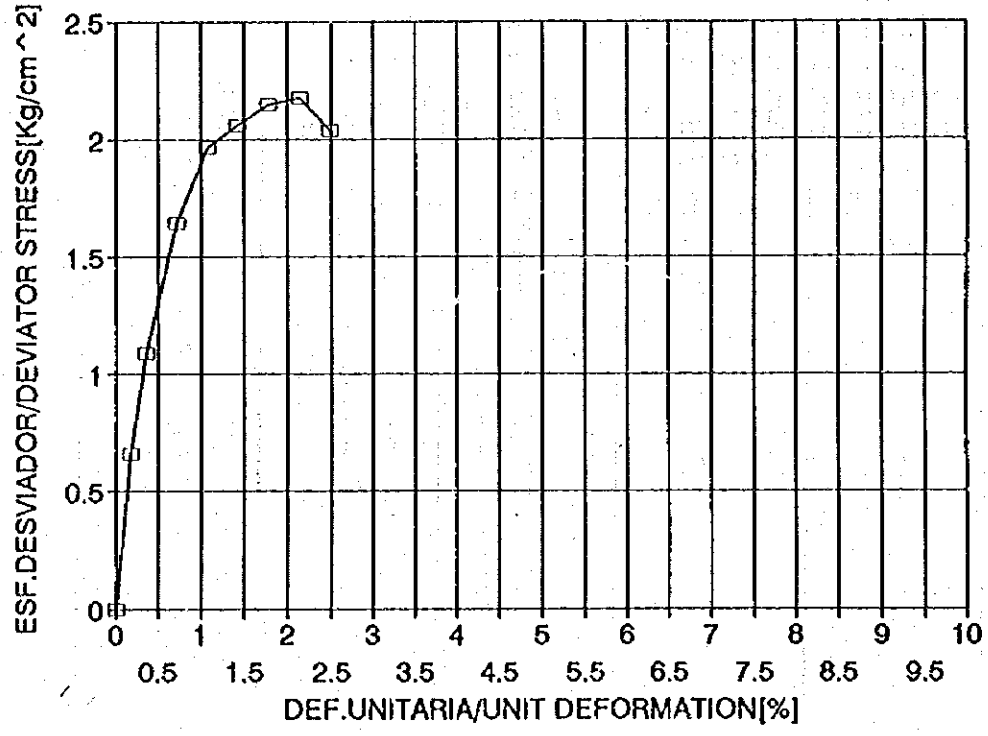
Cap. No.	260
Wcap.+SH	130.21
Wcap.+SS	98.15
Wcap.	20.81
w%	41.45

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-12
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-3.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



qu= 2.18Kg/cm^2

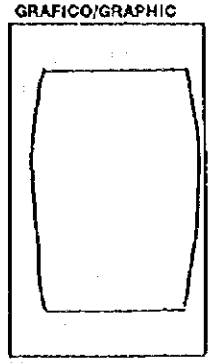
87

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-13
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.80-2.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	113	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.594	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.166	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 inch	DIAL CARGA LOAD DIAL x 1E-4 inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	8	2.64	0.18	9.97	0.26
10	15	4.95	0.36	9.99	0.50
20	28	9.24	0.71	10.03	0.92
30	44	14.52	1.07	10.06	1.44
40	52	17.16	1.43	10.10	1.70
50	62	20.46	1.78	10.13	2.02
60	68	22.44	2.14	10.17	2.21
70	72	23.76	2.50	10.21	2.33
80	74	24.42	2.85	10.25	2.38
90	77	25.41	3.21	10.28	2.47
100	78	25.74	3.57	10.32	2.49
120	79	26.07	4.28	10.40	2.51
140	76	25.08	4.99	10.48	2.39
175					
200					
250					

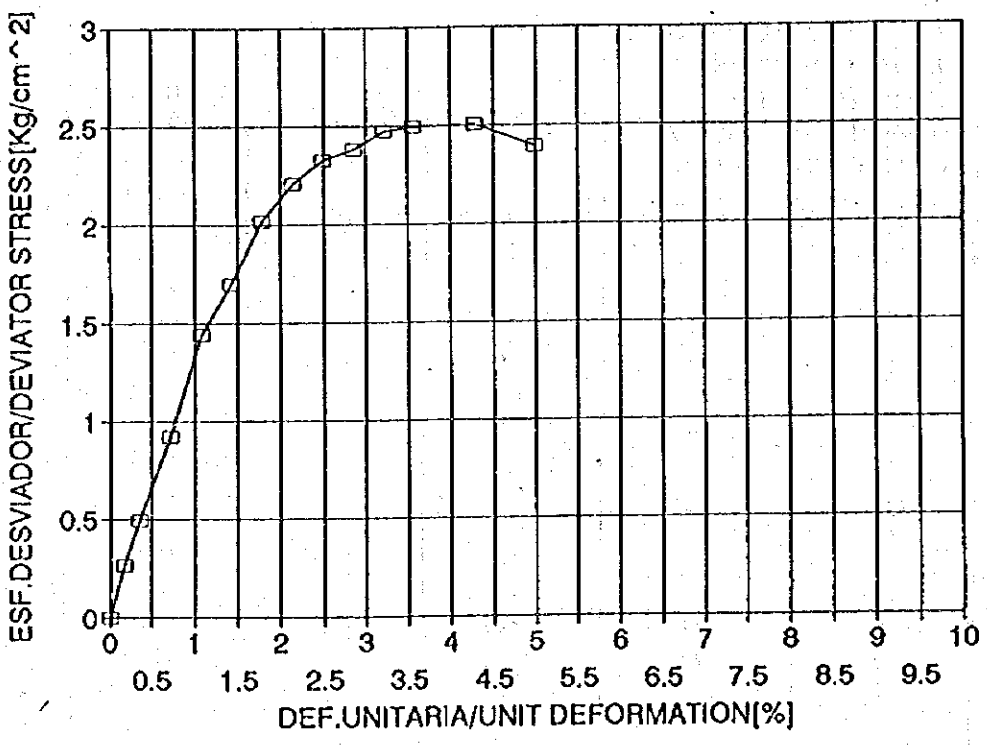
Cap. No.	460
Wcap.+SH	137.35
Wcap.+SS	107.00
Wcap.	24.51
w%	36.79

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-13
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.80-2.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



qu= 2.53Kg/cm ^ 2

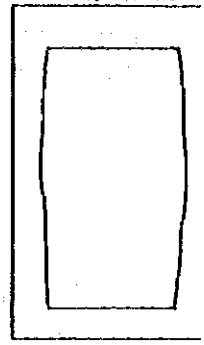
95

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT: Trasvases/Trasbasin
LOCALIZACION/SITE: Linea de Transmision / Transmission Line
FECHA/DATE: Enero-94/January-94
CALICATA No./PIT No.: C-14
MUESTRA No./SAMPLE No.: M-2
PROFUNDIDAD/DEPTH: 2.00-3.50 m.
ENSAYADO/PERFORMED BY: G.S.
CALCULADO/CALCULATED BY: F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	110.64	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.564	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.153	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	8	2.64	0.18	9.97	0.26
10	15	4.95	0.36	9.99	0.50
20	18	5.94	0.71	10.03	0.59
30	21	6.93	1.07	10.06	0.69
40	26	8.58	1.43	10.10	0.85
50	30	9.9	1.78	10.13	0.98
60	31	10.23	2.14	10.17	1.01
70	30	9.9	2.50	10.21	0.97
80					
90					
100					
120					
140					
160					
200					
250					

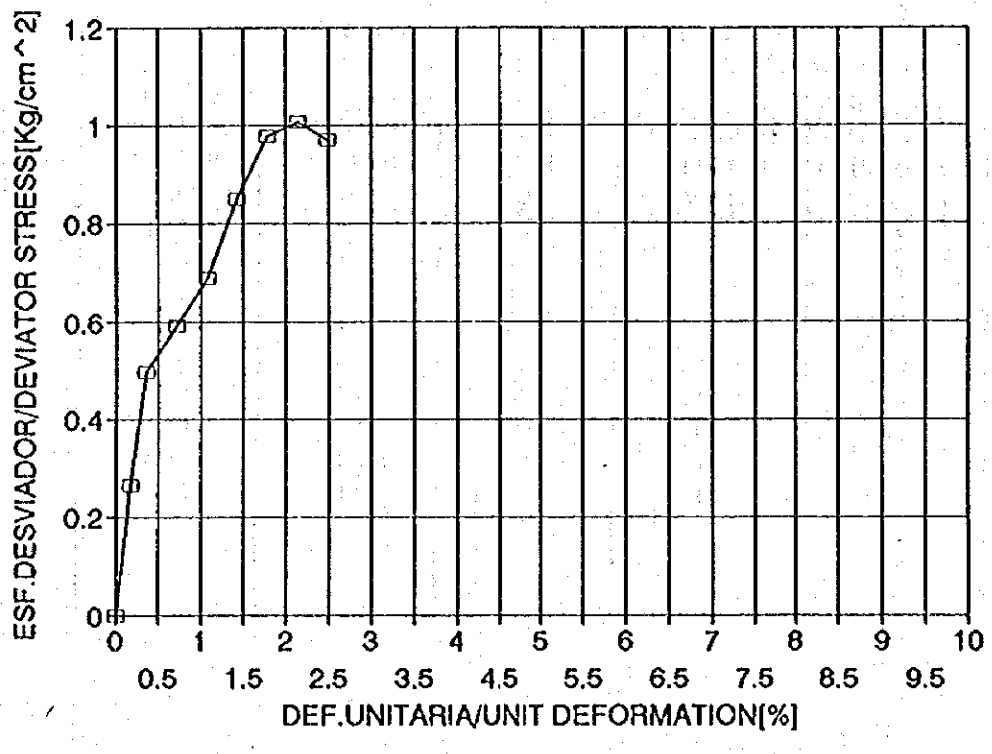
Cap. No.	438
Wcap.+SH	130.00
Wcap.+SS	101.32
Wcap.	20.73
w%	35.59

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Linea de Transmision / Transmission Line
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-14
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-3.50 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



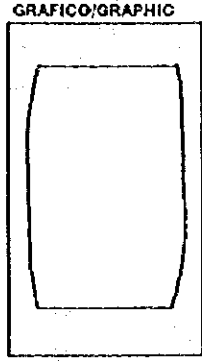
qu= 1.01 Kg/cm^2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-15
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.40-1.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	101.41	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.431	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.065	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	10	3.3	0.18	9.97	0.33
10	17	5.61	0.36	9.99	0.56
20	23	7.59	0.71	10.03	0.76
30	28	9.24	1.07	10.06	0.92
40	32	10.56	1.43	10.10	1.05
50	33	10.89	1.78	10.13	1.07
60	33	10.89	2.14	10.17	1.07
70	32	10.56	2.50	10.21	1.03
80					
90					
100					
120					
140					
175					
200					
250					

Cap. No.	455
Wcap.+SH	126.00
Wcap.+SS	100.08
Wcap.	24.65
w%	34.36

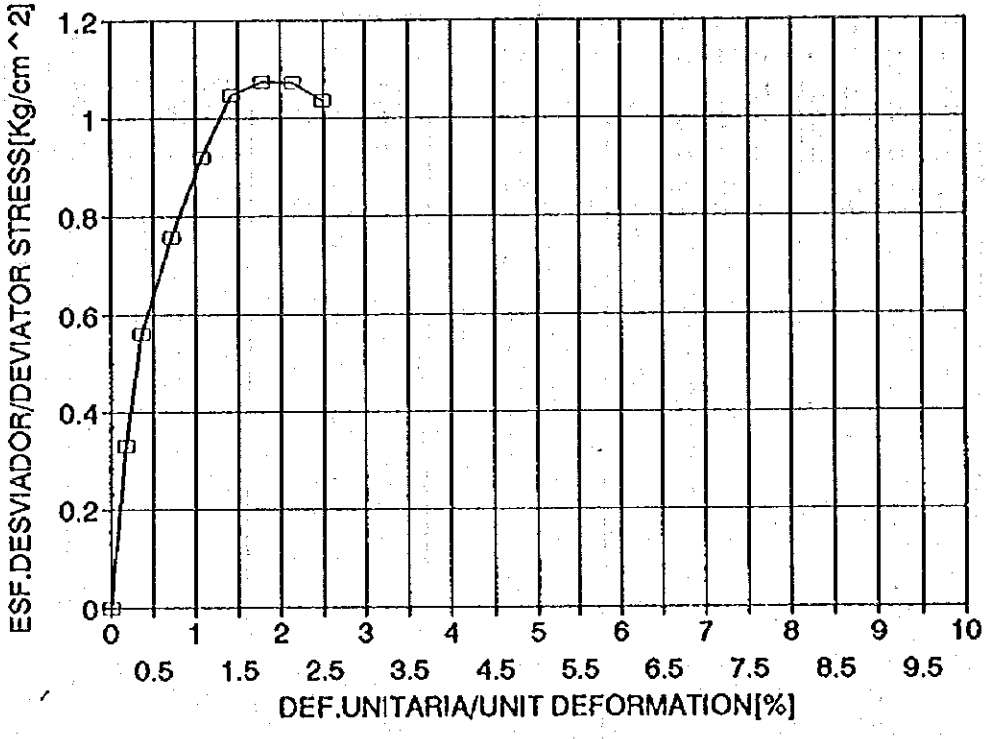
122

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-15
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.40-1.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



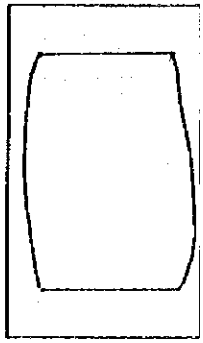
qu= 1.09Kg/cm ^ 2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-16
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-3.50 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	121	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.707	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.283	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	17	5.61	0.18	9.97	0.56
10	25	8.25	0.36	9.99	0.83
20	37	12.21	0.71	10.03	1.22
30	43	14.19	1.07	10.06	1.41
40	47	15.51	1.43	10.10	1.54
50	49	16.17	1.78	10.13	1.60
60	51	16.83	2.14	10.17	1.65
70	53	17.49	2.50	10.21	1.71
80	54	17.82	2.85	10.25	1.74
90	56	18.48	3.21	10.28	1.80
100	57	18.81	3.57	10.32	1.82
120	59	19.47	4.28	10.40	1.87
140	59	19.47	4.99	10.48	1.86
160	58	19.14	5.71	10.56	1.81
200					
250					

Cap. No.	412
Wcap.+SH	141.00
Wcap.+SS	111.00
Wcap.	20.17
w%	33.03

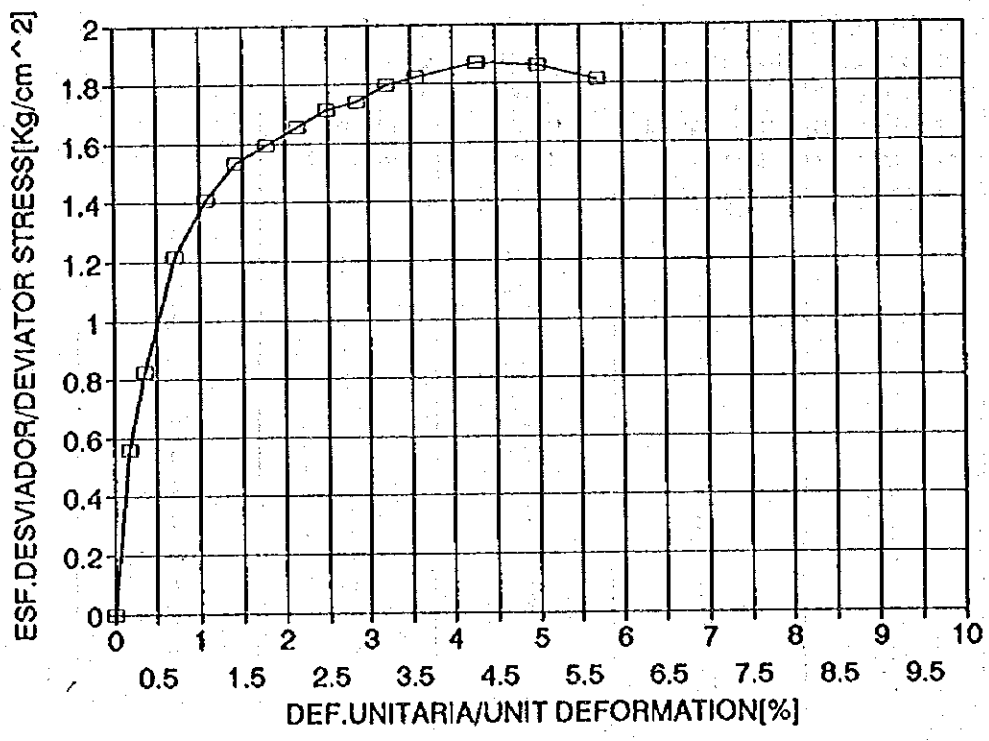
105

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-16
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-3.50 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



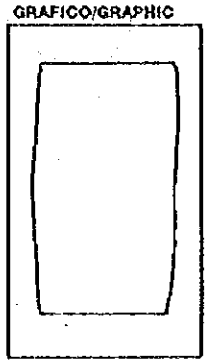
qu= 1.88Kg/cm^2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT: Trasvases/Trasbasin
LOCALIZACION/SITE: Canal abierto/Open Channel
FECHA/DATE: Enero-94/January-94
CALICATA No./PIT No.: C-17
MUESTRA No./SAMPLE No.: M-1
PROFUNDIDAD/DEPTH: 0.40-1.60 m.
ENSAYADO/PERFORMED BY: G.S.
CALCULADO/CALCULATED BY: F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	109	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.538	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.164	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 inch	DIAL CARGA LOAD DIAL x 1E-4 inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	14	4.62	0.18	9.97	0.46
10	22	7.26	0.36	9.99	0.73
20	36	11.88	0.71	10.03	1.18
30	44	14.52	1.07	10.06	1.44
40	50	16.5	1.43	10.10	1.63
50	51	16.83	1.78	10.13	1.66
60	50	16.5	2.14	10.17	1.62
70					
80					
90					
100					
120					
140					
160					
200					
250					

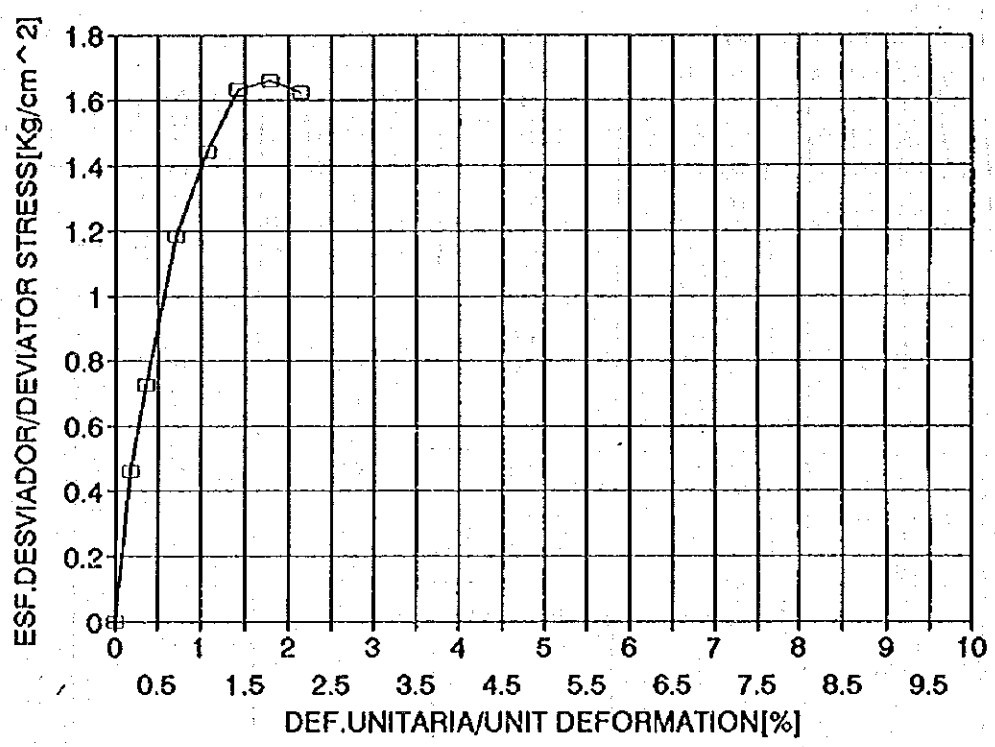
Cap. No.	256
Wcap.+SH	128.99
Wcap.+SS	102.56
Wcap.	20.41
w%	32.17

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-17
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.40-1.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



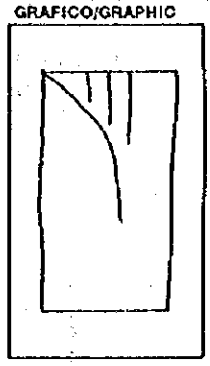
qu= 1.66Kg/cm ^ 2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-18
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.30-1.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	113.6	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.603	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.198	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 inch	DIAL CARGA LOAD DIAL x 1E-4 inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	10	3.3	0.18	9.97	0.33
10	18	5.94	0.36	9.99	0.59
20	33	10.89	0.71	10.03	1.09
30	47	15.51	1.07	10.06	1.54
40	59	19.47	1.43	10.10	1.93
50	68	22.44	1.78	10.13	2.21
60	72	23.76	2.14	10.17	2.34
70	74	24.42	2.50	10.21	2.39
80	73	24.09	2.85	10.25	2.35
90	70	23.1	3.21	10.28	2.25
100					
120					
140					
160					
200					
250					

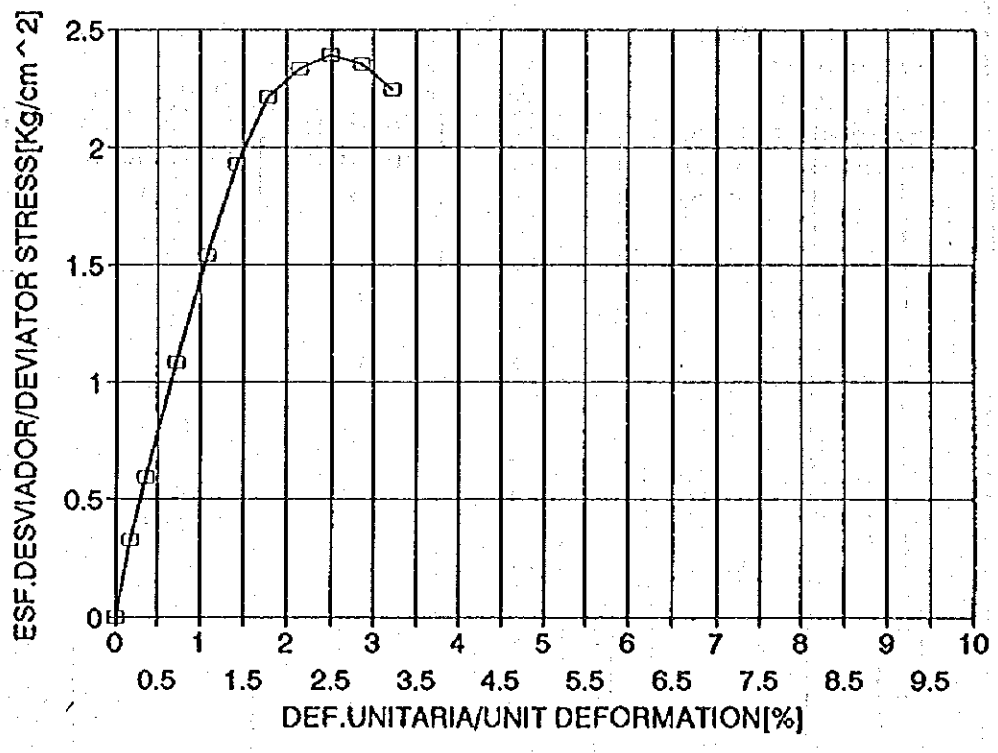
Cap. No.	306
Wcap.+SH	133.72
Wcap.+SS	105.07
Wcap.	20.20
w%	33.76

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-18
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.30-1.60 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



qu= 2.40 Kg/cm ^ 2

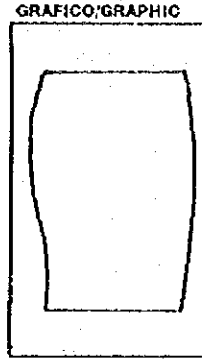
10 9

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-19
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-4.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	127.55	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.800	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.400	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	9	2.97	0.18	9.97	0.30
10	16	5.28	0.36	9.99	0.53
20	32	10.56	0.71	10.03	1.05
30	48	15.84	1.07	10.06	1.57
40	59	19.47	1.43	10.10	1.93
50	65	21.45	1.78	10.13	2.12
60	70	23.1	2.14	10.17	2.27
70	74	24.42	2.50	10.21	2.39
80	77	25.41	2.85	10.25	2.48
90	79	26.07	3.21	10.28	2.54
100	80	26.4	3.57	10.32	2.56
120	80	26.4	4.28	10.40	2.54
140	77	25.41	4.99	10.48	2.43
160					
200					
250					

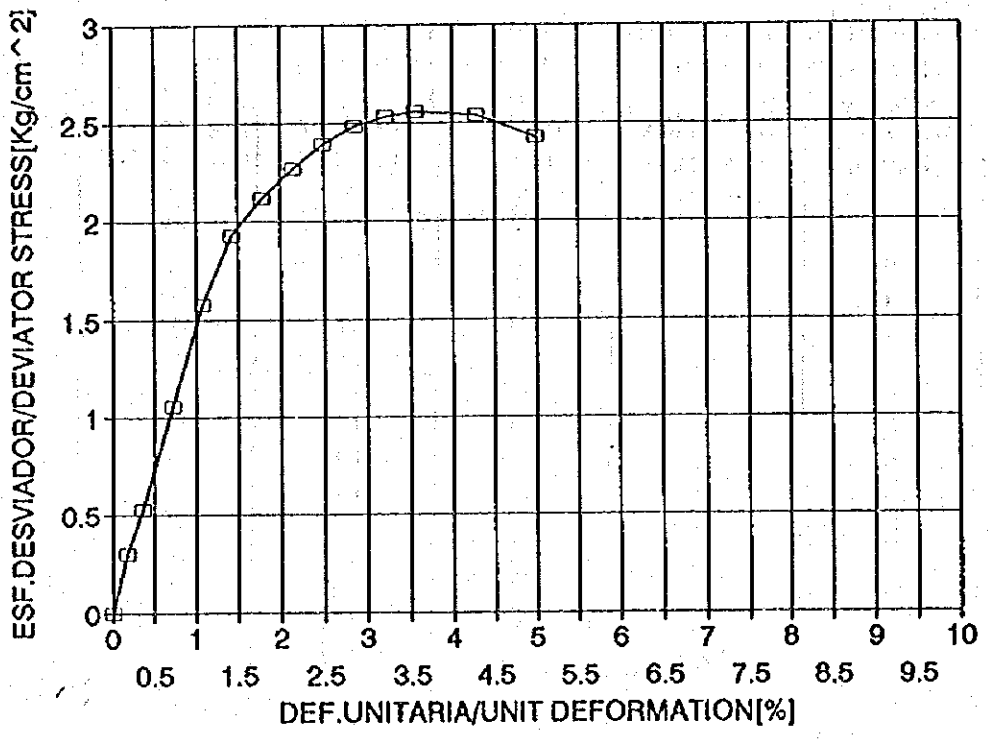
Cap. No.	238
Wcap.+SH	147.62
Wcap.+SS	119.46
Wcap.	20.29
w%	28.60

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Canal abierto/Open Channel
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-19
MUESTRA No./SAMPLE No.:	M-2
PROFUNDIDAD/DEPTH:	2.00-4.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



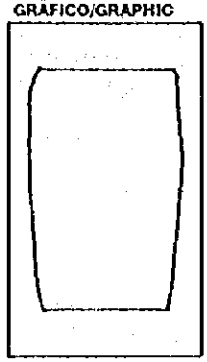
qu= 2.56 Kg/cm^2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT: Trasvases/Trasbasin
LOCALIZACION/SITE: Linea de Transmision / Transmission Line
FECHA/DATE: Enero-94/January-94
CALICATA No./PIT No.: C-20
MUESTRA No./SAMPLE No.: M-1
PROFUNDIDAD/DEPTH: 0.35-1.10 m.
ENSAYADO/PERFORMED BY: G.S.
CALCULADO/CALCULATED BY: F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.58	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	114.8	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.620	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.186	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	7	2.31	0.18	9.97	0.23
10	17	5.61	0.36	9.99	0.56
20	35	11.55	0.71	10.03	1.15
30	54	17.82	1.07	10.06	1.77
40	70	23.1	1.43	10.10	2.29
50	79	26.07	1.78	10.13	2.57
60	83	27.39	2.14	10.17	2.69
70	89	29.37	2.50	10.21	2.88
80	90	29.7	2.85	10.25	2.90
90	92	30.36	3.21	10.28	2.95
100	93	30.69	3.57	10.32	2.97
120	94	31.02	4.28	10.40	2.98
140	93	30.69	4.99	10.48	2.93
160					
200					
250					

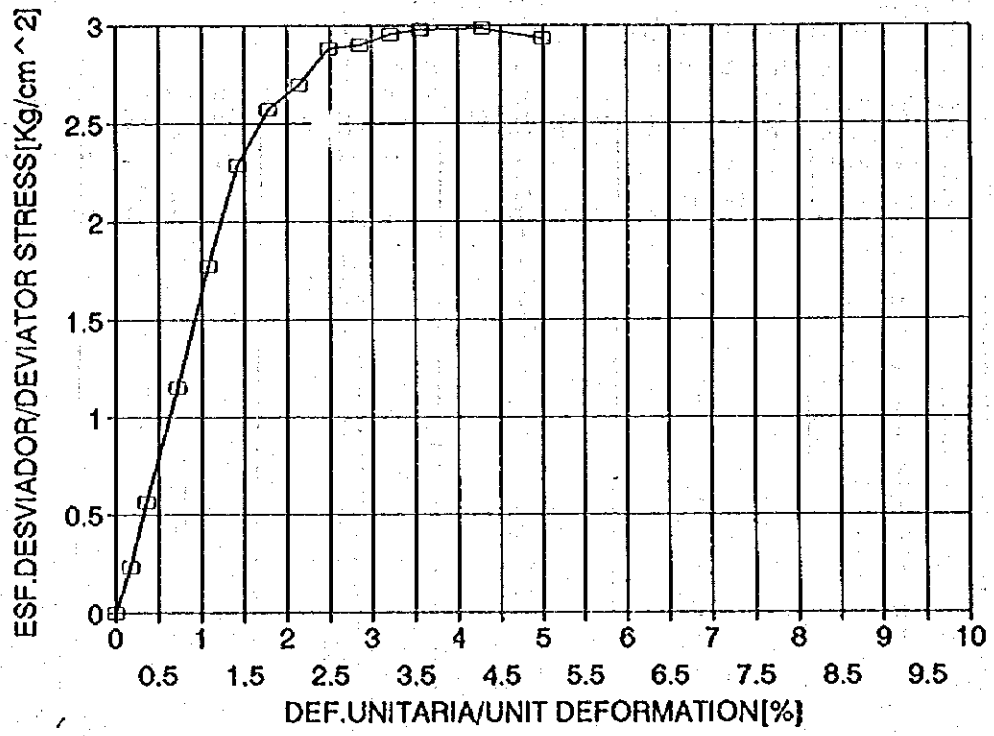
Cap. No.	452
Wcap.+SH	135.04
Wcap.+SS	104.37
Wcap.	20.40
w%	36.52

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Linea de Transmision / Transmission Line
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-20
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.35-1.10 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



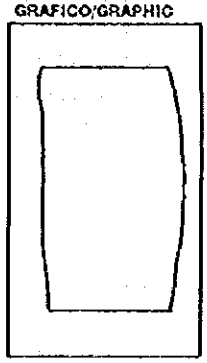
qu= 3.00 Kg/cm ^ 2

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Linea de Transmision / Transmission Line
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-21
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.40-1.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.

GRAFICO/GRAPHIC



DATOS DE LA MUESTRA/SAMPLE DATAS:

DIAMETRO/DIAMETER:	3.56	cm.
ALTURA/HEIGHT:	7.12	cm.
PESO/WEIGHT:	124.17	gr.
VOLUMEN/VOLUME:	70.87	cm^3
AREA/AREA:	9.95	cm^2
DENSIDAD HUMEDA/WET DENSITY	1.752	gr/cm^3
DENSIDAD SECA/DRY DENSITY:	1.347	gr/cm^3
Cte.ANILLO/RING KTE.:	0.33	Kg/div.

ANILLO No.: 13260

DEFORMACION DEFORMATION x 1E-3 Inch	DIAL CARGA LOAD DIAL x 1E-4 Inch	CARGA LOAD Kg	DEF.UNIT. UNIT.DEF. %	AREA CORREG. CORRECT.AREA cm^2	ESF.DESVIAD. DEVIAT.STRESS Kg/cm^2
0	0	0	0.00	9.95	0.00
5	7	2.31	0.18	9.97	0.23
10	10	3.3	0.36	9.99	0.33
20	13	4.29	0.71	10.03	0.43
30	18	5.94	1.07	10.06	0.59
40	21	6.93	1.43	10.10	0.69
50	23	7.59	1.78	10.13	0.75
60	25	8.25	2.14	10.17	0.81
70	25	8.25	2.50	10.21	0.81
80	24	7.92	2.85	10.25	0.77
90	21	6.93	3.21	10.28	0.67
100					
120					
140					
160					
200					
250					

Cap. No.	459
Wcap.+SH	148.99
Wcap.+SS	120.28
Wcap.	24.76
w%	30.06

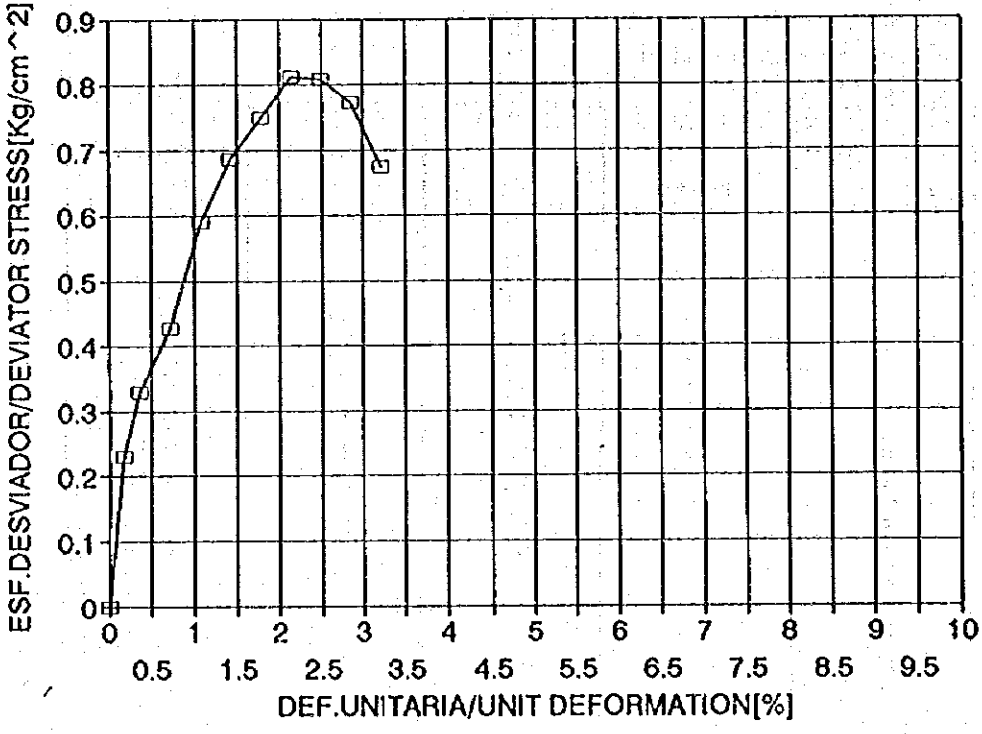
114

HIDROSUELOS CIA. LTDA.

COMPRESION SIMPLE / SIMPLE COMPRESSION

GRAFICO ESFUERZO-DEFORMACION/STRESS DEFORMATION GRAPHIC

PROYECTO/PROJECT:	Trasvases/Trasbasin
LOCALIZACION/SITE:	Linea de Transmision / Transmission Line
FECHA/DATE:	Enero-94/January-94
CALICATA No./PIT No.:	C-21
MUESTRA No./SAMPLE No.:	M-1
PROFUNDIDAD/DEPTH:	0.40-1.00 m.
ENSAYADO/PERFORMED BY:	G.S.
CALCULADO/CALCULATED BY:	F.V.



qu= 0.83 Kg/cm^2

UNDISTURBED SAMPLE

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

COMPRESION SIMPLE — ENVIO 2

FECHA: ENERO 1994

SONDEO: C-22
MUESTRA: M-1
PROF(m): 0.60-0.90
CTE ANILL (kg/div) = 1.175

PESO NAT(gr)= 137.74
Hm (cm) = 7.95
γm(gr/cm3)= 1.673
PESO SEC(gr)= 97.60
W % = 41.13
γd(gr/cm3)= 1.185

Ds (cm) = 3.63
Dm (cm) = 3.63
Di (cm) = 3.64
Ao (cm2) = 10.36
V (cm3) = 82.35

LECT DIAL (div)	CARGA (kg)	DEFORMAC (mm*E-2)	DEFORMACION UNITARIA (%)	AREA CORREGIDA (cm2)	ESFUERZO (kg/cm2)
0.0	0.00	0	0.00	10.36	0.00
11.5	13.51	10	0.13	10.37	1.30
22.0	25.85	20	0.25	10.38	2.49
30.5	35.84	30	0.38	10.40	3.45
37.5	44.06	40	0.50	10.41	4.23
45.5	53.46	50	0.63	10.42	5.13
61.0	71.68	75	0.94	10.46	6.85
73.2	86.01	100	1.26	10.49	8.20
90.0	105.75	125	1.57	10.52	10.05
100.5	118.09	150	1.89	10.56	11.18
107.5	126.31	175	2.20	10.59	11.93
112.0	131.60	200	2.52	10.63	12.38
120.0	141.00	250	3.14	10.69	13.18
115.0	135.13	260	3.27	10.71	12.62
95.0	111.63	270	3.40	10.72	10.41
85.0	99.88	280	3.52	10.74	9.30

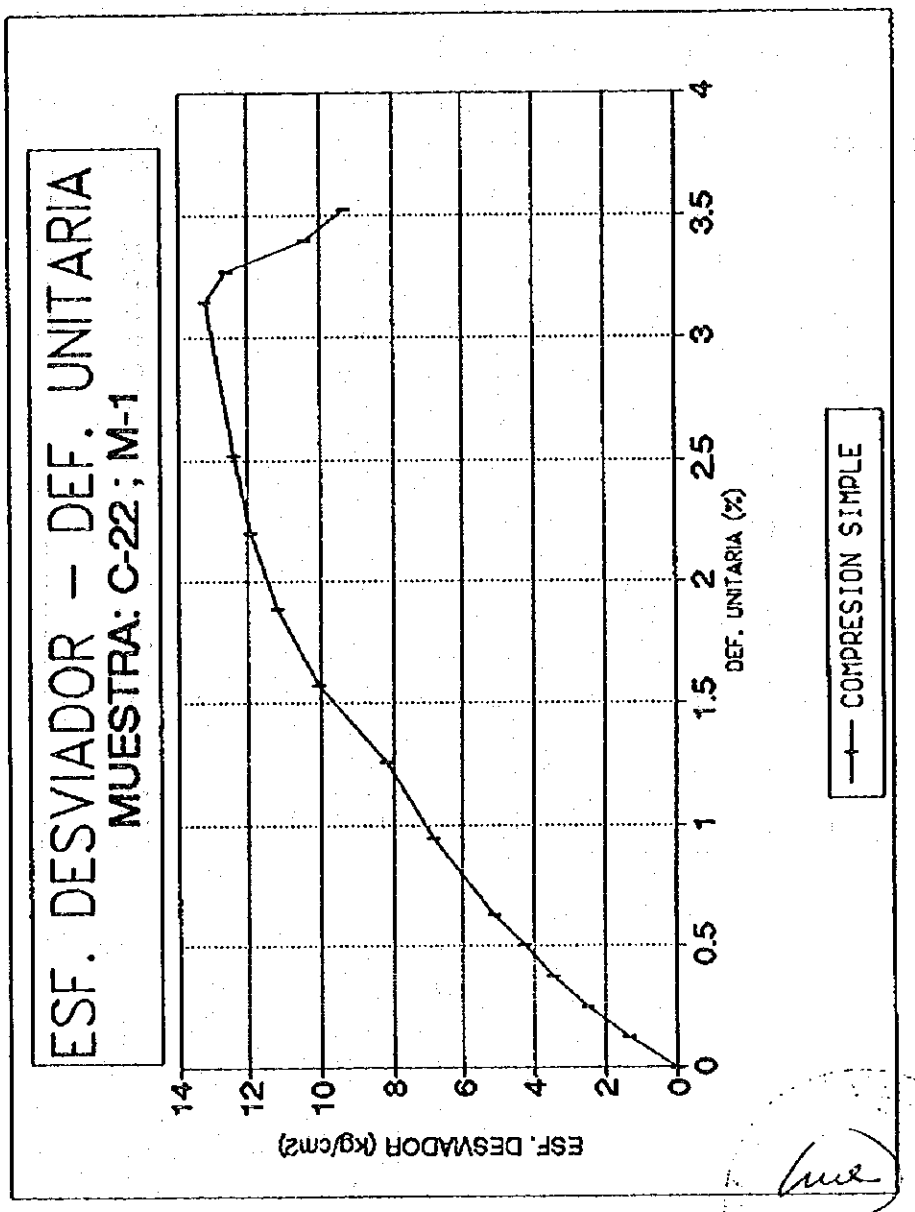
ESFUERZO MAXIMO: 13.18 Kg/cm2

ING. GERMAN LUNA H.
JEFE DE LABORATORIO

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

SONDEO: C-22
MUESTRA: BLOQUE M-1
PROFUNDIDAD: 0.60-0.90



ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

COMPRESION SIMPLE — ENVIO 2

FECHA: ENERO 1994

SONDEO: C-23
MUESTRA: M-1
PROF(m): 1.20-1.50
CTE ANILL (kg/div) = 1.175

PESO NAT(gr)= 140.17
Hm (cm) = 7.96
γm(gr/cm3)= 1.719
PESO SEC(gr)= 97.95
W % = 43.10
γd(gr/cm3)= 1.201

Ds (cm) = 3.61
Dm (cm) = 3.61
Di (cm) = 3.62
Ao (cm2) = 10.24
V (cm3) = 81.55

LECT DIAL (div)	CARGA (kg)	DEFORMAC (mm*E-2)	DEFORMACION UNITARIA (%)	AREA CORREGIDA (cm2)	ESFUERZO (kg/cm2)
0.0	0.00	0	0.00	10.36	0.00
9.5	11.16	10	0.13	10.37	1.08
17.5	20.56	20	0.25	10.38	1.98
24.5	28.79	30	0.38	10.40	2.77
29.5	34.66	40	0.50	10.41	3.33
34.0	39.95	50	0.63	10.42	3.83
45.5	53.46	75	0.94	10.46	5.11
55.0	64.63	100	1.26	10.49	6.16
65.0	76.38	125	1.57	10.52	7.26
72.0	84.60	150	1.89	10.56	8.01
75.5	88.71	175	2.20	10.59	8.38
74.0	86.95	180	2.26	10.60	8.20
73.0	85.78	190	2.39	10.61	8.08
72.0	84.60	200	2.52	10.63	7.96
71.0	83.43	210	2.64	10.64	7.84
70.0	82.25	220	2.77	10.65	7.72
68.0	79.90	230	2.89	10.67	7.49
64.0	75.20	240	3.02	10.68	7.04
58.0	68.15	250	3.14	10.69	6.37
52.0	61.10	260	3.27	10.71	5.71

ESFUERZO MAXIMO: 8.38 Kg/cm2

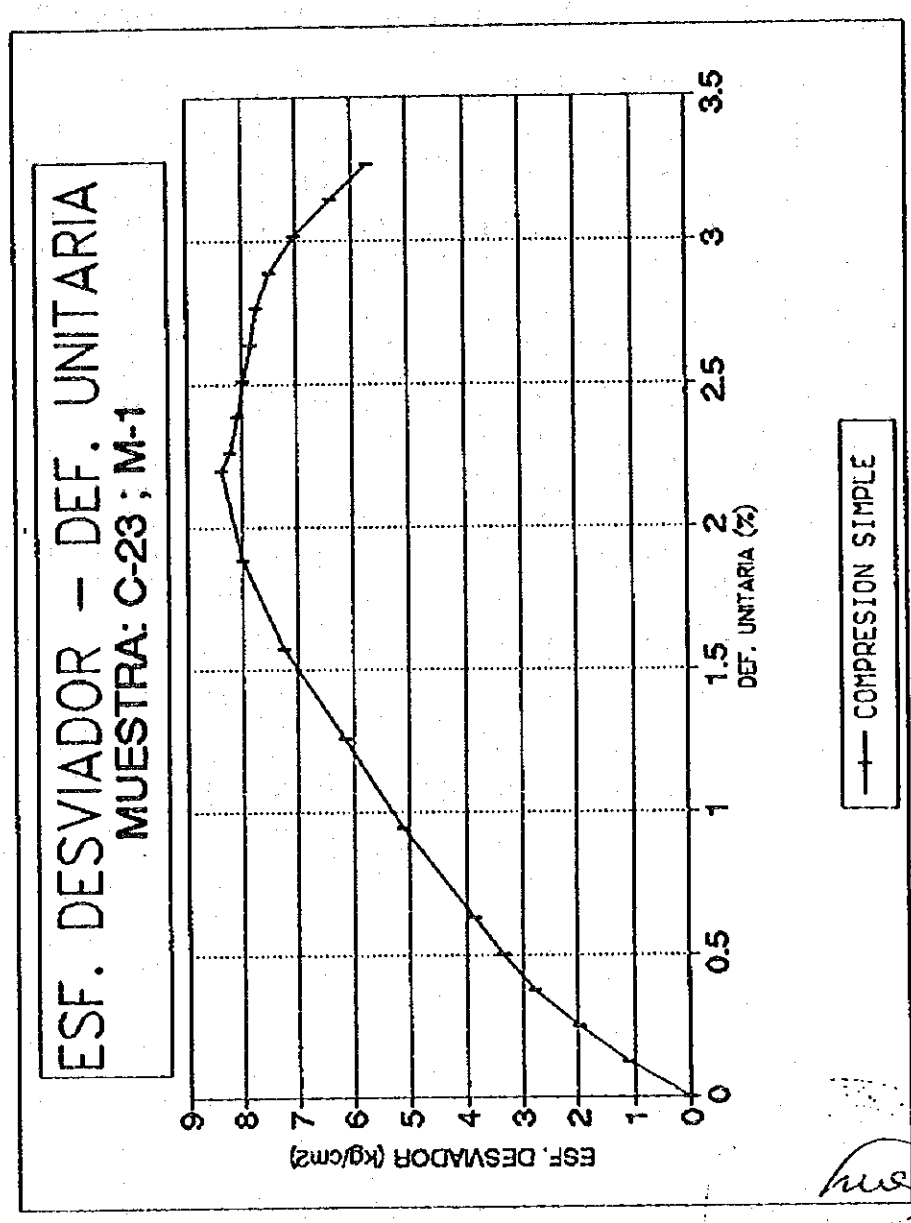
ING. GERMAN LUNA R.
JEFE DE LABORATORIO

11?

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

SONDEO:	C-23
MUESTRA:	BLOQUE M-1
PROFUNDIDAD:	1.20-1.50



ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

COMPRESION SIMPLE — ENVIO 2

FECHA: ENERO 1994

SONDEO: C-24
MUESTRA: M-1
PROF(m): 1.50-1.80
CTE ANILLO (kg/div) = 0.0431

PESO NAT(gr)= 137.11
Hm (cm) = 8.00
γm(gr/cm3)= 1.655
PESO SEC(gr)= 95.00
W % = 44.33
γd(gr/cm3)= 1.146

Ds (cm) = 3.65
Dm (cm) = 3.62
Di (cm) = 3.66
Ao (cm2) = 10.36
V (cm3) = 82.87

LECT DIAL (div)	CARGA (kg)	DEFORMAC (mm*E-2)	DEFORMACION UNITARIA (%)	AREA CORREGIDA (cm2)	ESFUERZO (kg/cm2)
0.0	0.00	0	0.00	10.36	0.00
40.0	1.72	10	0.13	10.37	0.17
82.0	3.53	20	0.25	10.38	0.34
125.0	5.39	30	0.38	10.40	0.52
162.0	6.98	40	0.50	10.41	0.67
202.0	8.71	50	0.63	10.42	0.84
312.0	13.45	75	0.94	10.46	1.29
439.0	18.53	100	1.26	10.49	1.77
480.0	20.69	125	1.57	10.52	1.97
300.0	12.93	150	1.89	10.56	1.22

ESFUERZO MAXIMO: 1.97 Kg/cm2

ING. GERMAN LUNA M.
JEFE DE LABORATORIO

ESCUELA POLITECNICA NACIONAL
FACULTAD DE INGENIERIA CIVIL
LABORATORIO DE MECANICA DE ROCAS

PROYECTO "TRASVASES MANABI"

PROYECTO:	TRASVASES "MANABI"
SONDEO:	C-24
MUESTRA:	BLOQUE M-1
PROFUNDIDAD:	1.50-180