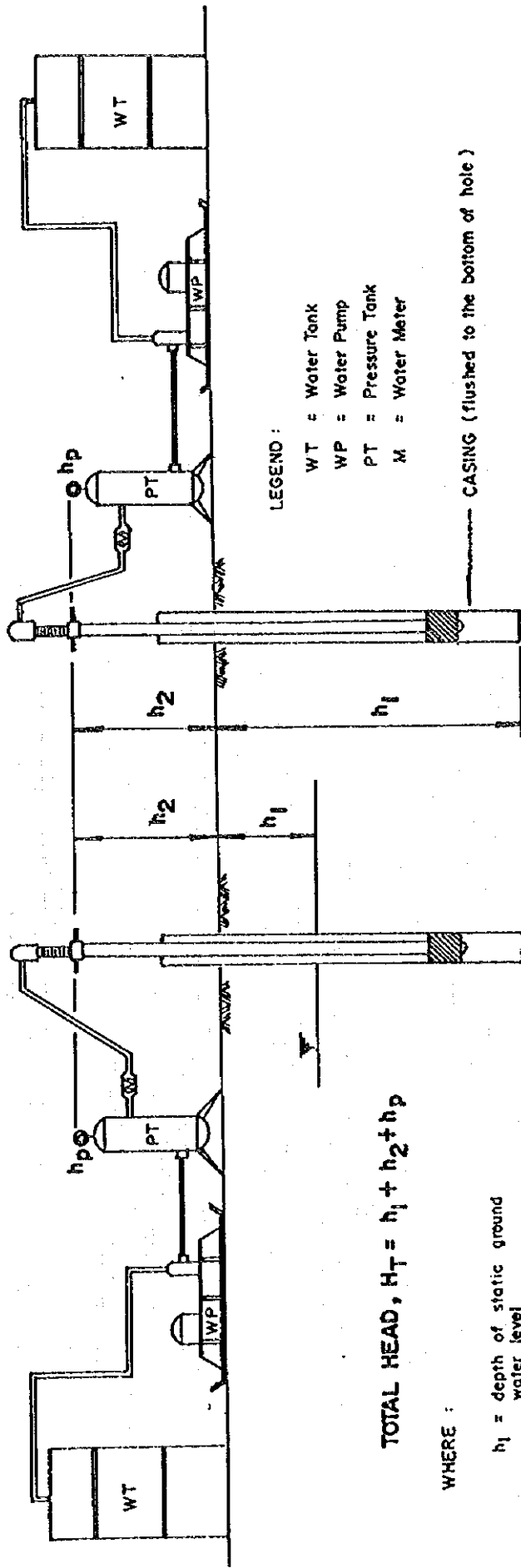

PART III

***FIELD PERMEABILITY
TEST RESULTS***





LEGEND :

WT = Water Tank
 WP = Water Pump
 PT = Pressure Tank
 M = Water Meter

CASING (flushed to the bottom of hole)

CONDITION 1A
 (WATER TABLE ENCOUNTERED
 (IN THE BOREHOLE)

CONDITION 1B
 (WATER TABLE NOT ENCOUNTERED)

CONDITION I

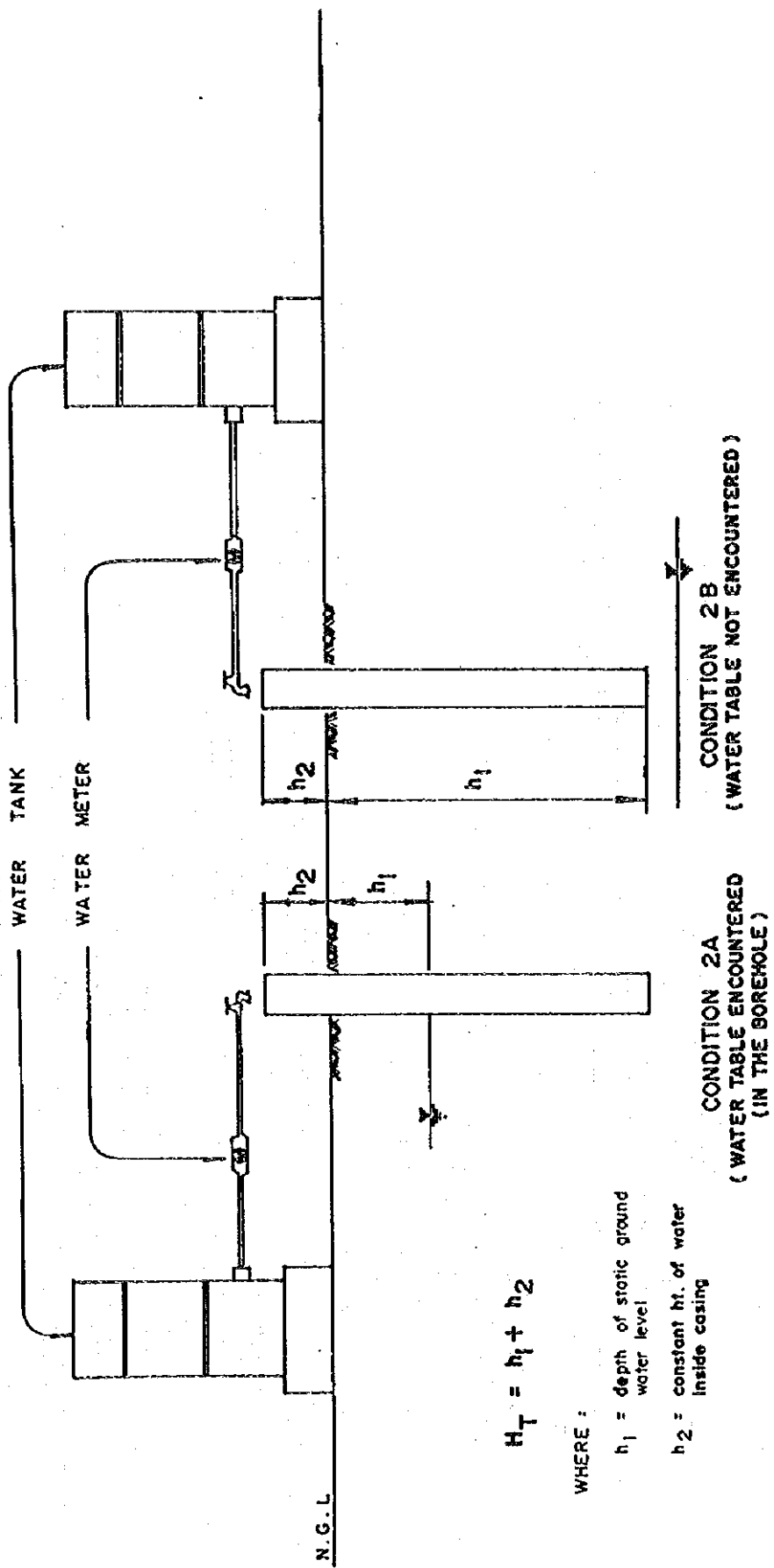
TOTAL HEAD, $H_T = h_1 + h_2 + h_p$

WHERE :

- h_1 = depth of static ground water level
- h_2 = ht. of pressure gauge from ground surface
- h_p = equivalent head arising from applied pressure.

SCHMATIC DIAGRAM OF
 PACKER TEST FOR FIELD PERMEABILITY

Figure C.1



$$H_T = h_1 + h_2$$

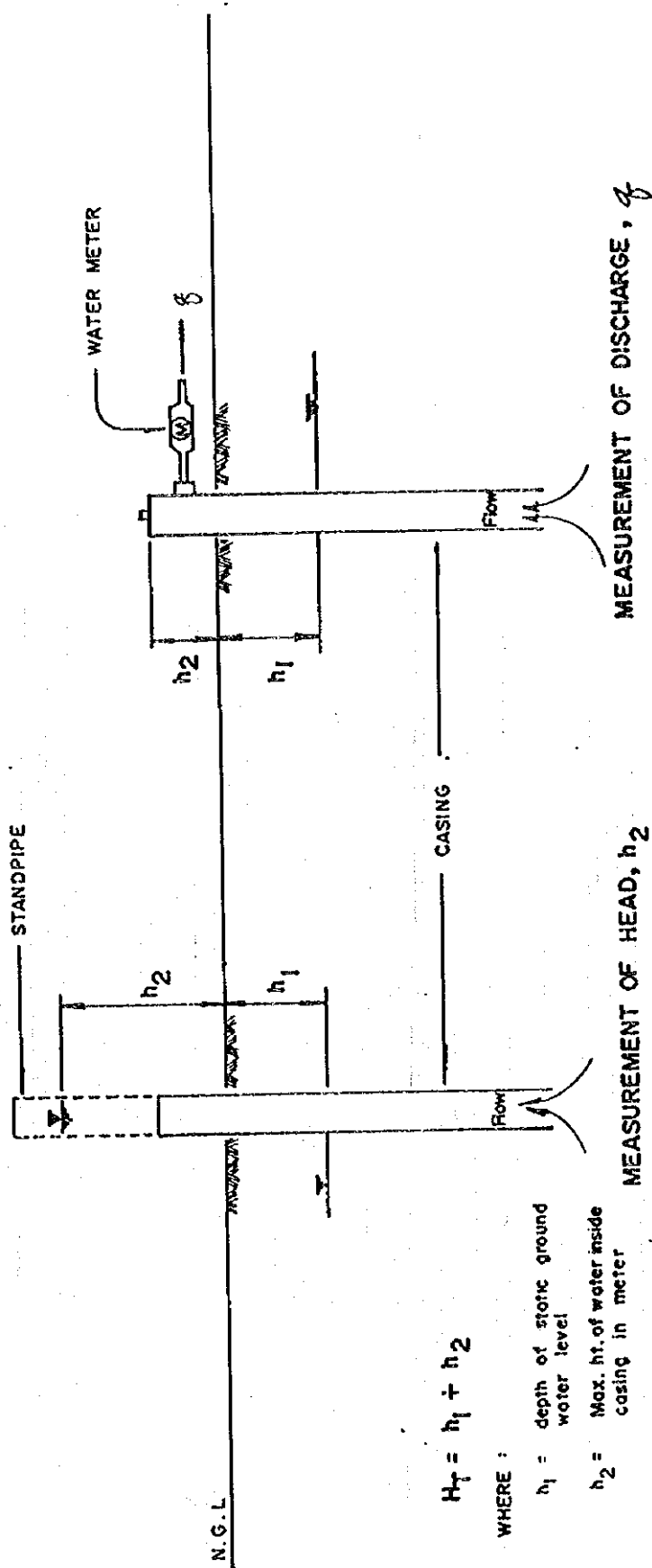
WHERE :

- h_1 = depth of static ground water level
- h_2 = constant ht. of water inside casing

CONDITION 2

SCHEMATIC DIAGRAM OF OPEN-END TEST FOR FIELD PERMEABILITY

Figure C.2



$$H_T = h_1 + h_2$$

WHERE :

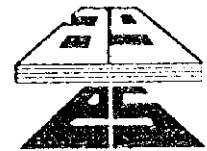
- h_1 = depth of static ground water level
- h_2 = Max. ht. of water inside casing in meter
- q = discharge of water in ℓ /min.

SCHEMATIC DIAGRAM FOR FIELD PERMEABILITY TEST (ARTESIAN CONDITION)

Figure C.3

TABLE C.1 – SUMMARY OF PERMEABILITY TEST RESULTS

SITES	BORING NO.	FIELD PERMEABILITY TEST RESULTS, k in cm/sec			LABORATORY TEST RESULTS, k in cm/sec		
		5.0 m depth	10.0 m depth	10.0 m depth	5.0 m depth	5.0 m depth	10.0 m depth
TM-1 Sabo Dam	BH-1	9.2×10^{-4}	6.5×10^{-4}		1.2×10^{-3}	2.8×10^{-4}	
	BH-2	8.1×10^{-4}	2.7×10^{-4}		1.3×10^{-3}	2.3×10^{-3}	
	BH-3	9.3×10^{-4}	7.7×10^{-4}		8.4×10^{-4}	1.8×10^{-3}	
	Average	8.9×10^{-4}	5.6×10^{-4}		1.1×10^{-3}	1.5×10^{-3}	
Sabo Dam #6	BH-1	2.0×10^{-2}	2.6×10^{-2}		9.2×10^{-4}	2.0×10^{-3}	
	BH-2	3.9×10^{-3}	4.1×10^{-3}		5.1×10^{-3}	2.2×10^{-3}	
	BH-3	2.3×10^{-2}	2.7×10^{-2}		2.8×10^{-3}	8.5×10^{-4}	
	Average	1.6×10^{-2}	1.9×10^{-2}		2.9×10^{-3}	1.7×10^{-3}	
Sabo Dam #9	BH-1	1.3×10^{-6}	2.7×10^{-2}		3.2×10^{-4}	2.1×10^{-4}	
	BH-2	1.2×10^{-2}	1.5×10^{-1}		3.1×10^{-4}	2.7×10^{-4}	
	BH-3	1.6×10^{-2}	1.7×10^{-2}		3.0×10^{-4}	4.6×10^{-4}	
	Average	1.4×10^{-2}	6.5×10^{-2}		3.1×10^{-4}	3.1×10^{-4}	
Maskup Sabo Dam (site no. 4)	BH-1	6.8×10^{-5}	2.2×10^{-2}		4.7×10^{-4}	8.2×10^{-4}	
	BH-2	1.5×10^{-2}	9.9×10^{-3}		3.4×10^{-4}	2.9×10^{-4}	
	BH-3	1.6×10^{-2}	3.9×10^{-5}		4.5×10^{-4}	2.4×10^{-4}	
	Average	1.5×10^{-2}	1.8×10^{-2}		4.2×10^{-4}	4.5×10^{-4}	
Dolores Sabo Dam (site no. 5)	BH-1	2.6×10^{-2}	3.9×10^{-3}		3.6×10^{-4}	5.8×10^{-4}	
	BH-2	1.4×10^{-2}	5.8×10^{-3}		2.9×10^{-4}	7.4×10^{-4}	
	BH-3	1.2×10^{-2}	9.8×10^{-3}		8.9×10^{-4}	2.8×10^{-4}	
	Average	1.7×10^{-2}	6.5×10^{-3}		5.1×10^{-4}	5.3×10^{-4}	



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>TM-1 Sabo Dam</u>
	BORING NO.: <u>1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>5.00 m</u>
	DEPTH OF GWT: <u>not encountered</u>
	DATE STARTED: <u>July 5, 1995</u>
	DATE FINISHED: <u>July 5, 1995</u>
	SHEET NO. <u>1 of 2</u>

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

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

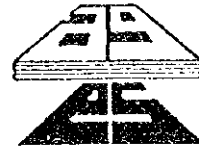
Static Water Level Depth, h_1	Constant Height of Water, h_2 (inside casing)	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.48 m	Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00		1:00	1:30	30	19817.8	19837.4	19.60	0.65	5.48	
5.00		1:30	2:00	30	19837.4	19855.1	17.70	0.59	5.48	
5.00		2:00	2:30	30	19855.1	19874.3	19.20	0.64	5.48	
5.00		2:30	3:00	30	19874.3	19893.6	19.30	0.64	5.48	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm} / \text{sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 9.5 \times 10^{-4} \text{ cm/sec}$ $k_2 = 8.6 \times 10^{-4} \text{ cm/sec}$ $k_3 = 9.3 \times 10^{-4} \text{ cm/sec}$ $k_4 = 9.4 \times 10^{-4} \text{ cm/sec}$ $k_{(ave)} = 9.2 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>TM-4 Sabo Dam</u> BORING NO.: <u>1</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>not encountered</u> DATE STARTED: <u>July 5, 1995</u> DATE FINISHED: <u>July 5, 1995</u> SHEET NO. <u>2 of 2</u>
	PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT

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

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

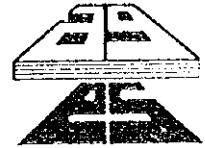
Static Water Level Depth, h_1 not encountered	Constant Height of Water, h_2 (inside casing) 0.19 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00		8:00	8:15	15	19952.3	19966.3	14.00	0.93	10.19	
10.00		8:15	8:30	15	19966.3	19973.3	7.00	0.47	10.19	
10.00		8:30	9:00	30	19973.3	19994.3	21.00	0.70	10.19	
10.00		9:00	9:30	30	19994.3	20014.9	20.60	0.69	10.19	
10.00		9:30	10:00	30	19994.3	20035.7	41.40	1.38	10.19	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
$\text{Flow Rate, } Q = \frac{\text{total flow}}{\text{elapsed time}}$ <p style="text-align: center;">= l / min</p>	$k = C_r \frac{Q}{h_T}$ <p>UNITS:</p> $k = \text{cm/sec}$ $C_r = \text{constant} = 8 \times 10^{-3}$ $Q = \text{l/min}$ $H_T = \text{meter}$	$k_1 = 7.3 \times 10^{-4} \text{ cm/sec}$ $k_2 = 3.7 \times 10^{-4} \text{ cm/sec}$ $k_3 = 5.5 \times 10^{-4} \text{ cm/sec}$ $k_4 = 5.4 \times 10^{-4} \text{ cm/sec}$ $k_5 = 1.1 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 6.5 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: TM-1 Sabo Dam
	BORING NO.: 2 DEPTH: 5.00 m DEPTH OF GWT: not encountered DATE STARTED: July 6, 1995 DATE FINISHED: July 6, 1995 SHEET NO. 1 of 2
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

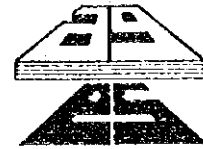
Static Water Level Depth, h_1 not encountered	Constant Height of Water, h_2 (inside casing) 0.48 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00		3:30	4:00	30	20041.4	20057.9	16.50	0.55	5.48	
5.00		4:00	4:30	30	20057.9	20074.7	16.80	0.56	5.48	
5.00		4:30	5:00	30	20074.7	20091.3	16.60	0.55	5.48	
5.00		5:00	5:30	30	20091.3	20108.2	16.90	0.56	5.48	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ l / min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{ cm / sec}$ $C_1 = \text{ constant}$ $= 8 \times 10^{-3}$ $Q = \text{ l / min}$ $H_T = \text{ meter}$	$k_1 = 8.0 \times 10^{-4} \text{ cm/sec}$ $k_2 = 8.2 \times 10^{-4} \text{ cm/sec}$ $k_3 = 8.1 \times 10^{-4} \text{ cm/sec}$ $k_4 = 8.2 \times 10^{-4} \text{ cm/sec}$ $k_{(ave)} = 8.1 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>TM-1 Sabo Dam</u>
	BORING NO.: <u>2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>10.00 m</u>
	DEPTH OF GWT: <u>not encountered</u>
	DATE STARTED: <u>July 7, 1995</u>
	DATE FINISHED: <u>July 7, 1995</u>
	SHEET NO. <u>2 of 2</u>

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

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

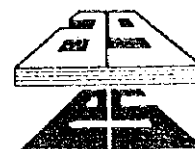
Static Water Level Depth, h_1 not encountered	Constant Height of Water, h_2 (inside casing) 0.19 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (h_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00		8:40	9:10	15	20217.7	20225.3	7.60	0.51	10.19	
10.00		9:10	9:40	15	20225.3	20231.9	6.60	0.44	10.19	
10.00		9:40	10:10	30	20231.9	20238.5	6.60	0.22	10.19	
10.00		10:10	10:40	30	20238.5	20245.1	6.60	0.22	10.19	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $h_T = \text{meter}$	$k_1 = 4.0 \times 10^{-4} \text{ cm/sec}$ $k_2 = 3.5 \times 10^{-4} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-4} \text{ cm/sec}$ $k_4 = 1.7 \times 10^{-4} \text{ cm/sec}$ $k_{(ave)} = 2.7 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>TM-1 Sabo Dam</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>5.00 m</u>
	DEPTH OF GWT: <u>not encountered</u>
	DATE STARTED: <u>July 8, 1995</u>
	DATE FINISHED: <u>July 8, 1995</u>
	SHEET NO. <u>1 of 2</u>

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

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

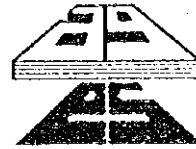
Static Water Level Depth, h_1	Constant Height of Water, h_2 (inside casing)	Equivalent Head, h_p (arising from applied pressure)
not encountered	0.48 m	Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_1)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00		8:00	8:30	30	20304.2	20323.4	19.20	0.64	5.48	
5.00		8:30	9:00	30	20323.4	20342.6	19.20	0.64	5.48	
5.00		9:00	9:30	30	20342.6	20361.8	19.20	0.64	5.48	
5.00		9:30	10:00	30	20361.8	20381.0	19.20	0.64	5.48	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $h_T = \text{meter}$	$k_1 = 9.3 \times 10^{-4} \text{ cm/sec}$ $k_2 = 9.3 \times 10^{-4} \text{ cm/sec}$ $k_3 = 9.3 \times 10^{-4} \text{ cm/sec}$ $k_4 = 9.3 \times 10^{-4} \text{ cm/sec}$ $k_{(ave)} = 9.3 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>TM-1 Sabo Dam</u>
	BORING NO.: <u>3</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>not encountered</u> DATE STARTED: <u>July 10, 1995</u> DATE FINISHED: <u>July 10, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

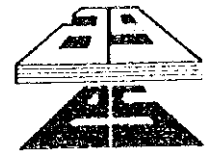
Static Water Level Depth, h_1 not encountered	Constant Height of Water, h_2 (inside casing) 0.19 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION DEPTH (m)	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
				INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q			
5.00		3:00	3:30	30	20395.4	20410.4	15.00	0.50	5.19	
5.00		3:30	4:00	30	20410.4	20425.4	15.00	0.50	5.19	
5.00		4:00	4:30	30	20425.4	20440.4	15.00	0.50	5.19	
5.00		4:30	5:00	30	20440.4	20455.4	15.00	0.50	5.19	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ = // min	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = // \text{ min}$ $H_T = \text{meter}$	$k_1 = 7.7 \times 10^{-4} \text{ cm/sec}$ $k_2 = 7.7 \times 10^{-4} \text{ cm/sec}$ $k_3 = 7.7 \times 10^{-4} \text{ cm/sec}$ $k_4 = 7.7 \times 10^{-4} \text{ cm/sec}$ $k_{(ave)} = 7.7 \times 10^{-4} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>1</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>1.80 m</u> DATE STARTED: <u>July 01, 1995</u> DATE FINISHED: <u>July 01, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
1.80 m	0.85 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	10	10:52	10:57	5	14592.7	14728.4	135.70	27.14	9.69	
5.00	20	10:57	11:02	5	14746.0	14972.5	228.50	45.30	16.72	
5.00	25	11:03	11:13	10	15095.0	15486.0	391.00	39.10	20.24	
5.00	20	11:13	11:18	5	15510.3	15713.7	203.40	40.68	16.72	
5.00	10	11:19	11:24	5	15727.8	15865.2	137.40	27.48	9.69	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_1 \frac{Q}{H_T}$ UNITS: $k = \text{cm/sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 2.2 \times 10^{-2} \text{ cm/sec}$ $k_2 = 2.2 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.5 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.9 \times 10^{-2} \text{ cm/sec}$ $k_5 = 2.3 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 2.0 \times 10^{-2} \text{ cm/sec}$
Note:		



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #6</u> BORING NO.: <u>1</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>1.80 m</u> DATE STARTED: <u>July 02, 1995</u> DATE FINISHED: <u>July 02, 1995</u> SHEET NO. <u>2 of 2</u>
	PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT

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

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

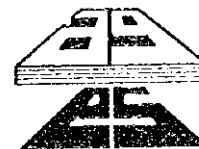
Static Water Level Depth, h_1 1.80 m	Height of Pressure Gauge, h_2 0.70 m	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
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B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00	10	1:00	1:05	5	15915.0	16109.5	194.50	38.90	9.54	
10.00	20	1:06	1:11	5	16126.4	16384.5	258.10	51.62	16.57	
10.00	25	1:13	1:23	10	16428.8	16839.0	410.20	41.02	20.09	
10.00	20	1:23	1:28	5	16850.9	17062.6	211.70	42.34	16.57	
10.00	10	1:29	1:34	5	17074.5	17278.5	204.00	40.80	9.54	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
$\text{Flow Rate, } Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_f \frac{Q}{h_T}$ <p>UNITS:</p> $k = \text{cm/sec}$ $C_f = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 3.3 \times 10^{-2} \text{ cm/sec}$ $k_2 = 2.5 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_4 = 2.0 \times 10^{-2} \text{ cm/sec}$ $k_5 = 3.4 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 2.6 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 3)	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>5.00 m</u>
	DEPTH OF GWT: <u>underwater borehole</u>
	DATE STARTED: <u>June 28, 1995</u>
	DATE FINISHED: <u>June 28, 1995</u>
	SHEET NO. <u>1 of 2</u>

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	Max. Height of Water, h_2 (inside casing)	Equivalent Head, h_p (arising from applied pressure)
0.00 m (underwater)	0.57 m	Not Applicable

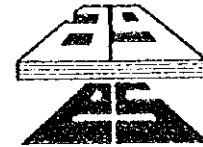
B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_1)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00		9:00	9:30	30	14543.3	14551.7	8.40	0.28	0.57	
5.00		9:30	10:00	30	14551.7	14560.1	8.40	0.28	0.57	
5.00		10:00	10:30	30	14560.1	14568.5	8.40	0.28	0.57	
5.00		10:30	11:00	30	14568.5	14576.9	8.40	0.28	0.57	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 3.9 \times 10^{-3} \text{ cm/sec}$ $k_2 = 3.9 \times 10^{-3} \text{ cm/sec}$ $k_3 = 3.9 \times 10^{-3} \text{ cm/sec}$ $k_4 = 3.9 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 3.9 \times 10^{-3} \text{ cm/sec}$

Note:

Artesian condition was encountered at about 3.00 m depth.
 Discharge Q was measured by attaching the meter to the casing.
 The head, h_1 was also measured by extending the standpipe.



FIELD PERMEABILITY TEST (CONDITION 3)	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>10.00 m</u>
	DEPTH OF GWT: <u>under water borehole</u>
	DATE STARTED: <u>June 30, 1995</u>
	DATE FINISHED: <u>June 30, 1995</u>
	SHEET NO. <u>2 of 2</u>

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 0.00 m (under water)	Max. Height of Water, h_2 (inside casing) 0.54 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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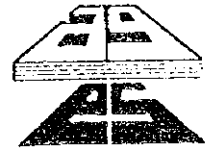
B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
10.00		3:00	3:30	30	14503.4	14511.1	7.70	0.26	0.54	
10.00		3:30	4:00	30	14511.1	14520.2	9.10	0.30	0.54	
10.00		4:00	5:00	60	14520.2	14537.0	16.80	0.28	0.54	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ // min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = \text{ // min}$ $H_T = \text{meter}$	$k_1 = 3.8 \times 10^{-3} \text{ cm/sec}$ $k_2 = 4.5 \times 10^{-3} \text{ cm/sec}$ $k_3 = 4.1 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 4.1 \times 10^{-3} \text{ cm/sec}$

Note:

Artesian condition was encountered at about 3.00 m depth.
 Discharge Q was measured by attaching the meter to the casing.
 The head, h_1 was also measured by extending the standpipe.



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>5.00 m</u>
	DEPTH OF GWT: <u>under water borehole</u>
	DATE STARTED: <u>July 01, 1995</u>
	DATE FINISHED: <u>July 01, 1995</u>
	SHEET NO. <u>1 of 2</u>

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

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

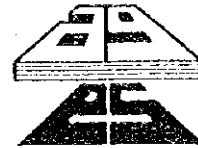
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
0.00 m (under water)	1.00 m	Note: 1 psi = 0.703 m of water

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_1)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	10	stopwatch		5	17286.0	17425.8	139.80	27.96	8.04	
5.00	20	stopwatch		5	17439.2	17674.2	235.00	47.00	15.07	
5.00	25	stopwatch		10	17699.4	18101.4	402.00	40.20	18.59	
5.00	20	stopwatch		5	18138.9	18310.9	172.00	34.40	15.07	
5.00	10	stopwatch		5	18342.6	18469.4	126.80	25.36	8.04	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 2.8 \times 10^{-2} \text{ cm/sec}$ $k_2 = 2.5 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.8 \times 10^{-2} \text{ cm/sec}$ $k_5 = 2.5 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 2.3 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>10.00 m</u>
	DEPTH OF GWL: <u>at ground level</u>
	DATE STARTED: <u>July 03, 1995</u>
	DATE FINISHED: <u>July 03, 1995</u>
	SHEET NO. <u>2 of 2</u>

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

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

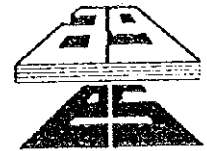
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure)
0.00 m (at ground level)	0.50 m	Note: 1 psi = 0.703 m of water

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (h)	SECTION LENGTH (m)
10.00	10	stopwatch		5	3208.10	3333.60				
10.00	20	stopwatch		5	3438.50	3697.50	259.00	51.80	14.57	
10.00	25	stopwatch		10	3748.40	4321.50	575.10	57.51	18.09	
10.00	20	stopwatch		5	4375.60	4630.40	254.80	50.96	14.57	
10.00	10	stopwatch		5	4699.30	4834.50	135.20	27.04	7.54	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant} = 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 2.7 \times 10^2 \text{ cm/sec}$ $k_2 = 2.8 \times 10^2 \text{ cm/sec}$ $k_3 = 2.5 \times 10^2 \text{ cm/sec}$ $k_4 = 2.8 \times 10^2 \text{ cm/sec}$ $k_5 = 2.9 \times 10^2 \text{ cm/sec}$ $k_{(ave)} = 2.7 \times 10^2 \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>1</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>1.05 m</u> DATE STARTED: <u>June 8, 1995</u> DATE FINISHED: <u>June 8, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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 1.05 m	Constant Height of Water, h_2 (inside casing) 0.74 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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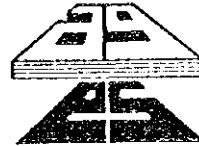
B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00		stop watch		60	0.000	0.004	0.0180	0.0003	1.79	
5.00		stop watch		60	0.004	0.008	0.0180	0.0003	1.79	
5.00		stop watch		120	0.008	0.016	0.0360	0.0003	1.79	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ l / min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{ cm / sec}$ $C_1 = \text{ constant}$ $= 8 \times 10^{-3}$ $Q = \text{ l / min}$ $H_T = \text{ meter}$	$k_1 = 1.3 \times 10^{-6} \text{ cm/sec}$ $k_2 = 1.3 \times 10^{-6} \text{ cm/sec}$ $k_3 = 1.3 \times 10^{-6} \text{ cm/sec}$ $k_{(ave)} = 1.3 \times 10^{-6} \text{ cm/sec}$

Note:

Packer Test was attempted but yielded virtually insignificant flow.



FIELD PERMEABILITY TEST (CONDITION 3)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DEPTH: <u>10.00 m</u>
	DEPTH OF GWT: <u>1.05 m</u>
	DATE STARTED: <u>June 9, 1995</u>
	DATE FINISHED: <u>June 9, 1995</u>
	SHEET NO. <u>2 of 2</u>

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

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

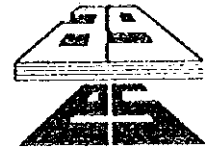
Static Water Level Depth, h_1	Max. Height of Water, h_2 (inside casing)	Equivalent Head, h_p (arising from applied pressure)
1.05 m	0.74 m	Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD (m)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE		
10.00		9:35	9:40	5	0.00	43.30	43.30	8.66	1.79	
10.00		9:40	9:45	5	43.30	67.80	24.50	4.90	1.79	
10.00		9:45	9:50	5	67.80	90.50	22.70	4.54	1.79	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ l / min}$	$k = C_1 \frac{Q}{h_r}$ UNITS: $k = \text{ cm / sec}$ $C_1 = \text{ constant}$ $= 8 \times 10^{-3}$ $Q = \text{ l / min}$ $h_r = \text{ meter}$	$k_1 = 3.9 \times 10^{-2} \text{ cm/sec}$ $k_2 = 2.2 \times 10^{-2} \text{ cm/sec}$ $k_3 = 2.0 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 2.7 \times 10^{-2} \text{ cm/sec}$

Note: Artesian condition was encountered at about 9.90 m depth.
 Discharge Q was measured by attaching the meter to the casing.
 The head, h_1 was also measured by extending the standpipe.



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>2</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>at ground level</u> DATE STARTED: <u>June 10, 1995</u> DATE FINISHED: <u>June 10, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

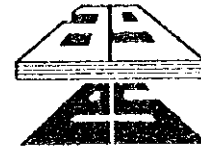
Static Water Level Depth, h_1 0.00 m (at ground level)	Height of Pressure Gauge, h_2 0.75 m	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
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B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	15	stop watch		5	1093.40	1124.80	31.40	6.28	11.30	
5.00	30	stop watch		5	1135.30	1314.70	179.40	35.88	21.86	
5.00	35	stop watch		10	1645.20	2018.30	373.10	37.31	25.37	
5.00	30	stop watch		5	2660.90	2945.30	284.40	56.88	21.86	
5.00	15	stop watch		5	3089.10	3170.90	81.80	16.36	11.30	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 4.4 \times 10^{-3} \text{ cm/sec}$ $k_2 = 1.3 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.2 \times 10^{-2} \text{ cm/sec}$ $k_4 = 2.1 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.2 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.2 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>2</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>at ground level</u> DATE STARTED: <u>June 13, 1995</u> DATE FINISHED: <u>June 13, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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 0.00 m (at ground level)	Constant Height of Water, h_2 (inside casing) 0.45 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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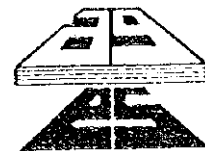
B. DATA ON FLOW TEST

TEST SECTION DEPTH (m)	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
				INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q			
10.00		stop watch		1	3380.60	3389.10	8.50	8.50	0.45	
10.00		stop watch		1	3389.10	3397.60	8.50	8.50	0.45	
10.00		stop watch		1	3397.60	3406.10	8.50	8.50	0.45	
10.00		stop watch		1	3406.10	3414.60	8.50	8.50	0.45	
10.00		stop watch		1	3414.60	3423.10	8.50	8.50	0.45	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ = // min	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = // \text{min}$ $H_T = \text{meter}$	$k_1 = 1.5 \times 10^{-1} \text{ cm/sec}$ $k_2 = 1.5 \times 10^{-1} \text{ cm/sec}$ $k_3 = 1.5 \times 10^{-1} \text{ cm/sec}$ $k_4 = 1.5 \times 10^{-1} \text{ cm/sec}$ $k_5 = 1.5 \times 10^{-1} \text{ cm/sec}$ $k_{(ave)} = 1.5 \times 10^{-1} \text{ cm/sec}$

Note:

Artesian condition was encountered at about 9.80 m depth.
Discharge Q was measured by attaching the meter to the casing.
The head, h_1 was also measured by extending the standpipe.



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>3</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>0.84 m</u> DATE STARTED: <u>June 14, 1995</u> DATE FINISHED: <u>June 14, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT: GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

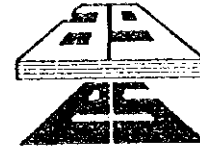
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
0.84 m	0.85 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	15	2:12	2:17	5	3208.10	3333.60	125.50	25.10	12.24	
5.00	30	2:18	2:23	5	3438.50	3697.50	259.00	51.80	22.80	
5.00	35	2:24	2:34	10	3746.40	4321.50	575.10	57.51	26.31	
5.00	30	2:35	2:45	10	4375.60	4630.40	254.80	25.48	22.80	
5.00	15	2:42	2:47	5	4699.30	4834.50	135.20	27.04	12.24	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_2 = 1.8 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_4 = 8.9 \times 10^{-3} \text{ cm/sec}$ $k_5 = 1.8 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.6 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>3</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>0.84 m</u> DATE STARTED: <u>June 15, 1995</u> DATE FINISHED: <u>June 15, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT: GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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 0.84 m	Constant Height of Water, h_2 (inside casing) 2.10 m	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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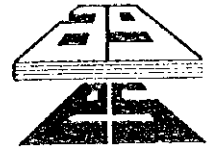
B. DATA ON FLOW TEST

TEST SECTION DEPTH (m)	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
10.00		1:10	1:11	1	4865.70	4872.80				
10.00		1:12	1:13	1	4872.80	4878.90	6.10	6.10	2.94	
10.00		1:13	1:14	1	4878.90	4885.00	6.10	6.10	2.94	
10.00		1:14	1:15	1	4885.00	4891.00	6.00	6.00	2.94	
10.00		1:15	1:16	1	4891.00	4897.20	6.20	6.20	2.94	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= // \text{ min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = // \text{ min}$ $H_T = \text{meter}$	$k_1 = 1.9 \times 10^{-2} \text{ cm/sec}$ $k_2 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.7 \times 10^{-2} \text{ cm/sec}$

Note:

Artesian condition was encountered at about 9.80 m depth.
Discharge Q was measured by attaching the meter to the casing.
The head, h_1 was also measured by extending the standpipe.



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>1</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>1.18 m</u> DATE STARTED: <u>June 17, 1995</u> DATE FINISHED: <u>June 17, 1995</u> SHEET NO. <u>1 of 3</u>
PROJECT: GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

A. DATA ON WATER HEADS (h_1, h_2, h_p)
 Total Head, $H_T = h_1 + h_2 + h_p$, in meters

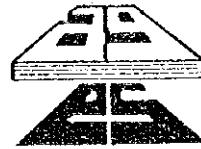
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
1.18 m	1.00 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	15	stop watch		5	4095.10	4096.30	1.20	0.24	12.73	
5.00	30	stop watch		5	4914.40	4914.80	0.40	0.08	23.29	
5.00	35	stop watch		10	4921.80	4922.70	0.90	0.09	26.80	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_f \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_f = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 1.5 \times 10^{-4} \text{ cm/sec}$ $k_2 = 2.7 \times 10^{-5} \text{ cm/sec}$ $k_3 = 2.7 \times 10^{-5} \text{ cm/sec}$ $k_{(ave)} = 6.8 \times 10^{-5} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>1</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>1.18 m</u> DATE STARTED: <u>June 19, 1995</u> DATE FINISHED: <u>June 19, 1995</u> SHEET NO. <u>2 of 3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

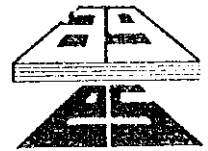
Static Water Level Depth, h_1 1.18 m	Constant Height of Water, h_2 (inside casing) 0.00 m (at ground level)	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION DEPTH (m)	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (h_1)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00		stop watch		5	49315	49345	30.00	6.00	1.18	
10.00		stop watch		10	49345	49389	44.00	4.40	1.18	
10.00		stop watch		20	49389	49449	60.00	3.00	1.18	
10.00		stop watch		30	49449	49572	123.00	4.10	1.18	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 4.1 \times 10^{-2} \text{ cm/sec}$ $k_2 = 3.0 \times 10^{-2} \text{ cm/sec}$ $k_3 = 2.0 \times 10^{-2} \text{ cm/sec}$ $2.8 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 3.0 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>1</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>1.18 m</u> DATE STARTED: <u>June 19, 1995</u> DATE FINISHED: <u>June 19, 1995</u> SHEET NO. <u>3 of 3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

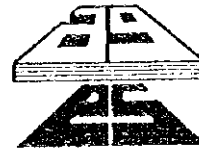
Total Head, $H_T = h_1 + h_2 + h_p$, in meters

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
1.18 m	1.10 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00	15	10:57	11:02	5	4958.30	5050.30	92.00	18.40	12.83	
10.00	30	11:03	11:08	5	5062.30	5251.50	189.20	37.84	23.39	
10.00	35	11:09	11:19	10	5280.80	5683.40	402.60	40.28	26.90	
10.00	30	11:19	11:24	5	5703.20	5906.50	203.30	40.66	23.39	
10.00	15	11:25	11:30	5	5925.40	6053.60	128.20	25.64	12.83	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 1.1 \times 10^{-2} \text{ cm/sec}$ $k_2 = 1.3 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.2 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.4 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_{(AVE)} = 1.3 \times 10^{-2} \text{ cm/sec}$
Note:		



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>2</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>4.80 m</u> DATE STARTED: <u>June 20, 1995</u> DATE FINISHED: <u>June 20, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

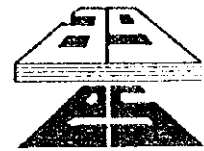
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
4.80 m	0.83 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (h_T)	SECTION LENGTH (m)
5.00	10	11:15	11:20	5	6105.90	6233.30	127.40	25.48	12.67	
5.00	20	11:21	11:26	5	6263.30	6445.90	182.60	36.52	19.70	
5.00	25	11:27	11:37	10	6472.90	6922.70	449.80	44.98	23.22	
5.00	20	11:39	11:44	5	6954.70	7140.40	185.70	37.14	19.70	
5.00	10	11:45	11:50	5	7173.40	7300.00	126.60	25.32	12.67	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_2 = 1.5 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.5 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.5 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.5 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>2</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>4.80 m</u> DATE STARTED: <u>June 21, 1995</u> DATE FINISHED: <u>June 21, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

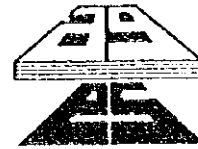
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
4.80 m	1.00 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
10.00	15	1:49	1:54	5	8943.50	9034.50	91.00	18.20	16.35	
10.00	30	1:55	2:00	5	9061.50	9239.70	178.20	35.64	26.91	
10.00	35	2:01	2:11	10	9271.70	9711.70	440.00	44.00	30.42	
10.00	30	2:11	2:16	5	9740.70	9922.20	181.50	36.30	26.91	
10.00	15	2:17	2:22	5	9951.20	10030.2	79.00	15.80	16.35	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_f \frac{Q}{H_T}$ UNITS: $k = \text{cm / sec}$ $C_f = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 8.9 \times 10^{-3} \text{ cm/sec}$ $k_2 = 1.1 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.2 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.1 \times 10^{-2} \text{ cm/sec}$ $k_5 = 7.7 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 9.9 \times 10^{-3} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>3</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>6.40 m</u> DATE STARTED: <u>June 19, 1995</u> DATE FINISHED: <u>June 19, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

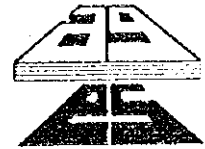
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
6.40 m	0.76 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	15	1:35	1:40	5	7315.00	7453.20	138.20	27.64	16.31	
5.00	30	1:41	1:46	5	7485.20	7761.50	276.30	55.26	26.87	
5.00	35	1:47	1:57	10	7786.50	8442.50	656.00	65.60	30.38	
5.00	30	1:58	2:03	5	8471.50	8754.00	282.50	56.50	26.87	
5.00	15	2:04	2:09	5	8787.00	8924.60	137.60	27.52	16.31	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 1.4 \times 10^{-2} \text{ cm/sec}$ $k_2 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.3 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.6 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>3</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>6.40 m</u> DATE STARTED: <u>June 21, 1995</u> DATE FINISHED: <u>June 21, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

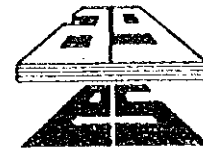
Static Water Level Depth, h_1	Constant Height of Water, h_2 (inside casing)	Equivalent Head, h_p (arising from applied pressure)
6.40 m	0.20 m	Not Applicable

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00		9:30	10:00	30	8931.00	8932.20	1.20	0.04	6.60	
10.00		10:00	11:00	60	8932.20	8933.90	1.70	0.03	6.60	
10.00		11:00	12:30	90	8933.90	8936.40	2.50	0.03	6.60	
10.00		12:30	2:30	120	8936.40	8940.30	3.90	0.03	6.60	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ l / min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = \text{l / min}$ $H_T = \text{meter}$	$k_1 = 4.8 \times 10^{-5} \text{ cm/sec}$ $k_2 = 3.4 \times 10^{-5} \text{ cm/sec}$ $k_3 = 3.4 \times 10^{-5} \text{ cm/sec}$ $3.9 \times 10^{-5} \text{ cm/sec}$ $k_{(ave)} = 3.9 \times 10^{-5} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 2)	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>1</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>0.62 m</u> DATE STARTED: <u>June 22, 1995</u> DATE FINISHED: <u>June 22, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

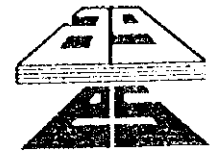
Static Water Level Depth, h_1 0.62 m	Constant Height of Water, h_2 (inside casing) 0.00 m (at ground surface)	Equivalent Head, h_p (arising from applied pressure) Not Applicable
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B. DATA ON FLOW TEST

TEST SECTION DEPTH (m)	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
5.00		8:00	8:05	5	12272.8	12282.3	9.50	1.90	0.62	
5.00		8:05	8:15	10	12282.3	12303.2	20.90	2.09	0.62	
5.00		8:15	8:30	15	12303.2	12333.2	30.00	2.00	0.62	
5.00		8:30	8:50	20	12333.2	12373.0	39.80	1.99	0.62	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_r \frac{Q}{h_r}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_r = \text{meter}$	$k_1 = 2.5 \times 10^{-2} \text{ cm/sec}$ $k_2 = 2.7 \times 10^{-2} \text{ cm/sec}$ $k_3 = 2.6 \times 10^{-2} \text{ cm/sec}$ $2.6 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 2.6 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>1</u> DEPTH: <u>10.00 m</u> DEPTH OF GWT: <u>0.62 m</u> DATE STARTED: <u>June 23, 1995</u> DATE FINISHED: <u>June 23, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

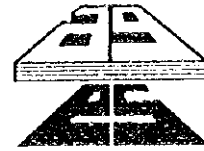
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
0.62 m	1.02 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00	10	2:13	2:18	5	11312.1	11322.7	10.60	2.12	8.68	
10.00	20	2:19	2:24	5	11327.9	11372.8	44.90	8.98	15.71	
10.00	25	2:25	2:35	10	11388.1	11538.8	150.70	15.07	19.23	
10.00	20	2:35	2:40	5	11545.2	11595.2	50.00	10.00	15.71	
10.00	10	2:42	2:47	5	11619.1	11627.3	8.20	1.64	8.68	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 2.0 \times 10^{-3} \text{ cm/sec}$ $k_2 = 4.6 \times 10^{-3} \text{ cm/sec}$ $k_3 = 6.3 \times 10^{-3} \text{ cm/sec}$ $k_4 = 5.1 \times 10^{-3} \text{ cm/sec}$ $k_5 = 1.5 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 3.9 \times 10^{-3} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>2</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>8.70 m</u> DATE STARTED: <u>June 22, 1995</u> DATE FINISHED: <u>June 22, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

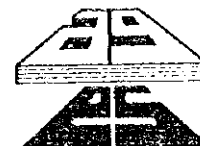
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
8.70 m	0.91 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
5.00	10	10:20	10:25	5	10103.6	10119.5	15.90	3.18	12.95	
5.00	20	10:26	10:31	5	10130.5	10344.1	213.60	42.72	19.98	
5.00	25	10:31	10:41	10	10381.8	10922.0	540.20	54.02	23.50	
5.00	20	10:42	10:47	5	10956.7	11160.9	204.20	40.84	19.98	
5.00	10	10:47	10:52	5	11175.9	11310.9	135.00	27.00	12.95	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_r \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_r = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 2.0 \times 10^{-3} \text{ cm/sec}$ $k_2 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.8 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_5 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_{(ave)} = 1.4 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>2</u> DEPTH: <u>10.00 m</u> DEPTH OF GW: <u>8.70 m</u> DATE STARTED: <u>June 23, 1995</u> DATE FINISHED: <u>June 23, 1995</u> SHEET NO. <u>2 of 2</u>
PROJECT: GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

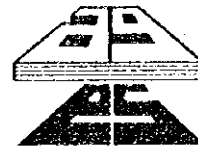
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
8.70 m	0.95 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (h_1)	SECTION LENGTH (m)
DEPTH (m)					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00	10	3:27	3:32	5	10633.0	10654.5	21.50	4.30	16.69	
10.00	20	3:33	3:38	5	11663.3	11792.0	128.70	25.74	23.72	
10.00	25	3:39	3:49	10	11826.0	12087.2	261.20	26.12	27.24	
10.00	20	3:50	3:55	5	12128.4	12219.2	90.80	18.16	23.72	
10.00	10	3:56	4:01	5	12221.6	12269.3	47.70	9.54	16.69	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l/min$	$k = C_f \frac{Q}{h_T}$ UNITS: $k = \text{cm/sec}$ $C_f = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l/min$ $H_T = \text{meter}$	$k_1 = 2.1 \times 10^{-3} \text{ cm/sec}$ $k_2 = 8.7 \times 10^{-3} \text{ cm/sec}$ $k_3 = 7.7 \times 10^{-3} \text{ cm/sec}$ $k_4 = 6.1 \times 10^{-3} \text{ cm/sec}$ $k_5 = 4.6 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 5.8 \times 10^{-3} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>3</u> DEPTH: <u>5.00 m</u> DEPTH OF GWT: <u>3.70 m</u> DATE STARTED: <u>June 24, 1995</u> DATE FINISHED: <u>June 24, 1995</u> SHEET NO. <u>1 of 2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

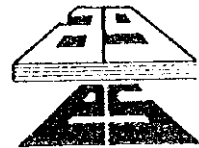
Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
3.70 m	0.93 m	

B. DATA ON FLOW TEST

TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING		TOTAL FLOW	FLOW RATE, Q	TOTAL HEAD, m (H_T)	SECTION LENGTH (m)
5.00	10	10:15	10:20	5	12358.3	12375.0	16.70	3.34	11.67	
5.00	20	10:21	10:26	5	12378.0	12569.0	191.00	38.20	18.70	
5.00	25	10:27	10:37	10	12583.0	13057.3	474.30	47.43	22.22	
5.00	20	10:38	10:43	5	13139.9	13358.3	218.40	43.68	18.70	
5.00	10	10:44	10:49	5	13373.0	13408.8	35.80	7.16	11.67	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= \text{ l / min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{ cm / sec}$ $C_1 = \text{ constant}$ $= 8 \times 10^{-3}$ $Q = \text{ l / min}$ $H_T = \text{ meter}$	$k_1 = 2.3 \times 10^{-3} \text{ cm/sec}$ $k_2 = 1.6 \times 10^{-2} \text{ cm/sec}$ $k_3 = 1.7 \times 10^{-2} \text{ cm/sec}$ $k_4 = 1.9 \times 10^{-2} \text{ cm/sec}$ $k_5 = 4.9 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 1.2 \times 10^{-2} \text{ cm/sec}$

Note:



FIELD PERMEABILITY TEST (CONDITION 1)	LOCATION: Dolores Consolidation Dam
	BORING NO.: 3 DEPTH: 10.00 m DEPTH OF GWT: 3.70 m DATE STARTED: June 26, 1995 DATE FINISHED: June 26, 1995 SHEET NO. 2 of 2
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

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

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

Static Water Level Depth, h_1	Height of Pressure Gauge, h_2	Equivalent Head, h_p (arising from applied pressure) Note: 1 psi = 0.703 m of water
3.70 m	1.00 m	

B. DATA ON FLOW TEST

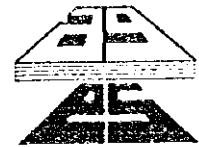
TEST SECTION	PRES. GAUGE READING (psi)	TIME			FLOW (LITERS/MIN)				ORIFICE	
		START OF TEST	END OF TEST	ELAPSED TIME (min)	WATER METER READING				TOTAL HEAD, m (H_t)	SECTION LENGTH (m)
					INITIAL METER	FINAL METER	TOTAL FLOW	FLOW RATE, Q		
10.00	10	2:45	2:50	5	13419.3	13446.7	27.40	5.48	11.74	
10.00	20	2:50	2:55	5	13461.7	13687.1	225.40	45.08	18.77	
10.00	25	2:56	3:06	10	13706.1	14259.1	553.00	55.30	22.29	
10.00	20	3:06	3:11	5	14271.0	14301.8	30.80	6.16	18.77	
10.00	10	3:12	3:17	5	14312.1	14337.1	25.00	5.00	11.74	

FLOW RATE CALCULATIONS	COEFFICIENT OF PERMEABILITY, k	VALUES OF k
Flow Rate, $Q = \frac{\text{total flow}}{\text{elapsed time}}$ $= l / \text{min}$	$k = C_1 \frac{Q}{h_T}$ UNITS: $k = \text{cm / sec}$ $C_1 = \text{constant}$ $= 8 \times 10^{-3}$ $Q = l / \text{min}$ $H_T = \text{meter}$	$k_1 = 3.7 \times 10^{-3} \text{ cm/sec}$ $k_2 = 1.9 \times 10^{-2} \text{ cm/sec}$ $k_3 = 2.0 \times 10^{-2} \text{ cm/sec}$ $k_4 = 2.6 \times 10^{-3} \text{ cm/sec}$ $k_5 = 3.4 \times 10^{-3} \text{ cm/sec}$ $k_{(ave)} = 9.8 \times 10^{-3} \text{ cm/sec}$

Note:

PART IV

***LABORATORY PERMEABILITY
TEST RESULTS***



LABORATORY PERMEABILITY TEST	LOCATION: TM-1 Sabo Dam BORING NO.: 1 DATE DRILLED: July 1, 1995 DATE FINISHED: July 2, 1995 SHEET NO. 1 of 1
PROJECT: GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: **ss-5**
 DEPTH: **4.55 m**
 DATE TESTED: **July 6, 1995**
 TESTED BY: **J. Castro**
 Description of soil: **Sandy GRAVEL (GM)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.75	26	100.0	1800.0	1300.0	0.04	52.63	0.8694	6.1 x 10 ⁻⁴
2	1.65	26	100.0	1800.0	3000.0	0.08	52.63	0.8694	1.4 x 10 ⁻³
3	1.55	26	100.0	1800.0	3550.0	0.10	52.63	0.8694	1.7 x 10 ⁻³
AVERAGE					2616.7	0.07	52.63	0.87	1.2 x 10⁻³

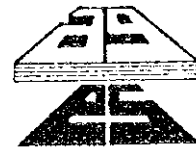
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: **ss-9**
 DEPTH: **9.55 m**
 DATE TESTED: **July 6, 1995**
 TESTED BY: **J. Castro**
 Description of soil: **Sandy SILT (ML)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.65	26	100.0	1800.0	550.0	0.02	52.63	0.8694	2.6 x 10 ⁻⁴
2	1.55	26	100.0	1800.0	600.0	0.02	52.63	0.8694	2.8 x 10 ⁻⁴
3	1.50	26	100.0	1800.0	650.0	0.02	52.63	0.8694	3.0 x 10 ⁻⁴
AVERAGE					600.0	0.02	52.63	0.87	2.8 x 10⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>TM-1 Sabo Dam</u>
	BORING NO.: <u>2</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DATE DRILLED: <u>July 1, 1995</u>
	DATE FINISHED: <u>July 2, 1995</u>
	SHEET NO. <u>1 of 1</u>

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-5
 DEPTH: 4.55 m
 DATE TESTED: July 6, 1995
 TESTED BY: J. Castro
 Description of soil: Gray SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.76	26	100.0	1800.0	2010.0	0.06	52.63	0.8694	9.4 X 10 ⁻⁴
2	1.66	26	100.0	1800.0	2470.0	0.07	52.63	0.8694	1.2 X 10 ⁻³
3	1.60	26	100.0	1800.0	3600.0	0.10	52.63	0.8694	1.7 X 10 ⁻³
AVERAGE					2693.3	0.08	52.63	0.87	1.3 X 10 ⁻³

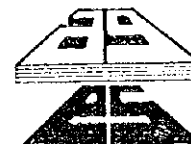
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.55 m
 DATE TESTED: July 6, 1995
 TESTED BY: J. Castro
 Description of soil: Brown SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.70	26	100.0	1800.0	2510.0	0.07	52.63	0.8694	1.2 X 10 ⁻³
2	1.65	26	100.0	1800.0	3710.0	0.10	52.63	0.8694	1.7 X 10 ⁻³
3	1.60	26	100.0	1800.0	8550.0	0.24	52.63	0.8694	4.0 X 10 ⁻³
AVERAGE					4923.3	0.14	52.63	0.87	2.3 X 10 ⁻³



LABORATORY PERMEABILITY TEST	LOCATION: TM-1 Sabo Dam
	BORING NO.: 3 DATE DRILLED: July 3, 1995 DATE FINISHED: July 4, 1995 SHEET NO. 1 of 1
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: **ss-6**
DEPTH: **5.55 m**
DATE TESTED: **July 6, 1995**
TESTED BY: **J. Castro**
Description of soil: **Gravelly SAND (SM)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.80	26	100.0	1800.0	900.0	0.03	52.63	0.8694	4.2 x 10 ⁻⁴
2	1.75	26	100.0	1800.0	1620.0	0.05	52.63	0.8694	7.6 x 10 ⁻⁴
3	1.65	26	100.0	1800.0	2850.0	0.08	52.63	0.8694	1.3 x 10 ⁻³
AVERAGE					1790.0	0.05	52.63	0.87	8.4 x 10⁻⁴

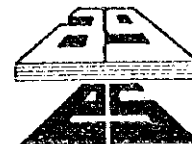
a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: **ss-9**
DEPTH: **9.55 m**
DATE TESTED: **July 6, 1995**
TESTED BY: **J. Castro**
Description of soil: **Gravelly SAND (SM)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.75	26	100.0	1800.0	1930.0	0.05	52.63	0.8694	9.0 x 10 ⁻⁴
2	1.70	26	100.0	1800.0	3200.0	0.09	52.63	0.8694	1.5 x 10 ⁻³
3	1.65	26	100.0	1800.0	6200.0	0.18	52.63	0.8694	2.9 x 10 ⁻³
AVERAGE					3776.7	0.11	52.63	0.87	1.8 x 10⁻³



LABORATORY PERMEABILITY TEST	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DATE DRILLED: <u>June 29, 1995</u>
	DATE FINISHED: <u>June 30, 1995</u>
	SHEET NO. <u>1 of 1</u>

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-4
 DEPTH: 5.55 m
 DATE TESTED: July 3, 1995
 TESTED BY: J. Castro
 Description of soil: Gray SAND (SP)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.95	26	100.0	1800.0	1940.0	0.05	52.63	0.8694	9.1 x 10 ⁻⁴
2	1.90	26	100.0	1800.0	1950.0	0.06	52.63	0.8694	9.1 x 10 ⁻⁴
3	1.85	26	100.0	1800.0	2000.0	0.06	52.63	0.8694	9.3 x 10 ⁻⁴
AVERAGE					1963.3	0.06	52.63	0.87	9.2 x 10 ⁻⁴

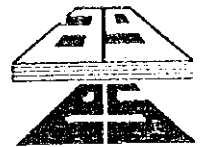
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-8
 DEPTH: 9.55 m
 DATE TESTED: July 3, 1995
 TESTED BY: J. Castro
 Description of soil: Gravelly SAND (SP)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.95	26	100.0	1800.0	3720.0	0.11	52.63	0.8694	1.7 x 10 ⁻³
2	1.88	26	100.0	1800.0	3870.0	0.11	52.63	0.8694	1.8 x 10 ⁻³
3	1.80	26	100.0	1800.0	4950.0	0.14	52.63	0.8694	2.3 x 10 ⁻³
AVERAGE					4180.0	0.12	52.63	0.87	2.0 x 10 ⁻³



LABORATORY PERMEABILITY TEST	LOCATION: Sabo Dam #6 BORING NO.: 2 DATE DRILLED: June 28, 1995 DATE FINISHED: June 29, 1995 SHEET NO. 1 of 1
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: **ss-6**
 DEPTH: **5.55 m**
 DATE TESTED: **July 3, 1995**
 TESTED BY: **J. Castro**
 Description of soil: **Gray SAND (SP)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.95	26	100.0	1800.0	5850.0	0.17	52.63	0.8694	2.7 X 10 ⁻³
2	1.90	26	100.0	1800.0	10000.0	0.28	52.63	0.8694	4.7 X 10 ⁻³
3	1.80	26	100.0	1800.0	16750.0	0.47	52.63	0.8694	7.8 X 10 ⁻³
AVERAGE					10866.7	0.31	52.63	0.87	5.1 X 10⁻³

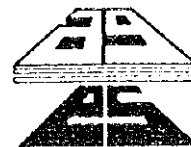
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: **ss-9**
 DEPTH: **9.55 m**
 DATE TESTED: **July 3, 1995**
 TESTED BY: **J. Castro**
 Description of soil: **Gray SAND (SP)**

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.90	26	100.0	1800.0	3180.0	0.09	52.63	0.8694	1.5 X 10 ⁻³
2	1.80	26	100.0	1800.0	4460.0	0.13	52.63	0.8694	2.1 X 10 ⁻³
3	1.70	26	100.0	1800.0	6570.0	0.19	52.63	0.8694	3.1 X 10 ⁻³
AVERAGE					4736.7	0.13	52.63	0.87	2.2 X 10⁻³



LABORATORY PERMEABILITY TEST	LOCATION: <u>Sabo Dam #6</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DATE DRILLED: <u>June 29, 1995</u>
	DATE FINISHED: <u>June 30, 1995</u>
	SHEET NO. <u>1 of 1</u>

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-3
 DEPTH: 4.55 m
 DATE TESTED: July 3, 1995
 TESTED BY: J. Castro
 Description of soil: Sandy GRAVEL (GW)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	2.15	26	100.0	1800.0	3550.0	0.10	52.63	0.8694	1.7 X 10 ⁻³
2	2.00	26	100.0	1800.0	5000.0	0.14	52.63	0.8694	2.3 X 10 ⁻³
3	1.92	28	100.0	1800.0	9300.0	0.26	52.63	0.8694	4.3 X 10 ⁻³
AVERAGE					5950.0	0.17	52.63	0.87	2.8 X 10 ⁻³

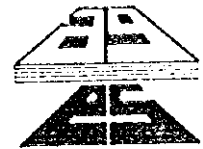
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-8
 DEPTH: 9.55 m
 DATE TESTED: July 3, 1995
 TESTED BY: J. Castro
 Description of soil: Gray SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.85	26	100.0	1800.0	1620.0	0.05	52.63	0.8694	7.6 X 10 ⁻⁴
2	1.75	26	100.0	1800.0	1850.0	0.05	52.63	0.8694	8.6 X 10 ⁻⁴
3	1.70	26	100.0	1800.0	2000.0	0.06	52.63	0.8694	9.3 X 10 ⁻⁴
AVERAGE					1823.3	0.05	52.63	0.87	8.5 X 10 ⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Sabo Dam #9</u> BORING NO.: <u>1</u> DATE DRILLED: <u>June 8, 1995</u> DATE FINISHED: <u>June 9, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-6
 DEPTH: 5.55 m
 DATE TESTED: June 14, 1995
 TESTED BY: J. Castro
 Description of soil: Gray silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.80	26	100.0	1800.0	600.0	0.02	52.63	0.8694	2.8 x 10 ⁻⁴
2	1.70	26	100.0	1800.0	590.0	0.02	52.63	0.8694	2.8 x 10 ⁻⁴
3	1.60	26	100.0	1800.0	880.0	0.02	52.63	0.8694	4.1 x 10 ⁻⁴
AVERAGE					690.0	0.02	52.63	0.87	3.2 x 10 ⁻⁴

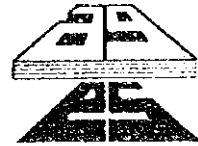
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.55 m
 DATE TESTED: June 14, 1995
 TESTED BY: J. Castro
 Description of soil: Gray silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.80	27	100.0	1800.0	201.0	0.01	52.63	0.8502	9.2 x 10 ⁻⁵
2	1.70	27	100.0	1800.0	760.0	0.02	52.63	0.8502	3.5 x 10 ⁻⁴
3	1.60	27	100.0	1800.0	440.0	0.01	52.63	0.8502	2.0 x 10 ⁻⁴
AVERAGE					467.0	0.01	52.63	0.85	2.1 x 10 ⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Sabo Dam #9</u> BORING NO.: <u>2</u> DATE DRILLED: <u>June 10, 1995</u> DATE FINISHED: <u>June 13, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-5
 DEPTH: 4.65 m
 DATE TESTED: June 17, 1995
 TESTED BY: J. Castro
 Description of soil: Gray silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.85	26	100.0	1800.0	650.0	0.02	52.63	0.8694	3.0 X 10 ⁻⁴
2	1.75	26	100.0	1800.0	670.0	0.02	52.63	0.8694	3.1 X 10 ⁻⁴
3	1.70	26	100.0	1800.0	680.0	0.02	52.63	0.8694	3.2 X 10 ⁻⁴
AVERAGE					666.7	0.02	52.63	0.87	3.1 X 10⁻⁴

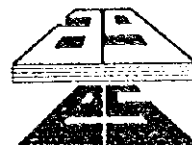
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.65 m
 DATE TESTED: June 17, 1995
 TESTED BY: J. Castro
 Description of soil: Brown silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.60	26	100.0	1800.0	460.0	0.01	52.63	0.8694	2.2 X 10 ⁻⁴
2	1.55	26	100.0	1800.0	640.0	0.02	52.63	0.8694	3.0 X 10 ⁻⁴
3	1.45	26	100.0	1800.0	640.0	0.02	52.63	0.8694	3.0 X 10 ⁻⁴
AVERAGE					580.0	0.02	52.63	0.87	2.7 X 10⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Sabo Dam #9</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DATE DRILLED: <u>June 14, 1995</u>
	DATE FINISHED: <u>June 15, 1995</u>
	SHEET NO. <u>1 of 1</u>

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-5
 DEPTH: 4.55 m
 DATE TESTED: June 17, 1995
 TESTED BY: J. Castro
 Description of soil: Brown silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.70	26	100.0	1800.0	530.0	0.01	52.63	0.8694	2.5 X 10 ⁻⁴
2	1.65	26	100.0	1800.0	670.0	0.02	52.63	0.8694	3.1 X 10 ⁻⁴
3	1.60	26	100.0	1800.0	750.0	0.02	52.63	0.8694	3.5 X 10 ⁻⁴
AVERAGE					650.0	0.02	52.63	0.87	3.0 X 10 ⁻⁴

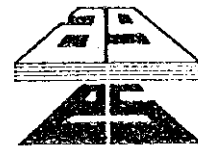
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.55 m
 DATE TESTED: June 17, 1995
 TESTED BY: J. Castro
 Description of soil: Brown silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.70	26	100.0	1800.0	680.0	0.02	52.63	0.8694	3.2 X 10 ⁻⁴
2	1.65	26	100.0	1800.0	920.0	0.03	52.63	0.8694	4.3 X 10 ⁻⁴
3	1.60	26	100.0	1800.0	1370.0	0.04	52.63	0.8694	6.4 X 10 ⁻⁴
AVERAGE					990.0	0.03	52.63	0.87	4.6 X 10 ⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>1</u> DATE DRILLED: <u>June 17, 1995</u> DATE FINISHED: <u>June 19, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-6
DEPTH: 5.55 m
DATE TESTED: June 26, 1995
TESTED BY: J. Castro
Description of soil: Gray SAND (SW-SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.80	26	100.0	1800.0	900.0	0.03	52.63	0.8694	4.2 X 10 ⁻⁴
2	1.70	26	100.0	1800.0	910.0	0.03	52.63	0.8694	4.3 X 10 ⁻⁴
3	1.60	26	100.0	1800.0	1200.0	0.03	52.63	0.8694	5.6 X 10 ⁻⁴
AVERAGE					1003.3	0.03	52.63	0.87	4.7 X 10⁻⁴

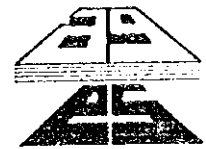
a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-9
DEPTH: 9.55 m
DATE TESTED: June 26, 1995
TESTED BY: J. Castro
Description of soil: Gray SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.65	26	100.0	1800.0	1600.0	0.05	52.63	0.8694	7.5 X 10 ⁻⁴
2	1.60	26	100.0	1800.0	1790.0	0.05	52.63	0.8694	8.4 X 10 ⁻⁴
3	1.50	26	100.0	1800.0	1900.0	0.05	52.63	0.8694	8.9 X 10 ⁻⁴
AVERAGE					1763.3	0.05	52.63	0.87	8.2 X 10⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Maskup Consolidation Dam</u> BORING NO.: <u>2</u> DATE DRILLED: <u>June 20, 1995</u> DATE FINISHED: <u>June 21, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-5
 DEPTH: 5.55 m
 DATE TESTED: June 26, 1995
 TESTED BY: J. Castro
 Description of soil: Brown SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.79	26	100.0	1800.0	680.0	0.02	52.63	0.8694	3.2 X 10 ⁻⁴
2	1.69	26	100.0	1800.0	700.0	0.02	52.63	0.8694	3.3 X 10 ⁻⁴
3	1.60	26	100.0	1800.0	810.0	0.02	52.63	0.8694	3.8 X 10 ⁻⁴
AVERAGE					730.0	0.02	52.63	0.87	3.4 X 10 ⁻⁴

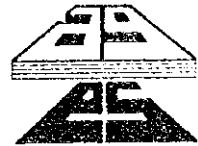
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-8
 DEPTH: 8.55 m
 DATE TESTED: June 26, 1995
 TESTED BY: J. Castro
 Description of soil: Brown clayey SAND (SC)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.57	26	100.0	1800.0	450.0	0.01	52.63	0.8694	2.1 X 10 ⁻⁴
2	1.50	26	100.0	1800.0	695.0	0.02	52.63	0.8694	3.2 X 10 ⁻⁴
3	1.45	26	100.0	1800.0	730.0	0.02	52.63	0.8694	3.4 X 10 ⁻⁴
AVERAGE					625.0	0.02	52.63	0.87	2.9 X 10 ⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Maskup Consolidation Dam</u>
	BORING NO.: <u>3</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	DATE DRILLED: <u>June 19, 1995</u>
	DATE FINISHED: <u>June 21, 1995</u>
	SHEET NO. <u>1 of 1</u>

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-5
 DEPTH: 4.55 m
 DATE TESTED: June 26, 1995
 TESTED BY: J. Castro
 Description of soil: Brown SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.73	26	100.0	1800.0	650.0	0.02	52.63	0.8694	2.6 X 10 ⁻⁴
2	1.63	26	100.0	1800.0	1000.0	0.03	52.63	0.8694	4.7 X 10 ⁻⁴
3	1.53	26	100.0	1800.0	1340.0	0.04	52.63	0.8694	6.3 X 10 ⁻⁴
AVERAGE					963.3	0.03	52.63	0.87	4.5 X 10 ⁻⁴

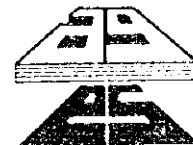
a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.55 m
 DATE TESTED: June 26, 1995
 TESTED BY: J. Castro
 Description of soil: Brown SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/AI	h/L	Viscosity correction	k, cm/s
1	1.79	26	100.0	1800.0	470.0	0.01	52.63	0.8694	2.2 x 10 ⁻⁴
2	1.69	26	100.0	1800.0	530.0	0.01	52.63	0.8694	2.5 x 10 ⁻⁴
3	1.60	26	100.0	1800.0	570.0	0.02	52.63	0.8694	2.7 x 10 ⁻⁴
AVERAGE					523.3	0.01	52.63	0.87	2.4 x 10 ⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>1</u> DATE DRILLED: <u>June 22, 1995</u> DATE FINISHED: <u>June 23, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-5
DEPTH: 4.55 m
DATE TESTED: June 28, 1995
TESTED BY: J. Castro
Description of soil: Gray SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.68	26	100.0	1800.0	720.0	0.02	52.63	0.8694	3.4 X 10 ⁻⁴
2	1.58	26	100.0	1800.0	750.0	0.02	52.63	0.8694	3.5 X 10 ⁻⁴
3	1.50	26	100.0	1800.0	850.0	0.02	52.63	0.8694	4.0 X 10 ⁻⁴
AVERAGE					773.3	0.02	52.63	0.87	3.6 X 10⁻⁴

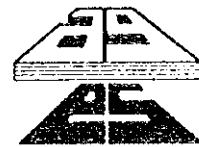
a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-9
DEPTH: 9.55 m
DATE TESTED: June 28, 1995
TESTED BY: J. Castro
Description of soil: Gray SAND (SW)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.85	26	100.0	1800.0	840.0	0.02	52.63	0.8694	3.9 X 10 ⁻⁴
2	1.74	26	100.0	1800.0	1380.0	0.04	52.63	0.8694	6.5 X 10 ⁻⁴
3	1.65	26	100.0	1800.0	1510.0	0.04	52.63	0.8694	7.1 X 10 ⁻⁴
AVERAGE					1243.3	0.04	52.63	0.87	5.8 X 10⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Dolores Consolidation Dam</u>
	BORING NO.: <u>2</u> DATE DRILLED: <u>June 22, 1995</u> DATE FINISHED: <u>June 23, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-6
DEPTH: 5.55 m
DATE TESTED: June 28, 1995
TESTED BY: J. Castro
Description of soil: Gray silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.72	26	100.0	1800.0	550.0	0.02	52.63	0.8694	2.6 X 10 ⁻⁴
2	1.62	26	100.0	1800.0	640.0	0.02	52.63	0.8694	3.0 X 10 ⁻⁴
3	1.52	26	100.0	1800.0	650.0	0.02	52.63	0.8694	3.0 X 10 ⁻⁴
AVERAGE					613.3	0.02	52.63	0.87	2.9 X 10⁻⁴

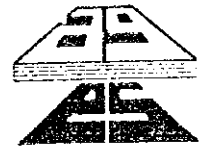
a) Sample Data

Diameter, D, = 5.00 cm
Area, A, = 19.63
Length, L, = 1.90

SAMPLE NO.: ss-9
DEPTH: 9.55 m
DATE TESTED: June 28, 1995
TESTED BY: J. Castro
Description of soil: Gray SAND (SP)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.95	26	100.0	1800.0	1380.0	0.04	52.63	0.8694	6.5 X 10 ⁻⁴
2	1.88	26	100.0	1800.0	1400.0	0.04	52.63	0.8694	6.5 X 10 ⁻⁴
3	1.80	26	100.0	1800.0	1950.0	0.06	52.63	0.8694	9.1 X 10 ⁻⁴
AVERAGE					1576.7	0.04	52.63	0.87	7.4 X 10⁻⁴



LABORATORY PERMEABILITY TEST	LOCATION: <u>Dolores Consolidation Dam</u> BORING NO.: <u>3</u> DATE DRILLED: <u>June 24, 1995</u> DATE FINISHED: <u>June 26, 1995</u> SHEET NO. <u>1 of 1</u>
PROJECT : GEOMECHANICAL SURVEY FOR THE MT. PINATUBO PROJECT	

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-6
 DEPTH: 5.55 m
 DATE TESTED: June 28, 1995
 TESTED BY: J. Castro
 Description of soil: Brown SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.70	26	100.0	1800.0	1860.0	0.05	52.63	0.8694	8.7 X 10 ⁻⁴
2	1.63	26	100.0	1800.0	1880.0	0.05	52.63	0.8694	8.8 X 10 ⁻⁴
3	1.53	26	100.0	1800.0	1940.0	0.05	52.63	0.8694	9.1 X 10 ⁻⁴
AVERAGE					1893.3	0.05	52.63	0.87	8.9 X 10 ⁻⁴

a) Sample Data

Diameter, D, = 5.00 cm
 Area, A, = 19.63
 Length, L, = 1.90

SAMPLE NO.: ss-9
 DEPTH: 9.55 m
 DATE TESTED: June 28, 1995
 TESTED BY: J. Castro
 Description of soil: Brown silty SAND (SM)

b) Permeability Test Data

Trial No.	Dry Density, g/cc	Temp. @ °C	Head, h, cm	Elapsed Time, t sec	Q, cm ³	Q/At	h/L	Viscosity correction	k, cm/s
1	1.79	26	100.0	1800.0	460.0	0.01	52.63	0.8694	2.2 x 10 ⁻⁴
2	1.65	26	100.0	1800.0	570.0	0.02	52.63	0.8694	2.7 x 10 ⁻⁴
3	1.59	26	100.0	1800.0	740.0	0.02	52.63	0.8694	3.5 x 10 ⁻⁴
AVERAGE					590.0	0.02	52.63	0.87	2.8 x 10 ⁻⁴

PART V

DIRECT SHEAR TEST RESULTS

DIRECT SHEAR TEST RESULTS

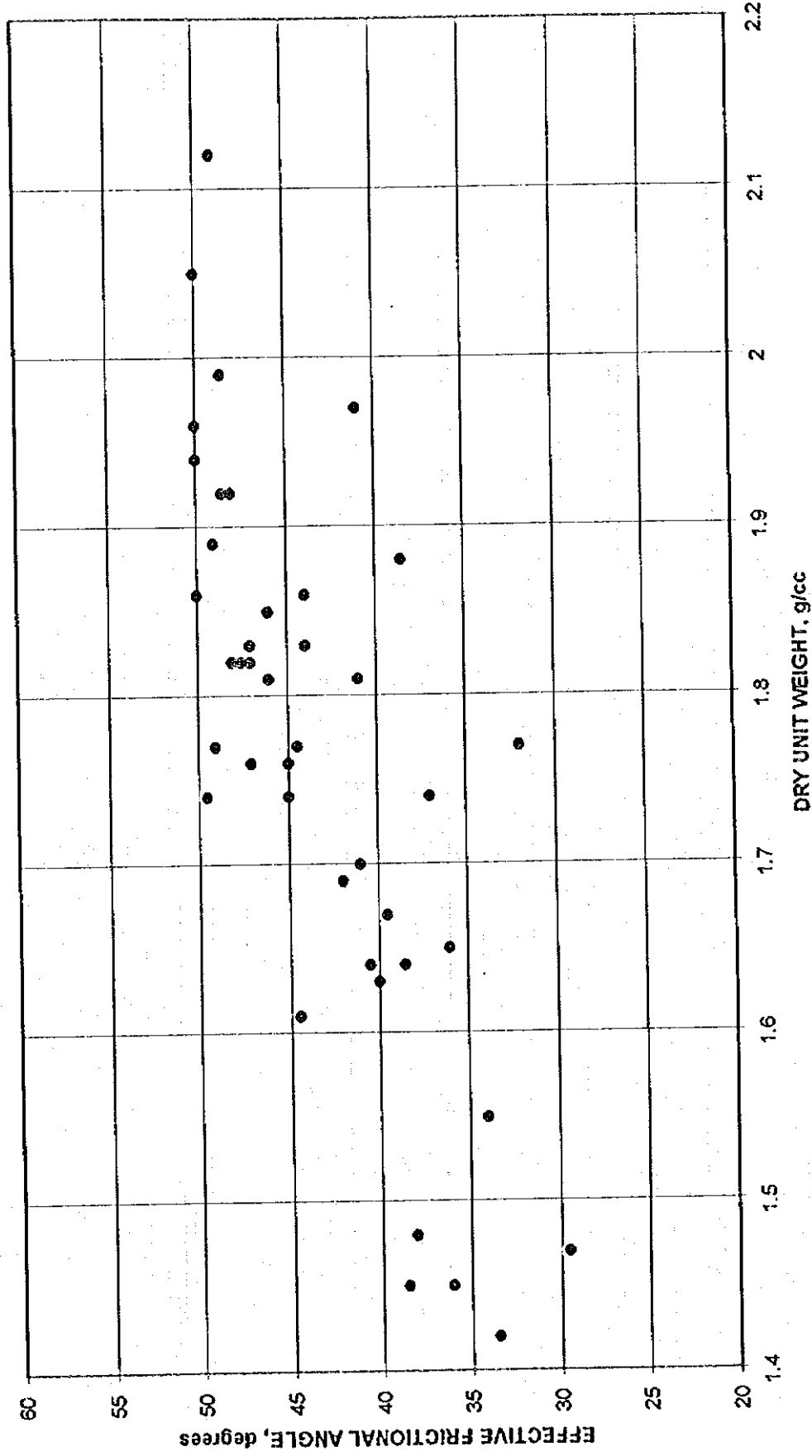


CHART E.1 - Direct Shear Test

COMPACTION TEST

Project PINATUBO Job No. DEPTH : 5.00 M.
 Location of Project TM-1 SABO DAM Boring No. 1 Sample No. -
 Description of Soil _____
 Test Performed By C.A.M. Date of Test 07-03-95
 Blows/Layer 50 No. of Layers 2 Wt. of Hammer 349 g
 Mold dimensions: Diam. 6 X 6 cm. Ht. 2 cm. Vol. 72 cu.cm.

DATE RECEIVED :
DATE RELEASED : 07 JUL 1995

Water Content Determination

Sample no	1	2	3	4	5	6
Moisture can no.						
Wt. of can + wet soil						
Wt. of can + dry soil						
Wt. of water						
Wt. of can						
Wt. of dry soil						
Water content, w %						

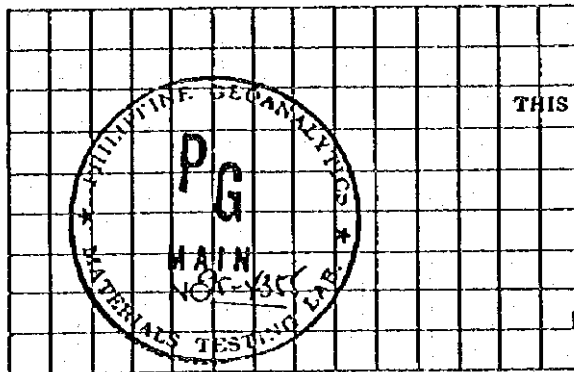
COMPUTER
PRINT-OUT
MANUAL
COMPARISON
BY: ACTM
QUALITY ASSURANCE
CHKD BY: 2

Density Determination

MAXIMUM DENSITY

Assumed water content	-	-	-	-	-	-
Water content, w %	-	-	-	-	-	-
Wt. of soil + mold	2,645	2,647	2,643	-	-	-
Wt. of mold	2,514	2,514	2,514	-	-	-
Wt. of soil in mold	131	133	129	-	-	-
Wet density, g/cc	1.819	1.847	1.792	-	-	-
Dry density γ , g/cc	Average = 1.819			-	-	-

Emilio M. Morales
EMILIO M. MORALES
CIVIL ENGINEER
REG. NO. 12394
SENIOR-TECHNICAL MANAGER

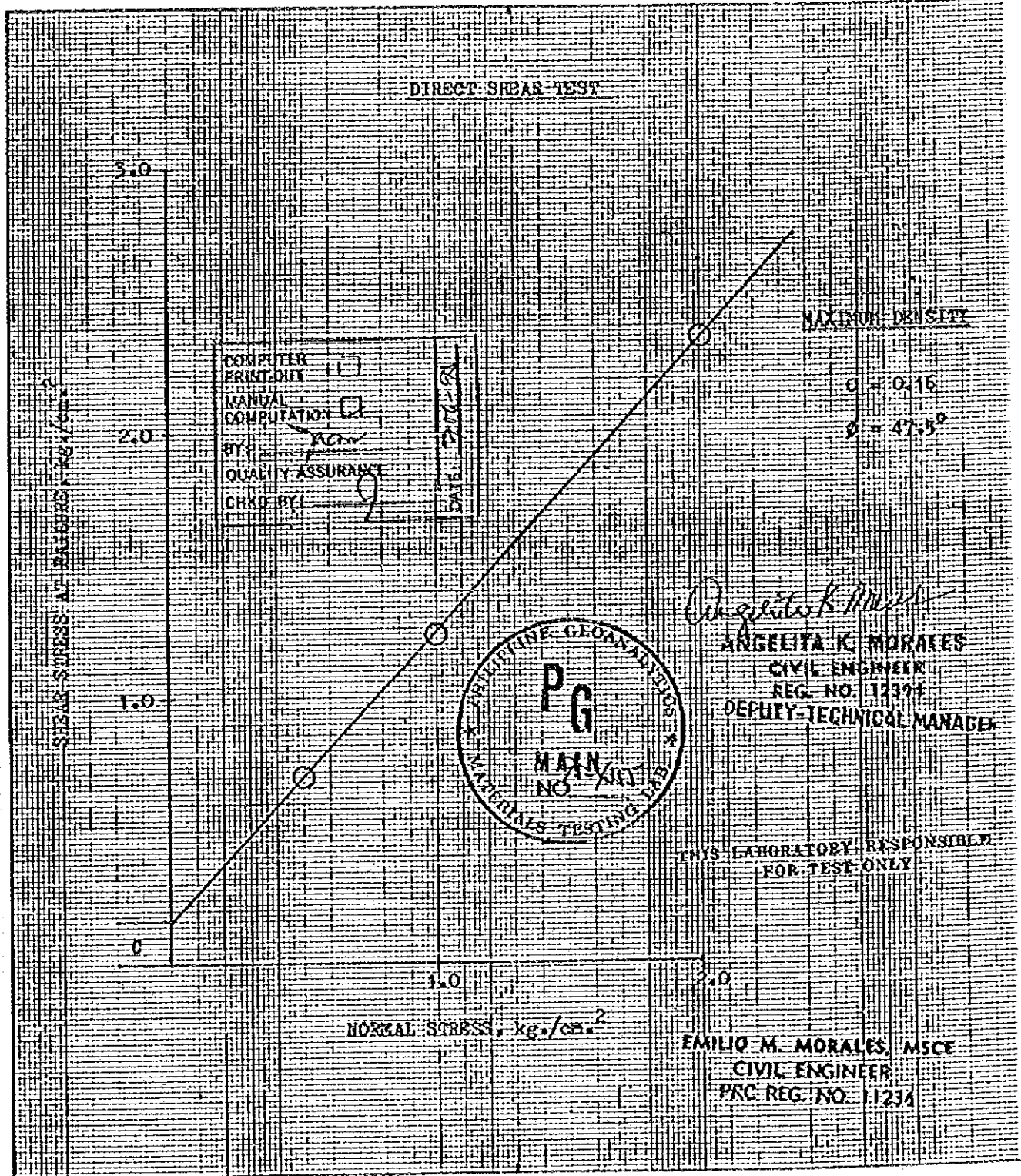


THIS LABORATORY RESPONSIBLE FOR TEST ONLY

EMILIO M. MORALES, M.Sc.
CIVIL ENGINEER
PRC REG. NO. 11234

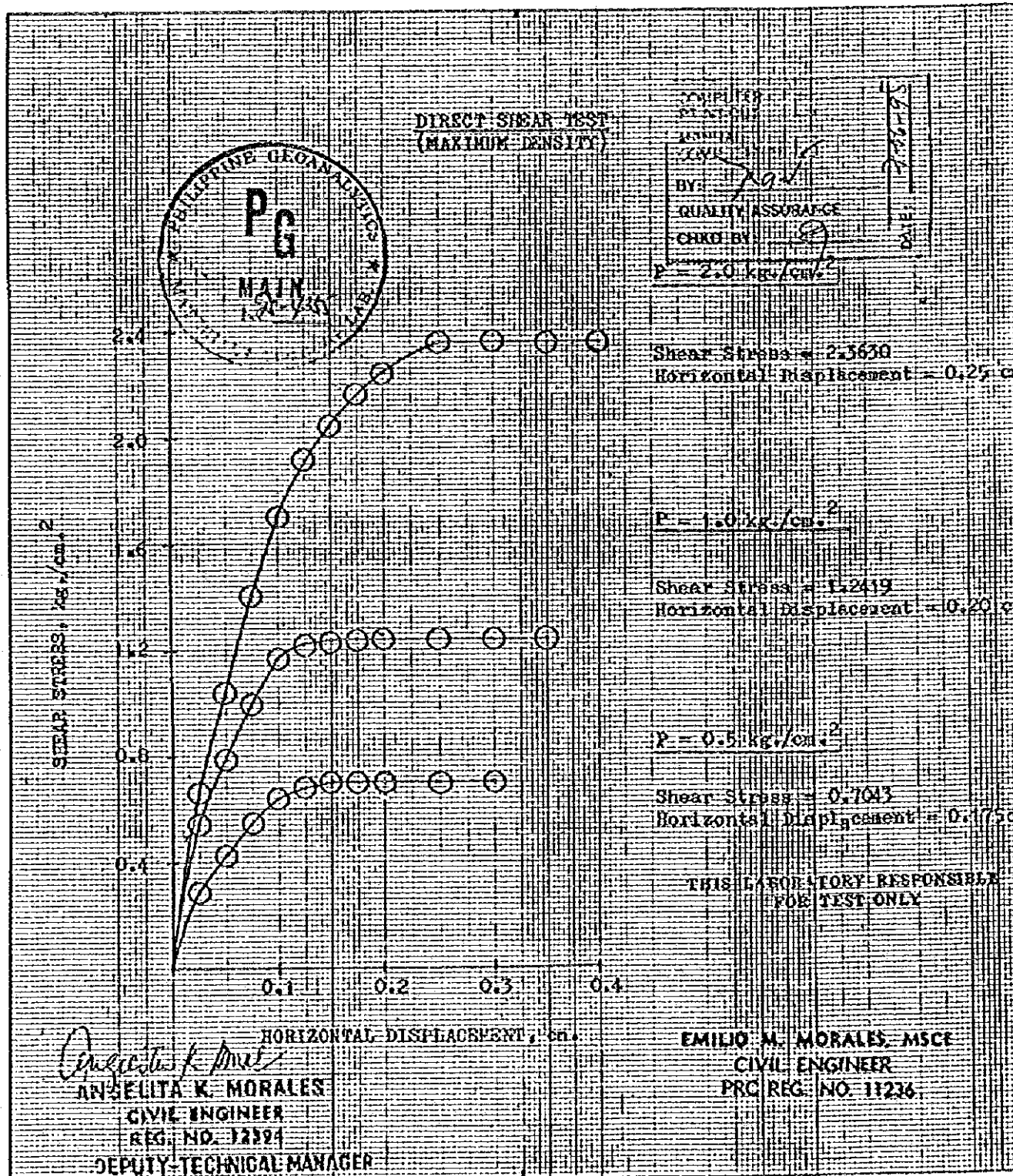
Water content, w % _____
Optimum moisture = _____ % Maximum dry density = _____ g/cc

PHILIPPINE GEOANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/> DETAILS PREPARED <input type="checkbox"/>	SHEET 2 OF 3
PROJECT: PINATUBO		JOB NO:	CROSS REFERENCE:
LOCATION: TM-1 SABO DAM		TESTED BY: CAM	CHECKED BY: JEV
SAMPLE: BH-1	DEPTH: 5.00 M,	DATE TESTED: 07-03-95	DATE FINISHED: 07-03-95



TKN - 101 878 87
 TAP - 25 888 88

PHILIPPINE GEOANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET <u>3</u> OF <u>3</u>
PROJECT: PINATUBO		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION: TM-1 SABO DAM		JOB NO.:	CHECKED BY: JBV
SAMPLE: BH-1 DEPTH: 5.00 M.		TESTED BY: CAM	DATE FINISHED: 07-03-95
		DATE TESTED: 07-03-95	



COMPACTION TEST

Page 1 of 3 pages
DEPTH : 10.00 M.

Project PINATUBO Job No. _____
 Location of Project TM-1 SABO DAM Boring No. 1 Sample No. _____
 Description of Soil _____ Date of Test 07-03-95
 Test Performed By C.A.M. Blows/Layer 50 No. of Layers 2 Wt. of Hammer 349 g.
 Mold dimensions: Diam. 6 X 6 cm. Ht. 2 cm. Vol. 72 cu.cm.

DATE RECEIVED : 07 JUL 1995
DATE RELEASED : _____

Water Content Determination

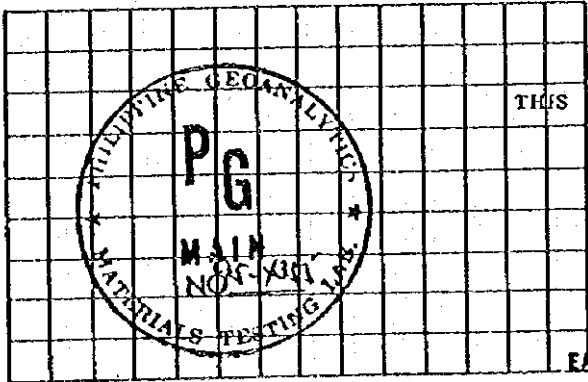
Sample no	1	2	3	4	5	6
Moisture can no.						
Wt. of can + wet soil						
Wt. of can + dry soil						
Wt. of water						
Wt. of can						
Wt. of dry soil						
Water content, w%						

COMPUTER PRINT-OUT
 MANUAL COMPARISON
 BY: [Signature]
 QUALITY ASSURANCE
 CHKD BY: [Signature]
 DATE: 7-3-95

MAXIMUM DENSITY

Density Determination	1	2	3	4	5	6
Assumed water content	--	--	--	--	--	--
Water content, w%	--	--	--	--	--	--
Wt. of soil + mold	2,639	2,642	2,640	--	--	--
Wt. of mold	2,514	2,514	2,514	--	--	--
Wt. of soil in mold	125	128	126	--	--	--
Wet density, g/cc	1.736	1.778	1.750	--	--	--
Dry density γ , g/cc	Average = 1.755			--	--	--

Indelita K. Morales
INDELITA K. MORALES
 CIVIL ENGINEER
 REG. NO. 12391
 DEPUTY-TECHNICAL MANAGER

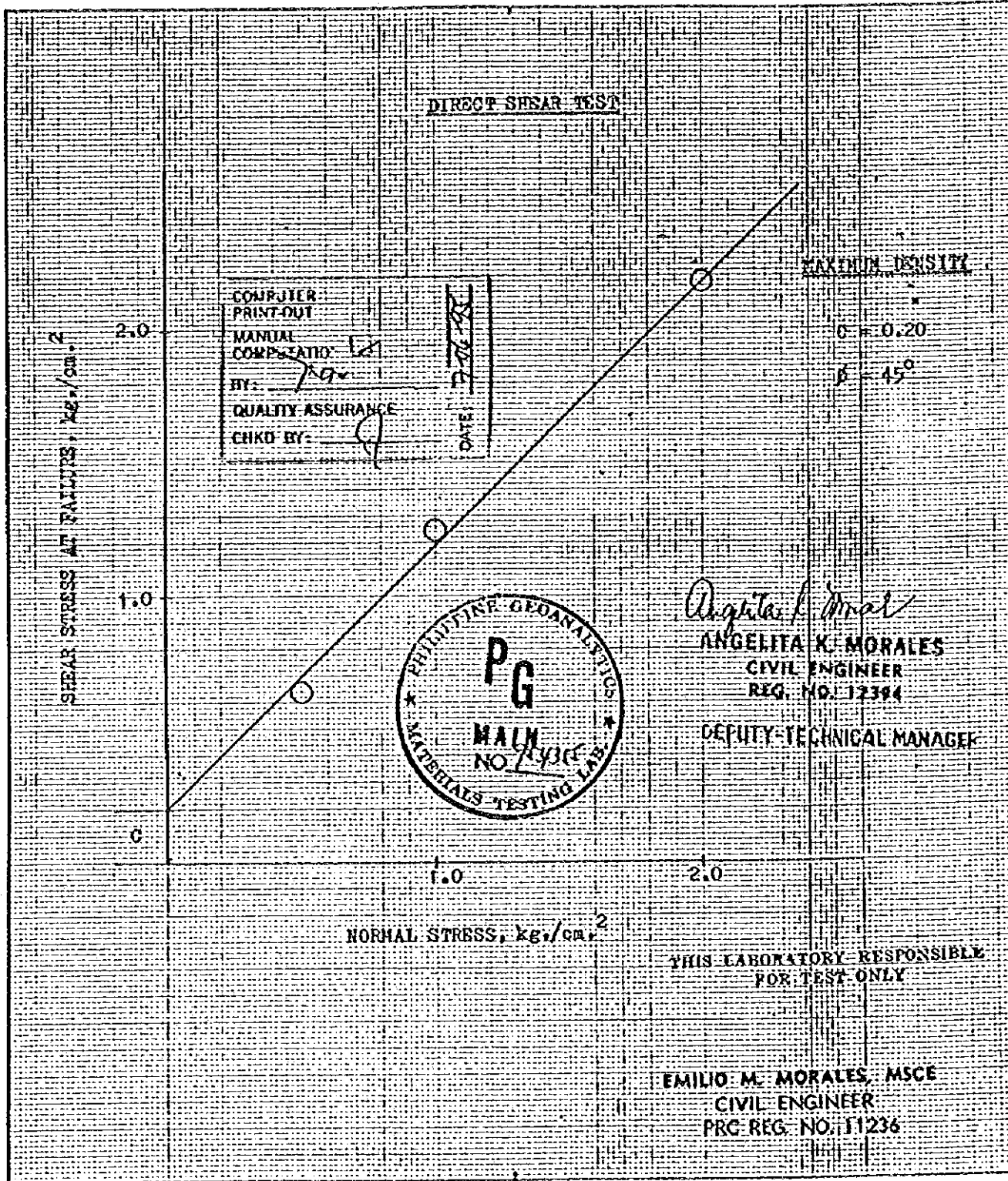


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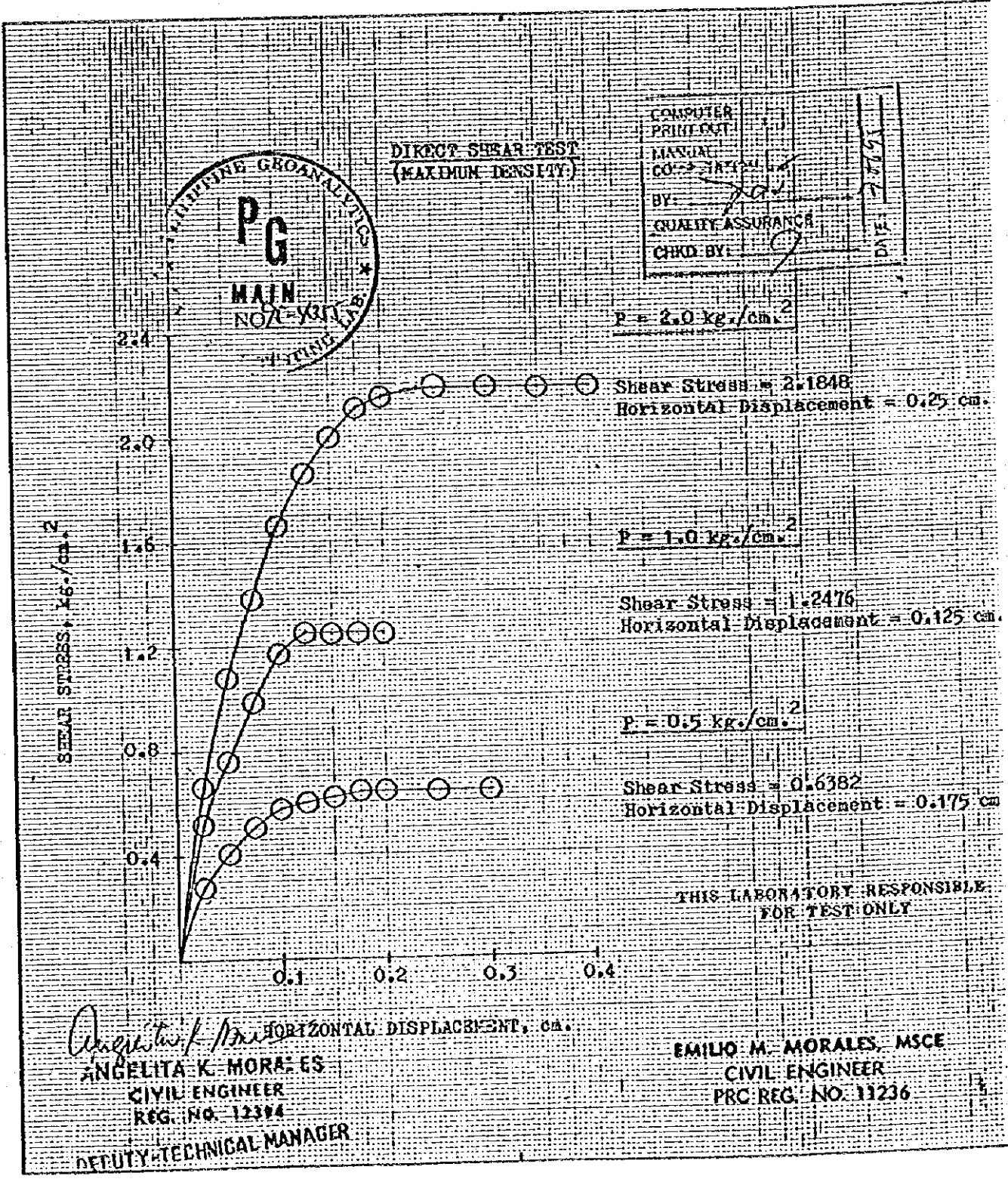
EMILIO M. MORALES, MSCE
 CIVIL ENGINEER
 PRC REG. NO. 11236

Optimum moisture = _____ % Maximum dry density = _____ g/cc

PHILIPPINE GEOANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET <u>2</u> of <u>3</u>
PROJECT: PINATUBO.		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION: TM-1 SABO DAM		JOB NO:	CHECKED BY: JBV
SAMPLE: BH-1 DEPTH: 10.00 M.		TESTED BY: CAM	DATE FINISHED: 07-03-95
		DATE TESTED: 07-03-95	



PHILIPPINE GEOTECHNICAL ANALYTICS PROJECT: PINATUBO. LOCATION: TN-1 SABO DAM SAMPLE: BH-1 DEPTH: 10.00 M.	COMPUTER PRINTOUT <input type="checkbox"/>	SHEET 3 of 3
	DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
	JOB NO:	CHECKED BY: JSV
	TESTED BY: CAM	DATE FINISHED: 07-03-95
	DATE TESTED: 07-03-95	



COMPACTION TEST
PINATUBO

Page 1 of 3 pages
DEPTH : 5.00 M.

Project TM-1 SABO DAM Job No. 2
 Location of Project TM-1 SABO DAM Boring No. 2 Sample No. -
 Description of Soil C.A.M. Date of Test 07-03-95
 Test Performed By 50 No. of Layers 2 Wt. of Hammer 349 g.
 Blows/Layer 6 X 6 cm. Hi. 2 cm. Vol. 72 cu.cm.

DATE RECEIVED :
DATE RELEASED : 07 JUL 1995

Water Content Determination

Sample no.	1	2	3	4	5	6
Moisture can no.						
Wt. of can + wet soil						
Wt. of can + dry soil						
Wt. of water						
Wt. of can						
Wt. of dry soil						
Water content, w%						

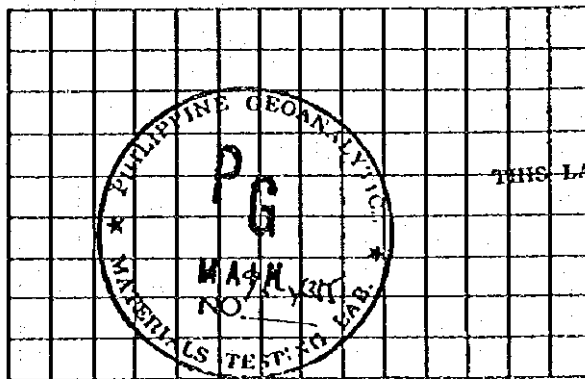
COMPUTER
PRINT-OUT
MANUAL
COMPILED
BY: hgw
QUALITY ASSURANCE
CHECK BY: [Signature]
DATE: 7/06/95

Density Determination

MAXIMUM DENSITY

	1	2	3	4	5	6
Assumed water content	-	-	-	-	-	-
Water content, w%	-	-	-	-	-	-
Wt. of soil + mold	2,646	2,644	2,642	-	-	-
Wt. of mold	2,514	2,514	2,514	-	-	-
Wt. of soil in mold	132	130	128	-	-	-
Wet density, g/cc	1.833	1.806	1.778	-	-	-
Dry density γ , g/cc	Average = 1.806			-	-	-

Gelita K. Mora
GELITA K. MORA
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REG. NO. 12394
DEPUTY-TECHNICAL MANAGER

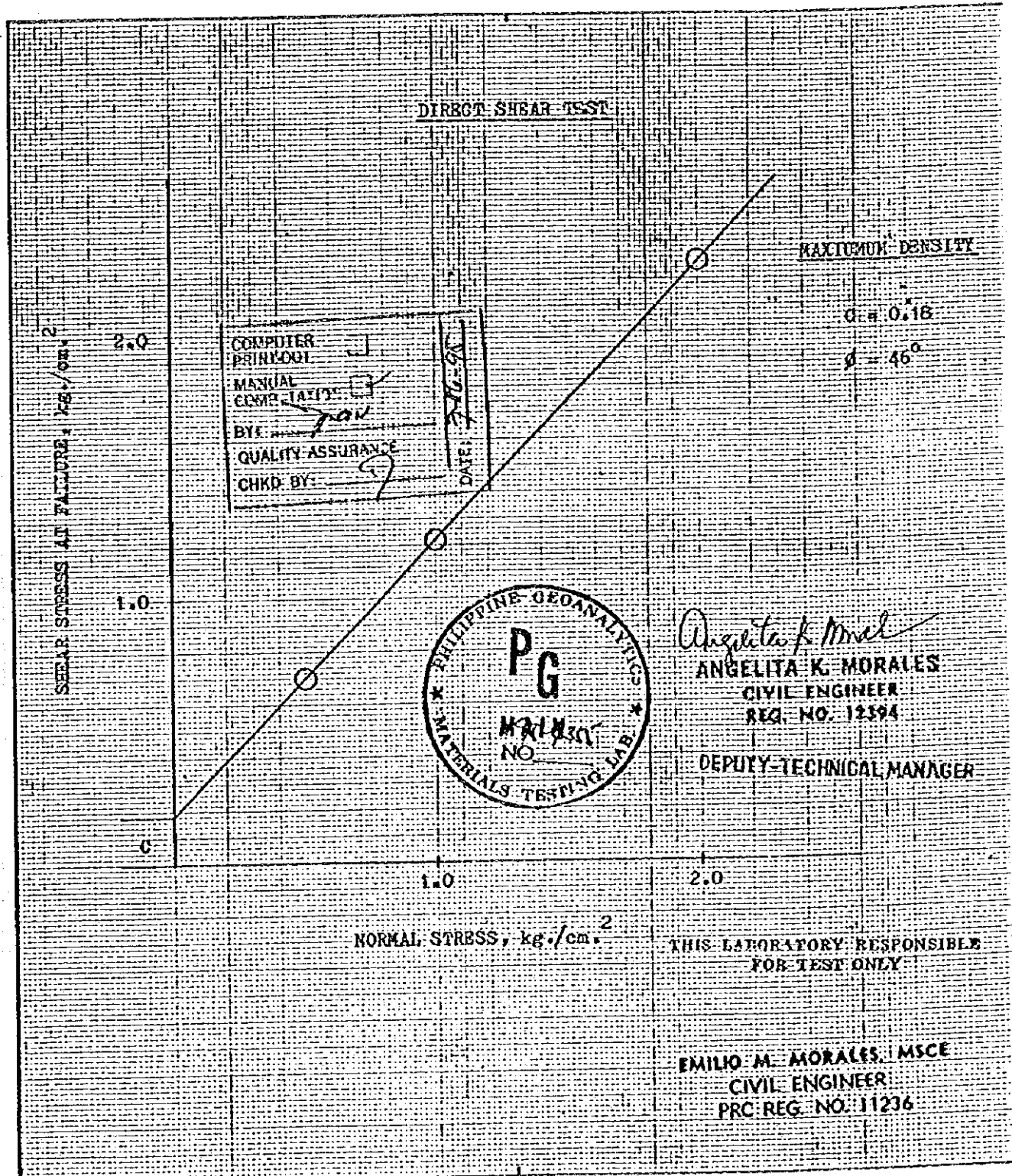


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CIVIL ENGINEER
PRC REG. NO. 11236

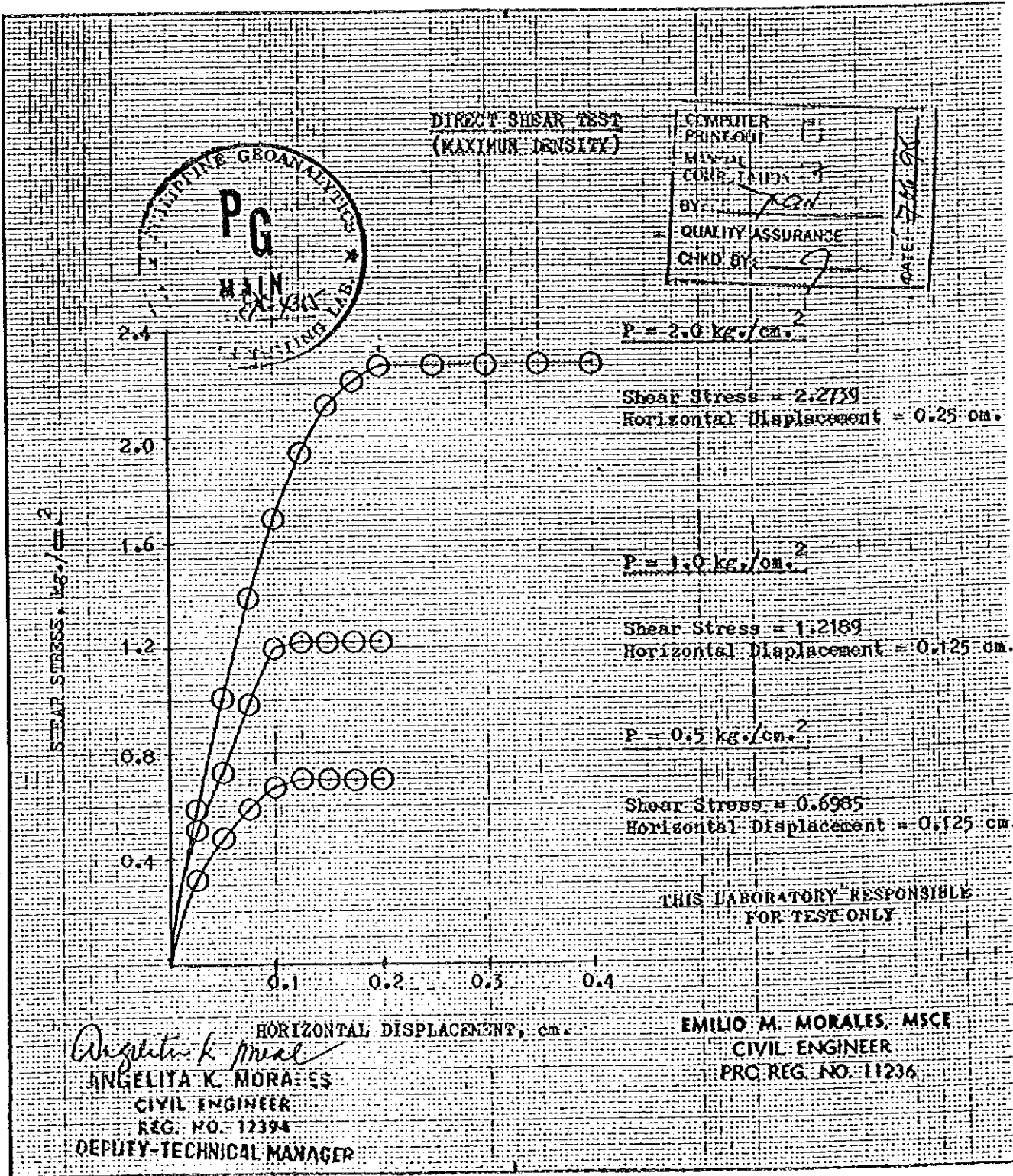
Optimum moisture = _____ % Water content, w%
Maximum dry density = _____ g/cc

PHILIPPINE GEOTECHNICAL ANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET <u>2</u> OF <u>3</u>
PROJECT: PINATUBO		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION TH-1 SABO DAM		JOB NO:	CHECKED BY: JEV
SAMPLE : BH-2 DEPTH : 5.00 M.		TESTED BY: CAM	DATE FINISHED: 07-03-95
		DATE TESTED: 07-03-95	



1 KN = 101.971 kgf
 1 MPa = 10.1971 kgf/cm²

PHILIPPINE GEOANALYTICS PROJECT: pinatubo LOCATION : TM-1 SABO DAM SAMPLE : BH-2 DEPTH : 5.00 M.	COMPUTER PRINTOUT <input type="checkbox"/> DETAILS PREPARED <input type="checkbox"/>	SHEET <u>3</u> of <u>3</u>
	JOB NO:	CROSS REFERENCE:
	TESTED BY: CAM	CHECKED BY: JBV
	DATE TESTED: 07-03-95	DATE FINISHED: 07-03-95



COMPACTION TEST
PINATUBO

Page 1 of 3 pages
DEPTH : 10.00 M.

Project IP-FI SABO DAM Job No. 2
 Location of Project _____ Boring No. _____ Sample No. _____
 Description of Soil C.A.M. Date of Test 07-04-95
 Test Performed By _____ No. of Layers 2 Wt. of Hammer 349 g.
 Blows/Layer 50 Mold dimensions: Diam. 6 X 6 cm. Hi. 2 cm. Vol. 72 cu.cm.

DATE RECEIVED :
DATE RELEASED : **07 JUL 1995**

Water Content Determination

Sample no.	1	2	3	4	5	6
Moisture can no.						
Wt. of can + wet soil						
Wt. of can + dry soil						
Wt. of water						
Wt. of can						
Wt. of dry soil						
Water content, w%						

COMPUTER PRINT-OUT
 MANUAL COMPUTATION
 BY: AGW
 QUALITY ASSURANCE
 CHKD BY: [Signature]
 DATE: 7 JUL 1995

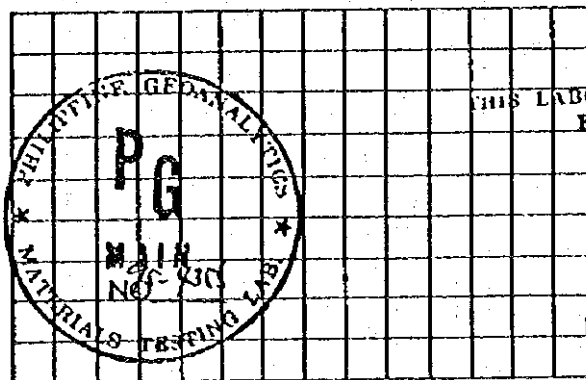
MAXIMUM DENSITY

Density Determination

	1	2	3	4	5	6
Assumed water content	-	-	-	-	-	-
Water content, w%	-	-	-	-	-	-
Wt. of soil + mold	2,643	2,640	2,641	-	-	-
Wt. of mold	2,514	2,514	2,514	-	-	-
Wt. of soil in mold	129	126	127	-	-	-
Wet density, g/cc	1.792	1.750	1.764	-	-	-
Dry density γ , g/cc	Average = 1.759			-	-	-

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Dry density γ_{arr} , g/cc

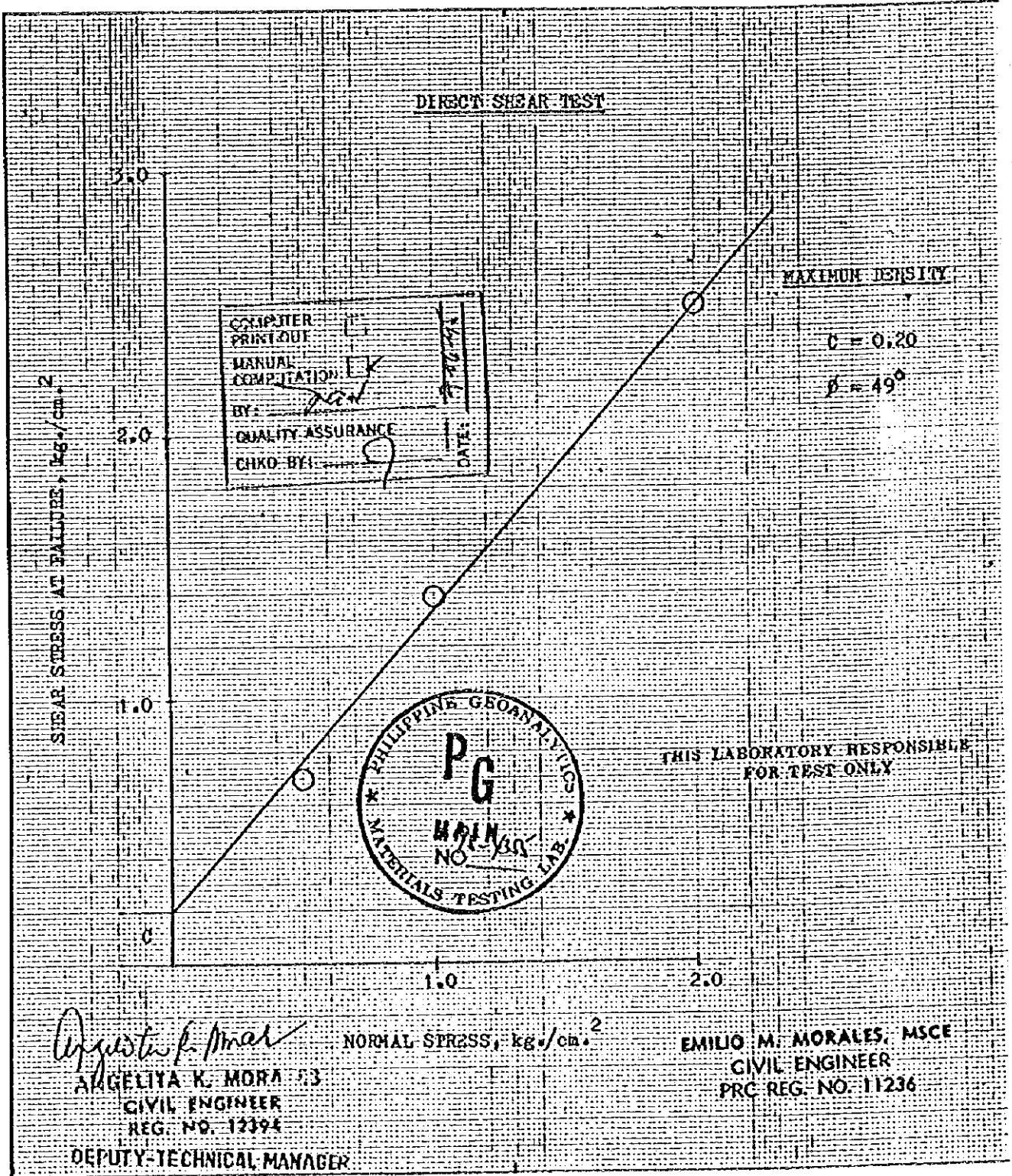


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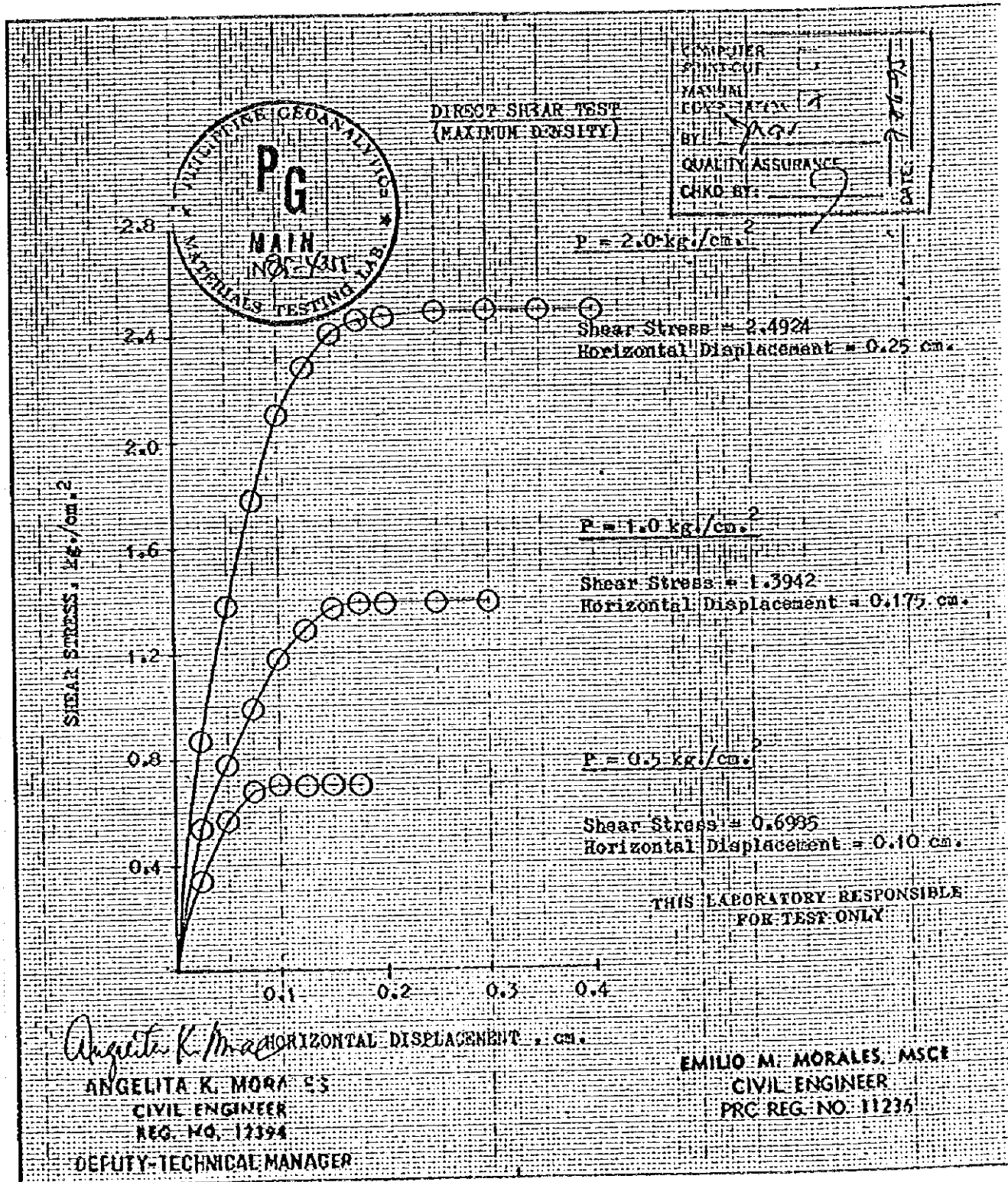
Water content, w% _____
 Optimum moisture = _____ % Maximum dry density = _____ g/cc

PHILIPPINE GEOANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET <u>2</u> OF <u>3</u>
PROJECT: PINATUBO		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION: TM-1 SABO DAM		JOB NO.:	CHECKED BY: JEV
SAMPLE: BH-2 DEPTH: 10.00 M.		TESTED BY: CAM	DATE FINISHED: 07-04-95
		DATE TESTED: 07-04-95	



1 KN = 101.971 Kg
 1 kg = 2.20462 lbs

PHILIPINE GEOTECHNICAL ANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET <u>3</u> of <u>3</u>
PROJECT: PINATUBO		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION: M-1 SABO DAM		JOB NO.:	CHECKED BY: JRV
SAMPLE: BH-2		TESTED BY: CAM	DATE FINISHED: 07-04-95
DEPTH: 10.00 M.		DATE TESTED: 07-04-95	



COMPACTION TEST

PINATUBO

DEPTH : 5.00 M.

Project PINATUBO Job No. _____
 Location of Project TM-1 SABO DAM Boring No. 3 Sample No. _____
 Description of Soil C.A.M. Date of Test 07-04-95
 Test Performed By _____ No. of Layers 2 Wt. of Hammer 349 g.
 Blows/Layer 50 Mold dimensions: Diam. 6 X 6 cm. Hi. 2 cm. Vol. 72 cu.cm.

DATE RECEIVED : _____
DATE RELEASED : 07 JUL 1995

Water Content Determination

Sample no.	1	2	3	4	5	6
Moisture can no.						
Wt. of can + wet soil						
Wt. of can + dry soil						
Wt. of water						
Wt. of can						
Wt. of dry soil						
Water content, w%						

COMPUTER
PRINT-OUT
MANILA
COMPACTION
BY: _____
QUALITY ASSURANCE
CHKD BY: _____

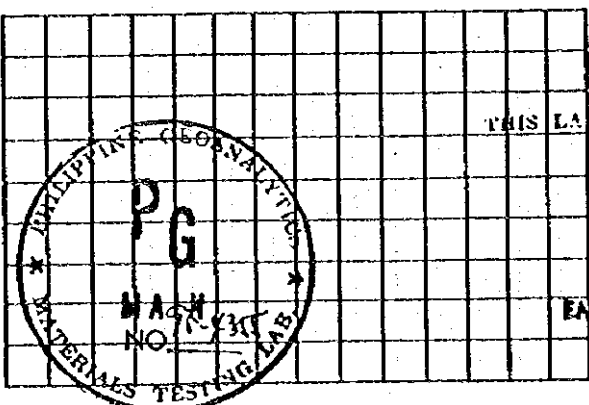
DATE
07 JUL 95

Density Determination

MAXIMUM DENSITY

	1	2	3	4	5	6
Assumed water content	-	-	-	-	-	-
Water content, w%	-	-	-	-	-	-
Wt. of soil + mold	2,644	2,645	2,647	-	-	-
Wt. of mold	2,514	2,514	2,514	-	-	-
Wt. of soil in mold	130	131	133	-	-	-
Wet density, g/cc	1.806	1.819	1.847	-	-	-
Dry density γ , g/cc	Average = 1.824			-	-	-

Angelita K. Morales
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REG. NO. 12394
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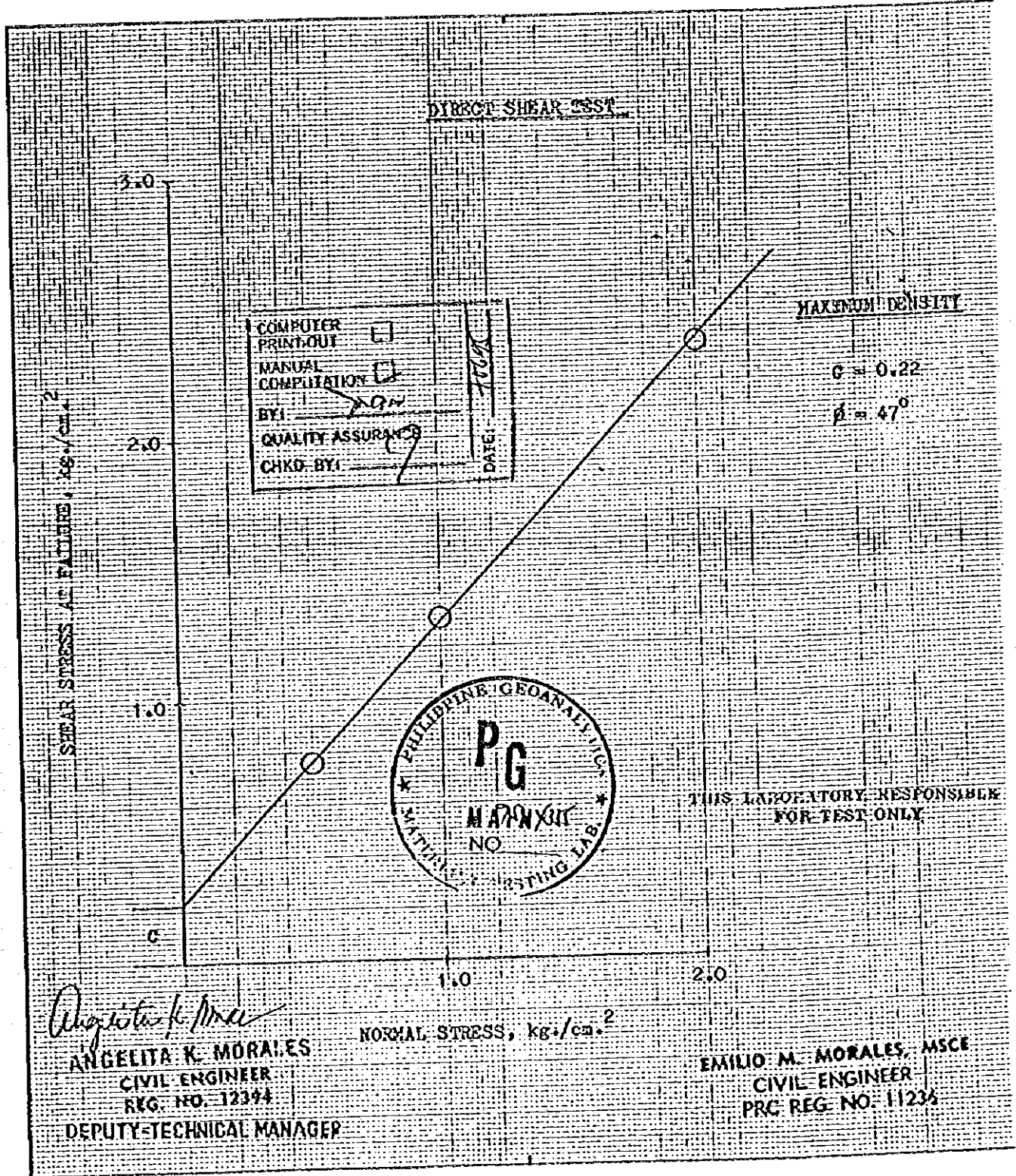


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CIVIL ENGINEER
PRC REG. NO. 1127

Water content, w% _____
Optimum moisture = _____ % Maximum dry density = _____ g/cc

PHILIPPINE GEOANALYTICS		COMPUTER PRINTOUT <input type="checkbox"/>	SHEET 2 of 3
PROJECT: PINATUBO		DETAILS PREPARED <input type="checkbox"/>	CROSS REFERENCE:
LOCATION: TM-1 SABO DAM		JOB NO:	CHECKED BY: JEV
SAMPLE: BH-3		DEPTH: 5.00 M.	DATE FINISHED: 07-04-95
		TESTED BY: CAK	DATE TESTED: 07-04-95



1 KN = 101.971 kgf