B3 Borehole Logs and Laboratory Test Results

BOREHOLE LOG

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

LOCATION : Maculcol Bridge, San Narciso , Zambales

BORING NO.: **BH-1**
FINAL DEPTH: **15.45 m.**
GWT: **5.60 m.**
ELEVATION: **7.50 m.**
DATE STARTED: **May 30, 2002**
DATE FINISHED: **June 02, 2002**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray medium to fine lahar SAND, with little amount of pyroclastic materials and non-plastic silt. (Rec: 45/45 cm.)	ss-1	Med. dense	SM	18			2.23
2	(2.0-2.45 m) Light gray fine to medium-grained lahar SAND, with some pyroclastic materials. (Rec: 45/35 cm.)	ss-2	Med. dense	*	20			
3	(3.0-3.45 m) - same materials - (Rec: 45/35 cm.)	ss-3	Med. dense	*	12			
4	(4.0-4.45 m) Brownish gray silty lahar SAND, with little amount of coarse-grained gravel. (Rec: 45/32 cm.)	ss-4	Loose	*	8			
5	(5.0-5.45 m) Brownish gray fine to medium lahar SAND, with non-plastic silt and gravel size ash tuff. (Rec: 45/35 cm.)	ss-5	Loose	SM	9			2.55
6	(6.0-6.45 m) - same materials - (Rec: 45/35 cm.)	ss-6	Med. dense	*	14			
7	(7.0-7.45 m) Gray fine lahar SAND, with some pyroclastic materials. (Rec: 45/33 cm.)	ss-7	Med. dense	*	20			
8	(8.0-8.45 m) Gray fine to medium lahar SAND, with some pyroclastic materials. (Rec: 45/45 cm.)	ss-8	Loose	*	6			
9	(9.0-9.45 m) Gray poorly graded fine to medium lahar SAND, with some pyroclastic materials and traces of non-plastic silt. (Rec: 45/31 cm.)	ss-9	Med. dense	SP-SM	18			2.62
10								

BOREHOLE LOG

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

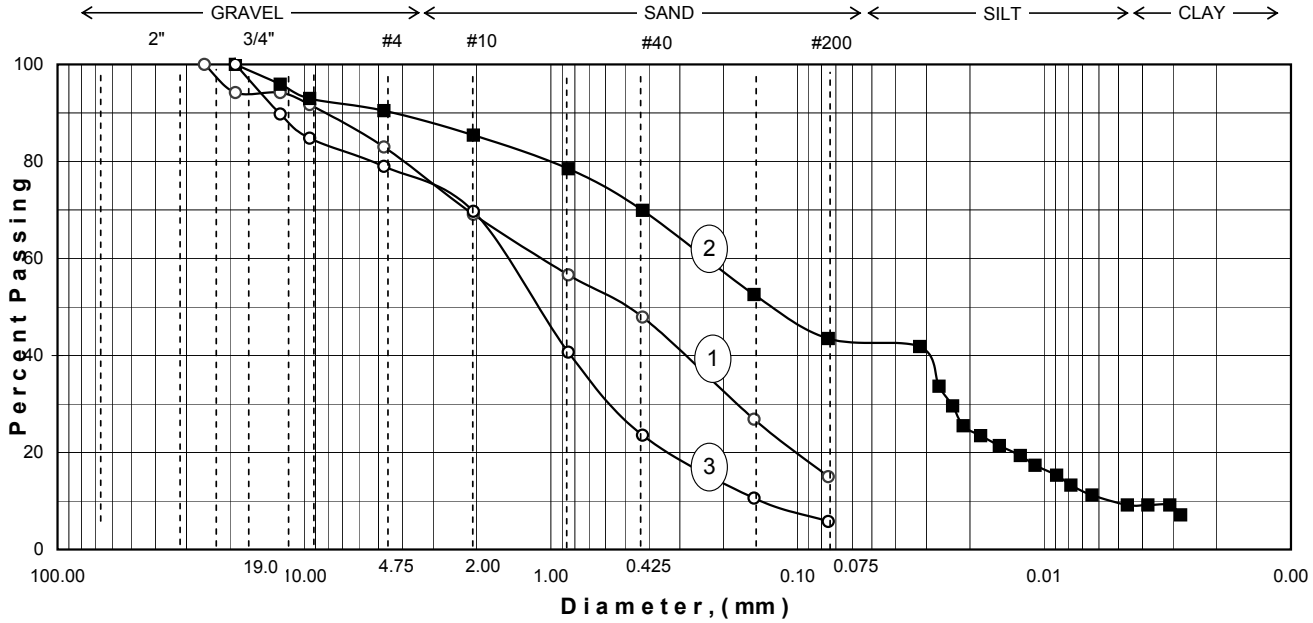
LOCATION : Maculcol Bridge, San Narciso , Zambales

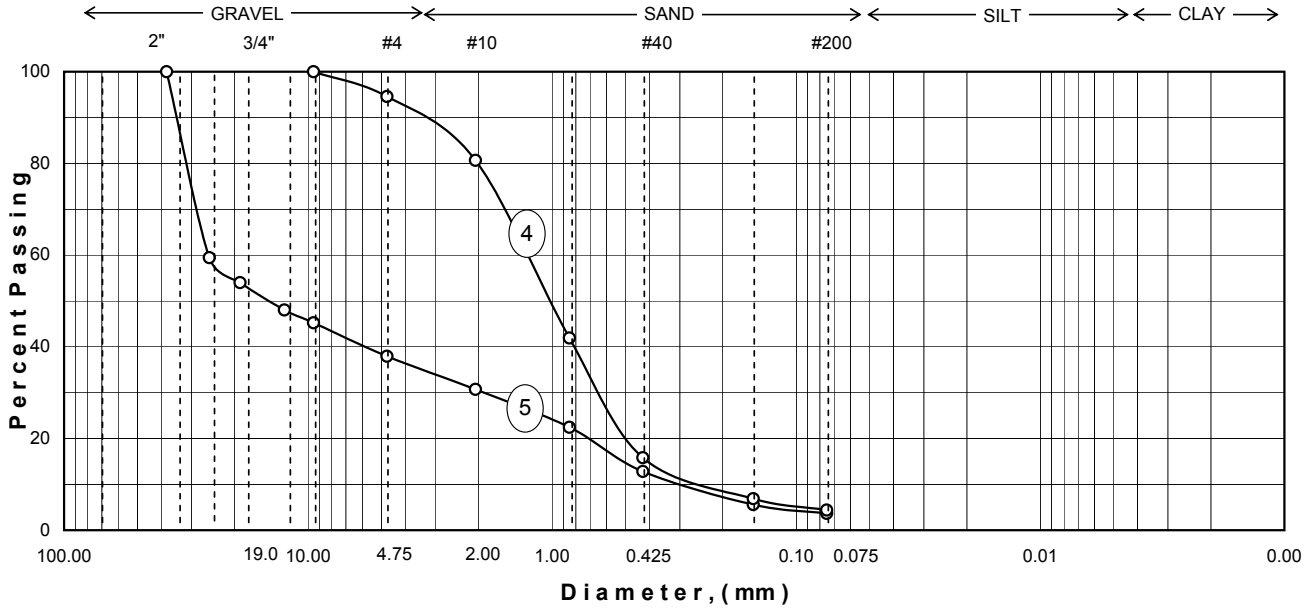
BORING NO.: **BH-1**
FINAL DEPTH: **15.45 m.**
GWT: **5.60 m.**
ELEVATION: **7.50 m.**
DATE STARTED: **May 30, 2002**
DATE FINISHED: **June 02, 2002**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Gray medium to coarse lahar SAND, with appreciable amount of pyroclastic materials. (Rec: 45/31 cm.)	ss-10	Dense	*	17			Gs =
11	(11.0-11.4 m) Gray poorly graded sandy gravel-size SANDSTONE, with traces of pyroclastic materials and non-plastic silt. (Rec: 40/25 cm.)	ss-11	Very dense	GP	56/25 cm.			2.64
12	(12.0-12.45 m) - same materials - but, some gravel. (Rec: 45/40 cm.)	ss-12	Very dense	*	52			
13	(13.0-13.45 m) Gray, medium to coarse SAND, with little amount of pyroclastic materials. (Rec: 45/30 cm.)	ss-13	Very dense	*	52			
14	(14.0-14.45 m) - same materials - (Rec: 45/30 cm.)	ss-14	Very dense	*	55			
15	(15.0-15.45 m) Gray poorly graded medium to coarse SAND, with traces of fine gravel and pyroclastic materials. (Rec: 45/45 cm.)	ss-15	Very dense	SP	54			2.64
16	**Note:** **--------- Visual Description*							
17	***End of Borehole @ 15.45 m.***							
	Type of drilling Machine - - - - - - KOKEN							
18								
19								
20								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
1	ss-1	1.00-1.45	1	28.82	NP	NP	NP	SM	Light gray medium to fine lahar SAND.
1	ss-5	5.00-5.45	2	25.77	NP	NP	NP	SM	Brownish gray fine to medium lahar SAND, with non-plastic silt.
1	ss-9	9.00-9.45	3	15.74	NP	NP	NP	SP-SM	Gray poorly graded fine to medium lahar SAND.
1	ss-11	11.00-11.45	4	9.82	NP	NP	NP	GP	Gray poorly graded sandy gravel-size SANDSTONE.
1	ss-15	15.00-15.45	5	14.37	NP	NP	NP	SP	Gray poorly graded medium to coarse SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-1** DATE TESTED: **June 08, 2002** 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-1				ss-5	
Depth (m)	1.00-1.45				5.00-5.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	395.33	389.29			395.10	400.60
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.86	334.09			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	44.53	44.80			38.99	39.26
Specific Gravity, Gs = Ws / Ww	2.25	2.23			2.56	2.55
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.24**	**2.22**			**2.56**	**2.54**

Sample Number	ss-9				ss-11	
Depth (m)	9.00-9.45				11.00-11.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	395.88	401.99			401.79	396.48
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			339.86	334.09
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	38.21	37.87			38.07	37.61
Specific Gravity, Gs = Ws / Ww	2.62	2.64			2.63	2.66
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.61**	**2.63**			**2.62**	**2.65**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-1** DATE TESTED: **June 08, 2002** 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-15					
Depth (m)	15.00-15.45					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	793.92	800.92				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	669.82	676.39				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	75.90	75.47				
Specific Gravity, Gs = Ws / Ww	2.64	2.65				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.63**	**2.64**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

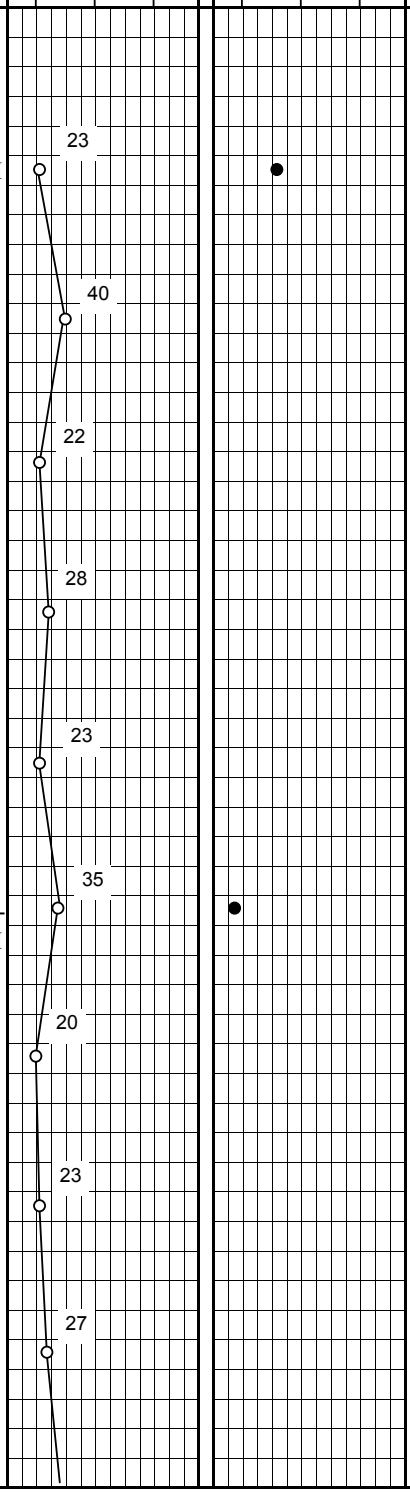
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : Maculcol Bridge, San Narciso, Zambales

BORING NO.: **BH-2**
FINAL DEPTH: **26.45 m.**
GWT: **Ground level**
ELEVATION: **4.10 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **May 29, 2002**
SHEET NO. **1 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	OTHER TEST RESULTS
						Gs =
1	(1.0-1.45 m) Light gray fine to medium lahar SAND, with little amount of non-plastic silt and traces of pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Med. dense	SM	23	2.04
2	(2.0-2.45 m) Gray, sandy GRAVEL, with some pyroclastic materials. (Rec: 45/25 cm.)	ss-2	Dense	*	40	
3	(3.0-3.45 m) Light gray, fine to medium-grained lahar SAND, with little amount of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-3	Med. dense	*	22	
4	(4.0-4.45 m) Brownish gray, fine to medium-grained lahar SAND, with little amount of pyroclastic materials. (Rec: 45/25 cm.)	ss-4	Med. dense	*	28	
5	(5.0-5.45 m) - same materials - (Rec: 45/33 cm.)	ss-5	Med. dense	*	23	
6	(6.0-6.45 m) Light gray poorly graded fine to medium lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/31 cm.)	ss-6	Dense	SP-SM	35	2.60
7	(7.0-7.45 m) Light gray fine to medium-grained lahar SAND, with little amount of pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Med. dense	*	20	
8	(8.0-8.45 m) - same materials - (Rec: 45/35 cm.)	ss-8	Med. dense	*	23	
9	(9.0-9.45 m) - same materials - (Rec: 45/33 cm.)	ss-9	Med. dense	*	27	
10						



BOREHOLE LOG

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

LOCATION : Maculcol Bridge, San Narciso, Zambales

BORING NO.: **BH-2**
FINAL DEPTH: **26.45 m.**
GWT: **Ground level**
ELEVATION: **4.10 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **May 29, 2002**
SHEET NO. **2 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray fine to medium-grained lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/35 cm.)	ss-10	Dense	*	41			Gs =
11	(11.0-11.45 m) Light gray fine to medium-grained SAND, with gravel-size pyroclastic materials. (Rec: 45/31 cm.)	ss-11	Very dense	*	54			
12	(12.0-12.45 m) Light gray poorly graded fine to medium SAND, with little amount of non-plastic silt and fine gravel, pyroclastic materials. (Rec: 45/33 cm.)	ss-12	Very dense	SP-SM	57	●		2.64
13	(13.0-13.45 m) Light gray fine to medium-grained SAND, with some pyroclastic materials. (Rec: 45/35 cm.)	ss-13	Very dense	*	62			
14	(14.0-14.45 m) - same materials - (Rec: 45/38 cm.)	ss-14	Very dense	*	51			
15	(15.0-15.45 m) - same materials - (Rec: 45/35 cm.)	ss-15	Dense	*	46			
16	(16.0-16.45 m) - same materials - (Rec: 45/33 cm.)	ss-16	Dense	*	49			
17	(17.0-17.45 m) - same materials - (Rec: 45/40 cm.)	ss-17	Dense	*	42			
18	(18.0-18.45 m) Light gray medium to fine SAND, with little amount of non-plastic silt and traces of pyroclastic materials. (Rec: 45/40 cm.)	ss-18	Med. dense	SM	66	●		2.70
19	(19.0-19.45 m) Gray fine SAND, with little amount of pyroclastic materials. (Rec: 45/25 cm.)	ss-19	Dense	*	38			
20								

BOREHOLE LOG

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

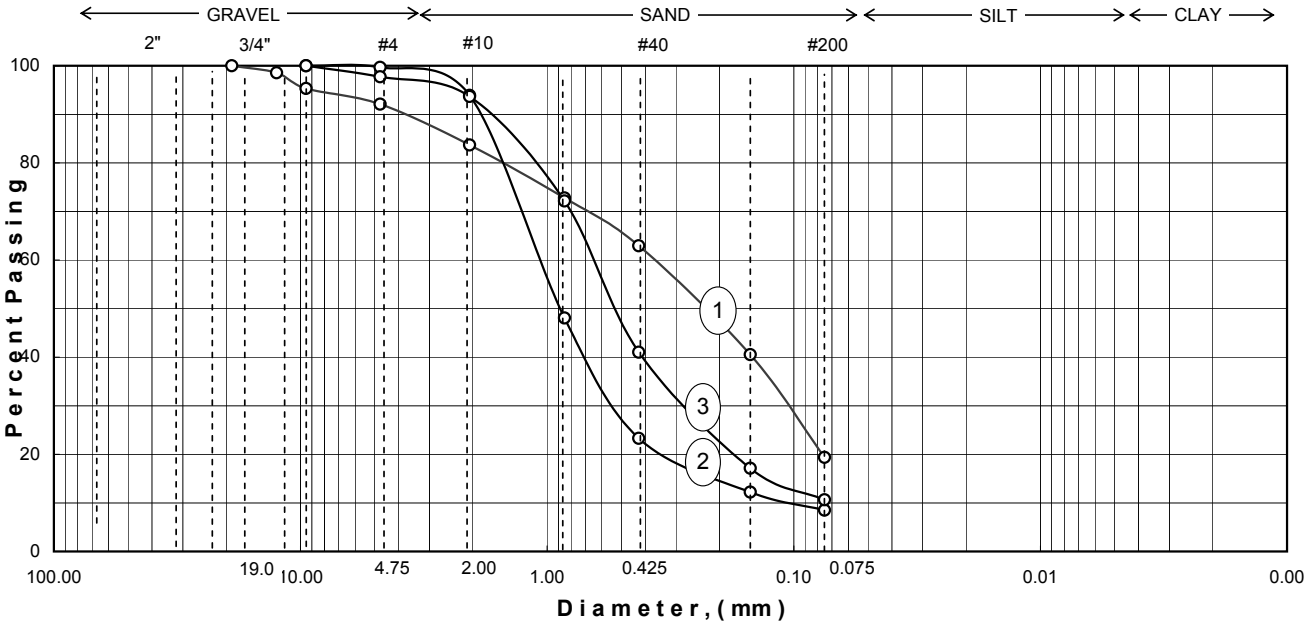
LOCATION : Maculcol Bridge, San Narciso, Zambales

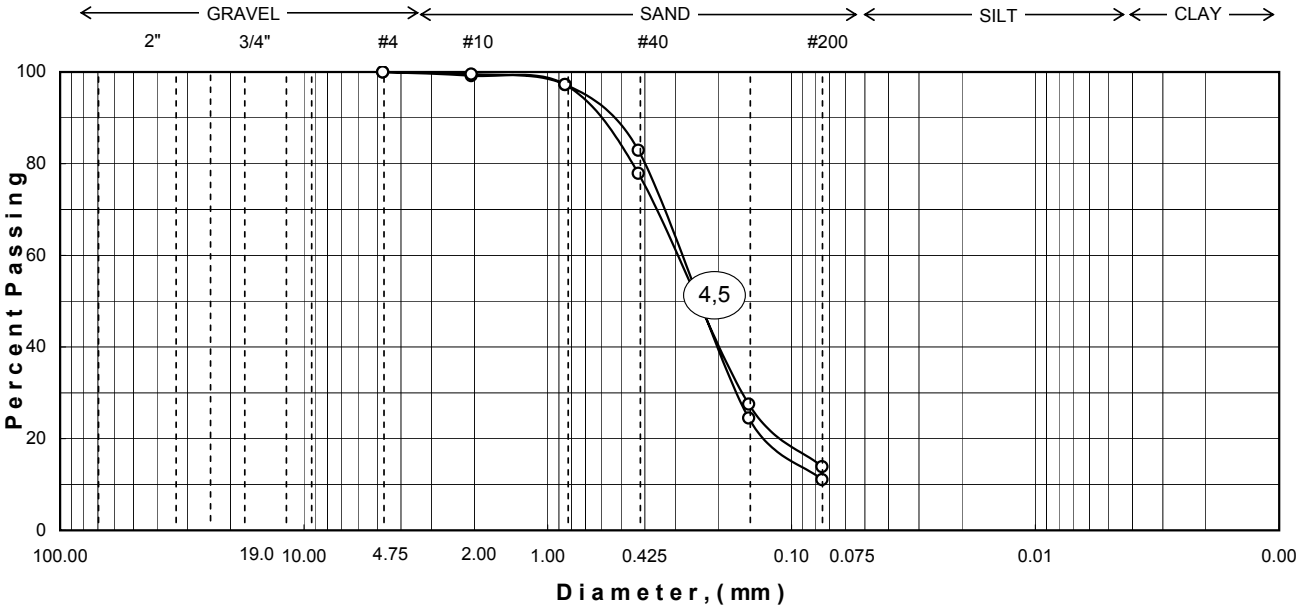
BORING NO.: **BH-2**
FINAL DEPTH: **26.45 m.**
GWT: **Ground level**
ELEVATION: **4.10 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **May 29, 2002**
SHEET NO. **3 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray fine SAND, with little amount of pyroclastic materials. (Rec: 45/30 cm.)	ss-20	Dense	*	39			Gs =
21	(21.0-21.45 m) - same materials - (Rec: 45/35 cm.)	ss-21	Dense	*	47			
22	(22.0-22.45 m) - same materials - (Rec: 45/32 cm.)	ss-22	Very dense	*	58			
23	(23.0-23.45 m) - same materials - (Rec: 45/40 cm.)	ss-23	Dense	*	45			
24	(24.0-24.45 m) Gray poorly graded fine to medium SAND, with little amount of non-plastic silt. (Rec: 45/35 cm.)	ss-24	Very dense	SP-SM	51	●		2.68
25	(25.0-25.45 m) Gray medium to fine SAND with little amount of pyroclastic materials. (Rec: 45/40 cm.)	ss-25	Very dense	*	51			
26	(26.0-26.45 m) - same materials - (Rec: 45/40 cm.)	ss-26	Very dense	*	42			
27	**Note:** **** - - - - - - Visual Description***							
28	***End of Borehole @ 26.45 m.***							
	Type of drilling Machine - - - - - - KOKEN							
29								
30								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
2	ss-1	1.00-1.45	1	43.82	NP	NP	NP	SM	Light gray fine to medium lahar SAND.
2	ss-6	6.00-6.45	2	15.16	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium lahar SAND.
2	ss-12	12.00-12.45	3	14.65	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium SAND.
2	ss-18	18.00-18.45	4	18.31	NP	NP	NP	SM	Light gray medium to fine SAND.
2	ss-24	24.00-24.45	5	22.30	NP	NP	NP	SP-SM	Gray poorly graded fine to medium SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-2** DATE TESTED: **June 06, 2002** 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-1				ss-6	
Depth (m)	1.00-1.45				6.00-6.45	
Volume of Flask @ 20° , ml	250	250			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	385.36	391.13			796.84	795.47
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.95			673.18	672.52
Wt. of Dry Soil = Ws	100.00	100.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	48.73	48.82			76.34	77.05
Specific Gravity, Gs = Ws / Ww	2.05	2.05			2.62	2.60
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.04**	**2.04**			**2.61**	**2.59**

Sample Number	ss-12				ss-18	
Depth (m)	12.00-12.45				18.00-18.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	396.42	402.13			397.09	402.95
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	37.67	37.73			37.00	36.91
Specific Gravity, Gs = Ws / Ww	2.65	2.65			2.70	2.71
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.64**			**2.69**	**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: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-2** DATE TESTED: **June 06, 2002** 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-24					
Depth (m)	24.00-24.45					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	802.59	795.01				
Temperature, ^oC	28	28				
Wt. of Flask + Water = Wbw	676.39	669.82				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	73.80	74.81				
Specific Gravity, Gs = Ws / Ww	2.71	2.67				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.70**	**2.66**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^oC						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : **Maculcol Bridge, San Narciso, Zambales**

BORING NO.: **BH-3**
FINAL DEPTH: **20.40 m.**
GWT: **6.40 m.**
ELEVATION: **8.10 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 08, 2002**
SHEET NO. **1 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Brownish gray fine to medium lahar SAND, with little amount of non-plastic silt and traces of gravel-size pyroclastic materials/ash tuff. (Rec: 45/40 cm.)	ss-1	Med. dense	SM	13			2.50
2	(2.0-2.45 m) Light gray silty lahar SAND, traces of gravel and little amount of pyroclastic pyroclastic materials. (Rec: 45/45 cm.)	ss-2	Very dense	*	55			
3	(3.0-3.45 m) Light gray silty lahar SAND, amount of pyroclastic materials. (Rec: 45/35 cm.)	ss-3	Med. dense	*	16			
4	(4.0-4.45 m) Gray lahar SAND, little amount of gravel. (Rec: 45/35 cm.)	ss-4	Med. dense	*	25			
5	(5.0-5.45 m) Brown coarse to medium lahar SAND, some crushed gravel and little amount of non-plastic silt. (Rec: 45/30 cm.)	ss-5	Med. dense	SM	22			2.73
6	(6.0-6.45 m) Brownish gray medium to coarse lahar SAND, little amount of gravel and traces of non-plastic silt. (Rec: 45/30 cm.)	ss-6	Med. dense	*	15			
7	(7.0-7.45 m) Light gray silty lahar SAND, traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-7	Med. dense	*	16			
8	(8.0-8.45 m) - same materials - (Rec: 45/35 cm.)	ss-8	Med. dense	*	17			
9	(9.0-9.45 m) - same materials - (Rec: 45/35 cm.)	ss-9	Med. dense	*	20			
10								

BOREHOLE LOG

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

LOCATION : Maculcol Bridge, San Narciso, Zambales

BORING NO.: **BH-3**
FINAL DEPTH: **20.40 m.**
GWT: **6.40 m.**
ELEVATION: **8.10 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 08, 2002**
SHEET NO. **2 of 3**

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) Gray silty lahar SAND, traces of pyroclastic materials. (Rec: 45/33 cm.)	ss-10	Dense	*	29			Gs =
11	(11.0-11.45 m) Gray poorly graded fine to medium lahar SAND, traces of non-plastic silt and pyroclastic materials. (Rec: 45/30 cm.)	ss-11	Med. dense	SP-SM	21			2.63
12	(12.0-12.45 m) Gray silty lahar SAND, traces of pyroclastic materials. (Rec: 45/40 cm.)	ss-12	Med. dense	*	29			
13	(13.0-13.45 m) Brownish gray medium to coarse SAND, traces of gravel. (Rec: 45/31 cm.)	ss-13	Dense	*	40			
14	(14.0-14.45 m) Brownish gray medium to fine-grained SAND, some non-plastic silt. (Rec: 45/38 cm.)	ss-14	Very dense	*	52			
15	(15.0-15.45 m) Light gray poorly graded fine to medium SAND, traces of non-plastic silt and pyroclastic materials/ash tuff. (Rec: 45/36 cm.)	ss-15	Very dense	SP-SM	56			2.74
16	(16.0-16.45 m) Light gray silty fine SAND. (Rec: 45/35 cm.)	ss-16	Very dense	*	56			
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Very dense	*	64			
18	(18.0-18.45 m) - same materials - (Rec: 45/31 cm.)	ss-18	Very dense	*	59			
19	(19.0-19.45 m) Gray poorly graded medium to fine SAND, traces of non-plastic silt and pyroclastic materials/ash tuff. (Rec: 45/45 cm.)	ss-19	Very dense	SP-SM	51			2.70
20								

BOREHOLE LOG

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

LOCATION : Maculcol Bridge, San Narciso, Zambales

BORING NO.: **BH-3**
FINAL DEPTH: **20.40 m.**
GWT: **6.40 m.**
ELEVATION: **8.10 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 08, 2002**
SHEET NO. **3 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.4 m) Gray silty fine-grained SAND. (Rec: 40/34 cm.)	ss-20	Very dense	*	52/25 cm.			
21								
	Note: ** - - - - - - Visual Description*							
22								
	End of Borehole @ 20.40 m.							
23	Type of drilling Machine - - - - - - - KOKEN							
24								
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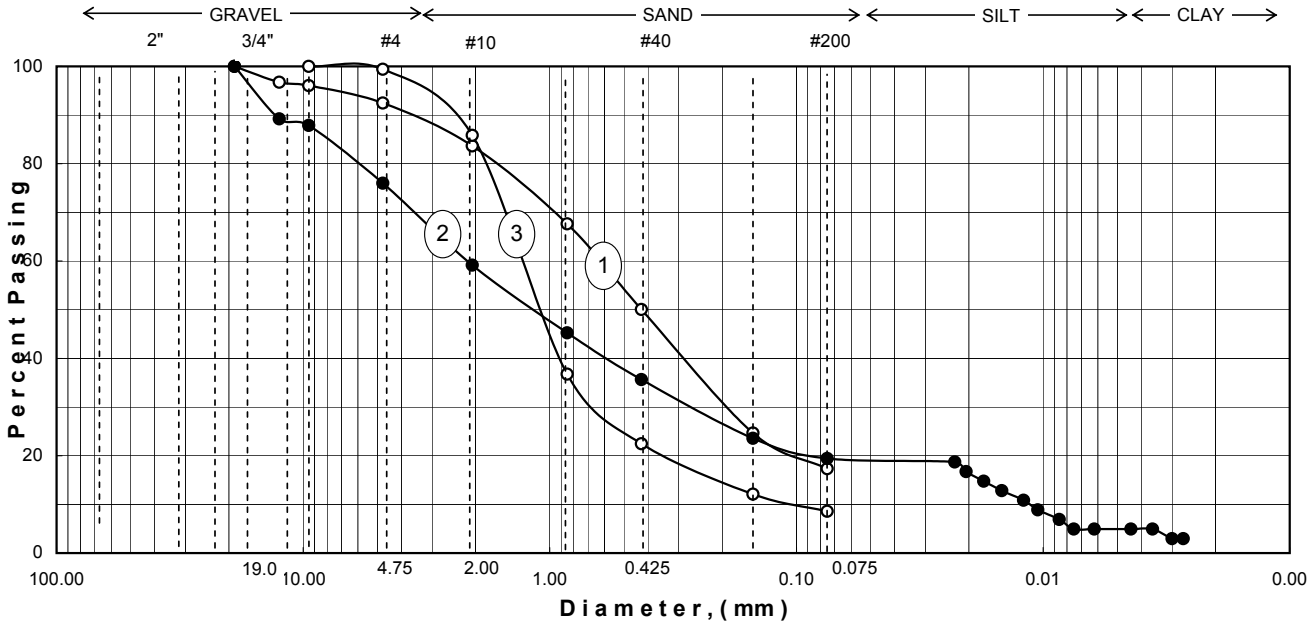
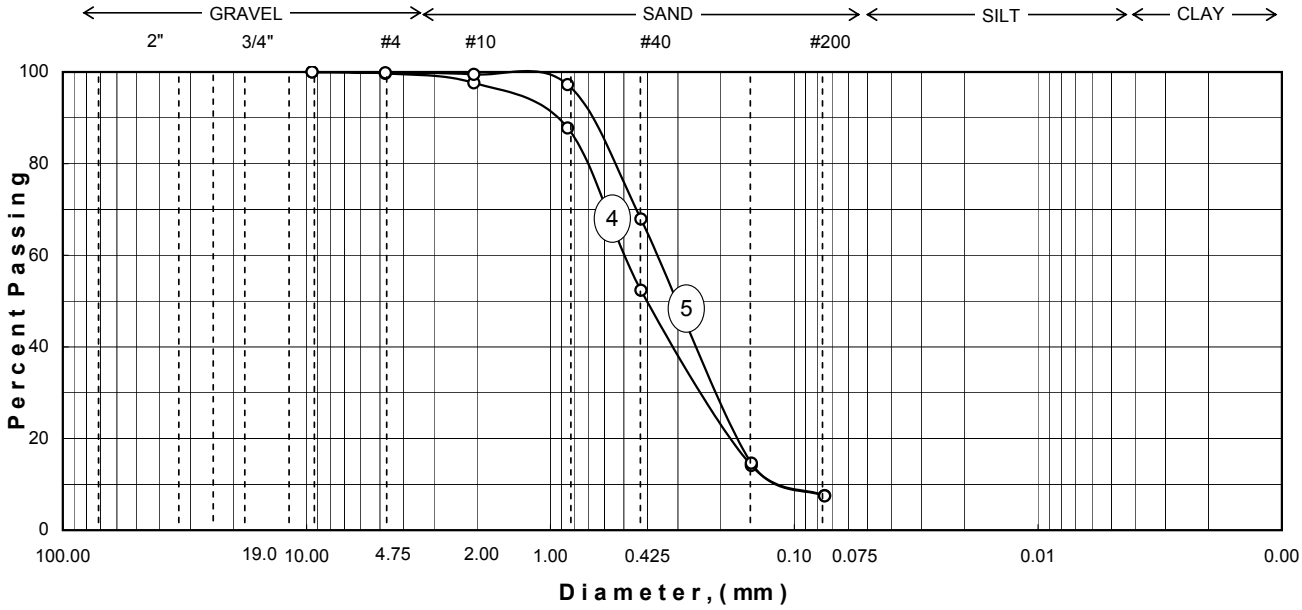
GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
3	ss-1	1.00-1.45	1	10.82	NP	NP	NP	SM	Brownish gray fine to medium lahar SAND.
3	ss-5	5.00-5.45	2	17.37	NP	NP	NP	SM	Brown coarse to medium lahar SAND.
3	ss-11	11.00-11.45	3	13.14	NP	NP	NP	SP-SM	Gray poorly graded fine to medium lahar SAND.
3	ss-15	15.00-15.45	4	15.77	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium SAND.
3	ss-19	19.00-19.45	5	23.20	NP	NP	NP	SP-SM	Gray poorly graded medium to fine SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-3** DATE TESTED: **June 19, 2002** 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-1				ss-5	
Depth (m)	1.00-1.45				5.00-5.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	394.35	399.81			398.04	403.00
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	39.74	40.05			36.05	36.86
Specific Gravity, Gs = Ws / Ww	2.52	2.50			2.77	2.71
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.51**	**2.49**			**2.76**	**2.70**

Sample Number	ss-11				ss-15	
Depth (m)	11.00-11.45				15.00-15.45	
Volume of Flask @ 20°C	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	797.45	796.76			793.31	802.82
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	673.18	672.52			666.36	675.63
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	75.73	75.76			73.05	72.81
Specific Gravity, Gs = Ws / Ww	2.64	2.64			2.74	2.75
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.63**	**2.63**			**2.73**	**2.74**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water in sample 1 (1.00-1.45 m.)

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maculcol Bridge, San Narciso, Zambales** BORING NO.: **BH-3** DATE TESTED: **June 19, 2002** 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-19					
Depth (m)	19.00-19.45					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	796.06	802.51				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	669.82	676.39				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	73.76	73.88				
Specific Gravity, Gs = Ws / Ww	2.71	2.71				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.70**	**2.70**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-4**
FINAL DEPTH: **35.45 m.**
GWT: **5.90 m.**
ELEVATION: **6.28 m.**
DATE STARTED: **June 10, 2002**
DATE FINISHED: **June 15, 2002**
SHEET NO. **1 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
								Gs =
1	(1.0-1.45 m) Grayish brown silty SAND, non-plastic, traces of gravel, moist to wet. (Rec: 45/30 cm.)	ss-1	Very loose	*	3			
2	(2.0-2.1 m) Grayish brown silty SAND, non-plastic, with gravel, moist to wet. (Rec: 10/10 cm.)	ss-2	Very dense	*	50/10 cm.			
3	(3.0-3.45 m) - same materials - (Rec: 45/40 cm.)	ss-3	Med. dense	*	26			
4	(4.0-4.45 m) Light brown SILT, non-plastic, with fine sand. (Rec: 45/30 cm.)	ss-4	Very loose	ML	3			2.62
5	(5.0-5.45 m) - same materials - (Rec: 45/38 cm.)	ss-5	Med. dense	*	12			
6	(6.0-6.45 m) - same materials - (Rec: 45/31 cm.)	ss-6	Med. dense	*	15			
7	(7.0-7.45 m) Brownish gray silty SAND, non-plastic. (Rec: 45/31 cm.)	ss-7	Loose	*	7			
8	(8.0-8.45 m) Brownish gray silty SAND, non-plastic, some gravel. (Rec: 45/30 cm.)	ss-8	Med. dense	*	16			
9	(9.0-9.45 m) - same materials - (Rec: 45/32 cm.)	ss-9	Med. dense	*	17			
10								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-4**
FINAL DEPTH: **35.45 m.**
GWT: **5.90 m.**
ELEVATION: **6.28 m.**
DATE STARTED: **June 10, 2002**
DATE FINISHED: **June 15, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brownish gray to gray silty SAND, non-plastic. (Rec: 45/31 cm.)	ss-10	Med. dense	*	26			Gs =
11	(11.0-11.45 m) Gray silty SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-11	Med. dense	*	27			
12	(12.0-12.45 m) Gray medium to fine SAND, with little amount of non-plastic silt. (Rec: 45/45 cm.)	ss-12	Loose	SM	5			2.41
13	(13.0-13.45 m) Gray silty SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-13	Med. dense	*	22			
14	(14.0-14.45 m) Gray fine-grained SAND, with non-plastic silt . (Rec: 45/39 cm.)	ss-14	Med. dense	*	20			
15	(15.0-15.45 m) Brownish gray silty fine SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/43 cm.)	ss-15	Med. dense	SM	14			2.51
16	(16.0-16.45 m) Light gray silty SAND, non-plastic, some pyroclastic materials. (Rec: 45/33 cm.)	ss-16	Dense	*	43			
17	(17.0-17.45 m) - same materials - (Rec: 45/40 cm.)	ss-17	Very dense	*	51			
18	(18.0-18.45 m) - same materials - (Rec: 45/40 cm.)	ss-18	Very dense	*	64			
19	(19.0-19.45 m) Light gray fine-grained SAND, with non-plastic silt, some amount of pyroclastic materials. (Rec: 45/45 cm.)	ss-19	Very dense	*	55			
20								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-4**
FINAL DEPTH: **35.45 m.**
GWT: **5.90 m.**
ELEVATION: **6.28 m.**
DATE STARTED: **June 10, 2002**
DATE FINISHED: **June 15, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/35 cm.)	ss-20	Very dense	*	56			Gs =
21	(21.0-21.45 m) - same materials - (Rec: 45/37 cm.)	ss-21	Very dense	*	67			
22	(22.0-22.45 m) Gray SILT, slightly plastic, little amount of fine sand and broken shells. (Rec: 45/45 cm.)	ss-22	Med. stiff	ML	7			2.58
23	(23.0-23.45 m) - same materials - (Rec: 45/45 cm.)	ss-23	Med. stiff	*	8			
24	(24.0-24.45 m) Grayish brown silty CLAY, medium plastic, traces of sand. (Rec: 45/40 cm.)	ss-24	Soft	*	4			
25	(25.0-25.45 m) Grayish brown silty CLAY, medium plastic, traces of sand. (Rec: 45/40 cm.)	ss-25	Med. stiff	*	7			
26	(26.0-26.45 m) Gray silty CLAY, medium plastic, traces of sand and broken shells, (Rec: 45/30 cm.)	ss-26	Med. stiff	*	7			
27	(27.0-27.45 m) Light gray silty SAND, non-plastic. (Rec: 45/30 cm.)	ss-27	Med. dense	*	11			
28	(28.0-28.45 m) - same materials - (Rec: 45/25 cm.)	ss-28	Med. dense	*	13			
29	(29.0-29.45 m) Grayish brown silty SAND, non-plastic. (Rec: 45/35 cm.)	ss-29	Loose	*	7			
30								

BOREHOLE LOG

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

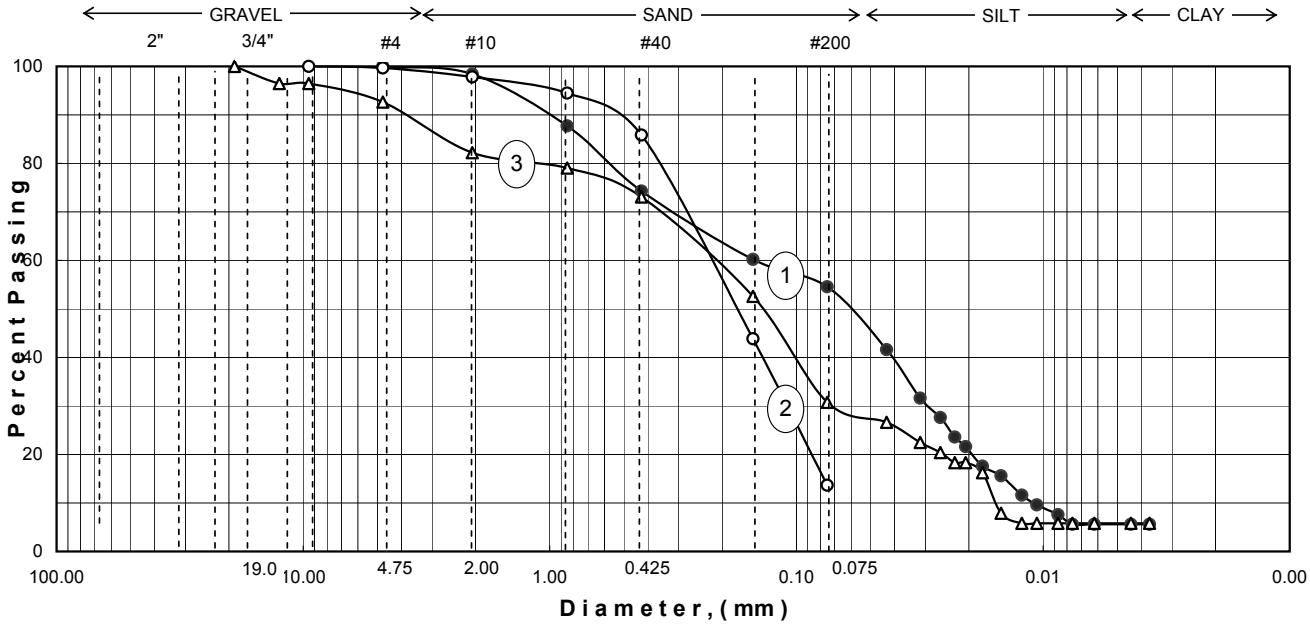
LOCATION : Maloma Bridge, San Felipe, Zambales

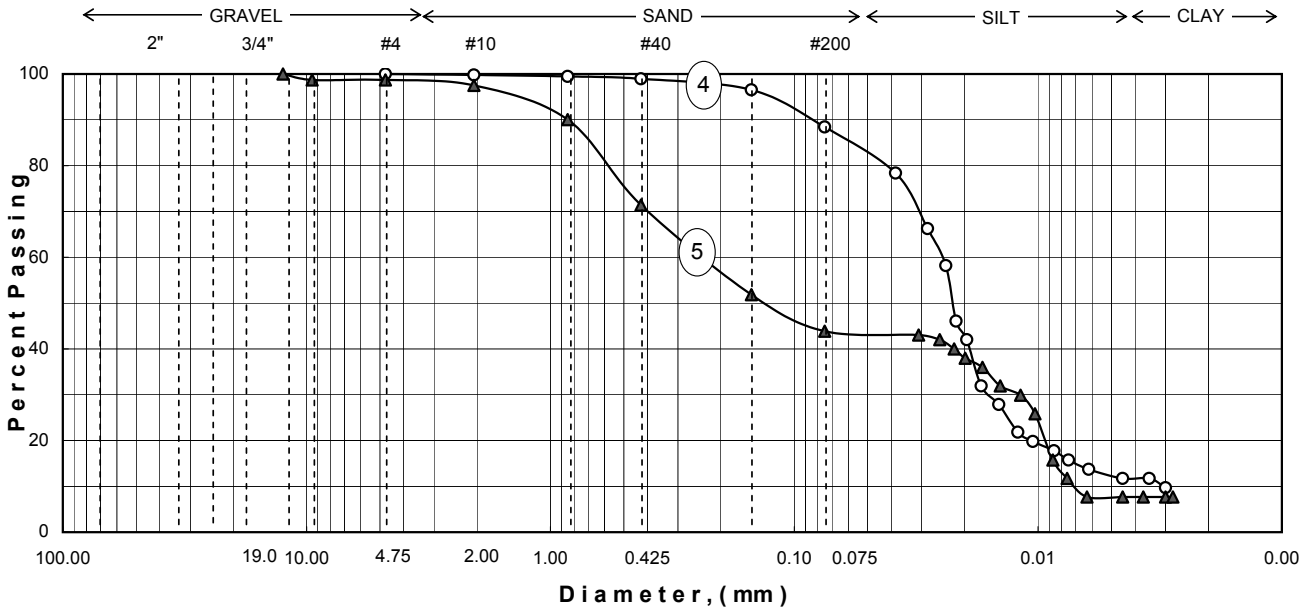
BORING NO.: **BH-4**
FINAL DEPTH: **35.45 m.**
GWT: **5.90 m.**
ELEVATION: **6.28 m.**
DATE STARTED: **June 10, 2002**
DATE FINISHED: **June 15, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Grayish brown fine SAND, with non-plastic silt and traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-30	Loose	SM	7			Gs = 2.62
31	(31.0-31.45 m) Light gray clayey SAND, slightly to medium plastic. (Rec: 45/30 cm.)	ss-31	Stiff	*	11			
32	(32.0-32.45 m) - same materials - (Rec: 45/28 cm.)	ss-32	Stiff	*	14			
33	(33.0-33.45 m) - same materials - (Rec: 45/34 cm.)	ss-33	Very stiff	*	23			
34	(34.0-34.45 m) - same materials - (Rec: 45/30 cm.)	ss-34	Very stiff	*	25			
35	(35.0-35.45 m) - same materials - (Rec: 45/32 cm.)	ss-35	Hard	*	31			
36	**Note:** ***---------- Visual Description**							
37	***End of Borehole @ 35.45 m.***							
	Type of drilling Machine - - - - - - KOKEN							
38								
39								
40								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
4	ss-4	4.00-4.45	1	31.88	NP	NP	NP	ML	Light brown SILT, with fine sand.
4	ss-12	12.00-12.45	2	35.59	NP	NP	NP	SM	Gray medium to fine SAND.
4	ss-15	15.00-15.45	3	34.89	NP	NP	NP	SM	Brownish gray silty fine SAND.
4	ss-22	22.00-22.45	4	43.80	NP	NP	NP	ML	Gray SILT.
4	ss-30	30.00-30.45	5	25.61	NP	NP	NP	SM	Grayish brown fine SAND, with non-plastic silt.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales** BORING NO.: **BH-4** DATE TESTED: **June 22, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-4				ss-12	
Depth (m)	4.00-4.45				12.00-12.45	
Volume of Flask @ 20° , ml	500	500			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	790.07	799.51			392.96	398.09
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	666.36	675.63			334.09	339.86
Wt. of Dry Soil = Ws	200.00	200.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	76.29	76.12			41.13	41.77
Specific Gravity, Gs = Ws / Ww	2.62	2.63			2.43	2.39
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.61**	**2.62**			**2.42**	**2.39**

Sample Number	ss-15				ss-22	
Depth (m)	15.00-15.45				22.00-22.45	
Volume of Flask @ 20°C	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	789.96	792.99			794.88	796.18
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	669.82	672.52			672.52	673.18
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	79.86	79.53			77.64	77.00
Specific Gravity, Gs = Ws / Ww	2.50	2.51			2.58	2.60
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.50**	**2.51**			**2.57**	**2.59**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales** BORING NO.: **BH-4** DATE TESTED: **June 22, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**
PROJECT: **THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO**	

Sample Number	ss-30					
Depth (m)	30.00-30.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	401.44	401.87				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	339.82	339.82				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	38.38	37.95				
Specific Gravity, Gs = Ws / Ww	2.61	2.64				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.60**	**2.63**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-5**
FINAL DEPTH: **35.45 m.**
GWT: **0.65 m.**
ELEVATION: **2.38 m.**
DATE STARTED: **June 17, 2002**
DATE FINISHED: **June 20, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray medium to fine lahar SAND, with pyroclastic materials. (Rec: 45/32 cm.)	ss-1	Very loose	*	3			
2	(2.0-2.45 m) - same materials - (Rec: 45/35 cm.)	ss-2	Loose	*	6			
3	(3.0-3.45 m) Gray medium to fine lahar SAND, little amount of pyroclastic materials. (Rec: 45/30 cm.)	ss-3	Loose	*	6			
4	(4.0-4.45 m) Dark gray silty fine SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/38 cm.)	ss-4	Very loose	*	3			
5	(5.0-5.45 m) - same materials - (Rec: 45/34 cm.)	ss-5	Very loose	*	3			
6	(6.0-6.45 m) - same materials - (Rec: 45/31 cm.)	ss-6	Very loose	*	3			
7	(7.0-7.45 m) Dark gray medium to fine SAND, traces of pyroclastic materials. (Rec: 45/45 cm.)	ss-7	Loose	*	7			
8	(8.0-8.45 m) Dark gray medium to coarse SAND, traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-8	Loose	*	9			
9	(9.0-9.45 m) Dark gray poorly graded fine to medium SAND, with little amount of gravel and traces of non-plastic silt, pyroclastic materials/ash tuff. (Rec: 45/40 cm.)	ss-9	Med. dense	SP	26	●		2.67
10								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-5**
FINAL DEPTH: **35.45 m.**
GWT: **0.65 m.**
ELEVATION: **2.38 m.**
DATE STARTED: **June 17, 2002**
DATE FINISHED: **June 20, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Dark gray medium to coarse SAND, traces of pyroclastic materials. (Rec: 45/30 cm.)	ss-10	Med. dense	*	21			Gs =
11	(11.0-11.45 m) Dark gray medium to fine SAND, traces of pyroclastic materials. (Rec: 45/33 cm.)	ss-11	Med. dense	*	24			
12	(12.0-12.45 m) Gray SILT, non-plastic little amount of fine sand and traces of pyroclastic materials. (Rec: 45/30 cm.)	ss-12	Dense	ML	47			2.50
13	(13.0-13.45 m) Gray SILT / fine SAND, non-plastic. (Rec: 45/40 cm.)	ss-13	Dense	*	37			
14	(14.0-14.45 m) - same materials - (Rec: 45/40 cm.)	ss-14	Very dense	*	76			
15	(15.0-15.40 m) Light gray silty fine SAND, little of amount of pyroclastic materials. (Rec: 40/35 cm.)	ss-15	Very dense	*	67/25 cm.			
16	(16.0-16.45 m) - same materials - (Rec: 45/30 cm.)	ss-16	Dense	*	48			
17	(17.0-17.3 m) - same materials - (Rec: 30/30 cm.)	ss-17	Very dense	*	61/15 cm.			
18	(18.0-18.45 m) - same materials - (Rec: 45/37 cm.)	ss-18	Very dense	*	81			
19	(19.0-19.45 m) Light gray SILT, non-plastic, little amount of fine sand. (Rec: 45/31 cm.)	ss-19	Very dense	ML	51			2.55
	Approximately change formation @ 19.70 m.							
20								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-5**
FINAL DEPTH: **35.45 m.**
GWT: **0.65 m.**
ELEVATION: **2.38 m.**
DATE STARTED: **June 17, 2002**
DATE FINISHED: **June 20, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Gray clayey SILT, slightly plastic, traces of broken shells and sand. (Rec: 45/30 cm.)	ss-20	Med. stiff	*	5			Gs =
21	(21.0-21.45 m) - same materials - (Rec: 45/45 cm.)	ss-21	Med. stiff	*	8			
22	(22.0-22.45 m) - same materials - (Rec: 45/32 cm.)	ss-22	Stiff	*	15			
23	(23.0-23.45 m) Gray silty SAND, non-plastic, traces of broken shells. (Rec: 45/31 cm.)	ss-23	Med. dense	*	13			
24	(24.0-24.45 m) Dark gray medium to fine SAND, with slightly plastic silt, traces of broken shells. (Rec: 45/45 cm.)	ss-24	Med. stiff	SM	6			2.55
25	(25.0-25.45 m) Brownish gray silty CLAY, medium plastic. (Rec: 45/45 cm.)	ss-25	Stiff	*	9			
26	(26.0-26.45 m) Brownish gray clayey SAND. slightly to medium plastic. (Rec: 45/40 cm.)	ss-26	Stiff	*	9			
27	(27.0-27.45 m) Light gray clayey SAND, slightly to medium plastic. (Rec: 45/30 cm.)	ss-27	Stiff	*	10			
28	(28.0-28.45 m) - same materials - (Rec: 45/31 cm.)	ss-28	Stiff	*	13			
29	(29.0-29.45 m) Light brown silty SAND, non-plastic. (Rec: 45/35 cm.)	ss-29	Med. dense	*	14			
30								

BOREHOLE LOG

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

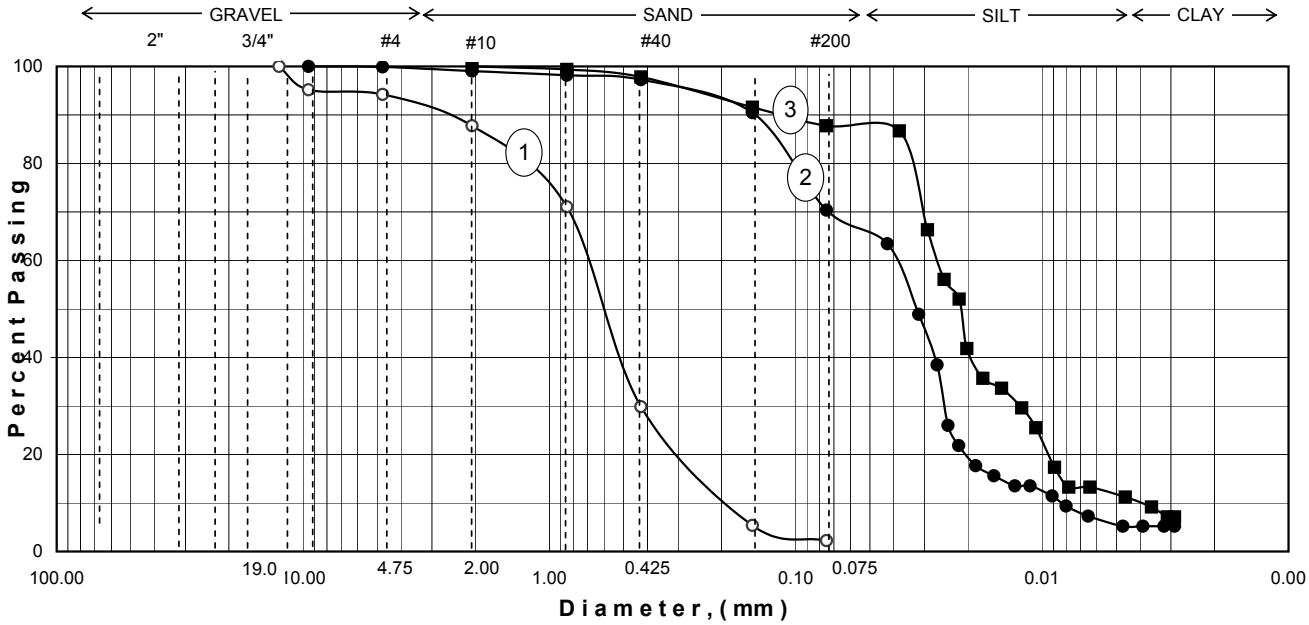
LOCATION : Maloma Bridge, San Felipe, Zambales

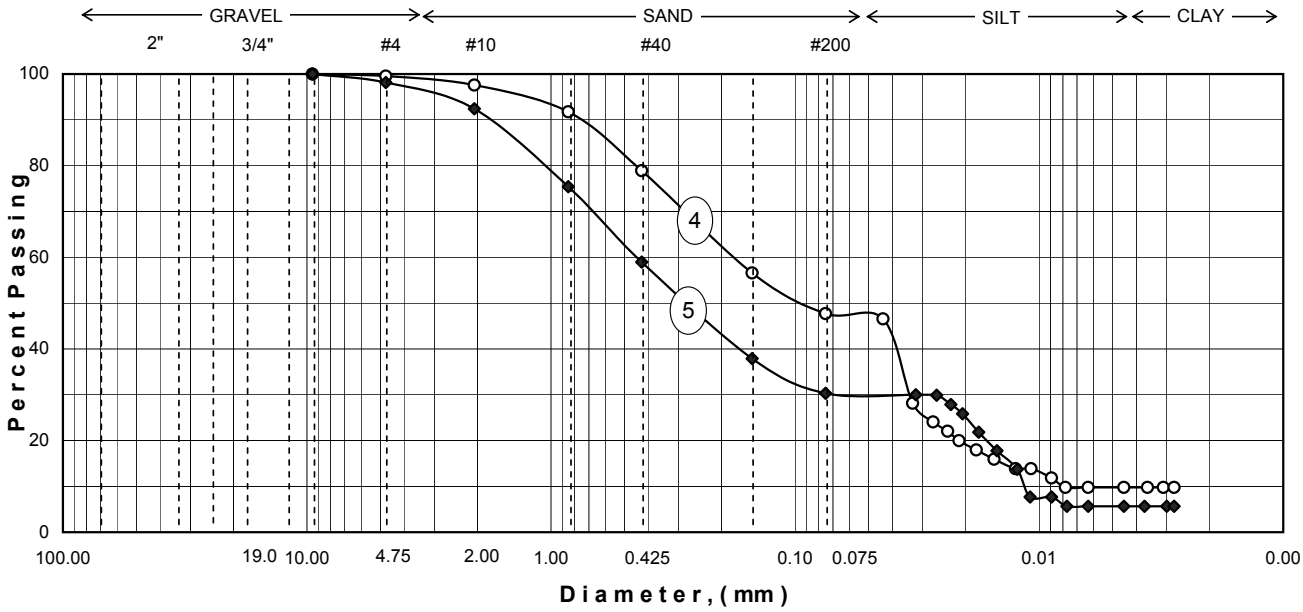
BORING NO.: **BH-5**
FINAL DEPTH: **35.45 m.**
GWT: **0.65 m.**
ELEVATION: **2.38 m.**
DATE STARTED: **June 17, 2002**
DATE FINISHED: **June 20, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Light brown silty SAND, non-plastic. (Rec: 45/32 cm.)	ss-30	Med. dense	*	21			Gs =
31	(31.0-31.45 m) Light brown silty fine to medium SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/30 cm.)	ss-31	Med. dense	SM	27			2.61
32	(32.0-32.45 m) - same materials - (Rec: 45/30 cm.)	ss-32	Dense	*	39			
33	(33.0-33.45 m) Gray silty SAND, non-plastic. (Rec: 45/25 cm.)	ss-33	Dense	*	46			
34	(34.0-34.45 m) - same materials - (Rec: 45/30 cm.)	ss-34	Very dense	*	51			
35	(35.0-35.45 m) - same materials - (Rec: 45/30 cm.)	ss-35	Dense	*	46			
36	**Note:** ***---------- Visual Description**							
37	***End of Borehole @ 35.45 m.***							
	Type of drilling Machine - - - - - - KOKEN							
38								
39								
40								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
5	ss-9	9.00-9.45	1	15.32	NP	NP	NP	SP	Dark gray poorly graded fine to medium SAND.
5	ss-12	12.00-12.45	2	36.49	NP	NP	NP	ML	Gray SILT.
5	ss-19	19.00-19.45	3	40.66	NP	NP	NP	ML	Light gray SILT.
5	ss-24	24.00-24.45	4	44.87	NP	NP	NP	SM	Dark gray medium to fine SAND, with silt.
5	ss-31	31.00-31.45	5	22.05	NP	NP	NP	SM	Light brown silty fine to medium SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales** BORING NO.: **BH-5** DATE TESTED: **June 22, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: **THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO**	

Sample Number	ss-9				ss-12	
Depth (m)	9.00-9.45				12.00-12.45	
Volume of Flask @ 20° , ml	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	798.60	801.57			796.41	790.58
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	673.18	676.39			676.39	669.82
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	74.58	74.82			79.98	79.24
Specific Gravity, Gs = Ws / Ww	2.68	2.67			2.50	2.52
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.66**			**2.49**	**2.51**

Sample Number	ss-19				ss-24	
Depth (m)	19.00-19.45				24.00-24.45	
Volume of Flask @ 20°C	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	790.94	795.08			798.08	791.80
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	669.82	672.52			676.39	669.82
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	78.88	77.44			78.31	78.02
Specific Gravity, Gs = Ws / Ww	2.54	2.58			2.55	2.56
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.53**	**2.57**			**2.54**	**2.55**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **BH-5** DATE TESTED: **June 22, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**

Sample Number	ss-31					
Depth (m)	31.00-31.45					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	793.48	799.40				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	669.82	675.63				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	76.34	76.23				
Specific Gravity, Gs = Ws / Ww	2.62	2.62				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.61**	**2.61**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-6**
FINAL DEPTH: **30.45 m.**
GWT: **6.75 m.**
ELEVATION: **5.79 m.**
DATE STARTED: **June 21, 2002**
DATE FINISHED: **June 25, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray to brownish gray lahar SAND, with pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Med. dense	*	18			
2	(2.0-2.45 m) Light brown silty SAND, non-plastic, traces of pyroclastic materials. (Rec: 45/45 cm.) *Approximately change formation @ 3.45 m.*	ss-2	Very loose	*	4			
3	(3.0-3.45 m) Brown silty CLAY, medium plastic. (Rec: 45/20 cm.)	ss-3	Soft	*	3			
4	(4.0-4.45 m) Brownish gray silty SAND, non-plastic, traces of gravel. (Rec: 45/37 cm.)	ss-4	Med. dense	*	26			
5	(5.0-5.45 m) Light gray silty SAND, non-plastic, traces of gravel. (Rec: 45/35 cm.)	ss-5	Med. dense	*	28			
6	(6.0-6.45 m) - same materials - (Rec: 45/30 cm.)	ss-6	Med. dense	*	23			
7	(7.0-7.45 m) Dark gray medium-grained SAND, traces of gravel. (Rec: 45/30 cm.)	ss-7	Med. dense	*	17			
8	(8.0-8.45 m) - same materials - (Rec: 45/35 cm.)	ss-8	Med. dense	*	22			
9	(9.0-9.45 m) Light gray fine to medium SAND, traces of non-plastic silt and traces of pyroclastic materials. (Rec: 45/30 cm.)	ss-9	Med. dense	SP-SM	20	●		2.66
10								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-6**
FINAL DEPTH: **30.45 m.**
GWT: **6.75 m.**
ELEVATION: **5.79 m.**
DATE STARTED: **June 21, 2002**
DATE FINISHED: **June 25, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Dark gray silty SAND, non-plastic, traces of decayed materials and pyroclastic materials. (Rec: 45/40 cm.)	ss-10	Loose	*	7			Gs =
11	(11.0-11.45 m) Gray silty SAND, non-plastic, some pyroclastic materials. (Rec: 45/40 cm.)	ss-11	Med. dense	*	22			
12	(12.0-12.45 m) - same materials - (Rec: 45/40 cm.)	ss-12	Med. dense	*	23			
13	(13.0-13.45 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/31 cm.)	ss-13	Med. dense	*	26			
14	(14.0-14.45 m) - same materials - (Rec: 45/40 cm.)	ss-14	Med. dense	*	26			
15	(15.0-15.45 m) Light gray SILT, non-plastic, some sand and traces of pyroclastic materials. (Rec: 45/35 cm.)	ss-15	Very dense	ML	58	●		2.50
16	(16.0-16.3 m) - same materials - (Rec: 30/30 cm.)	ss-16	Very dense	*	56/15 cm.			
17	(17.0-17.45 m) Light gray silty SAND, non-plastic, some pyroclastic materials. (Rec: 45/40 cm.)	ss-17	Very dense	*	61			
18	(18.0-18.45 m) - same materials - (Rec: 45/40 cm.)	ss-18	Med. dense	*	28			
19	(19.0-19.3 m) - same materials - (Rec: 30/28 cm.)	ss-19	Very dense	*	55/15 cm.			
20								

BOREHOLE LOG

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

LOCATION : Maloma Bridge, San Felipe, Zambales

BORING NO.: **BH-6**
FINAL DEPTH: **30.45 m.**
GWT: **6.75 m.**
ELEVATION: **5.79 m.**
DATE STARTED: **June 21, 2002**
DATE FINISHED: **June 25, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.4 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 40/35 cm.)	ss-20	Very dense	*	65/25 cm.			Gs =
21	(21.0-21.45 m) Dark gray SILT, slightly plastic, traces of fine sand and broken shells. (Rec: 45/32 cm.)	ss-21	Stiff	ML	15			2.60
22	(22.0-22.45 m) - same materials - (Rec: 45/38 cm.)	ss-22	Med. stiff	*	6			
23	(23.0-23.45 m) - same materials - Rec: 45/35 cm.)	ss-23	Stiff	*	12			
24	(24.0-24.45 m) - same materials - (Rec: 45/35 cm.)	ss-24	Med. stiff	*	6			
25	(25.0-25.45 m) Gray sandy SILT, slightly plastic, with traces of pyroclastic materials. (Rec: 45/35 cm.)	ss-25	Med. stiff	ML	6			2.58
26	(26.0-26.45 m) Brownish gray silty CLAY, medium plastic. (Rec: 45/32 cm.)	ss-26	Med. stiff	*	6			
27	(27.0-27.45 m) Light brown silty CLAY, medium plastic, very wet. (Rec: 45/30 cm.)	ss-27	Med. stiff	*	5			
28	(28.0-28.45 m) - same materials - (Rec: 45/30 cm.)	ss-28	Med. stiff	*	5			
29	(29.0-29.45 m) Brown silty CLAY, medium plastic, some fine sand. (Rec: 45/40 cm.)	ss-29	Med. stiff	*	8			
30								

BOREHOLE LOG

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

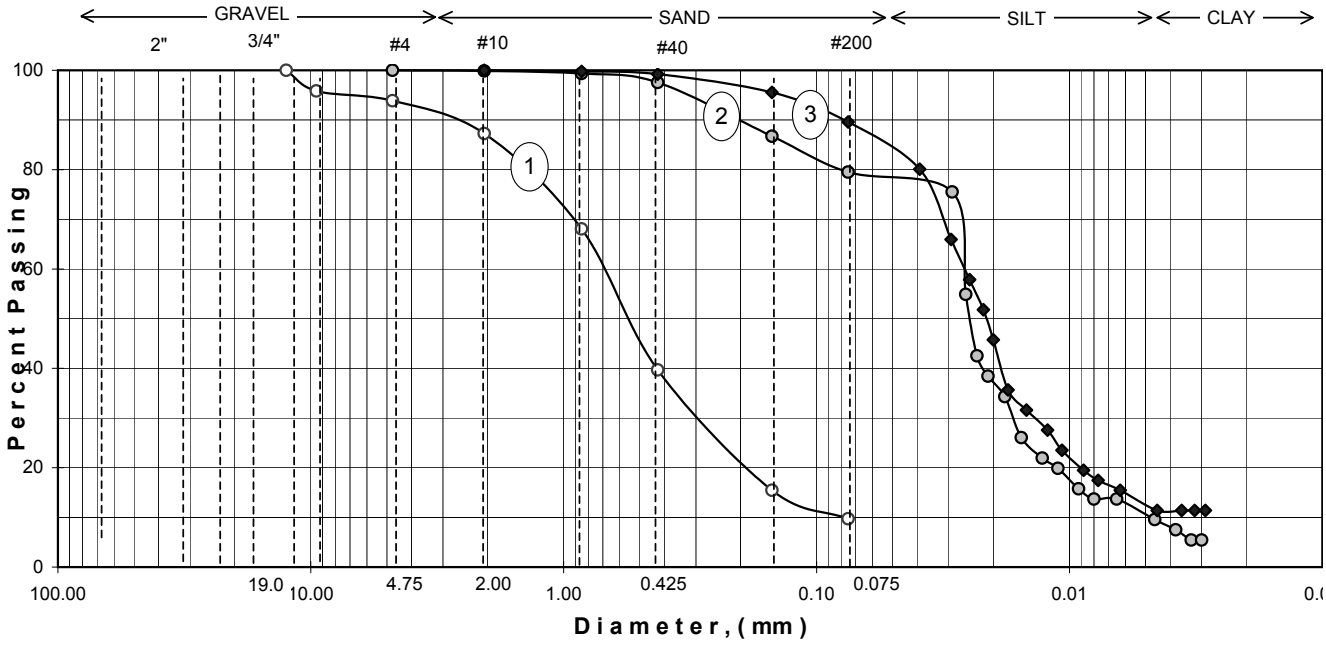
LOCATION : Maloma Bridge, San Felipe, Zambales

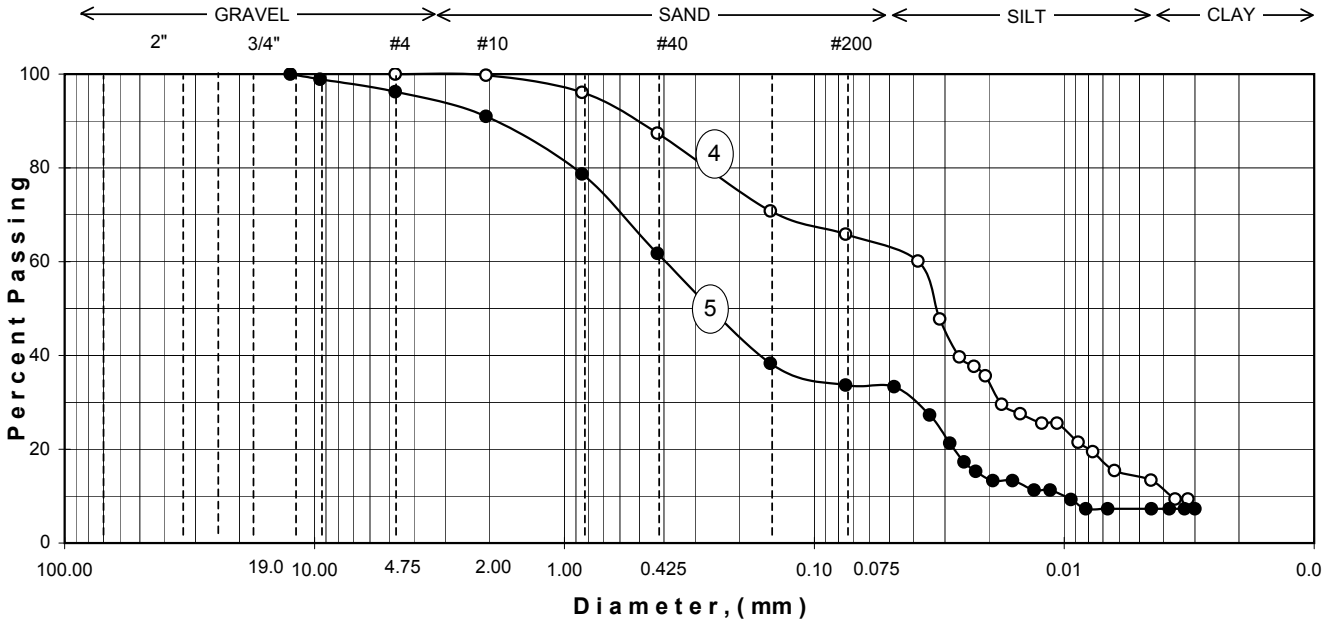
BORING NO.: **BH-6**
FINAL DEPTH: **30.45 m.**
GWT: **6.75 m.**
ELEVATION: **5.79 m.**
DATE STARTED: **June 21, 2002**
DATE FINISHED: **June 25, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Brown silty SAND, slightly plastic, traces of pyroclastic materials. (Rec: 45/33 cm.)	ss-30	Stiff	SM	9			Gs = 2.66
31	**Note:** ***---------- Visual Description**							
32	***End of Borehole @ 30.45 m.***							
	Type of drilling Machine - - - - - - KOKEN							
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
6	ss-9	9.00-9.45	1	20.20	NP	NP	NP	SP-SM	Light gray fine to medium SAND.
6	ss-15	15.00-15.45	2	38.40	Not tested			ML	Light gray SILT.
6	ss-21	21.00-21.45	3	45.38	Not tested			ML	Dark gray SILT.
6	ss-25	25.00-25.45	4	33.91	Not tested			ML	Gray sandy SILT.
6	ss-30	30.00-30.45	5	24.25	Not tested			SM	Brown silty SAND.
	Note: Soil classification base on hydrometer test results								

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales** BORING NO.: **BH-6** DATE TESTED: **July 05, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-9				ss-15	
Depth (m)	9.00-9.45				15.00-15.45	
Volume of Flask @ 20° , ml	500	500			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	791.82	800.97			187.19	187.06
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	666.36	676.39			157.08	157.02
Wt. of Dry Soil = Ws	200.00	200.00			50.00	50.00
Wt. of Water, Ww = Ws + Wbw - Wbws	74.54	75.42			19.89	19.96
Specific Gravity, Gs = Ws / Ww	2.68	2.65			2.51	2.51
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.64**			**2.50**	**2.50**

Sample Number	ss-21				ss-25	
Depth (m)						
Volume of Flask @ 20°C	250	100			250	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	401.44	187.62			401.19	187.88
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.86	156.70			339.86	157.25
Wt. of Dry Soil = Ws	100.00	50.00			100.00	50.00
Wt. of Water, Ww = Ws + Wbw - Wbws	38.42	19.08			38.67	19.37
Specific Gravity, Gs = Ws / Ww	2.60	2.62			2.59	2.58
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.59**	**2.61**			**2.58**	**2.57**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Maloma Bridge, San Felipe, Zambales** BORING NO.: **BH-6** DATE TESTED: **July 05, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**
PROJECT: **THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO**	

Sample Number	ss-30					
Depth (m)	30.00-30.45					
Volume of Flask @ 20° , ml	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	188.01	188.00				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.72	156.75				
Wt. of Dry Soil = Ws	50.00	50.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	18.71	18.75				
Specific Gravity, Gs = Ws / Ww	2.67	2.67				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.66**	**2.66**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-7**
FINAL DEPTH: **33.00 m.**
GWT: **2.10 m.**
ELEVATION: **11.30 m.**
DATE STARTED: **June 26, 2002**
DATE FINISHED: **July 05, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: *Fill materials @ about 3.00 m. depth*							Gs =
1	(1.0-1.1 m) Bluish gray GRAVEL/BOULDERS, with sand and silt (fill materials.) (Rec: 10/10 cm.)	ss-1	Very dense	*	40/10 cm.			
2	(2.0-2.45 m) Brown silty CLAY, medium plastic, little amount of sand, moist to wet. (Rec: 45/45 cm.)	ss-2	Very stiff	*	26			
3	(3.0-3.45 m) Brown silty CLAY, medium plastic, traces of gravel. (Rec: 45/37 cm.)	ss-3	Very stiff	*	29			
4	(4.0-4.45 m) - same materials - (Rec: 45/38 cm.)	ss-4	Med. stiff	*	6			
5	(5.0-5.45 m) Brown sandy SILT, medium plastic, traces of fine gravel. moist to wet. (Rec: 45/43 cm.)	ss-5	Stiff	ML	10			2.70
6	(6.0-6.45 m) - same materials - (Rec: 45/35 cm.)	ss-6	Very stiff	*	24			
7	(7.0-7.18 m) Brownish gray GRAVEL/ COBBLES. (Rec: 18/5 cm.) (7.18-8.0 m) - same materials - (Rec: 82/10/0 cm.)	ss-7 cs-1	Very dense	*	45/3 cm.			
8	(8.0-8.45 m) Brown SILT, non-plastic, little amount of fine sand and traces of fine gravel. (Rec: 45/35 cm.)	ss-8	Med. dense	ML	13			2.67
9	(9.0-9.45 m) Brown to gray brown SILT, non-plastic, with sand. (Rec: 45/28 cm.)	ss-9	Med. dense	*	29			
10								

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-7**
FINAL DEPTH: **33.00 m.**
GWT: **2.10 m.**
ELEVATION: **11.30 m.**
DATE STARTED: **June 26, 2002**
DATE FINISHED: **July 05, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brown to grayish brown SILT, non-plastic, with little amount of fine sand. (Rec: 45/28 cm.)	ss-10	Very dense	ML	61			Gs = 2.63
11	(11.0-11.45 m) Grayish brown silty CLAY, medium plastic, some sand. (Rec: 45/21 cm.)	ss-11	Hard	*	55			
12	(12.0-12.45 m) Grayish brown clayey SAND, slightly to medium plastic. (Rec: 45/30 cm.)	ss-12	Hard	*	39			
13	(13.0-13.45 m) Grayish brown SILT/CLAY, slightly to medium plastic, little amount of sand. (Rec: 45/27 cm.)	ss-13	Hard	*	39			
14	(14.0-14.45 m) Light brown sandy GRAVEL, some non-plastic silt. (Rec: 45/23 cm.)	ss-14	Dense	GM	48			2.78
15	(15.0-15.45 m) - same materials - (Rec: 45/18 cm.)	ss-15	Dense	*	49			
16	(16.0-16.45 m) Light brown to grayish brown silty SAND, non-plastic. (Rec: 45/29 cm.)	ss-16	Dense	*	48			
17	(17.0-17.45 m) Light gray well graded GRAVEL, with medium sand and traces of silt. (Rec: 45/17 cm.)	ss-17	Very dense	GW-GM	62			2.72
18	(18.0-18.45 m) Bluish gray moderately weathered DUNITE, strongly cemented. (Rec: 45/32/17 cm.)	cs-1						
19	(19.0-19.0 m) No Penetration after 10 blows. (Rec: 10/0 cm.)	ss-18	Very dense		10			
	(19.0-20.0 m) No Recovery (Rec: 100/0/0 cm.)	cs-3						
20								

BOREHOLE LOG

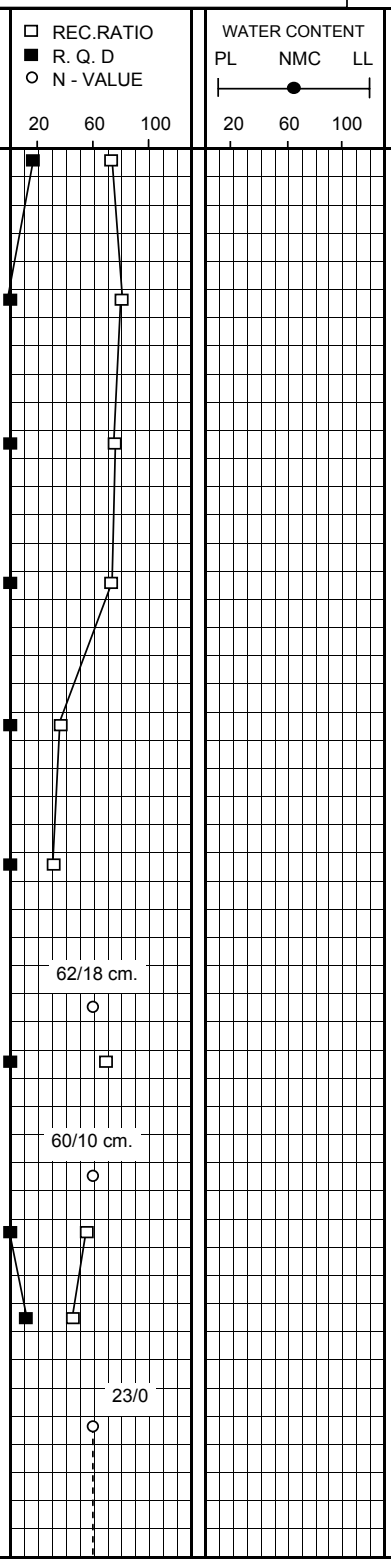
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Bucao Bridge, Botolan, Zambales**

BORING NO.: **BH-7**
FINAL DEPTH: **33.00 m.**
GWT: **2.10 m.**
ELEVATION: **11.30 m.**
DATE STARTED: **June 26, 2002**
DATE FINISHED: **July 05, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS
	(20.0-21.0 m) Dark gray moderately weathered DUNITE, strongly cemented. (Rec: 100/74/16 cm.	cs-4		
21	(21.0-22.0 m) - same materials - (Rec: 100/80/0 cm.)	cs-5		
22	(22.0-23.0 m) Light gray to yellowish gray highly to completely weathered DUNITE, weakly cemented. (Rec: 100/76/0 cm.)	cs-6		
23	(23.0-24.0 m) - same materials - Rec: 100/74/0 cm.)	cs-7		
24	(24.0-25.0 m) - same materials - (Rec: 100/37/0 cm.)	cs-8		
25	(25.0-26.0 m) Yellowish brown completely weathered DUNITE, weakly cemented. (Rec: 100/32/0 cm.)	cs-9		
26	(26.0-26.33 m) Yellowish brown, spotted with gray DUNITE. (Rec: 33/33 m.)	ss-19	Very dense	*
	(26.33-27.0 m) Yellowish brown, spotted with gray and highly to completely weathered DUNITE, weakly cemented. (Rec: 67/46/0 cm.)	cs-10		
27	(27.0-27.25 m) - same materials - (Rec: 25/15 cm.)	ss-20	Very dense	
	(27.25-28.0 m) Bluish gray, spotted with white highly to completely weathered DUNITE, weakly cemented. (Rec: 75/41/0 cm.)	cs-11		
28	(28.0-29.0 m) - same materials - (Rec: 75/45/13 cm.)	cs-12		
29	(29.0-29.0 m) No Penetration	ss-21	Very dense	
30				



P.I.	OTHER TEST RESULTS

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-7**
FINAL DEPTH: **33.00 m.**
GWT: **2.10 m.**
ELEVATION: **11.30 m.**
DATE STARTED: **June 26, 2002**
DATE FINISHED: **July 05, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-31.0 m) No Penetration (Rec: 100/0/0 cm.)	ss-22	Very dense	*	15/0			
	(30.0-31.0 m) Bluish gray, spotted with white highly to completely weathered DUNITE, weakly cemented. (Rec: 100/61/0 cm.)	cs-14						
31	(31.0-32.0 m) - same materials - (Rec: 100/50/0 cm.)	cs-15						
32	(32.0-33.0 m) - same materials - (Rec: 100/56/0 cm.)	cs-16						
33								
	Note: ***---------- Visual Description**							
34	***End of Borehole @ 33.00 m.***							
35	Type of drilling Machine - - - - - - TDC							
36								
37								
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39								
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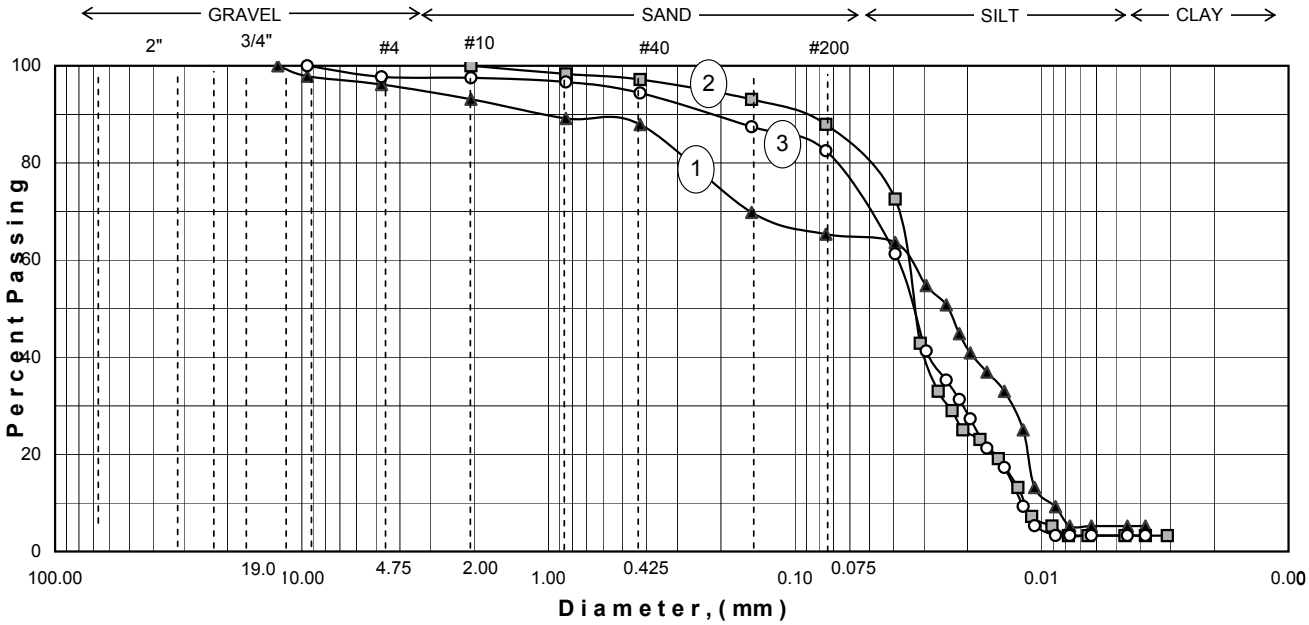
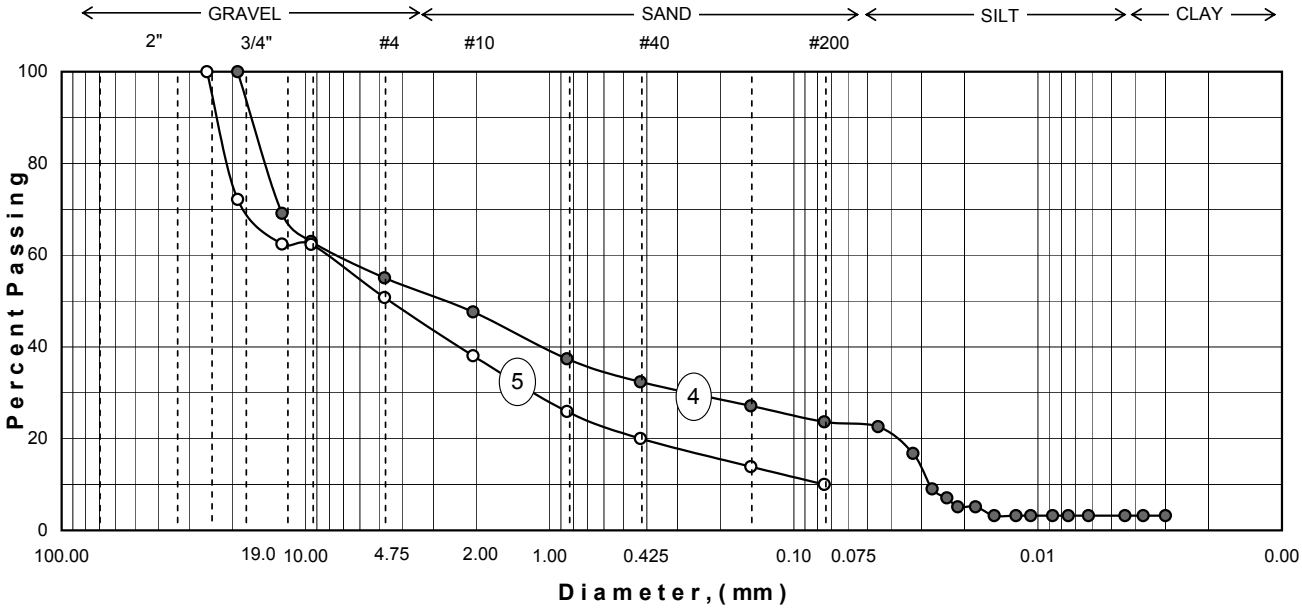
GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
7	ss-5	5.00-5.45	1	36.34	Not tested			ML	Brown sandy SILT.
7	ss-8	8.00-8.45	2	51.17	NP	NP	NP	ML	Brown SILT.
7	ss-10	10.00-10.45	3	53.10	NP	NP	NP	ML	Brown to grayish brown SILT.
7	ss-14	14.00-14.45	4	23.02	NP	NP	NP	GM	Light brown sandy GRAVEL.
7	ss-17	17.00-17.45	5	16.14	NP	NP	NP	GW-GM	Light gray well graded GRAVEL,
									with medium sand.
		Note: Soil classification of SS-5 (5.00-5.45 m.) is base on hydrometer test result.							

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan Zambales** BORING NO.: **BH-7** DATE TESTED: **July 08, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-5				ss-8	
Depth (m)	5.00-5.45				8.00-8.45	
Volume of Flask @ 20° , ml	250	250			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	402.81	403.00			188.03	187.99
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.86	339.86			156.70	156.72
Wt. of Dry Soil = Ws	100.00	100.00			50.00	50.00
Wt. of Water, Ww = Ws + Wbw - Wbws	37.05	36.86			18.67	18.73
Specific Gravity, Gs = Ws / Ww	2.70	2.71			2.68	2.67
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.69**	**2.70**			**2.67**	**2.66**

Sample Number	ss-10				ss-14	
Depth (m)	10.00-10.45				14.00-14.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	188.06	188.14			188.82	189.12
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	157.02			156.72	157.02
Wt. of Dry Soil = Ws	50.00	50.00			50.00	50.00
Wt. of Water, Ww = Ws + Wbw - Wbws	19.02	18.88			17.90	17.90
Specific Gravity, Gs = Ws / Ww	2.63	2.65			2.79	2.79
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.62**	**2.64**			**2.78**	**2.78**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan Zambales** BORING NO.: **BH-7** DATE TESTED: **July 08, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-17					
Depth (m)	17.00-17.45					
Volume of Flask @ 20° , ml	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	188.82	189.00				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	157.25	157.25				
Wt. of Dry Soil = Ws	50.00	50.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	18.43	18.25				
Specific Gravity, Gs = Ws / Ww	2.71	2.74				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.70**	**2.73**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-8**
FINAL DEPTH: **33.20 m.**
GWT: **1.35 m.**
ELEVATION: **7.71 m.**
DATE STARTED: **June 18, 2002**
DATE FINISHED: **June 27, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.1 m) Gray silty lahar SAND, little amount of pyroclastic materials. (Rec: 45/35 cm.)	ss-1	Very loose	*	4			
2	(2.0-2.45 m) - same materials - (Rec: 45/30 cm.)	ss-2	Loose	*	5			
3	(3.0-3.45 m) Gray medium to coarse lahar SAND, little amount of silt, some pyroclastic materials. (Rec: 45/26 cm.)	ss-3	Med. dense	*	11			
4	(4.0-4.45 m) Gray coarse lahar SAND, traces of silt with pyroclastic materials. (Rec: 45/45 cm.)	ss-4	Very loose	*	4			
5	(5.0-5.45 m) - same materials - (Rec: 45/45 cm.)	ss-5	Very loose	*	4			
6	(6.0-6.45 m) Gray coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/30 cm.)	ss-6	Loose	*	10			
7	(7.0-7.45 m) Brownish gray sandy GRAVEL, traces of silt. (Rec: 45/28 cm.)	ss-7	Dense	*	42			
8	(8.0-8.45 m) Brownish gray well graded coarse to medium SAND, with some gravel and traces of non-plastic silt. (Rec: 45/42 cm.)	ss-8	Very dense	SW-SM	70	●		2.65
9	(9.0-9.45 m) - same materials - (Rec: 45/30 cm.)	ss-9	Very dense	*	70			
	(9.45-10.0 m) Bluish gray GRAVEL/COBBLES. (Rec: 55/50/11 cm.)	cs-1			■ □			
10								

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-8**
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GWT: **1.35 m.**
ELEVATION: **7.71 m.**
DATE STARTED: **June 18, 2002**
DATE FINISHED: **June 27, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.5 m) Bluish brown GRAVEL/COBBLES. (Rec: 50/43/25 cm.)	cs-2						Gs =
11	(11.0-11.45 m) Brown SILT, slightly plastic, with some fine sand. (Rec: 45/40 cm.)	ss-10	Very stiff	ML	18			2.50
12	(12.0-12.45 m) - same materials - (Rec: 45/40 cm.)	ss-11	Very stiff	*	19			
13	(13.0-13.45 m) Brown silty CLAY, medium plastic, traces of sand. (Rec: 45/39 cm.)	ss-12	Very stiff	*	29			
14	(14.0-14.45 m) - same materials - (Rec: 45/30 cm.)	ss-13	Hard	*	70			
15	(15.0-15.45 m) Grayish brown silty fine SAND, non-plastic. (Rec: 45/40 cm.)	ss-14	Very dense	*	65			
16	(16.0-16.45 m) Grayish brown silty fine SAND, slightly plastic. (Rec: 45/30 cm.)	ss-15	Very dense	SM	60			2.60
17	(17.0-17.2 m) - same materials - (Rec: 20/15 cm.)	ss-16	Very dense	*	60/5 cm.			
18	(18.0-18.45 m) - same materials - (Rec: 45/30 cm.)	ss-17	Very dense	*	53			
19	(19.0-19.45 m) - same materials - (Rec: 45/30 cm.)	ss-18	Dense	*	39			
20								

BOREHOLE LOG

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BORING NO.: **BH-8**
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DATE STARTED: **June 18, 2002**
DATE FINISHED: **June 27, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Grayish brown silty fine SAND, non-plastic. (Rec: 45/30 cm.)	ss-19	Dense	SM	32			Gs = 2.51
21	(21.0-21.45 m) - same materials - (Rec: 45/30 cm.)	ss-20	Dense	*	50			
22	(22.0-22.4 m) - same materials - (Rec: 40/30 cm.)	ss-21	Very dense	SM	60/25 cm.			2.52
23	(23.0-23.3 m) Bluish gray silty fine SAND, non-plastic. (Rec: 30/30 cm.)	ss-22	Very dense	*	60/15 cm.			
	(23.3-24.0 m) Bluish gray moderately weathered DUNITE , strongly cemented. (Rec: 70/40/0 cm.)	cs-3			80/16 cm.			
24	(24.0-24.31 m) Bluish gray silty SAND, non-plastic. (Rec: 31/28 cm.)	ss-23	Very dense	*				
	(24.31-25.0 m) Brownish gray highly weathered DUNITE, weakly cemented. (Rec: 69/35/0 cm.)	cs-4						
25	(25.0-26.0 m) Bluish gray moderately weathered DUNITE, weakly cemented. (Rec: 100/31/0 cm.)	cs-5						
26	(26.0-27.0 m) - same materials - (Rec: 100/46/0 cm.)	cs-6						
27	(27.0-28.0 m) - same materials - (Rec: 100/44/0 cm.)	cs-7						
28	(28.0-29.0 m) Bluish gray moderately weathered DUNITE, strongly cemented. (Rec: 100/47/15 cm.)	cs-8						
29	(29.0-30.0 m) Creamy white to brown completely to highly weathered DUNITE, weakly cemented. (Rec: 100/62/0 cm.)	cs-9						
30								

BOREHOLE LOG

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DATE STARTED: **June 18, 2002**
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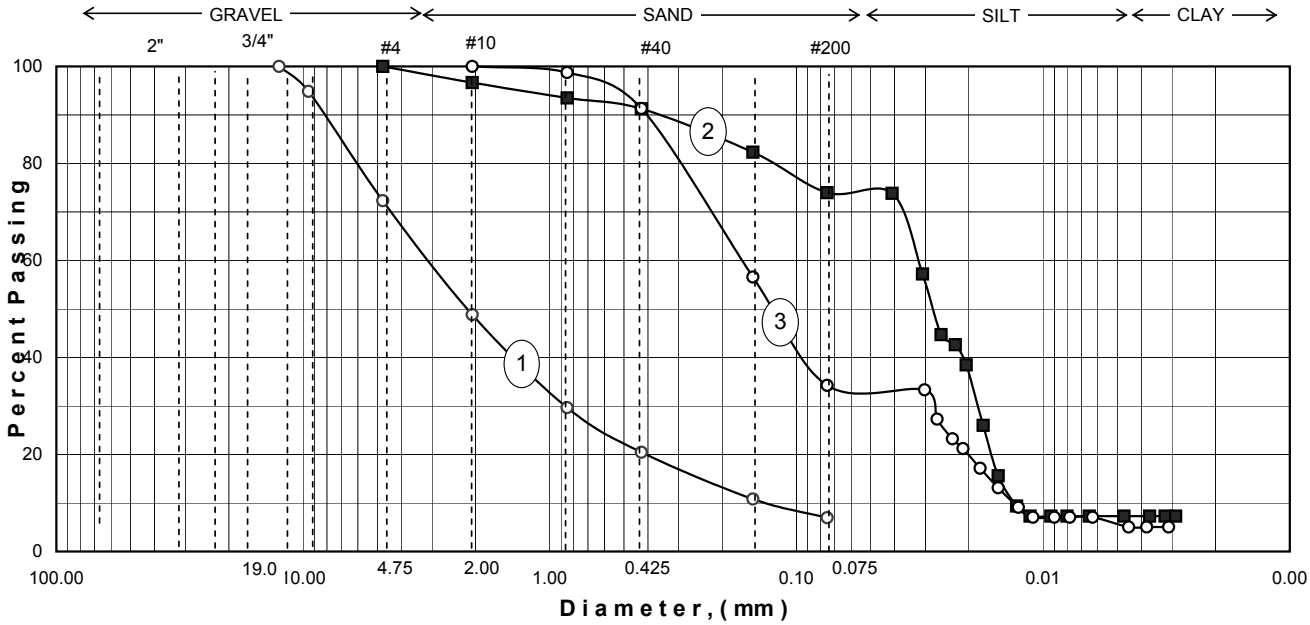
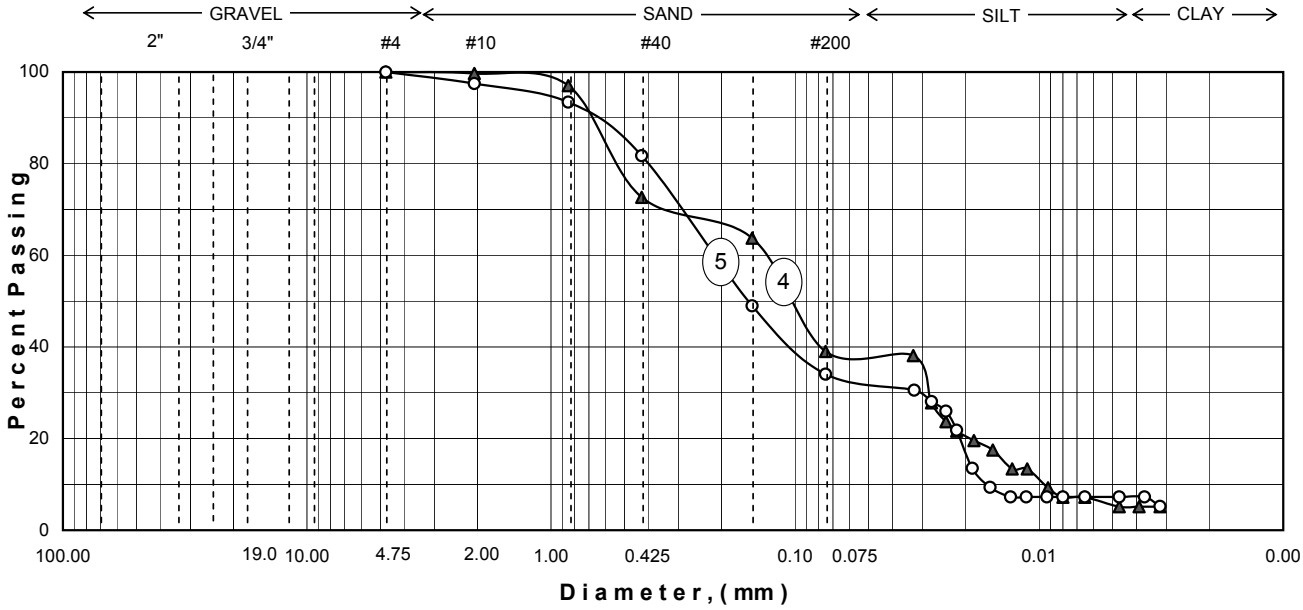
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Grayish brown completely weathered GABBRO or DUNITE, weakly cemented. (Rec: 45/33 cm.)	ss-24	Very dense	*	74			qu = kPa
31	(30.45-31.0 m) Grayish brown moderately weathered GABBRO or DUNITE, moderately to weakly cemented. (Rec: 55/40/0 cm.)	cs-10			70			28066.53
	(31.0-31.45 m) Grayish brown completely weathered GABBRO or DUNITE, weakly cemented. (Rec: 45/45 cm.)	ss-25	Very dense	*				
32	(31.45-32.0 m) Grayish brown moderately weathered GABBRO or DUNITE, moderately to weakly cemented. (Rec: 55/45/0 cm.)	cs-11			60			
	(32.0-32.45 m) Grayish brown completely weathered GABBRO or DUNITE, weakly cemented. (Rec: 45/35 cm.)	ss-26	Very dense	*				
33	(32.45-33.0 m) Grayish brown moderately weathered GABBRO or DUNITE, moderately to weakly cemented. (Rec: 55/40/0 cm.)	cs-12			60/5 cm.			28038.72
34	(33.0-33.2 m) Brown completely weathered GABBRO or DUNITE, weakly cemented. (Rec: 20/20 cm.)	ss-27	Very dense	*				
35	**Note:** ***---------- Visual Description**							
	End of Borehole @ 33.20 m.							
36	Type of drilling Machine - - - - - - TDC							
37								
38								
39								
40								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
8	ss-8	8.00-8.45	1	10.30	NP	NP	NP	SW-SM	Brownish gray well graded coarse to medium SAND.
8	ss-10	11.00-11.45	2	49.49	Not tested			ML	Brown SILT.
8	ss-15	16.00-16.45	3	27.16	NP	NP	NP	SM	Grayish brown silty fine SAND.
8	ss-19	20.00-20.45	4	37.30	NP	NP	NP	SM	Grayish brown silty fine SAND.
8	ss-21	22.00-22.40	5	37.02	NP	NP	NP	SM	Grayish brown silty fine SAND.
	Note: Soil classification of SS-10 (11.00-11.45 m) is base on hydrometer test result.								

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan, Zambales** BORING NO.: **BH-8** DATE TESTED: **July 03, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-8				ss-10	
Depth (m)	8.00-8.45				11.00-11.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	402.22	402.23			400.02	399.87
Temperature, ^{o}C	29	29			29	29
Wt. of Flask + Water = Wbw	339.86	339.86			339.86	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	37.64	37.63			39.84	39.99
Specific Gravity, Gs = Ws / Ww	2.66	2.66			2.51	2.50
Viscosity Correction	0.9960	0.9960			0.9960	0.9960
Specific Gravity corrected for Temp.	**2.65**	**2.65**			**2.50**	**2.49**

Sample Number	ss-15				ss-19	
Depth (m)	16.00-16.45				20.00-20.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	401.47	401.40			400.35	399.96
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.86	339.86			339.86	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	38.39	38.46			39.51	39.90
Specific Gravity, Gs = Ws / Ww	2.60	2.60			2.53	2.51
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.60**	**2.59**			**2.52**	**2.50**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan, Zambales** BORING NO.: **BH-8** DATE TESTED: **July 03, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-21					
Depth (m)	22.00-22.40					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	796.00	793.90				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	675.63	672.52				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	79.63	78.62				
Specific Gravity, Gs = Ws / Ww	2.51	2.54				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.50**	**2.53**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

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

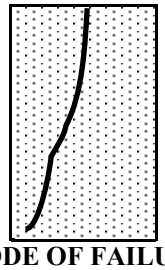
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Bucao Bridge, Botolan, Zambales
Borehole No.: 8	Sample No.: cs-10	Depth (m):	30.60
Date sampled: 06-01-02	Date tested: 08-09-02	Tested by:	N. Antonio

UNCONFINED COMPRESSION TEST REPORT

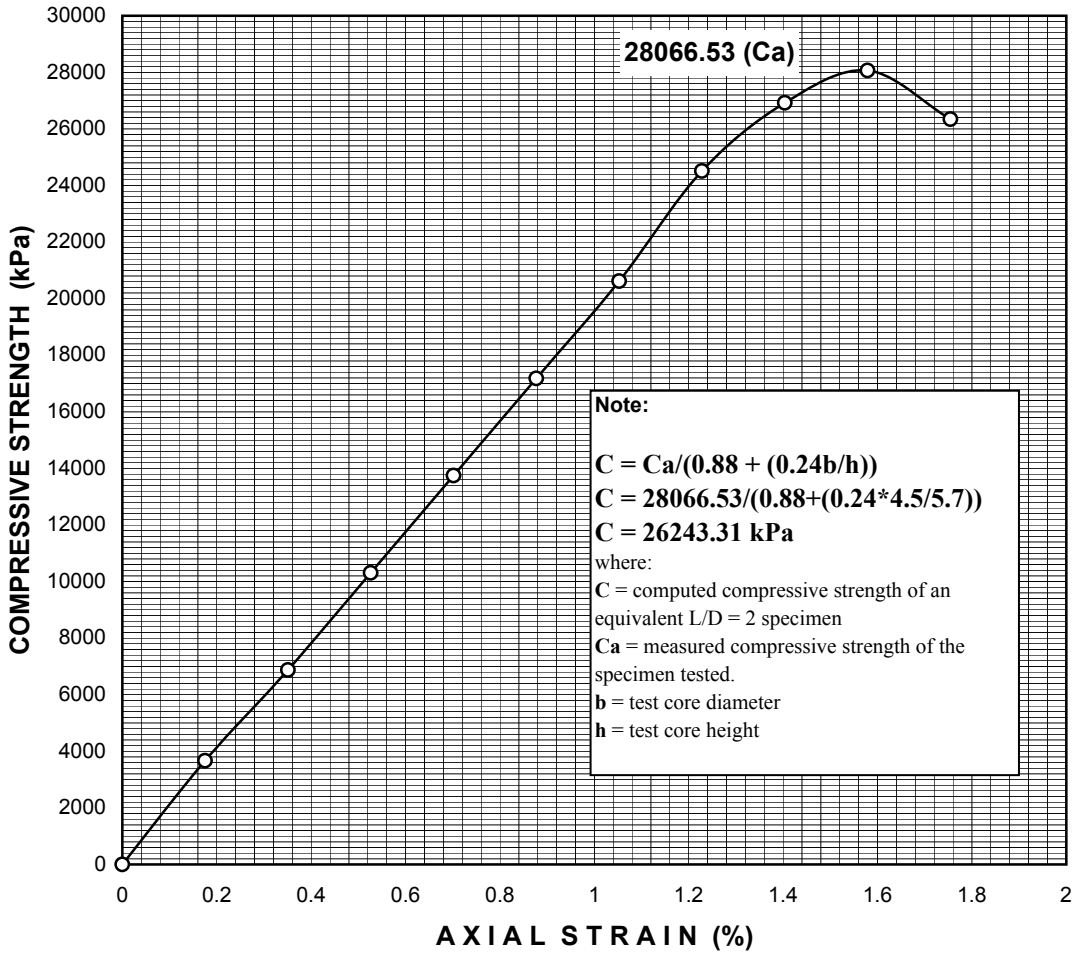
SAMPLE DATA:

Visual Classification: Grayish brown moderately weathered GABBRO or DUNITE

Diameter of sample,	(cm)=	4.50 **(b)**
Height of sample,	(cm)=	5.70 **(h)**
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	28.04
Compressive Strength ,	(kPa)	26243.31 **(C)**
Ave. Failure Strain,	(%)=	1.58



MODE OF FAILURE



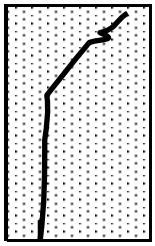
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Bucao Bridge, Botolan, Zambales
Borehole No.: 8	Sample No.: cs-12	Depth (m):	32.80
Date sampled: 06-01-02	Date tested: 08-09-02	Tested by:	N. Antonio

UNCONFINED COMPRESSION TEST REPORT

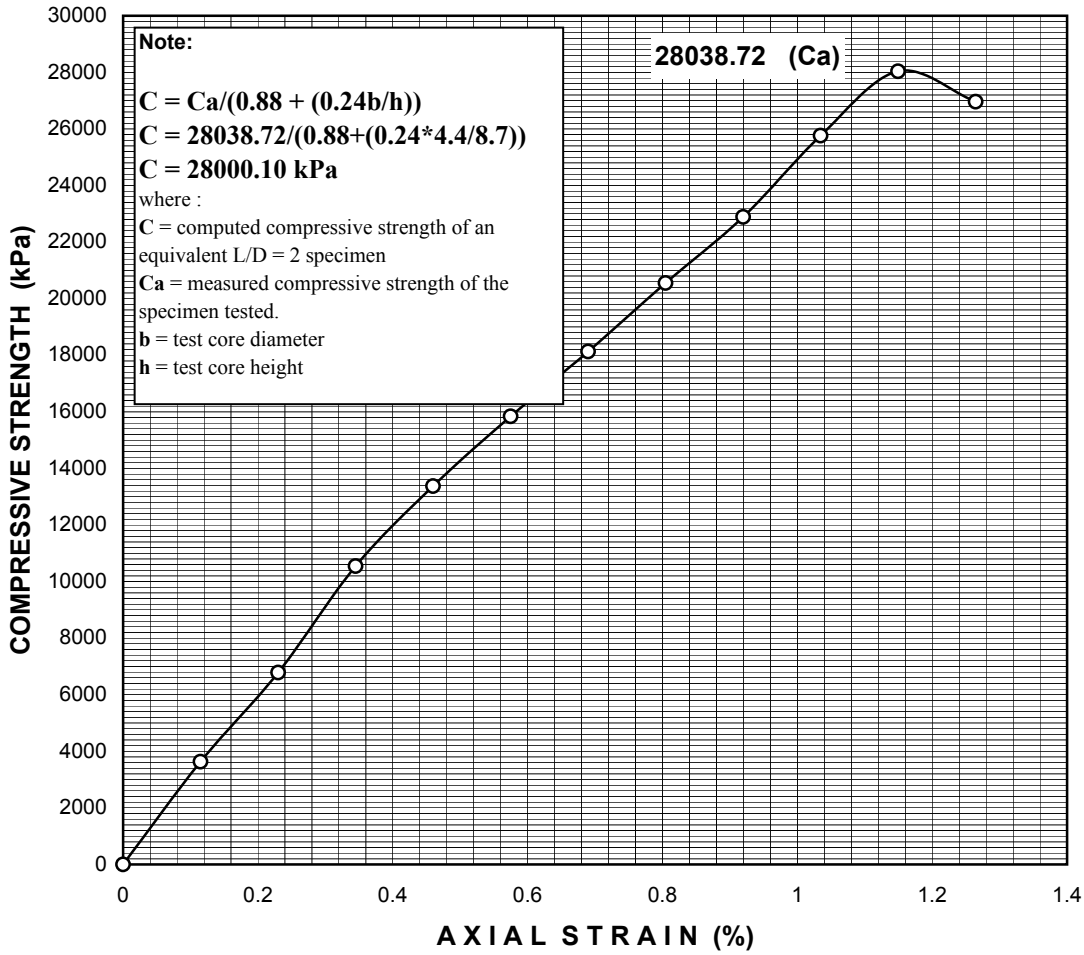
SAMPLE DATA:

Visual Classification: Grayish brown moderately weathered GABBRO or DUNITE

Diameter of sample,	(cm)=	4.40 **(b)**
Height of sample,	(cm)=	8.70 **(h)**
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	27.73
Compressive Strength ,	(kPa)	28000.10 **(C)**
Ave. Failure Strain,	(%)=	1.15



MODE OF FAILURE



BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-9**
FINAL DEPTH: **35.00 m.**
GWT: **7.70 m.**
ELEVATION: **10.52 m.**
DATE STARTED: **June 20, 2002**
DATE FINISHED: **June 26, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.1 m) Light gray silty SAND, non-plastic, traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-1	Med. loose	*	20			
2	(2.0-2.45 m) Light gray silty SAND, non-plastic, some pyroclastic materials, traces of gravel. (Rec: 45/37 cm.)	ss-2	Med. dense	*	14			
3	(3.0-3.45 m) - same materials - (Rec: 45/40 cm.)	ss-3	Med. dense	*	21			
4	(4.0-4.45 m) Brown fine SAND, with non-plastic silt. (Rec: 45/25 cm.)	ss-4	Loose	*	8			
5	(5.0-5.45 m) Grayish brown medium to coarse SAND, traces of gravel. (Rec: 45/35 cm.)	ss-5	Loose	*	10			
6	(6.0-6.45 m) - same materials - (Rec: 45/30 cm.)	ss-6	Loose	*	5			
7	(7.0-7.45 m) Light gray SAND, traces of gravel and non-plastic silt. (Rec: 45/28 cm.)	ss-7	Med. dense	*	12			
⊻ 8	(8.0-8.45 m) Brownish gray medium SAND, traces of gravel. (Rec: 45/30 cm.)	ss-8	Med. dense	*	10			
9	(9.0-9.45 m) - same materials - (Rec: 45/25 cm.)	ss-9	Med. dense	*	13			
10								

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-9**
FINAL DEPTH: **35.00 m.**
GWT: **7.70 m.**
ELEVATION: **10.52 m.**
DATE STARTED: **June 20, 2002**
DATE FINISHED: **June 26, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brownish gray sandy GRAVEL. (Rec: 45/26 cm.)	ss-10	Very dense	*	56			Gs =
11	(11.0-11.45 m) - same materials - (Rec: 45/20 cm.)	ss-11	Med. dense	*	14			
12	(12.0-12.45 m) Light gray SAND, some amount of pyroclastic materials. (Rec: 45/30 cm.)	ss-12	Med. dense	*	12			
13	(13.0-13.45 m) Light gray SAND, with pyroclastic materials, traces of gravel. (Rec: 45/30 cm.)	ss-13	Med. dense	*	21			
14	(14.0-14.45 m) - same materials - (Rec: 45/40 cm.)	ss-14	Very dense	*	23			
15	(15.0-15.45 m) Light gray medium to coarse SAND, some pyroclastic materials, traces of gravel. (Rec: 45/40 cm.)	ss-15	Med. dense	*	27			
16	(16.0-16.45 m) Light gray well graded fine to medium SAND, with little amount of pyroclastic materials and traces of non-plastic silt. (Rec: 45/40 cm.)	ss-16	Med. dense	SW SM	25	●		2.66
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Med. dense	*	30			
18	(18.0-18.45 m) - same materials - (Rec: 45/35 cm.)	ss-18	Med. dense	*	29			
19	(19.0-19.45 m) Light gray medium to coarse SAND, with little amount of pyroclastic materials. (Rec: 45/35 cm.)	ss-19	Med. dense	*	27			
20								

BOREHOLE LOG

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

LOCATION : Bucao Bridge, Botolan, Zambales

BORING NO.: **BH-9**
FINAL DEPTH: **35.00 m.**
GWT: **7.70 m.**
ELEVATION: **10.52 m.**
DATE STARTED: **June 20, 2002**
DATE FINISHED: **June 26, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Light gray medium to coarse SAND, with little amount of pyroclastic materials. (Rec: 45/35 cm.)	ss-20	Med. dense	*	26			Gs =
21	(21.0-21.45 m) Light gray well graded fine to medium SAND, with little amount of fine gravel and traces of non-plastic silt. (Rec: 45/35 cm.)	ss-21	Dense	SW	45			2.77
22	(22.0-22.45 m) Light gray medium to coarse SAND, with pyroclastic materials, traces of gravel. (Rec: 45/35 cm.)	ss-22	Med. dense	*	25			
23	(23.0-23.45 m) - same materials - (Rec: 45/40 cm.)	ss-23	Med. dense	*	27			
24	(24.0-24.45 m) - same materials - (Rec: 45/30 cm.)	ss-24	Med. dense	*	23			
25	(25.0-25.45 m) Light gray medium to coarse SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-25	Med. dense	*	25			
26	(26.0-26.45 m) - same materials - (Rec: 45/35 cm.)	ss-26	Med. dense	*	18			
27	(27.0-27.45 m) - same materials - (Rec: 45/38 cm.)	ss-27	Med. dense	*	28			
28	(28.0-28.45 m) Light gray well graded medium to fine SAND, with little amount of pyroclastic materials and traces of non-plastic silt. (Rec: 45/45 cm.)	ss-28	Med. dense	SW-SM	29			2.31
29	(29.0-29.45 m) - same materials - (Rec: 45/27 cm.)	ss-29	Med. dense	*	27			
30								

BOREHOLE LOG

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

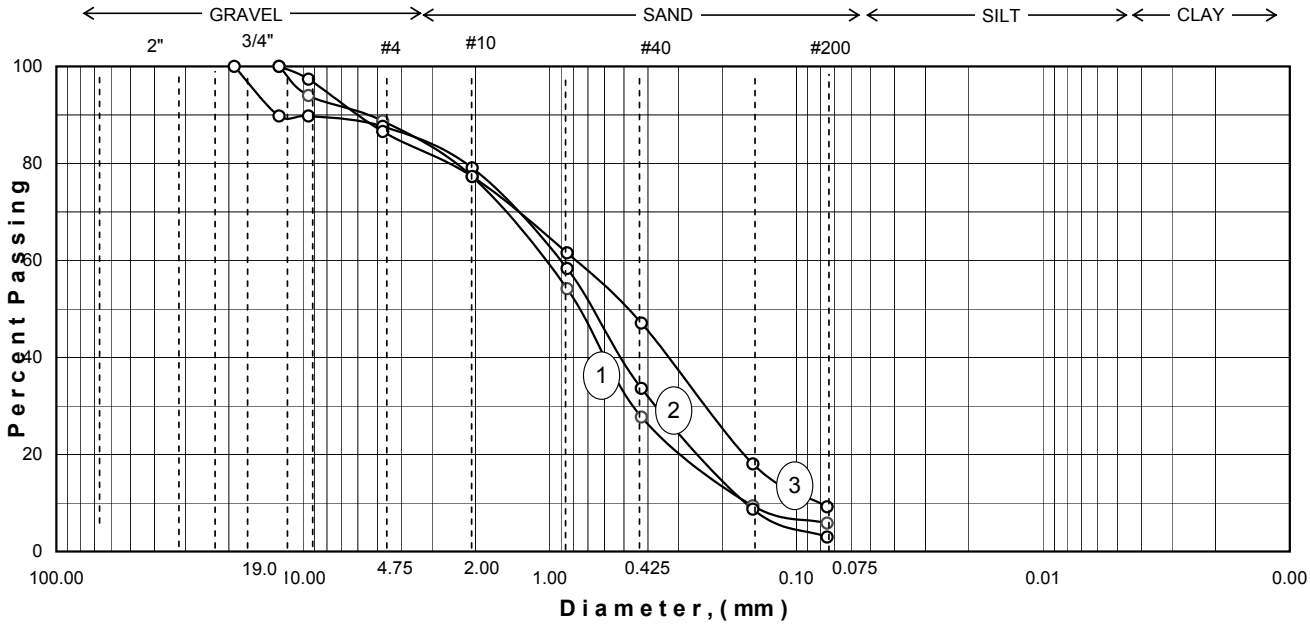
LOCATION : Bucao Bridge, Botolan, Zambales

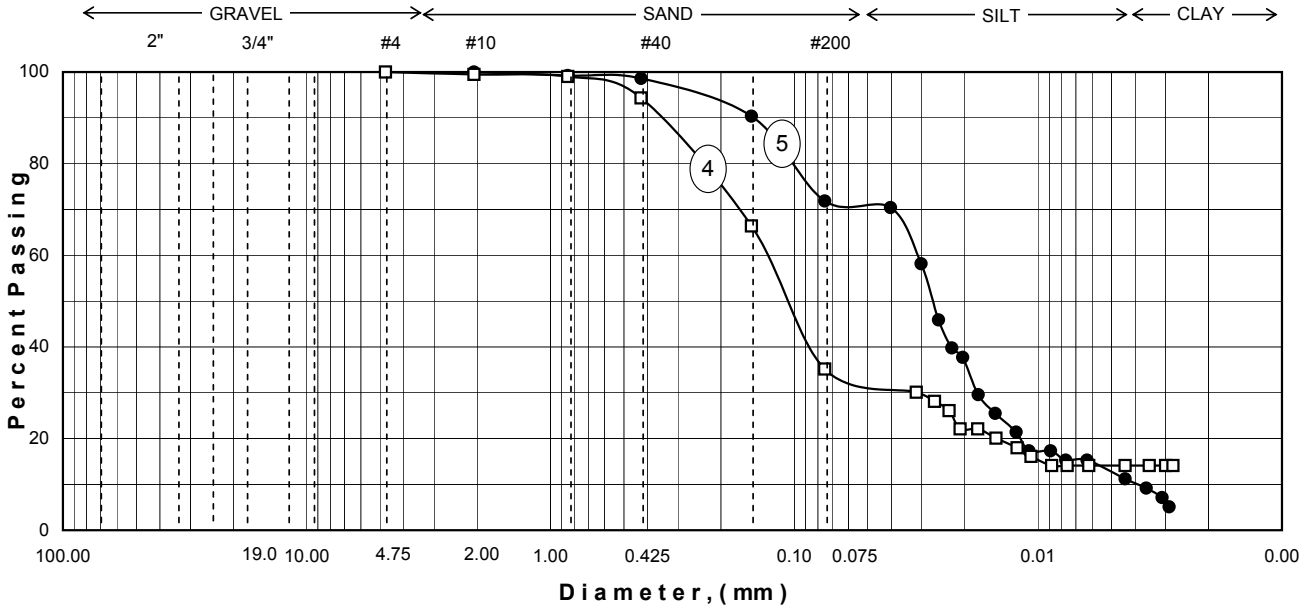
BORING NO.: **BH-9**
FINAL DEPTH: **35.00 m.**
GWT: **7.70 m.**
ELEVATION: **10.52 m.**
DATE STARTED: **June 20, 2002**
DATE FINISHED: **June 26, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Light gray medium to coarse SAND, with pyroclastic materials. (Rec: 45/30 cm.)	ss-30	Dense	*	42			Gs =
31	(31.0-31.45 m) Gray silty SAND, non-plastic, with traces of pyroclastic materials. (Rec: 45/33 cm.)	ss-31	Very dense	SM	65			2.65
32	(32.0-32.45 m) - same materials - (Rec: 45/27 cm.)	ss-32	Very dense	*	59			
33	(33.0-33.45 m) Gray silty fine SAND, little amount of pyroclastic materials. (Rec: 45/33 cm.)	ss-33	Very dense	*	50			
	Approximately change formation @ 34.0 m.							
34	(34.0-34.45 m) Gray to dark gray SILT, slightly plastic, with little amount of fine sand. (Rec: 45/45 cm.)	ss-34	Hard	ML	51			2.54
	(34.45-35.0 m) - same materials -	cs						
35								
36	**Note:** ***---------- Visual Description**							
	End of Borehole @ 35.00 m.							
37								
	Type of drilling Machine - - - - - - TDC							
38								
39								
40								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
9	ss-16	16.00-16.45	1	14.71	NP	NP	NP	SW-SM	Light gray well graded fine to medium SAND.
9	ss-21	21.00-21.45	2	16.53	NP	NP	NP	SW	Light gray well graded fine to medium SAND.
9	ss-28	28.00-28.45	3	40.83	NP	NP	NP	SW-SM	Light gray well graded medium to fine SAND.
9	ss-31	31.00-31.45	4	27.56	NP	NP	NP	SM	Gray silty SAND.
9	ss-34	34.00-34.45	5	44.39	Not tested			ML	Gray to dark gray SILT.
		Note: Soil classification of SS-34 (34.00-34.45 m.) is base on hydrometer test result.							

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan, Zambales** BORING NO.: **BH-9** DATE TESTED: **July 02, 2002** TESTED BY: **L. Padual** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-16				ss-21	
Depth (m)	16.00-16.45				21.00-21.45	
Volume of Flask @ 20° , ml	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	794.70	798.17			800.65	803.92
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	669.82	673.18			673.18	675.63
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	75.12	75.01			72.53	71.71
Specific Gravity, Gs = Ws / Ww	2.66	2.67			2.76	2.79
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.65**	**2.66**			**2.75**	**2.78**

Sample Number	ss-28				ss-31	
Depth (m)	28.00-28.45				31.00-31.45	
Volume of Flask @ 20°C	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	790.56	789.86			791.49	794.47
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	676.39	676.39			666.36	669.82
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	85.83	86.53			74.87	75.35
Specific Gravity, Gs = Ws / Ww	2.33	2.31			2.67	2.65
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.32**	**2.30**			**2.66**	**2.64**

Remarks:

Note: It was observed during testing, that some of light weight materials or pyroclastic materials floats in water @ 28.00-28.45 m.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Bucao Bridge, Botolan, Zambales** BORING NO.: **BH-9** DATE TESTED: **July 02, 2002** TESTED BY: **L. Padual** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-34					
Depth (m)	34.00-34.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	400.70	400.63				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	339.86	339.86				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	39.16	39.23				
Specific Gravity, Gs = Ws / Ww	2.55	2.55				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.54**	**2.54**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **1 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray medium-grained lahar SAND, little amount of pyroclastic materials, traces of silt. (Rec: 45/45 cm.)	ss-1	Med. dense	*	13			
2	(2.0-2.45 m) - same materials - (Rec: 45/40 cm.)	ss-2	Med. dense	*	20			
3	(3.0-3.45 m) - same materials - (Rec: 45/45 cm.)	ss-3	Med. dense	*	11			
4	(4.0-4.45 m) - same materials - (Rec: 45/41 cm.)	ss-4	Med. dense	*	16			
5	(5.0-5.45 m) Light gray silty lahar SAND, non-plastic, some pyroclastic materials. (Rec: 45/45 cm.)	ss-5	Med. dense	*	24			
6	(6.0-6.45 m) - same materials - (Rec: 45/43 cm.)	ss-6	Med. dense	*	23			
7	(7.0-7.45 m) Light gray coarse-grained lahar SAND, with pyroclastic materials. (Rec: 45/37 cm.)	ss-7	Med. dense	*	19			
8	(8.0-8.45 m) Light gray silty lahar SAND, non-plastic, with some pyroclastic materials. (Rec: 45/45 cm.)	ss-8	Med. dense	*	11			
9	(9.0-9.45 m) Light gray fine to medium lahar SAND, with gravel-size pyroclastic materials and traces of non-plastic silt. (Rec: 45/45 cm.)	ss-9	Loose	SM	7	●		2.17
10								

BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **2 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray silty lahar SAND, non-plastic, with traces of gravel-size pyroclastic materials. (Rec: 45/41 cm.)	ss-10	Loose	*	9			
11	(11.0-11.45 m) - same materials - (Rec: 45/37 cm.)	ss-11	Med. dense	*	14			
12	(12.0-12.45 m) Light gray silty lahar SAND, non-plastic, with some gravel-size pyroclastic materials. (Rec: 45/38 cm.)	ss-12	Med. dense	*	13			
13	(13.0-13.45 m) Light gray Lahar SAND, with pyroclastic materials. (Rec: 45/42 cm.)	ss-13	Med. dense	*	14			
14	(14.0-14.45 m) - same materials - (Rec: 45/38 cm.)	ss-14	Very dense	*	61			
15	(15.0-15.45 m) - same materials - (Rec: 45/35 cm.)	ss-15	Dense	*	30			
16	(16.0-16.45 m) - same materials - (Rec: 45/40 cm.)	ss-16	Dense	*	35			
17	(17.0-17.45 m) Light gray silty SAND, non-plastic, some pyroclastic materials. (Rec: 45/28 cm.)	ss-17	Med. dense	*	21			
18	(18.0-18.45 m) - same materials - (Rec: 45/31 cm.)	ss-18	Dense	*	35			
19	(19.0-19.45 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/28 cm.)	ss-19	Med. dense	*	19			
20								

BOREHOLE LOG

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

LOCATION : **Upstream, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **3 of 6**

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) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/31 cm.)	ss-20	Med. dense	*	25			Gs =
21	(21.0-21.45 m) Light gray coarse to fine SAND, some non-plastic silt and traces of pyroclastic materials. (Rec: 45/25 cm.)	ss-21	Med. dense	SM	28	●		2.55
22	(22.0-22.45 m) - same materials - (Rec: 45/25 cm.)	ss-22	Med. dense	*	23			
23	(23.0-23.45 m) - same materials - (Rec: 45/36 cm.)	ss-23	Med. dense	*	29			
24	(24.0-24.45 m) - same materials - (Rec: 45/26 cm.)	ss-24	Med. dense	*	26			
25	(25.0-25.45 m) - same materials - (Rec: 45/29 cm.)	ss-25	Med. dense	*	21			
26	(26.0-26.45 m) - same materials - (Rec: 45/36 cm.)	ss-26	Med. dense	*	12			
27	(27.0-27.45 m) - same materials - (Rec: 45/30 cm.)	ss-27	Med. dense	*	30			
28	(28.0-28.45 m) - same materials - (Rec: 45/28 cm.)	ss-28	Med. dense	*	25			
29	(29.0-29.45 m) - same materials - (Rec: 45/32 cm.)	ss-29	Med. dense	*	26			
30								

BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **4 of 6**

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
	(30.0-30.45 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/29 cm.)	ss-30	Dense	*	34			Gs =
31	(31.0-31.45 m) - same materials - (Rec: 45/40 cm.)	ss-31	Med. dense	*	18			
32	(32.0-32.45 m) Light gray medium to fine SAND, some non-plastic silt and little amount of gravel-size pyroclastic materials. (Rec: 45/20 cm.)	ss-32	Med. dense	SM	27	●		2.46
33	(33.0-33.45 m) Light gray silty SAND, non-plastic, with pyroclastic materials. (Rec: 45/25 cm.)	ss-33	Med. dense	*	23			
34	(34.0-34.45 m) - same materials - (Rec: 45/25 cm.)	ss-34	Med. dense	*	27			
35	(35.0-35.45 m) - same materials - (Rec: 45/29 cm.)	ss-35	Med. dense	*	28			
36	(36.0-36.45 m) - same materials - (Rec: 45/45 cm.)	ss-36	Med. dense	*	11			
37	(37.0-37.45 m) - same materials - (Rec: 45/38 cm.)	ss-37	Dense	*	30			
38	(38.0-38.45 m) - same materials - (Rec: 45/32 cm.)	ss-38	Dense	*	36			
39	(39.0-39.45 m) - same materials - (Rec: 45/20 cm.)	ss-39	Med. dense	*	21			
40								

BOREHOLE LOG

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

LOCATION : **Upstream, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **5 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(40.0-40.45 m) Light gray medium to coarse SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-40	Dense	*	30			Gs =
41	(41.0-41.45 m) - same materials - (Rec: 45/43 cm.)	ss-41	Dense	*	35			
42	42.0-42.45 m) Light gray medium SAND, with pyroclastic materials. (Rec: 45/31 cm.)	ss-42	Dense	*	31			
433	(43.0-43.45 m) - same materials - (Rec: 45/30 cm.)	ss-43	Dense	*	32			
44	(44.0-44.45 m) - same materials - (Rec: 45/35 cm.)	ss-44	Med. dense	*	29			
45	(45.0-45.45 m) - same materials - (Rec: 45/30 cm.)	ss-45	Dense	*	34			
436	(46.0-46.45 m) - same materials - (Rec: 45/25 cm.)	ss-46	Dense	*	36			
47	(47.0-47.45 m) - same materials - (Rec: 45/32 cm.)	ss-47	Dense	*	48			
48	(48.0-48.45 m) - same materials - (Rec: 45/30 cm.)	ss-48	Very dense	*	55			
49	(49.0-49.45 m) Light gray fine to medium SAND, some non-plastic silt and little amount of pyroclastic materials. (Rec: 45/25 cm.)	ss-49	Dense	SM	46	●		2.53
50								

BOREHOLE LOG

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

LOCATION : **Upstream, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-U1**
FINAL DEPTH: **55.45 m.**
GWT: **4.25 m.**
ELEVATION: **234.50 m.**
DATE STARTED: **June 04, 2002**
DATE FINISHED: **June 16, 2002**
SHEET NO. **6 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(50.0-50.45 m) Light gray medium SAND, traces of broken sandstone. (Rec: 45/19 cm.)	ss-50	Very dense	*	80			Gs =
51	(51.0-51.45 m) - same materials - (Rec: 45/25 cm.)	ss-51	Very dense	*	89			
52	(52.0-52.45 m) Brownish gray fine to medium SAND, with little amount of non-plastic silt and pyroclastic materials. (Rec: 45/25 cm.)	ss-52	Very dense	SM	95	●		2.70
533	(53.0-53.45 m) - same materials - (Rec: 45/17 cm.)	ss-53	Very dense	*	100			
54	(54.0-54.45 m) - same materials - (Rec: 45/16 cm.)	ss-54	Very dense	*	111			
55	(55.0-55.45 m) Gray medium-grained SAND, traces of broken sandstone and gravel. (Rec: 45/17 cm.)	ss-55	Very dense	*	100			
56	**Note:** ***---------- Visual Description**							
57	***End of Borehole @ 55.45 m.***							
	Type of drilling Machine - - - - - - TDC							
58								
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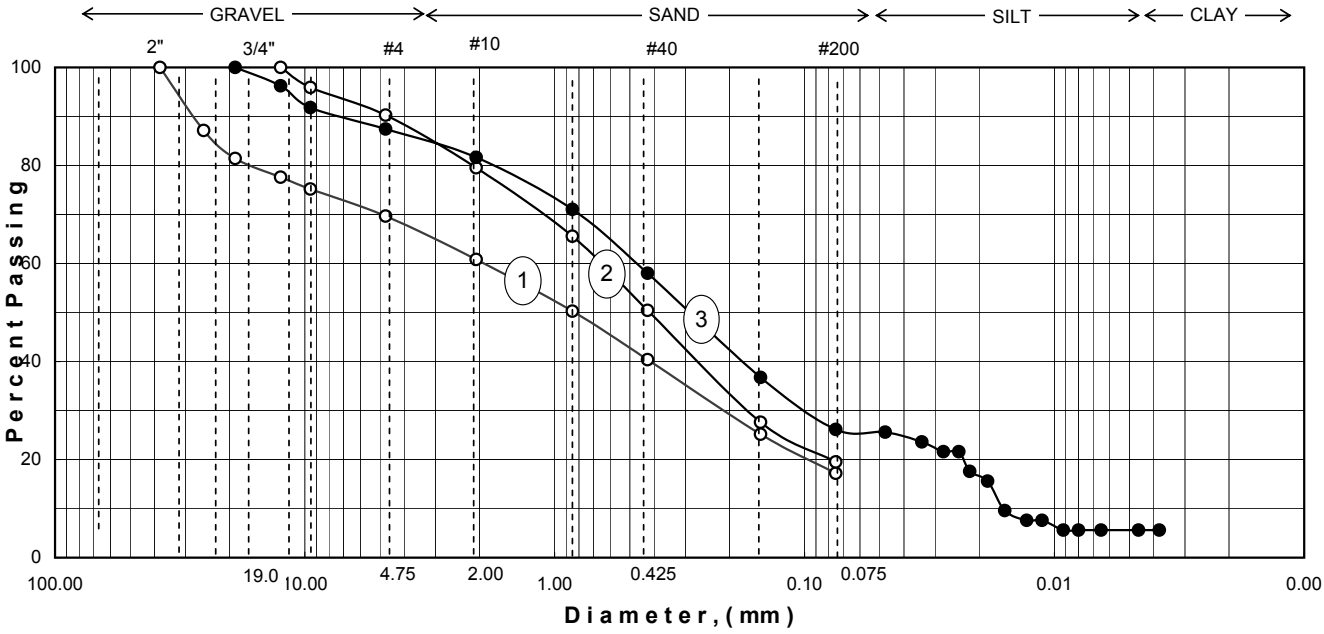
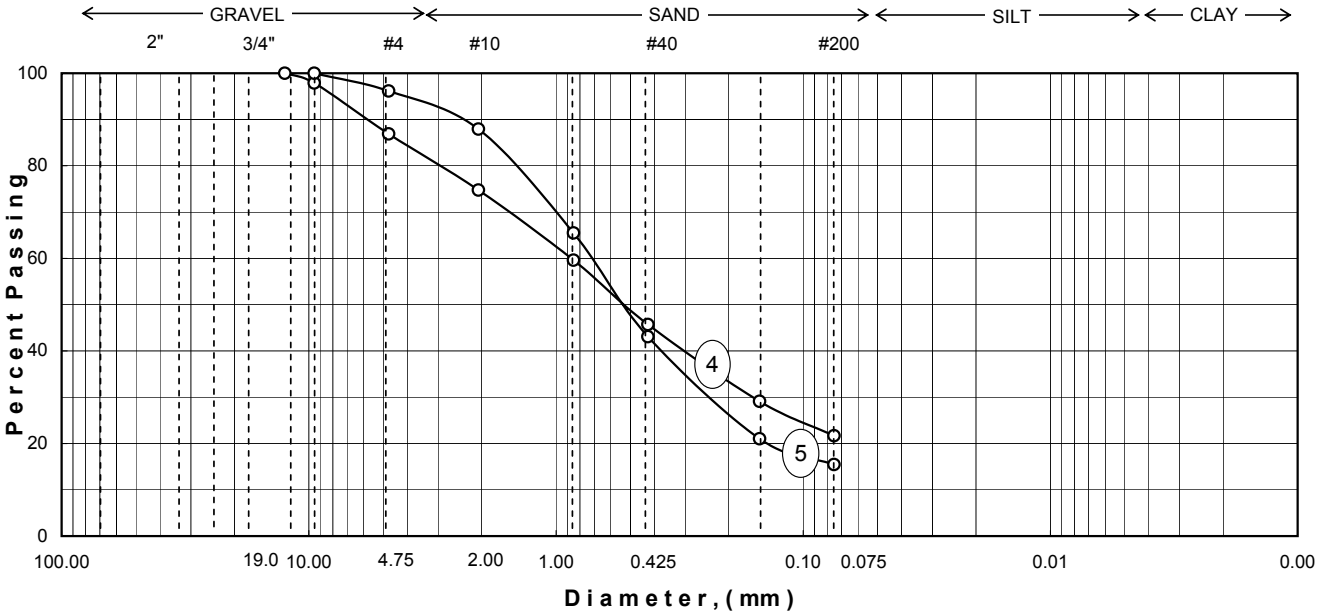
GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
U1	ss-9	9.00-9.45	1	33.79	NP	NP	NP	SM	Light gray fine to medium lahar SAND, with gravel-size pyroclastic materials.
U1	ss-21	21.00-21.45	2	16.05	NP	NP	NP	SM	Light gray coarse to fine SAND.
U1	ss-32	32.00-32.45	3	19.17	NP	NP	NP	SM	Light gray medium to fine SAND.
U1	ss-49	49.00-49.45	4	17.38	NP	NP	NP	SM	Light gray fine to medium SAND.
U1	ss-52	52.00-52.45	5	14.01	NP	NP	NP	SM	Brownish gray fine to medium SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Upstream, Marella River, Aglao, San Marcelino**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **BH-U1** DATE TESTED: **June 22, 2002** TESTED BY: **R. Ilopre** SHEET NO. **1 of 2**

Sample Number	ss-9				ss-21	
Depth (m)	9.00-9.45				21.00-21.45	
Volume of Flask @ 20° , ml	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	780.72	781.23			797.56	788.10
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	672.52	673.18			675.63	666.36
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	91.80	91.95			78.07	78.26
Specific Gravity, Gs = Ws / Ww	2.18	2.18			2.56	2.56
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.17**	**2.17**			**2.55**	**2.55**

Sample Number	ss-32				ss-49	
Depth (m)	32.00-32.45				49.00-49.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	398.70	398.84			399.86	399.99
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.36	339.36			339.36	339.36
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	40.66	40.52			39.50	39.37
Specific Gravity, Gs = Ws / Ww	2.46	2.47			2.53	2.54
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.45**	**2.46**			**2.52**	**2.53**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Upstream, Marella River, Aglao, San Marcelino** BORING NO.: **BH-U1** DATE TESTED: **June 22, 2002** TESTED BY: **R. Ilopre** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-52					
Depth (m)	52.00-52.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	402.40	402.37				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	339.36	339.36				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	36.96	36.99				
Specific Gravity, Gs = Ws / Ww	2.71	2.70				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.70**	**2.69**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **1 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray medium-grained SAND, little amount of pyroclastic materials, traces of silt. (Rec: 45/40 cm.)	ss-1	Med. dense	*	11			
2	(2.0-2.45 m) Light gray medium-grained SAND, little amount of gravel- pyroclastic materials. (Rec: 45/42 cm.)	ss-2	Med. dense	*	21			
3	(3.0-3.45 m) Light gray poorly graded sandy gravel-size PYROCLASTIC materials and with traces of non-plastic silt. (Rec: 45/45 cm.)	ss-3	Med. dense	*	14			
4	(4.0-4.45 m) - same materials - (Rec: 45/40 cm.)	ss-4	Med. dense	*	14			
5	(5.0-5.45 m) - same materials - (Rec: 45/45 cm.)	ss-5	Loose	*	8			
6	(6.0-6.45 m) - same materials - (Rec: 45/35 cm.)	ss-6	Loose	*	10			
7	(7.0-7.45 m) Light gray medium-grained SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-7	Loose	*	10			
8	(8.0-8.45 m) - same materials - (Rec: 45/35 cm.)	ss-8	Med. dense	*	12			
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 : **Upstream, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **2 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray poorly graded coarse to fine lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/35 cm.)	ss-10	Med. dense	SP-SM	13			Gs = 2.50
11	(11.0-11.45 m) - same materials - (Rec: 45/30 cm.)	ss-11	Med. dense	*	19			
12	(12.0-12.45 m) - same materials - (Rec: 45/35 cm.)	ss-12	Dense	*	37			
13	(13.0-13.45 m) - same materials - (Rec: 45/35 cm.)	ss-13	Med. dense	*	23			
14	(14.0-14.45 m) - same materials - (Rec: 45/30 cm.)	ss-14	Med. dense	*	18			
15	(15.0-15.45 m) - same materials - (Rec: 45/30 cm.)	ss-15	Med. dense	*	18			
16	(16.0-16.45 m) - same materials - (Rec: 45/40 cm.)	ss-16	Dense	*	33			
17	(17.0-17.45 m) Light gray SAND, little amount of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-17	Dense	*	33			
18	(18.0-18.45 m) - same materials - (Rec: 45/38 cm.)	ss-18	Very dense	*	52			
19	(19.0-19.45 m) - same materials - (Rec: 45/40 cm.)	ss-19	Dense	*	38			
20								

BOREHOLE LOG

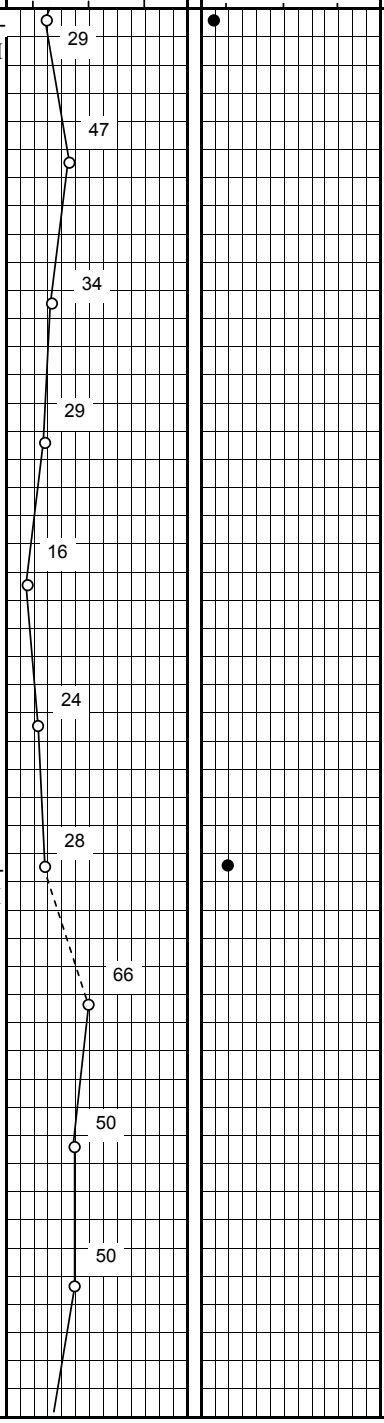
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **3 of 6**

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) Light gray poorly graded sandy gravel-size PYROCLASTIC materials. (Rec: 45/35 cm.)	ss-20	Med. dense	GP-GM	29			Gs = 2.63
21	(21.0-21.45 m) - same materials - (Rec: 45/29 cm.)	ss-21	Med. dense	*	47			
22	(22.0-22.45 m) - same materials - (Rec: 45/35 cm.)	ss-22	Dense	*	34			
23	(23.0-23.45 m) - same materials - (Rec: 45/33 cm.)	ss-23	Med. dense	*	29			
24	(24.0-24.45 m) - same materials - (Rec: 45/30 cm.)	ss-24	Med. dense	*	16			
25	(25.0-25.45 m) Light gray SAND, with pyroclastic materials. (Rec: 45/45 cm.)	ss-25	Med. dense	*	24			
26	(26.0-26.45 m) Light gray poorly graded fine to medium SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/35 cm.)	ss-26	Med. dense	SP-SM	28			2.58
27	(27.0-27.45 m) Light gray medium-grained SAND, little amount of gravel-size pyroclastic, materials. (Rec: 45/35 cm.)	ss-27	Very dense	*	66			
28	(28.0-28.45 m) - same materials - (Rec: 45/40 cm.)	ss-28	Dense	*	50			
29	(29.0-29.45 m) - same materials - (Rec: 45/35 cm.)	ss-29	Dense	*	50			
30								



BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **4 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Light gray SAND, with gravel-size pyroclastic materials. (Rec: 45/28 cm.)	ss-30	Dense	*	38			Gs =
31	(31.0-31.45 m) Light gray SAND, some pyroclastic materials. (Rec: 45/45 cm.)	ss-31	Very dense	*	52			
32	(32.0-32.45 m) Light gray well graded sandy gravel-size PYROCLASTIC materials and traces of non-plastic silt. (Rec: 45/30 cm.)	ss-32	Dense	GW-GM	36			2.61
33	(33.0-33.3 m) Light gray sandy gravel-size PYROCLASTIC MATERIALS. (Rec: 30/10 cm.)	ss-33	Very dense	*	66/15 cm.			
34	(34.0-34.5 m) Light gray gravel-size ANDESITE. (Rec: 50/20/0 cm.)	cs-1						
	(34.5-35.0 m) - same materials - (Rec: 50/15/0 cm.)	cs-2						
35	(35.0-35.5 m) - same materials - (Rec: 50/15/0 cm.)	cs-3						
	(35.5-36.0 m) - same materials - (Rec: 50/26/0 cm.)	cs-4						
36	(36.0-36.1 m) Light gray SAND, with gravel-size pyroclastic materials. (Rec: 10/10 cm.)	ss-34	Very dense		60/10 cm.			
	(36.1-37.0 m) Light gray GRAVEL/COBBLES. (Rec: 90/37/0 cm.)	cs-5						
37	(37.0-37.25 m) Light gray GRAVEL and SAND. (Rec: 25/15 cm.)	ss-35	Very dense		60/10 cm.			
38	(38.0-38.2 m) Brownish gray GRAVEL and SAND. (Rec: 20/15 cm.)	ss-36	Very dense		60/5 cm.			
	(38.2-39.0 m) Light gray to gray GRAVEL. (Rec: 80/20/0 cm.)	cs-6						
39	(39.0-39.2 m) - same materials - (Rec: 20/15 cm.)	ss-37	Very dense		60/5 cm.			
	(39.2-40.0 m) Bluish gray GRAVEL/COBBLES. (Rec: 80/34/0 cm.)	cs-7						
40								

BOREHOLE LOG

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

LOCATION : Upstream, Marella River, Aglao, San Marcelino

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **5 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(40.0-40.3 m) Brownish gray GRAVEL and SAND. (Rec: 30/15 cm.)	ss-38	Very dense	*	68/15 cm.			Gs =
41	(41.0-41.45 m) Light gray SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-39	Very dense	*	71			
42	42.0-42.45 m) - same materials - (Rec: 45/35 cm.)	ss-40	Very dense	*	65			
433	(43.0-43.45 m) - same materials - (Rec: 45/35 cm.)	ss-41	Very dense	*	54			
44	(44.0-44.45 m) Light gray fine to medium SAND, with little amount of non-plastic silt and traces of pyroclastic materials. (Rec: 45/40 cm.)	ss-42	Dense	SM	46	●		2.60
45	(45.0-45.45 m) - same materials - (Rec: 45/40 cm.)	ss-43	Very dense	*	56			
436	(46.0-46.45 m) Light gray SAND, little amount of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-44	Very dense	*	57			
47	(47.0-47.45 m) - same materials - (Rec: 45/40 cm.)	ss-45	Dense	*	48			
48	(48.0-48.45 m) - same materials - (Rec: 45/45 cm.)	ss-46	Very dense	*	51			
49	(49.0-49.45 m) Light gray SAND, with pyroclastic materials. (Rec: 45/35 cm.)	ss-47	Very dense	*	50			
50								

BOREHOLE LOG

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

LOCATION : **Upstream, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-U2**
FINAL DEPTH: **50.45 m.**
GWT: **5.60 m.**
ELEVATION: **212.50 m.**
DATE STARTED: **June 11, 2002**
DATE FINISHED: **June 19, 2002**
SHEET NO. **6 of 6**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(50.0-50.45 m) Light gray SAND, with pyroclastic materials. (Rec: 45/42 cm.)	ss-48	Very dense	*	51			
51	**Note:** * ---------- **Visual Description**							
52	***End of Borehole @ 50.45 m.***							
	Type of drilling Machine - - - - - - - TDC							
533								
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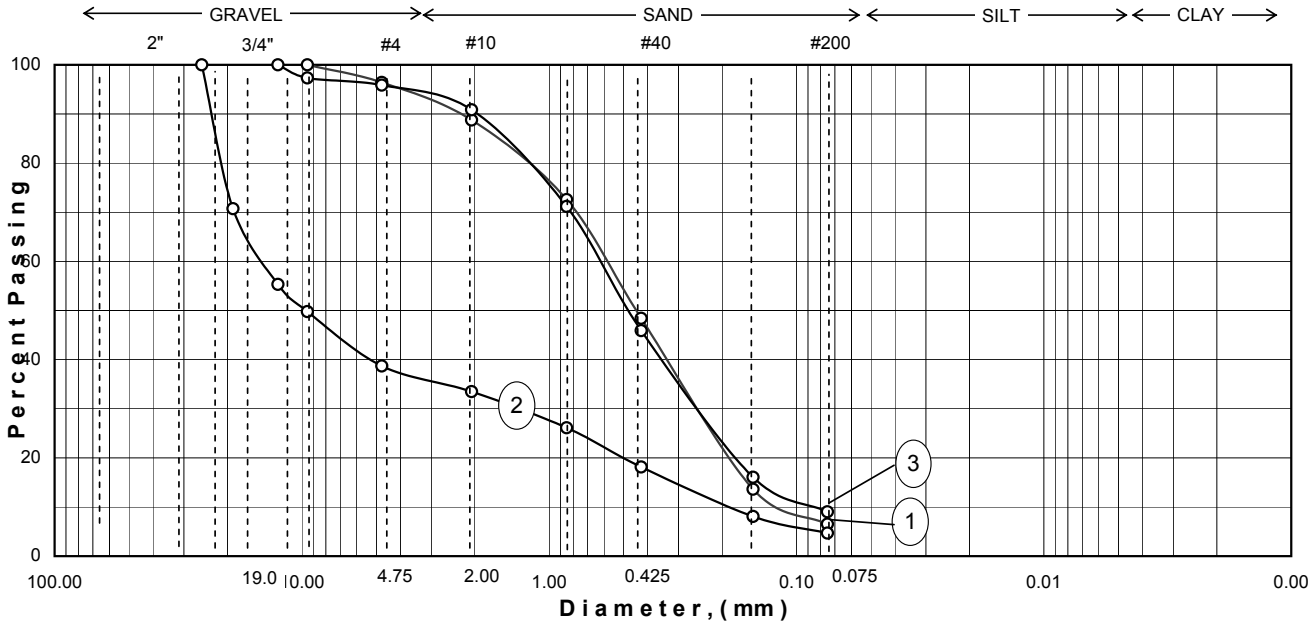
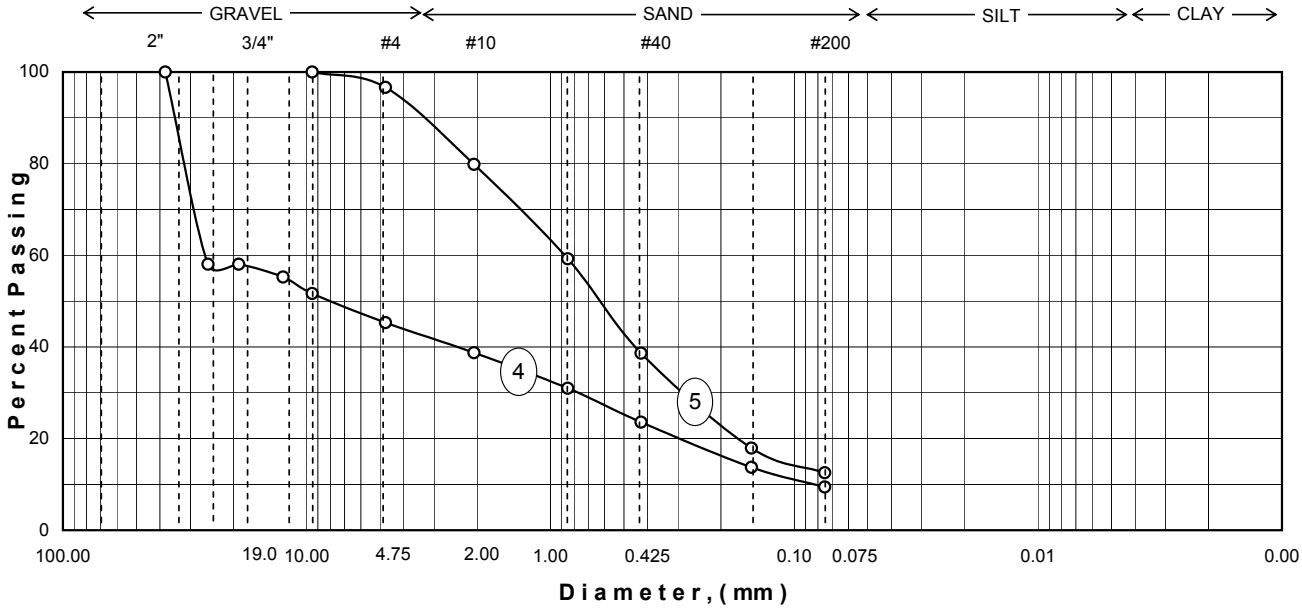
GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
U2	ss-10	10.00-10.45	1	19.13	NP	NP	NP	SP-SM	Light gray poorly graded coarse to fine lahar SAND.
U2	ss-20	20.00-20.45	2	9.62	NP	NP	NP	GP-GM	Light gray poorly graded sandy gravel-size PYROCLASTIC materials.
U2	ss-26	26.00-26.45	3	19.32	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium SAND.
U2	ss-32	32.00-32.45	4	14.35	NP	NP	NP	GW-GM	Light gray well graded sandy gravel-size PYROCLASTIC materials.
U2	ss-42	44.00-44.45	5	15.82	NP	NP	NP	SM	Light gray fine to medium SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Upstream, Marella River, Aglao, San Marcelino**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **BH-U2** DATE TESTED: **June 22, 2002** TESTED BY: **R. Ilopre** SHEET NO. **1 of 2**

Sample Number	ss-10				ss-20	
Depth (m)	10.00-10.45				20.00-20.45	
Volume of Flask @ 20° , ml	500	500			500	500
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	796.67	792.65			790.69	799.87
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	676.39	672.52			666.36	675.63
Wt. of Dry Soil = Ws	200.00	200.00			200.00	200.00
Wt. of Water, Ww = Ws + Wbw - Wbws	79.72	79.87			75.67	75.76
Specific Gravity, Gs = Ws / Ww	2.51	2.50			2.64	2.64
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.50**	**2.49**			**2.63**	**2.63**

Sample Number	ss-26				ss-32	
Depth (m)	26.00-26.45				32.00-32.45	
Volume of Flask @ 20°C	500	500			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	794.97	799.01			401.58	401.86
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	672.52	676.39			339.86	339.86
Wt. of Dry Soil = Ws	200.00	200.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	77.55	77.38			38.28	38.00
Specific Gravity, Gs = Ws / Ww	2.58	2.58			2.61	2.63
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.57**	**2.58**			**2.60**	**2.62**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Upstream, Marella River, Aglao, San Marcelino** BORING NO.: **BH-U2** DATE TESTED: **June 22, 2002** TESTED BY: **R. Ilopre** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-42					
Depth (m)	44.00-44.45					
Volume of Flask @ 20° , ml	500	500				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	799.22	796.32				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	675.63	673.18				
Wt. of Dry Soil = Ws	200.00	200.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	76.41	76.86				
Specific Gravity, Gs = Ws / Ww	2.62	2.60				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.61**	**2.59**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S1**
FINAL DEPTH: **27.00 m.**
GWT: **0.60 m.**
ELEVATION: **126.30 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **June 02, 2002**
SHEET NO. **1 of 3**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray, medium to coarse lahar SAND, traces of gravel and some pyroclastic materials. (Rec: 45/43 cm.)	ss-1	Loose	*	5			
2	(2.0-2.45 m) - same materials - (Rec: 45/30 cm.)	ss-2	Loose	*	8			
3	(3.0-3.45 m) - same materials - (Rec: 45/45 cm.)	ss-3	Very loose	*	2			
4	(4.0-4.45 m) - same materials - (Rec: 45/42 cm.)	ss-4	Loose	*	5			
5	(5.0-5.45 m) - same materials - (Rec: 45/37 cm.)	ss-5	Very loose	*	2			
6	(6.0-6.45 m) Light gray poorly graded coarse to medium lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/33 cm.)	ss-6	Loose	SP-SM	8	●		2.58
7	(7.0-7.45 m) Light gray, medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/31 cm.)	ss-7	Loose	*	6			
8	(8.0-8.45 m) - same materials - (Rec: 45/33 cm.)	ss-8	Med. dense	*	12			
9	(9.0-9.45 m) - same materials - (Rec: 45/25 cm.)	ss-9	Dense	*	34			
10								

BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S1**
FINAL DEPTH: **27.00 m.**
GWT: **0.60 m.**
ELEVATION: **126.30 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **June 02, 2002**
SHEET NO. **2 of 3**

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) Light gray medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/28 cm.)	ss-10	Med. dense	*	23			Gs =
11	(11.0-11.45 m) - same materials - (Rec: 45/20 cm.)	ss-11	Med. dense	*	19			
12	(12.0-12.45 m) Light gray poorly graded coarse to medium lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/38 cm.)	ss-12	Dense	SP-SM	38	●		2.55
13	(13.0-13.45 m) Light gray medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/32 cm.)	ss-13	Dense	*	32			
14	(14.0-14.45 m) - same materials - (Rec: 45/30 cm.)	ss-14	Dense	*	32			
15	(15.0-15.45 m) - same materials - (Rec: 45/19 cm.)	ss-15	Med. dense	*	14			
16	(16.0-16.45 m) - same materials - (Rec: 45/27 cm.)	ss-16	Med. dense	*	16			
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Dense	*	31			
18	(18.0-18.45 m) Light gray medium to fine SAND, with little amount of non-plastic silt and traces of fine gravel, pyroclastic materials. (Rec: 45/40 cm.)	ss-18	Dense	SM	37	●		2.55
19	(19.0-19.45 m) Light gray medium to coarse-grained SAND. (Rec: 45/30 cm.)	ss-19	Dense	*	34			
20								

BOREHOLE LOG

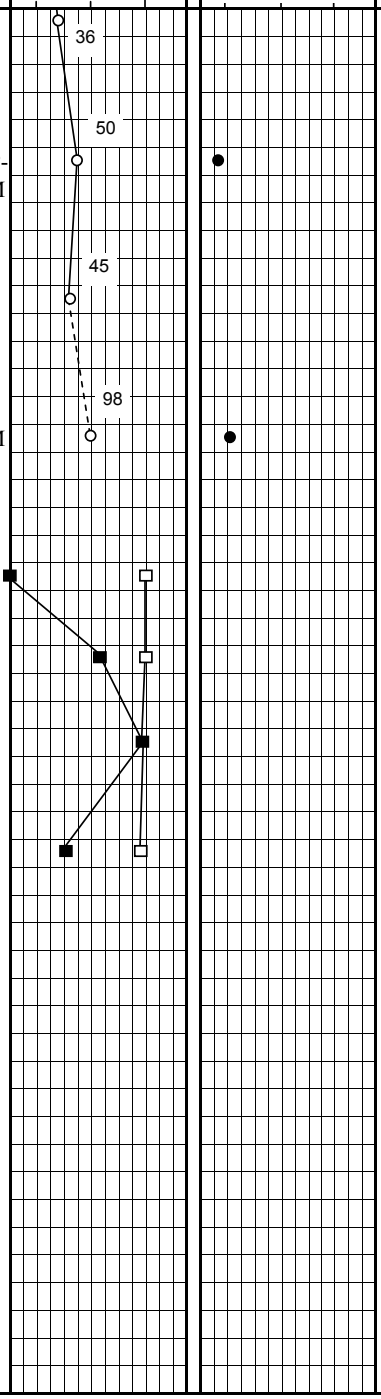
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S1**
FINAL DEPTH: **27.00 m.**
GWT: **0.60 m.**
ELEVATION: **126.30 m.**
DATE STARTED: **May 25, 2002**
DATE FINISHED: **June 02, 2002**
SHEET NO. **3 of 3**

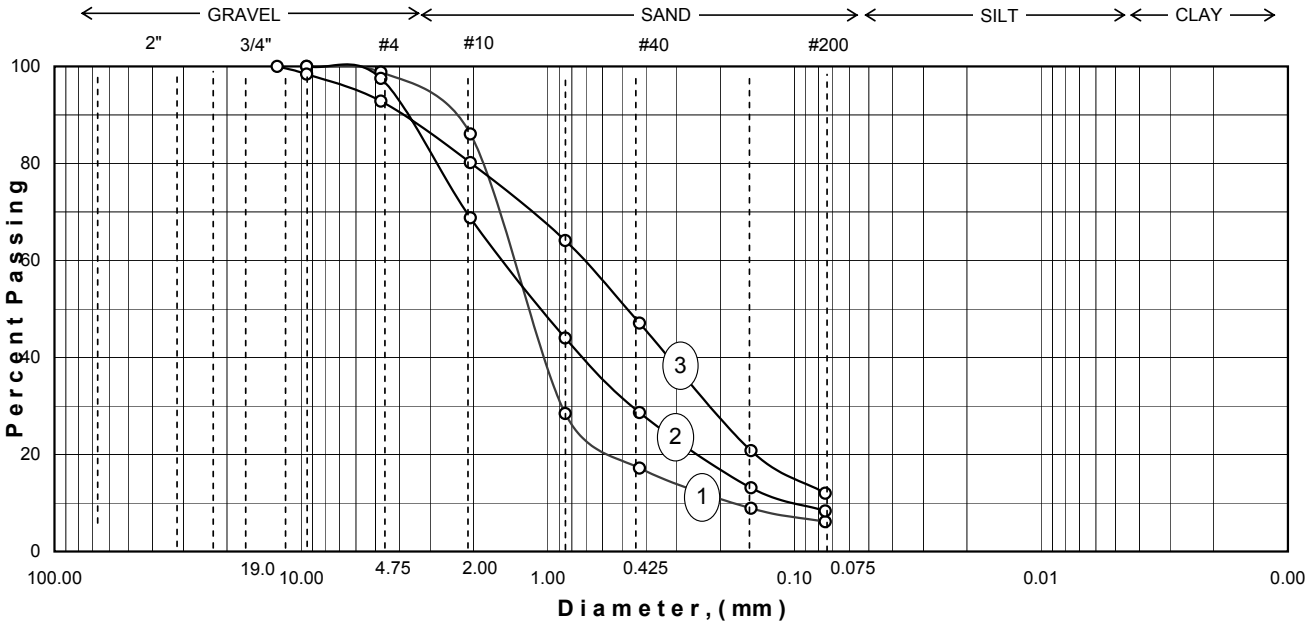
A G E S

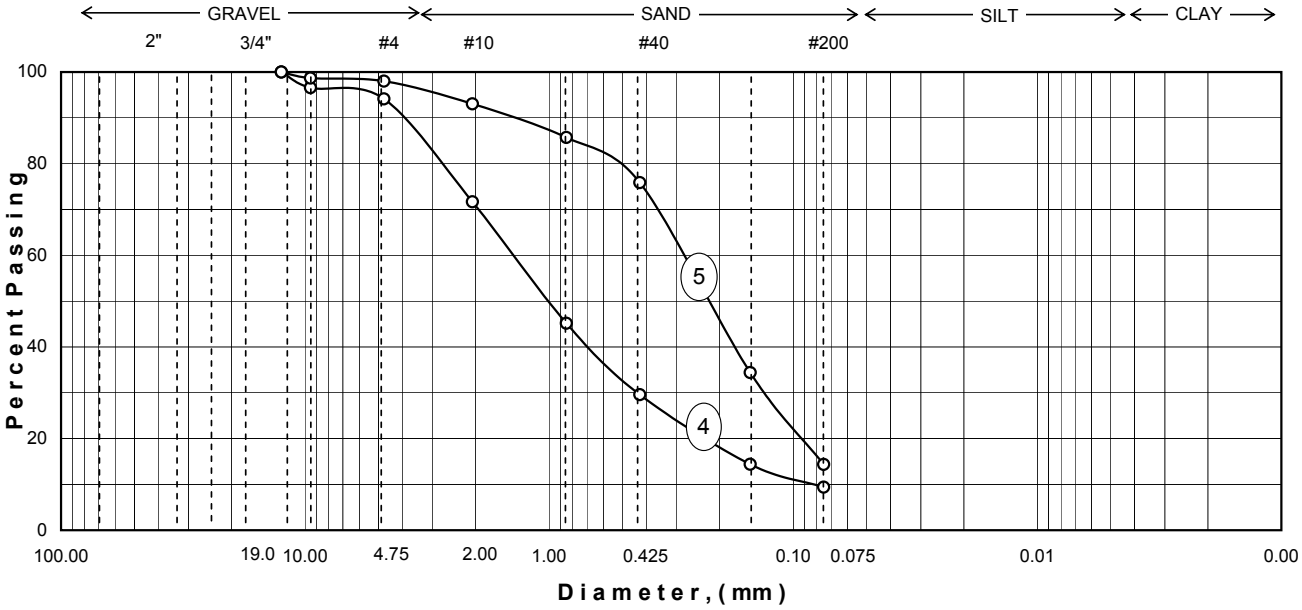
DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	OTHER TEST RESULTS
	(20.0-20.45 m) Brownish gray fine to medium-grained SAND. (Rec: 45/30 cm.)	ss-20	Dense	*	Gs =
21	(21.0-21.45 m) Brownish gray poorly graded coarse to medium SAND, with fine gravel, pyroclastic materials and non-plastic silt. (Rec: 45/35 cm.)	ss-21	Dense	SP-SM	2.62
22	(22.0-22.45 m) Brownish gray medium to coarse-grained SAND. (Rec: 45/45 cm.)	ss-22	Dense	*	
23	(23.0-23.45 m) Brownish gray medium to fine SAND, with little amount of non-plastic silt and traces of pyroclastic materials. (Rec: 45/45 cm.)	ss-23	Very dense	SM	2.66
	Approximately change in layer @ 24.32 m.				
24	(24.0-24.6 m) Brownish gray SAND to Light gray highly weathered welded TUFF, strongly cemented. (Rec: 60/60/0 cm.)	cs-1			
	(24.6-25.0 m) Light gray highly to moderately weathered welded TUFF, moderately cemented. (Rec: 40/40/27 cm.)	cs-2			qu (kPa) =25092.32
25	(25.0-26.0 m) - same materials - but, strongly cemented. (Rec: 100/98/98 cm.)	cs-3			=27601.55 =28518.02 =27739.16 =26840.49
26	(26.0-27.0 m) - same materials - but fissured. (Rec: 100/97/43 cm.)	cs-4			qu (kPa) =26361.19
27	**Note:** ***----------Visual Description**				
28	***End of Borehole @ 27.00 m.***				
	Type of drilling Machine - - - - - - TDC				
29					
30					



P.I.

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
S1	ss-6	6.00-6.45	1	14.85	NP	NP	NP	SP-SM	Light gray poorly graded coarse to medium lahar SAND.
S1	ss-12	12.00-12.45	2	14.00	NP	NP	NP	SP-SM	Light gray poorly graded coarse to medium lahar SAND.
S1	ss-18	18.00-18.45	3	16.30	NP	NP	NP	SM	Light gray medium to fine SAND.
S1	ss-21	21.00-21.45	4	14.43	NP	NP	NP	SP-SM	Brownish gray poorly graded coarse to medium SAND.
S1	ss-23	23.00-23.45	5	23.70	NP	NP	NP	SM	Brownish gray medium to fine SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino** BORING NO.: **BH-S1** DATE TESTED: **June 08, 2002** 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-6				ss-12	
Depth (m)	6.00-6.45				12.00-12.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	395.38	401.17			394.79	400.84
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	38.71	38.69			39.30	39.02
Specific Gravity, Gs = Ws / Ww	2.58	2.58			2.54	2.56
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.57**	**2.58**			**2.54**	**2.55**

Sample Number	ss-18				ss-21	
Depth (m)	18.00-18.45				21.00-21.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	395.08	400.59			396.08	401.63
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	39.01	39.27			38.01	38.23
Specific Gravity, Gs = Ws / Ww	2.56	2.55			2.63	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.55**	**2.54**			**2.62**	**2.61**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino** BORING NO.: **BH-S1** DATE TESTED: **June 08, 2002** 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-23					
Depth (m)	23.00-23.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	396.51	402.61				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	334.09	339.86				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	37.58	37.25				
Specific Gravity, Gs = Ws / Ww	2.66	2.68				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.65**	**2.67**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks:

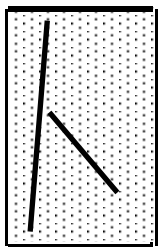
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.:	S1	Sample No.:	cs-3-a
Depth (m):	25.00-25.15		
Date sampled:	06-01-02	Date tested:	06-08-02
Tested by:	R. Cagbabanua		

UNCONFINED COMPRESSION TEST REPORT

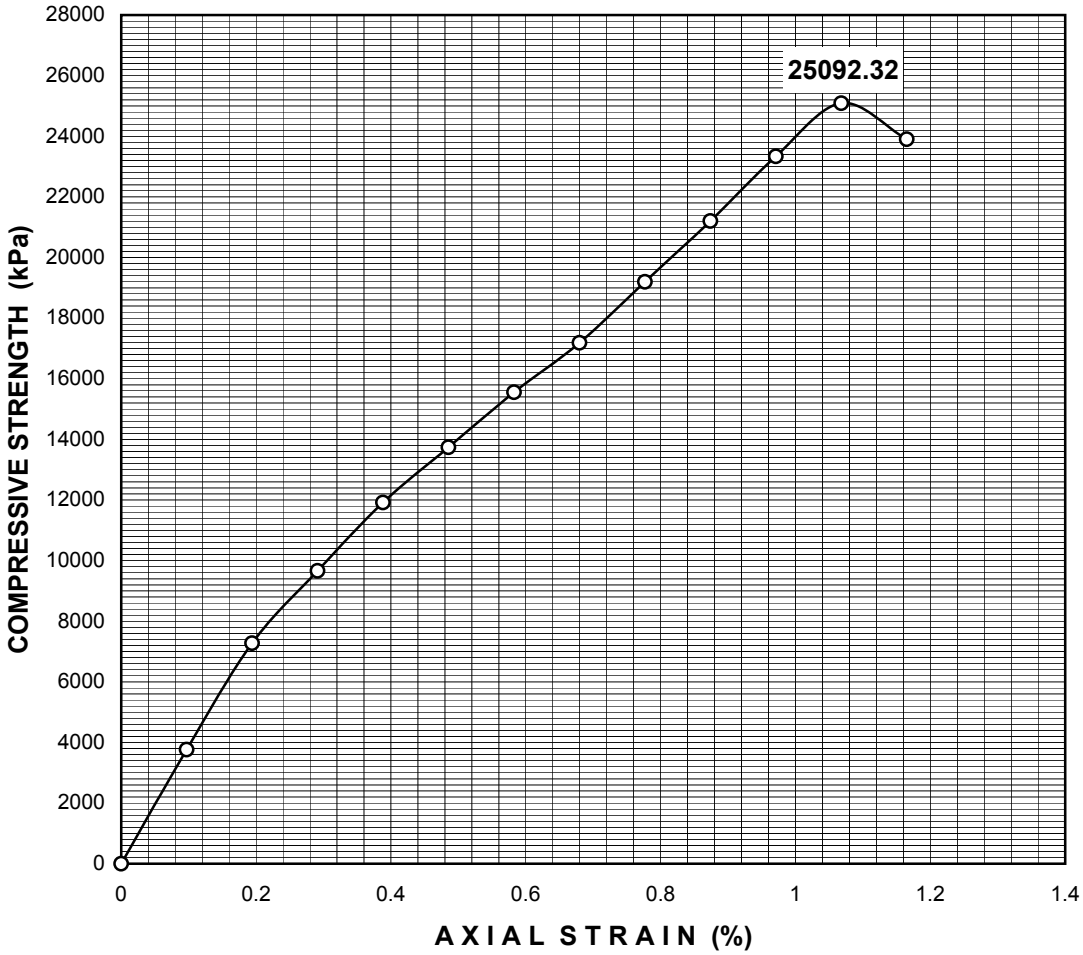
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.30
Height of sample,	(cm)=	10.30
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	25.53
Compressive Strength,	(kPa)	25092.32
Ave. Failure Strain,	(%)=	1.07



MODE OF FAILURE



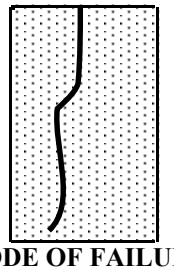
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.: S1	Sample No.: cs-3-b	Depth (m):	25.15-25.30
Date sampled: 06-01-02	Date tested: 08-09-02	Tested by:	N. Antonio

UNCONFINED COMPRESSION TEST REPORT

SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.30
Height of sample,	(cm)=	10.70
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	24.70
Compressive Strength,	(kPa)	27601.55
Ave. Failure Strain,	(%)=	0.84



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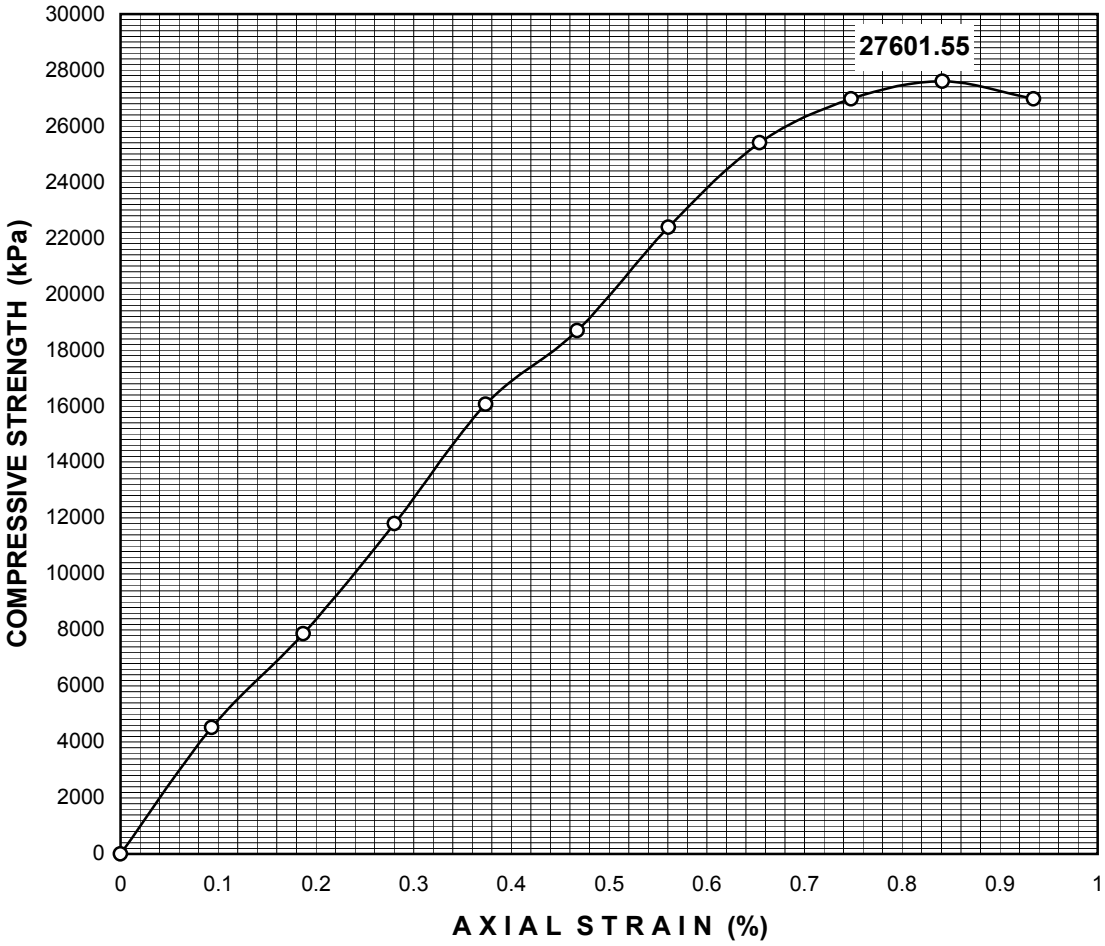


PROJECT: The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo LOCATION: Mt. Bagang, Marella River, Aglao, San Marcelino

Borehole No.: S1 Sample No.: cs-3-c Depth (m): 25.30-25.45

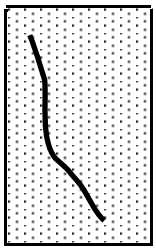
Date sampled: 06-01-02 Date tested: 08-09-02 Tested by: N. Antonio

UNCONFINED COMPRESSION TEST REPORT

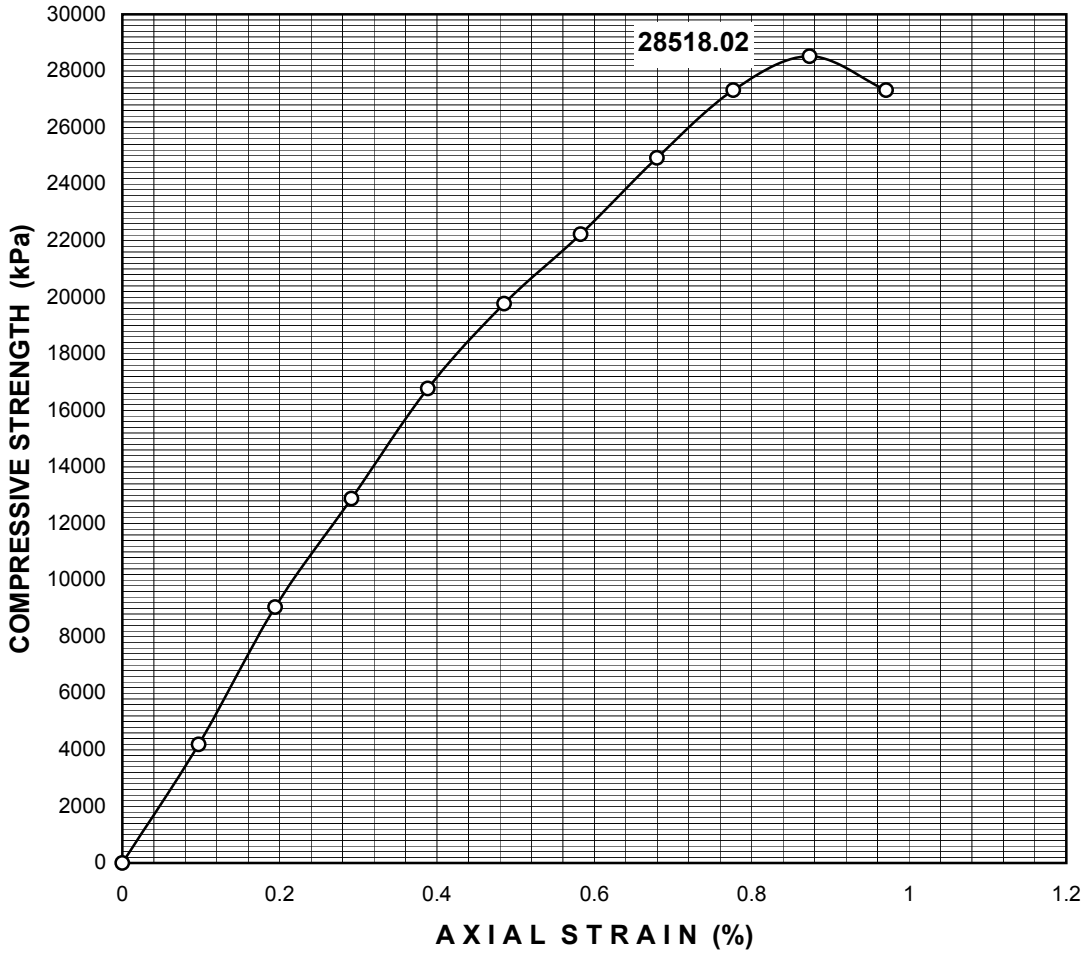
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.30
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	23.83
Compressive Strength,	(kPa)	28518.02
Ave. Failure Strain,	(%)=	0.87



MODE OF FAILURE



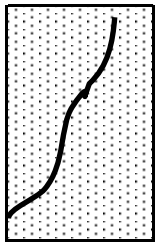
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.:	S1	Sample No.:	cs-3-d
Depth (m):	25.45-25.65		
Date sampled:	06-01-02	Date tested:	08-09-02
Tested by:	N. Antonio		

UNCONFINED COMPRESSION TEST REPORT

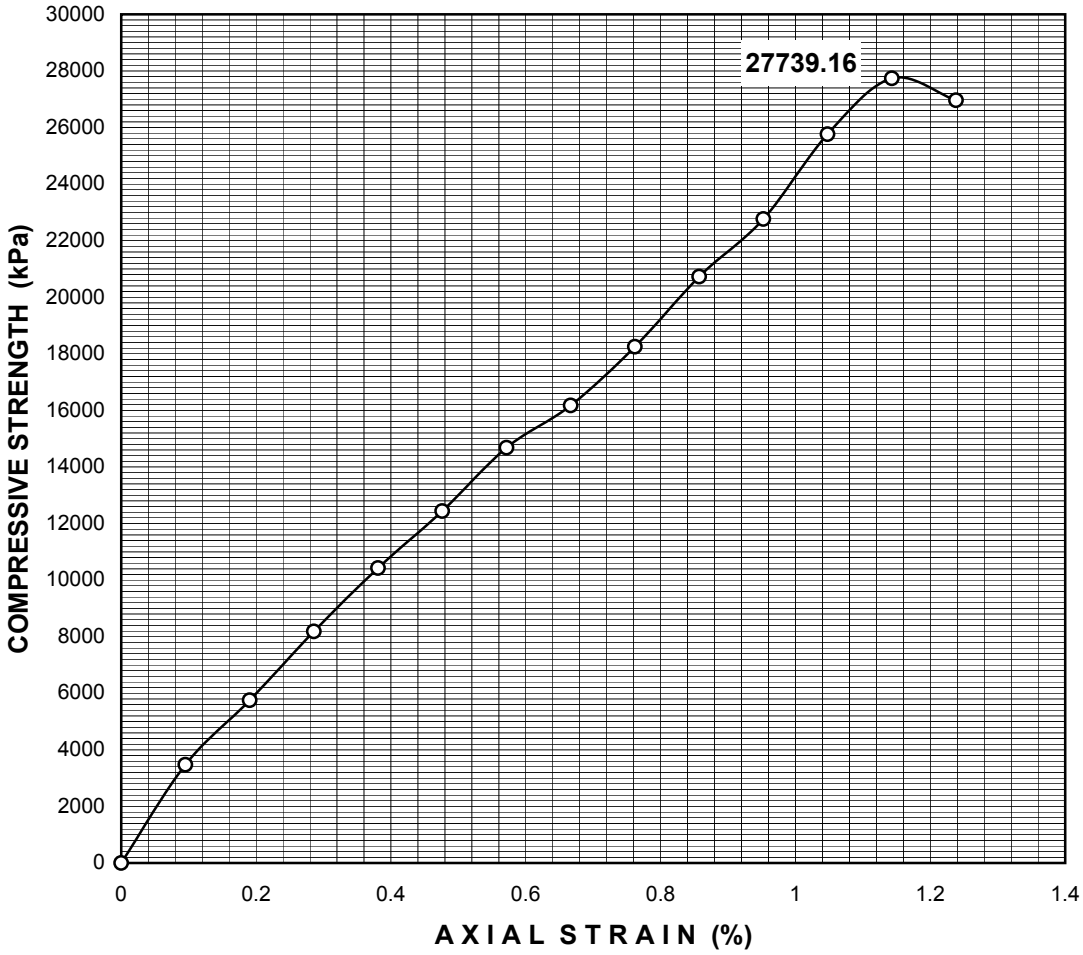
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.50
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	24.02
Compressive Strength,	(kPa)	27739.16
Ave. Failure Strain,	(%)=	1.14



MODE OF FAILURE



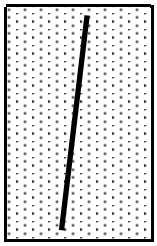
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.: S1	Sample No.: cs-3-e	Depth (m):	25.65-25.70
Date sampled: 06-01-02	Date tested: 08-09-02	Tested by:	N. Antonio

UNCONFINED COMPRESSION TEST REPORT

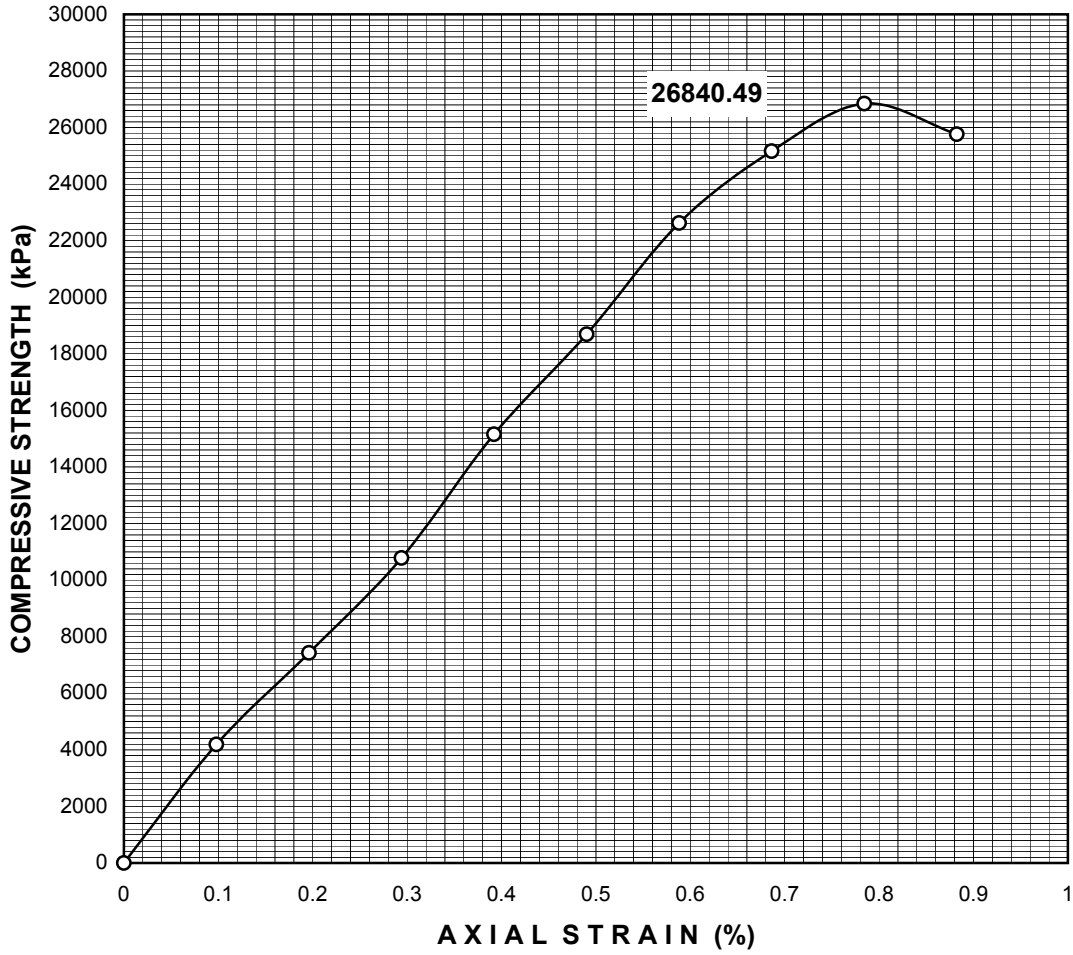
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.20
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	23.64
Compressive Strength,	(kPa)	26840.49
Ave. Failure Strain,	(%)=	0.78



MODE OF FAILURE



PROJECT: The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo LOCATION: Mt. Bagang, Marella River, Aglao, San Marcelino

Borehole No.: S1 Sample No.: cs-4 Depth (m): 26.00-27.00

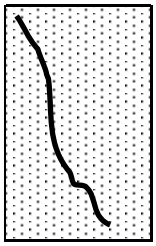
Date sampled: 06-01-02 Date tested: 08-09-02 Tested by: N. Antonio

UNCONFINED COMPRESSION TEST REPORT

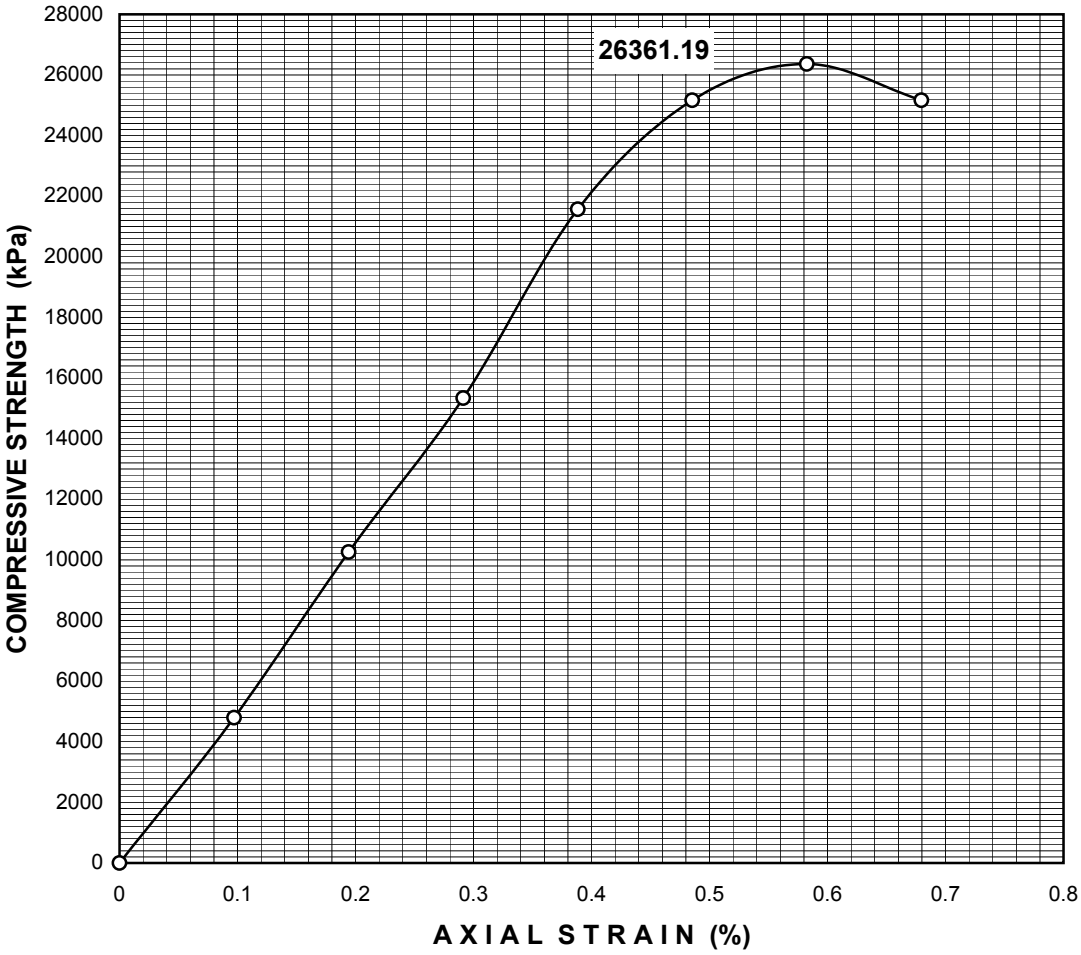
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.40
Height of sample,	(cm)=	10.30
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	23.90
Compressive Strength,	(kPa)	26361.19
Ave. Failure Strain,	(%)=	0.58



MODE OF FAILURE



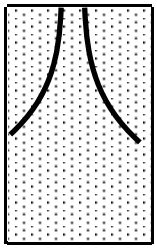
PROJECT:	The Study on Sabo & Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.:	S2	Sample No.:	cs-6 (Middle)
Depth (m):	39.00-40.00		
Date sampled:	06-03-02	Date tested:	06-08-02
Tested by:	R. Cagbabanua		

UNCONFINED COMPRESSION TEST REPORT

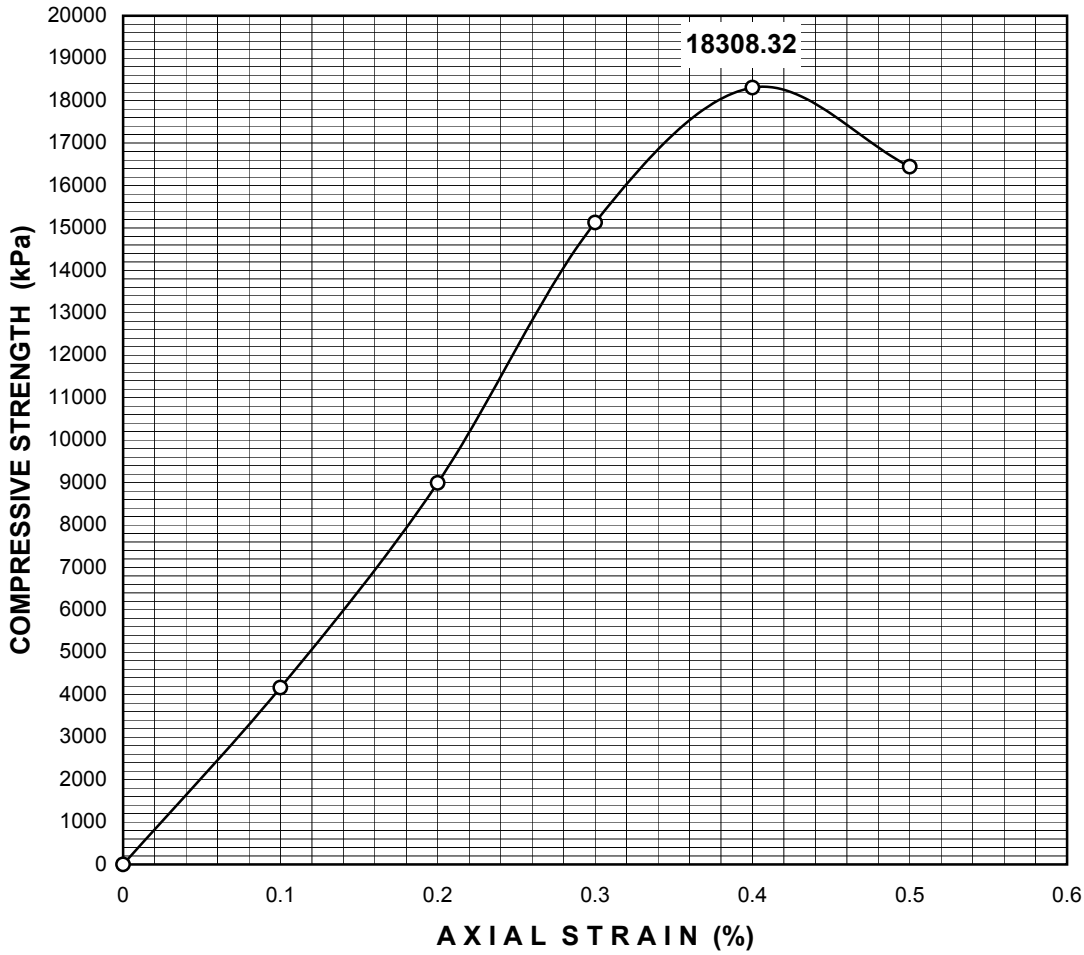
SAMPLE DATA:

Visual Classification: Light gray moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.60
Height of sample,	(cm)=	10.00
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	25.16
Compressive Strength,	(kPa)	18308.32
Ave. Failure Strain,	(%)=	0.40



MODE OF FAILURE



BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S2**
FINAL DEPTH: **40.00 m.**
GWT: **6.15 m.**
ELEVATION: **132.70 m.**
DATE STARTED: **May 26, 2002**
DATE FINISHED: **June 03, 2002**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray, fine to medium-grained lahar SAND, with pyroclastic materials, moist to wet. (Rec: 45/41 cm.)	ss-1	Loose	*	8			
2	(2.0-2.45 m) - same materials - (Rec: 45/40 cm.)	ss-2	Loose	*	10			
3	(3.0-3.45 m) Light gray poorly graded fine to medium lahar SAND, with traces of pyroclastic materials and non-plastic silt. (Rec: 45/42 cm.)	ss-3	Loose	SP-SM	9	●		2.61
4	(4.0-4.45 m) Light gray fine to medium-grained lahar SAND, with traces of pyroclastic materials. (Rec: 45/45 cm.)	ss-4	Med. dense	*	12			
5	(5.0-5.45 m) - same materials - (Rec: 45/25 cm.)	ss-5	Med. dense	*	25			
6	(6.0-6.45 m) Light gray fine to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/30 cm.)	ss-6	Med. dense	*	25			
7	(7.0-7.45 m) - same materials - (Rec: 45/38 cm.)	ss-7	Med. dense	*	13			
8	(8.0-8.45 m) - same materials - (Rec: 45/43 cm.)	ss-8	Med. dense	*	21			
9	(9.0-9.45 m) - same materials - (Rec: 45/31 cm.)	ss-9	Dense	*	39			
10								

BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S2**
FINAL DEPTH: **40.00 m.**
GWT: **6.15 m.**
ELEVATION: **132.70 m.**
DATE STARTED: **May 26, 2002**
DATE FINISHED: **June 03, 2002**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray poorly graded medium to fine lahar SAND, with traces of non-plastic silt and gravel-size pyroclastic materials. (Rec: 45/40 cm.)	ss-10	Med. dense	SP-SM	22			Gs = 2.39
11	(11.0-11.45 m) Light gray fine to coarse lahar SAND, traces of pyroclastic materials. (Rec: 45/31 cm.)	ss-11	Med. dense	*	17			
12	(12.0-12.45 m) - same materials - (Rec: 45/33 cm.)	ss-12	Med. dense	*	20			
13	(13.0-13.45 m) Light gray medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/25 cm.)	ss-13	Dense	*	31			
14	(14.0-14.45 m) - same materials - (Rec: 45/25 cm.)	ss-14	Dense	*	34			
15	(15.0-15.45 m) - same materials - (Rec: 45/30 cm.)	ss-15	Med. dense	*	27			
16	(16.0-16.45 m) Brownish gray fine to coarse lahar SAND, little amount of pyroclastic materials. (Rec: 45/35 cm.)	ss-16	Med. dense	*	16			
17	(17.0-17.45 m) - same materials - (Rec: 45/20 cm.)	ss-17	Dense	*	31			
18	(18.0-18.45 m) Brownish gray poorly graded medium to fine lahar SAND, with traces of non-plastic silt and pyroclastic materials. (Rec: 45/30 cm.)	ss-18	Med. dense	SP-SM	29			2.21
19	(19.0-19.45 m) Light gray medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/25 cm.)	ss-19	Med. dense	*	15			
20								

BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S2**
FINAL DEPTH: **40.00 m.**
GWT: **6.15 m.**
ELEVATION: **132.70 m.**
DATE STARTED: **May 26, 2002**
DATE FINISHED: **June 03, 2002**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Light gray medium to coarse lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/30 cm.)	ss-20	Med. dense	*	21			Gs =
21	(21.0-21.45 m) - same materials - (Rec: 45/25 cm.)	ss-21	Med. dense	*	27			
22	(22.0-22.45 m) - same materials - (Rec: 45/30 cm.)	ss-22	Dense	*	40			
23	(23.0-23.45 m) - same materials - (Rec: 45/30 cm.)	ss-23	Dense	*	37			
24	(24.0-24.45 m) - same materials - (Rec: 45/35 cm.)	ss-24	Med. dense	*	29			
25	(25.0-25.45 m) Light gray medium lahar SAND, some fines and traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-25	Dense	*	36			
26	(26.0-26.45 m) Light gray poorly graded fine to coarse lahar SAND, with little amount of gravel-size pyroclastic materials and traces of non-plastic silt. (Rec: 45/35 cm.)	ss-26	Dense	SP	30	●		2.50
27	(27.0-27.45 m) Light gray fine to coarse SAND, with little amount of pyroclastic materials. (Rec: 45/25 cm.)	ss-27	Dense	*	32			
28	(28.0-28.45 m) - same materials - (Rec: 45/35 cm.)	ss-28	Very dense	*	68			
29	(29.0-29.45 m) - same materials - (Rec: 45/35 cm.)	ss-29	Very dense	*	63			
30								

BOREHOLE LOG

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

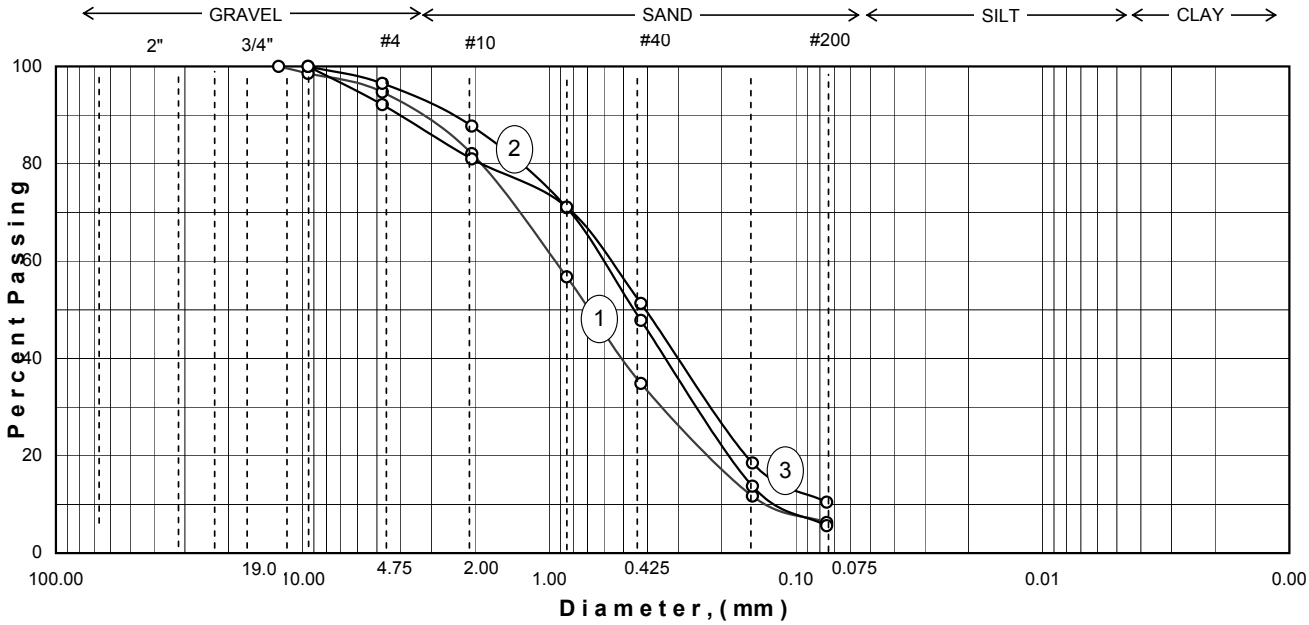
LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

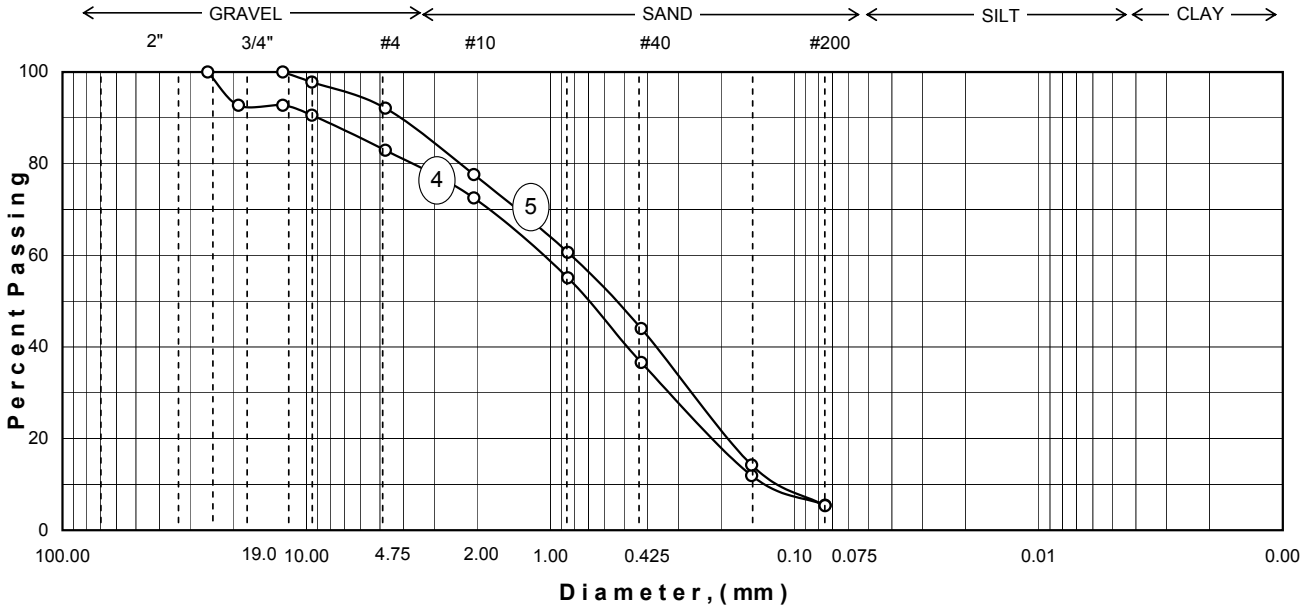
BORING NO.: **BH-S2**
FINAL DEPTH: **40.00 m.**
GWT: **6.15 m.**
ELEVATION: **132.70 m.**
DATE STARTED: **May 26, 2002**
DATE FINISHED: **June 03, 2002**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(30.0-30.45 m) Light gray medium SAND, some fines and traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-30	Very dense	*	59			
31	(31.0-31.45 m) Light gray medium-grained SAND, traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-31	Very dense	*	67			
32	(32.0-32.45 m) - same materials - (Rec: 45/30 cm.)	ss-32	Very dense	*	67			
33	(33.0-33.45 m) Light gray poorly graded medium to fine SAND, with traces of gravel-size pyroclastic materials and non-plastic silt. (Rec: 45/35 cm.)	ss-33	Very dense	SP	66			Gs=2.19
	Encountered Bedrock @ 34.45 m.							
34	(34.0-34.45 m) - same materials - (Rec: 45/35 cm.)	ss-34	Very dense	*	70			
	(34.45-35.0 m) Bluish gray and Brown gravel/cobble-size ANDESITE. (Rec: 55/50/0 cm.)	cs-1						
35	(35.0-36.0 m) - same materials - (Rec: 100/42/0 cm.)	cs-2						
36	(36.0-37.0 m) - same materials - (Rec: 100/44/0 cm.)	cs-3						
37	(37.0-38.0 m) Light gray highly to moderately weathered welded TUFF, moderately cemented. (Rec: 100/43/0 cm.)	cs-4						
38	(38.0-39.0 m) - same materials - (Rec: 100/82/11 cm.)	cs-5						qu (kPa) =14619.14
39	(39.0-40.0 m) - same materials - but, strongly cemented. (Rec: 100/85/38 cm.)	cs-6						qu (kPa) =27616.49 =18308.32 =22338.67
	Note: *---------- Visual Description							
	End of Borehole @ 40.00 m.							
40	Type of drilling Machine - - - - - -TDC							

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
S2	ss-3	3.00-3.45	1	7.96	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium lahar SAND.
S2	ss-10	10.00-10.45	2	18.32	NP	NP	NP	SP-SM	Light gray poorly graded medium to fine lahar SAND.
S2	ss-18	18.00-18.45	3	32.84	NP	NP	NP	SP-SM	Brownish gray poorly graded medium to fine lahar SAND.
S2	ss-26	26.00-26.45	4	15.89	NP	NP	NP	SP	Light gray poorly graded fine to coarse lahar SAND.
S2	ss-33	33.00-33.45	5	15.82	NP	NP	NP	SP	Light gray poorly graded medium to fine SAND.

SPECIFIC GRAVITY OF SOIL SOLIDS

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

LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino**
BORING NO.: **BH-S2**
DATE TESTED: **June 08, 2002**
TESTED BY: **R. Cagbabanua**
SHEET NO. **1 of 2**

Sample Number	ss-3				ss-10	
Depth (m)	3.00-3.45				10.00-10.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	395.75	401.75			392.82	397.85
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	38.34	38.11			41.27	42.01
Specific Gravity, Gs = Ws / Ww	2.61	2.62			2.42	2.38
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.60**	**2.61**			**2.41**	**2.37**

Sample Number	ss-18				ss-26	
Depth (m)	18.00-18.45				26.00-26.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	388.67	395.00			393.93	400.16
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	45.42	44.86			40.16	39.70
Specific Gravity, Gs = Ws / Ww	2.20	2.23			2.49	2.52
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.19**	**2.22**			**2.48**	**2.51**

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

SPECIFIC GRAVITY OF SOIL SOLIDS

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

LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino**
BORING NO.: **BH-S2**
DATE TESTED: **June 08, 2002**
TESTED BY: **R. Cagbabanua**
SHEET NO. **2 of 2**

Sample Number	ss-33					
Depth (m)	33.00-33.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	388.76	394.23				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	334.09	339.86				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	45.33	45.63				
Specific Gravity, Gs = Ws / Ww	2.21	2.19				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.20**	**2.18**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

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

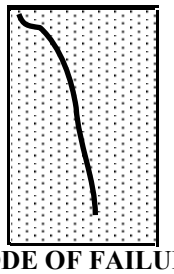
PROJECT:	The Study on Sabo and Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.:	S2	Sample No.:	cs-5
Depth (m):	38.00-39.00		
Date sampled:	06-01-02	Date tested:	08-09-02
Tested by:	N. Antonio		

UNCONFINED COMPRESSION TEST REPORT

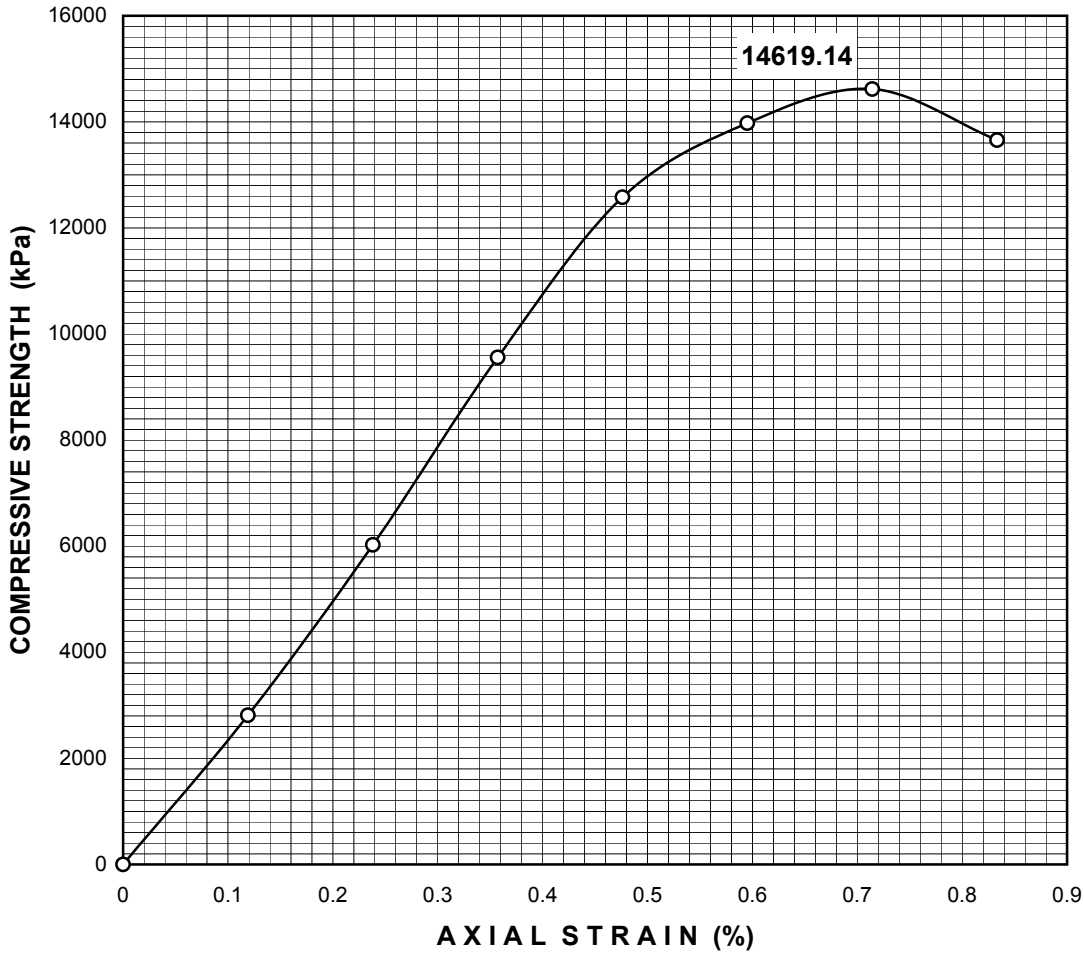
SAMPLE DATA:

Visual Classification: Light gray highly to moderately weathered welded TUFF.

Diameter of sample,	(cm)=	3.80
Height of sample,	(cm)=	8.40
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	24.27
Compressive Strength,	(kPa)	14619.14
Ave. Failure Strain,	(%)=	0.71



MODE OF FAILURE



PROJECT: The Study on Sabo & Flood Control for Western River Basins of Mount. Pinatubo LOCATION: Mt. Bagang, Marella River, Aglao, San Marcelino

Borehole No.: S2 Sample No.: cs-6 (Upper) Depth (m): 39.00-40.00

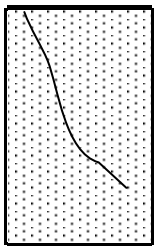
Date sampled: 06-03-02 Date tested: 06-08-02 Tested by: R. Cagbabanua

UNCONFINED COMPRESSION TEST REPORT

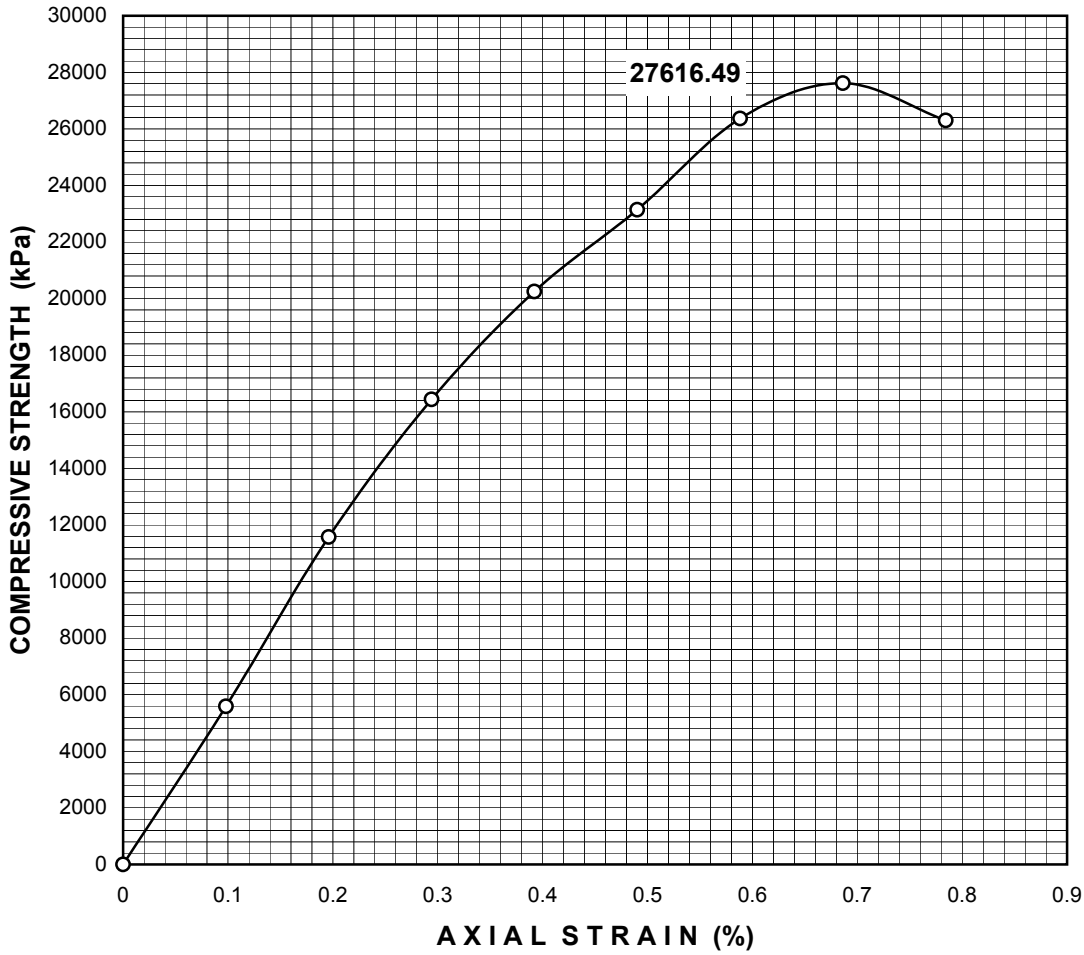
SAMPLE DATA:

Visual Classification: Light gray moderately weathered welded TUFF.

Diameter of sample,	(cm)=	4.20
Height of sample,	(cm)=	10.20
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	31.28
Compressive Strength,	(kPa)	27616.49
Ave. Failure Strain,	(%)=	0.69



MODE OF FAILURE



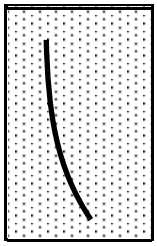
PROJECT:	The Study on Sabo & Flood Control for Western River Basins of Mount. Pinatubo	LOCATION:	Mt. Bagang, Marella River, Aglao, San Marcelino
Borehole No.:	S2	Sample No.:	cs-6 (Lower)
Depth (m):	39.00-40.00		
Date sampled:	06-03-02	Date tested:	06-08-02
Tested by:	R. Cagbabanua		

UNCONFINED COMPRESSION TEST REPORT

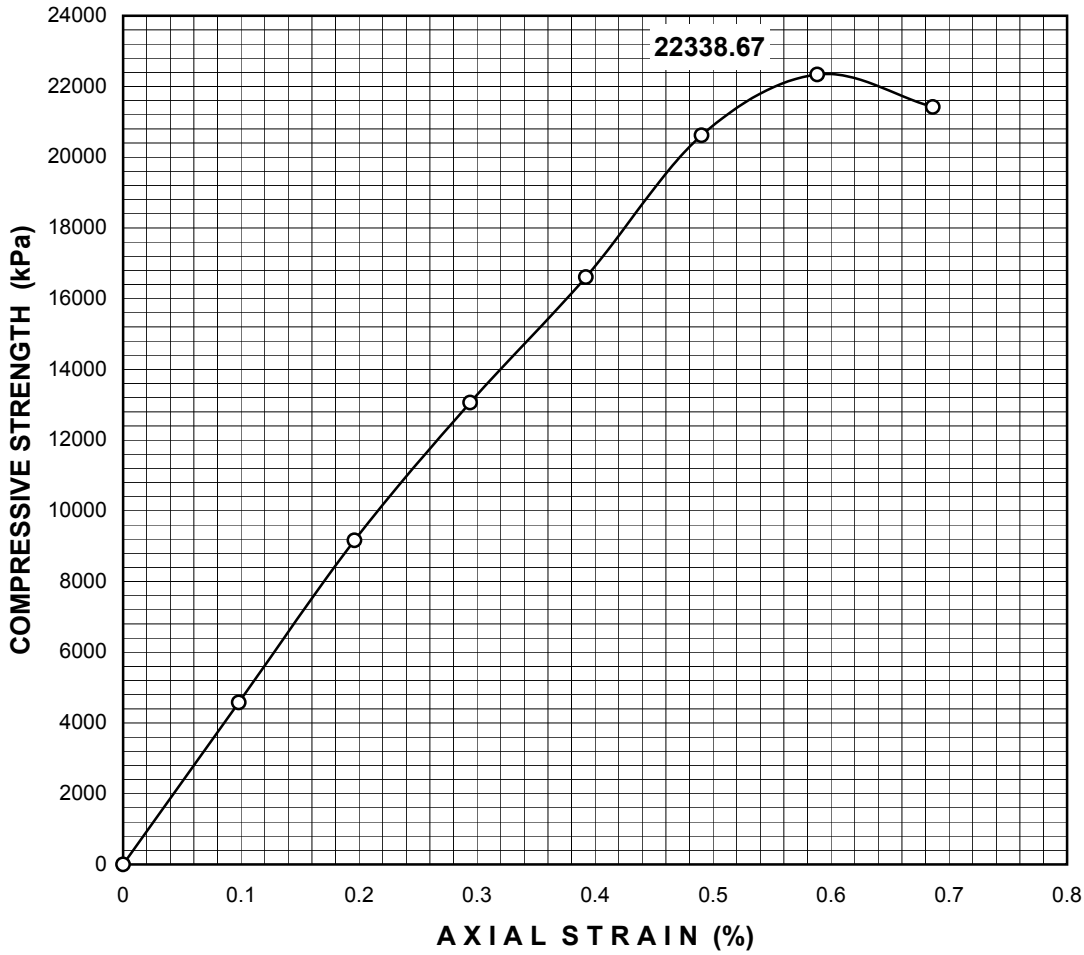
SAMPLE DATA:

Visual Classification: Light gray moderately weathered welded TUFF

Diameter of sample,	(cm)=	4.50
Height of sample,	(cm)=	10.20
Moisture Content,	(%)=	-
Wet Density,	(kN/m^3)=	25.85
Compressive Strength,	(kPa)	22338.67
Ave. Failure Strain,	(%)=	0.59



MODE OF FAILURE



BOREHOLE LOG

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

LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

BORING NO.: **BH-S3**
FINAL DEPTH: **16.00 m.**
GWT: **0.65 m.**
ELEVATION: **127.00 m.**
DATE STARTED: **June 05, 2002**
DATE FINISHED: **June 08, 2002**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
								Gs =
1	(1.0-1.45 m) Light gray poorly graded fine to medium lahar SAND, with little amount of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-1	Loose	SP-SM	8			2.45
2	(2.0-2.45 m) - same materials -but, traces of gravel. (Rec: 45/40 cm.)	ss-2	Loose	*	8			
3	(3.0-3.45 m) Light gray poorly graded medium to fine lahar SAND, with little amount of gravel-size pyroclastic materials and traces of non-plastic silt. (Rec: 45/40 cm.)	ss-3	Loose	SP-SM	8			2.51
4	(4.0-4.45 m) Light gray fine to medium-grained lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-4	Loose	*	6			
5	(5.0-5.45 m) Light gray medium to coarse-grained lahar SAND, traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.)	ss-5	Med. dense	*	11			
6	(6.0-6.45 m) - same materials - (Rec: 45/40 cm.)	ss-6	Med. dense	*	14			
7	(7.0-7.45 m) Light gray poorly graded coarse to medium lahar SAND, with little amount of pyroclastic materials and traces of non-plastic silt. (Rec: 45/30 cm.)	ss-7	Med. dense	SP-SM	10			1.82
8	(8.0-8.45 m) - same materials - (Rec: 45/35 cm.)	ss-8	Med. dense	*	15			
9	(9.0-9.45 m) - same materials - (Rec: 45/35 cm.)	ss-9	Loose	*	9			
10								

BOREHOLE LOG

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

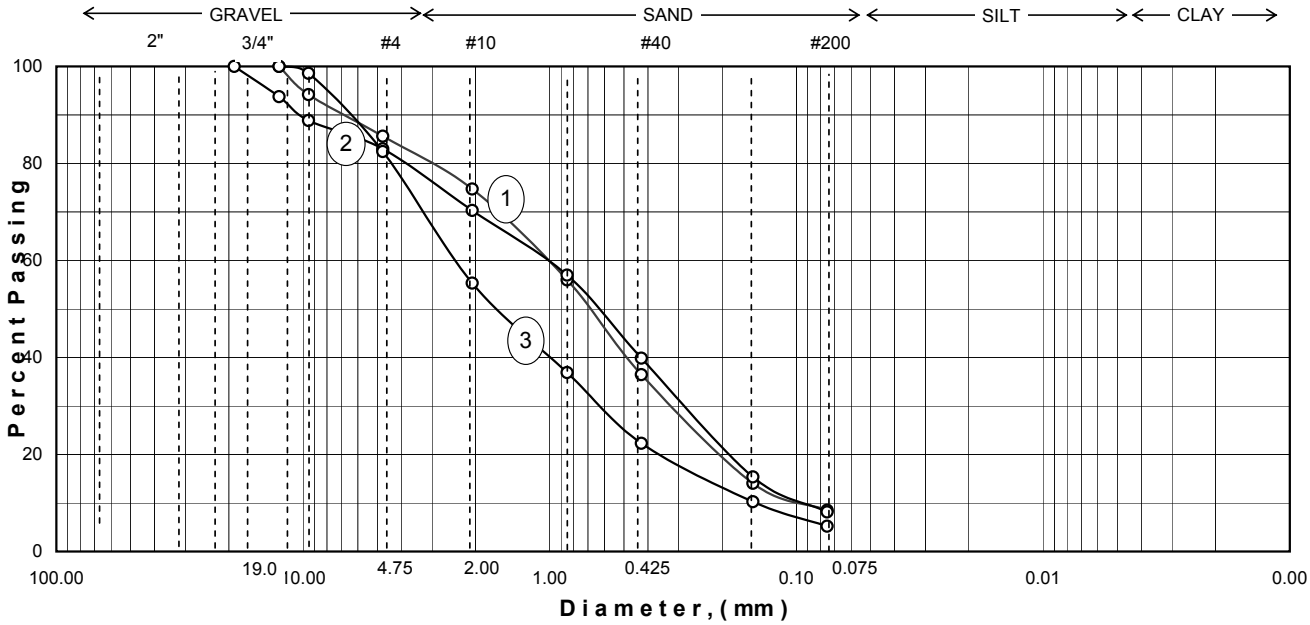
LOCATION : **Mt. Bagang, Marella River, Aglao, San Marcelino**

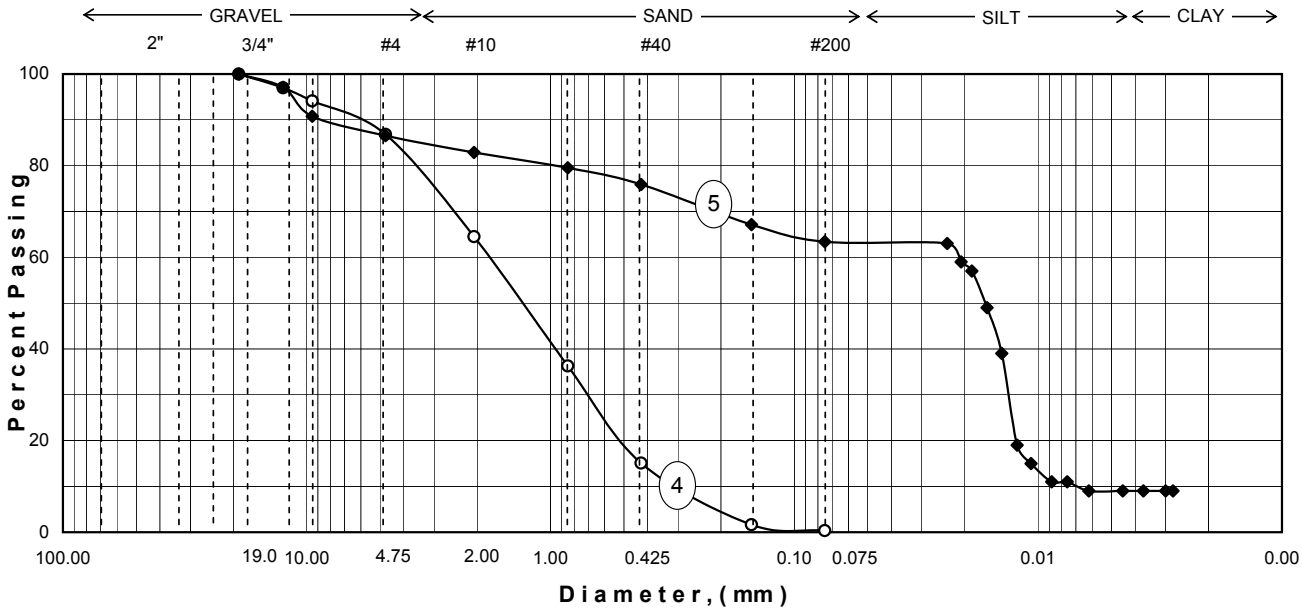
BORING NO.: **BH-S3**
FINAL DEPTH: **16.00 m.**
GWT: **0.65 m.**
ELEVATION: **127.00 m.**
DATE STARTED: **June 05, 2002**
DATE FINISHED: **June 08, 2002**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (20 60 100)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray coarse-grained SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-10	Med. dense	*	12			Gs =
11	(11.0-11.45 m) Light gray poorly graded coarse to medium lahar SAND, with little amount of gravel-size pyroclastic materials and traces of non-plastic silt. (Rec: 45/35 cm.)	ss-11	Med. dense	SP	15			2.36
12	(12.0-12.45 m) Light gray medium to coarse-grained SAND, with pyroclastic materials. (Rec: 45/35 cm.)	ss-12	Loose	*	7			
13	(13.0-13.45 m) Light gray medium to coarse-grained lahar SAND, with pyroclastic materials. (Rec: 45/40 cm.)	ss-13	Loose	*	8			
14	(14.0-14.45 m) Reddish brown completely weathered GABBRO. (Rec: 45/30 cm.)	ss-14	Med. stiff	ML	7			2.66
	Approximately change layer @ 15.05 m.							
15	(15.0-15.5 m) Bluish gray highly to moderately weathered GABBRO, weakly cemented. (Rec: 50/48/0 cm.)	cs-1						
	(15.5-16.0 m) Light gray moderately weathered GABBRO, weakly cemented. (Rec: 50/50/0 cm.)	cs-2						
16								
	Note: ***----------Visual Description***							
17	***End of Borehole @ 16.00 m. depth.***							
18	Type of drilling Machine - - - - - - - TDC							
19								
20								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
S3	ss-1	1.00-1.45	1	17.74	NP	NP	NP	SP-SM	Light gray poorly graded fine to medium lahar SAND.
S3	ss-3	3.00-3.45	2	21.39	NP	NP	NP	SP-SM	Light gray poorly graded medium to fine lahar SAND.
S3	ss-7	7.00-7.45	3	51.02	NP	NP	NP	SP-SM	Light gray poorly graded coarse to medium lahar SAND.
S3	ss-11	11.00-11.45	4	13.23	NP	NP	NP	SP	Light gray poorly graded coarse to medium lahar SAND.
S3	ss-14	14.00-14.45	5	36.58	Not tested			ML	Reddish brown completely weathered GABBRO.
		Note: Soil classification of SS-14 (14.00-14.45 m) is base on hydrometer test result.							

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino** BORING NO.: **BH-S3** DATE TESTED: **June 19, 2002** 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-1				ss-3	
Depth (m)	1.00-1.45				3.00-3.45	
Volume of Flask @ 20° , ml	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	399.17	393.23			394.62	399.98
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	339.86	334.09			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	40.69	40.86			39.47	39.88
Specific Gravity, Gs = Ws / Ww	2.46	2.45			2.53	2.51
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.45**	**2.44**			**2.52**	**2.50**

Sample Number	ss-7				ss-11	
Depth (m)	7.00-7.45				11.00-11.45	
Volume of Flask @ 20°C	250	250			250	250
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	381.28	382.50			391.67	397.76
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	334.09	339.86			334.09	339.86
Wt. of Dry Soil = Ws	100.00	100.00			100.00	100.00
Wt. of Water, Ww = Ws + Wbw - Wbws	52.81	57.36			42.42	42.10
Specific Gravity, Gs = Ws / Ww	1.89	1.74			2.36	2.38
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**1.89**	**1.74**			**2.35**	**2.37**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Mt. Bagang, Marella River, Aglao, San Marcelino** BORING NO.: **BH-S3** DATE TESTED: **June 19, 2002** 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-14					
Depth (m)	14.00-14.45					
Volume of Flask @ 20° , ml	250	250				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	396.55	402.56				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	334.09	339.86				
Wt. of Dry Soil = Ws	100.00	100.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	37.54	37.30				
Specific Gravity, Gs = Ws / Ww	2.66	2.68				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.65**	**2.67**				

Sample Number						
Depth (m)						
Volume of Flask @ 20°C						
Method of air removal						
Wt. of Flask + Water + Soil = Wbws						
Temperature, ^{o}C						
Wt. of Flask + Water = Wbw						
Wt. of Dry Soil = Ws						
Wt. of Water, Ww = Ws + Wbw - Wbws						
Specific Gravity, Gs = Ws / Ww						
Viscosity Correction						
Specific Gravity corrected for Temp.						

Remarks: