B6 Borehole Logs and Laboratory Test Results (Additional)

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-1**
FINAL DEPTH: **30.00 m.**
GWT: **1.00 m.**
ELEVATION: **28.00 m.**
DATE STARTED: **Feb. 05, 2003**
DATE FINISHED: **Feb. 07, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Very loose	*	3			
2	(2.0-2.45 m) Light gray lahar SAND, with some coarse to fine pyroclastic materials. (Rec: 45/45 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-2	Loose	SM-ML	6			Gs = 2.77
3	(3.0-3.45 m) - same materials - (Rec: 45/45 cm.)	ss-3	Loose	*	7			
4	(4.0-4.45 m) Light gray lahar SAND, with little amount of non-plastic silt and coarse to fine pyroclastic materials. (Rec: 45/45 cm.)	ss-4	Med. dense	SM	11			Gs = 2.25
5	(5.0-5.45 m) - same materials - (Rec: 45/45 cm.)	ss-5	Med. dense	*	13			
6	(6.0-6.45 m) Light gray lahar SAND, with some non-plastic silt and coarse to fine pyroclastic materials. (Rec: 45/25 cm.)	ss-6	Loose	SM	10			Gs = 2.73
7	(7.0-7.45 m) - same materials - (Rec: 45/30 cm.)	ss-7	Loose	*	9			
8	(8.0-8.45 m) Light gray lahar SAND and SILT, non-plastic, with little amount of coarse to fine pyroclastic materials. (Rec: 45/35 cm.)	ss-8	Med. dense	SM-ML	17			Gs = 2.61
9	(9.0-9.45 m) - same materials - (Rec: 45/30 cm.)	ss-9	Med. dense	*	14			
10								

BOREHOLE LOG

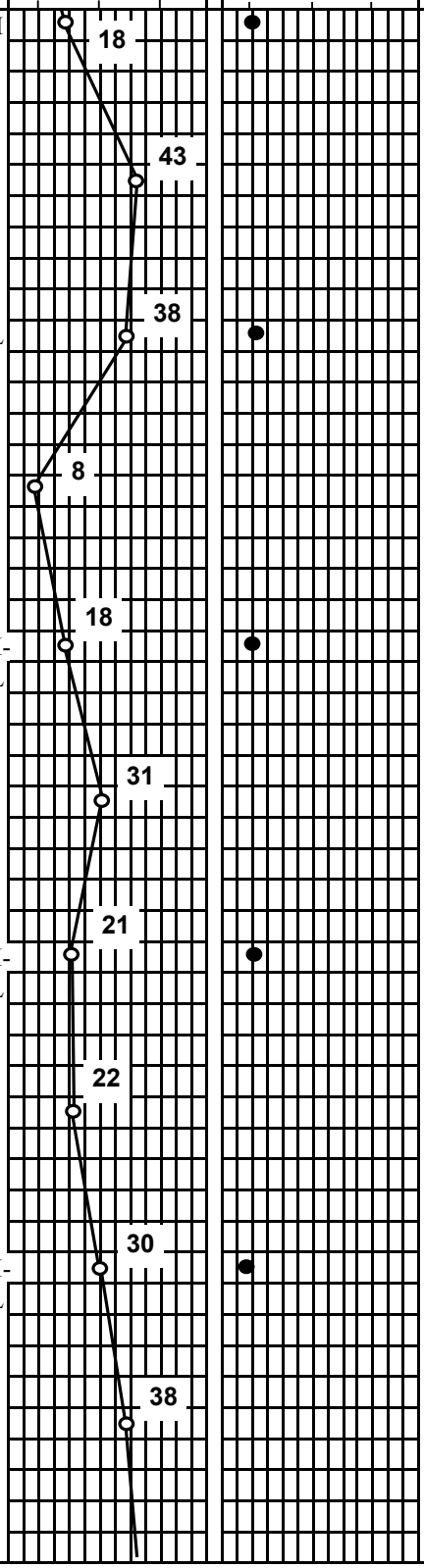
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-1**
FINAL DEPTH: **30.00 m.**
GWT: **1.00 m.**
ELEVATION: **28.00 m.**
DATE STARTED: **Feb. 05, 2003**
DATE FINISHED: **Feb. 07, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray lahar SAND, with non-plastic silt and some coarse to fine pyroclastic materials. (Rec: 45/30 cm.)	ss-10	Med. dense	SM	18			Gs = 2.65
11	(11.0-11.45 m) Light gray lahar SAND, with gravel and coarse to fine pyroclastic materials. (Rec: 45/35 cm.)	ss-11	Dense	*	43			
12	(12.0-12.45 m) Gray fine LAHAR, with little amount of fine sand and fine pyroclastic materials. (Rec: 45/35 cm.)	ss-12	Dense	ML	38			Gs = 2.67
13	(13.0-13.45 m) Gray clayey SAND, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-13	Med. stiff	*	8			
14	(14.0-14.45 m) Gray lahar SAND, with some coarse and fine pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample degraded into sandy SILT after oven drying in the laboratory.*	ss-14	Med. dense	SM-ML	18			Gs = 2.61
15	(15.0-15.45 m) - same materials - (Rec: 45/35 cm.)	ss-15	Dense	*	31			
16	(16.0-16.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-16	Med. dense	SM-ML	21			Gs = 2.70
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Med. dense	*	22			
18	(18.0-18.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-18	Dense	SM-ML	30			Gs = 2.70
19	(19.0-19.45 m) Gray lahar SAND, with some coarse and fine pyroclastic materials. (Rec: 45/30 cm.)	ss-19	Dense	*	38			
20								



BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-1**
FINAL DEPTH: **30.00 m.**
GWT: **1.00 m.**
ELEVATION: **28.00 m.**
DATE STARTED: **Feb. 05, 2003**
DATE FINISHED: **Feb. 07, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray lahar SAND, with non-plastic silt and traces of fine to coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-20	Dense	SM	44			Gs = 2.68
21	(21.0-21.45 m) Gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/35 cm.) *Note: Water table @ 1.15 m. (02-06-03 @ 7:00 AM)*	ss-21	Dense	*	46			
22	(22.0-22.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-22	Dense	SM-ML	42			Gs = 2.72
23	(23.0-23.45 m) - same materials - (Rec: 45/30 cm.)	ss-23	Dense	*	36			
24	(24.0-24.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-24	Dense	SM-ML	50			Gs = 2.68
25	(25.0-25.45 m) - same materials - (Rec: 45/35 cm.)	ss-25	Dense	*	46			
26	(26.0-26.45 m) Gray lahar SAND, with non-plastic silt and traces of fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-26	Dense	SM	49			Gs = 2.54
27	(27.0-27.45 m) Gray lahar SAND, with gravel, some fine and coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-27	Dense	*	35			
28	(28.0-28.45 m) Gray lahar SAND, with some non-plastic silt and traces of fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-28	Med. dense	SM	28			Gs = 2.71
29	(29.0-29.45 m) - same materials - Rec: 45/35 cm.)	ss-29	Med. dense	*	28			
	(29.55-30.0 m) Gray lahar SAND, with some non-plastic silt and little amount of fine to coarse pyroclastic materials and gravel.	ss-30	Dense	SM	32			Gs = 2.71
30								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

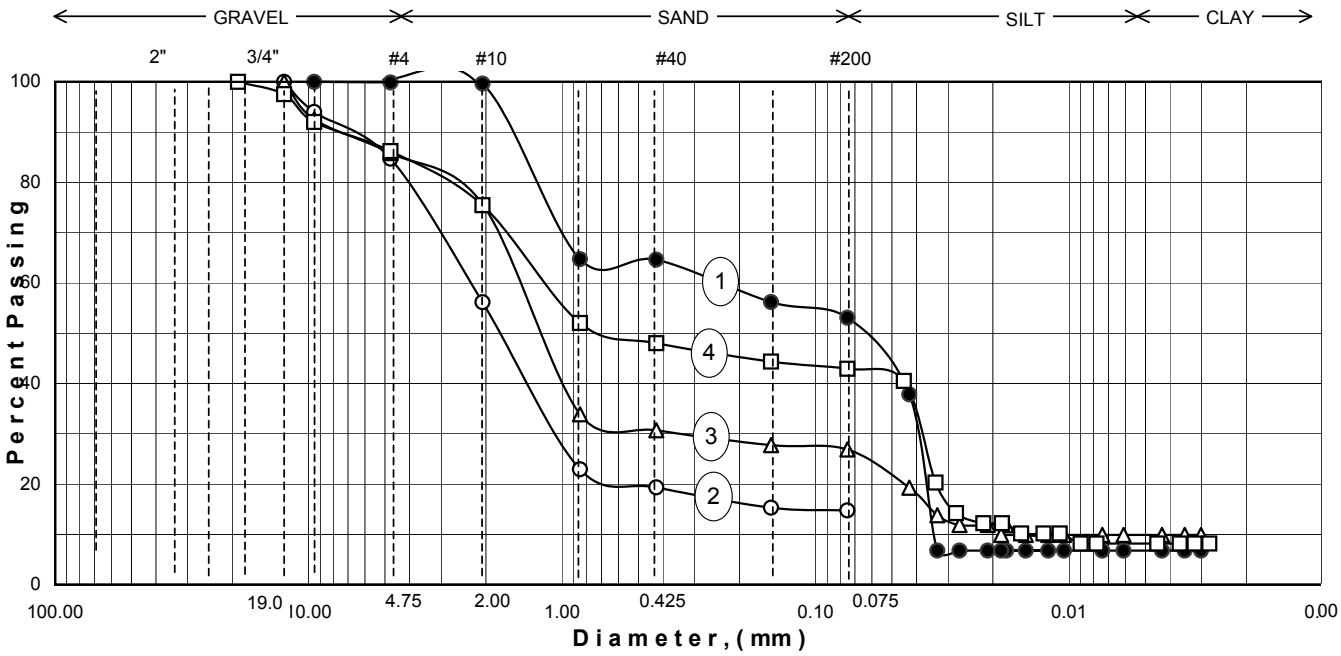
LOCATION : ***Bucao River, Botolan, Zambales***

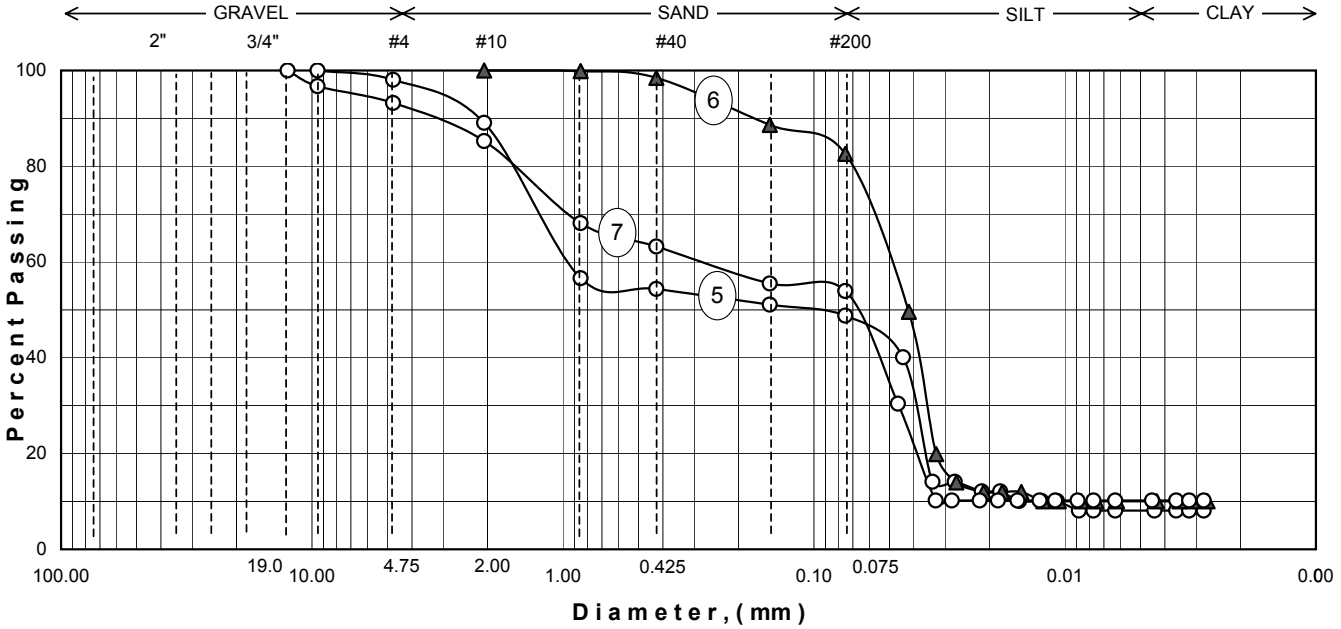
BORING NO.: **BR-1**
FINAL DEPTH: **30.00 m.**
GWT: **1.00 m.**
ELEVATION: **28.00 m.**
DATE STARTED: **Feb. 05, 2003**
DATE FINISHED: **Feb. 07, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)		SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
		(Rec: 45/25 cm.)							
		Note: Water table @ 1.20 m. (02-07-03 @ 7:00 PM) and 1.00 m. (02-08-03 @ 7:00 AM)							
31		***End of Borehole @ 30.00 m. depth***							
		Note:							
32		*** - - - - - - - - - - Visual Description**							
		Drilling Machine - - - - - - - - - - TONE - TDC							
		Size of Casing - - - - - - - - - - 76 mm.							
33									
34									
35									
36									
37									
38									
39									
40									

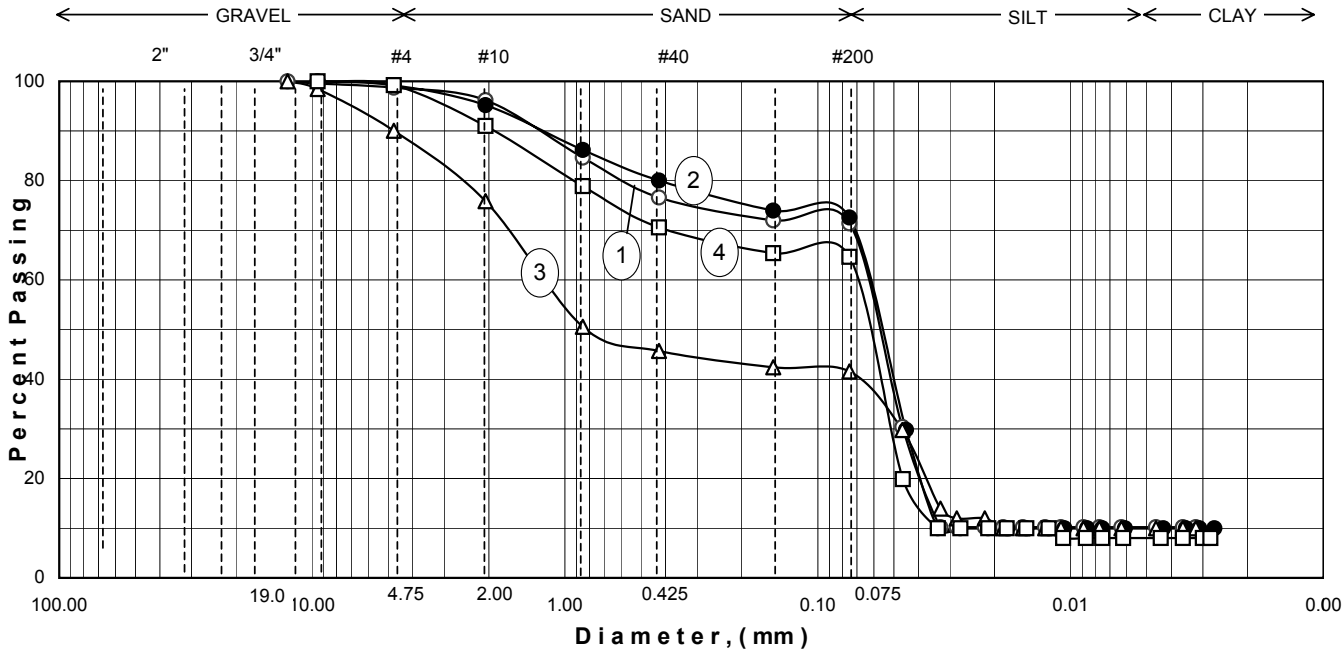
GRAIN-SIZE DISTRIBUTION CURVES

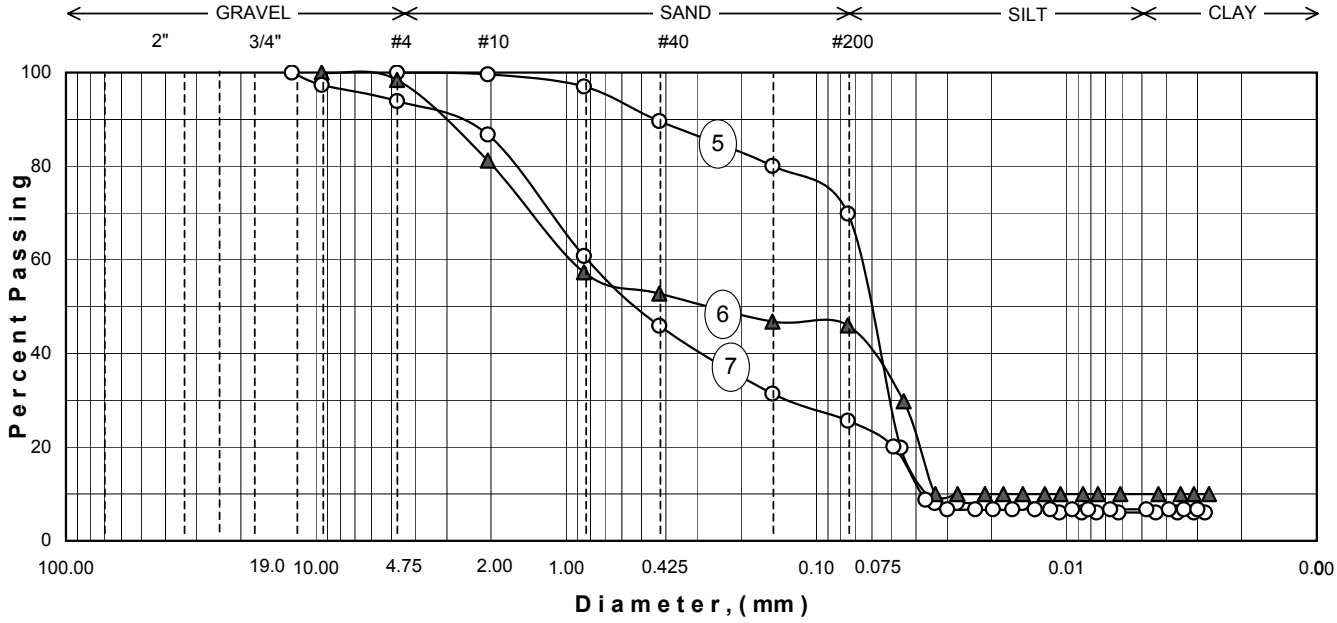




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-1	ss-2	2.00-2.45	1	25.03	NP	NP	NP	SM-ML	Light gray lahar SAND
BR-1	ss-4	4.00-4.45	2	23.36	NP	NP	NP	SM	Light gray lahar SAND
BR-1	ss-6	6.00-6.45	3	13.25	NP	NP	NP	SM	Light gray lahar SAND
BR-1	ss-8	8.00-8.45	4	15.63	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
BR-1	ss-10	10.00-10.45	5	20.92	NP	NP	NP	SM	Light gray lahar SAND, with non-plastic silt
BR-1	ss-12	12.00-12.45	6	22.99	NP	NP	NP	ML	Gray fine LAHAR
BR-1	ss-14	14.00-14.45	7	20.02	NP	NP	NP	SM-ML	Gray lahar SAND

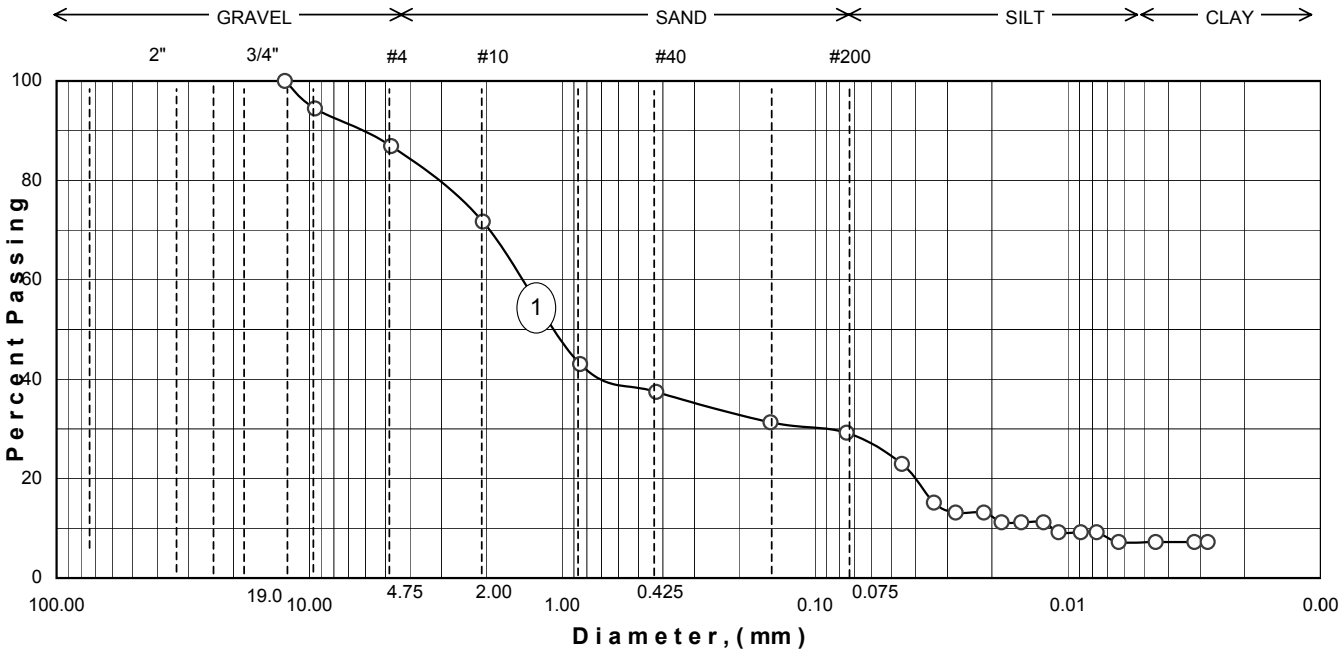
GRAIN-SIZE DISTRIBUTION CURVES

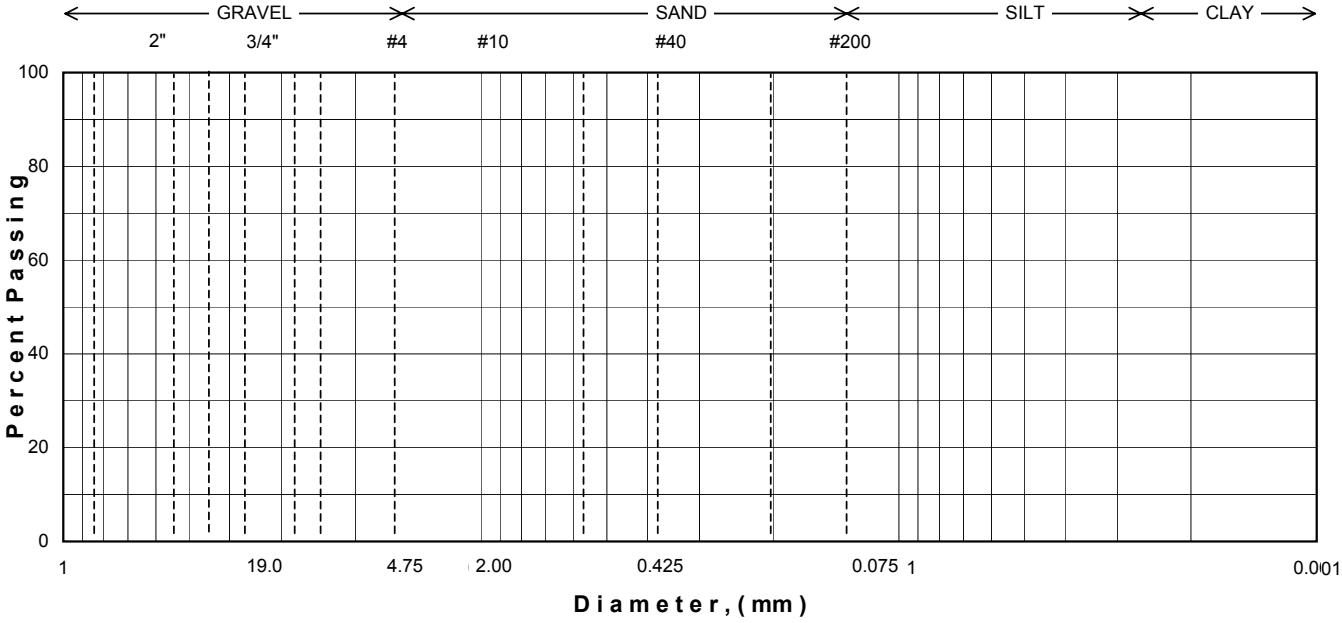




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-1	ss-16	16.00-16.45	1	23.29	NP	NP	NP	SM-ML	Gray lahar SAND
BR-1	ss-18	18.00-18.45	2	16.89	NP	NP	NP	SM-ML	Gray lahar SAND
BR-1	ss-20	20.00-20.45	3	14.98	NP	NP	NP	SM	Gray lahar SAND, with non-plastic silt
BR-1	ss-22	22.00-22.45	4	20.92	NP	NP	NP	SM-ML	Gray lahar SAND
BR-1	ss-24	24.00-24.45	5	21.24	NP	NP	NP	SM-ML	Gray lahar SAND
BR-1	ss-26	26.00-26.45	6	19.14	NP	NP	NP	SM	Gray lahar SAND, with non-plastic silt
BR-1	ss-28	28.00-28.45	7	24.97	NP	NP	NP	SM	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-1	ss-30	29.55-30.00	1	16.44	NP	NP	NP	SM	Gray lahar SAND

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-1** DATE TESTED: **February 15, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.99	176.01			173.82	173.57
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.74	156.84			157.02	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.75	10.83			13.20	13.45
Specific Gravity, Gs = Ws / Ww	2.79	2.77			2.27	2.23
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.78**	**2.76**			**2.27**	**2.22**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.06	176.07			175.50	175.79
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	157.08	157.00			157.02	157.25
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.02	10.93			11.52	11.46
Specific Gravity, Gs = Ws / Ww	2.72	2.74			2.60	2.62
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.71**	**2.74**			**2.60**	**2.61**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water at 4.00-4.45 m.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-1** DATE TESTED: **February 15, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.37	175.59			175.65	175.44
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.74	156.84			156.75	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.37	11.25			11.10	11.30
Specific Gravity, Gs = Ws / Ww	2.64	2.67			2.70	2.65
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.63**	**2.66**			**2.69**	**2.65**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.37	175.55			175.95	175.24
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.80	157.08			157.00	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.43	11.53			11.05	11.15
Specific Gravity, Gs = Ws / Ww	2.62	2.60			2.71	2.69
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.62**	**2.59**			**2.71**	**2.68**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-1** DATE TESTED: **February 15, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.65	175.60			175.98	175.84
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.72	156.70			157.08	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.07	11.10			11.10	11.18
Specific Gravity, Gs = Ws / Ww	2.71	2.70			2.70	2.68
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.70**	**2.69**			**2.69**	**2.67**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.36	175.73			175.57	176.08
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.39	156.70			156.72	157.25
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.03	10.97			11.15	11.17
Specific Gravity, Gs = Ws / Ww	2.72	2.73			2.69	2.69
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.71**	**2.73**			**2.68**	**2.68**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-1** DATE TESTED: **February 15, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.18	175.08			175.88	175.63
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.80	157.00			156.84	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.62	11.92			10.96	11.11
Specific Gravity, Gs = Ws / Ww	2.58	2.52			2.74	2.70
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.57**	**2.51**			**2.73**	**2.69**

Sample Number	ss-30					
Depth (m)	29.55-30.00					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.67	175.81				
Temperature, ^{o}C	26	26				
Wt. of Flask + Water = Wbw	156.75	156.80				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.08	10.99				
Specific Gravity, Gs = Ws / Ww	2.71	2.73				
Viscosity Correction	0.9968	0.9968				
Specific Gravity corrected for Temp.	**2.70**	**2.72**				

Remarks:

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.50 m.**
ELEVATION: **37.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 06, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.3 m) Brown silty SAND. (Rec: 30/30 cm.)	ss-1	Very dense	*	60/20 cm.			
2	(2.0-2.45 m) Reddish brown fine SAND and SILT, non-plastic, with traces of fine gravel. (Rec: 45/35 cm.)	ss-2	Med. dense	SM-ML	23			Gs = 2.63
3	(3.0-3.45 m) Dark brown clayey SILT. (Rec: 45/25 cm.)	ss-3	Stiff	*	12			
4	(4.0-4.45 m) Brown SAND and SILT, non-plastic, with some fine gravel. (Rec: 45/25 cm.)	ss-4	Med. dense	SM-ML	13			Gs = 2.68
5	(5.0-5.45 m) Brown clayey SILT. (Rec: 45/30 cm.)	ss-5	Stiff	*	14			
6	(6.0-6.45 m) Brown clayey SAND, with some crushed gravel. (Rec: 45/30 cm.)	ss-6	Very stiff	SC	17			Gs = 2.70
7	(7.0-7.45 m) Brown fine to coarse SAND, with little amount of silt. (Rec: 45/30 cm.)	ss-7	Med. dense	*	22			
8	(8.0-8.45 m) Brown clayey SAND, with some gravel. (Rec: 45/15 cm.)	ss-8	Med. stiff	SC	7			Gs = 2.68
9	(9.0-9.45 m) Brown sandy GRAVEL, with some silt. (Rec: 45/30 cm.)	ss-9	Med. dense	*	22			
10								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.50 m.**
ELEVATION: **37.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 06, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Gray well graded GRAVEL and SAND, with traces of non-plastic silt. (Rec: 45/30 cm.) *Note: Water table @ 8.50 m. (02-04-03 @ 7:00 AM)*	ss-10	Loose	GW-SW	8			Gs = 2.63
11	(11.0-11.45 m) Gray fine SAND, with little amount of non-plastic silt and fine pyroclastic materials. (Rec: 45/30 cm.)	ss-11	Loose	SM	6		NP	No Plasticity
12	(12.0-12.45 m) Gray silty lahar SAND, non-plastic, with fine pyroclastic materials. (Rec: 45/25 cm.)	ss-12	Med. dense	SM-ML	12			Gs = 2.67
13	(13.0-13.45 m) - same materials - (Rec: 45/20 cm.)	ss-13	Med. dense	*	21			
14	(14.0-14.45 m) Gray silty lahar SAND, non-plastic, with little amount of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-14	Med. dense	SM	25			Gs = 2.66
15	(15.0-15.45 m) Gray fine to coarse SAND, with gravel-size pyroclastic materials. (Rec: 45/20 cm.)	ss-15	Med. dense	*	12			
16	(16.0-16.45 m) Gray silty fine to coarse SAND, non-plastic, with little amount of gravel-size pyroclastic materials. (Rec: 45/30 cm.)	ss-16	Med. dense	SM	22			Gs = 2.63
17	(17.0-17.45 m) Gray lahar SAND, with some coarse and fine pyroclastic materials. (Rec: 45/35 cm.)	ss-17	Med. dense	*	17			
18	(18.0-18.45 m) Gray silty lahar SAND, non-plastic, with some gravel-size pyroclastic materials. (Rec: 45/20 cm.)	ss-18	Dense	SM	40			Gs = 2.59
19	(19.0-19.45 m) Gray lahar SAND, with some coarse and fine pyroclastic materials. (Rec: 45/35 cm.) *Note: Water table @ 8.60 m. (02-05-03 @ 7:00 AM)*	ss-19	Dense	*	46			
20								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.50 m.**
ELEVATION: **37.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 06, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray lahar SAND, with some fine and coarse pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample degraded into sandy SILT after oven drying in the laboratory*	ss-20	Dense	SM-ML	50			Gs = 2.59
21	(21.0-21.45 m) - same materials - (Rec: 45/25 cm.)	ss-21	Dense	*	32			
22	(22.0-22.45 m) Gray lahar SAND, with some traces of coarse to fine pyroclastic materials. (Rec: 45/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory*	ss-22	Dense	SM-ML	30			Gs = 2.75
23	(23.0-23.45 m) Gray lahar SAND, with some coarse to fine pyroclastic materials. (Rec: 45/30 cm.)	ss-23	Dense	*	32			
24	(24.0-24.45 m) - same materials - (Rec: 45/20 cm.) *Note: Sample became friable and degraded into sandy SILT after oven drying in the laboratory*	ss-24	Dense	SM-ML	32			Gs = 2.74
25	(25.0-25.45 m) - same materials - (Rec: 45/20 cm.)	ss-25	Dense	*	33			
26	(26.0-26.45 m) Gray lahar SAND, with non-plastic silt and traces of fine to coarse pyroclastic materials. (Rec: 45/25 cm.)	ss-26	Med. dense	SM	19			Gs = 2.61
27	(27.0-27.45 m) Gray lahar SAND, with gravel, some fine and coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-27	Med. dense	*	29			
28	(28.0-28.45 m) Gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory*	ss-28	Dense	SM-ML	45			Gs = 2.65
29	(29.0-29.45 m) - same materials - Rec: 45/30 cm.)	ss-29	Dense	*	42			
	(29.55-30.0 m) - same materials - (Rec: 45/30 cm.)	ss-30	Dense	SM-ML	38			Gs = 2.70
30								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Bucao River, Botolan, Zambales***

BORING NO.: **BR-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.50 m.**
ELEVATION: **37.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 06, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: Sample became friable and degraded into SILT after oven drying in the laboratory							
	Note: Water table @ 9.00 m. (02-06-03 @ 7:00 AM) and 8.50 m (02-07-03 @ 7:00 AM)							
31								
	End of Borehole @ 30.00 m. depth							
32	**Note:**							
	*** - - - - - - - - - - Visual Description**							
	Drilling Machine - - - - - - - - - - TONE - TDC							
	Size of Casing - - - - - - - - - - 76 mm.							
33								
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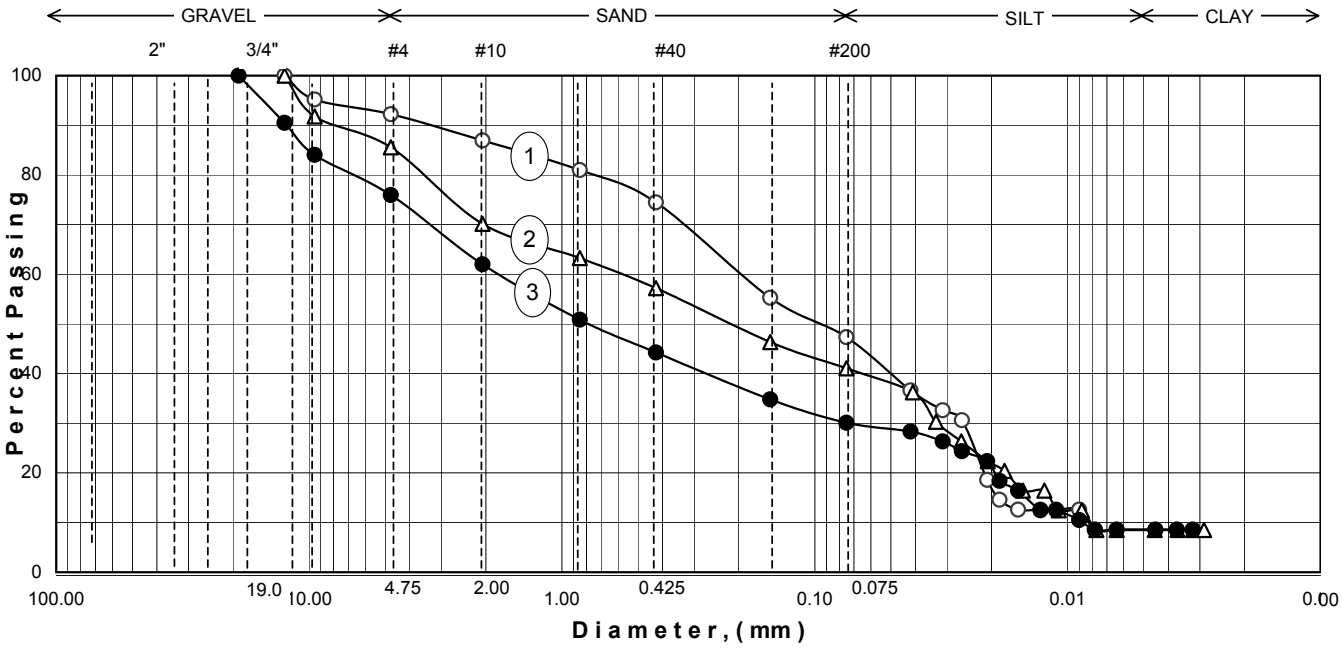
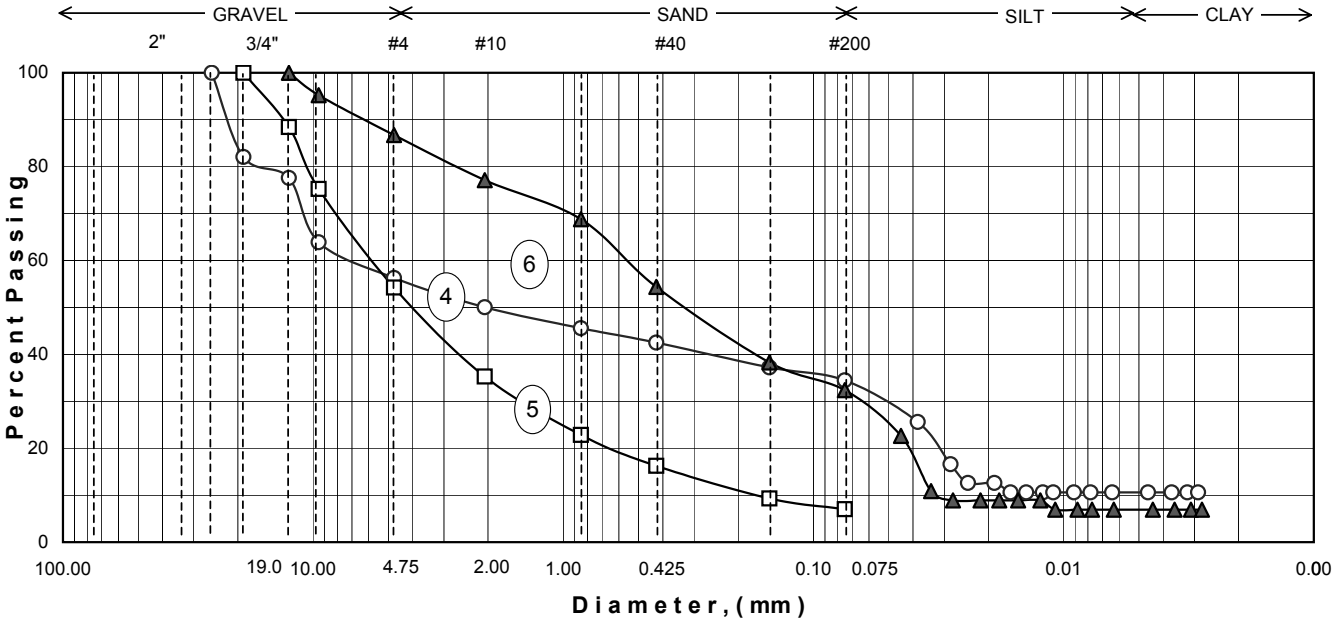
39								
40								

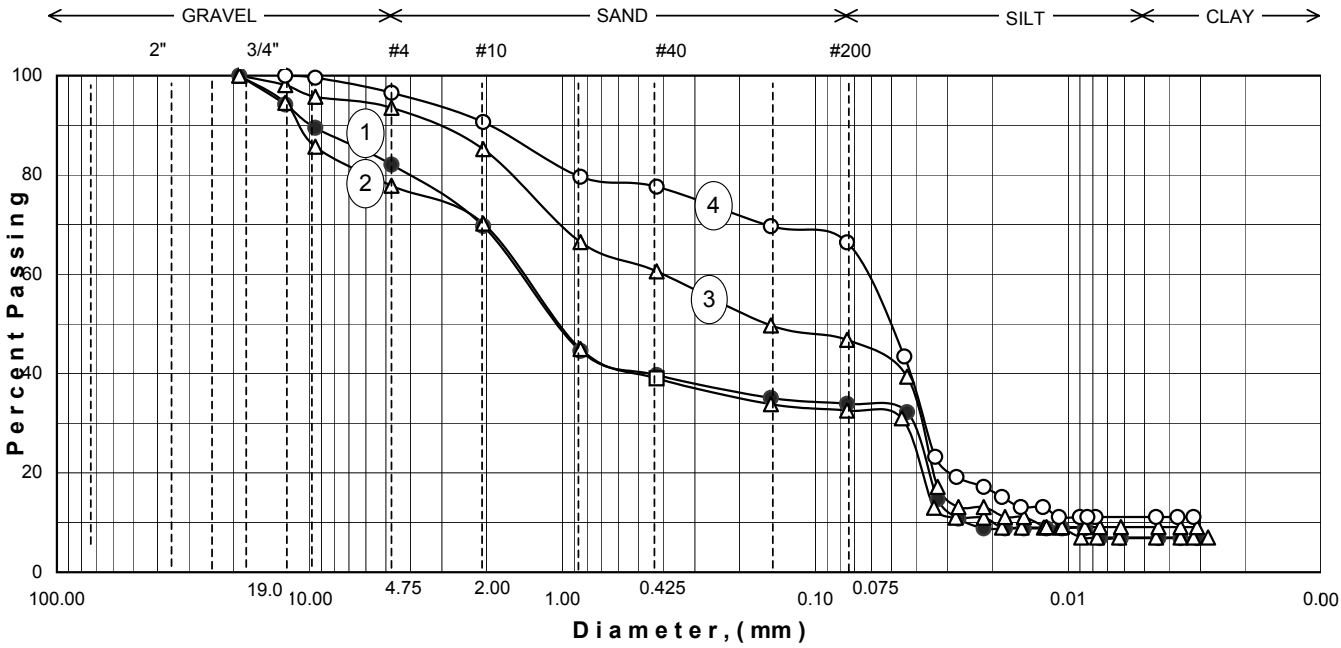
GRAIN-SIZE DISTRIBUTION CURVES

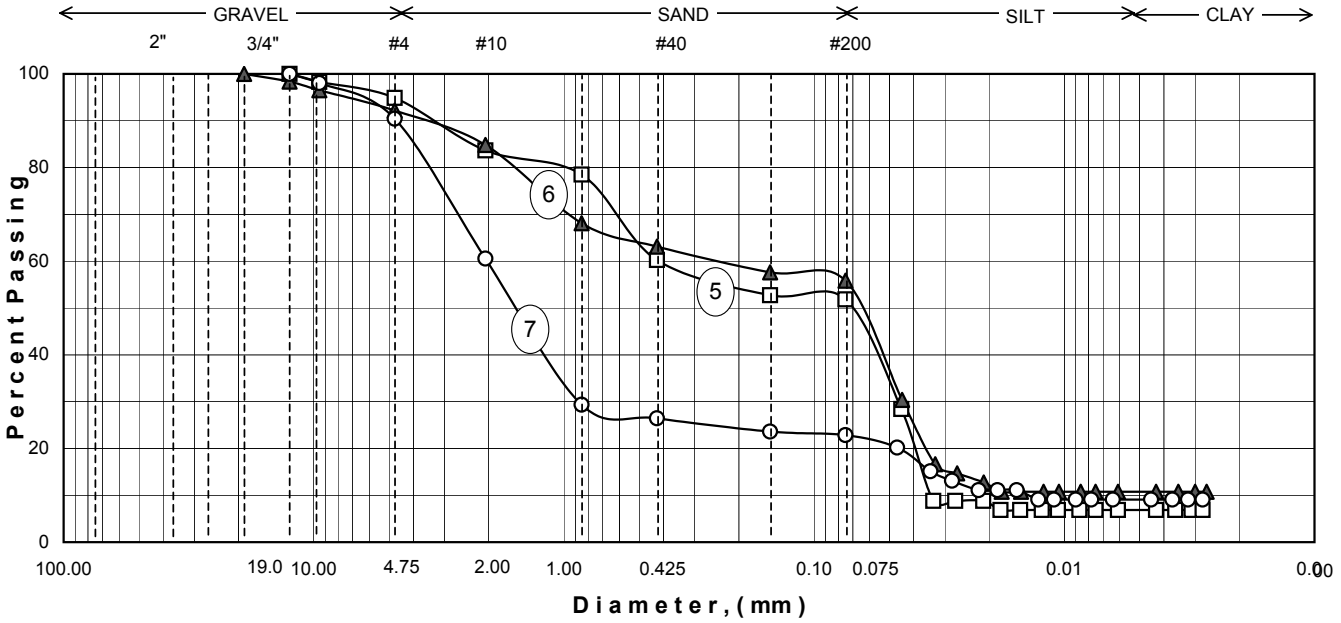




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-2	ss-2	2.00-2.45	1	19.55	NP	NP	NP	SM-ML	Reddish brown fine SAND and SILT, non-plastic
BR-2	ss-4	4.00-4.45	2	20.22	NP	NP	NP	SM-ML	Brown SAND and SILT, non-plastic
BR-2	ss-6	6.00-6.45	3	25.81	NP	NP	NP	SC	Brown clayey SAND
BR-2	ss-8	8.00-8.45	4	29.39	NP	NP	NP	SC	Brown clayey SAND
BR-2	ss-10	10.00-10.45	5	20.89	NP	NP	NP	GW-SW	Gray well graded GRAVEL and SAND
BR-2	ss-11	11.00-11.45		-	NP	NP	NP	SM	Gray fine SAND
BR-2	ss-12	12.00-12.45	6	23.15	NP	NP	NP	SM	Gray silty lahar SAND, non-plastic

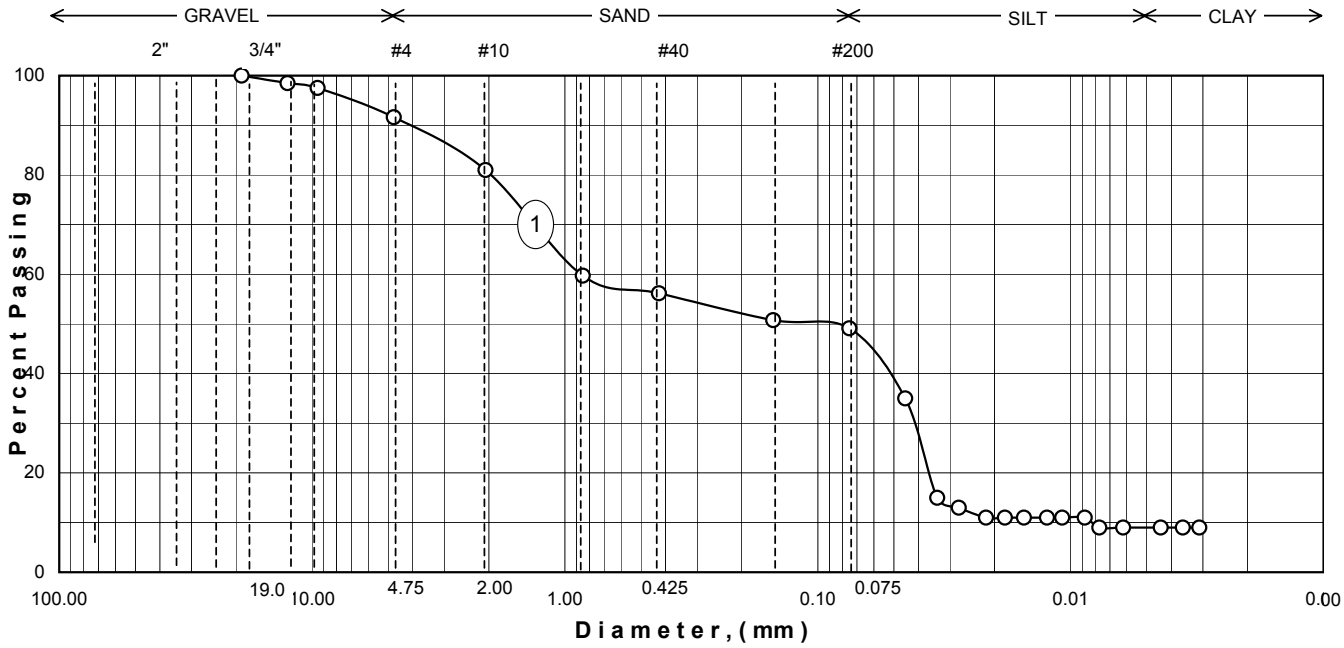
GRAIN-SIZE DISTRIBUTION CURVES

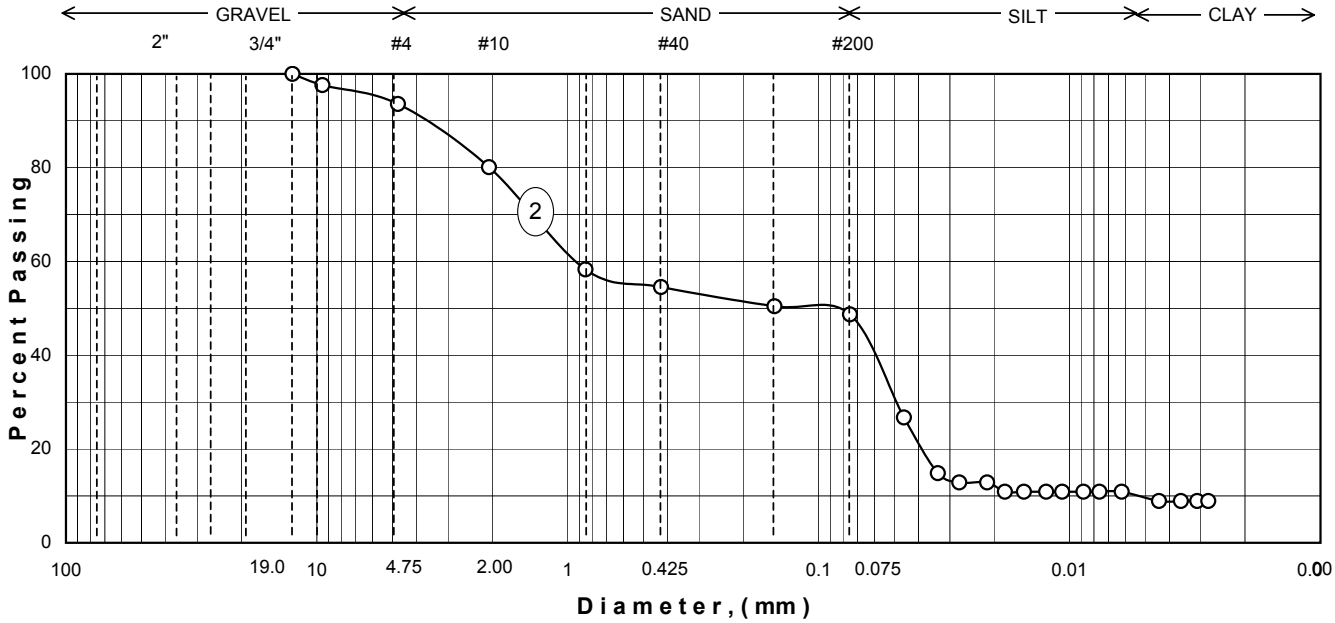




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-2	ss-14	14.00-14.45	1	8.02	NP	NP	NP	SM	Gray silty lahar SAND, non-plastic
BR-2	ss-16	16.00-16.45	2	14.11	NP	NP	NP	SM	Gray silty fine to coarse SAND, non-plastic
BR-2	ss-18	18.00-18.45	3	26.14	NP	NP	NP	SM	Gray silty lahar SAND, non-plastic
BR-2	ss-20	20.00-20.45	4	23.27	NP	NP	NP	SM-ML	Gray lahar SAND
BR-2	ss-22	22.00-22.45	5	17.06	NP	NP	NP	SM-ML	Gray lahar SAND
BR-2	ss-24	24.00-24.45	6	14.42	NP	NP	NP	SM-ML	Gray lahar SAND
BR-2	ss-26	26.00-26.45	7	17.27	NP	NP	NP	SM	Gray lahar SAND, with non-plastic silt

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
BR-2	ss-28	28.00-28.45	1	17.36	NP	NP	NP	SM-ML	Gray lahar SAND
BR-2	ss-30	29.55-30.00	2	10.57	NP	NP	NP	SM-ML	Gray lahar SAND

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-2** DATE TESTED: **February 17, 2003** TESTED BY: **L. Padual** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.78	175.26			175.19	175.54
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	157.08	156.70			156.39	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.30	11.44			11.20	11.16
Specific Gravity, Gs = Ws / Ww	2.65	2.62			2.68	2.69
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.65**	**2.61**			**2.67**	**2.68**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.66	175.64			175.56	175.65
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.75	156.74			156.72	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.09	11.10			11.16	11.19
Specific Gravity, Gs = Ws / Ww	2.71	2.70			2.69	2.68
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.70**	**2.69**			**2.68**	**2.67**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water at 4.00-4.45 m..

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-2** DATE TESTED: **February 17, 2003** TESTED BY: **L. Padual** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.40	175.03			175.97	175.54
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.80	156.39			157.25	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.40	11.36			11.28	11.16
Specific Gravity, Gs = Ws / Ww	2.63	2.64			2.66	2.69
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.62**	**2.63**			**2.65**	**2.68**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.44	175.83			175.58	175.49
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.74	157.08			157.00	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.30	11.25			11.42	11.35
Specific Gravity, Gs = Ws / Ww	2.65	2.67			2.63	2.64
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.65**	**2.66**			**2.62**	**2.63**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-2** DATE TESTED: **February 17, 2003** TESTED BY: **L. Padual** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.24	175.21			175.65	175.17
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.80	156.75			157.25	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.56	11.54			11.60	11.53
Specific Gravity, Gs = Ws / Ww	2.60	2.60			2.59	2.60
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.59**	**2.59**			**2.58**	**2.59**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.82	175.55			175.50	175.79
Temperature, ^{o}C	26	26			26	26
Wt. of Flask + Water = Wbw	156.72	156.39			156.39	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.90	10.84			10.89	10.96
Specific Gravity, Gs = Ws / Ww	2.75	2.77			2.75	2.74
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.74**	**2.76**			**2.75**	**2.73**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao River, Botolan, Zambales** BORING NO.: **BR-2** DATE TESTED: **February 17, 2003** TESTED BY: **L. Padual** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.32	175.28			175.63	175.58
Temperature, °C	26	26			26	26
Wt. of Flask + Water = Wbw	156.84	156.74			157.08	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.52	11.46			11.45	11.14
Specific Gravity, Gs = Ws / Ww	2.60	2.62			2.62	2.69
Viscosity Correction	0.9968	0.9968			0.9968	0.9968
Specific Gravity corrected for Temp.	**2.60**	**2.61**			**2.61**	**2.68**

Sample Number	ss-30					
Depth (m)	29.55-30.00					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.95	175.63				
Temperature, °C	26	26				
Wt. of Flask + Water = Wbw	157.00	156.80				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.05	11.17				
Specific Gravity, Gs = Ws / Ww	2.71	2.69				
Viscosity Correction	0.9968	0.9968				
Specific Gravity corrected for Temp.	**2.71**	**2.68**				

Remarks:

BOREHOLE LOG

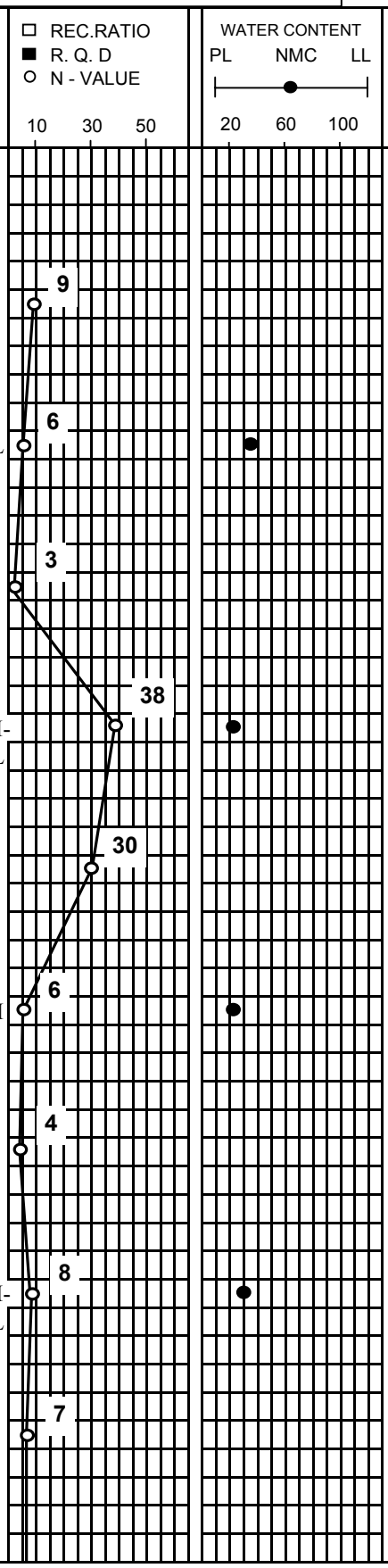
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Felipe, Zambales***

BORING NO.: **SR-1**
FINAL DEPTH: **30.00 m.**
GWT: **7.00 m.**
ELEVATION: **27.00 m,**
DATE STARTED: **Jan. 30, 2003**
DATE FINISHED: **Feb. 01, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	OTHER TEST RESULTS
1	(1.0-1.45 m) Grayish brown silty SAND, with some crushed gravel. (Rec: 45/35 cm.)	ss-1	Loose	*	9	
2	(2.0-2.45 m) Reddish brown clayey SILT, with little amount of fine sand and fine gravel. (Rec: 45/45 cm.)	ss-2	Med. stiff	ML	6	Gs = 2.77
3	(3.0-3.45 m) - same materials - (Rec: 45/30 cm.)	ss-3	Very loose	*	3	
4	(4.0-4.45 m) Light gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-4	Dense	SM-ML	38	Gs = 2.50
5	(5.0-5.45 m) - same materials - (Rec: 45/35 cm.)	ss-5	Med. dense	*	30	
6	(6.0-6.45 m) Light gray silty lahar SAND, non-plastic, with little amount of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-6	Loose	SM	6	Gs = 2.63
7	(7.0-7.45 m) Light gray lahar SAND, with some coarse to fine pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Very loose	*	4	
8	(8.0-8.45 m) - same materials - (Rec: 45/25 cm.) *Note: Sample became friable and degraded into sandy SILT after oven drying in the laboratory.*	ss-8	Loose	SM-ML	8	Gs = 2.62
9	(9.0-9.45 m) - same materials - (Rec: 45/35 cm.)	ss-9	Loose	*	7	
10						



BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Felipe, Zambales***

BORING NO.: **SR-1**
FINAL DEPTH: **30.00 m.**
GWT: **7.00 m.**
ELEVATION: **27.00 m.**
DATE STARTED: **Jan. 30, 2003**
DATE FINISHED: **Feb. 01, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray lahar SAND, with coarse and fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-10	Loose	SM-ML	7			Gs = 2.70
11	(11.0-11.45 m) - same materials - (Rec: 45/30 cm.)	ss-11	Loose	*	9			
12	(12.0-12.45 m) Light gray silty lahar SAND, non-plastic, with little amount of coarse to fine pyroclastic materials. (Rec: 45/30 cm.)	ss-12	Loose	SM	9			Gs = 2.71
13	(13.0-13.45 m) Light gray fine to medium lahar SAND, with coarse and fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 6.50 m. 01-31-03 @ 7:00 AM)*	ss-13	Loose	*	8			
14	(14.0-14.45 m) Light gray fine to medium lahar SAND, with some non-plastic silt and fine pyroclastic materials. (Rec: 45/35 cm.)	ss-14	Loose	SM	8			Gs = 2.72
15	(15.0-15.45 m) - same materials - (Rec: 45/30 cm.)	ss-15	Med. dense	*	22			
16	(16.0-16.45 m) Dark gray silty CLAY, medium plastic, with traces of fine sand. (Rec: 45/35 cm.)	ss-16	Soft	CL	4		23	Gs = 2.66
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Med. stiff	CL	7		25	
18	(18.0-18.45 m) Gray fine LAHAR, with little amount of fine sand and traces of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-18	Loose	ML	7			Gs = 2.58
19	(19.0-19.45 m) Gray sandy SILT, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-19	Loose	*	9			
20								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Felipe, Zambales***

BORING NO.: **SR-1**
FINAL DEPTH: **30.00 m.**
GWT: **7.00 m.**
ELEVATION: **27.00 m.**
DATE STARTED: **Jan. 30, 2003**
DATE FINISHED: **Feb. 01, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL / NMC / LL)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray fine LAHAR, traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-20	Med. dense	ML	25			Gs = 2.64
21	(21.0-21.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.)	ss-21	Dense	*	40			
22	(22.0-22.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-22	Very dense	SM-ML	52			Gs = 2.76
23	(23.0-23.45 m) - same materials - (Rec: 45/25 cm.) *Note: Water table @ 6.50 m. 02-01-03 @ 7:00 AM)*	ss-23	Dense	*	42			
24	(24.0-24.45 m) - same materials - (Rec: 45/20 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-24	Dense	SM-ML	35			Gs = 2.75
25	(25.0-25.45 m) - same materials - (Rec: 45/20 cm.)	ss-25	Dense	*	31			
26	(26.0-26.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-26	Dense	SM-ML	49			Gs = 2.76
27	(27.0-27.45 m) - same materials - (Rec: 45/30 cm.)	ss-27	Very dense	*	52			
28	(28.0-28.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-28	Very dense	SM-ML	55			Gs = 2.76
29	(29.0-29.45 m) - same materials - Rec: 45/35 cm.)	ss-29	Very dense	*	54			
	(29.55-30.0 m) - same materials - (Rec: 45/30 cm.)	ss-30	Very dense	SM-ML	57			Gs = 2.74
30								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

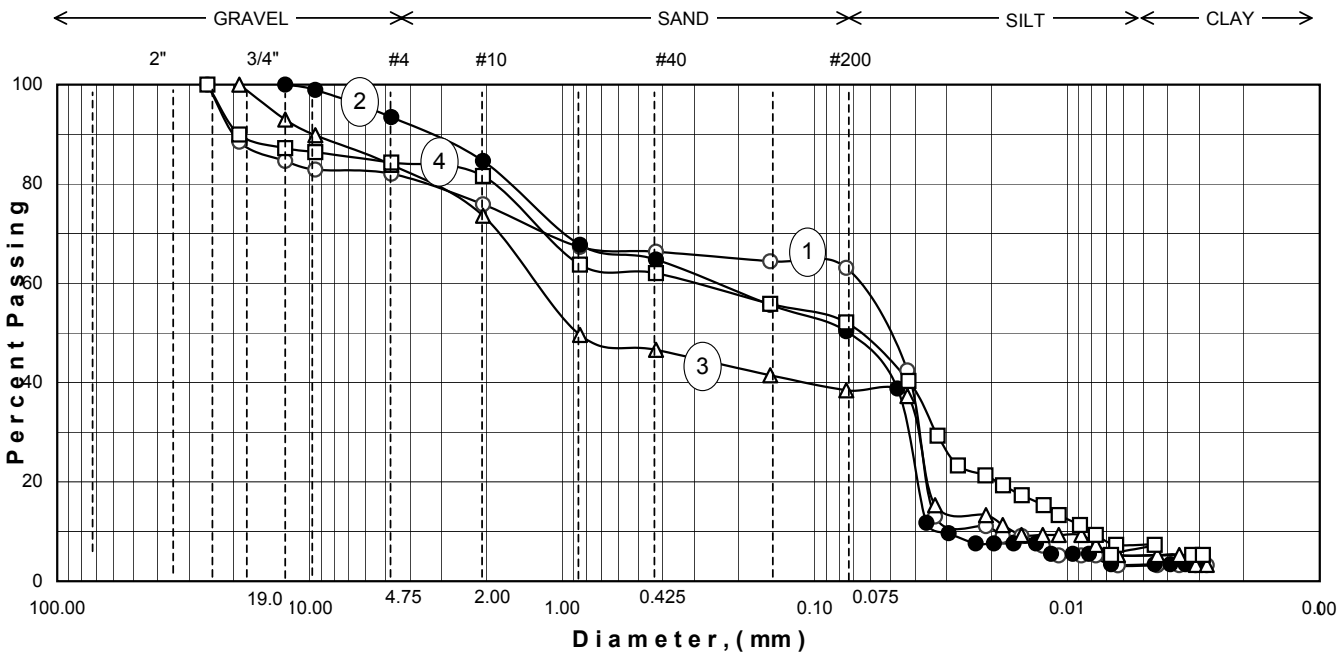
LOCATION : ***Sto. Tomas River, San Felipe, Zambales***

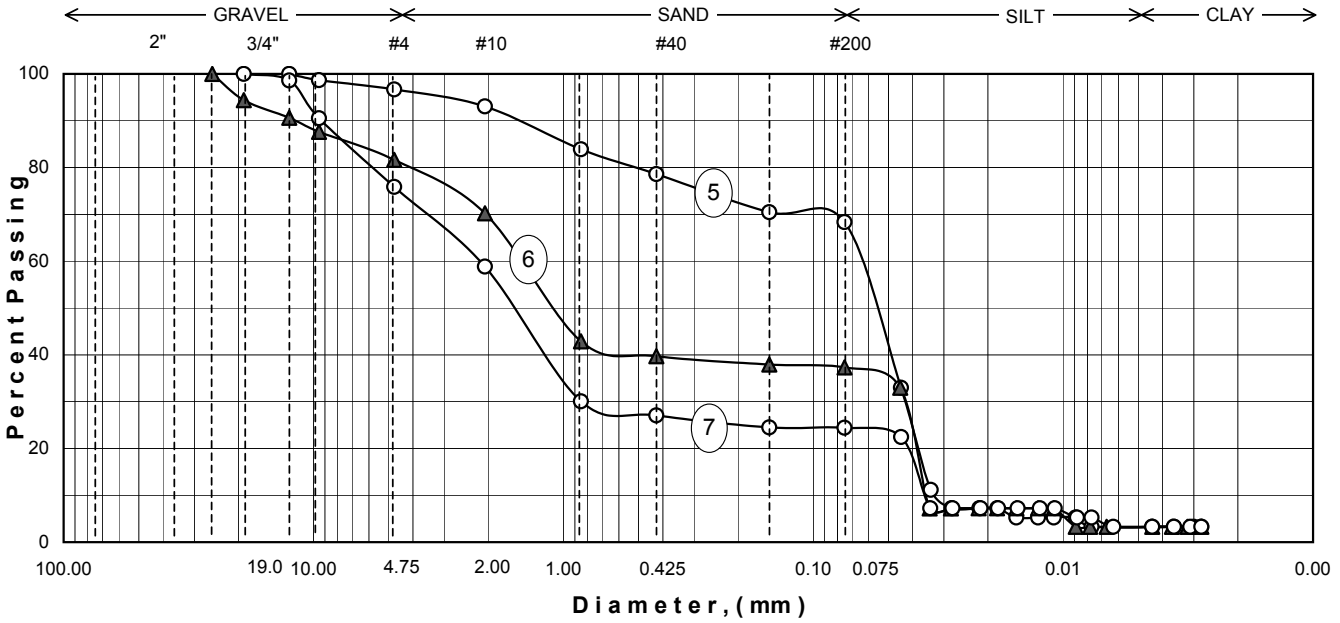
BORING NO.: **SR-1**
FINAL DEPTH: **30.00 m.**
GWT: **7.00 m.**
ELEVATION: **27.00 m.**
DATE STARTED: **Jan. 30, 2003**
DATE FINISHED: **Feb. 01, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)		SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
		Note: Sample became friable and degraded into SILT after oven drying in the laboratory.							
		Note: Water table @ 7.00 m. (02-01-03) and 7.00 m. (02-02-03 @ 7:00 AM)							
31		***End of Borehole @ 30.00 m. depth***							
32		**Note:**							
		*** - - - - - - - - - - Visual Description**							
		Drilling Machine - - - - - - - - TONE - TDC							
		Size of Casing - - - - - - - - - 76 mm.							
33									
34									
35									
36									
37									
38									
39									
40									

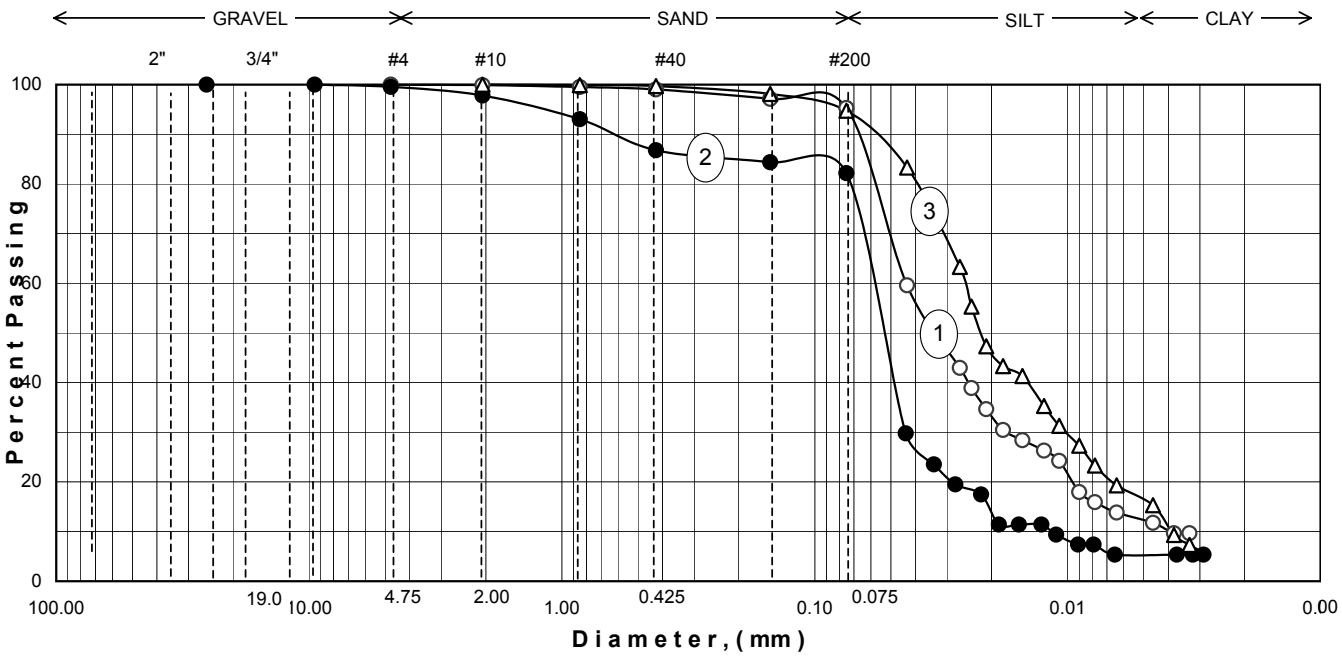
GRAIN-SIZE DISTRIBUTION CURVES

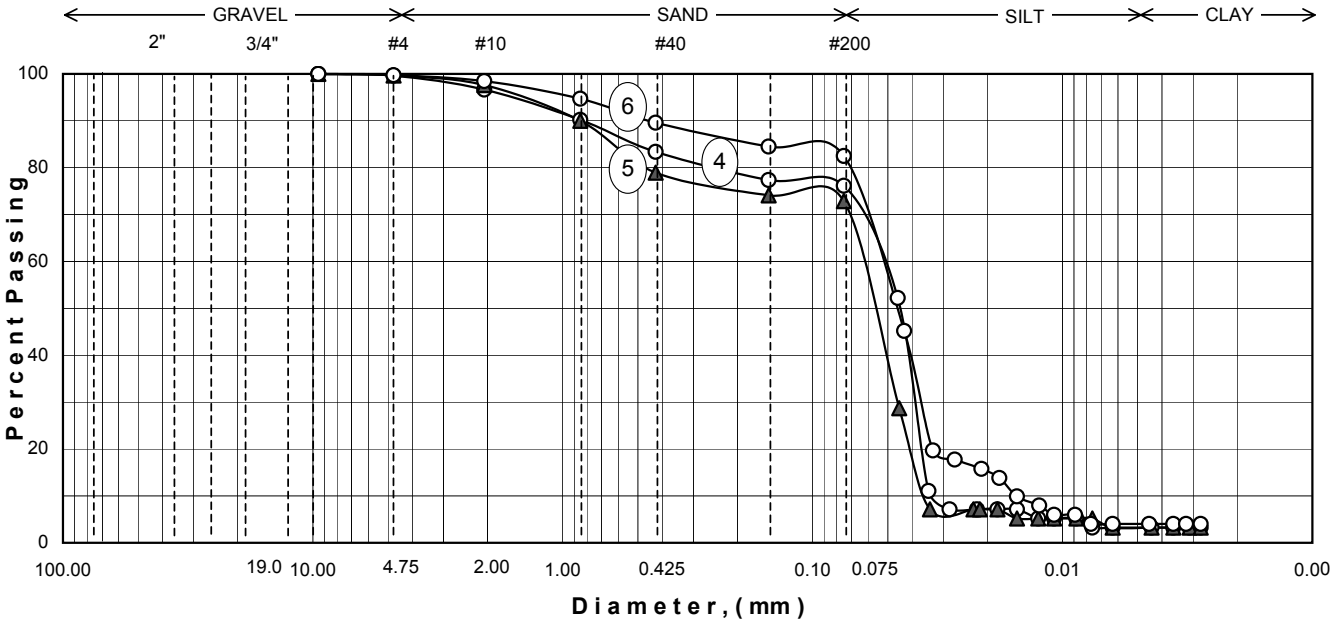




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SR-1	ss-2	2.00-2.45	1	35.44	NP	NP	NP	ML	Reddish brown clayey SILT
SR-1	ss-4	4.00-4.45	2	22.70	NP	NP	NP	SM-ML	Light gray lahar SAND
SR-1	ss-6	6.00-6.45	3	20.69	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SR-1	ss-8	8.00-8.45	4	29.83	NP	NP	NP	SM-ML	Light gray lahar SAND
SR-1	ss-10	10.00-10.45	5	21.42	NP	NP	NP	SM-ML	Light gray lahar SAND
SR-1	ss-12	12.00-12.45	6	14.45	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SR-1	ss-14	14.00-14.45	7	11.27	NP	NP	NP	SM	Light gray fine to medium lahar SAND

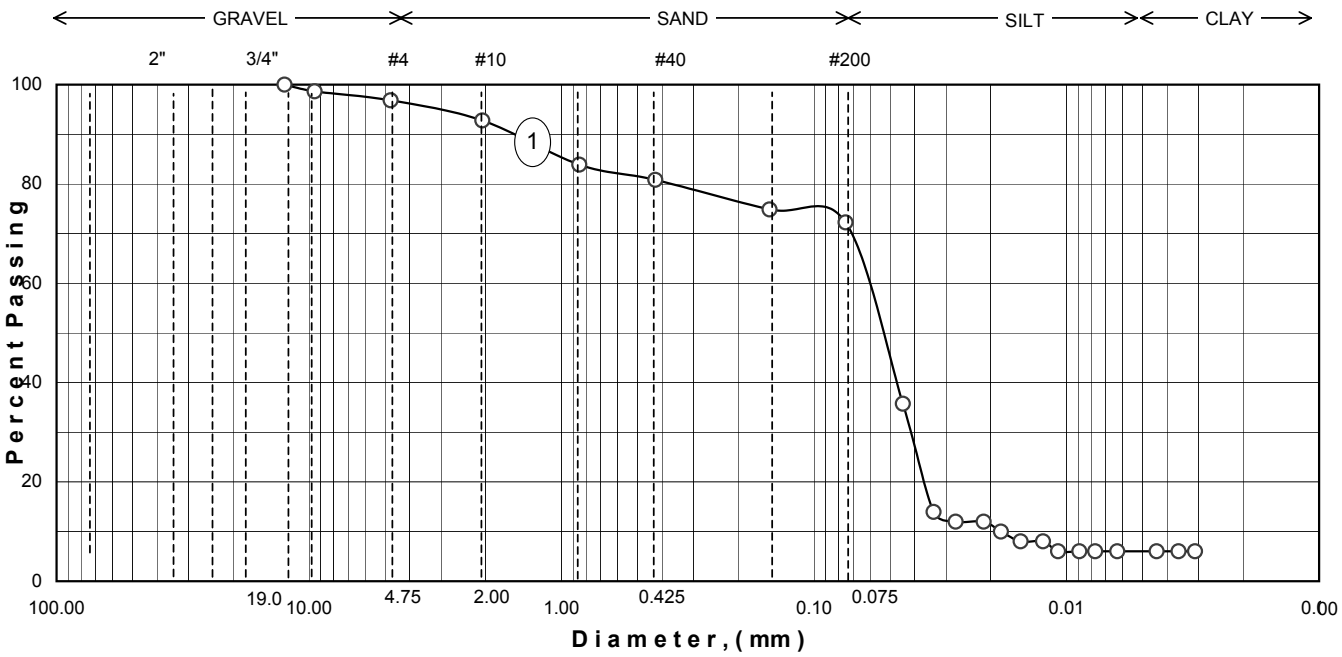
GRAIN-SIZE DISTRIBUTION CURVES

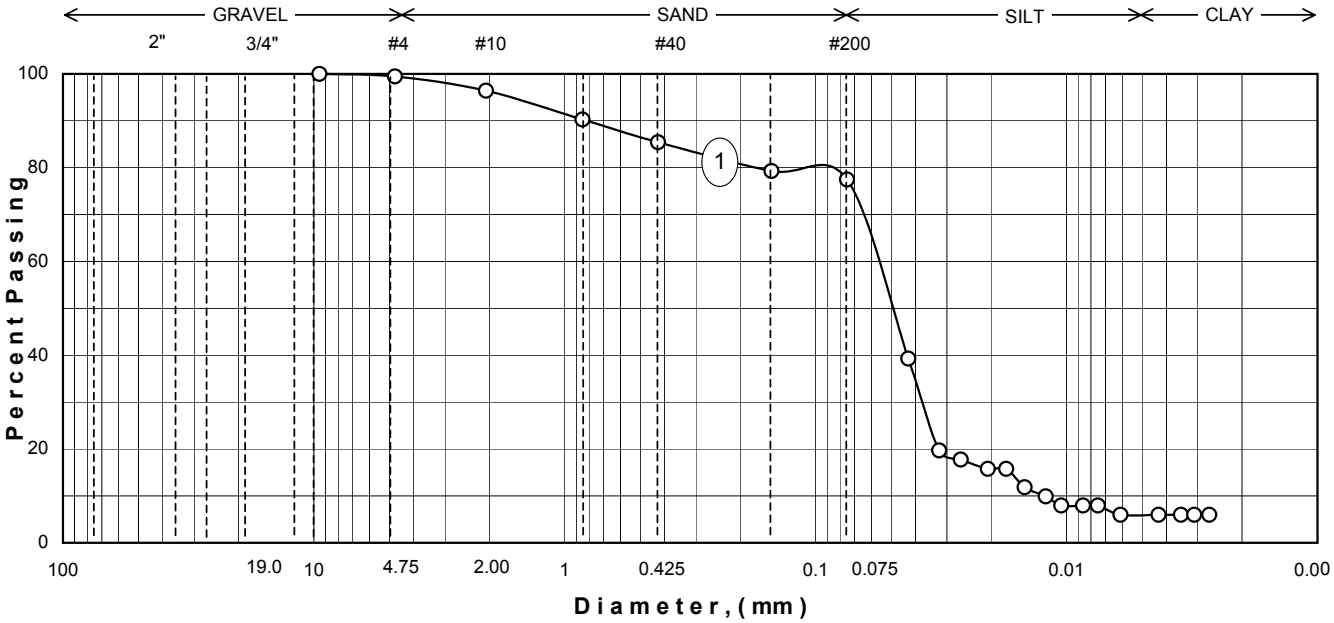




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SR-1	ss-16	16.00-16.45	1	49.31	44	21	23	CL	Dark gray silty CLAY, medium plastic
SR-1	ss-17	17.00-17.45	-	-	45	20	25	CL	Dark gray silty CLAY, medium plastic
SR-1	ss-18	18.00-18.45	2	33.68	NP	NP	NP	ML	Gray fine LAHAR
SR-1	ss-20	20.00-20.45	3	27.09	NP	NP	NP	ML	Gray fine LAHAR
SR-1	ss-22	22.00-22.45	4	20.82	NP	NP	NP	SM-ML	Gray lahar SAND
SR-1	ss-24	24.00-24.45	5	14.45	NP	NP	NP	SM-ML	Gray lahar SAND
SR-1	ss-26	26.00-26.45	6	11.38	NP	NP	NP	SM-ML	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SR-1	ss-28	28.00-28.45	1	13.60	NP	NP	NP	SM-ML	Gray lahar SAND
SR-1	ss-30	29.55-30.00	2	11.91	NP	NP	NP	SM-ML	Gray lahar SAND

LIQUID AND PLASTIC LIMIT

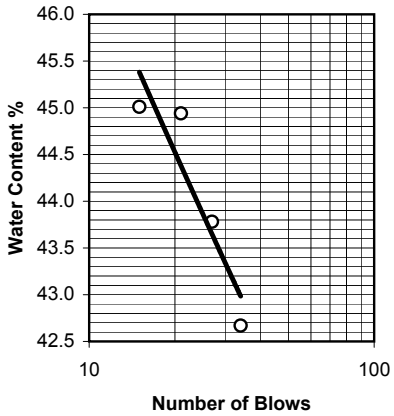
(AASHTO T-89 & T-90)

Project	:	THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO
Location	:	Sto. Tomas River, San Felipe, Zambales
Tested by	:	S. Fernandez
Checked by	:	E. CRUZ - Materials Engineer
BOREHOLE NO.	:	SR-1

SAMPLE NO. ss-16 (16.00-16.45 m)

LIQUID LIMIT TEST			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1	34	42.67	1	20.23
2	27	43.78	2	21.05
3	21	44.94		
4	15	45.01		
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
44	21		23	

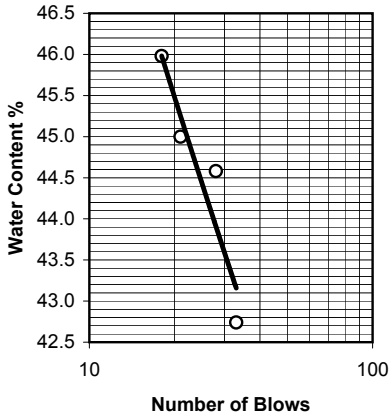
REMARKS:



SAMPLE NO. ss-17 (17.00-17.45 m)

			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1	33	42.74	1	20.40
2	28	44.58	2	19.62
3	21	45.00		
4	18	45.98		
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
45	20		25	

REMARKS:



SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Felipe, Zambales** BORING NO.: **SR-1** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.99	175.88			175.28	174.80
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	156.75	156.74			157.25	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.76	10.86			11.97	11.94
Specific Gravity, Gs = Ws / Ww	2.79	2.76			2.51	2.51
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.78**	**2.75**			**2.50**	**2.50**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.37	175.32			175.42	175.41
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	156.72	156.70			156.84	156.80
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.35	11.38			11.42	11.39
Specific Gravity, Gs = Ws / Ww	2.64	2.64			2.63	2.63
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.63**	**2.63**			**2.62**	**2.62**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Felipe, Zambales** BORING NO.: **SR-1** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.03	175.27			176.10	175.86
Temperature, ^{o}C	27	27			27	27
Wt. of Flask + Water = Wbw	157.08	156.39			157.00	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.05	11.12			10.90	11.16
Specific Gravity, Gs = Ws / Ww	2.71	2.70			2.75	2.69
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.71**	**2.69**			**2.74**	**2.68**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.64	175.80			175.84	175.14
Temperature, ^{o}C	27	27			27	27
Wt. of Flask + Water = Wbw	156.75	156.72			157.08	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.11	10.92			11.24	11.25
Specific Gravity, Gs = Ws / Ww	2.70	2.75			2.67	2.67
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.69**	**2.74**			**2.66**	**2.66**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Felipe, Zambales** BORING NO.: **SR-1** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20°, ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.40	175.65			175.33	175.42
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	157.00	157.25			156.70	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.60	11.60			11.37	11.32
Specific Gravity, Gs = Ws / Ww	2.59	2.59			2.64	2.65
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.58**	**2.58**			**2.63**	**2.64**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.09	175.99			175.95	175.93
Temperature, °C	27	27			27	27
Wt. of Flask + Water = Wbw	157.02	156.75			156.84	156.80
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.93	10.76			10.89	10.87
Specific Gravity, Gs = Ws / Ww	2.74	2.79			2.75	2.76
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.74**	**2.78**			**2.75**	**2.75**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Felipe, Zambales** BORING NO.: **SR-1** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.88	175.98			176.25	175.57
Temperature, ^{o}C	27	27			27	27
Wt. of Flask + Water = Wbw	156.70	156.84			157.08	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.82	10.86			10.83	10.82
Specific Gravity, Gs = Ws / Ww	2.77	2.76			2.77	2.77
Viscosity Correction	0.9965	0.9965			0.9965	0.9965
Specific Gravity corrected for Temp.	**2.76**	**2.75**			**2.76**	**2.76**

Sample Number	ss-30					
Depth (m)	29.55-30.00					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	176.28	176.08				
Temperature, ^{o}C	27	27				
Wt. of Flask + Water = Wbw	157.25	157.00				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	10.97	10.92				
Specific Gravity, Gs = Ws / Ww	2.73	2.75				
Viscosity Correction	0.9965	0.9965				
Specific Gravity corrected for Temp.	**2.73**	**2.74**				

Remarks:

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-1**
FINAL DEPTH: **15.00 m.**
GWT: **3.00 m.**
ELEVATION: **40.00 m.**
DATE STARTED: **Feb. 01, 2003**
DATE FINISHED: **Feb. 02, 2003**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with some coarse and fine pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Med. dense	*	10			
2	(2.0-2.45 m) Light gray lahar SAND, with some gravel-size pyroclastic materials and little amount of non-plastic silt. (Rec: 45/45 cm.)	ss-2	Med. dense	SM	13			Gs = 2.60
3	(3.0-3.45 m) - same materials - (Rec: 45/40 cm.)	ss-3	Med. dense	*	14			
4	(4.0-4.45 m) Light gray lahar SAND, with gravel-size pyroclastic materials and some non-plastic silt. (Rec: 45/35 cm.)	ss-4	Med. dense	SM	17			Gs = 2.61
5	(5.0-5.45 m) - same materials - (Rec: 45/30 cm.)	ss-5	Med. dense	*	10			
6	(6.0-6.45 m) Brownish gray silty lahar SAND, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-6	Med. dense	SM	17			Gs = 2.68
7	(7.0-7.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Loose	*	7			
8	(8.0-8.45 m) Light gray silty lahar SAND, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/25 cm.)	ss-8	Med. dense	SM	16			Gs = 2.70
9	(9.0-9.45 m) - same materials - (Rec: 45/30 cm.)	ss-9	Med. dense	*	7			
10								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

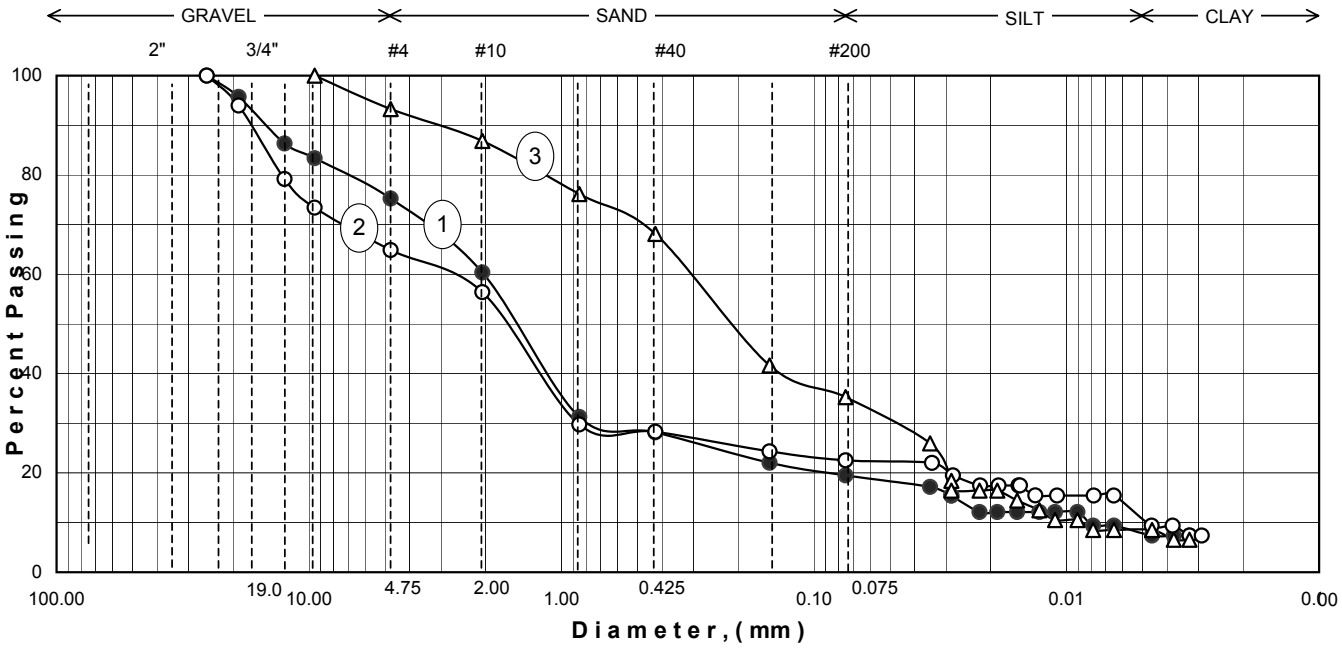
LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

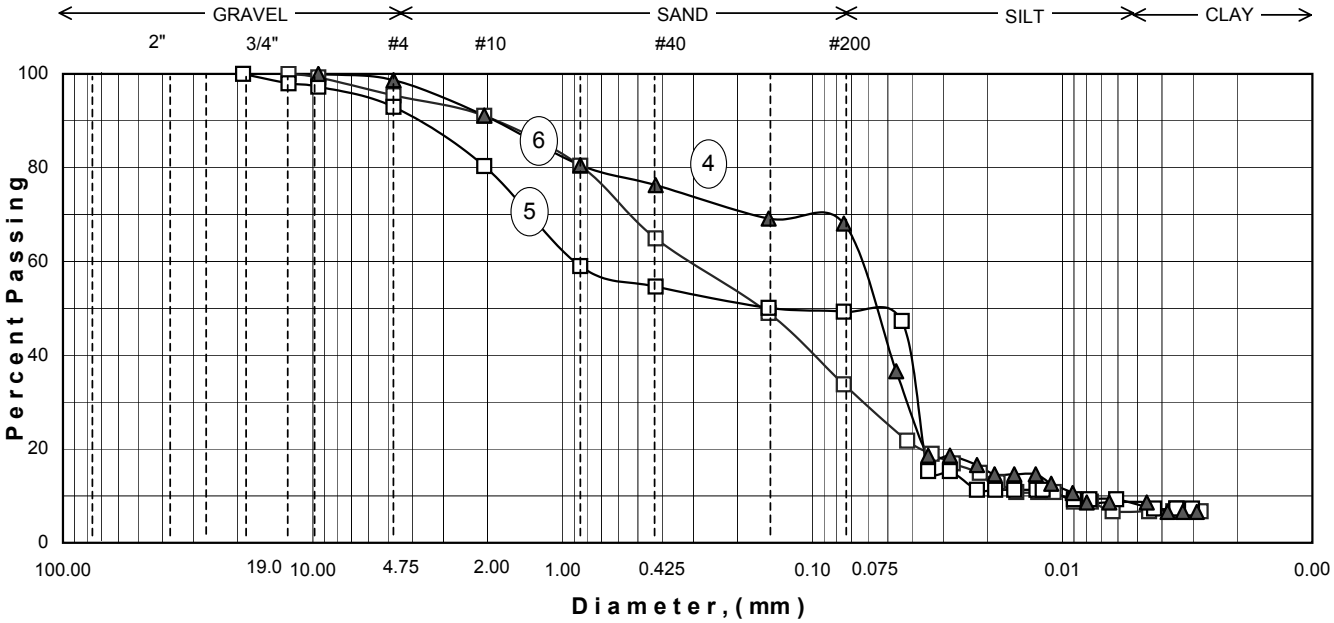
BORING NO.: **SL-1-1**
FINAL DEPTH: **15.00 m.**
GWT: **3.00 m.**
ELEVATION: **40.00 m,**
DATE STARTED: **Feb. 01, 2003**
DATE FINISHED: **Feb. 02, 2003**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray lahar SAND and SILT, non-plastic, with traces of gravel-size pyroclastic materials. (Rec: 45/25 cm.)	ss-10	Loose	SM-ML	9			Gs = 2.63
	Approximately change formation @ 11.00 m.				4			
11	(11.0-11.45 m) Dark gray SAND and CLAY, slightly plastic. (Rec: 45/45 cm.)	ss-11	Soft	SC-CL		H	5	
	Note: Sample degraded into SILT after oven drying in the laboratory							
12	(12.0-12.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/25 cm.)	ss-12	Loose	SM-ML	6			Gs = 2.63
13	(13.0-13.45 m) - same materials - (Rec: 45/35 cm.)	ss-13	Med. dense	*	13			
14	(14.0-14.45 m) Gray SILT, non-plastic, with traces of lahar sand and fine pyroclastic materials. (Rec: 45/30 cm.)	ss-14	Med. dense	ML	20			Gs = 2.67
15	(14.55-15.0 m) Gray SAND and SILT, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-15	Dense	*	34			
	Note: Water table @ 3.50 m. (02-01-03 @ 6:00 PM) and 3.00 m (02-02-03 @ 7:00 AM)							
16	***End of Borehole @ 15.00 m. depth***							
17	**Note:** *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
18								
19								
20								

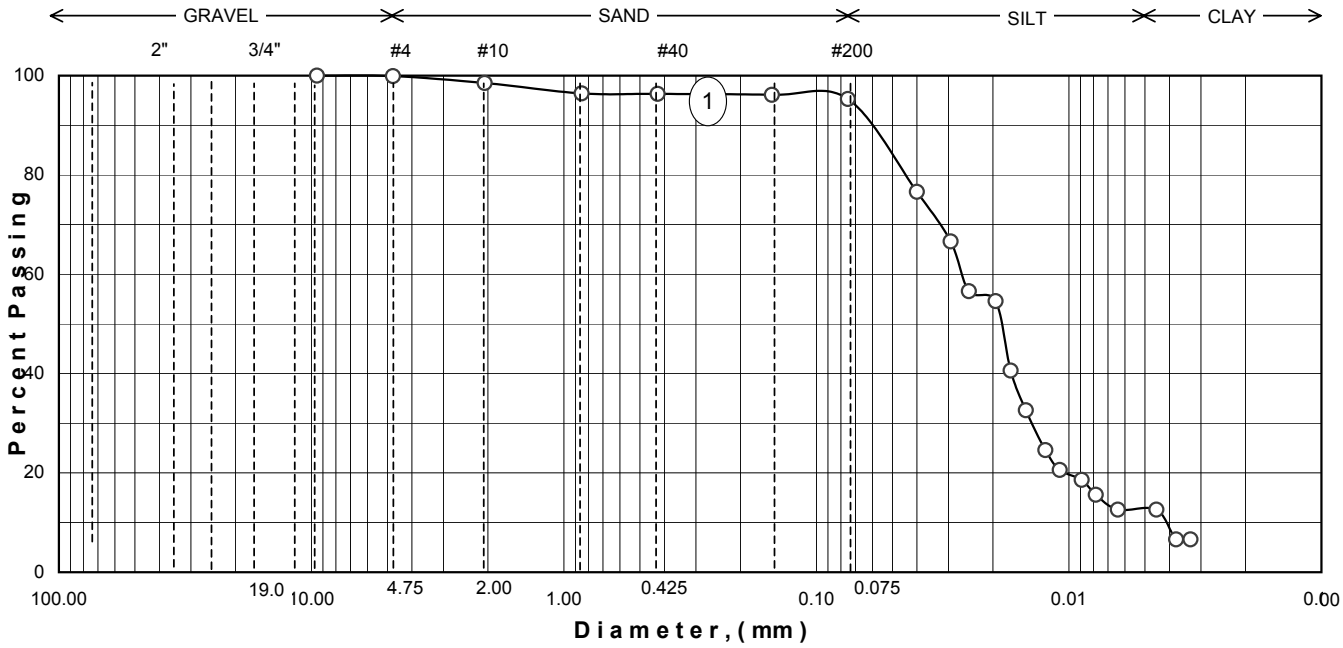
GRAIN-SIZE DISTRIBUTION CURVES

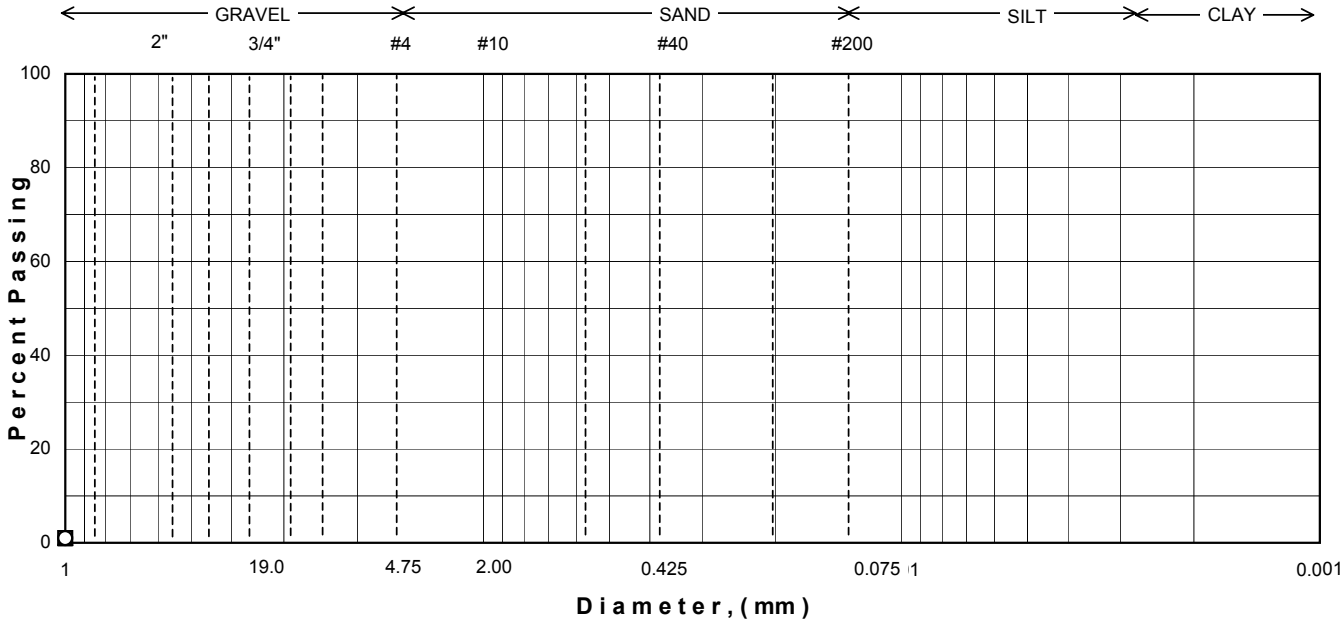




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-1	ss-2	2.00-2.45	1	19.90	NP	NP	NP	SM	Light gray lahar SAND
SL-1-1	ss-4	4.00-4.45	2	22.38	NP	NP	NP	SM	Light gray lahar SAND, with gravel-size pyroclastic materials
SL-1-1	ss-6	6.00-6.45	3	15.95	NP	NP	NP	SM	Brownish gray silty lahar SAND, non-plastic
SL-1-1	ss-8	8.00-8.45	4	17.70	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SL-1-1	ss-10	10.00-10.45	5	18.91	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-1-1	ss-11	11.00-11.45		-	24	19	5	SC-CL	Dark gray SAND and CLAY, slightly plastic
SL-1-1	ss-12	12.00-12.45	6	27.31	NP	NP	NP	SM-ML	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-1	ss-14	14.00-14.45	1	48.63	NP	NP	NP	ML	Gray SILT, non-plastic

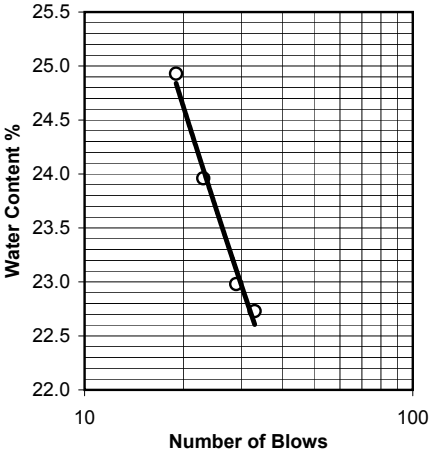
LIQUID AND PLASTIC LIMIT

(AASHTO T-89 & T-90)

Project	:	THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO
Location	:	Sto. Tomas River, San Narciso, Zambales
Tested by	:	S. Fernandez
Checked by	:	E. CRUZ - Materials Engineer
BOREHOLE NO.	:	SL-1-1

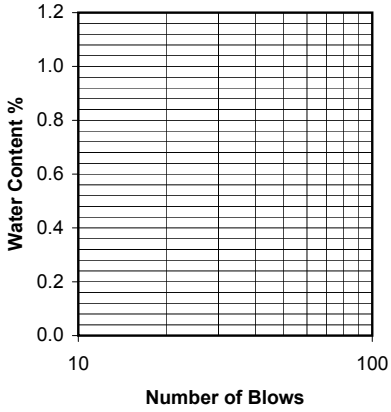
SAMPLE NO. ss-11 (11.00-11.45 m)

LIQUID LIMIT TEST			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1	33	22.73	1	19.42
2	29	22.98	2	19.49
3	23	23.96		
4	19	24.93		
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
24	19		5	
REMARKS:				



SAMPLE NO.

			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1			1	
2			2	
3				
4				
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
REMARKS:				



SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-1** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.30	175.34			175.80	175.50
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.84	156.80			157.25	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.54	11.46			11.45	11.50
Specific Gravity, Gs = Ws / Ww	2.60	2.62			2.62	2.61
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.59**	**2.61**			**2.61**	**2.60**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.63	175.19			176.00	175.90
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	156.39			157.08	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.17	11.20			11.08	11.10
Specific Gravity, Gs = Ws / Ww	2.69	2.68			2.71	2.70
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.68**	**2.67**			**2.70**	**2.69**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-1** DATE TESTED: **February 10, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.54	175.77			175.45	175.57
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.84	157.25			156.72	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.30	11.48			11.27	11.45
Specific Gravity, Gs = Ws / Ww	2.65	2.61			2.66	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.65**	**2.60**			**2.65**	**2.61**

Sample Number	ss-14					
Depth (m)	14.00-14.45					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.57	175.49				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.75	156.74				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.18	11.25				
Specific Gravity, Gs = Ws / Ww	2.68	2.67				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.67**	**2.66**				

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

BOREHOLE LOG

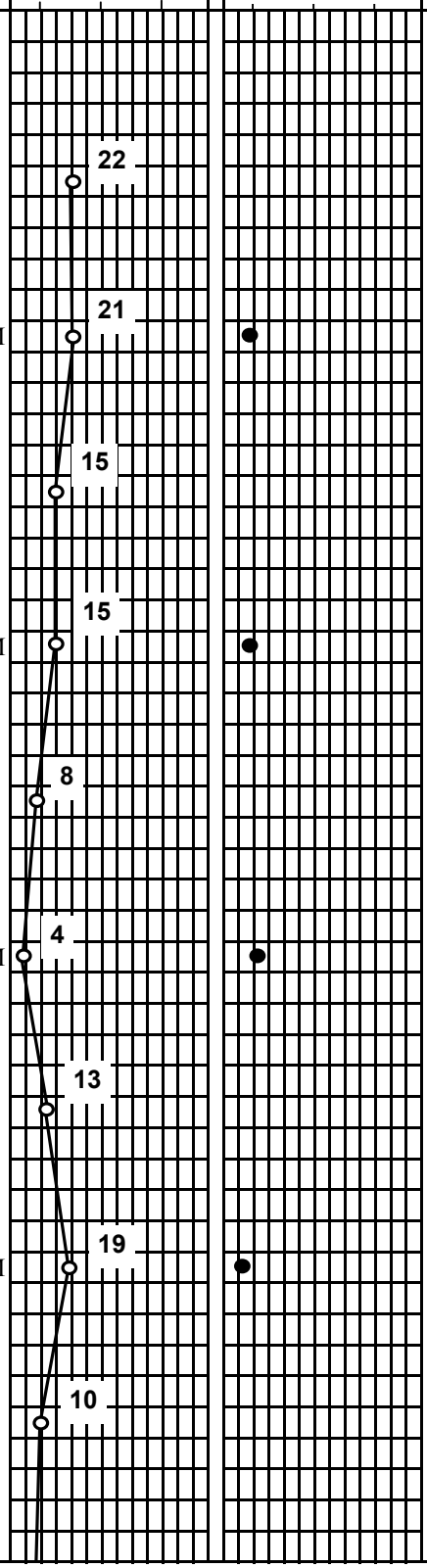
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-2**
FINAL DEPTH: **30.35 m.**
GWT: **5.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 28, 2003**
DATE FINISHED: **Jan. 31, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with with fine and coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Med. dense	*	22	
2	(2.0-2.45 m) Light gray lahar SAND, with non-plastic silt and traces of fine pyroclastic materials. (Rec: 45/45 cm.)	ss-2	Med. dense	SM	21	Gs = 2.52
3	(3.0-3.45 m) - same materials - (Rec: 45/30 cm.)	ss-3	Med. dense	*	15	
4	(4.0-4.45 m) - same materials - (Rec: 45/35 cm.)	ss-4	Med. dense	SM	15	Gs = 2.52
5	(5.0-5.45 m) - same materials - (Rec: 45/35 cm.)	ss-5	Loose	*	8	
6	(6.0-6.45 m) Light gray silty lahar SAND, with little amount of gravel-size pyroclastic materials. (Rec: 45/30 cm.)	ss-6	Loose	SM	4	Gs = 2.53
7	(7.0-7.45 m) Light gray to gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Med. dense	*	13	
8	(8.0-8.45 m) Brownish gray fine to coarse SAND, with gravel-size pyroclastic materials and little amount of non-plastic silt. (Rec: 45/25 cm.)	ss-8	Med. dense	SM	19	Gs = 2.67
9	(9.0-9.45 m) Gray lahar SAND, with some fine and coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-9	Loose	*	10	
10						



BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-2**
FINAL DEPTH: **30.35 m.**
GWT: **5.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 28, 2003**
DATE FINISHED: **Jan. 31, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE (REC.RATIO / R. Q. D)	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-10	Loose	SM-ML	8			Gs = 2.72
11	(11.0-11.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-11	Med. dense	*	14			
12	(12.0-12.45 m) - same materials - (Rec: 45/35 cm.)	ss-12	Med. dense	SM-ML	18			Gs = 2.74
13	(13.0-13.45 m) Brownish gray fine to medium-grained SAND, with little amount of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-13	Med. dense	*	11			
14	(14.0-14.45 m) Brownish gray fine to medium SAND and SILT, non-plastic, traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-14	Loose	SM-ML	10			Gs = 2.74
15	(15.0-15.45 m) Brownish gray SAND and SILT, slightly plastic, with traces of fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 5.50 m. (01-29-03 @ 7:00 AM)*	ss-15	Med. stiff	SM-ML	8	H	12	
16	(16.0-16.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-16	Med. dense	SM-ML	15			Gs = 2.55
17	(17.0-17.45 m) Gray SAND and SILT, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-17	Med. dense	*	13			
18	(18.0-18.45 m) Gray sandy SILT, non-plastic, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-18	Dense	ML	41			Gs = 2.66
19	(19.0-19.45 m) - same materials - (Rec: 45/30 cm.)	ss-19	Dense	*	34			
20								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-2**
FINAL DEPTH: **30.35 m.**
GWT: **5.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 28, 2003**
DATE FINISHED: **Jan. 31, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-20	Med. dense	SM-ML	13			Gs = 2.67
21	(21.0-21.45 m) - same materials - (Rec: 45/25 cm.)	ss-21	Dense	*	40			
22	(22.0-22.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-22	Dense	SM-ML	37			Gs = 2.74
23	(23.0-23.45 m) - same materials - (Rec: 45/25 cm.) *Note: Water table @ 5.75 m. (01-30-03 @ 7:00 AM)*	ss-23	Dense	*	35			
24	(24.0-24.45 m) - same materials - (Rec: 45/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-24	Dense	SM-ML	36			Gs = 2.74
25	(25.0-25.45 m) - same materials - (Rec: 45/30 cm.)	ss-25	Dense	*	35			
26	(26.0-26.45 m) Gray silty lahar SAND, non-plastic, with traces of fine gravel and fine pyroclastic materials. (Rec: 45/30 cm.)	ss-26	Very dense	SM	68			Gs = 2.73
27	(27.0-27.45 m) Gray lahar SAND, with gravel and some fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 5.00 m. (01-3103 @ 7:00 AM)*	ss-27	Very dense	*	61			
28	(28.0-28.4 m) - same materials - (Rec: 40/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-28	Very dense	SM-ML	60/25 cm.			Gs = 2.70
29	(29.0-29.35 m) - same materials - Rec: 35/35 cm.)	ss-29	Very dense	*	60/20 cm.			
30								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-2**
FINAL DEPTH: **30.35 m.**
GWT: **5.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 28, 2003**
DATE FINISHED: **Jan. 31, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.35 m) Gray lahar SAND, with some gravel and traces of fine pyroclastic materials. (Rec: 35/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.* *Note: Water table @ 5.50 m. (02-01-03 @ 7:00 AM)*	ss-30	Very dense	SM-ML	60/20 cm.			Gs = 2.76
31								
32								
	End of Borehole @ 30.35 m. depth							
33	**Note:** *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
34								
35								
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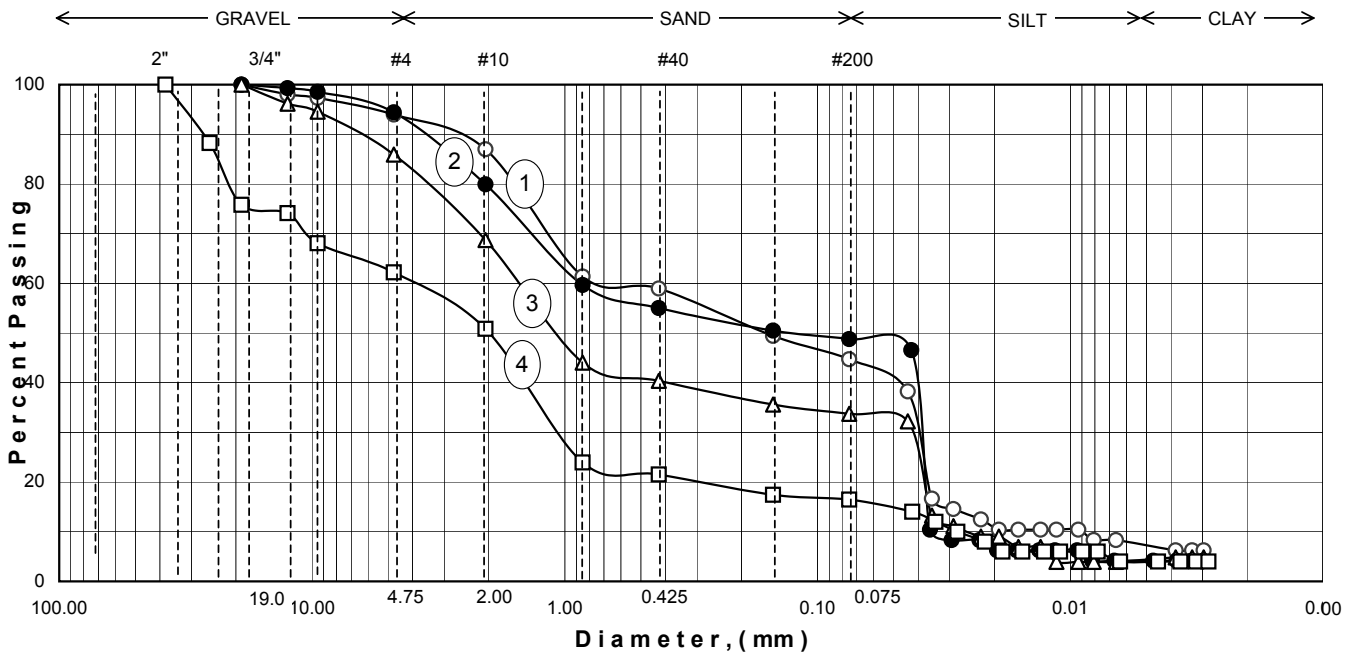
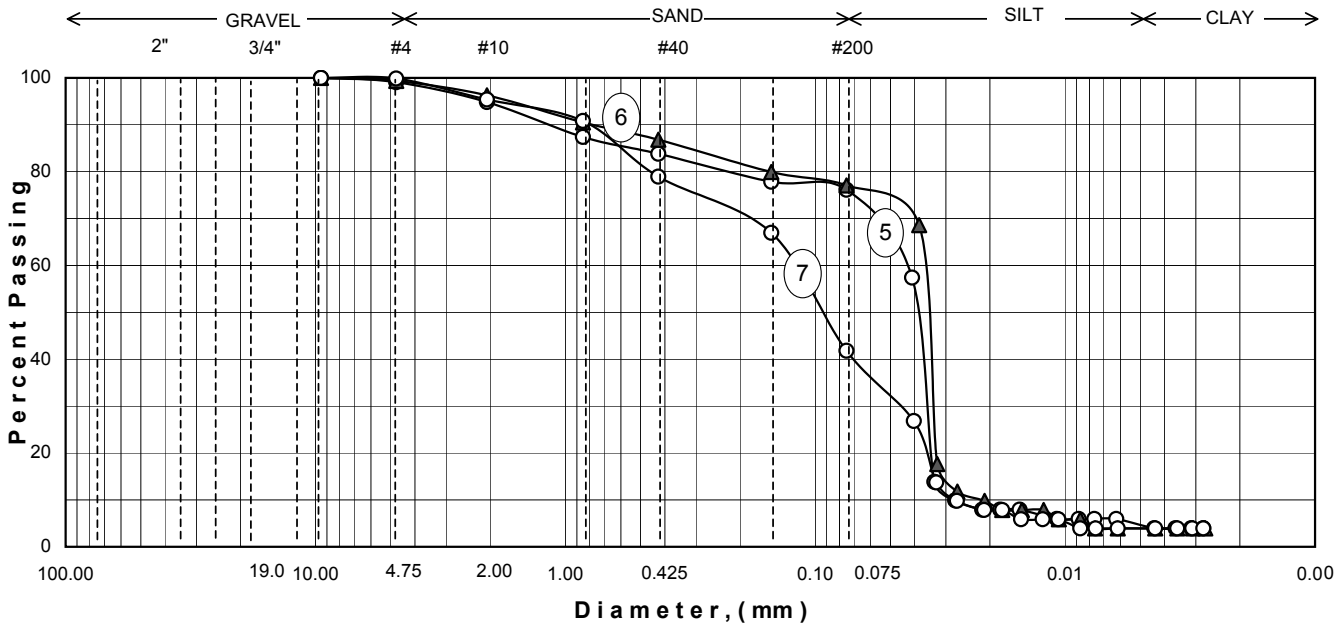
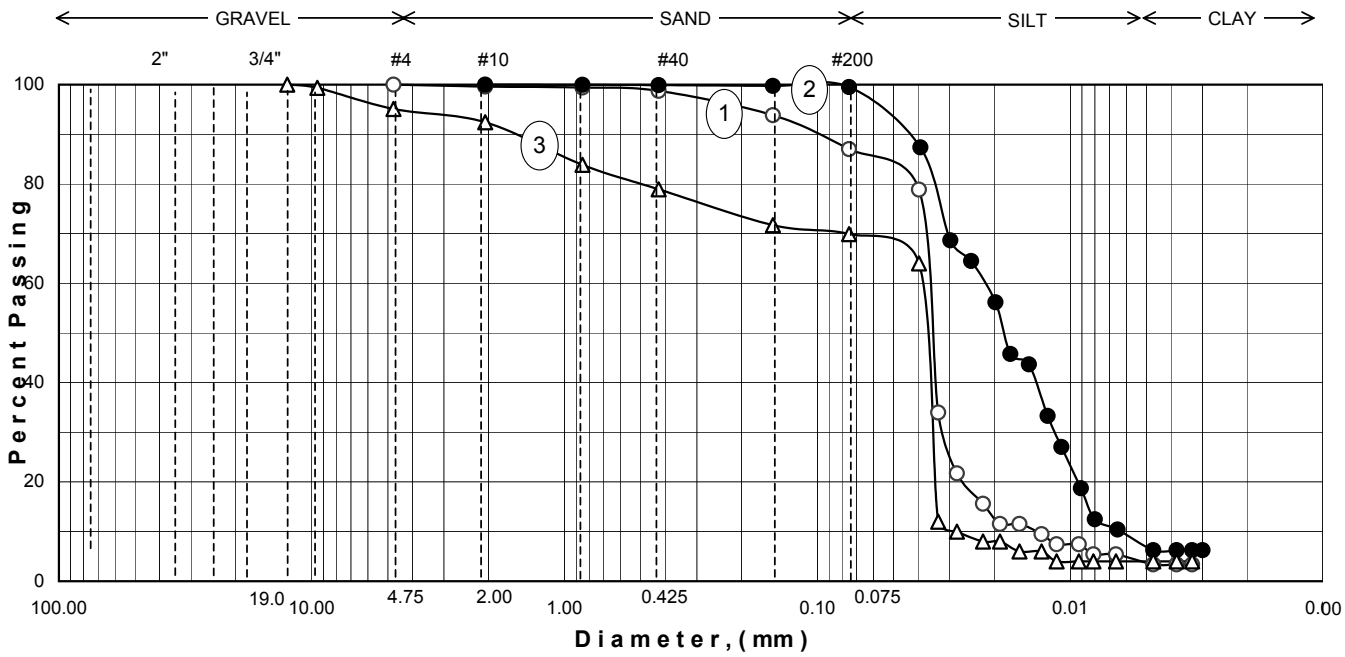
GRAIN-SIZE DISTRIBUTION CURVES

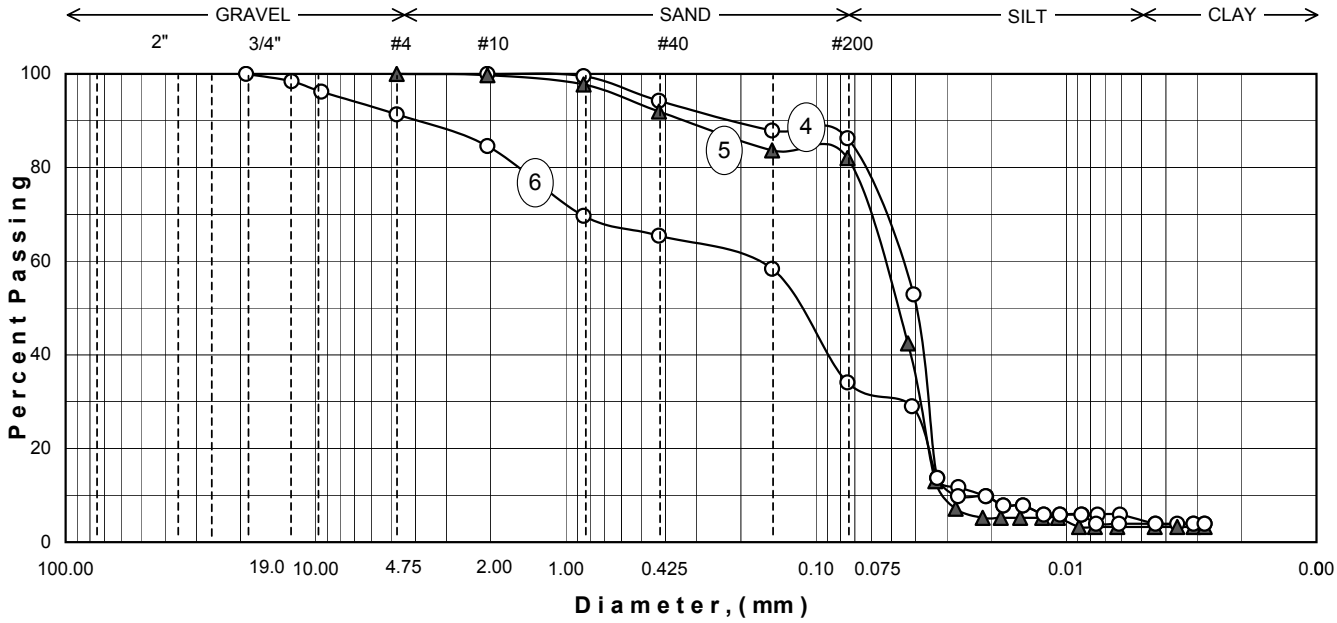




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-2	ss-2	2.00-2.45	1	18.15	NP	NP	NP	SM	Light gray lahar SAND, with non-plastic silt
SL-1-2	ss-4	4.00-4.45	2	18.49	NP	NP	NP	SM	Light gray lahar SAND, with non-plastic silt
SL-1-2	ss-6	6.00-6.45	3	22.44	NP	NP	NP	SM	Light gray silty lahar SAND
SL-1-2	ss-8	8.00-8.45	4	13.92	NP	NP	NP	SM	Brownish gray fine to coarse SAND, with gravel-size pyroclastic materials
SL-1-2	ss-10	10.00-10.45	5	22.96	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-12	12.00-12.45	6	17.81	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-14	14.00-14.45	7	23.20	NP	NP	NP	SM-ML	Brownish gray fine to medium SAND and SILT, non-plastic

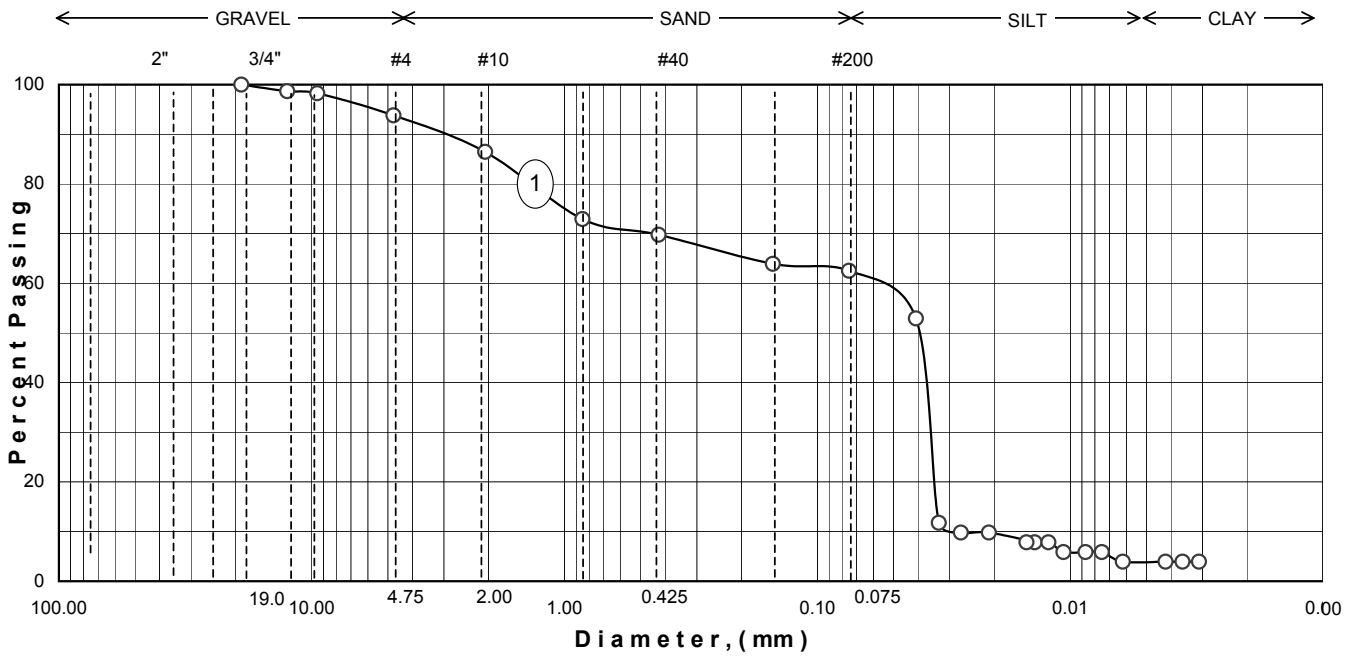
GRAIN-SIZE DISTRIBUTION CURVES

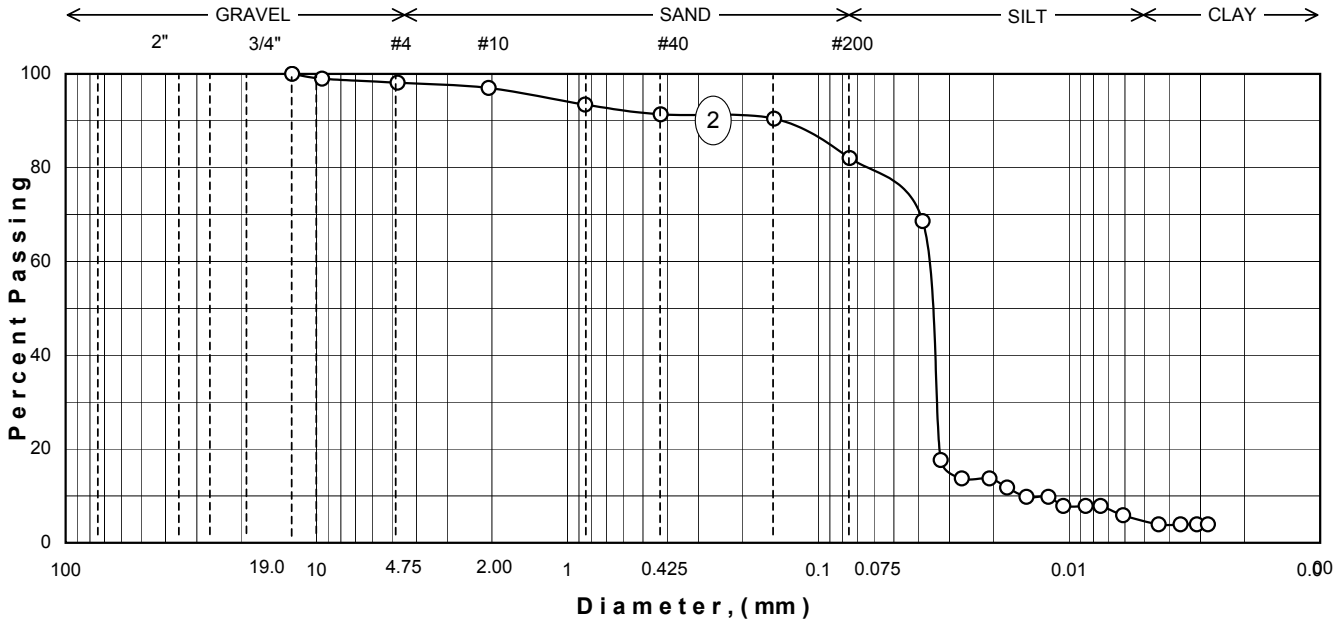




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-2	ss-15	15.00-15.45		-	43	31	12	SM-ML	Brownish gray SAND and SILT, slightly plastic
SL-1-2	ss-16	16.00-16.45	1	33.87	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-18	18.00-18.45	2	25.98	NP	NP	NP	ML	Gray sandy SILT, non-plastic
SL-1-2	ss-20	20.00-20.45	3	26.10	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-22	22.00-22.45	4	14.70	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-24	24.00-24.45	5	15.86	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-26	26.00-26.45	6	11.56	NP	NP	NP	SM	Gray silty lahar SAND, non-plastic

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-2	ss-28	28.00-28.40	1	16.46	NP	NP	NP	SM-ML	Gray lahar SAND
SL-1-2	ss-30	30.00-30.35	2	13.09	NP	NP	NP	SM-ML	Gray lahar SAND

LIQUID AND PLASTIC LIMIT

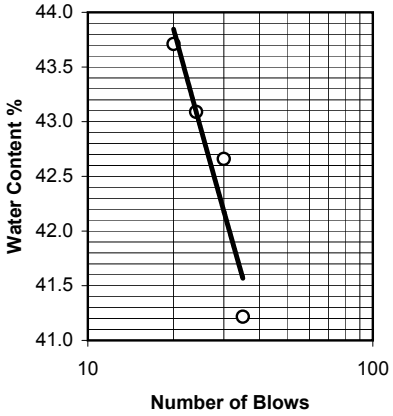
(AASHTO T-89 & T-90)

Project	:	THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO
Location	:	Sto. Tomas River, San Narciso, Zambales
Tested by	:	S. Fernandez
Checked by	:	E. CRUZ - Materials Engineer
BOREHOLE NO.	:	SL-1-2

SAMPLE NO. ss-15 (15.00-15.45 m)

LIQUID LIMIT TEST			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1	35	41.23	1	30.16
2	30	42.66	2	31.15
3	24	43.09		
4	20	43.71		
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
43	31		12	

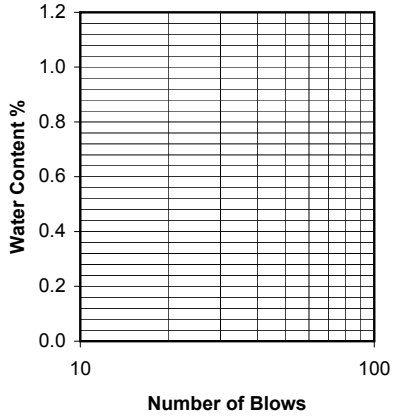
REMARKS:



SAMPLE NO.

			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1			1	
2			2	
3				
4				
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	

REMARKS:



SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-2** DATE TESTED: **February 12, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.09	174.91			174.89	174.55
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	156.72			156.80	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.93	11.81			11.91	11.84
Specific Gravity, Gs = Ws / Ww	2.51	2.54			2.52	2.53
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.51**	**2.53**			**2.51**	**2.52**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.88	174.96			175.10	175.83
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	156.70			156.39	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.92	11.74			11.29	11.17
Specific Gravity, Gs = Ws / Ww	2.52	2.56			2.66	2.69
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.51**	**2.55**			**2.65**	**2.68**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-2** DATE TESTED: **February 12, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.21	175.75			176.05	175.84
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	157.25	156.74			157.00	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.04	10.99			10.95	10.91
Specific Gravity, Gs = Ws / Ww	2.72	2.73			2.74	2.75
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.71**	**2.72**			**2.73**	**2.74**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.06	175.88			175.46	174.98
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	157.00	156.80			157.25	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.94	10.92			11.79	11.72
Specific Gravity, Gs = Ws / Ww	2.74	2.75			2.54	2.56
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.73**	**2.74**			**2.54**	**2.55**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-1-2** DATE TESTED: **February 12, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 4**

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.51	175.85			175.54	175.15
Temperature, ^{o}C	28	28			29	29
Wt. of Flask + Water = Wbw	156.74	157.08			156.74	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.23	11.23			11.20	11.24
Specific Gravity, Gs = Ws / Ww	2.67	2.67			2.68	2.67
Viscosity Correction	0.9963	0.9963			0.9960	0.9960
Specific Gravity corrected for Temp.	**2.66**	**2.66**			**2.67**	**2.66**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.84	176.05			175.89	175.85
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	156.72	157.02			156.84	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.88	10.97			10.95	10.90
Specific Gravity, Gs = Ws / Ww	2.76	2.73			2.74	2.75
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.75**	**2.72**			**2.73**	**2.74**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water .

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-2** DATE TESTED: **February 12, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.40	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.12	175.72			176.16	175.58
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	156.70			157.25	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.96	10.98			11.09	11.12
Specific Gravity, Gs = Ws / Ww	2.74	2.73			2.71	2.70
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.73**	**2.72**			**2.70**	**2.69**

Sample Number	ss-30					
Depth (m)	30.00-30.35					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.97	175.91				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.84	156.75				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	10.87	10.84				
Specific Gravity, Gs = Ws / Ww	2.76	2.77				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.75**	**2.76**				

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-1-3**
FINAL DEPTH: **15.00 m.**
GWT: **2.85 m.**
ELEVATION: **39.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 04, 2003**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with with fine to coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Med. dense	*	14			
2	(2.0-2.45 m) Light gray gravel-size PYROCLASTIC materials and lahar SAND, with non-plastic silt. (Rec: 45/45 cm.)	ss-2	Med. dense	GM-SM	14			Gs = 2.70
3	(3.0-3.45 m) - same materials - (Rec: 45/35 cm.)	ss-3	Med. dense	*	16			
4	(4.0-4.45 m) Light gray silty lahar SAND, with little amount of gravel-size pyroclastic materials. (Rec: 45/45 cm.)	ss-4	Med. dense	SM	15			Gs = 2.55
5	(5.0-5.45 m) - same materials - (Rec: 45/20 cm.)	ss-5	Loose	*	9			
6	(6.0-6.45 m) Light gray lahar SAND and SILT, non-plastic, with traces of fine pyroclastic materials. (Rec: 45/25 cm.)	ss-6	Loose	SM-ML	6			Gs = 2.69
7	(7.0-7.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/25 cm.)	ss-7	Loose	*	6			
8	(8.0-8.45 m) Light gray silty lahar SAND, non-plastic, with traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-8	Loose	SM	8			Gs = 2.64
9	(9.0-9.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-9	Med. dense	*	16			
10								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

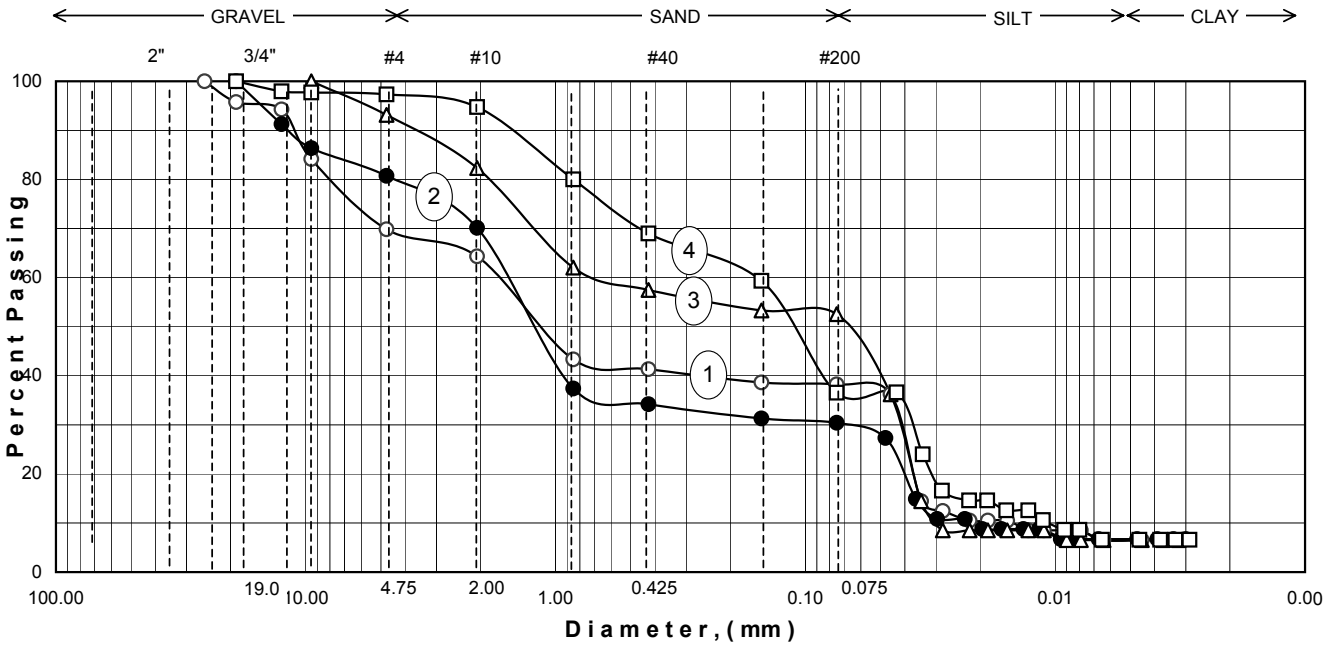
LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

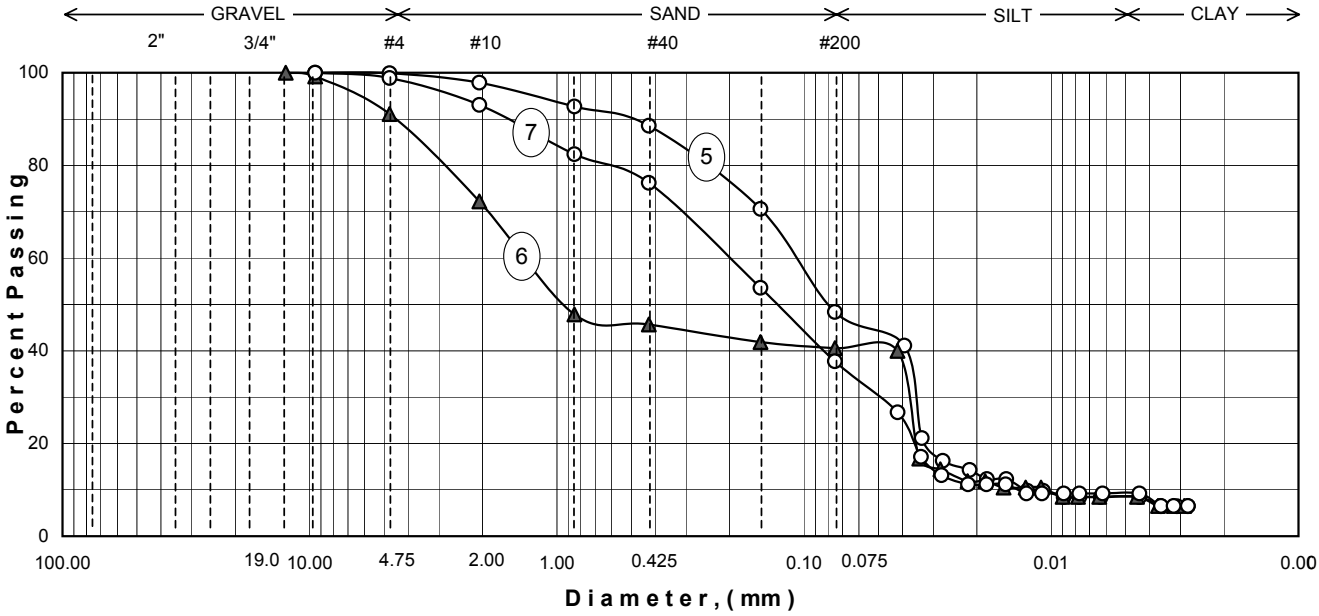
BORING NO.: **SL-1-3**
FINAL DEPTH: **15.00 m.**
GWT: **2.85 m.**
ELEVATION: **39.00 m.**
DATE STARTED: **Feb. 03, 2003**
DATE FINISHED: **Feb. 04, 2003**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray lahar SAND, with non-plastic silt, with traces of fine pyroclastic materials. (Rec: 45/20 cm.)	ss-10	Med. dense	SM	18			Gs = 2.73
11	(11.0-11.45 m) - same materials - (Rec: 45/35 cm.)	ss-11	Med. dense	*	20			
12	(12.0-12.45 m) Light gray lahar SAND, with non-plastic silt and traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-12	Med. dense	SM	17			Gs = 2.68
13	(13.0-13.45 m) - same materials - (Rec: 45/35 cm.)	ss-13	Med. dense	*	19			
14	(14.0-14.45 m) Light gray silty lahar SAND, non-plastic, with fine to medium sand and traces pyroclastic materials. (Rec: 45/25 cm.)	ss-14	Med. dense	SM	21			Gs = 2.69
15	(14.55-15.0 m) Gray SAND and SILT, non-plastic, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-15	Med. dense	*	17		NP	No plasticity
	Note: Water table @ 2.85 m. (02-04-03 @ 7:00 AM)							
16	***End of Borehole @ 15.00 m. depth***							
	Note:							
	*** - - - - - - - - - - Visual Description**							
17	**Drilling Machine - - - - - - - - - - TONE - TDC**							
	Size of Casing - - - - - - - - - - 76 mm.							
18								
19								
20								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-1-3	ss-2	2.00-2.45	1	4.48	NP	NP	NP	GM-SM	Light gray gravel-size PYROCLASTIC materials and lahar SAND
SL-1-3	ss-4	4.00-4.45	2	9.12	NP	NP	NP	SM	Light gray silty lahar SAND
SL-1-3	ss-6	6.00-6.45	3	7.52	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-1-3	ss-8	8.00-8.45	4	10.08	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SL-1-3	ss-10	10.00-10.45	5	7.06	NP	NP	NP	SM	Light gray lahar SAND, with non-plastic silt
SL-1-3	ss-12	12.00-12.45	6	8.13	NP	NP	NP	SM	Light gray lahar SAND, with non-plastic silt
SL-1-3	ss-14	14.00-14.45	7	15.22	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-2** DATE TESTED: **February 10, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.99	176.18			175.10	175.15
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	157.25			156.72	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.09	11.07			11.62	11.87
Specific Gravity, Gs = Ws / Ww	2.71	2.71			2.58	2.53
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.70**	**2.70**			**2.57**	**2.52**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.89	175.65			175.05	175.64
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	156.72			156.39	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.19	11.07			11.34	11.38
Specific Gravity, Gs = Ws / Ww	2.68	2.71			2.65	2.64
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.70**			**2.64**	**2.63**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Narciso, Zambales** BORING NO.: **SL-1-3** DATE TESTED: **February 10, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.74	175.81			175.85	175.25
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	156.70	156.74			157.00	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.96	10.93			11.15	11.14
Specific Gravity, Gs = Ws / Ww	2.74	2.74			2.69	2.69
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.73**	**2.73**			**2.68**	**2.68**

Sample Number	ss-14					
Depth (m)	14.00-14.45					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.50	175.73				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.70	156.80				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.20	11.07				
Specific Gravity, Gs = Ws / Ww	2.68	2.71				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.67**	**2.70**				

Remarks:

BOREHOLE LOG

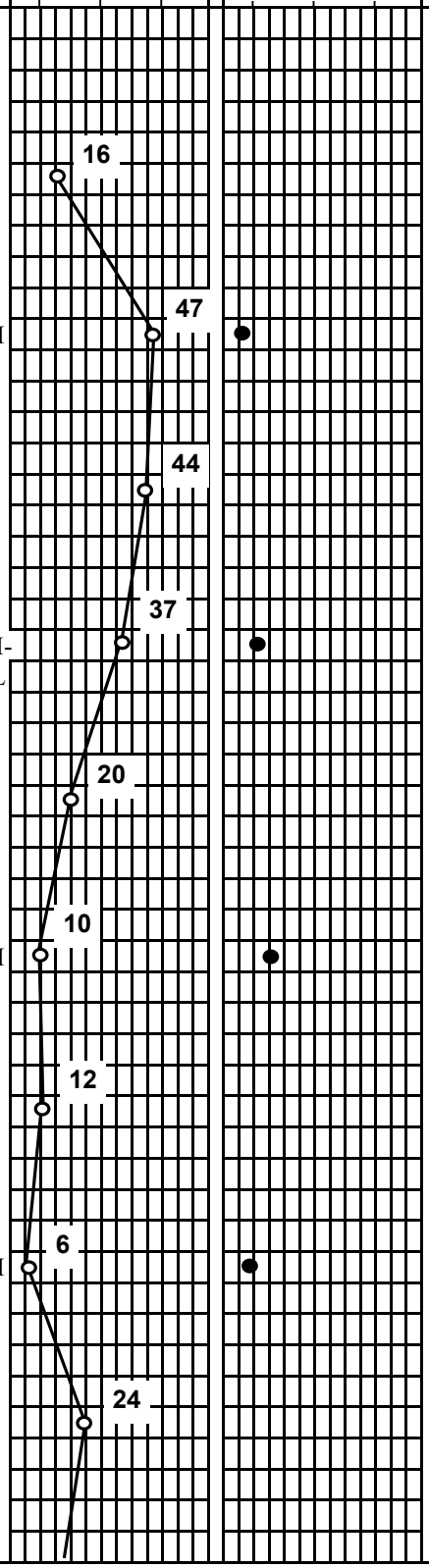
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 25, 2003**
DATE FINISHED: **Jan. 28, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Brown fine to coarse SAND, with little amount of silt. (Rec: 45/35 cm.)	ss-1	Med. dense	*	16			
2	(2.0-2.45 m) Brownish gray lahar SAND, with fine pyroclastic materials and some non-plastic silt. (Rec: 45/35 cm.)	ss-2	Dense	SM	47			Gs = 2.60
3	(3.0-3.45 m) Light gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.)	ss-3	Dense	*	44			
4	(4.0-4.45 m) Light gray lahar SAND and SILT, non-plastic, with little amount of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-4	Dense	SM-ML	37			Gs = 2.52
5	(5.0-5.45 m) Light gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/25 cm.)	ss-5	Med. dense	*	20			
6	(6.0-6.45 m) Light gray silty lahar SAND, non-plastic, with traces of fine pyroclastic materials. (Rec: 45/30 cm.)	ss-6	Med. dense	SM	10			Gs = 2.52
7	(7.0-7.45 m) Light gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Med. dense	*	12			
8	(8.0-8.45 m) Light gray to gray silty lahar SAND, non-plastic, with some fine pyroclastic materials. (Rec: 45/35 cm.)	ss-8	Loose	SM	6			Gs = 2.70
9	(9.0-9.45 m) Light gray lahar SAND, with gravel-size pyroclastic materials. (Rec: 45/20 cm.)	ss-9	Med. dense	*	24			
10								



BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 25, 2003**
DATE FINISHED: **Jan. 28, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray gravel-size PYROCLASTIC materials, with fine sand and little amount of non-plastic silt. (Rec: 45/20 cm.)	ss-10	Med. dense	GM	14			Gs = 2.74
11	(11.0-11.45 m) Light gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/10 cm.)	ss-11	Med. dense	*	13			
12	(12.0-12.45 m) Light gray sand / gravel-size PYROCLASTIC materials, with little amount of non-plastic silt. (Rec: 45/25 cm.) *Note: Water table @ 7.00 m. (01-26-03 @ 7:00 AM)*	ss-12	Loose	GM-SM	5			Gs = 2.70
13	(13.0-13.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.)	ss-13	Loose	SM	5		NP	No Plasticity
14	(14.0-14.45 m) Gray gravelly lahar SAND, with little amount of non-plastic silt. (Rec: 45/10 cm.)	ss-14	Med. dense	SM	12			Gs = 2.62
15	(15.0-15.45 m) Gray lahar SAND, with some fine pyroclastic materials and gravel. (Rec: 45/30 cm.)	ss-15	Loose	*	5			
16	(16.0-16.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into sandy SILT after oven drying.*	ss-16	Loose	SM-ML	7			Gs = 2.58
17	(17.0-17.45 m) Gray elastic SILT, high plastic, with traces of fine sand. (Rec: 45/40 cm.)	ss-17	Soft	MH	3		30	
18	(18.0-18.45 m) Gray fine LAHAR, with little amount of fine sand and traces of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-18	Med. dense	ML	19			Gs = 2.58
19	(19.0-19.45 m) - same materials - (Rec: 45/30 cm.)	ss-19	Med. dense	*	25			
20								

BOREHOLE LOG

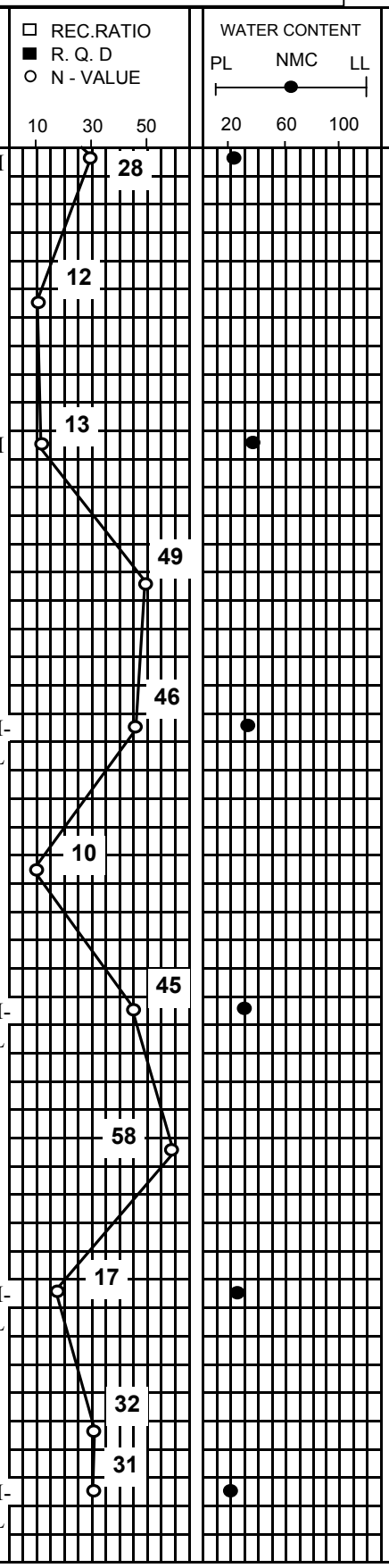
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

BORING NO.: **SL-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 25, 2003**
DATE FINISHED: **Jan. 28, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	OTHER TEST RESULTS
	(20.0-20.45 m) Gray fine SAND, with some non-plastic silt and traces of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-20	Med. dense	SM	Gs = 2.77
21	(21.0-21.45 m) - same materials - (Rec: 45/30 cm.)	ss-21	Med. dense	*	
22	(22.0-22.45 m) Gray silty fine SAND, non-plastic, with traces of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-22	Med. dense	SM	Gs = 2.67
23	(23.0-23.45 m) - same materials - (Rec: 45/30 cm.) *Note: Water table @ 7.50 m. (01-27-03 @ 7:00 AM)*	ss-23	Dense	*	
24	(24.0-24.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-24	Dense	SM-ML	Gs = 2.66
25	(25.0-25.45 m) Gray silty SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.)	ss-25	Med. dense	*	
26	(26.0-26.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-26	Dense	SM-ML	Gs = 2.54
27	(27.0-27.45 m) - same materials - (Rec: 45/25 cm.)	ss-27	Very dense	*	
28	(28.0-28.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-28	Med. dense	SM-ML	Gs = 2.77
29	(29.0-29.45 m) - same materials - Rec: 45/35 cm.)	ss-29	Dense	*	
	(29.55-30.0 m) - same materials - (Rec: 45/30 cm.)	ss-30	Dense	SM-ML	Gs = 2.68
30	(Rec: 45/35 cm.)				



P.I.

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

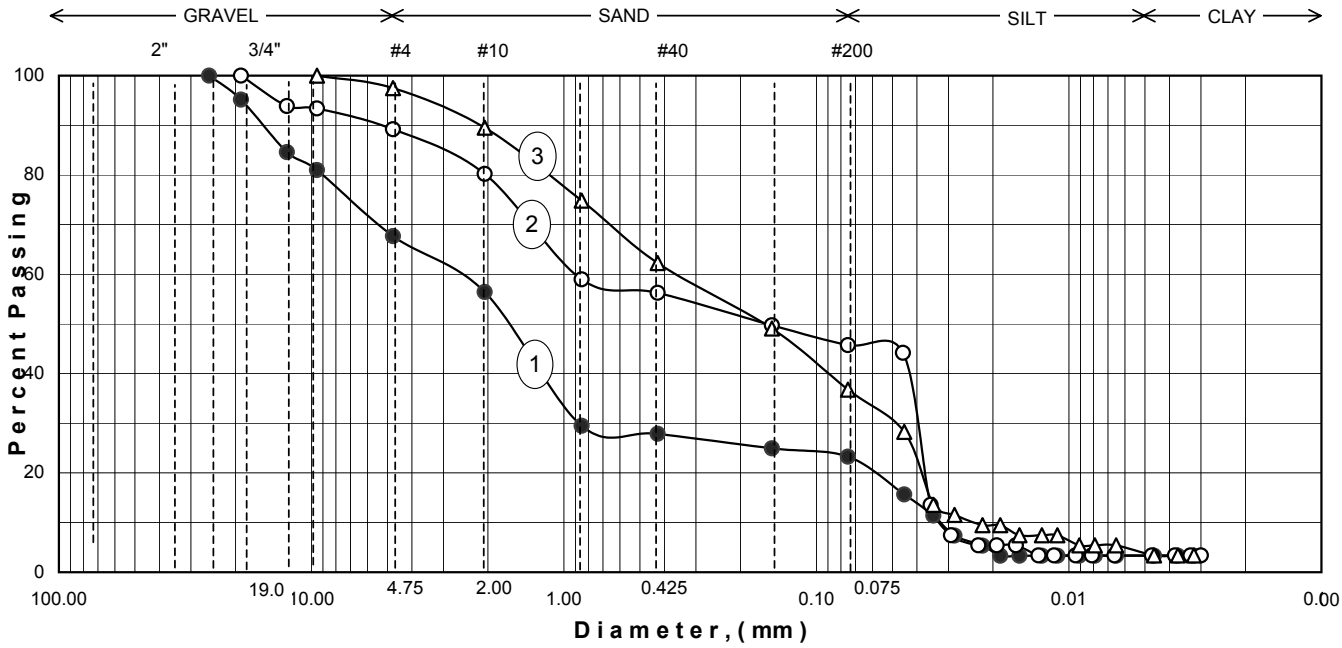
LOCATION : ***Sto. Tomas River, San Narciso, Zambales***

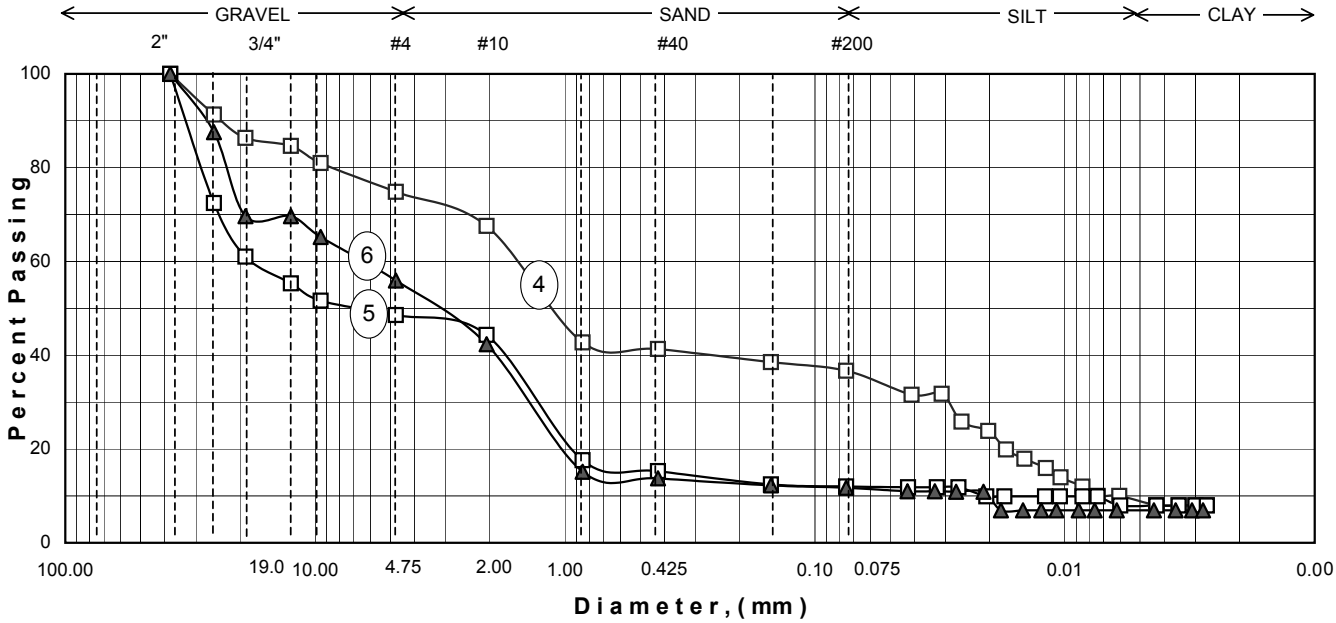
BORING NO.: **SL-2**
FINAL DEPTH: **30.00 m.**
GWT: **8.00 m.**
ELEVATION: **43.00 m.**
DATE STARTED: **Jan. 25, 2003**
DATE FINISHED: **Jan. 28, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: Sample became friable and degraded into SILT after oven drying.							
	Note: Water table @ 8.00 m. (01-28-03 @ 7:00 PM)							
31								
	End of Borehole @ 30.00 m. depth							
32	**Note:**							
	*** - - - - - - - - - - Visual Description**							
	Drilling Machine - - - - - - - - - - TONE - TDC							
	Size of Casing - - - - - - - - - - 76 mm.							
33								
34								
35								
36								
37								
38								
39								
40								

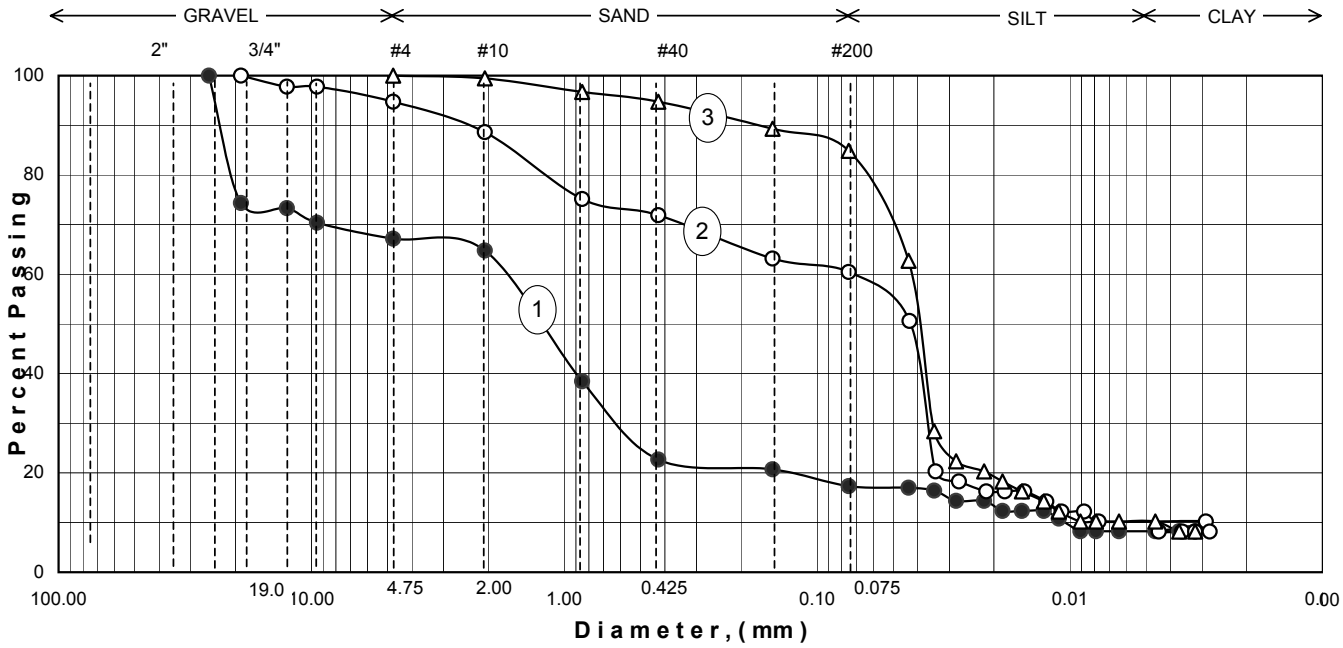
GRAIN-SIZE DISTRIBUTION CURVES

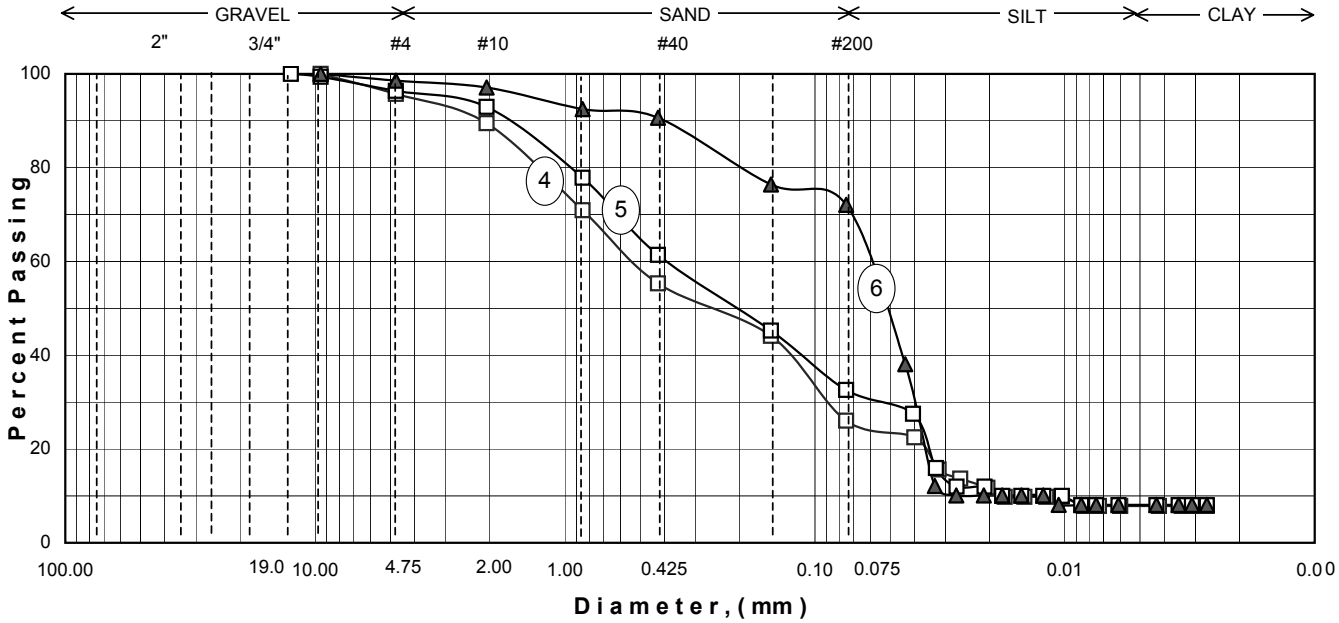




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-2	ss-2	2.00-2.45	1	13.04	NP	NP	NP	SM	Brownish gray lahar SAND, with fine pyroclastic materials
SL-2	ss-4	4.00-4.45	2	22.99	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-2	ss-6	6.00-6.45	3	30.76	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SL-2	ss-8	8.00-8.45	4	18.77	NP	NP	NP	SM	Light gray to gray silty lahar SAND, non-plastic
SL-2	ss-10	10.00-10.45	5	12.22	NP	NP	NP	GM	Light gray gravel-size PYROCLASTIC materials, with fine sand
SL-2	ss-12	12.00-12.45	6	13.11	NP	NP	NP	GM-SM	Light gray sand/gravel-size PYROCLASTIC materials
SL-2	ss-13	13.00-13.45		-	NP	NP	NP	SM	Gray lahar SAND, non-plastic

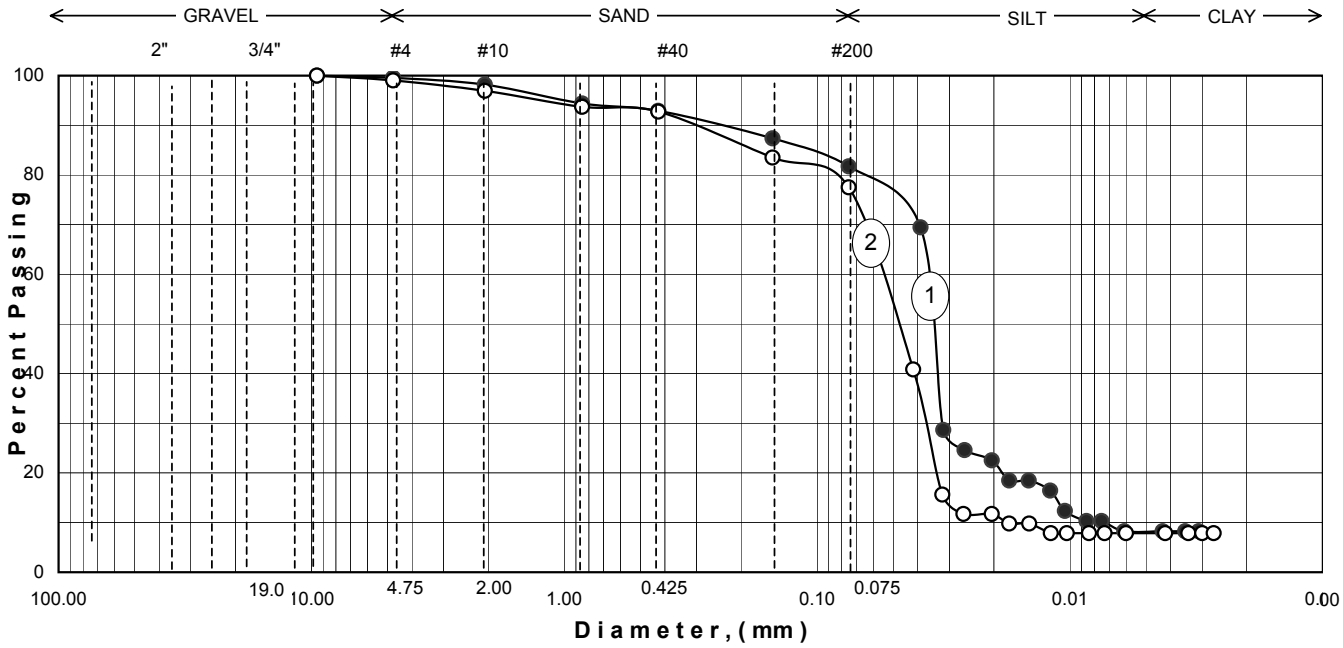
GRAIN-SIZE DISTRIBUTION CURVES

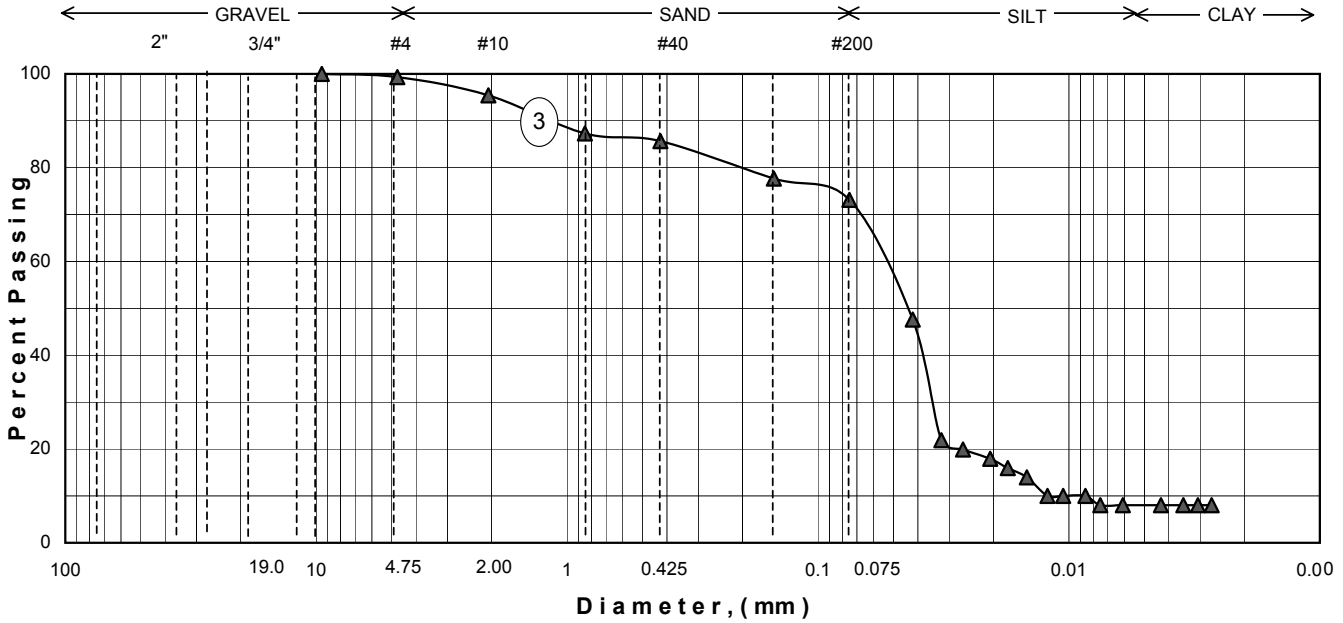




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-2	ss-14	14.00-14.45	1	20.26	NP	NP	NP	SM	Gray gravelly lahar SAND
SL-2	ss-16	16.00-16.45	2	35.09	NP	NP	NP	SM-ML	Gray lahar SAND
SL-2	ss-17	17.00-17.45		-	66	36	30	MH	Gray elastic SILT, high plastic
SL-2	ss-18	18.00-18.45	3	31.14	NP	NP	NP	ML	Gray fine LAHAR
SL-2	ss-20	20.00-20.45	4	23.06	NP	NP	NP	SM	Gray fine SAND
SL-2	ss-22	22.00-22.45	5	37.26	NP	NP	NP	SM	Gray silty fine SAND, non-plastic
SL-2	ss-24	24.00-24.45	6	31.81	NP	NP	NP	SM-ML	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-2	ss-26	26.00-26.45	1	30.17	NP	NP	NP	SM-ML	Gray lahar SAND
SL-2	ss-28	28.00-28.45	2	25.71	NP	NP	NP	SM-ML	Gray lahar SAND
SL-2	ss-30	29.55-30.00	3	19.87	NP	NP	NP	SM-ML	Gray lahar SAND

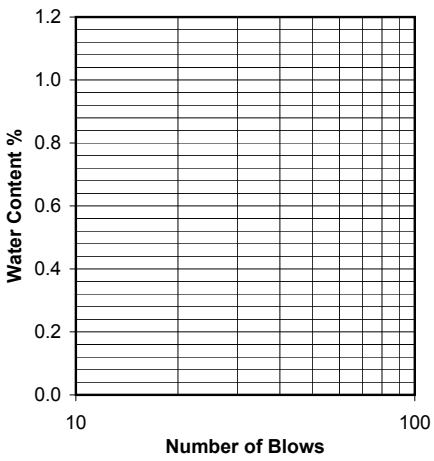
LIQUID AND PLASTIC LIMIT

(AASHTO T-89 & T-90)

Project	:	THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO
Location	:	Sto. Tomas River, San Narciso, Zambales
Tested by	:	S. Fernandez
Checked by	:	E. CRUZ - Materials Engineer
BOREHOLE NO.	:	SL-2

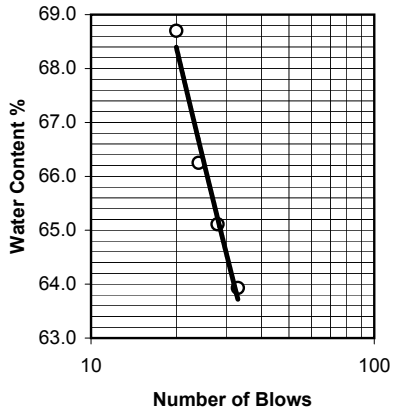
SAMPLE NO. ss-13 (13.00-13.45 m)

LIQUID LIMIT TEST			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1			1	
2	No. Plasticity		2	
3				
4				
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
REMARKS:				



SAMPLE NO. ss-17 (17.00-17.45 m)

			PLASTIC LIMIT TEST	
Run No.	No. of Blows	Water Content	Run No.	Water Content
1	33	63.93	1	36.40
2	28	65.11	2	36.59
3	24	66.25		
4	20	68.70		
Liquid Limit (%)	*Plastic Limit (%)*		*Plasticity Index (%)*	
66	36		30	
REMARKS:				



SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-2** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.54	175.53			174.80	174.84
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	157.02			156.72	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.54	11.49			11.92	11.86
Specific Gravity, Gs = Ws / Ww	2.60	2.61			2.52	2.53
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.59**	**2.60**			**2.51**	**2.52**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.97	175.28			175.92	175.67
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.75	157.25			157.00	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.78	11.97			11.08	11.07
Specific Gravity, Gs = Ws / Ww	2.55	2.51			2.71	2.71
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.54**	**2.50**			**2.70**	**2.70**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-2** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.87	175.73			175.62	175.67
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.72	156.70			156.70	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.85	10.97			11.08	11.05
Specific Gravity, Gs = Ws / Ww	2.76	2.73			2.71	2.71
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.75**	**2.72**			**2.70**	**2.70**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.02	175.22			175.22	175.33
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.39	156.70			156.74	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.37	11.48			11.52	11.69
Specific Gravity, Gs = Ws / Ww	2.64	2.61			2.60	2.57
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.63**	**2.60**			**2.59**	**2.56**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-2** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.42	175.12			176.24	176.04
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.00	156.75			157.08	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.58	11.63			10.84	10.80
Specific Gravity, Gs = Ws / Ww	2.59	2.58			2.77	2.78
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.58**	**2.57**			**2.76**	**2.77**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.96	175.64			175.53	175.65
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.25	156.75			156.80	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.29	11.11			11.27	11.19
Specific Gravity, Gs = Ws / Ww	2.66	2.70			2.66	2.68
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.65**	**2.69**			**2.65**	**2.67**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-2** DATE TESTED: **February 13, 2003** TESTED BY: **L. Padual** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.11	174.55			175.89	176.46
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	156.39			156.72	157.25
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.69	11.84			10.83	10.79
Specific Gravity, Gs = Ws / Ww	2.57	2.53			2.77	2.78
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.56**	**2.52**			**2.76**	**2.77**

Sample Number	ss-30					
Depth (m)	29.55-30.00					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.83	175.64				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	157.02	156.80				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.19	11.16				
Specific Gravity, Gs = Ws / Ww	2.68	2.69				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.67**	**2.68**				

Remarks:

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Sto. Tomas River, San Marcelino, Zambales**

BORING NO.: **SL-3**
FINAL DEPTH: **40.35 m.**
GWT: **5.50 m.**
ELEVATION: **59.00 m.**
DATE STARTED: **Jan. 22, 2003**
DATE FINISHED: **Jan. 27, 2003**
SHEET NO. **1 of 5**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with some coarse pyroclastic materials, (Rec: 45/30 cm.)	ss-1	Med. dense	*	18			
2	(2.0-2.45 m) Light gray lahar SAND and SILT, non-plastic, with little amount of fine to coarse pyroclastic materials. (Rec: 45/40 cm.)	ss-2	Med. dense	SM-ML	19			Gs = 2.39
3	(3.0-3.45 m) Light gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-3	Loose	*	5			
4	(4.0-4.45 m) Light gray lahar SAND, with gravel-size pyroclastic materials and some non-plastic silt. (Rec: 45/30 cm.)	ss-4	Loose	SM	4			Gs =2.55
5	(5.0-5.45 m) - same materials - (Rec: 45/30 cm.)	ss-5	Loose	*	4			
6	(6.0-6.45 m) Light gray lahar SAND, with gravel-size pyroclastic materials and non-plastic silt. (Rec: 45/20 cm.)	ss-6	Loose	SM	6			Gs = 2.53
7	(7.0-7.45 m) Light gray lahar SAND, with some fine and coarse pyroclastic materials. (Rec: 45/25 cm.)	ss-7	Med. dense	*	17			
8	(8.0-8.45 m) Light gray to gray lahar SAND, with some gravel-size pyroclastic materials. and non-plastic silt. (Rec: 45/40 cm.)	ss-8	Med. dense	SM	25			Gs = 2.74
9	(9.0-9.45 m) - same materials - (Rec: 45/40 cm.)	ss-9	Med. dense	*	18			
10								

BOREHOLE LOG

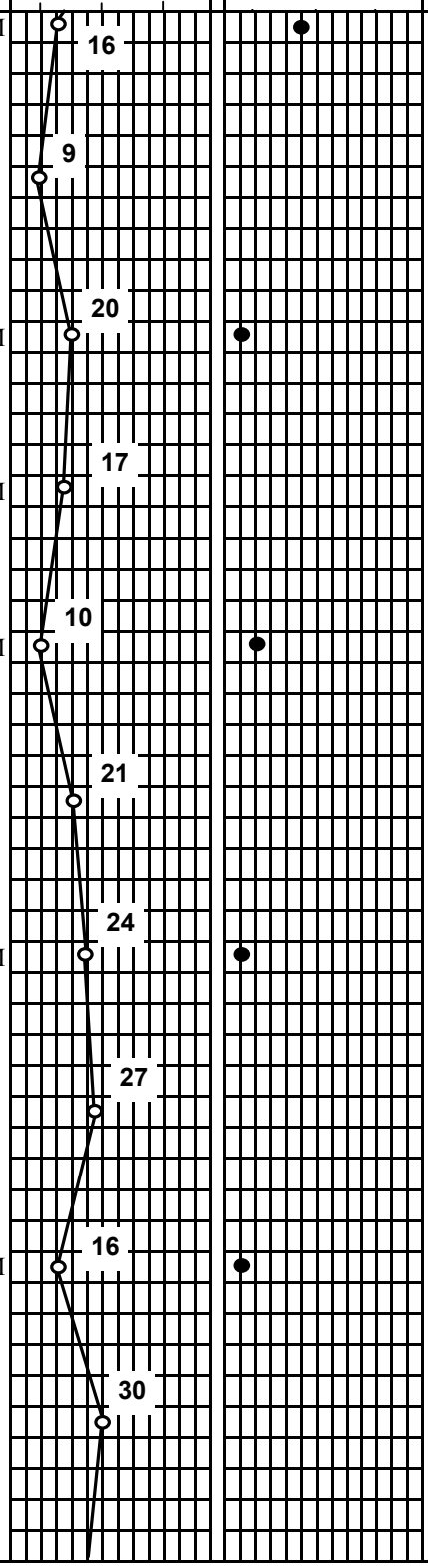
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Sto. Tomas River, San Marcelino, Zambales**

BORING NO.: **SL-3**
FINAL DEPTH: **40.35 m.**
GWT: **5.50 m.**
ELEVATION: **59.00 m.**
DATE STARTED: **Jan. 22, 2003**
DATE FINISHED: **Jan. 27, 2003**
SHEET NO. **2 of 5**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray to gray lahar SAND, with some fine pyroclastic materials and non-plastic silt. (Rec: 45/30 cm.)	ss-10	Med. dense	SM	16			Gs = 2.41
11	(11.0-11.45 m) - same materials - (Rec: 45/30 cm.) *Note: Water table @ 6.50 m. (01-22-03 @ 7:00 AM)*	ss-11	Loose	*	9			
12	(12.0-12.45 m) Brownish gray silty fine to coarse SAND, with some grave-size pyroclastic materials. (Rec: 45/40 cm.)	ss-12	Med. dense	SM	20			Gs = 2.71
13	(13.0-13.45 m) Brownish gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-13	Med. dense	SM	17		NP	No Plasticity
14	(14.0-14.45 m) Gray silty lahar SAND, non-plastic, with some fine pyroclastic materials. (Rec: 45/15 cm.)	ss-14	Med. dense	SM	10			Gs = 2.61
15	(15.0-15.45 m) gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/25 cm.)	ss-15	Med. dense	*	21			
16	(16.0-16.45 m) Brownish gray silty lahar SAND, non-plastic, with some fine pyroclastic materials. (Rec: 45/30 cm.)	ss-16	Med. dense	SM	24			Gs = 2.73
17	(17.0-17.45 m) Gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-17	Med. dense	*	27			
18	(18.0-18.45 m) Gray lahar SAND, with some non-plastic silt and little amount of fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-18	Med. dense	SM	16			Gs = 2.66
19	(19.0-19.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/35 cm.)	ss-19	Med. dense	*	30			
20								



BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Sto. Tomas River, San Marcelino, Zambales**

BORING NO.: **SL-3**
FINAL DEPTH: **40.35 m.**
GWT: **5.50 m.**
ELEVATION: **59.00 m.**
DATE STARTED: **Jan. 22, 2003**
DATE FINISHED: **Jan. 27, 2003**
SHEET NO. **3 of 5**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray lahar SAND, with fine pyroclastic materials and non-plastic silt. (Rec: 45/35 cm.)	ss-20	Med. dense	SM	20			Gs = 2.68
21	(21.0-21.45 m) - same materials - (Rec: 45/25 cm.)	ss-21	Med. dense	*	30			
22	(22.0-22.45 m) Gray lahar SAND and SILT, non-plastic, with little amount of fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 6.60 m. 01-23-03 @ 7:00 AM)*	ss-22	Med. dense	SM-ML	29			Gs = 2.79
23	(23.0-23.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-23	Dense	*	33			
24	(24.0-24.45 m) - same materials - (Rec: 45/30 cm.)	ss-24	Dense	SM-ML	33			Gs = 2.73
25	(25.0-25.45 m) - same materials - (Rec: 45/35 cm.)	ss-25	Med. dense	*	28			
26	(26.0-26.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-26	Dense	SM-ML	34			Gs = 2.73
27	(27.0-27.45 m) - same materials - (Rec: 45/20 cm.)	ss-27	Dense	*	37			
28	(28.0-28.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into sandy SILT after oven drying.*	ss-28	Dense	SM-ML	33			Gs = 2.70
29	(29.0-29.45 m) - same materials - Rec: 45/35 cm.) *Note: Water table @ 6.30 m. 01-24-03 @ 7:00 AM)*	ss-29	Dense	*	35			
30								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Sto. Tomas River, San Marcelino, Zambales**

BORING NO.: **SL-3**
FINAL DEPTH: **40.35 m.**
GWT: **5.50 m.**
ELEVATION: **59.00 m.**
DATE STARTED: **Jan. 22, 2003**
DATE FINISHED: **Jan. 27, 2003**
SHEET NO. **4 of 5**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) - same materials - (Rec: 45/40 cm.) *Note: Sample became friable and degraded into sandy SILT after oven drying.*	ss-30	Dense	SM-ML	40			Gs = 2.75
31	(31.0-31.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/15 cm.)	ss-31	Dense	*	31			
32	(32.0-32.45 m) Brownish gray lahar SAND and SILT, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/20 cm.)	ss-32	Med. dense	SM-ML	23			Gs = 2.52
33	(33.0-33.45 m) Brownish gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-33	Very dense	*	51			
34	(34.0-34.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-34	Dense	SM-ML	37			Gs = 2.73
35	(35.0-35.45 m) - same materials - (Rec: 45/30 cm.) *Note: Water table @ 6.20 m. 01-25-03 @ 7:00 AM)*	ss-35	Med. dense	*	28			
36	(36.0-36.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-36	Dense	SM-ML	36			Gs = 2.68
37	(37.0-37.45 m) Brownish gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/20 cm.)	ss-37	Dense	*	40			
38	(38.0-38.40 m) - same materials - (Rec: 40/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying.*	ss-38	Very dense	SM-ML	60/25 cm.			Gs = 2.65
39	(39.0-39.35 m) - same materials - Rec: 35/25 cm.)	ss-39	Very dense	*	60/20 cm.			
40								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Sto. Tomas River, San Marcelino, Zambales**

BORING NO.: **SL-3**
FINAL DEPTH: **40.35 m.**
GWT: **5.50 m.**
ELEVATION: **59.00 m.**
DATE STARTED: **Jan. 22, 2003**
DATE FINISHED: **Jan. 27, 2003**
SHEET NO. **5 of 5**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(40.00-40.35 m) Brownish gray lahar SAND, with some fine pyroclastic materials. (Rec: 35/30 cm.) *Note: Sample became friable and degraded into sandy SILT after oven drying.*	ss-40	Very dense	SM-ML	60/20 cm.			Gs = 2.68
41	*Note: Water table @ 6.00 m. (01-27-03 @ 1:00 PM) and 5.50 m (01-28-03 @ 7:00 AM)*							
42	***End of Borehole @ 40.35 m. Depth***							
43	**Note:** *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
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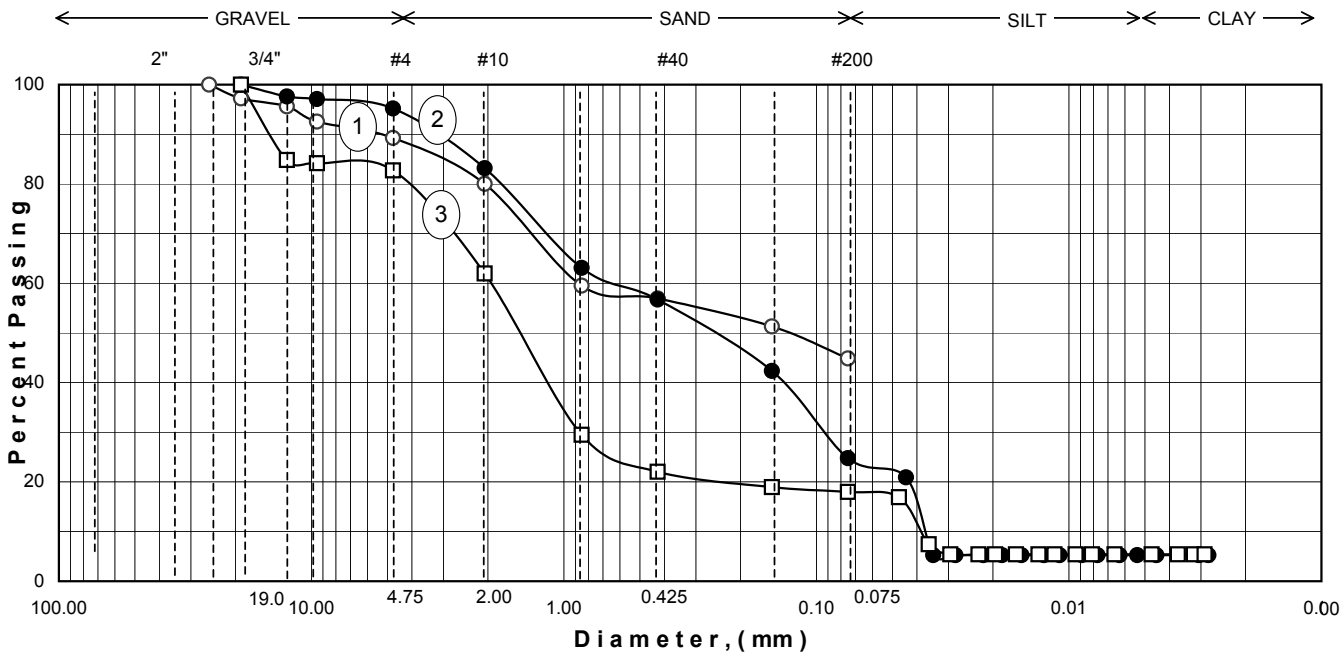
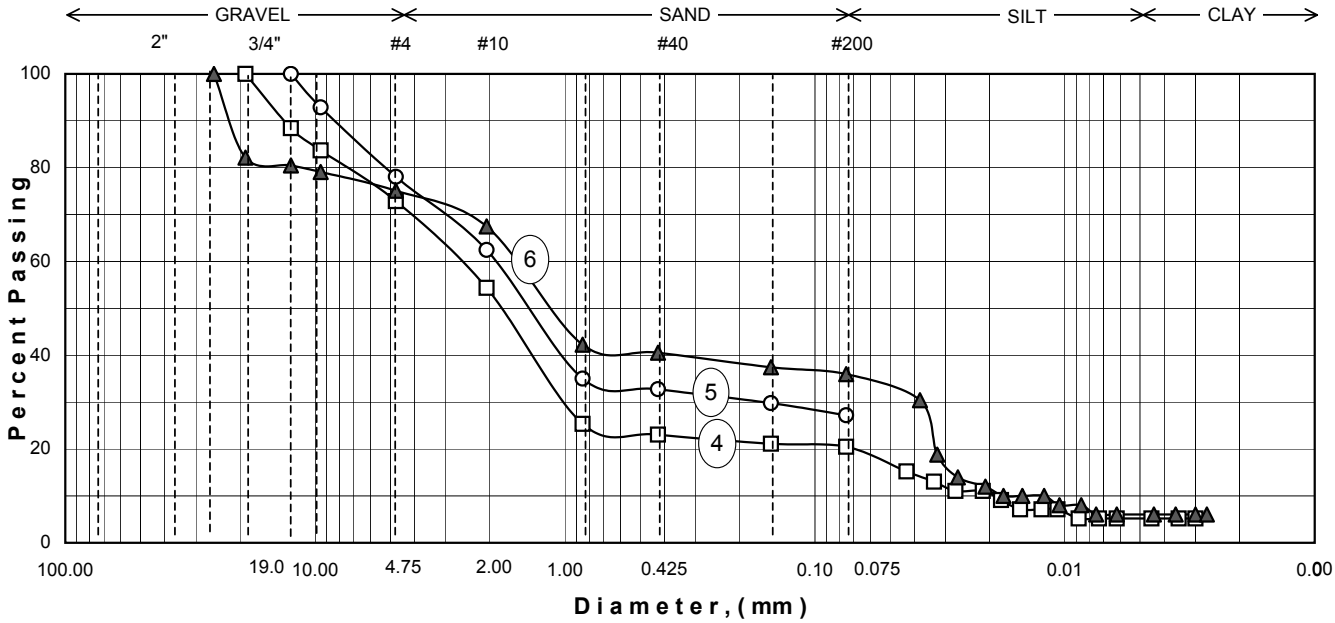
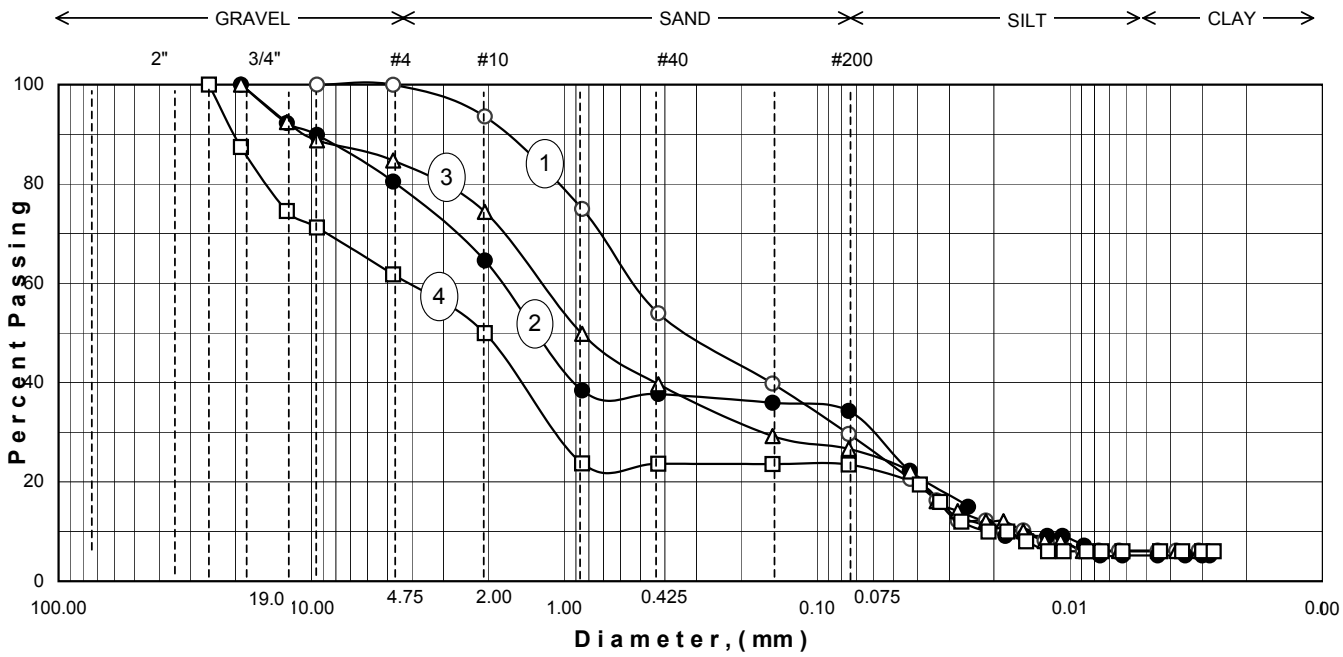
GRAIN-SIZE DISTRIBUTION CURVES

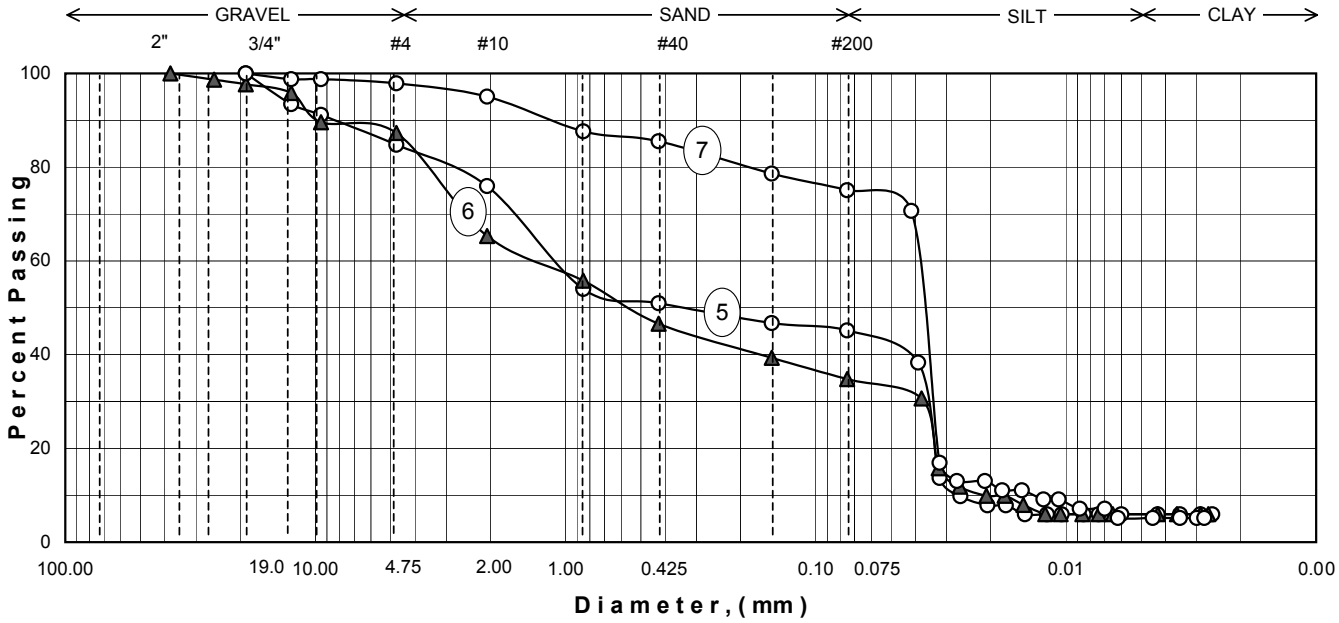




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-3	ss-2	2.00-2.45	1	25.79	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-3	ss-4	4.00-4.45	2	37.86	NP	NP	NP	SM	Light gray lahar SAND, with gravel-size pyroclastic materials
SL-3	ss-6	6.00-6.45	3	37.13	NP	NP	NP	SM	Light gray lahar SAND, with gravel-size pyroclastic materials and non-plastic silt
SL-3	ss-8	8.00-8.45	4	26.88	NP	NP	NP	SM	Light gray to gray lahar SAND
SL-3	ss-10	10.00-10.45	5	50.15	NP	NP	NP	SM	Light gray to gray lahar SAND
SL-3	ss-12	12.00-12.45	6	11.62	NP	NP	NP	SM	Brownish gray silty fine to coarse SAND
SL-3	ss-13	13.00-13.45	-	-	NP	NP	NP	SM	Brownish gray lahar SAND

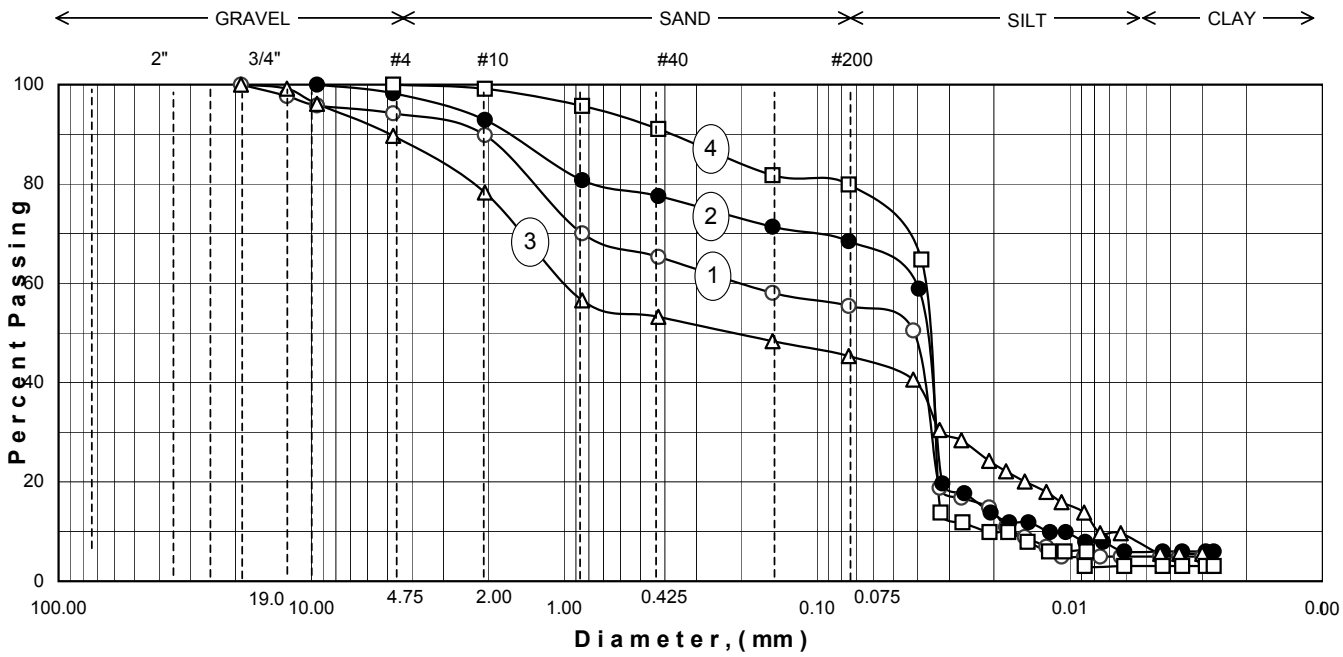
GRAIN-SIZE DISTRIBUTION CURVES

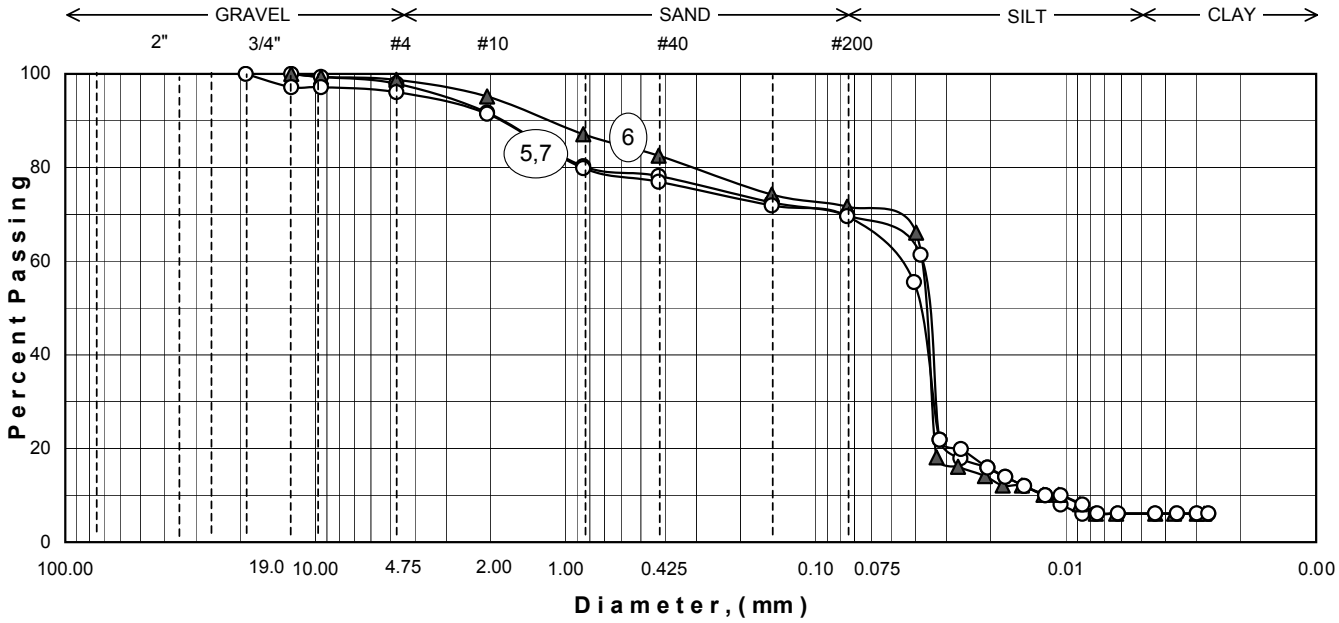




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-3	ss-14	14.00-14.45	1	20.89	NP	NP	NP	SM	Gray silty lahar SAND, non-plastic
SL-3	ss-16	16.00-16.45	2	12.51	NP	NP	NP	SM	Brownish gray silty lahar SAND, non-plastic
SL-3	ss-18	18.00-18.45	3	11.97	NP	NP	NP	SM	Gray lahar SAND
SL-3	ss-20	20.00-20.45	4	11.94	NP	NP	NP	SM	Gray lahar SAND
SL-3	ss-22	22.00-22.45	5	12.92	NP	NP	NP	SM-ML	Gray lahar SAND and SILT, non-plastic
SL-3	ss-24	24.00-24.45	6	13.56	NP	NP	NP	SM-ML	Gray lahar SAND
SL-3	ss-26	26.00-26.45	7	20.08	NP	NP	NP	SM-ML	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-3	ss-28	28.00-28.45	1	15.07	NP	NP	NP	SM-ML	Gray lahar SAND
SL-3	ss-30	30.00-30.45	2	12.95	NP	NP	NP	SM-ML	Gray lahar SAND
SL-3	ss-32	32.00-32.45	3	29.75	NP	NP	NP	SM-ML	Brownish gray lahar SAND and SILT, non-plastic
SL-3	ss-34	34.00-34.45	4	16.49	NP	NP	NP	SM-ML	Brownish gray lahar SAND
SL-3	ss-36	36.00-36.45	5	17.29	NP	NP	NP	SM-ML	Brownish gray lahar SAND
SL-3	ss-38	38.00-38.40	6	12.04	NP	NP	NP	SM-ML	Brownish gray lahar SAND
SL-3	ss-40	40.00-40.35	7	15.97	NP	NP	NP	SM-ML	Brownish gray lahar SAND

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-3** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.64	174.28			174.99	175.02
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.25	156.72			156.79	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	12.61	12.44			11.80	11.68
Specific Gravity, Gs = Ws / Ww	2.38	2.41			2.54	2.57
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.37**	**2.40**			**2.53**	**2.56**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.89	174.89			175.83	175.75
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	156.75			156.74	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.81	11.86			10.91	10.95
Specific Gravity, Gs = Ws / Ww	2.54	2.53			2.75	2.74
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.53**	**2.52**			**2.74**	**2.73**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water at 2.00-2.45 m. depth.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-3** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.27	174.00			175.81	175.69
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	156.74	156.39			156.84	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	12.47	12.39			11.03	11.06
Specific Gravity, Gs = Ws / Ww	2.41	2.42			2.72	2.71
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.40**	**2.41**			**2.71**	**2.70**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.35	175.16			176.10	176.05
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.75	156.70			157.08	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.40	11.54			10.98	10.95
Specific Gravity, Gs = Ws / Ww	2.63	2.60			2.73	2.74
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.62**	**2.59**			**2.72**	**2.73**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water at 10.00-10.45 m. depth.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-3** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.07	175.69			175.63	175.09
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	157.25	157.02			156.72	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.18	11.33			11.09	11.30
Specific Gravity, Gs = Ws / Ww	2.68	2.65			2.71	2.65
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.64**			**2.70**	**2.65**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.25	176.32			175.91	175.80
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.00	157.02			156.80	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.75	10.70			10.89	11.04
Specific Gravity, Gs = Ws / Ww	2.79	2.80			2.75	2.72
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.78**	**2.79**			**2.74**	**2.71**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-3** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.10	175.81			175.29	175.78
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	157.00	156.80			156.39	156.80
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.90	10.99			11.10	11.02
Specific Gravity, Gs = Ws / Ww	2.75	2.73			2.70	2.72
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.74**	**2.72**			**2.69**	**2.71**

Sample Number	ss-30				ss-32	
Depth (m)	30.00-30.45				32.00-32.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.18	175.52			175.12	174.64
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	156.39			157.08	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.90	10.87			11.96	11.75
Specific Gravity, Gs = Ws / Ww	2.75	2.76			2.51	2.55
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.74**	**2.75**			**2.50**	**2.54**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-3** DATE TESTED: **February 11, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **5 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-34				ss-36	
Depth (m)	34.00-34.45				36.00-36.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.81	175.95			175.49	175.58
Temperature, ^{o}C	29	29			28	28
Wt. of Flask + Water = Wbw	156.80	156.84			156.70	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.99	10.89			11.21	11.14
Specific Gravity, Gs = Ws / Ww	2.73	2.75			2.68	2.69
Viscosity Correction	0.9960	0.9960			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.72**	**2.74**			**2.67**	**2.68**

Sample Number	ss-38				ss-40	
Depth (m)	38.00-38.40				40.00-40.35	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.66	176.02			175.85	175.90
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	157.25			157.00	157.08
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.36	11.23			11.15	11.18
Specific Gravity, Gs = Ws / Ww	2.64	2.67			2.69	2.68
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.63**	**2.66**			**2.68**	**2.67**

Remarks:

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Sto. Tomas River, San Marcelino, Zambales***

BORING NO.: **SL-4-1**
FINAL DEPTH: **10.45 m.**
GWT: **10.05 m.**
ELEVATION: **81.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 09, 2003**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	Concrete Pavement encountered @ 4.80 m. (thickness @ 0.10 m.)							
1	(1.0-1.45 m) Ligh gray lahar SAND, with with fine pyroclastic materials. (Rec: 45/35 cm.)	ss-1	Loose	*	9			
2	(2.0-2.45 m) Light gray silty lahar SAND, with little amount of pyroclastic materials. (Rec: 45/30 cm.) *Permeability is conducted @ 3.00 m.*	ss-2	Med. dense	SM	15			Gs = 2.50
3	(3.0-3.45 m) Light gray lahar SAND, with coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-3	Med. dense	*	12			
4	(4.0-4.45 m) Light gray silty lahar SAND, with traces of coarse of pyroclastic materials. (Rec: 45/45 cm.)	ss-4	Med. dense	SM	14			Gs = 2.60
5	(5.0-5.45 m) - same materials - (Rec: 45/45 cm.)	ss-5	Med. dense	*	22			
6	(6.0-6.45 m) Light gray silty lahar SAND, with some coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-6	Loose	SM	6			Gs = 2.50
7	(7.0-7.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-7	Med. dense	*	12			
8	*Approximately change formation @ 8.00 m.* (8.0-8.45 m) Gray SILT, non-plastic, with some fine sand and traces of pyroclastic materials. (Rec: 45/30 cm.)	ss-8	Loose	ML	8			Gs = 2.52
9	(9.0-9.45 m) Brownish gray sandy SILT, with fine pyroclastic materials. (Rec: 45/30 cm.)	ss-9	Med. dense	ML	7			
10								

BOREHOLE LOG

PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

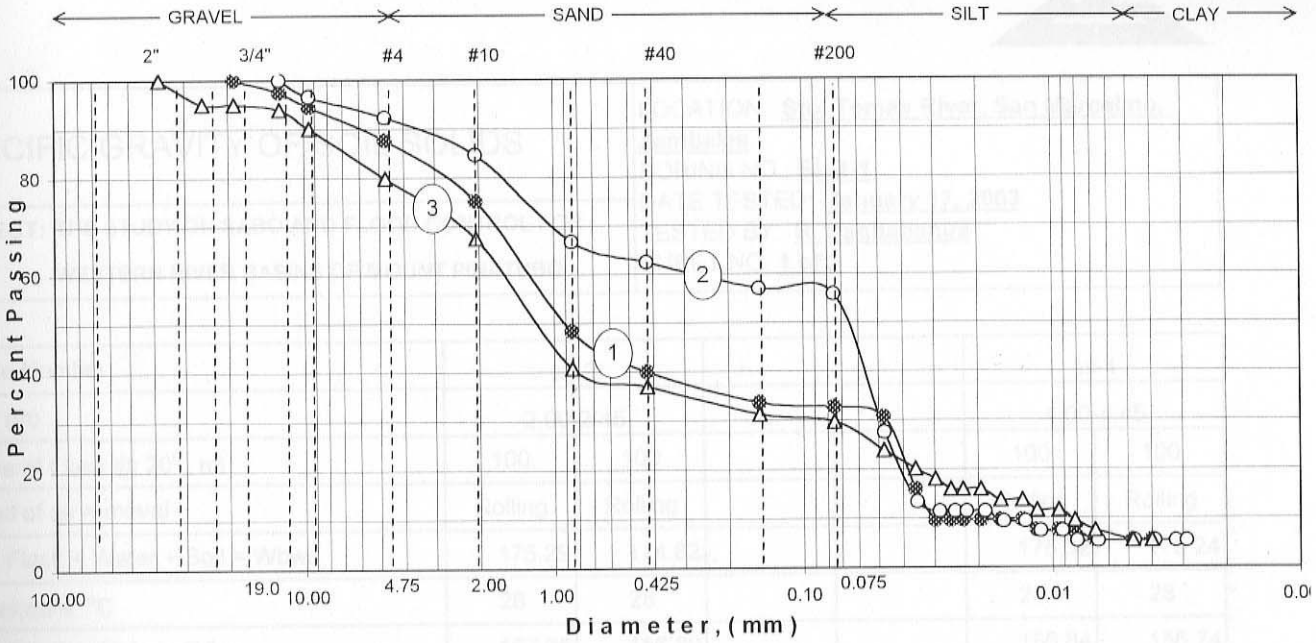
LOCATION : ***Sto. Tomas River, San Marcelino, Zambales***

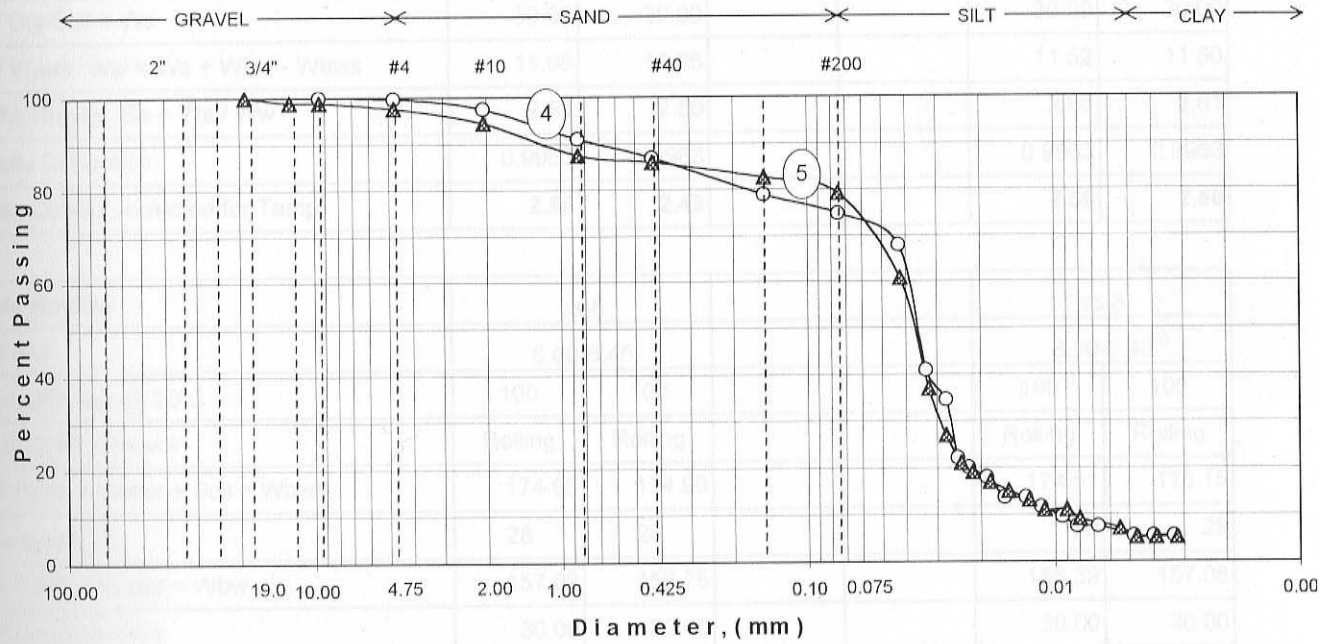
BORING NO.: **SL-4-1**
FINAL DEPTH: **10.45 m.**
GWT: **10.05 m.**
ELEVATION: **81.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 09, 2003**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brownish gray SILT, non-plastic, with little amount of fine sand and traces of pyroclastic materials. (Rec: 45/45 cm.)	ss-10	Loose	ML	7			Gs = 2.68
11	***End of Borehole @ 10.45 m. depth.***							
12	**Note:** *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
13								
14								
15								
16								
17								
18								
19								
20								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-1	ss-2	2.00-2.45	1	15.50	NP	NP	NP	SM	Light gray silty lahar SAND
SL-4-1	ss-4	4.00-4.45	2	18.85	NP	NP	NP	SM	Light gray silty lahar SAND
SL-4-1	ss-6	6.00-6.45	3	24.30	NP	NP	NP	SM	Light gray silty lahar SAND
SL-4-1	ss-8	8.00-8.45	4	32.14	NP	NP	NP	ML	Gray SILT, non-plastic
SL-4-1	ss-9	9.00-9.45	5	-	NP	NP	NP	ML	Brownish gray sandy SILT, non-plastic
SL-4-1	ss-10	10.00-10.45	6	23.90	NP	NP	NP	ML	Brownish gray SILT, non-plastic

Note: * - - - - Visual Description

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-1** DATE TESTED: **January 17, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.29	174.82			175.32	175.24
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.25	156.80			156.84	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.96	11.98			11.52	11.50
Specific Gravity, Gs = Ws / Ww	2.51	2.50			2.60	2.61
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.50**	**2.49**			**2.59**	**2.60**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.96	174.90			174.51	175.15
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	156.75			156.39	157.08
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	12.06	11.85			11.88	11.93
Specific Gravity, Gs = Ws / Ww	2.49	2.53			2.53	2.51
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.48**	**2.52**			**2.52**	**2.51**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water.