SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.25	175.71			175.68	175.24
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.39	156.74			157.02	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.14	11.03			11.34	11.15
Specific Gravity, Gs = Ws / Ww	2.69	2.72			2.65	2.69
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.68**	**2.71**			**2.64**	**2.68**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.38	175.28			174.91	174.72
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	156.74			156.74	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.32	11.46			11.83	11.67
Specific Gravity, Gs = Ws / Ww	2.65	2.62			2.54	2.57
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.61**			**2.53**	**2.56**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.46	175.86			175.04	175.24
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	157.25			157.02	157.08
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.34	11.39			11.98	11.84
Specific Gravity, Gs = Ws / Ww	2.65	2.63			2.50	2.53
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.62**			**2.49**	**2.52**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.56	175.65			175.48	175.31
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	157.00			156.80	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.46	11.35			11.32	11.44
Specific Gravity, Gs = Ws / Ww	2.62	2.64			2.65	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.61**	**2.63**			**2.64**	**2.61**

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: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.54	175.26			175.77	175.60
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	156.74			156.84	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.54	11.48			11.07	11.12
Specific Gravity, Gs = Ws / Ww	2.60	2.61			2.71	2.70
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.59**	**2.60**			**2.70**	**2.69**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.15	175.82			175.89	175.66
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.00	156.75			157.25	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.85	10.93			11.36	11.34
Specific Gravity, Gs = Ws / Ww	2.76	2.74			2.64	2.65
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.75**	**2.73**			**2.63**	**2.64**

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: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.38	175.74			175.57	175.50
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.74	157.08			156.75	156.70
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.36	11.34			11.18	11.20
Specific Gravity, Gs = Ws / Ww	2.64	2.65			2.68	2.68
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.63**	**2.64**			**2.67**	**2.67**

Sample Number	ss-30				ss-32	
Depth (m)	30.00-30.45				32.00-32.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.19	175.25			175.62	175.58
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	156.75			157.08	157.00
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.51	11.50			11.46	11.42
Specific Gravity, Gs = Ws / Ww	2.61	2.61			2.62	2.63
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.60**	**2.60**			**2.61**	**2.62**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **5 of 5**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-34				ss-36	
Depth (m)	34.00-34.45				36.00-36.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.94	175.31			175.39	175.36
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.39	156.70			156.80	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.45	11.39			11.41	11.39
Specific Gravity, Gs = Ws / Ww	2.62	2.63			2.63	2.63
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.61**	**2.62**			**2.62**	**2.62**

Sample Number	ss-38				ss-40	
Depth (m)	38.00-38.45				40.00-40.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.93	176.25			175.77	176.22
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	157.25			156.84	157.25
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.09	11.00			11.07	11.03
Specific Gravity, Gs = Ws / Ww	2.71	2.73			2.71	2.72
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.70**	**2.72**			**2.70**	**2.71**

Remarks:

BOREHOLE LOG

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

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

BORING NO.: **SL-4-4**
FINAL DEPTH: **30.00 m.**
GWT: **8.40 m.**
ELEVATION: **80.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 14, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light brown SAND and SILT, with traces of fine pyroclastic materials. (Rec: 45/40 cm.)	ss-1	Loose	*	8			
2	(2.0-2.45 m) Light brown fine to coarse SAND, with gravel-size pyroclastic materials and little amount of non-plastic silt. (Rec: 45/45 cm.)	ss-2	Med. dense	SM	13			Gs = 2.76
	Permeability is conducted @ 3.00 m.							
3	(3.0-3.45 m) Brown sandy SILT, traces of fine pyroclastic materials. (Rec: 45/25 cm.)	ss-3	Loose	*	6			
4	(4.0-4.45 m) Light gray lahar SAND, with traces of fine pyroclastic materials. (Rec: 45/45 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-4	Med. dense	SM-ML	28			Gs = 2.65
5	(5.0-5.45 m) - same materials - (Rec: 45/15 cm.)	ss-5	Med. dense	*	26			
	Permeability is conducted @ 6.00 m.							
6	(6.0-6.45 m) Light gray lahar SAND, with traces of pyroclastic materials. Rec: 45/35 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-6	Med. dense	SM-ML	13			Gs = 2.55
7	(7.0-7.45 m) Light gray to gray fine SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.)	ss-7	Med. dense	*	18			
8	(8.0-8.45 m) Gray lahar SAND, with little amount of fine pyroclastic materials. (Rec: 45/45 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-8	Loose	SM-ML	9			Gs = 2.73
	Permeability is conducted @ 9.00 m.							
9	(9.0-9.45 m) - same materials - (Rec: 45/45 cm.)	ss-9	Loose	*	10			
	Approximately change formation @ 10.00 m.							
10								

BOREHOLE LOG

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

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

BORING NO.: **SL-4-4**
FINAL DEPTH: **30.00 m.**
GWT: **8.40 m.**
ELEVATION: **80.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 14, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brown fine SAND, with non-plastic silt and traces of fine sand and traces of pyroclastic materials. (Rec: 45/15 cm.)	ss-10	Loose	SM	7			Gs = 2.66
11	(11.0-11.45 m) Brownish gray fine SAND, with fine pyroclastic materials. (Rec: 45/35 cm.)	ss-11	Med. dense	*	10			
12	*Permeability is conducted @ 12.00 m.* (12.0-12.45 m) Gray fine to medium SAND, with some non-plastic silt and traces of fine pyroclastic materials. (Rec: 45/45 cm.)	ss-12	Med. dense	SM	21			Gs = 2.53
13	(13.0-13.45 m) Gray fine to medium SAND, with little amount of gravel. (Rec: 45/35 cm.)	ss-13	Med. dense	*	12			
14	(14.0-14.45 m) Gray medium to fine SAND and SILT, non-plastic, traces of gravel. (Rec: 45/20 cm.)	ss-14	Med. dense	SM-ML	26			Gs = 2.68
15	(15.0-15.45 m) Gray fine to coarse SAND, with little amount of gravel. (Rec: 45/20 cm.)	ss-15	Med. dense	*	23			
16	(16.0-16.45 m) Gray silty fine to coarse SAND, with little amount of gravel. (Rec: 45/30 cm.)	ss-16	Med. dense	SM	21			Gs = 2.69
17	(17.0-17.45 m) - same materials - (Rec: 45/35 cm.)	ss-17	Very dense	*	23			
18	(18.0-18.45 m) Gray fine to coarse SAND, with gravel and traces of pyroclastic materials. (Rec: 45/35 cm.)	ss-18	Dense	SM	31			Gs = 2.68
19	(19.0-19.45 m) Gray gravelly Sand, with traces of fine pyroclastic materials. (Rec: 45/15 cm.)	ss-19	Dense	*	31			
20	(19.55-20.0 m) Gray silty fine to coarse SAND, with some gravel and pyroclastic materials.	ss-20	Med. dense	SM	29			Gs = 2.66

BOREHOLE LOG

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

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

BORING NO.: **SL-4-4**
FINAL DEPTH: **30.00 m.**
GWT: **8.40 m.**
ELEVATION: **80.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 14, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
	(Rec: 45/45 cm.)							
21	(21.0-21.45 m) Gray lahar SAND, with some fine and coarse pyroclastic materials. (Rec: 45/25 cm.) *Note: Water table @ 8.70 m. (01-12-03)*	ss-21	Med. dense	*	22			
22	(22.0-22.45 m) Gray lahar SAND, with fine medium of pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-22	Dense	SM-ML	32			Gs = 2.65
23	(23.0-23.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-23	Med. dense	*	24			
24	(24.0-24.45 m) Gray lahar SAND, with some pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 8.50 m. (01-13-03)*	ss-24	Med. dense	SM-ML	26			Gs = 2.59
25	(25.0-25.45 m) - same materials - (Rec: 45/20 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-25	Med. dense	*	27			
26	(26.0-26.45 m) Gray lahar SAND, with fine pyroclastic materials. (Rec: 45/45 cm.)	ss-26	Dense	SM-ML	30			Gs = 2.63
27	(27.0-27.45 m) - same materials - (Rec: 45/45 cm.) *Note: Water table @ 8.40 m. (01-14-03)*	ss-27	Dense	*	32			
28	(28.0-28.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory*	ss-28	Dense	SM-ML	31			Gs = 2.59
29	(29.0-29.45 m) - same materials - Rec: 45/30 cm.)	ss-29	Dense	*	31			
30	(29.55-30.0 m) Gray lahar SAND, with fine some gravel. (Rec: 45/25 cm.)	ss-30	Dense	SM-ML	32			Gs = 2.70

BOREHOLE LOG

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

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

BORING NO.: **SL-4-4**
FINAL DEPTH: **30.00 m.**
GWT: **8.40 m.**
ELEVATION: **80.00 m.**
DATE STARTED: **Jan. 08, 2003**
DATE FINISHED: **Jan. 14, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: Sample degraded into SILT/sandy SILT after oven drying in the laboratory							
31	***End of Borehole @ 30.00 m. depth***							
	Note: *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
32								
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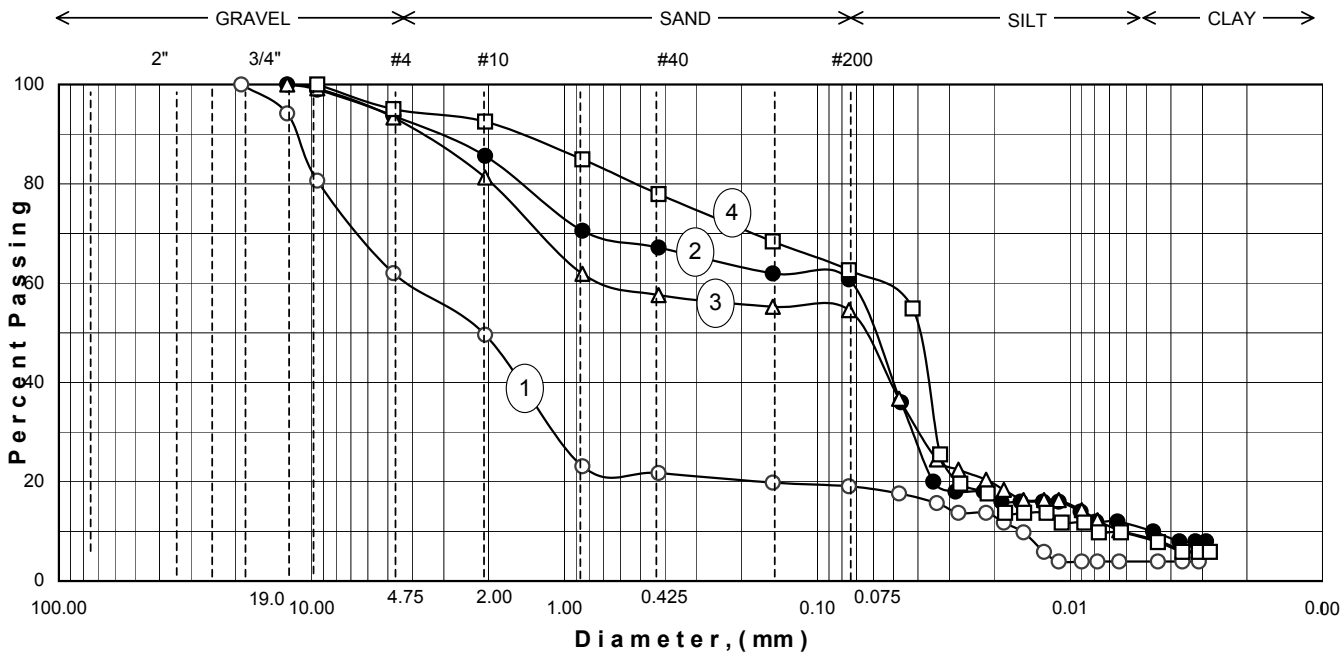
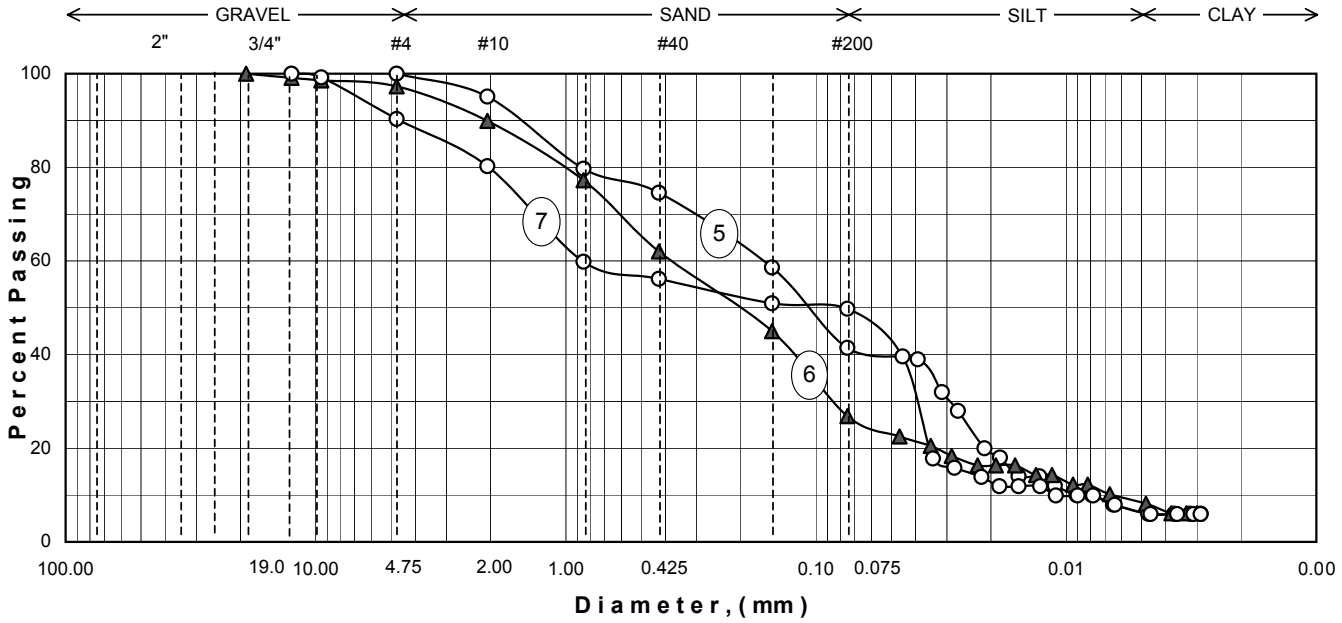
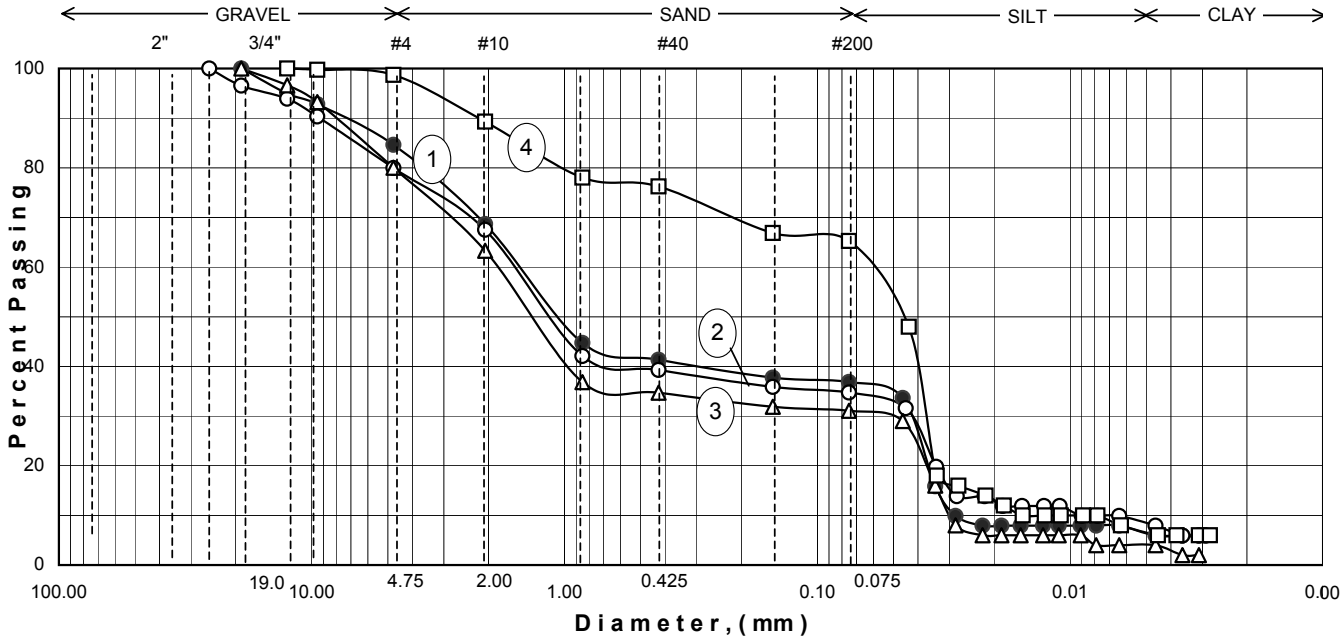
GRAIN-SIZE DISTRIBUTION CURVES

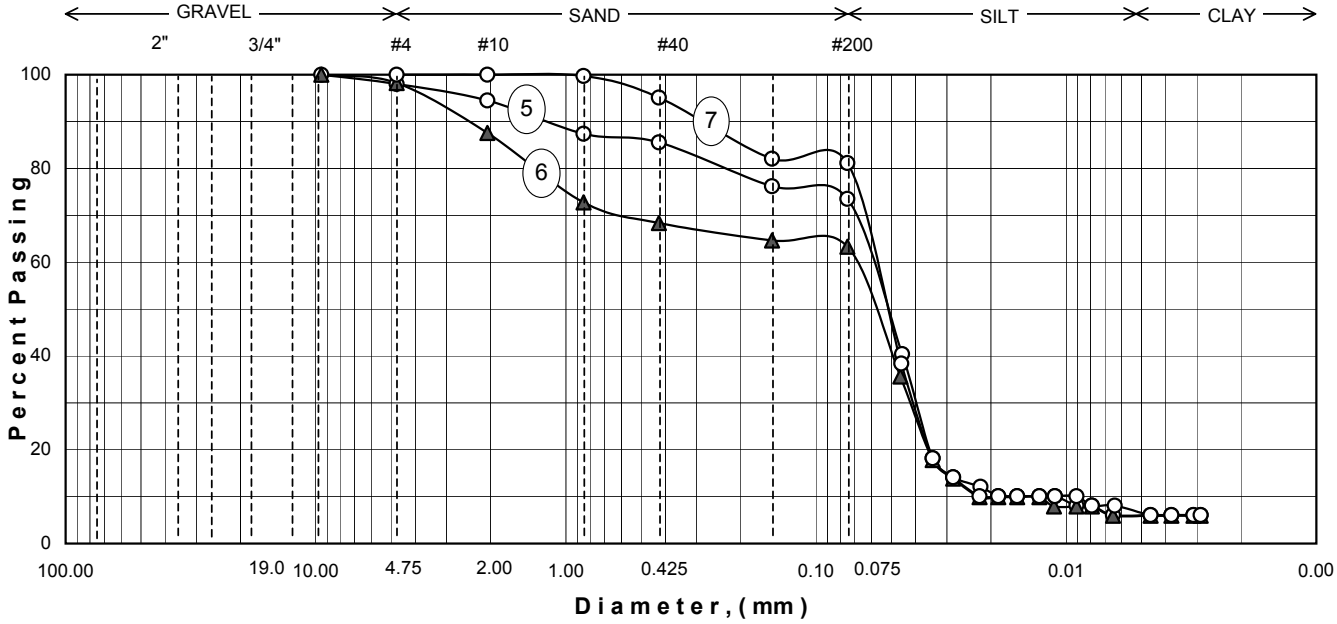




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-4	ss-2	2.00-2.45	1	23.63	NP	NP	NP	SM	Light brown fine to coarse SAND, with gravel-size pyroclastic materials
SL-4-4	ss-4	4.00-4.45	2	14.72	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-4-4	ss-6	6.00-6.45	3	26.24	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-4-4	ss-8	8.00-8.45	4	16.81	NP	NP	NP	SM-ML	Gray lahar SAND
SL-4-4	ss-10	10.00-10.45	5	26.38	NP	NP	NP	SM	Brown fine SAND, with non-plastic silt
SL-4-4	ss-12	12.00-12.45	6	18.34	NP	NP	NP	SM	Gray fine to medium SAND
SL-4-4	ss-14	14.00-14.45	7	12.71	NP	NP	NP	SM-ML	Gray medium to fine SAND and SILT, non-plastic

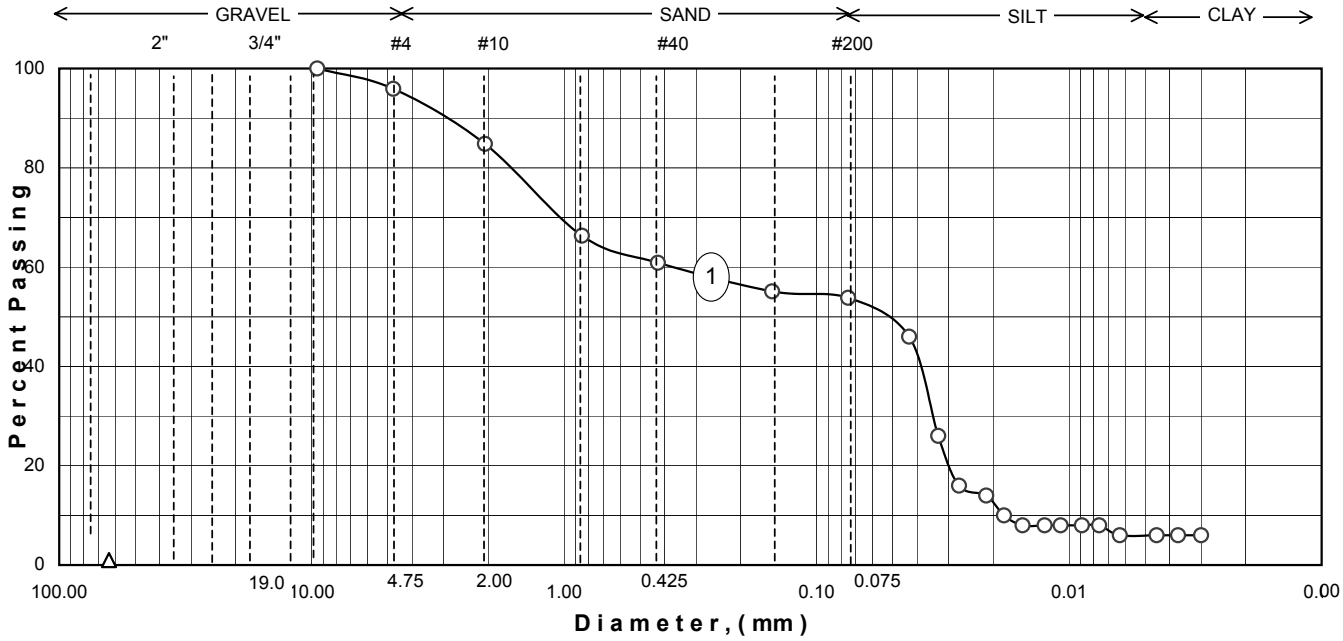
GRAIN-SIZE DISTRIBUTION CURVES

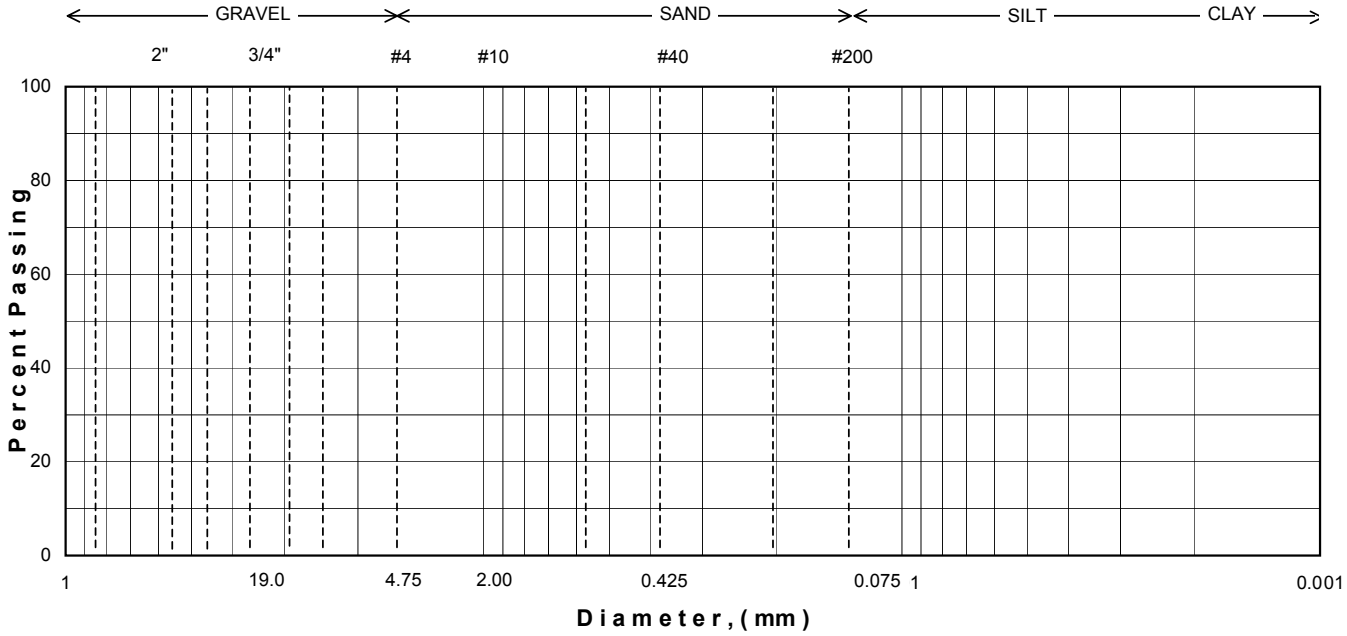




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-4	ss-16	16.00-16.45	1	16.23	NP	NP	NP	SM	Gray silty fine to coarse SAND
SL-4-4	ss-18	18.00-18.45	2	15.42	NP	NP	NP	SM	Gray fine to coarse SAND, with gravel
SL-4-4	ss-20	19.55-20.00	3	13.16	NP	NP	NP	SM	Gray silty fine to coarse SAND
SL-4-4	ss-22	22.00-22.45	4	19.93	NP	NP	NP	SM-ML	Gray lahar SAND, with fine to medium pyroclastic materials
SL-4-4	ss-24	24.00-24.45	5	23.66	NP	NP	NP	SM-ML	Gray lahar SAND
SL-4-4	ss-26	26.00-26.45	6	14.67	NP	NP	NP	SM-ML	Gray lahar SAND
SL-4-4	ss-28	28.00-28.45	7	24.63	NP	NP	NP	SM-ML	Gray lahar SAND

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-4	ss-30	29.55-30.00	1	13.84	NP	NP	NP	SM-ML	Gray lahar SAND

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DATE TESTED: **January 20, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.95	176.20			175.46	175.37
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.75	157.08			156.70	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.80	10.88			11.24	11.37
Specific Gravity, Gs = Ws / Ww	2.78	2.76			2.67	2.64
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.77**	**2.75**			**2.66**	**2.63**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.68	175.26			175.79	175.83
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.39	157.02			156.80	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.71	11.76			11.01	10.89
Specific Gravity, Gs = Ws / Ww	2.56	2.55			2.72	2.75
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.55**	**2.54**			**2.71**	**2.74**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water in sample 6.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DATE TESTED: **January 20, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.94	175.64			175.29	174.53
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.25	156.84			157.08	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.31	11.20			11.79	11.86
Specific Gravity, Gs = Ws / Ww	2.65	2.68			2.54	2.53
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.67**			**2.54**	**2.52**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.82	176.11			175.53	175.59
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	157.25			156.70	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.20	11.14			11.17	11.13
Specific Gravity, Gs = Ws / Ww	2.68	2.69			2.69	2.70
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.68**			**2.68**	**2.69**

Remarks:

Note: It was observed during testing, that some light weight materials or pyroclastic materials floats in water in sample 12.

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DATE TESTED: **January 20, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				19.55-20.00	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.60	175.57			175.53	175.60
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	156.74			156.75	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.20	11.17			11.22	11.24
Specific Gravity, Gs = Ws / Ww	2.68	2.69			2.67	2.67
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.67**	**2.68**			**2.66**	**2.66**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.74	175.50			175.14	175.20
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	156.80			156.70	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.34	11.30			11.56	11.55
Specific Gravity, Gs = Ws / Ww	2.65	2.65			2.60	2.60
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.65**			**2.59**	**2.59**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DATE TESTED: **January 20, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.49	175.53			175.25	174.82
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.72	157.02			156.74	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.23	11.49			11.49	11.57
Specific Gravity, Gs = Ws / Ww	2.67	2.61			2.61	2.59
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.66**	**2.60**			**2.60**	**2.58**

Sample Number	ss-30					
Depth (m)	29.55-30.00					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.73	176.11				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.72	157.25				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	10.99	11.14				
Specific Gravity, Gs = Ws / Ww	2.73	2.69				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.72**	**2.68**				

Remarks:

BOREHOLE LOG

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

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

BORING NO.: **SL-4-5**
FINAL DEPTH: **15.00 m.**
GWT: **6.00 m.**
ELEVATION: **77.00 m.**
DATE STARTED: **Jan. 15, 2003**
DATE FINISHED: **Jan. 17, 2003**
SHEET NO. **1 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL – NMC – LL)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Brown sandy SILT, non-plastic, traces of fine pyroclastic materials. (Rec: 45/35 cm.)	ss-1	Med. dense	*	11			
2	(2.0-2.45 m) Light gray silty lahar SAND, non-plastic, with traces of pyroclastic materials. (Rec: 45/45 cm.) *Permeability is conducted @ 3.00 m.*	ss-2	Loose	SM	10			Gs = 2.62
3	(3.0-3.45 m) Light gray lahar SAND, with little amount of silt. (Rec: 45/35 cm.)	ss-3	Loose	*	8			
4	(4.0-4.45 m) Light gray to gray silty fine to medium lahar SAND, with little amount of pyroclastic materials and gravel. (Rec: 45/45 cm.)	ss-4	Med. dense	SM	29			Gs = 2.66
5	(5.0-5.45 m) Gray fine-grained lahar SAND, with fine pyroclastic materials. (Rec: 45/45 cm.) *Approximately change formation @ 6.00 m.*	ss-5	Loose	*	5			
6	(6.0-6.45 m) Brownish gray SAND and SILT, non-plastic, with amount of fine gravel and pyroclastic materials. (Rec: 45/45 cm.)	ss-6	Med. dense	SM-ML	30			Gs = 2.72
7	(7.0-7.45 m) Brownish gray silty SAND, with fine pyroclastic materials/ gravel. (Rec: 45/45 cm.)	ss-7	Med. dense	*	21			
8	(8.0-8.45 m) Brownish gray fine to medium SAND, with some non-plastic silt and traces of gravel/pyroclastic materials. (Rec: 45/35 cm.)	ss-8	Med. dense	SM	25			Gs = 2.77
9	(9.0-9.45 m) - same materials - (Rec: 45/20 cm.)	ss-9	Med. dense	*	27			
10								

BOREHOLE LOG

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

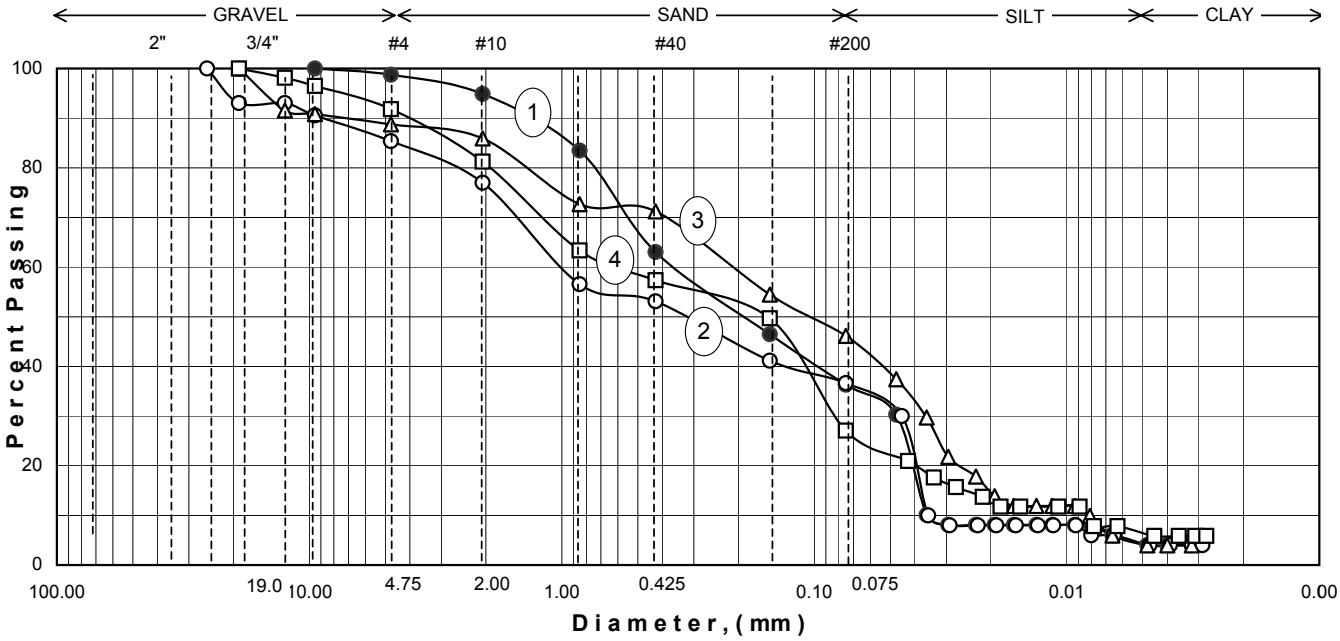
LOCATION : ***Sto. Tomas River, San Marcelino, Zambales***

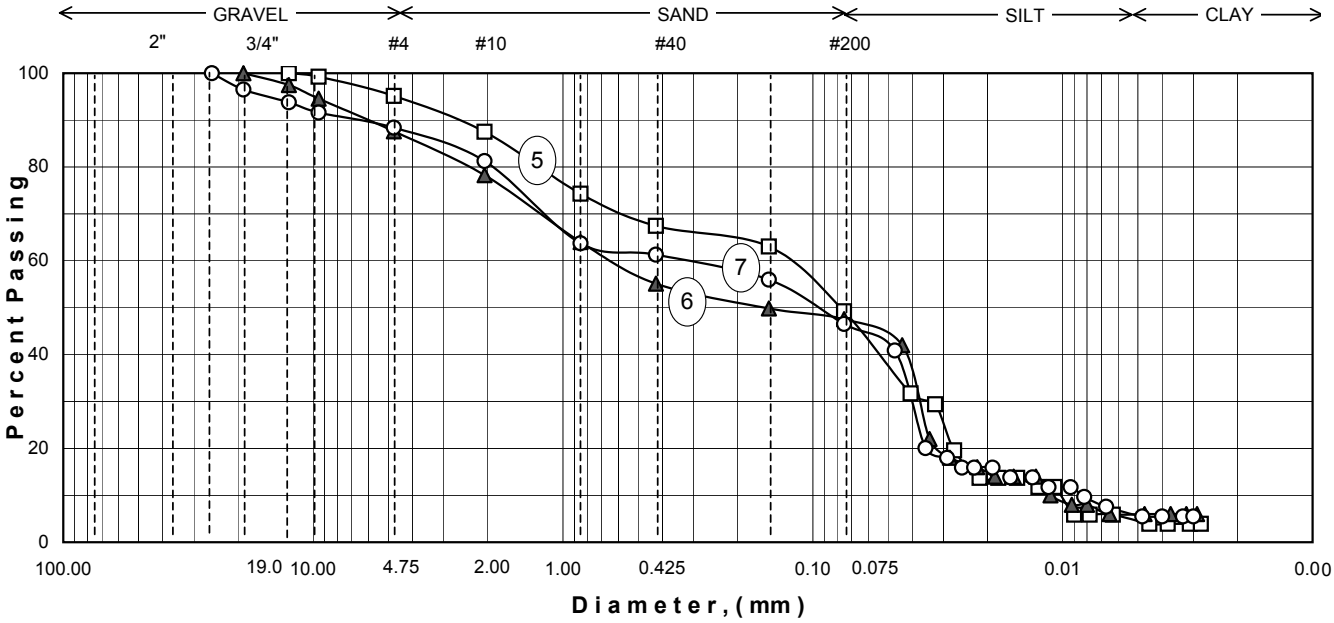
BORING NO.: **SL-4-5**
FINAL DEPTH: **15.00 m.**
GWT: **6.00 m.**
ELEVATION: **77.00 m.**
DATE STARTED: **Jan. 11, 2003**
DATE FINISHED: **Jan. 13, 2003**
SHEET NO. **2 of 2**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	(10.0-10.45 m) Brownish gray SAND and SILT, non-plastic, with traces of fine gravel. (Rec: 45/25 cm.)	ss-10	Med. dense	SM-ML	28			Gs = 2.75
11	(11.0-11.45 m) Gray lahar SAND, with some fine pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 6.10 m. (01-17-03 @ 7:00 AM)*	ss-11	Med. dense	*	15			
12	(12.0-12.45 m) Gray lahar SAND and SILT, non-plastic, some sand-gravel-size pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-12	Med. dense	SM-ML	20			Gs = 2.66
13	(13.0-13.45 m) Gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-13	Med. dense	*	27			
14	(14.0-14.45 m) Gray lahar SAND and SILT, non-plastic, with little amount of gravel and gravel-size pyroclastic materials. (Rec: 45/25 cm.)	ss-14	Dense	SM-ML	31 / 28			Gs = 2.70
15	(14.55-15.00 m) Gray lahar SAND, with some fine to coarse pyroclastic meterials. (Rec: 45/45 cm.) *Note: Water table @ 6.00 m. (01-17-03 @ 3:30 PM)*	ss-15	Med. dense	*				
16	***End of Borehole 15.00 m.depth***							
17	**Note:** *** - - - - - - - - - - Visual Description** **Drilling Machine - - - - - - - - - - TONE - TDC** **Size of Casing - - - - - - - - - - 76 mm.**							
18								
19								
20								

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-5	ss-2	2.00-2.45	1	4.20	NP	NP	NP	SM	Light gray silty lahar SAND
SL-4-5	ss-4	4.00-4.45	2	10.91	NP	NP	NP	SM	Light gray to gray silty lahar SAND, non-plastic
SL-4-5	ss-6	6.00-6.45	3	18.65	NP	NP	NP	SM-ML	Brownish gray SAND and SILT, non-plastic
SL-4-5	ss-8	8.00-8.45	4	9.76	NP	NP	NP	SM	Brownish gray fine to medium SAND
SL-4-5	ss-10	10.00-10.45	5	11.68	NP	NP	NP	SM-ML	Brownish gray SAND and SILT, non-plastic
SL-4-5	ss-12	12.00-12.45	6	13.82	NP	NP	NP	SM-ML	Gray lahar SAND and SILT, non-plastic
SL-4-5	ss-14	14.00-14.45	7	13.16	NP	NP	NP	SM-ML	Gray lahar SAND and SILT, non-plastic

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-5** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.41	175.75			175.80	175.95
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.74	157.25			157.00	157.25
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.33	11.50			11.20	11.30
Specific Gravity, Gs = Ws / Ww	2.65	2.61			2.68	2.65
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.60**			**2.67**	**2.65**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	176.10	176.01			175.68	176.16
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	157.00			156.39	157.02
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.98	10.99			10.71	10.86
Specific Gravity, Gs = Ws / Ww	2.73	2.73			2.80	2.76
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.72**	**2.72**			**2.79**	**2.75**

Remarks:

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-5** DATE TESTED: **January 31, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.82	175.81			175.57	175.52
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	156.72			156.80	156.75
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	10.88	10.91			11.23	11.23
Specific Gravity, Gs = Ws / Ww	2.76	2.75			2.67	2.67
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.75**	**2.74**			**2.66**	**2.66**

Sample Number	ss-14					
Depth (m)	14.00-14.45					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.69	175.70				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	156.80	156.72				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.11	11.02				
Specific Gravity, Gs = Ws / Ww	2.70	2.72				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.69**	**2.71**				

Remarks:

BOREHOLE LOG

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

LOCATION : ***Marella River, San Marcelino, Zambales***

BORING NO.: **SL-5**
FINAL DEPTH: **30.00 m.**
GWT: **6.00 m.**
ELEVATION: **129.00 m.**
DATE STARTED: **Jan. 19, 2003**
DATE FINISHED: **Jan. 23, 2003**
SHEET NO. **1 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE (10 30 50)	WATER CONTENT (PL NMC LL; 20 60 100)	P.I.	OTHER TEST RESULTS
1	(1.0-1.45 m) Light gray lahar SAND, with with some fine to coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-1	Loose	*	10			
2	(2.0-2.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-2	Loose	SM-ML	10			Gs = 2.69
3	(3.0-3.45 m) - same materials - (Rec: 45/35 cm.)	ss-3	Loose	*	8			
4	(4.0-4.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-4	Loose	SM-ML	10			Gs = 2.61
5	(5.0-5.45 m) - same materials - (Rec: 45/30 cm.)	ss-5	Loose	*	10			
▼ 6	(6.0-6.45 m) - same materials - (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-6	Med. dense	SM-ML	18			Gs = 2.50
7	(7.0-7.45 m) - same materials - (Rec: 45/30 cm.)	ss-7	Loose	*	7			
8	(8.0-8.45 m) - same materials - (Rec: 45/25 cm.) *Note: Sample became friable and degraded into SILT after oven drying in the laboratory.*	ss-8	Loose	SM-ML	6			Gs = 2.63
9	(9.0-9.45 m) - same materials - (Rec: 45/30 cm.)	ss-9	Loose	*	6			
10								

BOREHOLE LOG

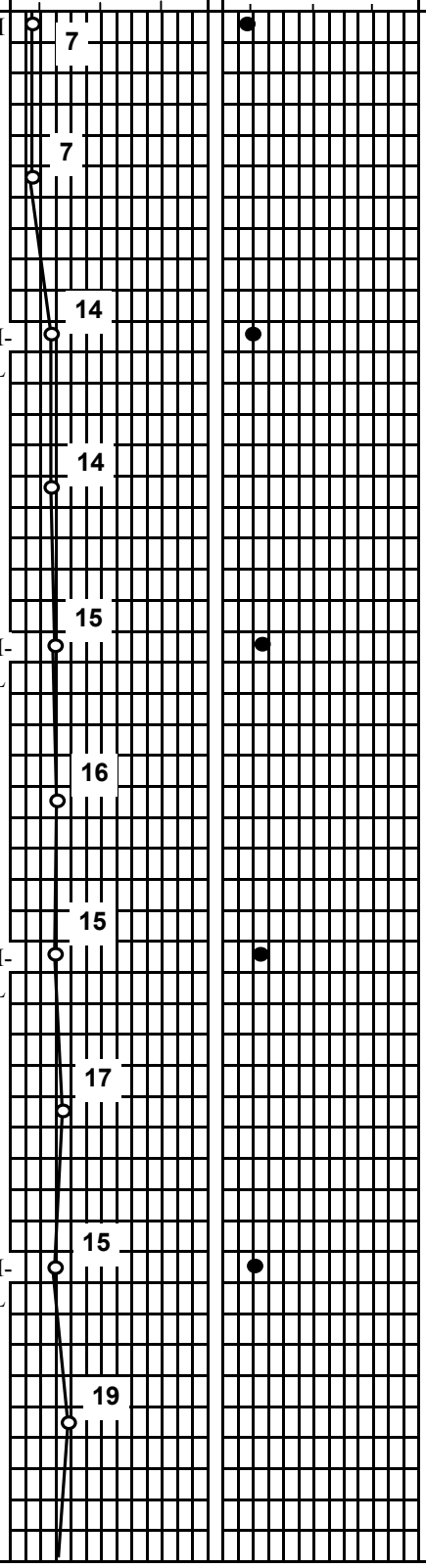
PROJECT : ***THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO***

LOCATION : ***Marella River, San Marcelino, Zambales***

BORING NO.: **SL-5**
FINAL DEPTH: **30.00 m.**
GWT: **6.00 m.**
ELEVATION: **129.00 m.**
DATE STARTED: **Jan. 19, 2003**
DATE FINISHED: **Jan. 23, 2003**
SHEET NO. **2 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	OTHER TEST RESULTS
	(10.0-10.45 m) Light gray silty lahar SAND, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-10	Loose	SM	7	Gs = 2.62
11	(11.0-11.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/35 cm.) *Note: Water table @ 6.30 m. (01-21-03 @ 7:00 AM)*	ss-11	Loose	*	7	
12	(12.0-12.45 m) Light gray lahar SAND and SILT, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/25 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-12	Med. dense	SM-ML	14	Gs = 2.60
13	(13.0-13.45 m) Light gray lahar SAND, with fine to coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-13	Med. dense	*	14	
14	(14.0-14.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-14	Med. dense	SM-ML	15	Gs = 2.55
15	(15.0-15.45 m) - same materials - (Rec: 45/30 cm.)	ss-15	Med. dense	*	16	
16	(16.0-16.45 m) - same materials - (Rec: 45/30 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-16	Med. dense	SM-ML	15	Gs = 2.63
17	(17.0-17.45 m) - same materials - (Rec: 45/40 cm.)	ss-17	Med. dense	*	17	
18	(18.0-18.45 m) - same materials - (Rec: 45/30 cm.)	ss-18	Med. dense	SM-ML	15	Gs = 2.59
19	(19.0-19.45 m) - same materials - (Rec: 45/35 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 : ***Marella River, San Marcelino, Zambales***

BORING NO.: **SL-5**
FINAL DEPTH: **30.00 m.**
GWT: **6.00 m.**
ELEVATION: **129.00 m.**
DATE STARTED: **Jan. 19, 2003**
DATE FINISHED: **Jan. 23, 2003**
SHEET NO. **3 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	N - VALUE	WATER CONTENT (PL NMC LL)	P.I.	OTHER TEST RESULTS
	(20.0-20.45 m) Light gray silty lahar SAND, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/30 cm.)	ss-20	Med. dense	SM	16			Gs = 2.62
21	(21.0-21.45 m) Light gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/30 cm.) *Note: Water table @ 6.10 m. (01-22-03 @ 7:00 AM)*	ss-21	Med. dense	*	15			
22	(22.0-22.45 m) Light gray lahar SAND, with traces of gravel-size pyroclastic materials. (Rec: 45/40 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-22	Med. dense	SM-ML	17			Gs = 2.50
23	(23.0-23.45 m) - same materials - (Rec: 45/35 cm.)	ss-23	Med. dense	*	16			
24	(24.0-24.45 m) Light gray lahar SAND and SILT, non-plastic, with traces of fine to coarse pyroclastic materials. (Rec: 45/35 cm.)	ss-24	Dense	SM-ML	33			Gs = 2.50
25	(25.0-25.45 m) Light gray to gray lahar SAND, with some fine to coarse pyroclastic materials. (Rec: 45/45 cm.)	ss-25	Med. dense	*	21			
26	(26.0-26.45 m) Light gray lahar SAND, with with traces of fine to coarse pyroclastic materials. (Rec: 45/30 cm.) *Note: Sample degraded into sandy SILT after oven drying in the laboratory.*	ss-26	Med. dense	SM-ML	16			Gs = 2.63
27	(27.0-27.45 m) - same materials - (Rec: 45/35 cm.)	ss-27	Med. dense	*	18			
28	(28.0-28.45 m) Light gray lahar SAND and SILT, non-plastic, with traces of gravel-size pyroclastic materials. (Rec: 45/35 cm.) *Note: Sample degraded into SILT after oven drying in the laboratory.*	ss-28	Med. dense	SM-ML	18			Gs = 2.58
29	(29.0-29.45 m) Light gray lahar SAND, with some fine to coarse pyroclastic materials (Rec: 45/30 cm.)	ss-29	Med. dense	*	20			
30	(29.55-30.0 m) - same materials - (Rec: 45/35 cm.)	ss-30	Med. dense	SM-ML	21			Gs = 2.66

BOREHOLE LOG

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

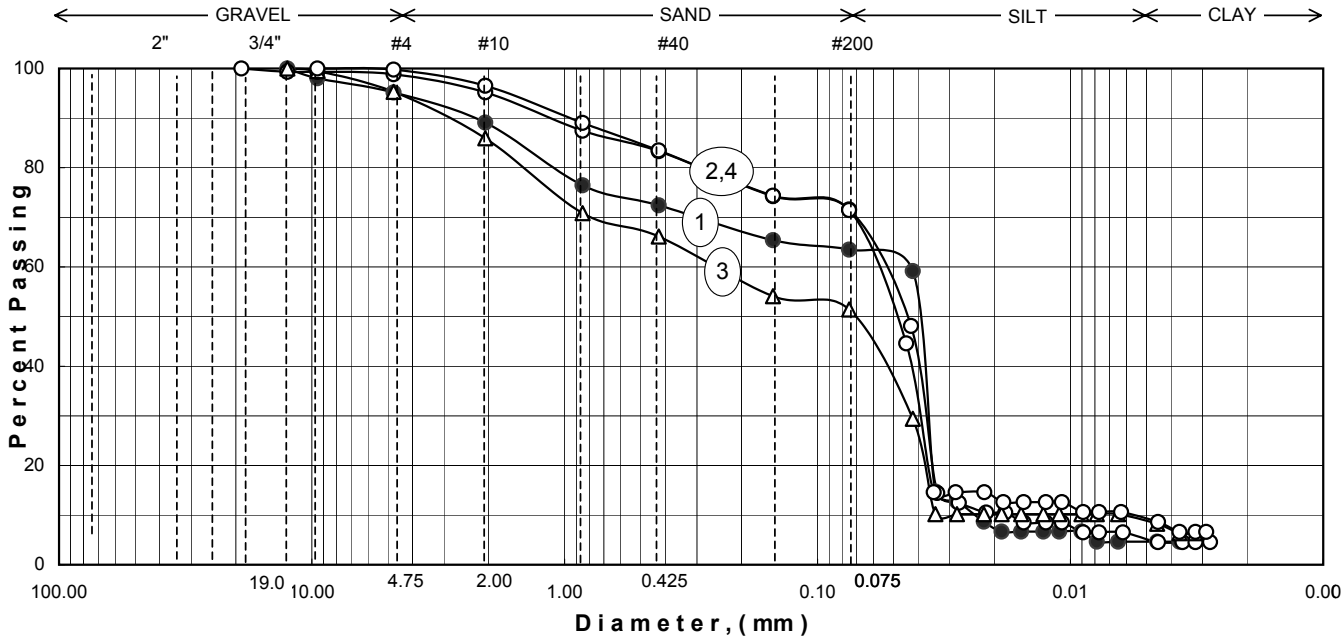
LOCATION : ***Marella River, San Marcelino, Zambales***

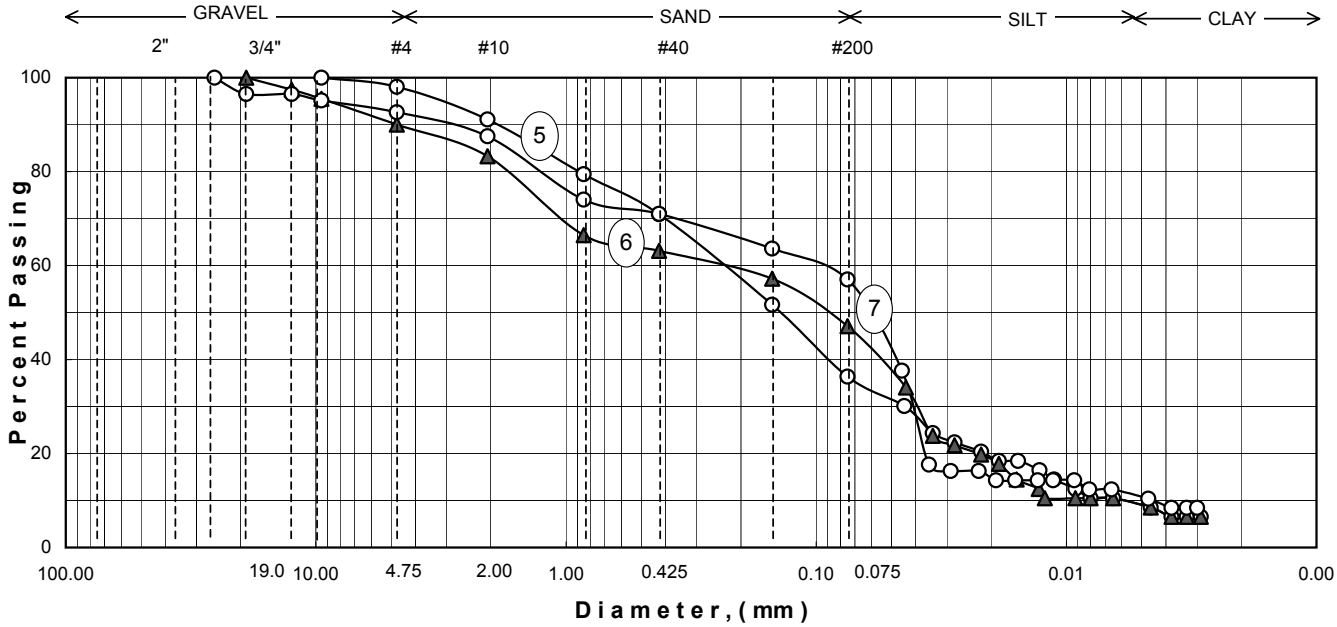
BORING NO.: **SL-5**
FINAL DEPTH: **30.00 m.**
GWT: **6.00 m.**
ELEVATION: **129.00 m.**
DATE STARTED: **Jan. 19, 2003**
DATE FINISHED: **Jan. 23, 2003**
SHEET NO. **4 of 4**

A G E S

DEPTH (m)	SAMPLE DESCRIPTION	SAMPLE NO.	CONSISTENCY	USCS	REC.RATIO / R. Q. D / N - VALUE (10 30 50)	WATER CONTENT PL NMC LL (20 60 100)	P.I.	OTHER TEST RESULTS
	Note: Sample degraded into SILT after oven drying in the laboratory.							
	Note: Water table @ 6.00 m. (01-24-03 @ 7:00 AM)							
31								
	*** - - - - - - - - - - Visual Description**							
	End of Borehole @ 30.00 m. depth							
32								
	Note:							
	*** - - - - - - - - - - Visual Description**							
	Drilling Machine - - - - - - - - - - TONE - TDC							
33	**Size of Casing - - - - - - - - - - 76 mm.**							
34								
35								
36								
37								
38								
39								
40								

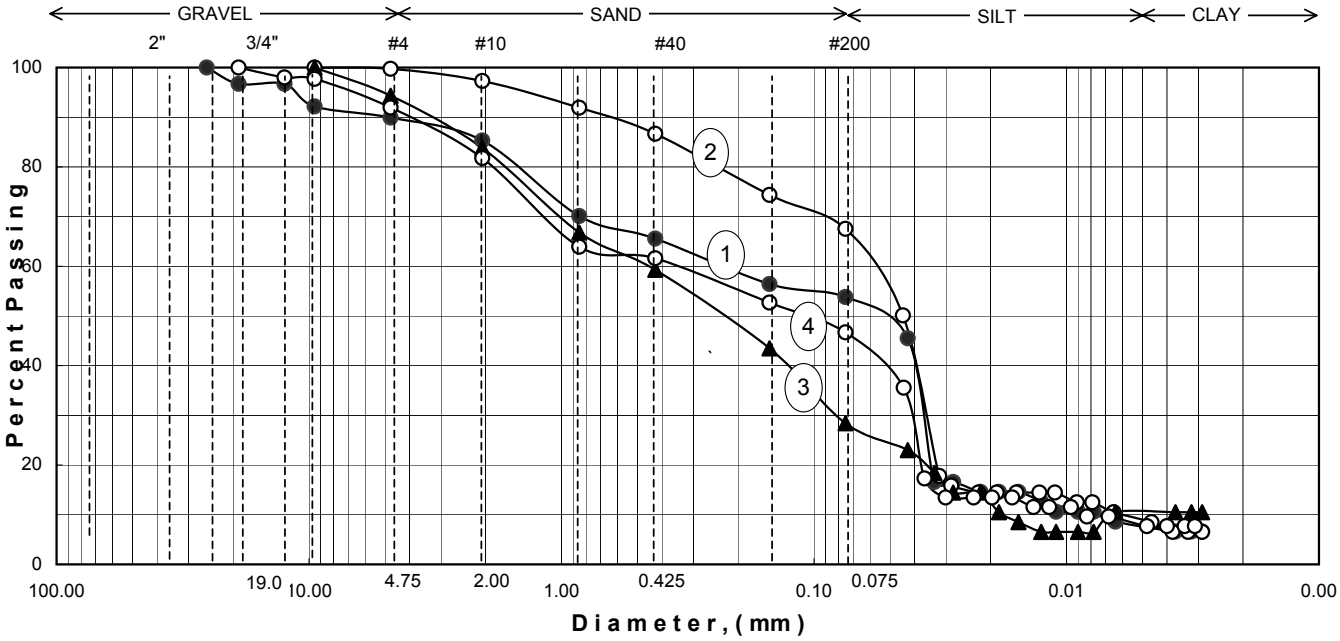
GRAIN-SIZE DISTRIBUTION CURVES

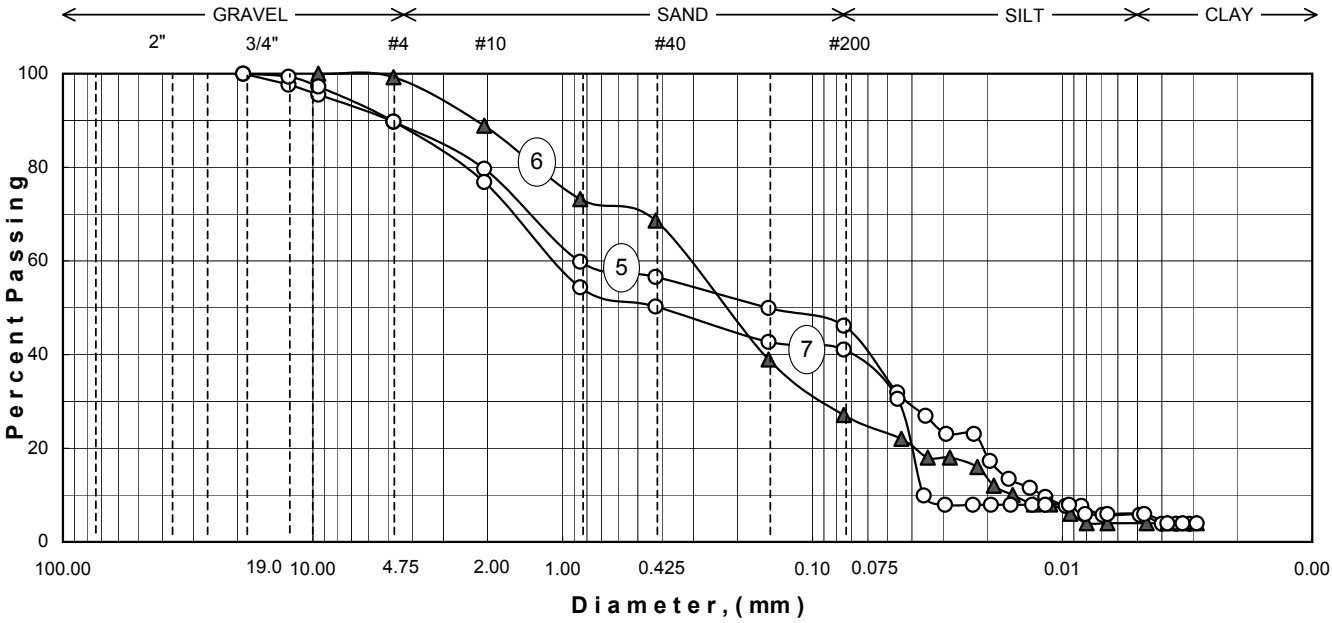




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-5	ss-2	2.00-2.45	1	5.35	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-4	4.00-4.45	2	20.10	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-6	6.00-6.45	3	20.19	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-8	8.00-8.45	4	18.81	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-10	10.00-10.45	5	15.99	NP	NP	NP	SM	Light gray silty lahar SAND, non-plastic
SL-5	ss-12	12.00-12.45	6	20.15	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-5	ss-14	14.00-14.45	7	26.61	NP	NP	NP	SM-ML	Light gray lahar SAND

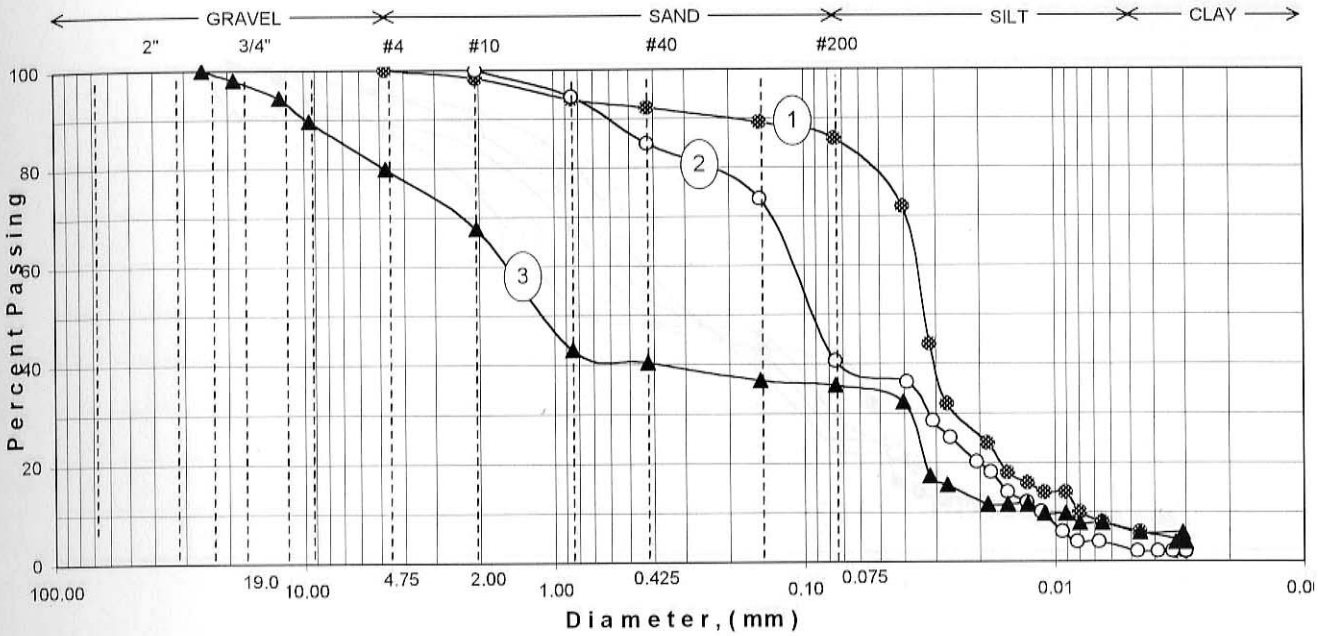
GRAIN-SIZE DISTRIBUTION CURVES

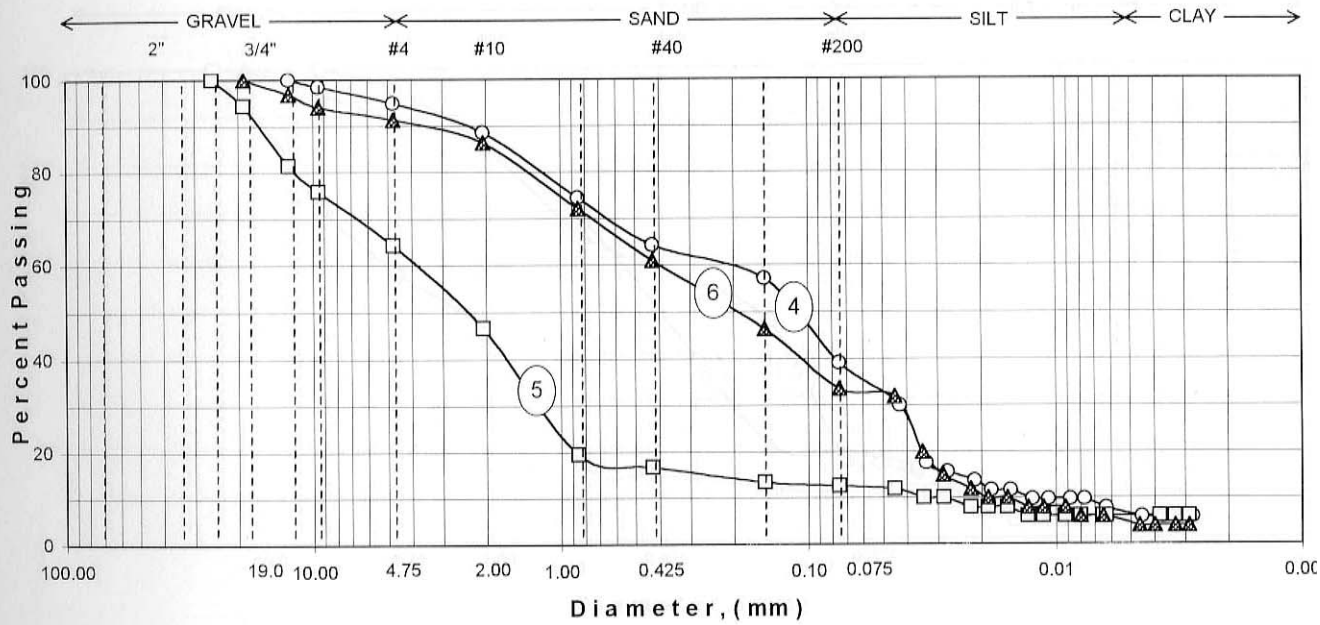




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-5	ss-16	16.00-16.45	1	26.32	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-18	18.00-18.45	2	21.47	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-20	20.00-20.45	3	16.34	NP	NP	NP	SM	Light gray silty lahar SAND
SL-5	ss-22	22.00-22.45	4	38.19	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-24	24.00-24.45	5	33.66	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic
SL-5	ss-26	26.00-26.45	6	16.84	NP	NP	NP	SM-ML	Light gray lahar SAND
SL-5	ss-28	28.00-28.45	7	18.09	NP	NP	NP	SM-ML	Light gray lahar SAND and SILT, non-plastic

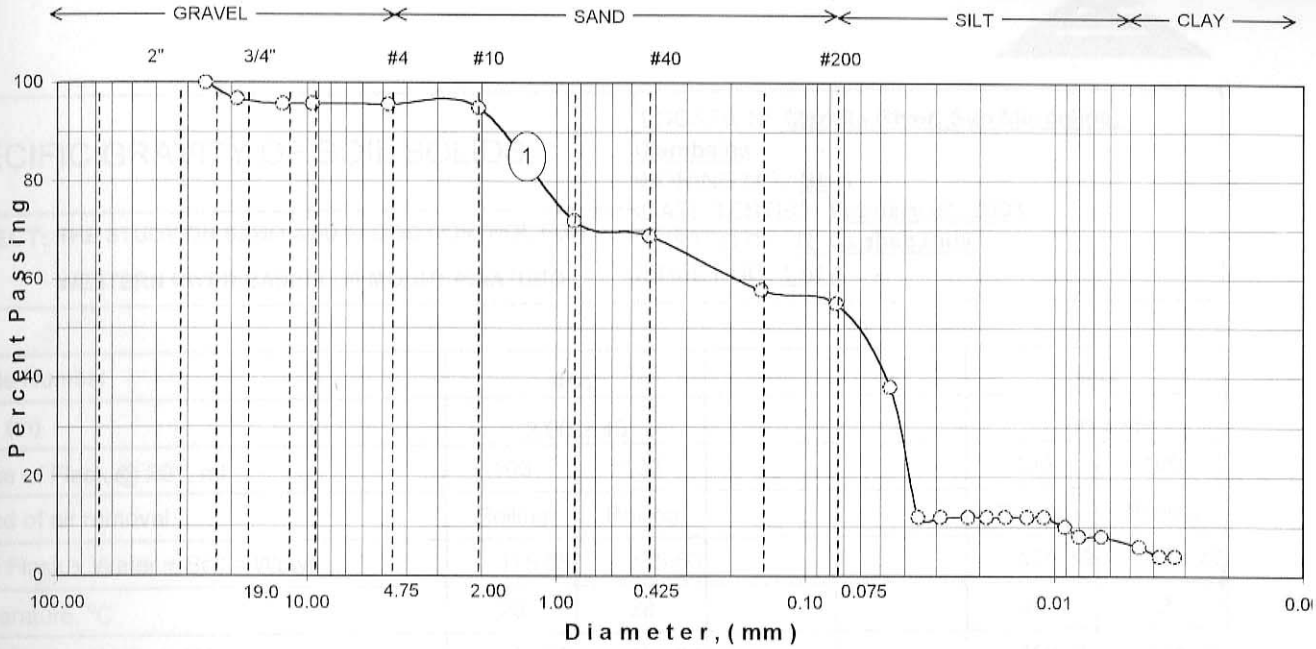
GRAIN-SIZE DISTRIBUTION CURVES

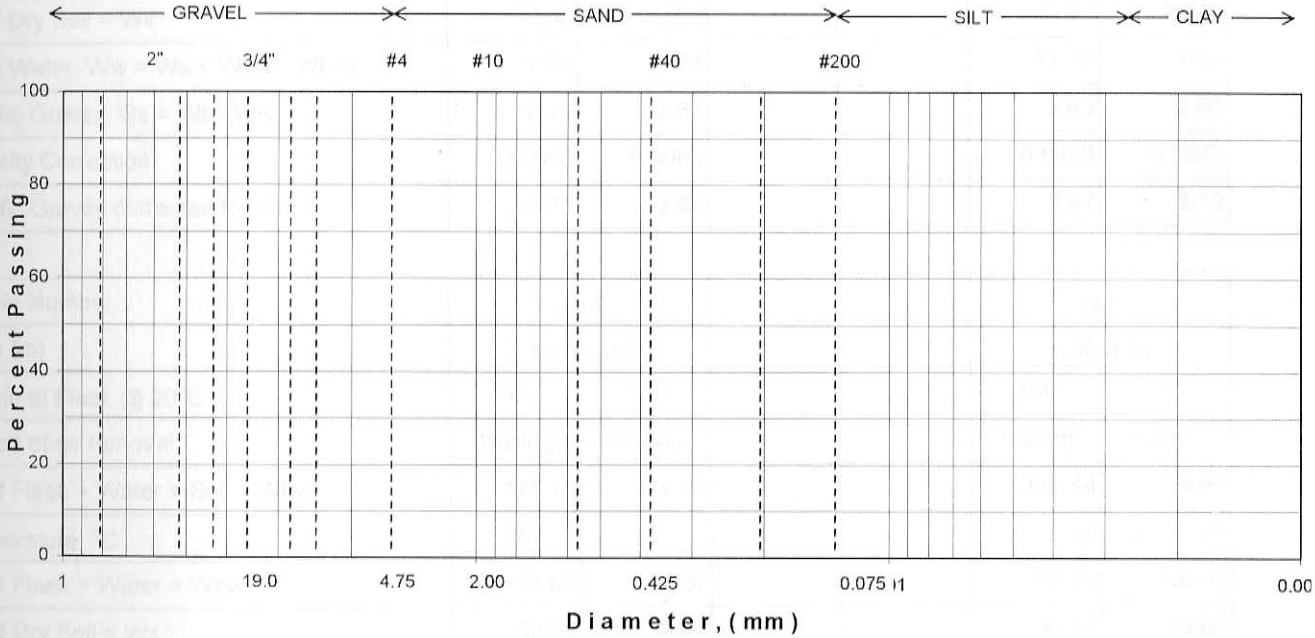




BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-4-3	ss-15	15.00-15.45		-	28	19	9	SM-ML	Grayish brown SAND and SILT, slightly plastic
SL-4-3	ss-16	16.00-16.45	1	19.03	NP	NP	NP	SM-ML	Grayish brown lahar SAND
SL-4-3	ss-18	18.00-18.45	2	29.19	NP	NP	NP	SM	Grayish brown fine SAND, with non-plastic silt
SL-4-3	ss-20	20.00-20.45	3	9.02	NP	NP	NP	SM	Brownish gray silty fine to coarse SAND
SL-4-3	ss-22	22.00-22.45	4	12.13	NP	NP	NP	SM	Gray silty SAND, non-plastic
SL-4-3	ss-24	24.00-24.45	5	13.70	NP	NP	NP	SM	Gray fine to medium SAND, with fine pyroclastic materials
SL-4-3	ss-26	26.00-26.45	6	16.27	NP	NP	NP	SM	Gray silty SAND, non-plastic

GRAIN-SIZE DISTRIBUTION CURVES





BH. NO.	SAMPLE NO.	DEPTH (m)	CURVE NO.	NMC	LL	PL	PI	USCS	DESCRIPTION
SL-5	ss-30	30.00-30.45	1	17.75	NP	NP	NP	SM-ML	Light gray lahar SAND

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Marella River, San Marcelino, Zambales** BORING NO.: **SL-5** DATE TESTED: **Febuary 01, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **1 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-2				ss-4	
Depth (m)	2.00-2.45				4.00-4.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.68	175.60			175.33	175.21
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.72	156.84			156.75	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.04	11.24			11.42	11.53
Specific Gravity, Gs = Ws / Ww	2.72	2.67			2.63	2.60
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.71**	**2.66**			**2.62**	**2.59**

Sample Number	ss-6				ss-8	
Depth (m)	6.00-6.45				8.00-8.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.18	174.96			175.44	174.96
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.08	157.00			156.75	156.39
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.90	12.04			11.31	11.43
Specific Gravity, Gs = Ws / Ww	2.52	2.49			2.65	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.51**	**2.48**			**2.64**	**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: **Marella River, San Marcelino, Zambales** BORING NO.: **SL-5** DATE TESTED: **Febuary 01, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **2 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-10				ss-12	
Depth (m)	10.00-10.45				12.00-12.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.56	175.88			175.30	175.26
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	157.02	157.25			156.84	156.72
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.46	11.37			11.54	11.46
Specific Gravity, Gs = Ws / Ww	2.62	2.64			2.60	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.61**	**2.63**			**2.59**	**2.61**

Sample Number	ss-14				ss-16	
Depth (m)	14.00-14.45				16.00-16.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.08	174.98			175.61	175.42
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.80	156.72			157.00	156.80
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.72	11.74			11.39	11.38
Specific Gravity, Gs = Ws / Ww	2.56	2.56			2.63	2.64
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.55**	**2.55**			**2.62**	**2.63**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Marella River, San Marcelino, Zambales** BORING NO.: **SL-5** DATE TESTED: **Febuary 01, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **3 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-18				ss-20	
Depth (m)	18.00-18.45				20.00-20.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.19	175.48			175.31	175.28
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	157.08			156.70	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.51	11.60			11.39	11.46
Specific Gravity, Gs = Ws / Ww	2.61	2.59			2.63	2.62
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.60**	**2.58**			**2.62**	**2.61**

Sample Number	ss-22				ss-24	
Depth (m)	22.00-22.45				24.00-24.45	
Volume of Flask @ 20°C	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	174.43	175.25			175.16	174.86
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.39	157.25			157.08	156.84
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.96	12.00			11.92	11.98
Specific Gravity, Gs = Ws / Ww	2.51	2.50			2.52	2.50
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.50**	**2.49**			**2.51**	**2.49**

Remarks:

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

SPECIFIC GRAVITY OF SOIL SOLIDS	LOCATION: **Marella River, San Marcelino, Zambales** BORING NO.: **SL-5** DATE TESTED: **Febuary 01, 2003** TESTED BY: **R. Cagbabanua** SHEET NO. **4 of 4**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

Sample Number	ss-26				ss-28	
Depth (m)	26.00-26.45				28.00-28.45	
Volume of Flask @ 20° , ml	100	100			100	100
Method of air removal	Rolling	Rolling			Rolling	Rolling
Wt. of Flask + Water + Soil = Wbws	175.37	175.58			175.32	175.07
Temperature, ^{o}C	28	28			28	28
Wt. of Flask + Water = Wbw	156.70	157.02			156.75	156.74
Wt. of Dry Soil = Ws	30.00	30.00			30.00	30.00
Wt. of Water, Ww = Ws + Wbw - Wbws	11.33	11.44			11.43	11.67
Specific Gravity, Gs = Ws / Ww	2.65	2.62			2.62	2.57
Viscosity Correction	0.9963	0.9963			0.9963	0.9963
Specific Gravity corrected for Temp.	**2.64**	**2.61**			**2.61**	**2.56**

Sample Number	ss-30					
Depth (m)	30.00-30.45					
Volume of Flask @ 20°C	100	100				
Method of air removal	Rolling	Rolling				
Wt. of Flask + Water + Soil = Wbws	175.99	175.15				
Temperature, ^{o}C	28	28				
Wt. of Flask + Water = Wbw	157.25	156.39				
Wt. of Dry Soil = Ws	30.00	30.00				
Wt. of Water, Ww = Ws + Wbw - Wbws	11.26	11.24				
Specific Gravity, Gs = Ws / Ww	2.66	2.67				
Viscosity Correction	0.9963	0.9963				
Specific Gravity corrected for Temp.	**2.65**	**2.66**				

Remarks:

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

B7 Field Permeability Test

FIELD PERMEABILITY TEST
(OPEN - END TEST)

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

LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
BORING NO.: **SL-4-1**
DEPTH: **3.00 m.**
DEPTH OF GWT: **Not encountered**
DATE STARTED: **January 08, 2003**
DATE FINISHED: **January 08, 2003**
SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
3.00		5:55	5:56	1	7812.50	7813.25	0.75	0.75	3.15	
		5:56	5:57	2	7813.25	7814.25	1.00	1.00		
		5:57	5:58	3	7814.25	7815.75	1.50	1.50		
		5:58	5:59	4	7815.75	7817.50	1.75	1.75		
		5:59	6:00	5	7817.50	7818.75	1.25	1.25		
		6:00	6:01	6	7818.75	7820.00	1.25	1.25		
		6:01	6:02	7	7820.00	7821.50	1.50	1.50		
		6:02	6:03	8	7821.50	7822.75	1.25	1.25		
		6:03	6:04	9	7822.75	7824.25	1.50	1.50		
		6:04	6:05	10	7824.25	7826.00	1.75	1.75		
		6:05	6:10	15	7826.00	7841.00	15.00	3.00		
		6:10	6:15	20	7841.00	7857.50	16.50	3.30		
		6:15	6:20	25	7857.50	7876.50	19.00	3.80		
		6:20	6:25	30	7876.50	7894.50	18.00	3.60		
		6:25	6:30	35	7894.50	7912.50	18.00	3.60		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-1** DEPTH: **3.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 08, 2003** DATE FINISHED: **January 08, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.90E-03 cm/sec. k_2 = 2.53E-03 cm/sec. k_3 = 3.80E-03 cm/sec. k_4 = 4.43E-03 cm/sec. k_5 = 3.16E-03 cm/sec. k_6 = 3.16E-03 cm/sec. k_7 = 3.80E-03 cm/sec. k_8 = 3.16E-03 cm/sec. k_9 = 3.80E-03 cm/sec. k_{10} = 4.43E-03 cm/sec. k_{11} = 7.59E-03 cm/sec. k_{12} = 8.35E-03 cm/sec. k_{13} = 9.62E-03 cm/sec. k_{14} = 9.11E-03 cm/sec. k_{15} = 9.11E-03 cm/sec. **$k_{(ave)}$= 5.20E-03 cm/sec.**

Note:

FIELD PERMEABILITY TEST
(OPEN - END TEST)

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

LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
BORING NO.: **SL-4-2**
DEPTH: **3.00 m.**
DEPTH OF GWT: **Not encountered**
DATE STARTED: **January 11, 2003**
DATE FINISHED: **January 11, 2003**
SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
3.00		11:15	11:16	1	8467.75	8470.00	2.25	2.25	3.15	
		11:16	11:17	2	8470.00	8472.50	2.50	2.50		
		11:17	11:18	3	8472.50	8475.00	2.50	2.50		
		11:18	11:19	4	8475.00	8477.50	2.50	2.50		
		11:19	11:20	5	8477.50	8479.75	2.25	2.25		
		11:20	11:21	6	8479.75	8482.25	2.50	2.50		
		11:21	11:22	7	8482.25	8484.75	2.50	2.50		
		11:22	11:23	8	8484.75	8487.00	2.25	2.25		
		11:23	11:24	9	8487.00	8489.50	2.50	2.50		
		11:24	11:25	10	8489.50	8491.75	2.25	2.25		
		11:25	11:30	15	8491.75	8502.50	10.75	2.15		
		11:30	11:35	20	8502.50	8513.00	10.50	2.10		
		11:35	11:40	25	8513.00	8522.50	9.50	1.90		
		11:40	11:45	30	8522.50	8533.50	11.00	2.20		
		11:45	11:50	35	8533.50	8542.75	9.25	1.85		
		11:50	11:55	40	8542.75	8552.00	9.25	1.85		
		11:55	12:00	45	8552.00	8564.25	12.25	2.45		
		12:00	12:05	50	8564.25	8570.50	6.25	1.25		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-2** DEPTH: **3.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 11, 2003** DATE FINISHED: **January 11, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 5.70E-03 cm/sec. k_2 = 6.33E-03 cm/sec. k_3 = 6.33E-03 cm/sec. k_4 = 6.33E-03 cm/sec. k_5 = 5.70E-03 cm/sec. k_6 = 6.33E-03 cm/sec. k_7 = 6.33E-03 cm/sec. k_8 = 5.70E-03 cm/sec. k_9 = 6.33E-03 cm/sec. k_{10} = 5.70E-03 cm/sec. k_{11} = 5.44E-03 cm/sec. k_{12} = 5.32E-03 cm/sec. k_{13} = 4.81E-03 cm/sec. k_{14} = 5.57E-03 cm/sec. k_{15} = 4.68E-03 cm/sec. k_{16} = 4.68E-03 cm/sec. k_{17} = 6.20E-03 cm/sec. k_{18} = 3.16E-03 cm/sec. **$k_{(ave)}$= 5.59E-03 cm/sec.**
Note:		

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-2 DEPTH: 6.00 m. DEPTH OF GWT: Not encountered DATE STARTED: January 11, 2003 DATE FINISHED: January 11, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
6.00		3:28	3:29	1	8687.50	8689.00	1.50	1.50	6.15	
		3:29	3:30	2	8689.00	8690.50	1.50	1.50		
		3:30	3:31	3	8690.50	8692.25	1.75	1.75		
		3:31	3:32	4	8692.25	8694.00	1.75	1.75		
		3:32	3:33	5	8694.00	8696.00	2.00	2.00		
		3:33	3:34	6	8696.00	8698.25	2.25	2.25		
		3:34	3:35	7	8698.25	8700.50	2.25	2.25		
		3:35	3:36	8	8700.50	8702.50	2.00	2.00		
		3:36	3:37	9	8702.50	8704.50	2.00	2.00		
		3:37	3:38	10	8704.50	8707.00	2.50	2.50		
		3:38	3:43	15	8707.00	8723.50	16.50	3.30		
		3:43	3:48	20	8723.50	8741.50	18.00	3.60		
		3:48	3:53	25	8741.50	8758.00	16.50	3.30		
		3:53	3:58	30	8758.00	8777.00	19.00	3.80		
		3:58	4:03	35	8777.00	8796.00	19.00	3.80		
		4:03	4:08	40	8796.00	8816.00	20.00	4.00		
		4:08	4:13	45	8816.00	8836.00	20.00	4.00		
		4:13	4:18	50	8836.00	8856.00	20.00	4.00		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-2** DEPTH: **6.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 11, 2003** DATE FINISHED: **January 11, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.94E-03 cm/sec. k_2 = 1.94E-03 cm/sec. k_3 = 2.27E-03 cm/sec. k_4 = 2.27E-03 cm/sec. k_5 = 2.59E-03 cm/sec. k_6 = 2.92E-03 cm/sec. k_7 = 2.92E-03 cm/sec. k_8 = 2.59E-03 cm/sec. k_9 = 2.59E-03 cm/sec. k_{10} = 3.24E-03 cm/sec. k_{11} = 4.28E-03 cm/sec. k_{12} = 4.67E-03 cm/sec. k_{13} = 4.28E-03 cm/sec. k_{14} = 4.93E-03 cm/sec. k_{15} = 4.93E-03 cm/sec. k_{16} = 5.19E-03 cm/sec. k_{17} = 5.19E-03 cm/sec. k_{18} = 5.19E-03 cm/sec. **$k_{(ave)}$= 3.55E-03 cm/sec.**
Note:		

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-2 DEPTH: 9.00 m. DEPTH OF GWT: Not encountered DATE STARTED: January 12, 2003 DATE FINISHED: January 12, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
9.00		11:26	11:27	1	8945.00	8945.30	0.30	0.30	9.15	
		11:27	11:28	2	8945.30	8945.65	0.35	0.35		
		11:28	11:29	3	8945.65	8946.00	0.35	0.35		
		11:29	11:30	4	8946.00	8946.50	0.50	0.50		
		11:30	11:31	5	8946.50	8947.00	0.50	0.50		
		11:31	11:32	6	8947.00	8947.75	0.75	0.75		
		11:32	11:33	7	8947.75	8948.50	0.75	0.75		
		11:33	11:34	8	8948.50	8949.00	0.50	0.50		
		11:34	11:35	9	8949.00	8949.35	0.35	0.35		
		11:35	11:36	10	8949.35	8950.00	0.65	0.65		
		11:36	11:41	15	8950.00	8951.90	1.90	0.38		
		11:41	11:46	20	8951.90	8953.70	1.80	0.36		
		11:46	11:51	25	8953.70	8955.10	1.40	0.28		
		11:51	11:56	30	8955.10	8956.70	1.60	0.32		
		11:56	12:01	35	8956.70	8958.30	1.60	0.32		
		12:01	12:06	40	8958.30	8960.10	1.80	0.36		
		12:06	12:11	45	8960.10	8961.90	1.80	0.36		
		12:11	12:16	50	8961.90	8963.70	1.80	0.36		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-2** DEPTH: **9.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 12, 2003** DATE FINISHED: **January 12, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 2.61E-04 cm/sec. k_2 = 3.05E-04 cm/sec. k_3 = 3.05E-04 cm/sec. k_4 = 4.36E-04 cm/sec. k_5 = 4.36E-04 cm/sec. k_6 = 6.54E-04 cm/sec. k_7 = 6.54E-04 cm/sec. k_8 = 4.36E-04 cm/sec. k_9 = 3.05E-04 cm/sec. k_{10} = 5.66E-04 cm/sec. k_{11} = 3.31E-04 cm/sec. k_{12} = 3.14E-04 cm/sec. k_{13} = 2.44E-04 cm/sec. k_{14} = 2.79E-04 cm/sec. k_{15} = 2.79E-04 cm/sec. k_{16} = 3.14E-04 cm/sec. k_{17} = 3.14E-04 cm/sec. k_{18} = 3.14E-04 cm/sec. **$k_{(ave)}$= 3.75E-04 cm/sec.**
Note:		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **6.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 15, 2003** DATE FINISHED: **January 15, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
6.00		9:33	9:34	1	9115.35	9115.45	0.10	0.10	6.15	
		9:34	9:35	2	9115.45	9115.55	0.10	0.10		
		9:35	9:36	3	9115.55	9115.70	0.15	0.15		
		9:36	9:37	4	9115.70	9115.80	0.10	0.10		
		9:37	9:38	5	9115.80	9115.90	0.10	0.10		
		9:38	9:39	6	9115.90	9116.00	0.10	0.10		
		9:39	9:40	7	9116.00	9116.15	0.15	0.15		
		9:40	9:41	8	9116.15	9116.25	0.10	0.10		
		9:41	9:42	9	9116.25	9116.35	0.10	0.10		
		9:42	9:43	10	9116.35	9116.50	0.15	0.15		
		9:43	9:48	15	9116.50	9117.00	0.50	0.10		
		9:48	9:53	20	9117.00	9117.75	0.75	0.15		
		9:53	9:58	25	9117.75	9118.25	0.50	0.10		
		9:58	10:03	30	9118.25	9119.00	0.75	0.15		
		10:03	10:08	35	9119.00	9119.75	0.75	0.15		
		10:08	10:13	40	9119.75	9120.25	0.50	0.10		
		10:13	10:18	45	9120.25	9121.00	0.75	0.15		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **6.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 15, 2003** DATE FINISHED: **January 15, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.30E-04 cm/sec. k_2 = 1.30E-04 cm/sec. k_3 = 1.94E-04 cm/sec. k_4 = 1.30E-04 cm/sec. k_5 = 1.30E-04 cm/sec. k_6 = 1.30E-04 cm/sec. k_7 = 1.94E-04 cm/sec. k_8 = 1.30E-04 cm/sec. k_9 = 1.30E-04 cm/sec. k_{10} = 1.94E-04 cm/sec. k_{11} = 1.30E-04 cm/sec. k_{12} = 1.94E-04 cm/sec. k_{13} = 1.30E-04 cm/sec. k_{14} = 1.94E-04 cm/sec. k_{15} = 1.94E-04 cm/sec. k_{16} = 1.30E-04 cm/sec. k_{17} = 1.94E-04 cm/sec. **$k_{(ave)}$= 1.56E-04 cm/sec.**

Note:

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-3 DEPTH: 9.00 m. DEPTH OF GWT: Not encountered DATE STARTED: January 15, 2003 DATE FINISHED: January 15, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
9.00		1:41	1:42	1	9179.50	9181.50	2.00	2.00	9.15	
		1:42	1:43	2	9181.50	9183.50	2.00	2.00		
		1:43	1:44	3	9183.50	9185.25	1.75	1.75		
		1:44	1:45	4	9185.25	9187.00	1.75	1.75		
		1:45	1:46	5	9187.00	9188.50	1.50	1.50		
		1:46	1:47	6	9188.50	9190.25	1.75	1.75		
		1:47	1:48	7	9190.25	9192.25	2.00	2.00		
		1:48	1:49	8	9192.25	9194.25	2.00	2.00		
		1:49	1:50	9	9194.25	9196.00	1.75	1.75		
		1:50	1:51	10	9196.00	9197.75	1.75	1.75		
		1:51	1:56	15	9197.75	9205.25	7.50	1.50		
		1:56	2:01	20	9205.25	9212.75	7.50	1.50		
		2:01	2:06	25	9212.75	9220.75	8.00	1.60		
		2:06	2:11	30	9220.75	9228.50	7.75	1.55		
		2:11	2:16	35	9228.50	9236.50	8.00	1.60		
		2:16	2:21	40	9236.50	9244.50	8.00	1.60		
		2:21	2:26	45	9244.50	9252.50	8.00	1.60		
		2:26	2:31	50	9252.50	9260.50	8.00	1.60		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DEPTH: **9.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 15, 2003** DATE FINISHED: **January 15, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.74E-03 cm/sec. k_2 = 1.74E-03 cm/sec. k_3 = 1.53E-03 cm/sec. k_4 = 1.53E-03 cm/sec. k_5 = 1.31E-03 cm/sec. k_6 = 1.53E-03 cm/sec. k_7 = 1.74E-03 cm/sec. k_8 = 1.74E-03 cm/sec. k_9 = 1.53E-03 cm/sec. k_{10} = 1.53E-03 cm/sec. k_{11} = 1.31E-03 cm/sec. k_{12} = 1.31E-03 cm/sec. k_{13} = 1.39E-03 cm/sec. k_{14} = 1.35E-03 cm/sec. k_{15} = 1.39E-03 cm/sec. k_{16} = 1.39E-03 cm/sec. k_{17} = 1.39E-03 cm/sec. k_{18} = 1.39E-03 cm/sec. **$k_{(ave)}$= 1.49E-03 cm/sec.**
Note:		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **12.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 16, 2003** DATE FINISHED: **January 16, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
12.00		7:25	7:26	1	9358.00	9358.50	0.50	0.50	12.15	
		7:26	7:27	2	9358.50	9359.00	0.50	0.50		
		7:27	7:28	3	9359.00	9359.50	0.50	0.50		
		7:28	7:29	4	9359.50	9360.25	0.75	0.75		
		7:29	7:30	5	9360.25	9361.00	0.75	0.75		
		7:30	7:31	6	9361.00	9361.75	0.75	0.75		
		7:31	7:32	7	9361.75	9362.25	0.50	0.50		
		7:32	7:33	8	9362.25	9363.00	0.75	0.75		
		7:33	7:34	9	9363.00	9363.85	0.85	0.85		
		7:34	7:35	10	9363.85	9364.55	0.70	0.70		
		7:35	7:36	15	9364.55	9367.55	3.00	0.60		
		7:40	7:41	20	9367.55	9371.80	4.25	0.85		
		7:45	7:50	25	9371.80	9375.80	4.00	0.80		
		7:50	7:55	30	9375.80	9379.80	4.00	0.80		
		7:55	8:00	35	9379.80	9383.80	4.00	0.80		
		8:00	8:05	40	9383.80	9387.80	4.00	0.80		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DEPTH: **12.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 16, 2003** DATE FINISHED: **January 16, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 3.28E-04 cm/sec. k_2 = 3.28E-04 cm/sec. k_3 = 3.28E-04 cm/sec. k_4 = 4.92E-04 cm/sec. k_5 = 4.92E-04 cm/sec. k_6 = 4.92E-04 cm/sec. k_7 = 3.28E-04 cm/sec. k_8 = 4.92E-04 cm/sec. k_9 = 5.58E-04 cm/sec. k_{10} = 4.59E-04 cm/sec. k_{11} = 3.94E-04 cm/sec. k_{12} = 5.58E-04 cm/sec. k_{13} = 5.25E-04 cm/sec. k_{14} = 5.25E-04 cm/sec. k_{15} = 5.25E-04 cm/sec. k_{16} = 5.25E-04 cm/sec. **$k_{(ave)}$= 4.59E-04 cm/sec.**
Note:		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **15.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 16, 2003** DATE FINISHED: **January 16, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
15.00		11:18	11:19	1	9449.25	9449.25	0.00	0.00	15.15	
		11:19	11:20	2	9449.25	9449.25	0.00	0.00		
		11:20	11:21	3	9449.25	9449.35	0.10	0.10		
		11:21	11:22	4	9449.35	9449.35	0.00	0.00		
		11:22	11:23	5	9449.35	9449.45	0.10	0.10		
		11:23	11:24	6	9449.45	9449.50	0.05	0.05		
		11:24	11:25	7	9449.50	9449.55	0.05	0.05		
		11:25	11:26	8	9449.55	9449.65	0.10	0.10		
		11:26	11:27	9	9449.65	9449.75	0.10	0.10		
		11:27	11:28	10	9449.75	9449.85	0.10	0.10		
		11:28	11:33	15	9449.85	9450.85	1.00	0.20		
		11:33	11:38	20	9450.85	9451.60	0.75	0.15		
		11:38	11:43	25	9451.60	9452.45	0.85	0.17		
		11:43	11:48	30	9452.45	9453.20	0.75	0.15		
		11:48	11:53	35	9453.20	9453.90	0.70	0.14		
		11:53	11:58	40	9453.90	9454.60	0.70	0.14		
		11:58	12:03	45	9454.60	9455.30	0.70	0.14		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-3** DEPTH: **15.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 16, 2003** DATE FINISHED: **January 16, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 0.00E+00 cm/sec. k_2 = 0.00E+00 cm/sec. k_3 = 5.26E-05 cm/sec. k_4 = 0.00E+00 cm/sec. k_5 = 5.26E-05 cm/sec. k_6 = 2.63E-05 cm/sec. k_7 = 2.63E-05 cm/sec. k_8 = 5.26E-05 cm/sec. k_9 = 5.26E-05 cm/sec. k_{10} = 5.26E-05 cm/sec. k_{11} = 1.05E-04 cm/sec. k_{12} = 7.90E-05 cm/sec. k_{13} = 8.95E-05 cm/sec. k_{14} = 7.90E-05 cm/sec. k_{15} = 7.37E-05 cm/sec. k_{16} = 7.37E-05 cm/sec. k_{17} = 7.37E-05 cm/sec. **$k_{(ave)}$= 5.23E-05 cm/sec.**

Note:

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **18.00 m.** DEPTH OF GWT: **15.65 m.** DATE STARTED: **January 17, 2003** DATE FINISHED: **January 17, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
15.65 m.	0.20 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
18.00		9:02	9:03	1	9581.75	9584.50	2.75	2.75	15.85	
		9:03	9:04	2	9584.50	9587.60	3.10	3.10		
		9:04	9:05	3	9587.60	9591.40	3.80	3.80		
		9:05	9:06	4	9591.40	9594.40	3.00	3.00		
		9:06	9:07	5	9594.40	9597.00	2.60	2.60		
		9:07	9:08	6	9597.00	9600.00	3.00	3.00		
		9:08	9:09	7	9600.00	9602.50	2.50	2.50		
		9:09	9:10	8	9602.50	9605.00	2.50	2.50		
		9:10	9:11	9	9605.00	9607.00	2.00	2.00		
		9:11	9:12	10	9607.00	9609.50	2.50	2.50		
		9:12	9:17	15	9609.50	9617.50	8.00	1.60		
		9:17	9:22	20	9617.50	9626.00	8.50	1.70		
		9:22	9:27	25	9626.00	9632.50	6.50	1.30		
		9:27	9:32	30	9632.50	9638.00	5.50	1.10		
		9:32	9:37	35	9638.00	9644.00	6.00	1.20		
		9:37	9:42	40	9644.00	9650.25	6.25	1.25		
		9:42	9:47	45	9650.25	9666.25	16.00	3.20		
		9:47	9:52	50	9666.25	9672.25	6.00	1.20		
		9:52	9:57	55	9672.25	9678.25	6.00	1.20		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **18.00 m.** DEPTH OF GWT: **15.65 m.** DATE STARTED: **January 17, 2003** DATE FINISHED: **January 17, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.38E-03 cm/sec. k_2 = 1.56E-03 cm/sec. k_3 = 1.91E-03 cm/sec. k_4 = 1.51E-03 cm/sec. k_5 = 1.31E-03 cm/sec. k_6 = 1.51E-03 cm/sec. k_7 = 1.26E-03 cm/sec. k_8 = 1.26E-03 cm/sec. k_9 = 1.01E-03 cm/sec. k_{10} = 1.26E-03 cm/sec. k_{11} = 8.05E-04 cm/sec. k_{12} = 8.55E-04 cm/sec. k_{13} = 6.54E-04 cm/sec. k_{14} = 5.53E-04 cm/sec. k_{15} = 6.04E-04 cm/sec. k_{16} = 6.29E-04 cm/sec. k_{17} = 1.61E-03 cm/sec. k_{18} = 6.04E-04 cm/sec. k_{19} = 6.04E-04 cm/sec. **$k_{(ave)}$= 1.10E-03 cm/sec.**

Note:

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **21.00 m.** DEPTH OF GWT: **15.50 m.** DATE STARTED: **January 17, 2003** DATE FINISHED: **January 17, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
15.50 m.	0.20 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
21.00		2:40	2:41	1	9861.00	9861.90	0.90	0.90	15.70	
		2:41	2:42	2	9861.90	9862.70	0.80	0.80		
		2:42	2:43	3	9862.70	9863.70	1.00	1.00		
		2:43	2:44	4	9863.70	9864.50	0.80	0.80		
		2:44	2:45	5	9864.50	9865.40	0.90	0.90		
		2:45	2:46	6	9865.40	9866.25	0.85	0.85		
		2:46	2:47	7	9866.25	9867.10	0.85	0.85		
		2:47	2:48	8	9867.10	9867.85	0.75	0.75		
		2:48	2:49	9	9867.85	9868.60	0.75	0.75		
		2:49	2:50	10	9868.60	9869.50	0.90	0.90		
		2:50	2:55	15	9869.50	9872.30	2.80	0.56		
		2:55	3:00	20	9872.30	9875.30	3.00	0.60		
		3:00	3:05	25	9875.30	9878.05	2.75	0.55		
		3:05	3:10	30	9878.05	9880.80	2.75	0.55		
		3:10	3:15	35	9880.80	9883.30	2.50	0.50		
		3:15	3:20	40	9883.30	9885.80	2.50	0.50		
		3:20	3:25	45	9885.80	9888.30	2.50	0.50		
		3:25	3:30	50	9888.30	9890.80	2.50	0.50		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-3** DEPTH: **21.00 m.** DEPTH OF GWT: **15.50 m.** DATE STARTED: **January 17, 2003** DATE FINISHED: **January 17, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 4.57E-04 cm/sec. k_2 = 4.06E-04 cm/sec. k_3 = 5.08E-04 cm/sec. k_4 = 4.06E-04 cm/sec. k_5 = 4.57E-04 cm/sec. k_6 = 4.32E-04 cm/sec. k_7 = 4.32E-04 cm/sec. k_8 = 3.81E-04 cm/sec. k_9 = 3.81E-04 cm/sec. k_{10} = 4.57E-04 cm/sec. k_{11} = 2.84E-04 cm/sec. k_{12} = 3.05E-04 cm/sec. k_{13} = 2.79E-04 cm/sec. k_{14} = 2.79E-04 cm/sec. k_{15} = 2.54E-04 cm/sec. k_{16} = 2.54E-04 cm/sec. k_{17} = 2.54E-04 cm/sec. k_{18} = 2.54E-04 cm/sec. **$k_{(ave)}$= 3.60E-04 cm/sec.**
Note:		

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-4** DEPTH: **3.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 09, 2003** DATE FINISHED: **January 09, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
3.00		11:23	11:24	1	7915.00	7915.00	0.00	0.00	3.15	
		11:24	11:25	2	7915.00	7915.00	0.00	0.00		
		11:25	11:26	3	7915.00	7915.00	0.00	0.00		
		11:26	11:27	4	7915.00	7915.00	0.00	0.00		
		11:27	11:28	5	7915.00	7915.05	0.05	0.05		
		11:28	11:29	6	7915.05	7915.05	0.00	0.00		
		11:29	11:30	7	7915.05	7915.05	0.00	0.00		
		11:30	11:31	8	7915.05	7915.10	0.05	0.05		
		11:31	11:32	9	7915.10	7915.10	0.00	0.00		
		11:32	11:33	10	7915.10	7915.20	0.10	0.10		
		11:33	11:38	15	7915.20	7915.40	0.20	0.04		
		11:38	11:43	20	7915.40	7915.60	0.20	0.04		
		11:43	11:48	25	7915.60	7915.80	0.20	0.04		
		11:48	11:53	30	7915.80	7916.00	0.20	0.04		
		11:53	11:58	35	7916.00	7916.25	0.25	0.05		
		11:58	12:03	40	7916.25	7916.50	0.25	0.05		
		12:03	12:08	45	7916.50	7916.75	0.25	0.05		
		12:08	12:13	50	7916.75	7917.00	0.25	0.05		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-4** DEPTH: **3.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 09, 2003** DATE FINISHED: **January 09, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 0.00E+00 cm/sec. k_2 = 0.00E+00 cm/sec. k_3 = 0.00E+00 cm/sec. k_4 = 0.00E+00 cm/sec. k_5 = 1.27E-04 cm/sec. k_6 = 0.00E+00 cm/sec. k_7 = 0.00E+00 cm/sec. k_8 = 1.27E-04 cm/sec. k_9 = 0.00E+00 cm/sec. k_{10} = 2.53E-04 cm/sec. k_{11} = 1.01E-04 cm/sec. k_{12} = 1.01E-04 cm/sec. k_{13} = 1.01E-04 cm/sec. k_{14} = 1.01E-04 cm/sec. k_{15} = 1.27E-04 cm/sec. k_{16} = 1.27E-04 cm/sec. k_{17} = 1.27E-04 cm/sec. k_{18} = 1.27E-04 cm/sec. **$k_{(ave)}$= 7.88E-05 cm/sec.**

Note:

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-4** DEPTH: **6.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 09, 2003** DATE FINISHED: **January 09, 2003** SHEET NO. **1 of 2**

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
6.00		6:38	6:39	1	7925.00	7925.25	0.25	0.25	6.15	
		6:39	6:40	2	7925.25	7925.50	0.25	0.25		
		6:40	6:41	3	7925.50	7925.75	0.25	0.25		
		6:41	6:42	4	7925.75	7926.00	0.25	0.25		
		6:42	6:43	5	7926.00	7926.50	0.50	0.50		
		6:43	6:44	6	7926.50	7927.00	0.50	0.50		
		6:44	6:45	7	7927.00	7927.50	0.50	0.50		
		6:45	6:46	8	7927.50	7928.00	0.50	0.50		
		6:46	6:47	9	7928.00	7928.50	0.50	0.50		
		6:47	6:48	10	7928.50	7929.00	0.50	0.50		
		6:48	6:53	15	7929.00	7931.00	2.00	0.40		
		6:53	6:58	20	7931.00	7933.00	2.00	0.40		
		6:58	7:03	25	7933.00	7935.00	2.00	0.40		
		7:03	7:08	30	7935.00	7936.75	1.75	0.35		
		7:08	7:13	35	7936.75	7938.00	1.25	0.25		
		7:13	7:18	40	7938.00	7939.00	1.00	0.20		
		7:18	7:23	45	7939.00	7940.50	1.50	0.30		
		7:23	7:28	50	7940.50	7942.00	1.50	0.30		
		7:28	7:33	55	7942.00	7943.50	1.50	0.30		
6.00		7:33	7:38	60	7943.50	7945.00	1.50	0.30		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DEPTH: **6.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 09, 2003** DATE FINISHED: **January 09, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 3.24E-04 cm/sec. k_2 = 3.24E-04 cm/sec. k_3 = 3.24E-04 cm/sec. k_4 = 3.24E-04 cm/sec. k_5 = 6.48E-04 cm/sec. k_6 = 6.48E-04 cm/sec. k_7 = 6.48E-04 cm/sec. k_8 = 6.48E-04 cm/sec. k_9 = 6.48E-04 cm/sec. k_{10} = 6.48E-04 cm/sec. k_{11} = 5.19E-04 cm/sec. k_{12} = 5.19E-04 cm/sec. k_{13} = 5.19E-04 cm/sec. k_{14} = 4.54E-04 cm/sec. k_{15} = 3.24E-04 cm/sec. k_{16} = 2.59E-04 cm/sec. k_{17} = 3.89E-04 cm/sec. k_{18} = 3.89E-04 cm/sec. k_{19} = 3.89E-04 cm/sec. k_{20} = 3.89E-04 cm/sec. **$k_{(ave)}$= 4.67E-04 cm/sec.**
Note:		

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-4 DEPTH: 9.00 m. DEPTH OF GWT: Not encountered DATE STARTED: January 10, 2003 DATE FINISHED: January 10, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
9.00		9:02	9:03	1	7950.00	7952.00	2.00	2.00	9.15	
		9:03	9:04	2	7952.00	7954.00	2.00	2.00		
		9:04	9:05	3	7954.00	7956.25	2.25	2.25		
		9:05	9:06	4	7956.25	7959.00	2.75	2.75		
		9:06	9:07	5	7959.00	7961.50	2.50	2.50		
		9:07	9:08	6	7961.50	7963.75	2.25	2.25		
		9:08	9:09	7	7963.75	7966.50	2.75	2.75		
		9:09	9:10	8	7966.50	7969.25	2.75	2.75		
		9:10	9:11	9	7969.25	7971.75	2.50	2.50		
		9:11	9:12	10	7971.75	7974.50	2.75	2.75		
		9:12	9:17	15	7974.50	7989.50	15.00	3.00		
		9:17	9:22	20	7989.50	8009.50	20.00	4.00		
		9:22	9:27	25	8009.50	8022.50	13.00	2.60		
		9:27	9:32	30	8022.50	8040.50	18.00	3.60		
		9:32	9:37	35	8040.50	8059.50	19.00	3.80		
		9:37	9:42	40	8059.50	8078.50	19.00	3.80		
		9:42	9:47	45	8078.50	8097.50	19.00	3.80		
		9:47	9:52	50	8097.50	8116.50	19.00	3.80		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-4** DEPTH: **9.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 10, 2003** DATE FINISHED: **January 10, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.74E-03 cm/sec. k_2 = 1.74E-03 cm/sec. k_3 = 1.96E-03 cm/sec. k_4 = 2.40E-03 cm/sec. k_5 = 2.18E-03 cm/sec. k_6 = 1.96E-03 cm/sec. k_7 = 2.40E-03 cm/sec. k_8 = 2.40E-03 cm/sec. k_9 = 2.18E-03 cm/sec. k_{10} = 2.40E-03 cm/sec. k_{11} = 2.61E-03 cm/sec. k_{12} = 3.49E-03 cm/sec. k_{13} = 2.27E-03 cm/sec. k_{14} = 3.14E-03 cm/sec. k_{15} = 3.31E-03 cm/sec. k_{16} = 3.31E-03 cm/sec. k_{17} = 3.31E-03 cm/sec. k_{18} = 3.31E-03 cm/sec. **$k_{(ave)}$= 2.56E-03 cm/sec.**

Note:

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-4 DEPTH: 12.00 m. DEPTH OF GWT: 9.70 m. DATE STARTED: January 10, 2003 DATE FINISHED: January 10, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
9.70 m.	0.20 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
12.00		5:57	5:58	1	8240.00	8242.25	2.25	2.25	9.90	
		5:58	5:59	2	8242.25	8246.00	3.75	3.75		
		5:59	6:00	3	8246.00	8247.50	1.50	1.50		
		6:00	6:01	4	8247.50	8249.00	1.50	1.50		
		6:01	6:02	5	8249.00	8250.50	1.50	1.50		
		6:02	6:03	6	8250.50	8252.40	1.90	1.90		
		6:03	6:04	7	8252.40	8254.00	1.60	1.60		
		6:04	6:05	8	8254.00	8255.50	1.50	1.50		
		6:05	6:06	9	8255.50	8257.00	1.50	1.50		
		6:06	6:07	10	8257.00	8262.75	5.75	5.75		
		6:07	6:12	15	8262.75	8267.25	4.50	0.90		
		6:12	6:17	20	8267.25	8273.90	6.65	1.33		
		6:17	6:22	25	8273.90	8278.50	4.60	0.92		
		6:22	6:27	30	8278.50	8278.50	0.00	0.00		
		6:27	6:32	35	8278.50	8283.00	4.50	0.90		
		6:32	6:37	40	8283.00	8287.00	4.00	0.80		
		6:37	6:42	45	8287.00	8291.00	4.00	0.80		
		6:42	6:47	50	8291.00	8296.00	5.00	1.00		
		6:47	6:52	55	8296.00	8300.00	4.00	0.80		
		6:52	6:57	60	8300.00	8304.00	4.00	0.80		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales** BORING NO.: **SL-4-4** DEPTH: **12.00 m.** DEPTH OF GWT: **9.70 m.** DATE STARTED: **January 10, 2003** DATE FINISHED: **January 10, 2003** SHEET NO. **2 of 2**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 1.81E-03 cm/sec. k_2 = 3.02E-03 cm/sec. k_3 = 1.21E-03 cm/sec. k_4 = 1.21E-03 cm/sec. k_5 = 1.21E-03 cm/sec. k_6 = 1.53E-03 cm/sec. k_7 = 1.29E-03 cm/sec. k_8 = 1.21E-03 cm/sec. k_9 = 1.21E-03 cm/sec. k_{10} = 4.63E-03 cm/sec. k_{11} = 7.25E-04 cm/sec. k_{12} = 1.07E-03 cm/sec. k_{13} = 7.41E-04 cm/sec. k_{14} = 0.00E+00 cm/sec. k_{15} = 7.25E-04 cm/sec. k_{16} = 6.44E-04 cm/sec. k_{17} = 6.44E-04 cm/sec. k_{18} = 8.06E-04 cm/sec. k_{19} = 6.44E-04 cm/sec. k_{20} = 6.44E-04 cm/sec. **$k_{(ave)}$= 1.25E-03 cm/sec.**
Note:		

FIELD PERMEABILITY TEST (OPEN - END TEST)	LOCATION: Sto. Tomas River, San Marcelino, Zambales
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: SL-4-5 DEPTH: 3.00 m. DEPTH OF GWT: Not encountered DATE STARTED: January 16, 2003 DATE FINISHED: January 16, 2003 SHEET NO. 1 of 2

A. DATA ON WATER HEADS (h_1, h_2, h_p)

Total Head, $H_T = h_1 + h_2$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.15 m	Note: Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES.	TIME			FLOW (LITERS/MIN)				ORIFICE	
					WATER METER READING					
DEPTH (m)	GAUGE READING (psi)	START OF TEST	END OF TEST	ELAPSED TIME (min)	INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
3.00		8:36	8:37	1	9628.00	9629.50	1.50	1.50	3.15	
		8:37	8:38	2	9629.50	9631.00	1.50	1.50		
		8:38	8:39	3	9631.00	9632.50	1.50	1.50		
		8:39	8:40	4	9632.50	9634.00	1.50	1.50		
		8:40	8:41	5	9634.00	9635.50	1.50	1.50		
		8:41	8:42	6	9635.50	9636.75	1.25	1.25		
		8:42	8:43	7	9636.75	9638.50	1.75	1.75		
		8:43	8:44	8	9638.50	9639.50	1.00	1.00		
		8:44	1:50	9	9639.50	9641.00	1.50	1.50		
		8:45	8:46	10	9641.00	9642.75	1.75	1.75		
		8:46	8:51	15	9642.75	9647.00	4.25	0.85		
		8:51	8:56	20	9647.00	9652.50	5.50	1.10		
		8:56	9:01	25	9652.50	9656.50	4.00	0.80		
		9:01	9:06	30	9656.50	9661.00	4.50	0.90		
		9:06	9:11	35	9661.00	9666.00	5.00	1.00		
		9:11	9:16	40	9666.00	9671.00	5.00	1.00		
		9:16	9:21	45	9671.00	9676.00	5.00	1.00		
		9:21	9:26	50	9676.00	9681.00	5.00	1.00		

FIELD PERMEABILITY TEST **(OPEN - END TEST)**	LOCATION: **Sto. Tomas River, San Marcelino, Zambales**
PROJECT: THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO	BORING NO.: **SL-4-5** DEPTH: **3.00 m.** DEPTH OF GWT: **Not encountered** DATE STARTED: **January 16, 2003** DATE FINISHED: **January 16, 2003** SHEET NO. **2 of 2**

C. CALCULATIONS

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, *k*	VALUES OF *k*
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / min$	$k = \frac{Q \times 10^3}{5.5rH \times 60}$ UNITS: k = cm / sec Q = l / min H = cm. r = cm.	k_1 = 3.80E-03 cm/sec. k_2 = 3.80E-03 cm/sec. k_3 = 3.80E-03 cm/sec. k_4 = 3.80E-03 cm/sec. k_5 = 3.80E-03 cm/sec. k_6 = 3.16E-03 cm/sec. k_7 = 4.43E-03 cm/sec. k_8 = 2.53E-03 cm/sec. k_9 = 3.80E-03 cm/sec. k_{10} = 4.43E-03 cm/sec. k_{11} = 2.15E-03 cm/sec. k_{12} = 2.78E-03 cm/sec. k_{13} = 2.03E-03 cm/sec. k_{14} = 2.28E-03 cm/sec. k_{15} = 2.53E-03 cm/sec. k_{16} = 2.53E-03 cm/sec. k_{17} = 2.53E-03 cm/sec. k_{18} = 2.53E-03 cm/sec. **$k_{(ave)}$= 3.15E-03 cm/sec.**

Note: