

Appendix A

Electrical properties of Standard Solution

Standard solutions were used for the apparatus calibration. The standard solutions including three electrolytic solutions NaCl, KCl and MgCl₂ that commonly found in municipal landfill. Various concentrations of those solutions were used in the calibration. The more variation, the better calibration.

All electrical resistivity of the solutions used in the calibration must be known. The conductivity will be measured by the conductivity meter in mS.cm⁻¹ then converted it into ohm-m as a resistivity value.

1. Standard solutions used in four electrode model resistivity box calibration.

Standard Solution	Concentration (Mole)	The conductivity measurement			Resistivity (ohm-m)
		1 st measurement (mS.cm ⁻¹)	2 nd measurement (mS.cm ⁻¹)	Average measurement (Siemens.m ⁻¹)	
NaCl	0.005	0.940	0.641	0.000791	12.65
	0.02	2.03	1.95	0.00199	5.03
	0.05	5.55	5.74	0.005645	1.77
	0.1	10.76	10.87	0.010815	0.92
	0.2	18.58	18.69	0.018635	0.54
	0.5	47.9	48.3	0.0481	0.21
KCl	0.005	0.849	0.979	0.000914	10.94
	0.02	2.64	2.8	0.00272	3.68
	0.05	6.6	6.48	0.00654	1.53
	0.1	13.04	12.91	0.012975	0.77
	0.25	30.4	30.5	0.03045	0.33
MgCl ₂	0.01	2.24	3.28	0.00276	3.62
	0.05	9.85	9.83	0.00984	1.02
	0.1	15.2	15.02	0.01511	0.66
	0.2	33.3	32.5	0.0329	0.30
	0.5	66.1	65.1	0.0656	0.15

2. Standard solutions used in six electrode model resistivity box calibration.

After the six electrode model resistivity box has been successfully modified, all the standard solutions were newly prepared in laboratory to use in its calibration. The conductivity and resistivity of these standard solutions were shown in the table below.

Standard Solution	Concentration (Mole)	The conductivity measurement			Resistivity (ohm-m)
		1 st measurement (mS.cm ⁻¹)	2 nd measurement (mS.cm ⁻¹)	Average measurement (Siemens.m ⁻¹)	
NaCl	0.002	0.280	0.282	0.000281	35.59
	0.005	0.650	0.667	0.000659	15.19
	0.02	2.2	2.28	0.00224	4.46
	0.05	5.6	5.48	0.00554	1.81
	0.2	20.8	20.7	0.02075	0.48
	0.5	50.0	48.8	0.0494	0.20
KCl	0.002	0.359	0.400	0.00038	26.35
	0.005	0.760	0.751	0.000756	13.24
	0.02	2.84	2.9	0.00287	3.48
	0.05	6.71	6.59	0.00665	1.50
	0.2	25.1	25.2	0.02515	0.40
	0.5	60.3	56.2	0.05825	0.17
MgCl ₂	0.002	0.302	0.432	0.000367	27.25
	0.005	918	878	0.000898	11.14
	0.02	1.8	1.85	0.001825	5.48
	0.05	4.96	4.95	0.004955	2.02
	0.2	31.4	35.9	0.03365	0.30
	0.5	95.5	94.4	0.09495	0.11

Appendix B

Field Data and information

1. Hand Auger drillings Location

The drilling operations were done totally two days in 15th and 18th November 2005, just right after the rainy season in Chiang Mai. I did twenty hand auger drilling, the soil in the area is quite compact and contain with a lot of gravel.

I lost the data of some drillings due to reach the water level, get stuck by the thick layer of gravelly clay or thick layer of loose sand.

ID	Easting	Northing	Elevation (m)	Total drilling Depth (cm)
ST.18/1	493613	207298	331.3	80
ST.18/2	493657	207300	329.6	200
ST.18/3	493063	2072921	331.9	200
ST.18/4	493549	2073115	329.8	150
ST.18/5	493932	2072992	321.4	120
ST.18/6	493836	2072924	317.7	110
ST.18/7	493662	2072723	317.9	190
ST.18/8	493600	2072745	324.6	80
SMH-6	493655	2072996	327.6	165
SMH-20	493530	2072949	327.6	120
SMH-23	493355	2073337	336.0	90
SMH-2	493636	2072695	324.4	150
SMH-1	493490	2072750	325.7	60

2. Opened trench location

After did all the analysis, four type of sediment were picked up as the representative of the area. Four trenches were opened according to those data, to get the big amount of sediment samples for electrical resistivity laboratory measurement on 12th December 2005

ID	Easting	Northing	Elevation (m)	Depth of sample taken (cm)
SMH-6	493655	2072996	325.6	30-88
ST.18/8	493600	2072745	324.2	50-100
ST.18/7	493622	2072750	317.9	85-130
ST.18/6	493836	2072924	317.7	80-130

3. Groundwater Sampling Location

Groundwater Sampling was done in three monitoring wells. The monitoring wells were drilled by Aztec engineering company and were used in many investigations during The WADIS project still running until.

Observation well no.	Easting	Northing	Elevation (m)
MW-MH8 (upgradient)	493266	2072942	329.6
MW-MH3 uw (downgradient)	493528	2072804	325.2
MW-MH L2 (leachate)	493384	2073015	329.3

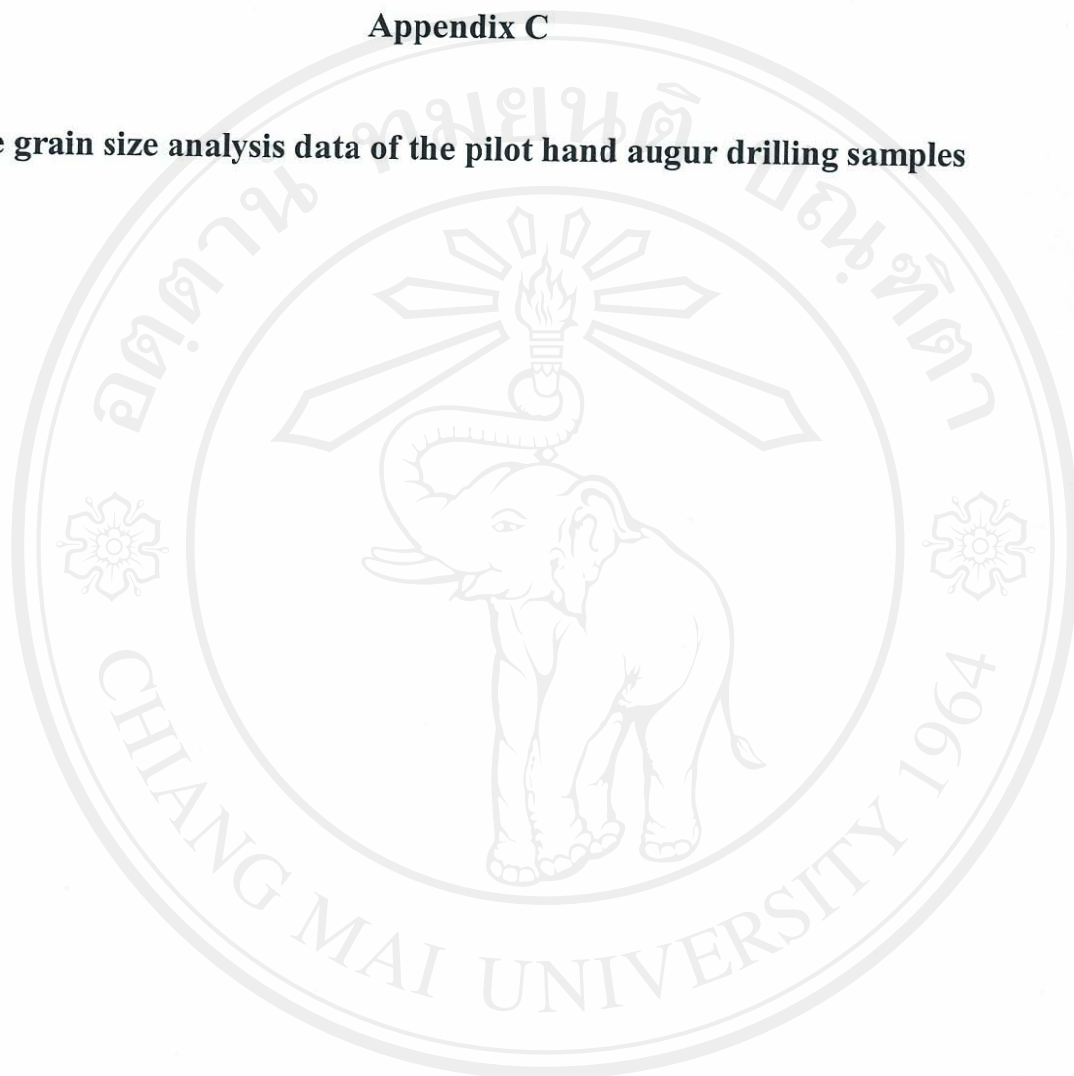
4. Some of the groundwater's field measurements

During the collection on 3rd May 2006, some of field measurements were done.

Observation well no.	Screen depth. (m)	Water level (m)	Conductivity (mS.cm ⁻¹)	pH
MW-MH8 (upgradient)	13	2.5	0.616	6.8
MW-MH3 uw (downgradient)	7	1.8	2.2	7.05
MW-MH L2	4.5	2.1	24.5	7.49

Appendix C

The grain size analysis data of the pilot hand auger drilling samples



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Soil sample

dept

SMH-6low

100-134cm.

beginning sample weight

382.5

g.

after wet sieve through 200 mech

193.71

g.

In sieve weight

pour out suspension weight

93.6

g.

suspension in jar weight

50.14

g.

Total soil sample weight

337.45

g.

1.hydrometer analysis

D(mm.)	N(%)	N'	
0.072614	102.67252	46.262724	veryfine sand
0.0532841	94.972078	42.79302	coarse silt
0.039	87.863981	39.590216	"
0.0286295	78.978859	35.586711	medium-fine silt
0.0286295	78.583965	35.408777	"
0.0189283	68.119266	30.693538	"
0.0136345	63.775429	28.736269	"
0.0097283	62.590746	28.202468	"
0.006893	58.246909	26.245199	"
0.0055794	53.508177	24.109997	"
0.0040793	53.31073	24.02103	"
0.0014708	40.674112	18.327156	clay
0.0012469	40.674112	18.327156	clay
0.0008623	40.476665	18.238189	clay

sieve analysis

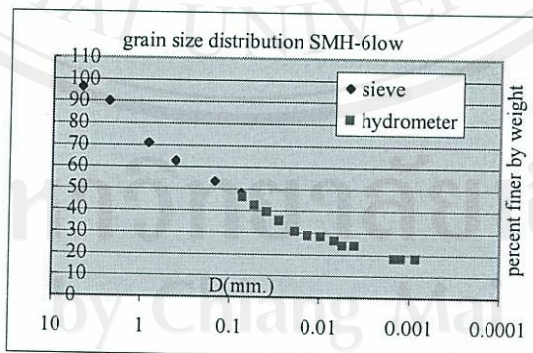
sieve no.	D(mm.)	wt.		~%retain	%finer
4	4.75	12.12	pebble	3.591643206	3.5916432 96.408357
8	2.362	21.34	granule	6.323899837	9.915543 90.084457
22	0.84	64.86	coarse sand	19.22062528	29.136168 70.863832
45	0.42	26.95	medium sand	7.986368351	37.122537 62.877463
100	0.15	31.48	fine sand	9.32878945	46.451326 53.548674
200	0.075	17.27	veryfine sand	5.117795229	51.569121 48.430879
pan	<0.075	152.05			

3.conclusion

>200mesh 51.569121

<200mesh 45.058527

pebble	3.5916432
granule	6.3238998
coarse sand	19.220625
medium sand	7.9863684
fine sand	9.3287895
veryfine sand	5.1177952



veryfine sand	3.4697043	%
coarse silt	6.6725083	%
medium to fine silt	15.569186	%
clay	24.02103	%

Soil sample

dept	SMH-6up
beginning sample weight	33-80cm.
after wet sieve through 200 mech	350.0g.
In sieve weight	226.03 g.
pour out suspension weight	77.62 g.
suspension in jar weight	48.47 g.
Total soil sample weight	352.12 g.

Hydrometer analysis

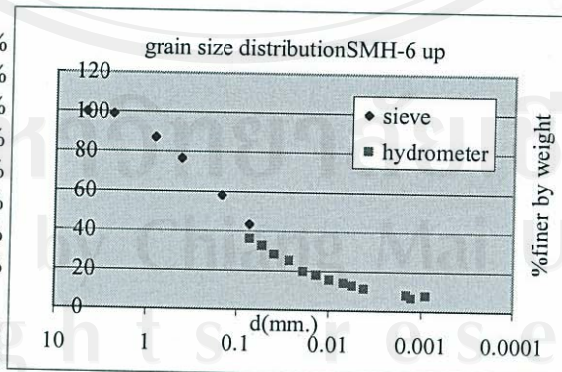
D(mm.)	N(%)	N%	
0.0735826	85.785022	35.883437	very fine sand
0.0539333	77.61502	32.465967	coarse silt
0.0396182	67.402517	28.194129	"
0.0269933	60.253765	25.203843	medium to fine silt
0.0189737	46.773262	19.565017	"
0.0136294	43.096761	18.027155	"
0.0098224	37.173509	15.549489	"
0.0069971	33.701259	14.097065	"
0.0054991	30.637508	12.815513	"
0.0041569	26.552507	11.106778	"
0.0014594	19.403755	8.1164917	clay
0.0012795	15.523004	6.4931934	"
0.0008942	18.382505	7.6893079	"

Sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain		%finer
4	4.75	0	pebble	0	0	100
8	2.362	3.65	granule	1.036578439	1.0365784	98.963422
22	0.84	41.3	coarse sand	11.72895604	12.765534	87.234466
45	0.42	37.91	medium sand	10.76621606	23.531751	76.468249
100	0.15	64.88	fine sand	18.42553675	41.957287	58.042713
200	0.075	51.11	very fine sand	14.51493809	56.472225	43.527775
pan	<0.075	147.29				

3. conclusion

>200 mesh	56.472225 %
<200 mesh	41.82949 %
pebble	0 %
granule	1.0365784 %
coarse sand	11.728956 %
medium sand	10.766216 %
fine sand	18.425537 %
very fine sand	14.514938 %
very fine sand	7.6443376 %
coarse silt	7.6893079 %
medium to fine silt	17.087351 %
clay	11.106778 %
total	100



Soil sample
dept

ST.18-2
42-75cm.

beginning sample weight	350	g.
after wet sieve through 200 mech		
In sieve weight	214	g.
pour out suspension wieght	71.28	g.
suspension in jar weight	57.5	g.
Total soil sample weight	342.78	g.

hydrometer analysis

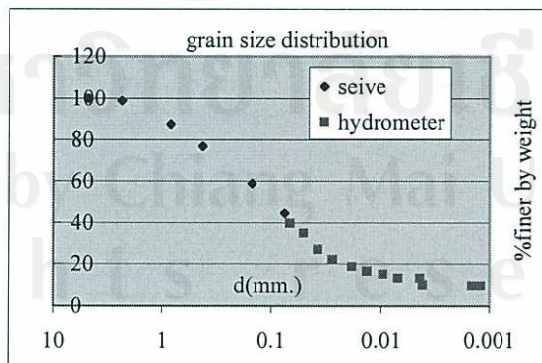
D(mm.)	N(%)	N'%	
0.0670284	89.530435	39.604119	veryfine sand
0.0503428	79.2	35.034413	coarse silt
0.0371806	61.293913	27.113589	"
0.027443	49.930435	22.086912	medium to fine silt
0.0181989	42.182609	18.659633	"
0.0134195	37.533913	16.603265	"
0.00968	34.434783	15.232353	"
0.0069509	29.958261	13.252147	"
0.0043988	29.958261	13.252147	"
0.004173	22.382609	9.9010297	"
0.0014594	21.521739	9.5202209	clay
0.0012	21.521739	9.5202209	"
0.0008556	20.66087	9.139412	"

sieve analysis

sieve no.	D(mm.)	WT.(g.)		%retain		%finer
4	4.75	0	pebble	0	0	100
8	2.362	3.83	granule	1.117334734	1.1173347	98.882665
22	0.84	39.74	coarse sand	11.59344186	12.710777	87.289223
45	0.42	35.58	medium sand	10.37983546	23.090612	76.909388
100	0.15	62.41	fine sand	18.20701324	41.297625	58.702375
200	0.075	48.78	veryfine sand	14.23070191	55.528327	44.471673
pan	<0.075	22.85	151.63			

3.conclusion

>200mesh	55.528327	%
<200mesh	44.23537	%
pebble	0	%
granule	1.1173347	%
coarse sand	11.593442	%
medium sand	10.379835	%
fine sand	18.207013	%
veryfine sand	14.230702	%
veryfine sand	4.867554	%
coarse silt	12.49053	%
medium to fine silt	17.212559	%
clay	9.9010297	%



Soil sample
dept

ST.18/8
0-50cm.

beginning sample weight 214.5 g.
after wet sieve through 200 mech 141.1 g.
In sieve weight 0 g.
pour out suspension wieght 63.81 g.
suspension in jar weight 204.91 g.
Total soil sample weight

1.hydrometer analysis

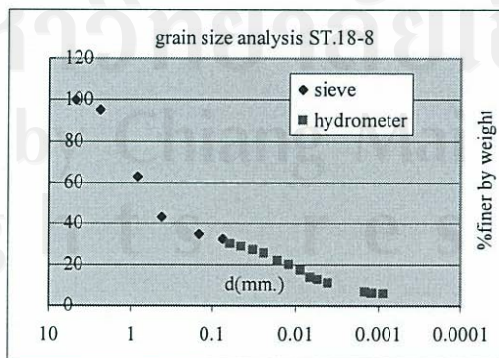
D(mm.)	N(%)	N'%	
0.0611882	93.088858	30.351211	veryfine sand
0.0448999	88.434415	28.83365	coarse silt
0.0326435	83.779972	27.31609	"
0.0240898	78.349788	25.545602	medium to fine silt
0.0162333	67.489422	22.004628	"
0.0118794	61.283498	19.981214	"
0.0087361	53.526093	17.451946	"
0.0065727	42.665726	13.910972	"
0.0053666	38.787024	12.646338	"
0.0040131	34.132581	11.128777	siltor clay????
0.0014594	20.944993	6.8290224	clay
0.00121	19.238364	6.2725835	"
0.0008784	17.842031	5.8173154	"

2.sieve analysis

sieve no.	D(mm.)	wt.(g.)	%retain	%finer
4	4.75	0 pebble	0	100
8	2.362	9.73 granule	4.748426138	95.251574
22	0.84	66.45 coarse sand	32.42887121	62.822703
45	0.42	40 medium san	19.52076521	43.301937
100	0.15	17.13 fine sand	8.359767703	34.94217
200	0.075	4.79 veryfine san	2.337611634	32.604558
pan	<0.075	66.81		

3.conclusion

>200mesh	67.395442 %
<200mesh	32.604558 %
pebble	0 %
granule	4.7484261 %
coarse sand	32.428871 %
medium sand	19.520765 %
fine sand	8.3597677 %
veryfine sand	2.3376116 %
veryfine sand	2.2533475 %
coarse silt	3.0351211 %
medium to fine silt	14.669752 %
clay	12.646338 %



Soil sample
dept

ST.18/6
80-130cm.

beginning sample weight 394.0g.
after wet sieve through 200 mech
In sieve weight 151.77 g.
pour out suspension wieght 112.88 g.
suspension in jar weight 56.52 g.
Total soil sample weight 327.17 g.

1.hydrometer analysis

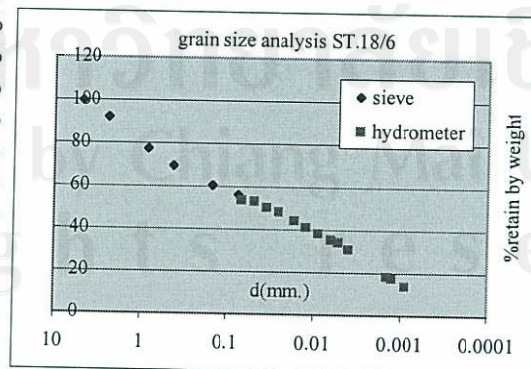
D(mm.)	N(%)	N'	
0.0682964	99.840764	53.571679	veryfine sand
0.048815	98.964968	53.101752	coarse silt
0.035602	93.710191	50.28219	medium to fine silt
0.0256729	89.856688	48.214511	"
0.0169182	82.324841	44.173139	"
0.0123058	76.369427	40.977635	"
0.0089374	70.93949	38.064088	"
0.0064	65.859873	35.338511	"
0.0052776	63.933121	34.304672	"
0.0039144	57.27707	30.733226	???silt-clay
0.001448	34.156051	18.327153	clay
0.0012604	32.404459	17.387299	"
0.0008912	25.573248	13.721869	"

2.sieve analysis

sieve no.	D(mm.)	wt.	pebble	%retain	%finer
4	4.75	0.4	granule	0.122260598	0.1222606 99.877739
8	2.362	25.22	coarse sand	7.708530733	7.8307913 92.169209
22	0.84	47.69	medium san	14.57651985	22.407311 77.592689
45	0.42	26.32	fine sand	8.044747379	30.452059 69.547941
100	0.15	29.8	veryfine san	9.108414586	39.560473 60.439527
200	0.075	14.49		4.428890179	43.989363 56.010637
pan	<0.075	175.55			

3.conclusion

>200mesh	43.989363 %
<200mesh	53.65712 %
pebble	0.1222606 %
granule	7.7085307 %
coarse sand	14.57652 %
medium sand	8.0447474 %
fine sand	9.1084146 %
veryfine sand	4.4288902 %
veryfine sand	0.469927 %
coarse silt	2.819562 %
medium to fine silt	18.79708 %
clay	34.304672 %



Soil sample
dept

st.18-3
58-105cm.

beginning sample weight 350 g.
after wet sieve through 200 mesh 204.36 g.
In sieve weight
pour out suspension weight 88.38 g.
suspension in jar weight 56.3 g.
Total soil sample weight 349.04 g.

1. hydrometer analysis

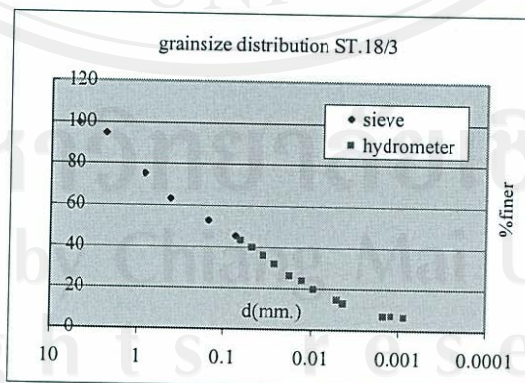
D(mm.)	N(%)	N'%	
0.0658311	94.955595	43.220248	very fine sand
0.0487016	87.921847	40.018748	coarse silt
0.0360978	79.129663	36.016873	"
0.0266475	70.337478	32.014999	medium to fine silt
0.0178654	58.028419	26.412374	"
0.0129193	52.753108	24.011249	"
0.0094504	43.609236	19.849299	
0.004989	32.706927	14.886974	"
0.0042608	28.838366	13.126149	"
0.0015027	14.946714	6.8031872	clay
0.0012	15.825933	7.2033747	"
0.0008556	14.067496	6.4029997	"

2. sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain		%finer
4	4.75	1.02	pebble	0.292230117	0.2922301	99.70777
8	2.362	17.07	granule	4.890556956	5.1827871	94.817213
22	0.84	67.83	coarse sand	19.43330277	24.61609	75.38391
45	0.42	42.77	medium sand	12.2536099	36.8697	63.1303
100	0.15	35.99	fine sand	10.31113912	47.180839	52.819161
200	0.075	25.36	very fine sand	7.265642906	54.446482	45.553518
pan	<0.075	158.87				

3. conclusion

>200 mesh	54.446482 %
<200 mesh	45.516273 %
pebble	0.2922301 %
granule	4.890557 %
coarse sand	19.433303 %
medium sand	12.25361 %
fine sand	10.311139 %
very fine sand	7.2656429 %
very fine sand	2.3332702 %
coarse silt	7.2033747 %
medium to fine silt	22.890724 %
clay	13.126149 %



total

100

Soil sample
dept

SMH-23up
20-57cm.

beginning sample weight 350 g.
after wet sieve through 200 mech 231.56 g.
In sieve weight
pour out suspension weight 45.18 g.
suspension in jar weight 65.47 g.
Total soil sample weight 342.21 g.
1.hydrometer analysis

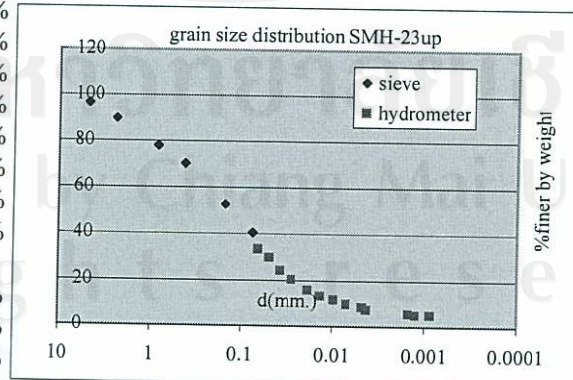
D(mm.)	N(%)	N%	
0.0662744	80.899649	33.415638	veryfine sand
0.0498896	71.826791	29.668089	coarse silt
0.0382636	58.217504	24.046767	"
0.028377	49.144646	20.299219	medium to fine silt
0.018862	38.257217	15.802161	"
0.013743	31.755002	13.116418	"
0.0098301	27.974645	11.55494	
0.0070555	23.438216	9.681166	"
0.0046863	20.41393	8.4319833	"
0.0042608	18.145716	7.4950963	"
0.0015145	13.609287	5.6213222	clay
0.0012586	12.248358	5.05919	"
0.0008809	12.097144	4.9967309	"

2.sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain	%finer
4	4.75	12.43	pebble	3.632272581	96.367727
8	2.362	22.49	granule	6.571987961	89.795739
22	0.84	41.19	coarse sand	12.03646883	77.759271
45	0.42	25.5	medium san	7.451564829	70.307706
100	0.15	60.62	fine sand	17.71426902	52.593437
200	0.075	41	veryfine san	11.98094737	40.612489
pan	<0.075	30.7	141.35		

3.conclusion

>200mesh	59.387511 %
<200mesh	41.305047 %
pebble	5.3772279 %
granule	9.7291919 %
coarse sand	17.818827 %
medium sand	11.03132 %
fine sand	26.22426 %
veryfine sand	17.736633 %
veryfine sand	7.1968518 %
coarse silt	9.3688704 %
medium to fine silt	16.551671 %
clay	7.4950963 %



Soil sample
dept

SMH-23low
57-70cm.

beginning sample weight 331 g.
after wet sieve through 200 mech 211.33 g.
In sieve weight
pour out suspension wieght 51.71 g.
suspension in jar weight 67.79 g.
Total soil sample weight 330.83 g.
1.hydrometer analysis

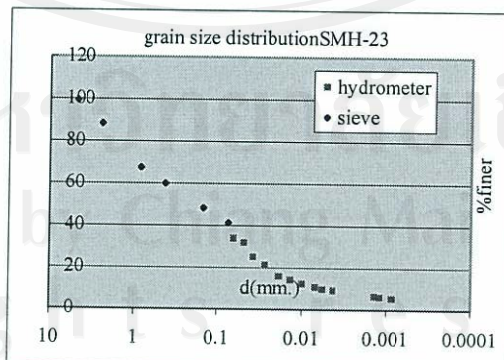
D(mm.)	N(%)	N'%	
0.0644829	81.781974	33.995276	veryfine sand
0.0480965	76.590258	31.837174	coarse silt
0.037879	60.988539	25.351824	"
0.0273256	51.060172	21.224783	medium to fine silt
0.0185094	38.295129	15.918587	"
0.013474	34.323782	14.267771	"
0.0097553	29.7851	12.381123	
0.0069509	25.530086	10.612391	"
0.0056754	23.402579	9.7280254	"
0.0041916	22.126074	9.1974058	"
0.0013796	15.601719	6.4853503	clay
0.00121	14.467049	6.0136884	"
0.0008725	13.474212	5.6009843	"

2.sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain	%finer
4	4.75	2.27	pebble	0.686153009	99.313847
8	2.362	35.77	granule	10.81219962	88.501647
22	0.84	69.37	coarse sand	20.96847323	67.533174
45	0.42	25.36	medium san	7.665568419	59.867606
100	0.15	37.93	fine sand	11.46510292	48.402503
200	0.075	22.69	veryfine san	6.858507391	41.543995
pan <0.075		137.52			

3.conclusion

>200mesh	58.456005 %
<200mesh	41.568177 %
pebble	0.686153 %
granule	10.8122 %
coarse sand	20.968473 %
medium sand	7.6655684 %
fine sand	11.465103 %
veryfine sand	6.8585074 %
veryfine sand	7.5487198 %
coarse silt	8.6434519 %
medium to fine silt	16.154418 %
clay	9.1974058 %



total

100

Soil sample
dept

st.18/7low
170-190cm.

beginning sample weight 400 g.
after wet sieve through 200 mesh 264.2 g.
In sieve weight
pour out suspension weight 81.99 g.
suspension in jar weight 48.42 g.
Total soil sample weight 394.61 g.

1. hydrometer analysis

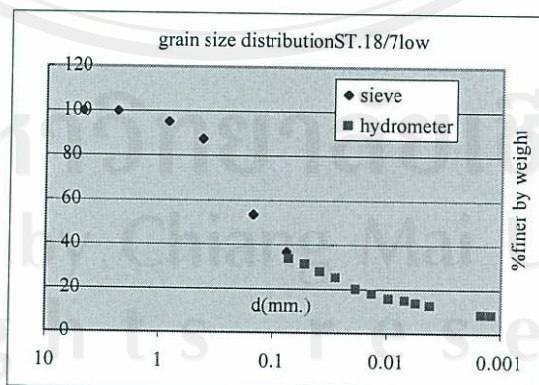
D(mm.)	N(%)	N'	
0.0717997	92.007435	33.73365	veryfine sand
0.0523068	84.851301	31.109922	coarse silt
0.0383249	75.650558	27.736557	"
0.0278855	68.494424	25.112828	medium to fine silt
0.0185515	54.182156	19.865372	"
0.0133626	49.070632	17.99128	"
0.0096747	42.936803	15.74237	
0.0068935	40.892193	14.992733	"
0.0055449	37.825279	13.868278	"
0.0041916	34.758364	12.743823	"
0.0014594	23.513011	8.6208217	clay
0.00121	22.490706	8.2460034	"
0.0008697	18.401487	6.74673	"

2. sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain		%finer
4	4.75	0	pebble	0	0	100
8	2.362	0.09	granule	0.022807329	0.0228073	99.977193
22	0.84	18.55	coarse sand	4.700843871	4.7236512	95.276349
45	0.42	30.94	medium sand	7.840652796	12.564304	87.435696
100	0.15	133.52	fine sand	33.83593928	46.400243	53.599757
200	0.075	66.56	veryfine sand	16.86728669	63.26753	36.73247
pan <0.075		144.68				

3. conclusion

>200mesh	63.26753 %
<200mesh	36.664048 %
pebble	0 %
granule	0.0228073 %
coarse sand	4.7008439 %
medium sand	7.8406528 %
fine sand	33.835939 %
veryfine sand	16.867287 %
veryfine sand	2.9988199 %
coarse silt	5.9970934 %
medium to fine silt	14.992733 %
clay	12.743823 %



total

100

Soil sample
dept

st.18/7up
85-130cm.

beginning sample weight 380.0g.
after wet sieve through 200 mesh 116.83
In sieve weight
pour out suspension weight 150.27
suspension in jar weight 52.82
Total soil sample weight 319.92
1.hydrometer analysis

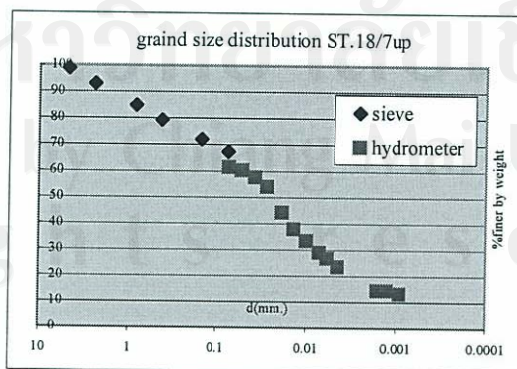
D(mm.)	N(%)	N'%	
0.0737898	92.964786	61.508678	veryfine sand
0.0527167	90.903067	60.144574	coarse silt
0.0380495	87.154487	57.664386	"
0.0276072	81.531617	53.944103	medium to fine silt
0.0276072	81.531617	53.944103	"
0.0186493	66.912154	44.271367	"
0.0136066	57.165846	37.822877	
0.0099148	50.605831	33.482546	"
0.0071267	44.045816	29.142216	"
0.0058657	40.297236	26.662028	"
0.0044341	35.424082	23.437783	"
0.0016044	21.929193	14.509103	clay
0.0013	21.929193	14.509103	"
0.0009122	19.867474	13.145	"

2.sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain	%finer
4	4.75	3.4	pebble	1.062765691	1.0627657 98.937234
8	2.362	18.88	granule	5.901475369	6.9642411 93.035759
22	0.84	25.86	coarse sand	8.083270818	15.047512 84.952488
45	0.42	18.14	medium san	5.670167542	20.717679 79.282321
100	0.15	22.68	fine sand	7.089272318	27.806952 72.193048
200	0.075	15.25	veryfine san	4.766816704	32.573768 67.426232
pan	<0.075	211.67			

3.conclusion

>200mesh	32.573768
<200mesh	66.163416
pebble	1.0627657 %
granule	5.9014754 %
coarse sand	8.0832708 %
medium sand	5.6701675 %
fine sand	7.0892723 %
veryfine sand	4.7668167 %
veryfine sand	5.9175536 %
coarse silt	3.8442924 %
medium to fine silt	34.226603 %
clay	23.437783 %



Soil sample
dept

ST.18-2
90-168cm.

beginning sample weight 400.0g.
after wet sieve through 200 mech
In sieve weight 170.21 g.
pour out suspension weight 114.05 g.
suspension in jar weight 56.7 g.
Total soil sample weight 340.96 g.
1.hydrometer analysis

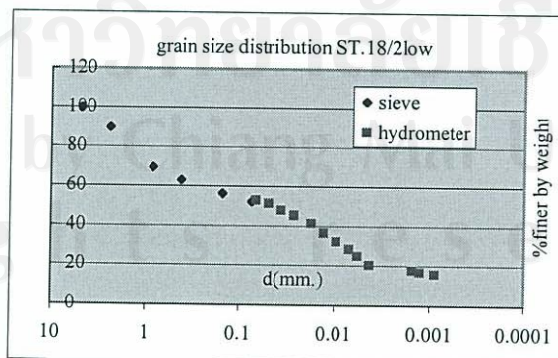
D(mm.)	N(%)	N'%	
0.067817	102.14286	52.799972	veryfine sand
0.0490157	99.52381	51.446127	coarse silt
0.0361142	92.539683	47.835872	"
0.0265901	87.825397	45.398951	medium-finesilt
0.0263632	87.47619	45.218438	"
0.0173791	80.142857	41.427671	"
0.012902	70.539683	36.463571	"
0.0094465	62.333333	32.221522	"
0.0069319	55	28.430754	"
0.0056666	48.015873	24.8205	"
0.0042453	39.460317	20.397938	"
0.0015145	34.396825	17.780504	clay
0.0012604	32.301587	16.697427	"
0.0008912	30.730159	15.88512	"

2.sieve analysis

sieve no.	D(mm.)	wt.(g.)		%retain	%finer
4	4.75	0.26	pebble	0.076255279	99.923745
8	2.362	34.1	granule	10.00117316	89.922572
22	0.84	68.88	coarse sand	20.2017832	69.720788
45	0.42	22.46	medium san	6.587282966	63.133505
100	0.15	23.42	fine sand	6.86884092	56.264664
200	0.075	13.26	veryfine san	3.88901924	52.375645
pan	<0.075	176.25			

3.conclusion

>200mesh	47.624355
<200mesh	51.692281
pebble	0.0762553 %
granule	10.001173 %
coarse sand	20.201783 %
medium sand	6.587283 %
fine sand	6.8688409 %
veryfine sand	3.8890192 %
veryfine sand	0 %
coarse silt	4.9641 %
medium to fine silt	27.437934 %
clay	20.397938 %



Soil sample**SMH-20**

dept

50-90cm.

beginning sample weight

421

g.

after wet sieve through 200 mech

154.1

g.

In sieve weight

pour out suspension weight

119.53

g.

suspension in jar weight

56.39

g.

Total soil sample weight

330.02

g.

1. hydrometer analysis

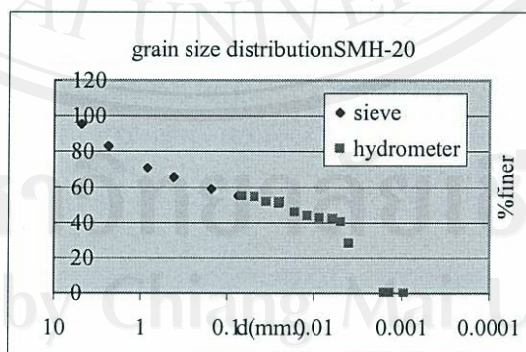
D(mm.)	N(%)	%N'	
0.0687895	100.2465	55.171721	veryfine sand
0.048815	99.193119	54.591983	coarse silt
0.035602	94.101791	51.789917	"
0.0255078	92.346161	50.823687	mediumtofine silt
0.0251744	94.101791	51.789917	"
0.0169	83.919135	46.185784	"
0.0121951	80.056748	44.060078	"
0.0087207	78.301117	43.093849	"
0.0062346	76.545487	42.127619	"
0.0050349	73.560915	40.485028	"
0.0040904	51.791098	28.503779	clay
0.0016064	0.8778152	0.4831149	"
0.0013912	0.8778152	0.4831149	"
0.0013739	0.8778152	0.4831149	"
0.0009626	0	0	"

.sieve analysis

sieve no.	D(mm.)	wt.		%retain		%finer
4	4.75	14.03	pebble	4.2512575	4.2512575	95.748743
8	2.362	41.02	granule	12.42954972	16.680807	83.319193
22	0.84	41.5	coarse sand	12.57499545	29.255803	70.744197
45	0.42	16.75	medium sand	5.075449973	34.331253	65.668747
100	0.15	21.63	fine sand	6.554148233	40.885401	59.114599
200	0.075	12.48	veryfine sand	3.781588995	44.66699	55.33301
pan	<0.075	181.63				

3.conclusion

>200mesh	44.66699
<200mesh	55.036058
pebble	4.2512575
granule	12.42955
coarse sand	12.574995
medium sand	5.07545
fine sand	6.5541482
veryfine sand	3.781589
veryfine sand	0.1612891
coarse silt	3.3818043
medium to fine silt	11.304889
clay	40.485028



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