

**INUNDATION, RUN-UP HEIGHTS, CROSS-SECTION
PROFILES AND LITTORAL ENVIRONMENT ALONG THE
TAMIL NADU COAST AFTER 26TH DECEMBER 2004
TSUNAMI**

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EXECUTIVE SUMMARY

On 26 December 2004 the coastal areas of different countries around the Indian Ocean including India were hit by a Tsunami that caused extensive fatalities and damage to coastal property. On the initiative of Director, National Institute of Oceanography (NIO) and under the leadership of Dr. G. C. Battacharya, Scientist F, NIO,) surveys were carried out along several coastal areas of India for eliciting information about the inundation and several related aspects of the Tsunami. Different locations were surveyed were between Vedaranyam in the south to Pulicat lake on the north of Tamil Nadu and at Krishnapatnam in Andhra Pradesh. The survey was planned to carry out survey as per IOC manuals and Guideline report No. 37 dealing with the Post-Tsunami field surveys. This report pertains to surveys carried out mainly along the Tamil Nadu coast and presents basic data and preliminary information on Tsunami inundation limit, run-up height, cross sectional profiles at different locations and littoral environmental observations in the surf zone.

More than 25 locations were surveyed to assess the inundation limits as well as run-up heights. Cross-sectional profiles from the shoreline till the inundation limit were measured using automatic leveling equipment and a graduated staff with reference to local water level at the time of survey. These profiles were reduced to the Chart Datum (CD) approximately arrived from the time of observation of the water line and the corresponding tide predicted for the location. The lateral inundation limit varied between 31 m at Kottaiyadu Kuppam village and 862 m at Nagore. The run-up height with respect to CD varied between 1.987 m at Arkattuthurai and 6.54 m at Periyakalpet. Primarily this report presents preliminary findings on Tsunami inundation and detailed data on cross section profiles based on which the Tsunami run-up heights were estimated.

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1.0 INTRODUCTION

A field survey was initiated by NIO, Goa to investigate the extent of inundation and the Tsunami run-up height due to the "26th December 2004 great Tsunami" that had a devastating effect on the Tamil Nadu coast. This report presents the results of the field observations carried out in this context on the cross sectional profiles, littoral environmental observations and inter-tidal sediments during 15th January 2005 to 7th February 2005.

2.0 STUDY REGION

The study region is the south east coast of India along Tamil Nadu (Fig. 1). The different locations that were surveyed are presented in Fig. 2. The study region is between Vedaranyam in the south to Pulicat lake on the north of Tamil Nadu and one location, viz., Krishnapatnam in Andhra Pradesh was also considered in the study.

The coast of Tamil Nadu and Andhra Pradesh on the east coast of India is made of sandy beaches. Few major rivers Cauvery R., Palar R., etc, join the sea on the east coast of India. Many number of streams/ rivulets join the Bay of Bengal too. Often this coast experiences cyclones / storms during northeast monsoon period (October - February) whereas occurrences of Tsunamis are rare in this part of the world.

3.0 SCOPE OF THE STUDY

The scope of the present study is to carryout the following:

- o Beach profiles from the water line till the inundation limit of the Tsunami
- o Littoral Environmental observations and Surf zone parameters viz., longshore current velocity, breaking wave parameters, and
- o Inter-tidal beach sediment grain-size distribution

4.0 METHODS OF STUDY

- 4.1 Cross sectional profiles:** With reference to local water level at the time of survey, cross-sectional profiles were taken from water line till the inundation limit. Automatic survey leveling equipment and a graduated staff were used to record the beach levels. These levels were reduced to the Chart Datum that were approximately arrived from the time of observation of the water line and the corresponding predicted-tide of the location. The predicted-tide for different locations is obtained by linear interpolation of tides between known tidal stations in the study region. Generally profiles were taken at interval of 5m. Larger intervals were considered where the beach is flat and smaller intervals were considered where beach is highly undulating with features like dunes, ridges, valleys, etc. Wherever the inundation limit was accessible and the terrain is amicable for survey the profiles were taken till the inundation limit otherwise only the position of the inundation limit was noted. It was not possible to complete the cross sectional profile survey at most of the places on the southern stretch of Tamil Nadu coast due to inaccessibility to the maximum inundation points. The locations where the cross sectional profile survey was not up to the inundation limit were Samanthan Pettai, Tarangambadi, Poompuhar, Thirumallaivasal, Thoduvai and Kodyampalayam. Whereas at all other places the cross sectional profile survey was up to the inundation limit.
- 4.2 Inundation Limit and Run-up:** The distance from the landward penetration of the Tsunami to the shoreline is termed as the inundation limit (Fig. 3). The inundation limit is ascertained from visual observations like water marks on the walls of buildings or debris line left while recession of the Tsunami as well as information gathered from the local villagers. The run-up is the height of the maximum inundation limit with respect to the shoreline level. The run-up height can be estimated from the cross sectional profiles or beach profiles. As the profiles are measured at a different time compared to the actual event, the profiles and the run-up heights were reduced to the Chart Datum.
- 4.3 Littoral environmental observations:** Breaking wave parameters and the littoral environmental observations were carried out at each station. Breaking wave height, wave period and direction were observed during the study

period. Heights of 10 consecutive breaking waves (breakers) were visually observed and the average of those heights was noted as the corresponding **breaking wave height**. Simultaneously, the total time elapsed beginning with the first breaker till the eleventh was averaged and recorded as the corresponding **breaker period**. The wave direction was visually observed and the approximate values are recorded. Longshore current velocity, surf zone width, wind speed and direction are the parameters observed in this study. Neutrally buoyant floats were released in the surf zone and the distance traveled by them in 2 minutes and the direction of travel was noted. The speed and direction of these floats were noted as the longshore current speed and direction. Surf zone width was visually estimated. Wind speed was observed based on the intensity and noted as calm, mild, moderate, medium, strong or very strong which are assumed as 0, 5, 10, 20, 40, or 60 km/h respectively and the direction was observed with the help of a magnetic compass.

4.4 Beach sediments: Beach surface sediment samples from the inter-tidal region, close to the water line, at each station were collected during the study period and sieve analysis was carried out to study the grain size distribution.

5 BASIC DATA & PRELIMINARY RESULTS

5.1 Cross sectional profiles: The cross sectional profiles at each of the station are presented in the form of graphs and digital data in Appendix - 1. The profiles were terminated at the landward end of the inundation limit. At each of the station, wherever possible more than one profile has been measured one on the north and the other on the south of the entrance to the station.

5.2 Inundation Limit & Run-up height. The inundation limits with respect to local time and the run-up height corresponding to the Chart Datum are presented in Table 1. More than 25 locations were surveyed to assess the inundation limits as well as run-up heights. At most of the locations more than one cross section profile was considered to ascertain the inundation and run-up height values. The inundation limit (for the profiles considered till inundation limit) varied between 31 m and 862 m whereas the run-up height varied between 1.987 m and 6.537 m. The minimum inundation limit is observed at Kottaikadu

Kuppam and the maximum at Nagore (along mid-profiles). The maximum run-up height is observed at Periyakalapet (North) and the minimum run-up height is observed at Arkattuthurai.

5.3 Littoral environmental observations: Breaking wave parameters and the littoral environmental observations at each of the station are presented in Table. 2. It is observed that the breaking wave heights were seen higher in northern region compared to the southern region and so were the wave periods. The Longshore current was predominantly southerly over the region except at some locations where it was northerly. The southerly longshore currents were seen to be greater in magnitude compared to the northerly currents.

5.4 Beach sediments: The inter-tidal beach sediments collected at each of the station were analysed for the grain-size distribution and the data and graphs are presented in Appendix - 2. The median grain-size (D50) values at each of the station are presented in Table. 3. the D50 of the sediments north of Poompohar were observed to be higher compared to the sediments south of Poompohar. This could be due to the wave climate, which is higher on the north compared to the south.

6 CONCLUSIONS

- o The inundation limits estimated from the survey data, where the profiles were taken till inundation limits, showed that the maximum inundation was observed at Nagore (862 m) followed by Arkattuthurai (385 m). The average inundation distance considering the surveyed locations where the profiles were taken till inundation limits was about 237 m.
- o The run-up heights reduced to Chart Datum showed that the run-up height is higher in the northern region along the Chennai-Pondicherry coast compared to the south along the Poompohar coast. The maximum run-up height was estimated at Periyakalapet-north (6.53 m) and the minimum at Nagore-north (0.67 m). The average run-up height considering the surveyed locations where the profiles were taken till inundation limits was about 4.0 m.

- o Breaking wave parameters showed that the wave heights as well as wave period were higher in the northern region compared to the southern region.
- o The littoral environmental observations showed that the longshore currents were predominantly in the southward direction with northerly currents are at few locations. The southward longshore currents were much stronger compared to the northward longshore currents.
- o The grain size distribution of the inter-tidal sediments showed that the median size varied between 0.165 mm and 0.865 mm with an average size of about 0.3 mm.

ACKNOWLEDGEMENTS

Dr. Satish R Shetye, Director, NIO, Goa has been instrumental in initiating the Post-Tsunami survey. The authors duly acknowledge the support and encouragement provided by the Director, NIO. The local officials at each of the stations and the helpful villagers who had provided the much needed information and co-operation during the survey are greatly acknowledged

REFERENCES

1. IOC Manuals and guides No. 37 - Post Tsunami survey guidelines, Intergovernmental Oceanographic Commission, UNESCO, 1998.
2. Field guide for measuring Tsunami run-ups and inundations, State of Hawaii, Dept. of Defense, Civil Defense Division, Tsunami Technical Review Committee, Hawaii, 38P, October 2002.

TABLES

Table. 1. Inundation limits and Run-up height

Sr. No.	Station Name	Date	Time	Tide (m)	Position		Inundation Limit (m)	Run up (w.r.t. CD) (m)
					Latitude	Longitude		
1	Arukattuthurai	21/01/05	1435	0.387	10°23'30.51"	79°52'07.14"	385	1.987
2	Velangani (North)	18/01/05	1410	0.530	10°40'24.98"	79°51'12.59"	175	4.705
3	Velangani (Middle)	18/01/05	0954	0.230	10°40'48.68"	79° 51'02.22"	325	3.925
4	Velangani (South)	18/01/05	1020	0.250	10°41'12.49"	79°51'13.23"	249	2.145
5	Samanthan Pettai (North)	20/01/05	1103	0.210	10°47'50.03"	79°51'03.54"	152*	1.920*
6	Samanthan Pettai (Middle)	20/01/05	0958	0.200	10°47'57.04"	79°51'03.00"	150*	3.285*
7	Samanthan Pettai (South)	20/01/05	0923	0.220	10°47'57.05"	79°51' 06.06"	174.5*	2.520*
8	Nagore (North)	19/01/05	1412	0.460	10°48'47.52"	79° 51'04.39"	41.5	2.170
9	Nagore (Middle)	19/01/05	1048	0.230	10°48'47.52"	79°51'04.38"	862	3.145
10	Nagore (South)	19/01/05	1304	0.420	10°48'47.52"	79° 51'04.37"	37	1.755
11	Karaikal	22/01/05	1444	0.338	10°54'50.03"	79°51'08.04"	199.5	2.638
12	Tarangambadi (North)	24/01/05	0942	0.461	11°01'53.59"	79°51'21.07"	160*	3.351*
13	Tarangambadi (Middle)	24/01/05	1055	0.319	11°02'09.84"	79°51'18.09"	401*	1.909*
14	Tarangambadi (South)	24/01/05	1400	0.144	11°02'26.76"	79°51'20.04"	95.5*	2.444*
15	Poompuhar (North)	25/01/05	1345	0.132	11°08'14.34"	79°51'28.03"	225*	0.672*
16	Poompuhar (South)	25/01/05	1101	0.391	11°09'00"	79°51'26.07"	150*	2.181*
17	Thirumullaivasal	26/01/05	0958	0.5712	11°14'31.00"	79°50'38.05"	280*	2.162*
18	Thodu vai	26/01/05	1206	0.352	11°6'23.05"	79°50'26.07"	536*	2.622*
19	Kodiyam Palayam	27/01/05	1115	0.570	11°23'08.34"	79°49'15.03"	628*	2.030*
20	Velangirayan	29/01/05	1123	0.576	11°32'15.04"	79°45'44.07"	323.75	3.663
21	Reddiar Pettai - 1	2/2/2005	1240	0.664	11°34'34.00"	79°45'28.06"	75	4.171
22	Reddiar Pettai - 2	2/2/2005	1252	0.690	11°34'34.00"	79°45'28.06"	155	3.210
23	Kurinjjipadi	2/2/2005	1133	0.584	11°36'45.03"	79°45'34.08"	372	3.722
24	Thevanampattinam	2/2/2005	0921	0.370	11°44'40.00"	79°47'18.09"	370	3.868
25	Pudu Kuppam	1/2/2005	1545	0.419	11°52'03.00"	79°49'09.36"	105	3.069
26	Periyakalpet (North)	1/2/2005	1124	0.761	12°1'27.18"	79°51'56.08"	350	5.886
27	Periyakalpet (South)	1/2/2005	0946	0.597	12°01'40.08"	79°52'02.52"	175	5.362
28	Periyakalpet (Middle)	1/2/2005	0106	0.788	12°2'03.18"	79°52'17.07"	240	6.538
29	Nochi Kuppam	3/2/2005	1610	0.757	12°05'08.46"	79°53'55.01"	196	3.727
30	Ekkar Kuppam	3/2/2005	0916	0.325	12°10'49.00"	79°57'37.03"	49	4.525
31	Kottai Kadu Kuppam	3/2/2005	1427	0.793	12°14'42.00"	79°58'59.04"	31	2.498
32	Alambarai Kuppam	3/2/2005	1146	0.621	12°16'04.92"	80°00'55.02"	216	4.576
33	Sadurangapattinam-1	4/2/2005	1055	0.379	12°31'22.09"	80°09'56.28"	250	5.789
34	Sadurangapattinam-2	4/2/2005	1212	0.491	12°31'31.00"	80°09'58.56"	182	5.071
35	Mahabalipuram	4/2/2005	1350	0.767	12°36'55.05"	80°11'56.08"	349	5.433
36	Kovalam	5/2/2005	1020	0.286	12°47'19.09"	80°15'16.02"	90	5.419
37	Urur Alcott Kuppam	5/2/2005	1445	0.880	13°00'35.28"	80°16'34.05"	113	5.037
38	Krishnapatanam	5/2/2005	1445	0.871	14°15'00"	80°08'16.56"	156	2.198

* - Profiles were not taken till the Inundation Limit

Table 2. Littoral Environmental Observations

Location	Date	Time	Breaking Wave Height (m)	Wave period (sec)	Breaking Wave Angle (deg.)	Type of Breaker	Longshore Current Velocity (m/min.)	Wind speed (kmph)	Wind Direction
Velangani(Middle)	18/1/2005	1000	0.7	4	5	5	-3	5	NE
Velangani (South)	18/1/2005	1115	0.6	3	5	3	4	2	NE
Velangani (North)	18/1/2005	1410	0.5	3	4	5	5	2	S
Nagore (Middle)	19/1/2005	1100	0.4	3	2	5	-20	6	S
Nagore (South)	19/1/2005	1330	0.7	4	4	5	-18	6	S
Nagore (North)	19/1/2005	1415	0.8	3	2	5	-25	6	S
Samanthan Pettai (Middle)	20/1/2005	1100	0.4	3	0	5	-20	6	S
Samanthan Pettai (South)	20/1/2005	1330	0.7	4	1	5	-18	6	S
Samanthan Pettai (North)	20/1/2005	1415	0.8	3	2	5	-25	6	S
Arukattuthurai (Vedraniyam)	21/1/2005	1430	0.4	4	3	5	8	10	SW
Karaikal Beach	22/1/2005	1445	0.75	4	0	5	-15	5	SW
Tarangambadi (Middle)	24/1/2005	0942	0.8	4	0	5	5	8	S
Tarangambadi (South)	24/1/2005	1055	0.6	5	0	5	6	12	S
Tarangambadi (North)	24/1/2005	1444	1.2	4	0	5	-15	5	S
Poompuhar (North)	25/1/2005	1030	0.8	6	0	5	-7	5	NW
Poompuhar (South)	25/1/2005	1340	0.75	3	0	1	-20	5	NW
Thirumullaivasal	26/1/2005	1215	0.6	4	2	5	-15	5	SE
Kodiyam Palayam	27/1/2005	1115	0.5	5	5	1&2	11	5	SE
Velangirayan	29/1/2005	1155	0.56	4	0	5	12	5	SW
Periyakalpet (Middle)	1/2/2005	1130	1.03	9	3	5	4	10	S
Periyakalpet (South)	1/2/2005	1300	1.27	9	1	5	-8	10	S
Periyakalpet (North)	1/2/2005	1540	1.2	8	0	5	-21	10	NE
Thevanampattinam (Cuddalore)	2/2/2005	0915	1.19	8	0	5	-13	10	NE
Kurinjipadi	2/2/2005	1130	1.3	10	0	5	-8	20	NE
Reddiar Pettai - 1	2/2/2005	1240	1.16	10	0	5	-13	10	NE
Ekkar Kuppam	3/2/2005	0915	1.37	8	0	5	-21	10	NE
Alambarai Kuppam	3/2/2005	1115	1.3	7	1	5	-11	10	NE
Nochi Kuppam	3/2/2005	1610	1.4	7	0	5	-28	20	NE
Sadurangapattinam-1	4/2/2005	1100	1.5	7	2	5	-17	20	NE
Sadurangapattinam-2	4/2/2005	1210	1.8	8	2	5	-13	20	NE
Mahabalipuram Beach	4/2/2005	1350	1.75	8	0	5	3	20	NE
Kovalam Beach	5/2/2005	1015	1.15	9	0	5	6	5	NE
Urur Kuppam	5/2/2005	1440	1.26	11	0	5	7	10	NE
Krishnapatanam	6/2/2005	1315	0.75	7	0	5	-13	5	NE

(Type of breaker: 1- Spill, 2-Plunge, 3-Collapse, 4-Spill and plunge, 5-Plunge and Spill. Longshore current velocity: -ve Northerly, +ve Southerly)

Table 3. Median Size of Beach Sediments D₅₀ during the survey

Sr. No.	Station Name	D ₅₀ Value (mm)
1.	Arukattuthurai	0.275
2	Velangani (Middle)	0.275
3	Samanthan Pettai (Middle)	0.200
4	Nagore (Middle)	0.250
5	Karaikal Beach	0.210
6	Tarangambadi (Middle)	0.230
7	Poompuhar (South)	0.530
8	Poompuhar (North)	0.290
9	Thirumullaivasal	0.270
10	Kodiyam Palayam - 1	0.200
11	Kodiyam Palayam - 2	0.175
12	Velangirayan	0.225
13	Reddiar Pettai - 1	0.230
14	Kurinjipadi	0.260
15	Thevanampattinam (Cuddalore)	0.320
16	Pudu Kuppam	0.405
17	Periyakalpet (South)	0.710
18	Periyakalpet (Middle)	0.360
19	Periyakalpet (North)	0.390
20	Nochi Kuppam	0.380
21	Ekkiyar Kuppam	0.240
22	Kottai Kadu Kuppam	0.415
23	Alambarai Kuppam	0.330
24	Sadurangapattinam-1	0.340
25	Mahabalipuram Beach	0.380
26	Kovalam Beach	0.865
27	Urur Alcott Kuppam	0.290
28	Krishnapatanam	0.165

FIGURES

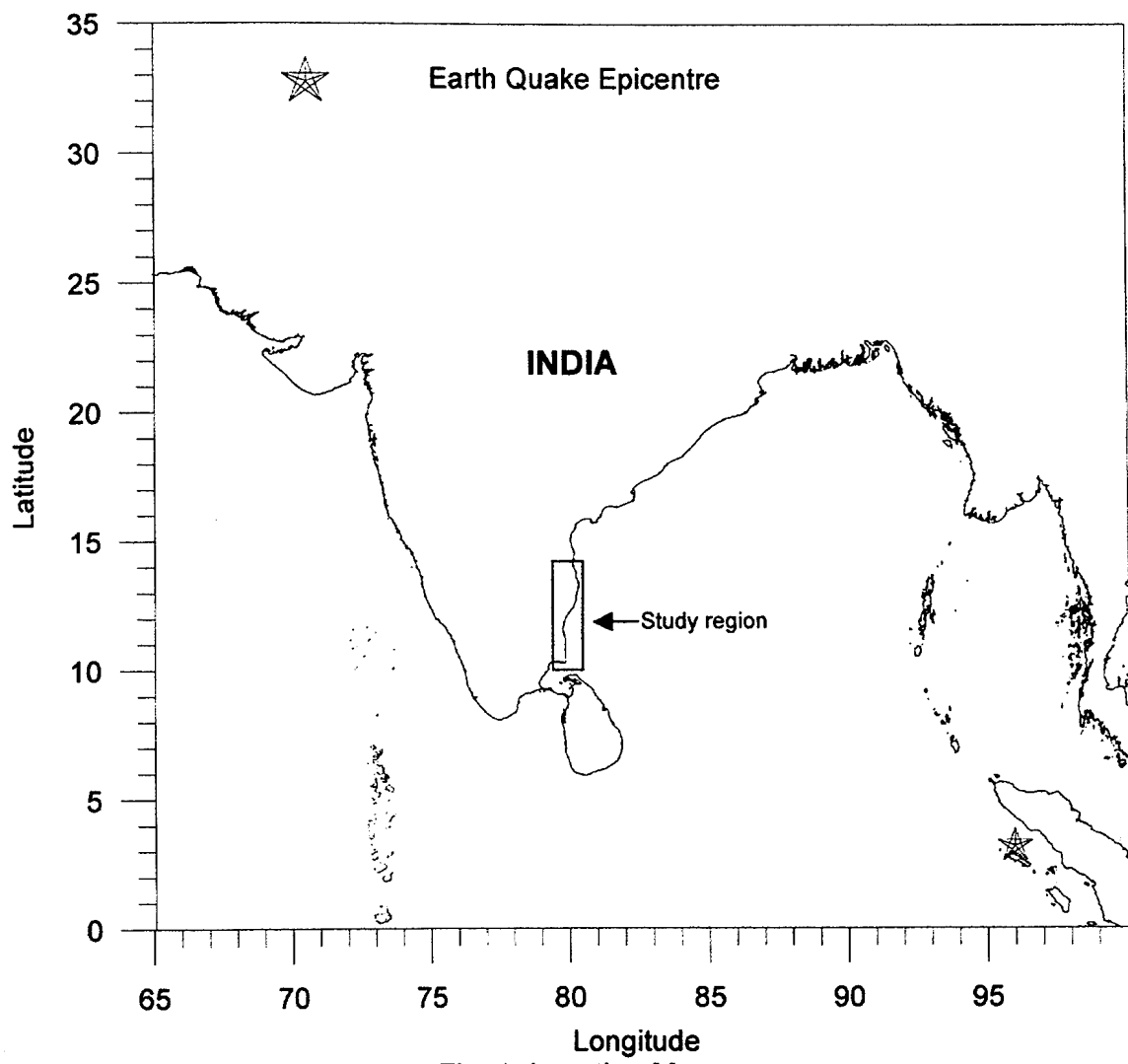


Fig. 1. Location Map

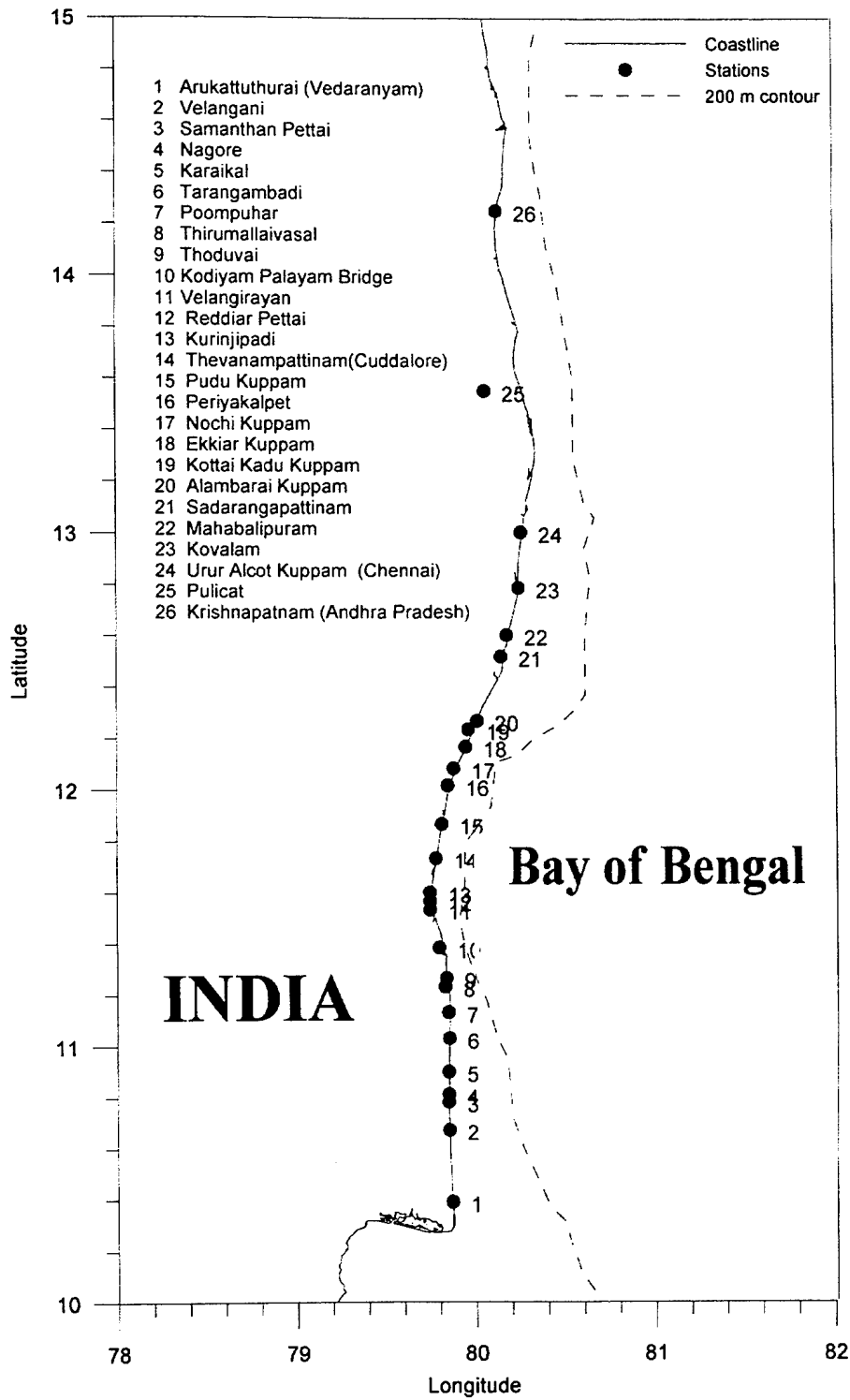


Fig. 2. Plot Showing Locations of Post-tsunami Field Survey

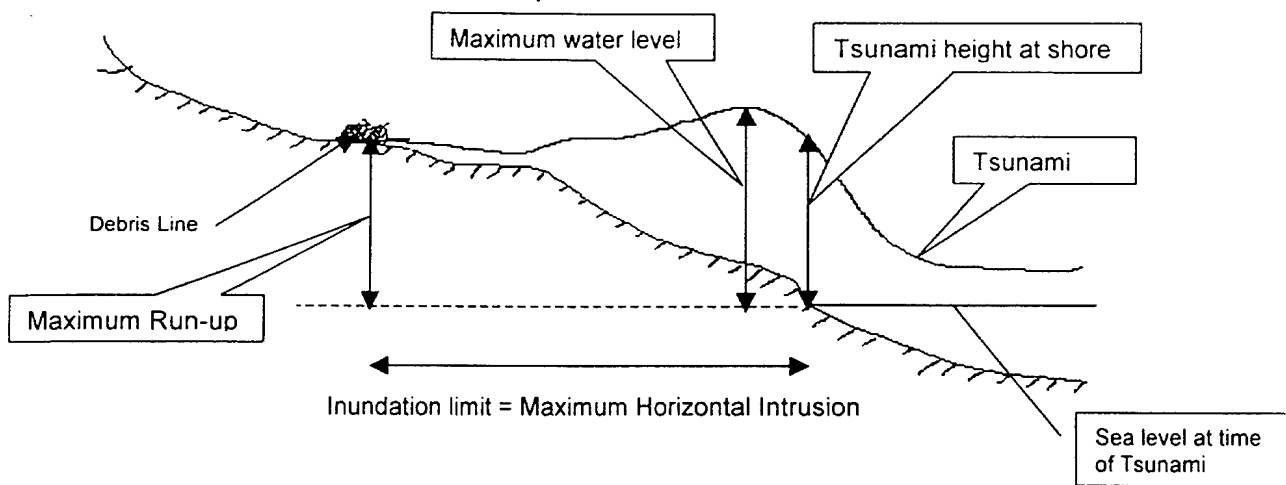


Fig. 3. Inundation limit and Run-up height

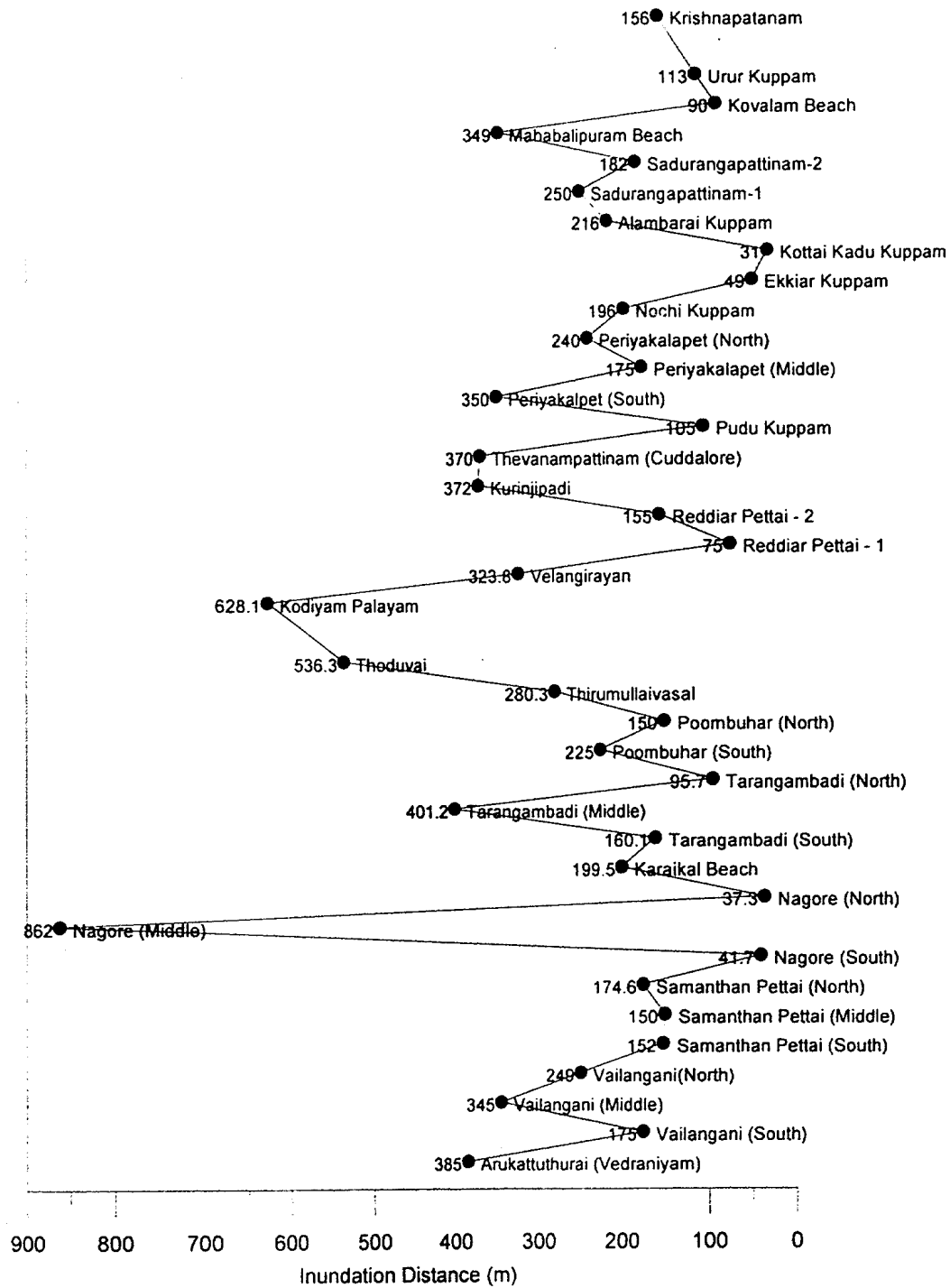


Fig. 4. Inundation limits along the survey locations

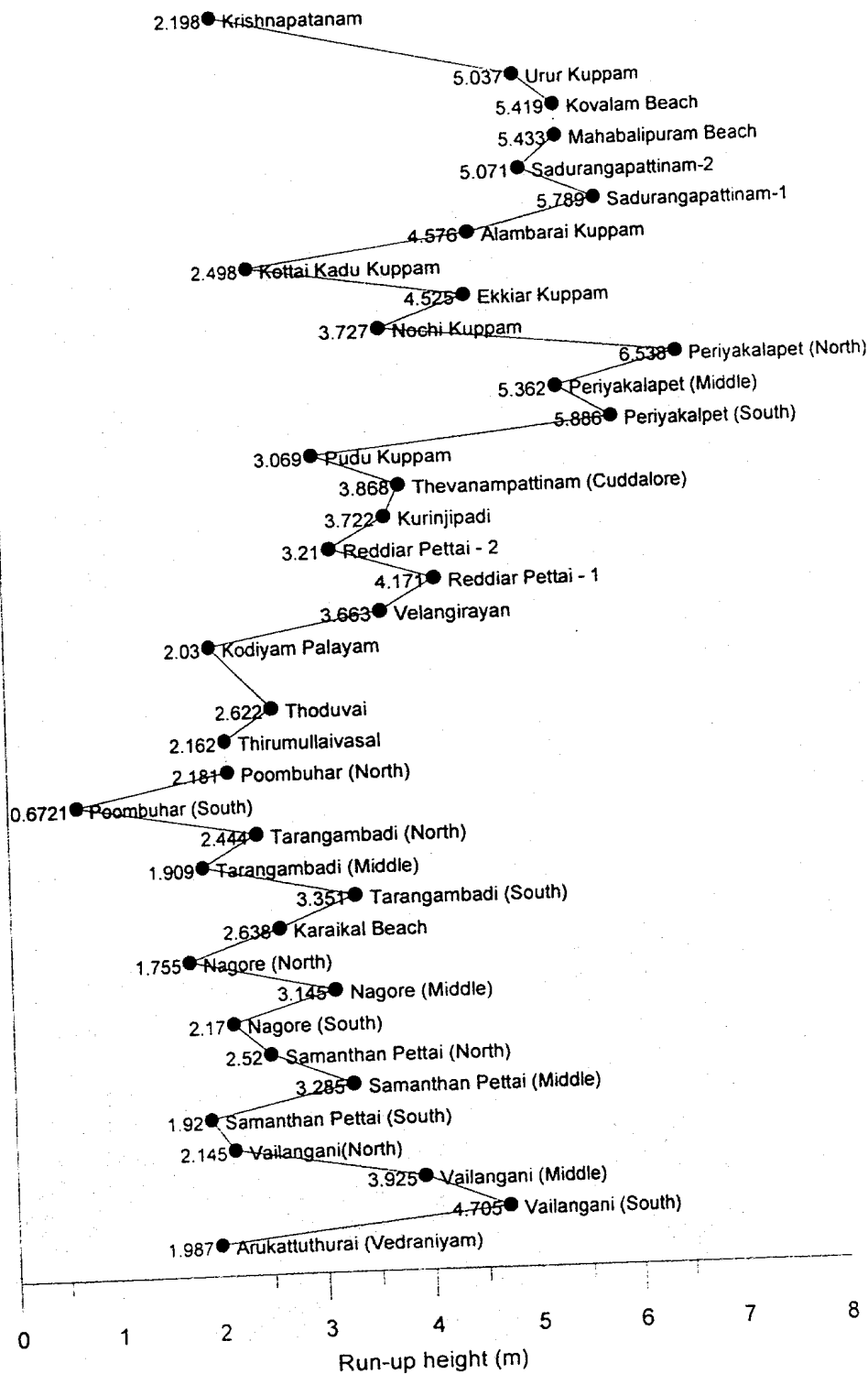


Fig. 5. Height of Tsunami Run-up

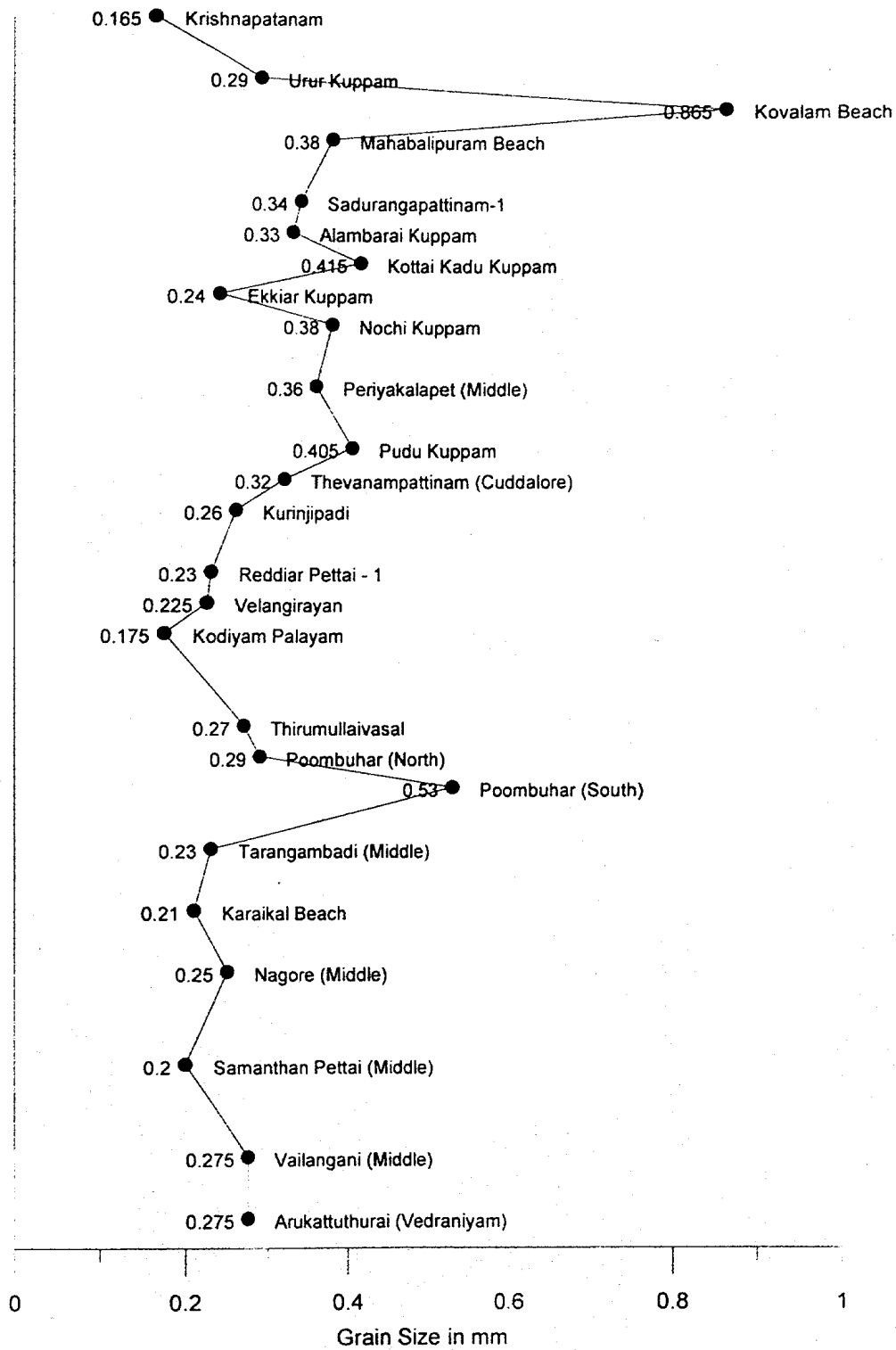
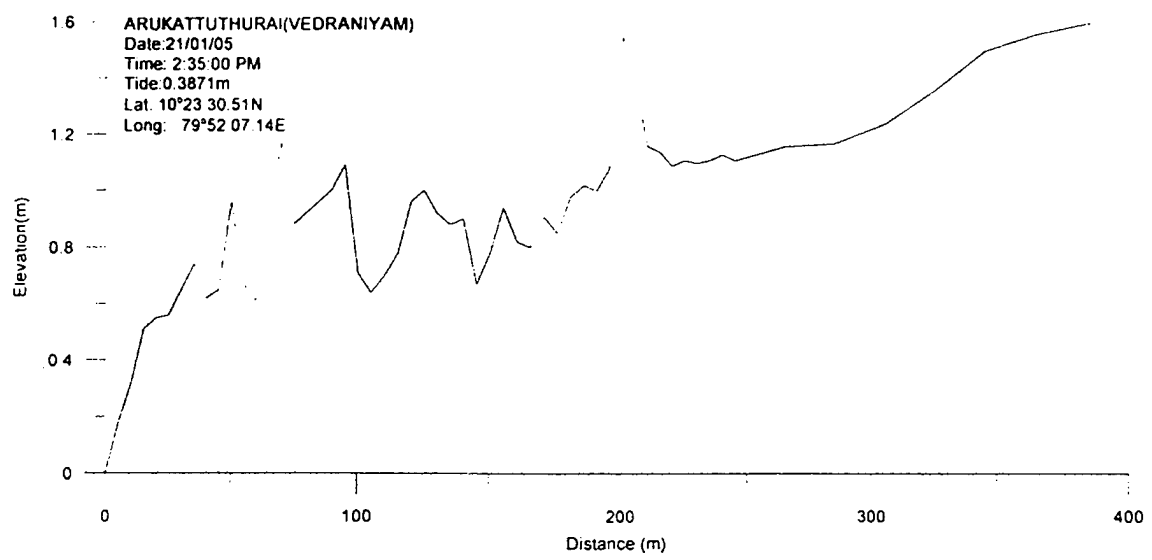


Fig.6. Median Grain size of intertidal beach sediments

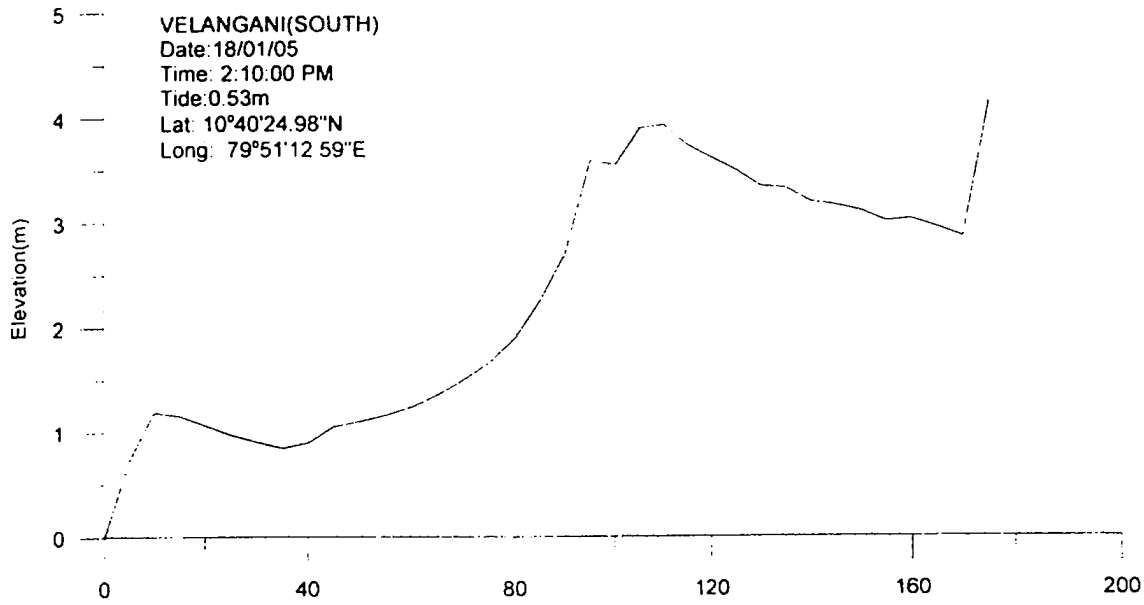
Appendix 1

A1-1



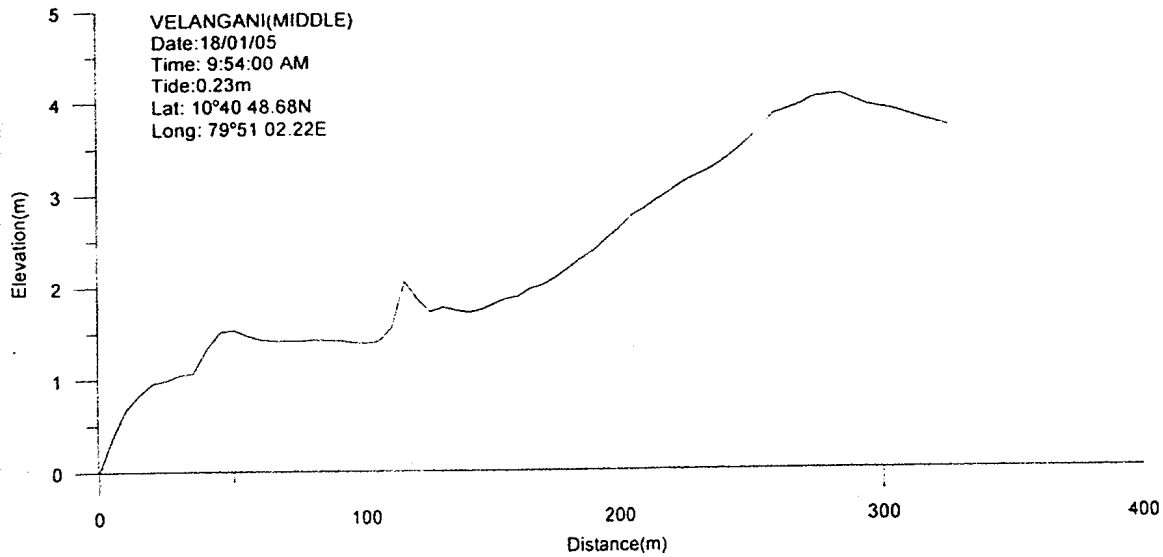
Distance(m)	Elevation(m)
0	0
5	0.18
10	0.32
15	0.51
20	0.55
25	0.56
30	0.65
35	0.74
40	0.62
45	0.65
50	0.96
55	0.67
60	0.61
65	0.94
70	1.17
75	0.88
80	0.92
85	0.96
90	1
95	1.09
100	0.71
105	0.64
110	0.7
115	0.78
120	0.96
125	1
130	0.92
135	0.88
140	0.9

145	0.67
150	0.78
155	0.94
160	0.82
165	0.8
170	0.91
175	0.85
180	0.98
185	1.02
190	1
195	1.08
200	1.55
205	1.38
210	1.16
215	1.14
220	1.09
225	1.11
230	1.1
235	1.11
240	1.13
245	1.11
265	1.16
285	1.17
305	1.24
325	1.36
345	1.5
365	1.56
385	1.6
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.73
10	1.19
15	1.16
20	1.07
25	0.98
30	0.91
35	0.85
40	0.9
45	1.055
50	1.105
55	1.165
60	1.245
65	1.365
70	1.51
75	1.675
80	1.905
85	2.265
90	2.715

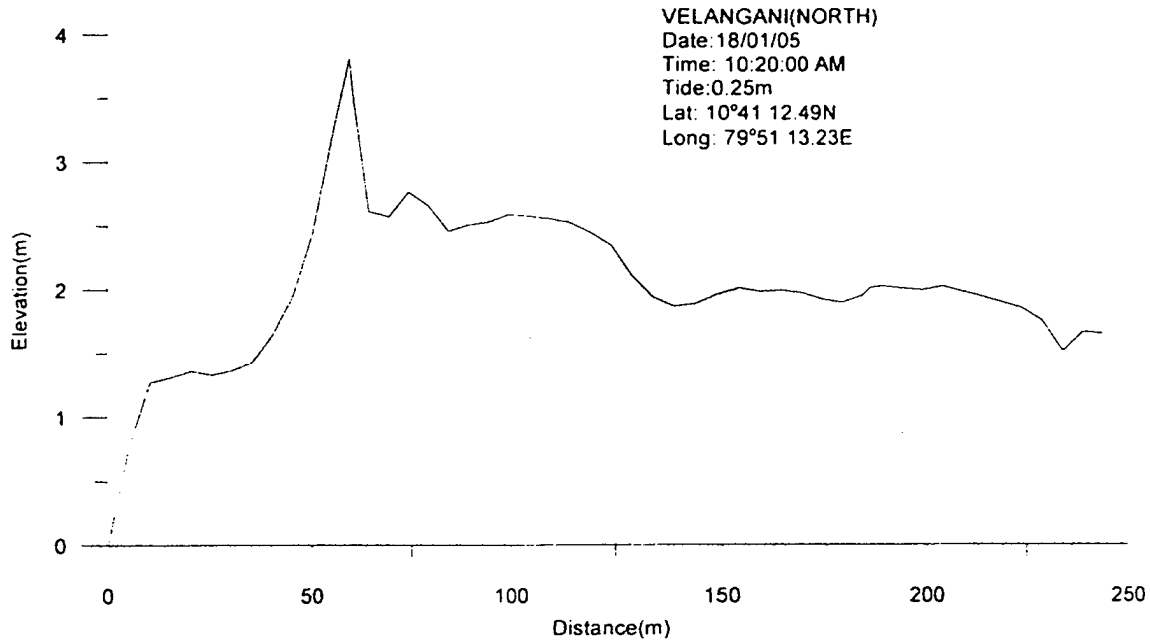
Distance(m)	Elevation(m)
95	3.605
100	3.565
105	3.915
110	3.945
115	3.755
120	3.635
125	3.515
130	3.365
35	3.345
140	3.215
145	3.18
150	3.125
155	3.025
160	3.045
165	2.965
170	2.875
175	4.175
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.36
10	0.67
15	0.83
20	0.95
25	0.98
30	1.04
35	1.06
40	1.32
45	1.505
50	1.525
55	1.465
60	1.42
65	1.405
70	1.405
75	1.405
80	1.415
85	1.41
90	1.405
95	1.385
100	1.375
105	1.395
110	1.545
115	2.05
120	1.855
125	1.715
130	1.765
135	1.735
140	1.71
145	1.735
150	1.8

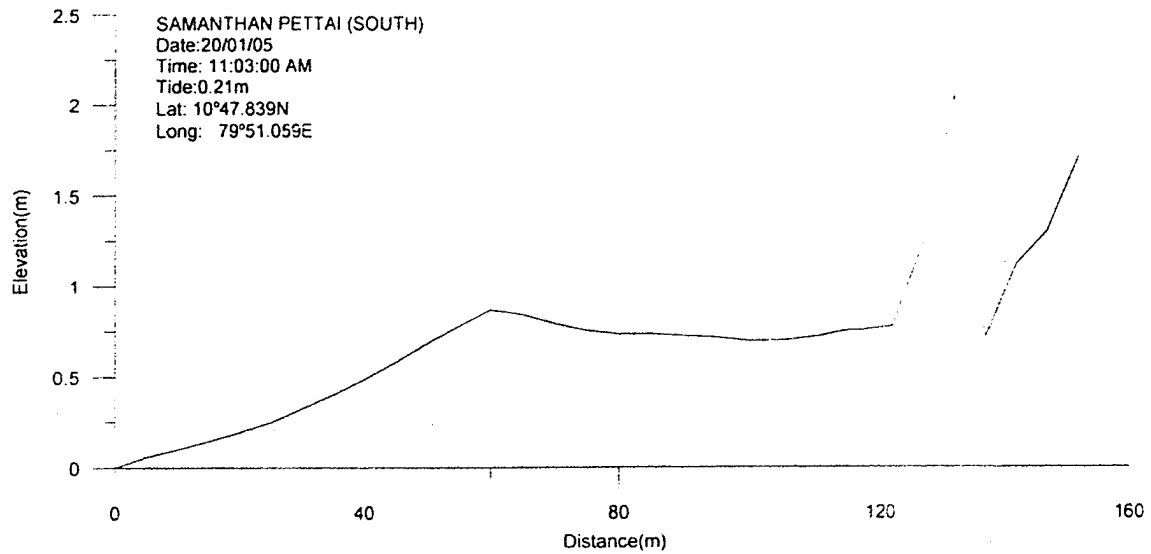
155	1.855
160	1.88
165	1.965
170	2.005
175	2.085
180	2.185
185	2.285
190.1	2.375
195	2.495
200	2.605
205	2.745
210	2.82
215.1	2.915
220	3
225	3.095
230	3.165
235	3.23
240	3.31
245	3.415
250	3.535
255	3.68
260	3.84
270.1	3.94
275	4.02
285	4.055
295	3.93
305	3.875
315	3.775
325	3.695
Inundation limit reached	

A1-4



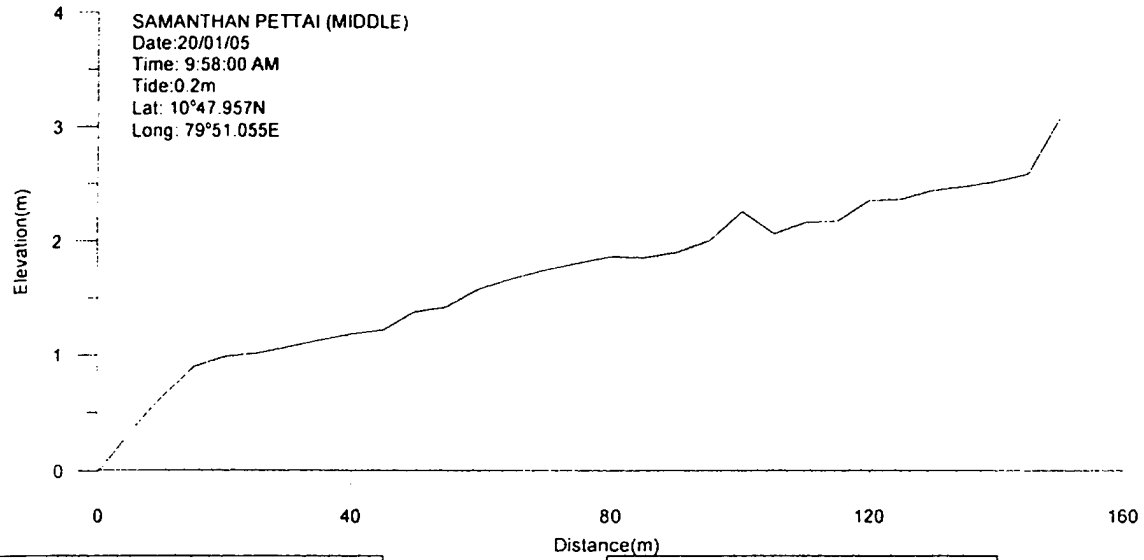
Distance(m)	Elevation(m)
0	0
5	0.785
10	1.27
15	1.31
20	1.36
25	1.33
30	1.365
35	1.43
40	1.64
45	1.945
50	2.45
55	3.25
59	3.81
60	3.5
64	2.61
69	2.57
74	2.765
79	2.655
84	2.46
89	2.51
94	2.53
99	2.59
104	2.58
109	2.56
114	2.53
119	2.455
124	2.35

129	2.11
134	1.945
139	1.87
144	1.89
149	1.965
154	2.015
159	1.985
164	1.995
169	1.975
174	1.925
179	1.895
184	1.95
186	2.015
189	2.025
194	2.01
199	1.995
204	2.025
214	1.945
224	1.855
229	1.755
234	1.515
239	1.665
244	1.655
249	1.895
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.06
10	0.1
15	0.145
20	0.195
25	0.25
30	0.325
35	0.4
40	0.485
45	0.58
50	0.685
55	0.78
60	0.87
65	0.845
70	0.795
75	0.755
80	0.735
85	0.735
90	0.725
95	0.715
100	0.695
105	0.7
110	0.72
115	0.755
117	0.755
122	0.775
127	1.235
132	2.045
137	0.715
142	1.115

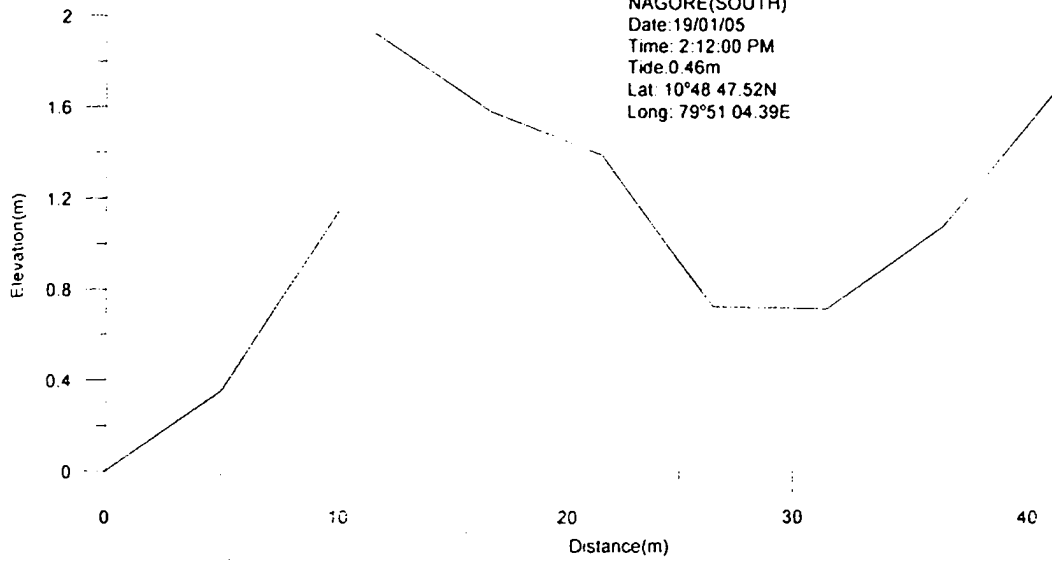
147	1.295
152	1.71
Inundation limit NOT reached	



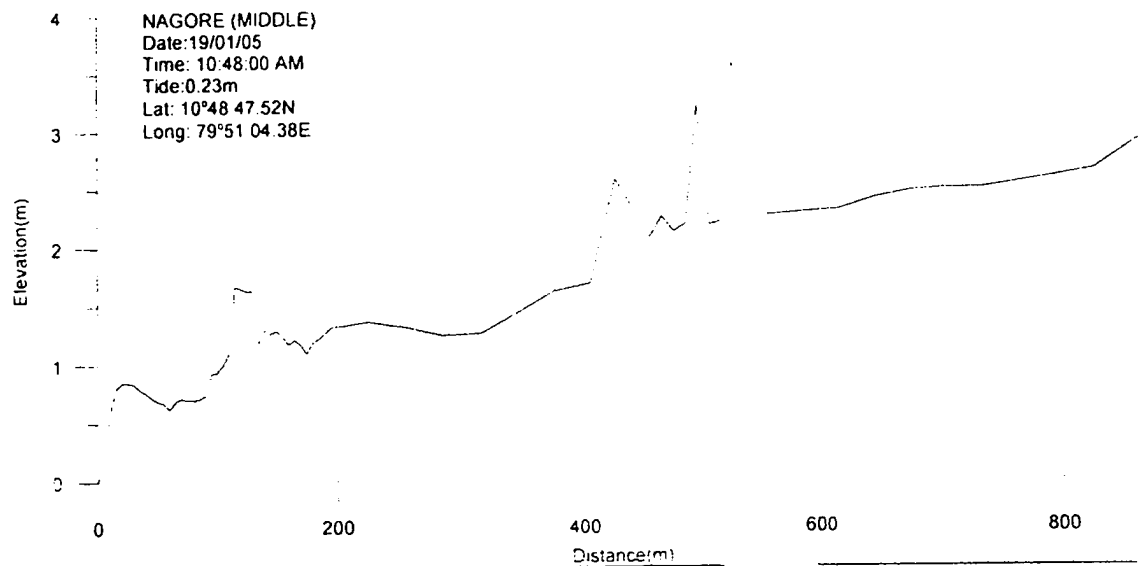
Distance(m)	Elevation(m)
0	0
5	0.33
10	0.63
15	0.9
20	0.99
25	1.015
30	1.07
35	1.13
40	1.185
45	1.22
50	1.38
55	1.42
60	1.58
65	1.67
70	1.75
75	1.81
80	1.87

Distance(m)	Elevation(m)
85	1.86
90	1.91
95	2.015
100	2.27
105	2.075
110	2.175
115	2.185
120	2.365
125	2.375
130	2.45
135	2.485
140	2.53
145	2.595
150	3.085
Inundation limit NOT reached	

NAGORE(SOUTH)
 Date: 19/01/05
 Time: 2:12:00 PM
 Tide: 0.46m
 Lat: 10°48' 47.52N
 Long: 79°51' 04.39E



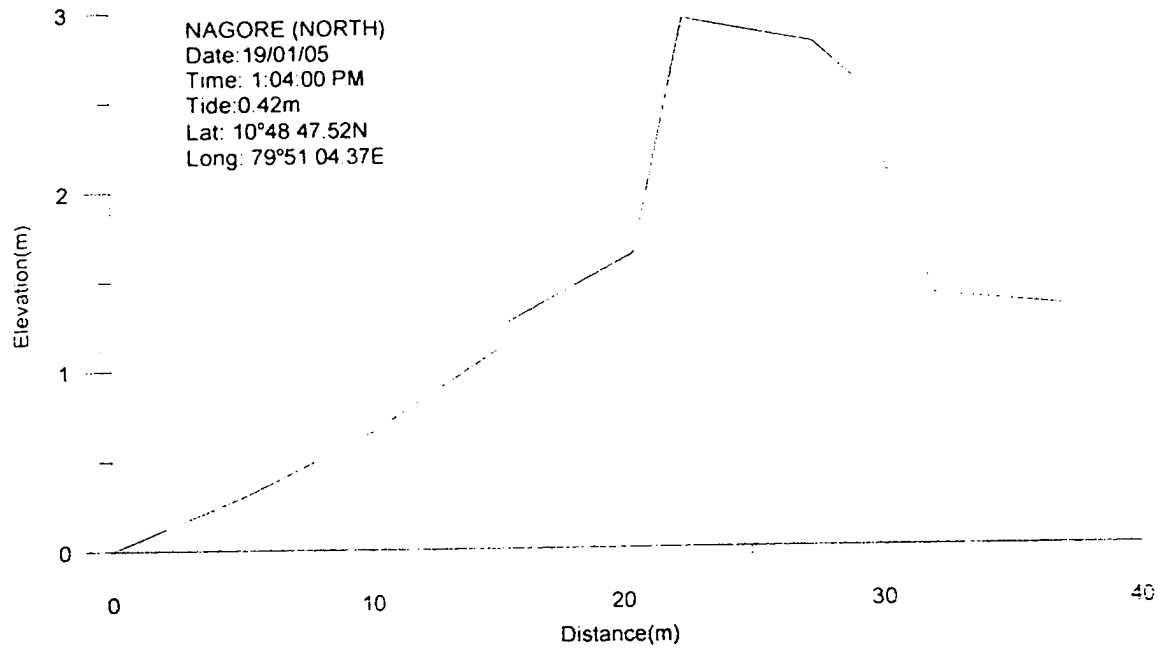
Distance(m)	Elevation(m)
0	0
5	0.35
10	1.14
11	1.87
11.5	1.92
16.5	1.58
21.5	1.39
26.5	0.725
31.5	0.715
36.5	1.08
41.5	1.71
Inundation limit reached	



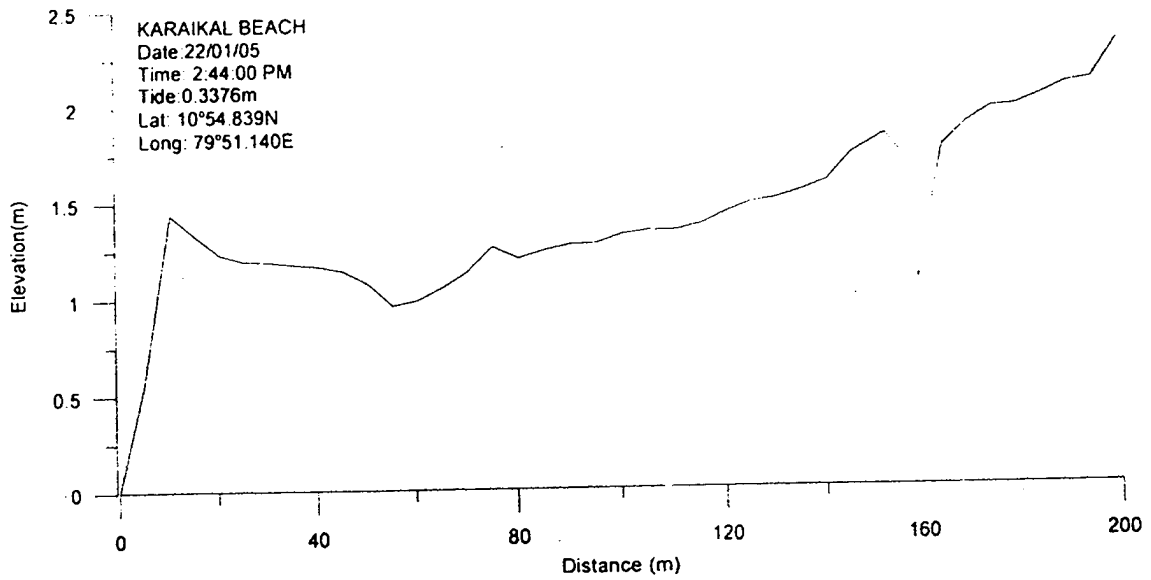
Distance (m)	Elevation (m)
0	0
5	0.18
10	0.59
15	0.8
20	0.85
25	0.85
30	0.84
35	0.79
40	0.76
45	0.72
50	0.69
55	0.675
60	0.62
65	0.69
70	0.715
75	0.7
80	0.7
85	0.71
90	0.74
95	0.92
100	0.935
105	1
110	1.09
115	1.67
120	1.65
125	1.63
130	1.63
135	1.18
140	1.3

Distance (m)	Elevation (m)
145	1.26
150	1.29
155	1.25
160	1.17
165	1.21
170	1.17
175	1.09
180	1.19
185	1.22
195	1.32
205	1.33
215	1.35
225	1.365
255	1.32
285	1.25
315	1.27
345	1.45
375	1.63
405	1.695
426	2.59
456	2.085
466	2.265
476	2.135
486	2.2
496	3.23
506	2.19
516	2.22
526	3.59
556	2.275
586	2.3
616	2.32

646	2.42
676	2.48
706	2.5
736	2.5
766	2.55
796	2.605
826	2.66
862	2.915
Inundation limit reached	

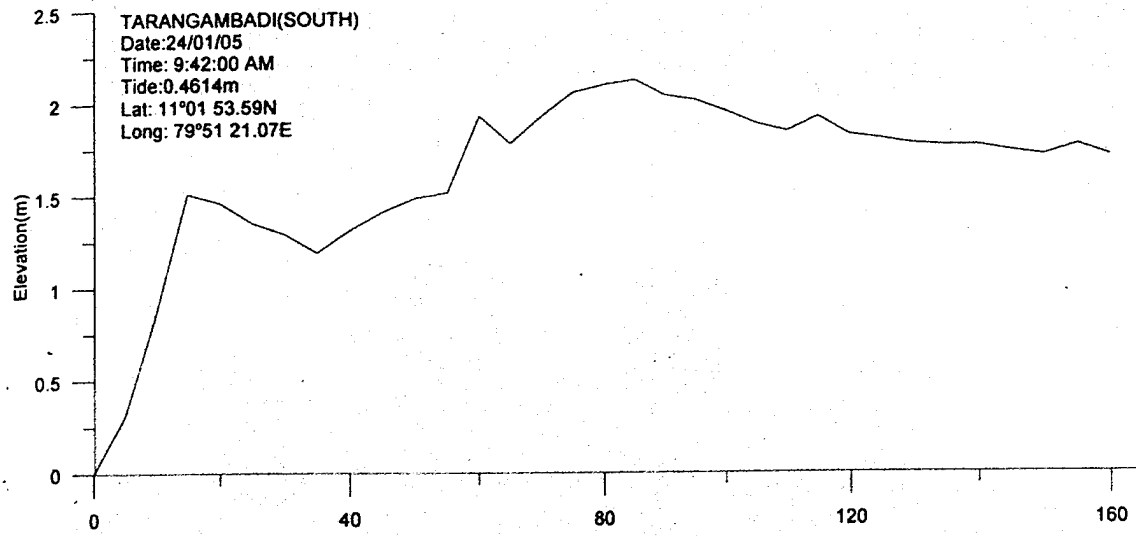


Distance(m)	Elevation(m)
0	0
5	0.305
10	0.655
15	1.105
15.5	1.265
20.5	1.645
22.5	2.955
27.5	2.82
29	2.625
32	1.4
37	1.335
Inundation limit reached	



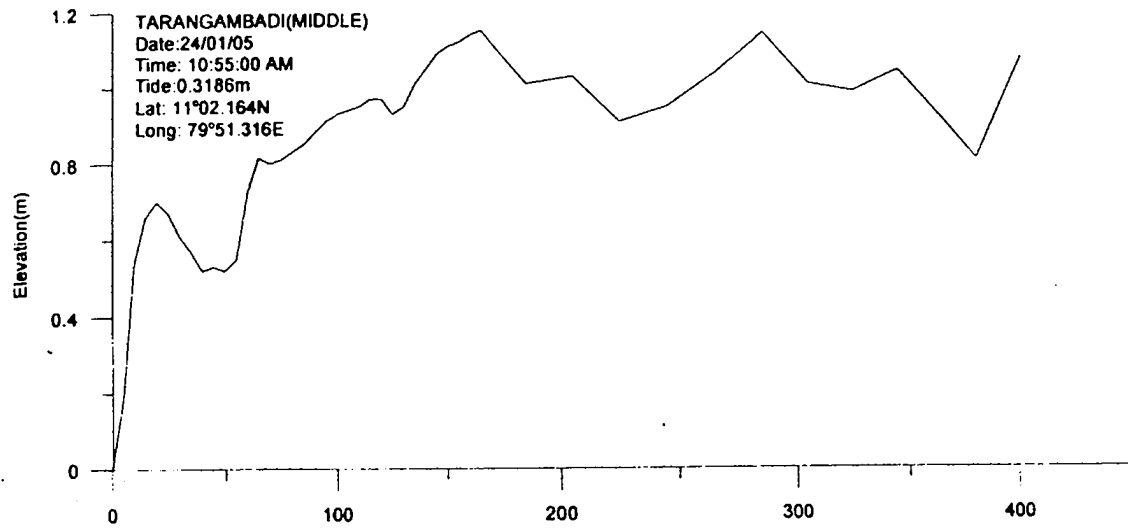
Distance(m)	Elevation(m)
0	0
5	0.56
10.5	1.44
15.5	1.33
20.5	1.23
25.5	1.195
30.5	1.19
35.5	1.175
40.5	1.165
45.5	1.14
50.5	1.075
55.5	0.96
60.5	0.985
65.5	1.05
70.5	1.13
75.5	1.26
80.5	1.2
85.5	1.24
90.5	1.27
95.5	1.275
100.5	1.32
105.5	1.34
110.5	1.34
115.5	1.37
120.5	1.43
125.5	1.48
130.5	1.5

135.5	1.54
140.5	1.59
145.5	1.73
150.5	1.8
152.5	1.83
155.5	1.74
159.5	1.07
164.5	1.76
169.5	1.88
174.5	1.96
179.5	1.97
184.5	2.02
189.5	2.08
194.5	2.1
199.5	2.3
Inundation limit reached	



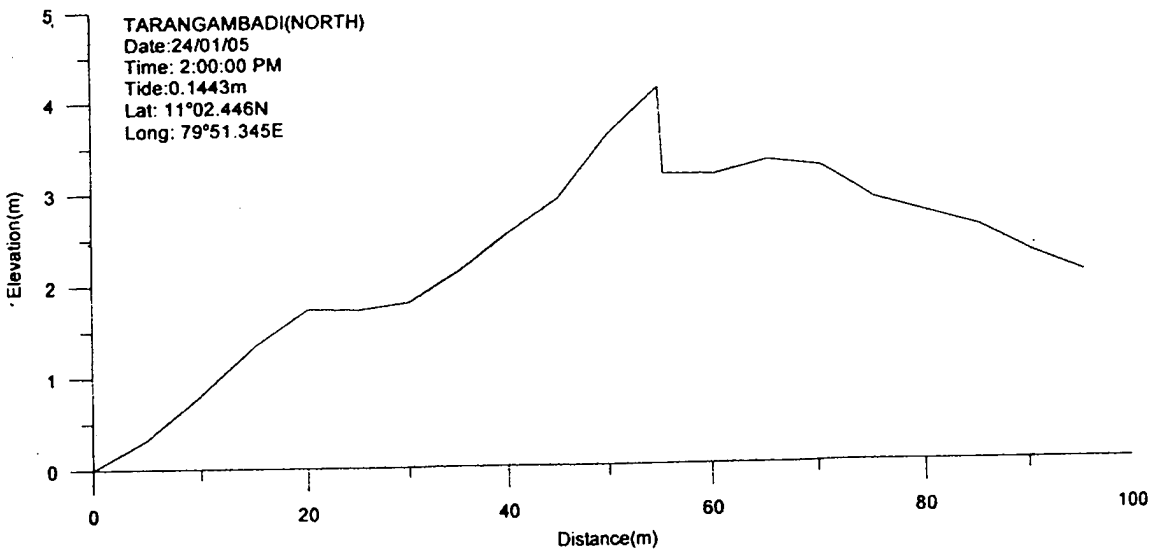
Distance(m)	Elevation(m)
0	0
5	0.31
10	0.86
15	1.51
20	1.46
25	1.35
30	1.29
35	1.19
40	1.31
45	1.41
50	1.485
55	1.515
60	1.93
65	1.78
70	1.93
75	2.06
80	2.1
85	2.125
90	2.045
95	2.02
100	1.96
105	1.89
110	1.85
115	1.93
120	1.83
125	1.81
130	1.78
135	1.77

Distance(m)	Elevation(m)
140	1.77
145	1.74
150	1.715
155	1.77
160	1.71
Inundation limit NOT reached	

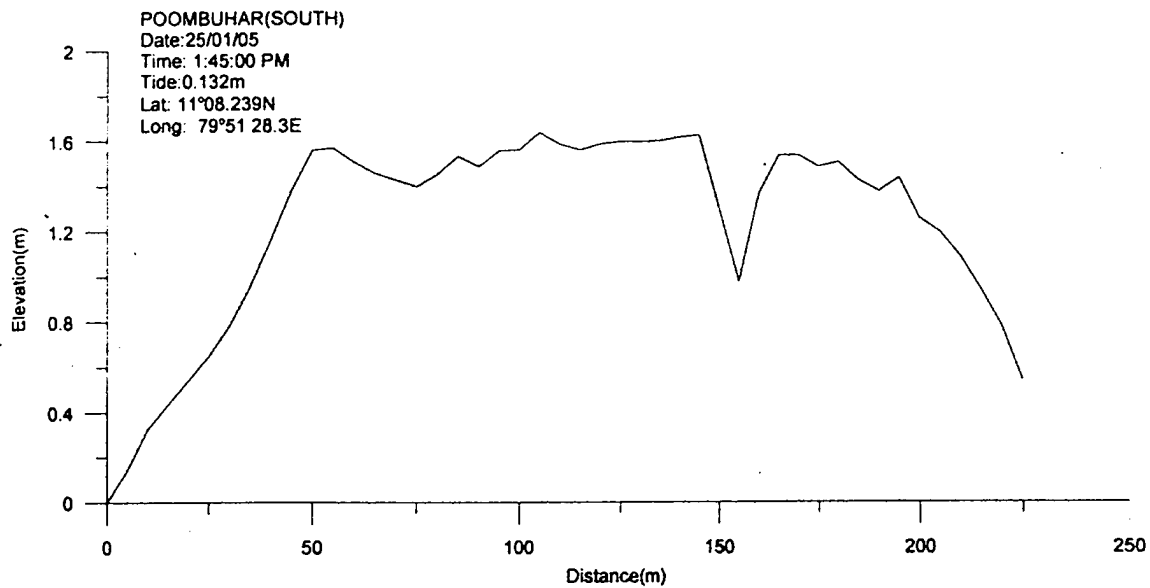


Distance(m)	Elevation(m)
0	0
5	0.18
10	0.54
15	0.66
20	0.7
25	0.67
30	0.61
35	0.57
40	0.52
45	0.53
50	0.52
55	0.55
60	0.725
65	0.815
70	0.8
75	0.81
80	0.83
85	0.85
90	0.88
95	0.91
100	0.93
105	0.94
110	0.95
115	0.97
120	0.97
125	0.93
130	0.95
135	1.01
140	1.05
145	1.09
150	1.11

Distance(m)	Elevation(m)
155	1.12
160	1.14
165	1.15
185	1.01
205	1.03
225	0.91
245	0.95
265	1.04
285	1.145
305	1.01
325	0.99
345	1.045
381	0.81
401	1.08
Inundation limit NOT reached	



Distance(m)	Elevation(m)
0	0
5	0.32
10	0.8
15	1.34
20	1.735
25	1.725
30	1.8
35	2.135
40	2.535
45	2.91
50	3.61
55	4.12
55.5	3.17
60.5	3.16
65.5	3.31
70.5	3.24
75.5	2.87
80.5	2.71
85.5	2.55
90.5	2.26
95.5	2.04
Inundation limit NOT reached	

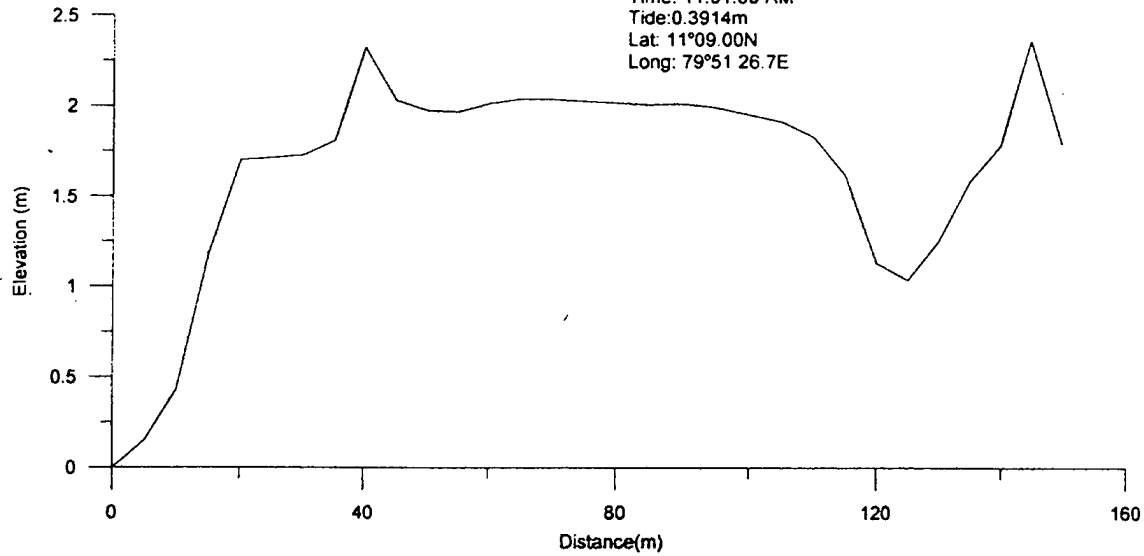


Distance(m)	Elevation(m)
0	0
5	0.14
10	0.325
15	0.435
20	0.54
25	0.65
30	0.78
35	0.955
40	1.16
45	1.38
50	1.56
55	1.57
60	1.51
65	1.46
70	1.43
75	1.4
80	1.455
85	1.535
90	1.49
95	1.56
100	1.565
105	1.64
110	1.59
115	1.565
120	1.59
125	1.6

130	1.6
135	1.605
140	1.62
145	1.63
150	1.31
155	0.98
160	1.37
165	1.54
170	1.54
175	1.49
180	1.51
185	1.43
190	1.38
195	1.44
200	1.26
205	1.2
210	1.09
215	0.945
220	0.78
225	0.54
Inundation limit NOT reached	

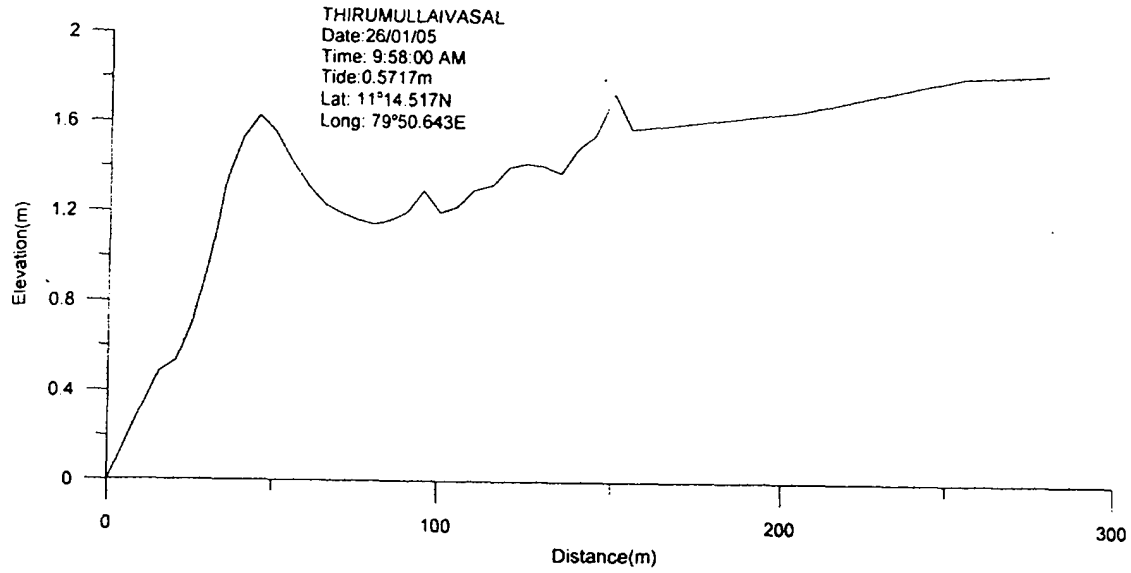
A1-16

POOMBUHAR(NORTH)
 Date:25/01/05
 Time: 11:01:00 AM
 Tide:0.3914m
 Lat: 11°09.00N
 Long: 79°51 26.7E



Distance(m)	Elevation(m)
0	0
5	0.15
10	0.43
15	1.18
20	1.7
25	1.71
30	1.725
35	1.805
40	2.32
45	2.03
50	1.975
55	1.97
60	2.015
65	2.04
70	2.04
75	2.03
80	2.02
85	2.01
90	2.015
95	1.995
100	1.955
105	1.915
110	1.83
115	1.62

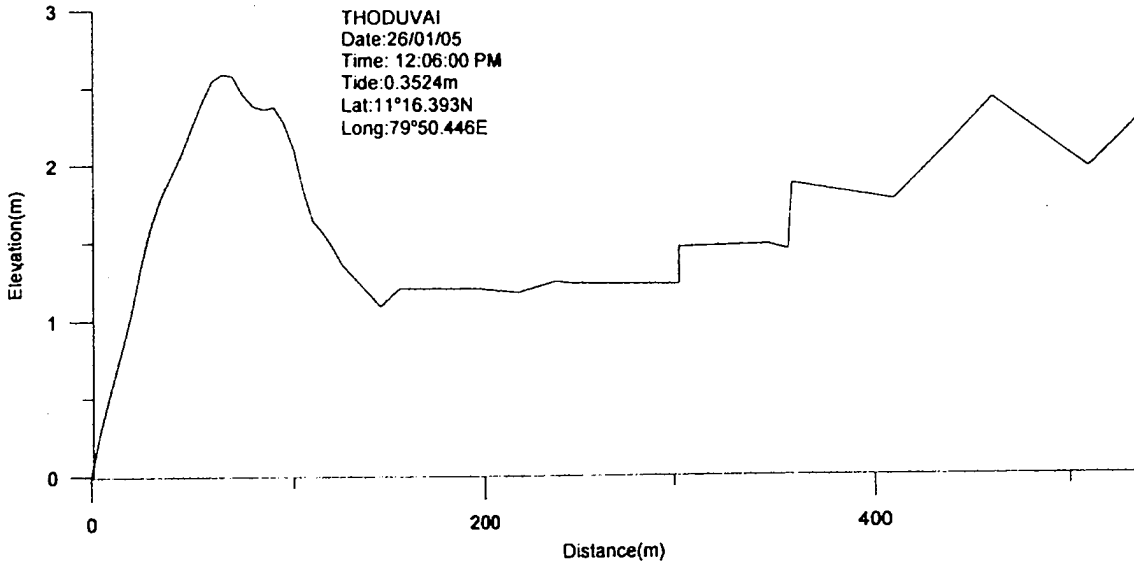
120	1.13
125	1.035
130	1.25
135	1.585
140	1.785
145	2.365
150	1.79
Inundation limit NOT reached	



Distance(m)	Elevation(m)
0	0
5	0.165
10	0.325
15	0.485
20	0.535
25	0.71
30	0.985
35	1.345
40	1.525
45	1.625
50	1.555
55	1.425
60	1.315
65	1.235
70	1.195
75	1.165
80	1.145
85	1.165
90	1.2
95	1.295
100	1.2
105	1.225
110	1.3
115	1.32
120	1.405
125	1.42
130	1.41
135	1.38

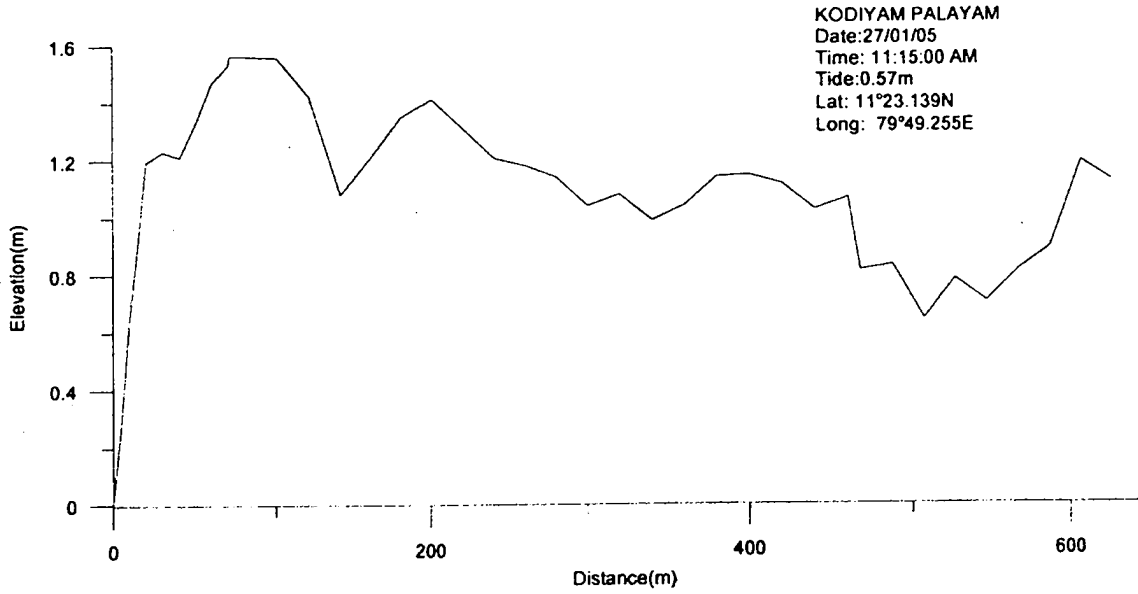
140	1.49
145	1.55
150	1.74
155	1.58
205	1.665
255	1.82
280	1.835
Inundation limit NOT reached	

A1-18



Distance(m)	Elevation(m)
0	0
5	0.3
10	0.55
15	0.79
20	1.045
25	1.355
30	1.605
35	1.79
40	1.93
45	2.07
50	2.24
55	2.4
60	2.54
65	2.585
70	2.57
75	2.45
80	2.375
85	2.355
90	2.37
95	2.27
100	2.1
105	1.83
110	1.635
115	1.56
120	1.47
125	1.36
145	1.085
155	1.2

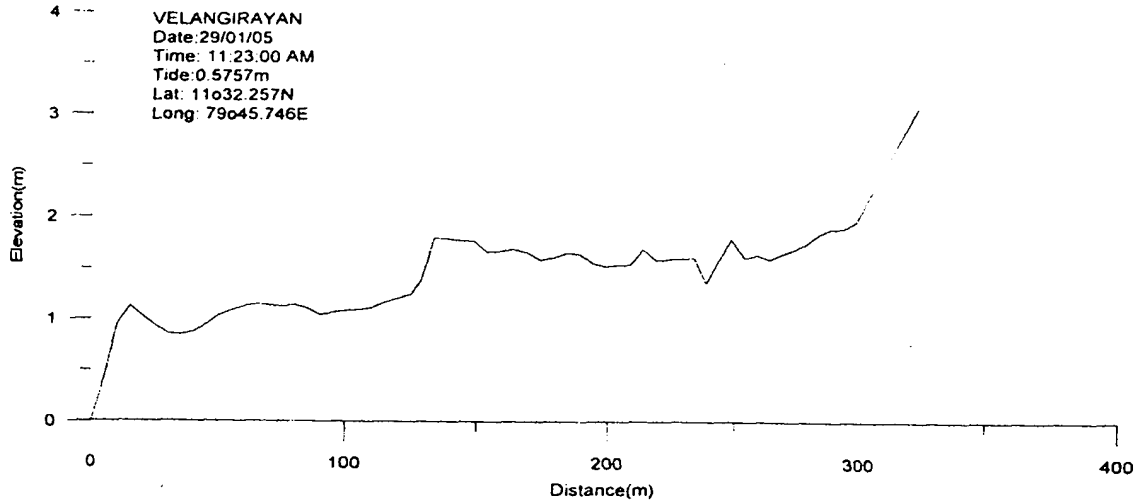
168	1.2
175	1.2
195	1.2
218	1.175
238	1.245
248	1.23
303	1.225
303	1.46
348	1.475
358	1.44
360	1.87
410	1.76
460	2.415
510	1.96
536	2.27
Inundation limit NOT reached	



Distance(m)	Elevation(m)
0	0
5	0.28
10	0.64
15	0.91
20	1.195
30	1.23
40	1.21
50	1.33
60	1.47
70	1.53
71	1.56
81	1.56
101	1.555
121	1.42
141	1.08
161	1.21
181	1.35
201	1.41
221	1.31
241	1.205
261	1.18
281	1.14
301	1.04
321	1.08
341	0.99
361	1.04
381	1.14

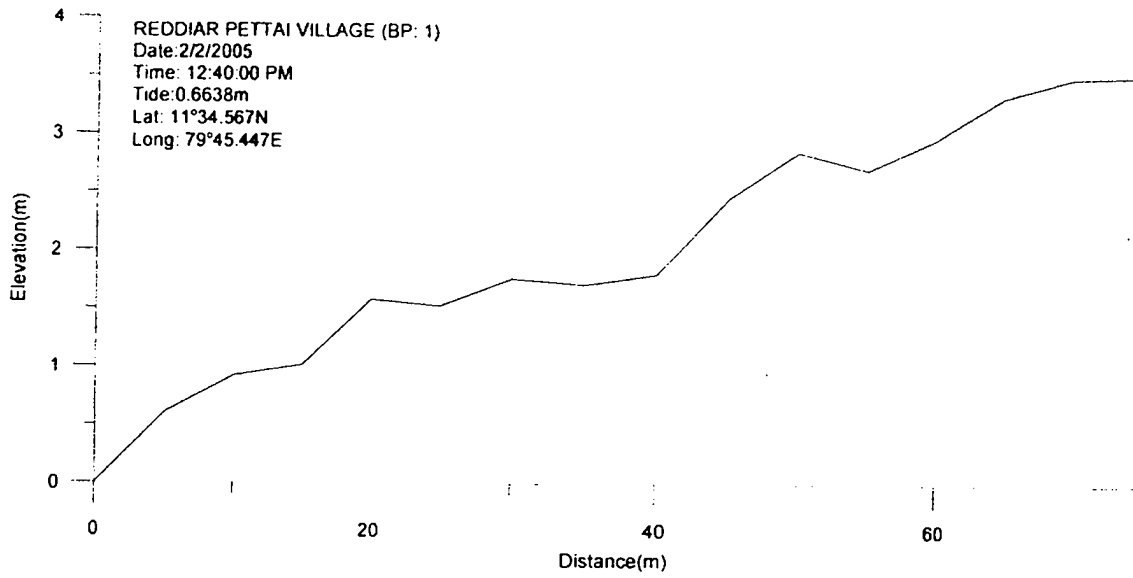
401	1.145
421	1.115
441	1.025
461	1.065
468	0.81
488	0.83
508	0.64
528	0.78
548	0.7
568	0.81
588	0.89
608	1.19
628	1.12
Inundation limit NOT reached	

A1-20

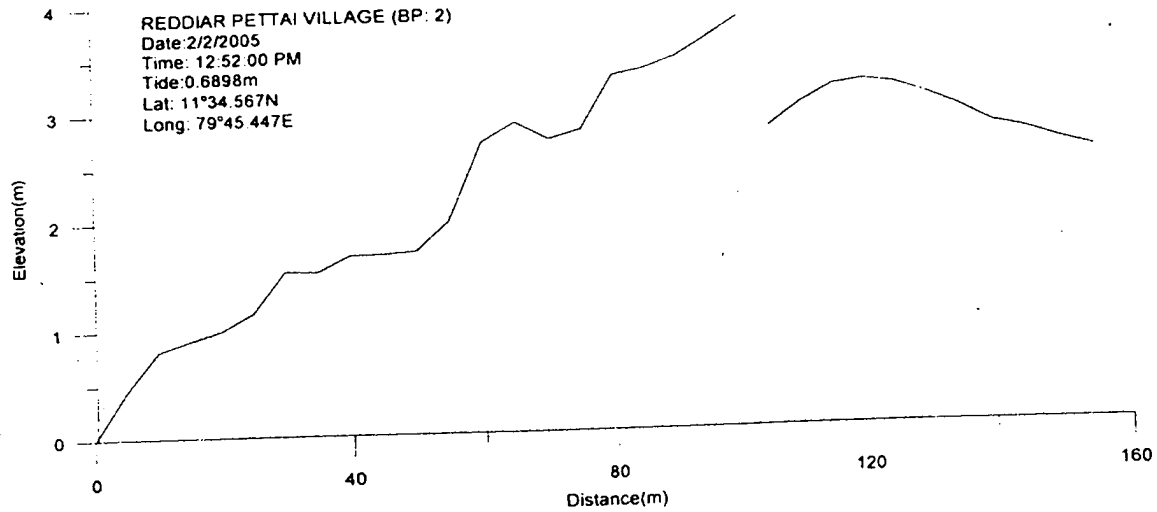


Distance(m)	Elevation(m)
0	0
5	0.42
10	0.95
15	1.13
20	1.03
25	0.94
30	0.86
35	0.85
40	0.88
45	0.95
50	1.04
55	1.09
60	1.13
65	1.15
70	1.14
75	1.13
80	1.14
85	1.11
90	1.05
95	1.07
100	1.09
105	1.1
110	1.12
115	1.175
120	1.215
125	1.255
128.75	1.385
133.75	1.805
138.75	1.8
143.75	1.78
148.75	1.775

153.75	1.67
158.75	1.675
163.75	1.695
168.75	1.665
173.75	1.59
178.75	1.615
183.75	1.665
188.75	1.65
193.75	1.56
198.75	1.53
203.75	1.54
208.75	1.545
213.75	1.7
218.75	1.59
223.75	1.6
228.75	1.605
233.75	1.615
238.75	1.365
243.75	1.6
248.75	1.8
253.75	1.615
258.75	1.64
263.75	1.6
268.75	1.655
273.75	1.7
278.75	1.75
283.75	1.845
288.75	1.9
293.75	1.9
298.75	1.967
323.75	3.087
Inundation limit reached	

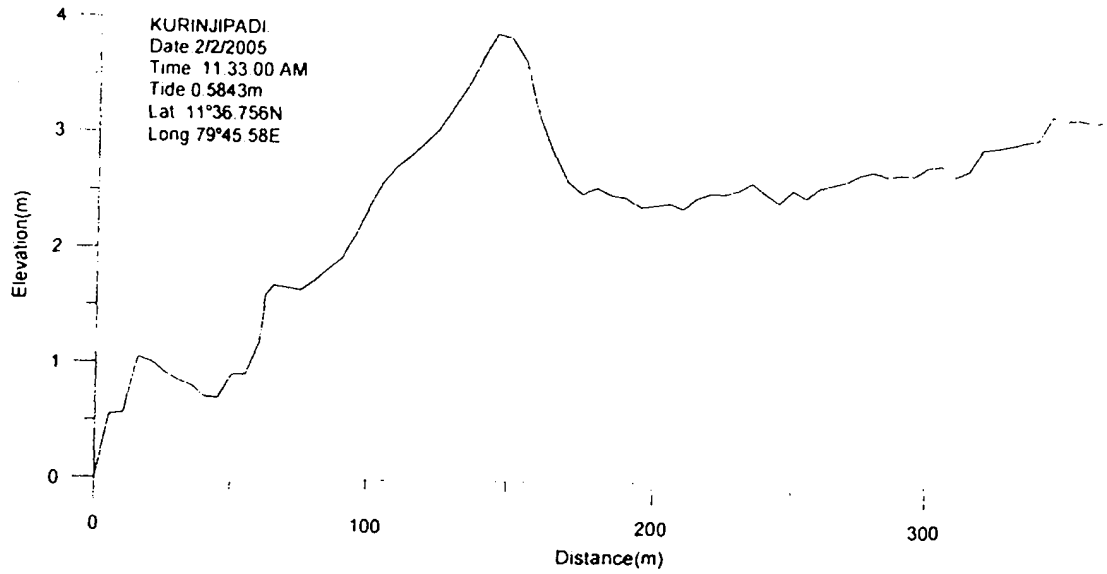


Distance(m)	Elevation(m)
0	0
5	0.605
10	0.92
15	1.01
20	1.58
25	1.525
30	1.76
35	1.71
40	1.8
45	2.46
50	2.855
55	2.705
60	2.97
65	3.33
70	3.495
75	3.507
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.445
10	0.81
15	0.905
20	0.993
25	1.152
30	1.53
35	1.523
40	1.67
45	1.675
50	1.702
55	1.975
60	2.69
65	2.87
70	2.71
75	2.795
80	3.29
85	3.35
90	3.455
95	3.63
100	3.815
105	2.783
110	2.99
115	3.15
120	3.19
125	3.15
130	3.052
135	2.93
140	2.772
145	2.705

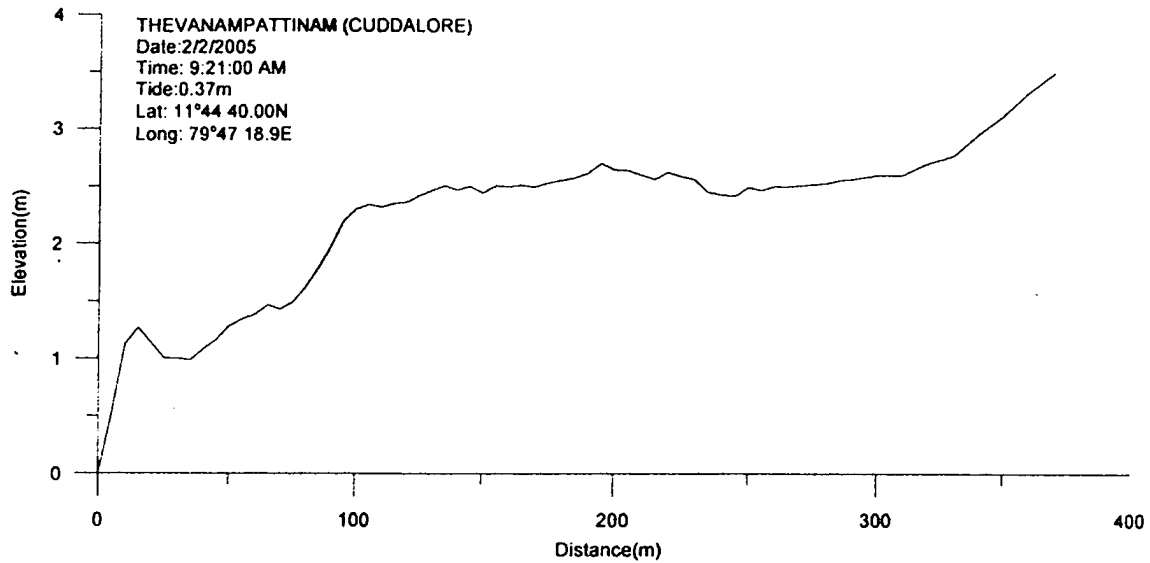
150	2.6
155	2.52
Inundation limit reached	



Distance (m)	Elevation (m)
0	0
5	0.548
10	0.56
15	1.047
20	1.008
25	0.91
30	0.845
35	0.805
40	0.705
45	0.7
50	0.9
55	0.905
60	1.175
61	1.36
62	1.59
65	1.68
70	1.665
75	1.64
80	1.73
85	1.835
90	1.93
95	2.125
100	2.37
105	2.59
110	2.725
115	2.815
120	2.925
125	3.05
130	3.238

135	3.431
140	3.668
145	3.878
150	3.848
155	3.658
160	3.163
165	2.853
170	2.603
175	2.503
180	2.553
185	2.493
190	2.473
195	2.388
200	2.408
205	2.428
210	2.38
215	2.473
220	2.513
225	2.513
230	2.538
235	2.608
240	2.518
245	2.438
250	2.548
255	2.483
260	2.573
265	2.598
270	2.628
275	2.688
280	2.718
285	2.673

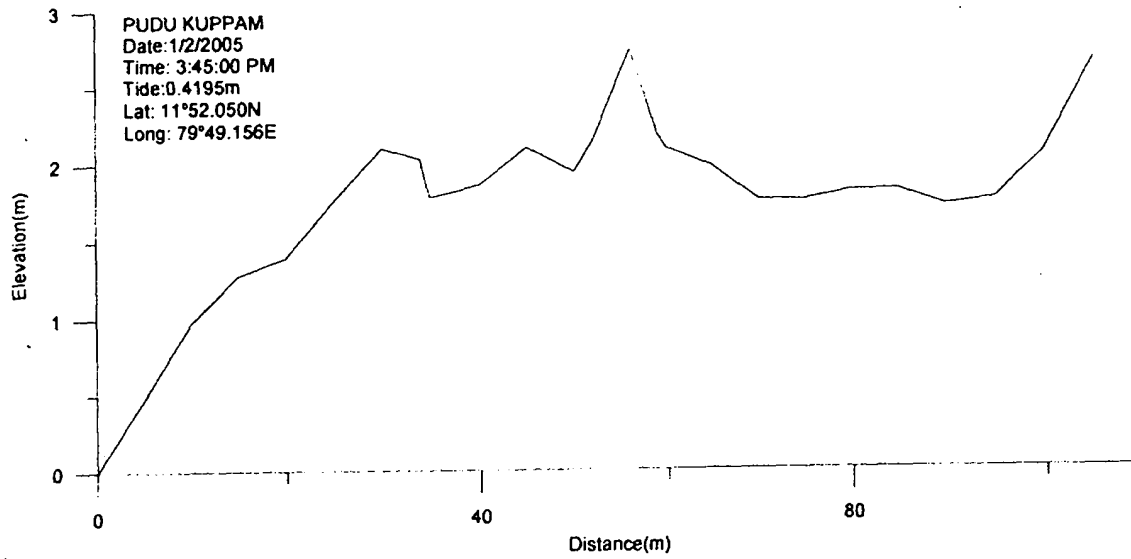
290	2.69
295	2.688
300	2.758
305	2.773
310	2.683
315	2.733
320	2.913
325	2.928
330	2.953
335	2.978
340	2.998
345	3.203
350	3.165
355	3.173
360	3.148
365	3.165
370	3.163
372	3.138
Inundation limit reached	



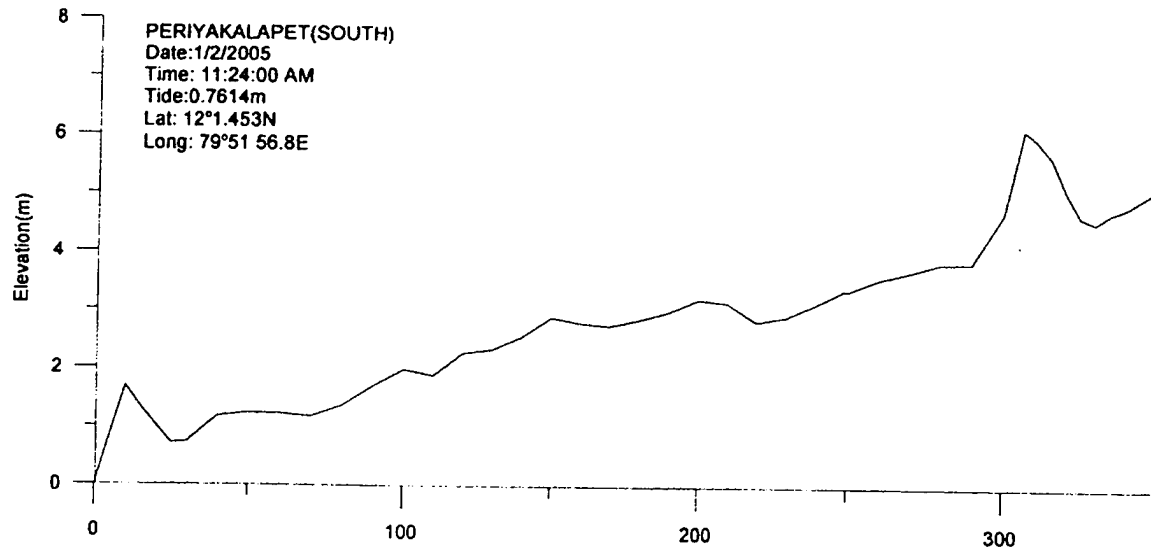
Distance (m)	Elevation (m)
0	0
5	0.533
10	1.125
15	1.27
20	1.135
25	1
30	1.002
35	0.985
40	1.08
45	1.165
50	1.283
55	1.343
60	1.383
65	1.468
70	1.428
75	1.493
80	1.623
85	1.783
90	1.963
95	2.188
100	2.298
105	2.338
110	2.318
115	2.348
120	2.358
125	2.418
130	2.463
135	2.503
140	2.468

145	2.498
150	2.443
155	2.503
160	2.498
165	2.513
170	2.498
175	2.533
180	2.558
185	2.578
190	2.618
195	2.703
200	2.648
205	2.643
210	2.603
215	2.568
220	2.628
225	2.593
230	2.568
235	2.458
240	2.433
245	2.423
250	2.498
255	2.473
260	2.508
265	2.503
270	2.513
275	2.523
280	2.533
285	2.558
288	2.568
290	2.568

300	2.603
310	2.603
320	2.708
330	2.768
340	2.958
350	3.118
360	3.328
370	3.498
Inundation limit reached	

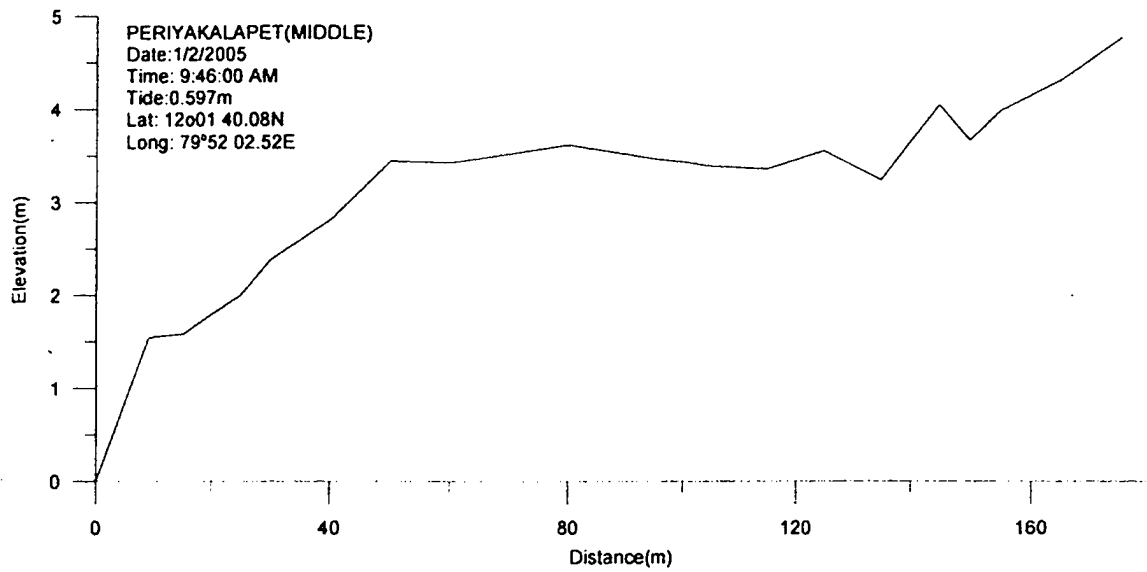


Distance(m)	Elevation(m)
0	0
5	0.475
10	0.965
15	1.275
20	1.39
25	1.76
30	2.095
34	2.025
35	1.775
40	1.86
45	2.1
50	1.94
52	2.14
56	2.735
58	2.38
59	2.18
60	2.09
65	1.975
70	1.755
75	1.75
80	1.81
85	1.815
90	1.71
95	1.75
100	2.055
105	2.65
Inundation limit reached	

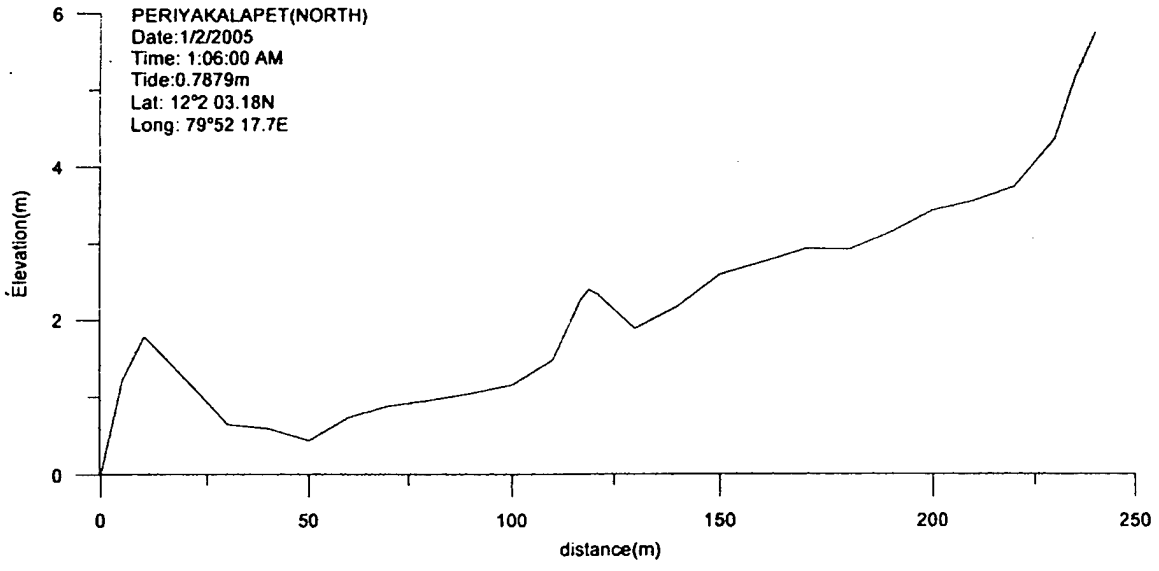


Distance(m)	Elevation(m)
0	0
10	1.685
15	1.33
25	0.71
30	0.725
40	1.17
50	1.23
60	1.22
70	1.175
80	1.36
90	1.705
100	1.985
110	1.885
120	2.275
130	2.34
140	2.56
150	2.895
160	2.8
170	2.75
180	2.86
190	3
200	3.215
210	3.155
220	2.835
230	2.925
240	3.145
249	3.385
250	3.37
260	3.575
270	3.71

Distance(m)	Elevation(m)
280	3.86
290	3.865
300	4.725
306	6.16
310	5.99
315	5.68
320	5.105
325	4.675
330	4.57
335	4.73
340	4.825
350	5.125
Inundation limit reached	

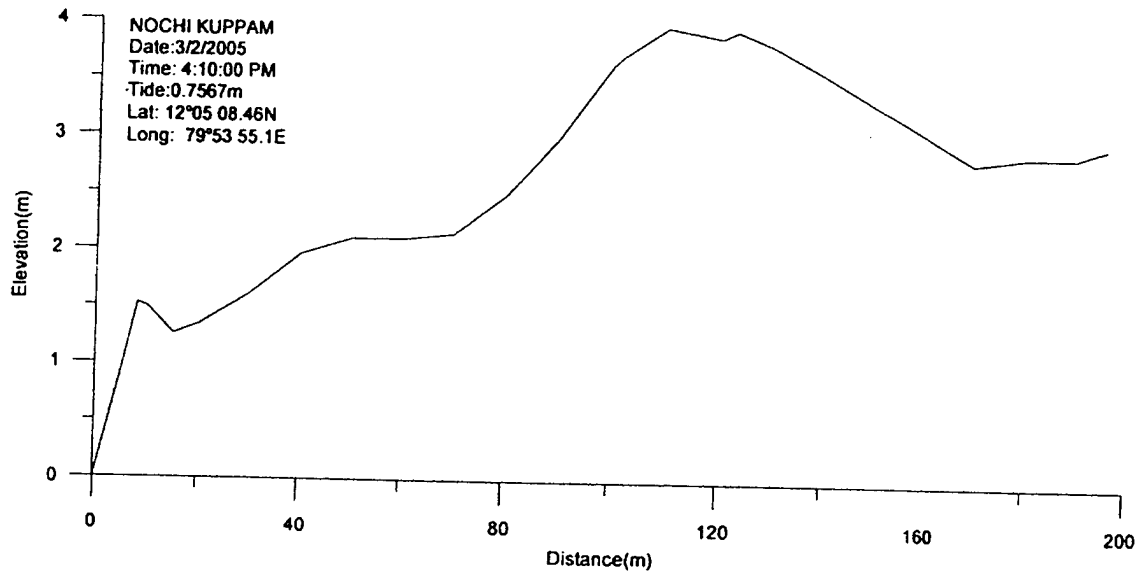


Distance(m)	Elevation(m)
0	0
5	0.86
9	1.535
10	1.55
15	1.58
20	1.795
25	1.995
30	2.375
40	2.805
50	3.44
60	3.425
70	3.52
80	3.62
90	3.52
95	3.47
100	3.44
105	3.395
115	3.365
125	3.56
135	3.245
145	4.05
150	3.67
155	3.985
165	4.31
175	4.765
Inundation limit reached	

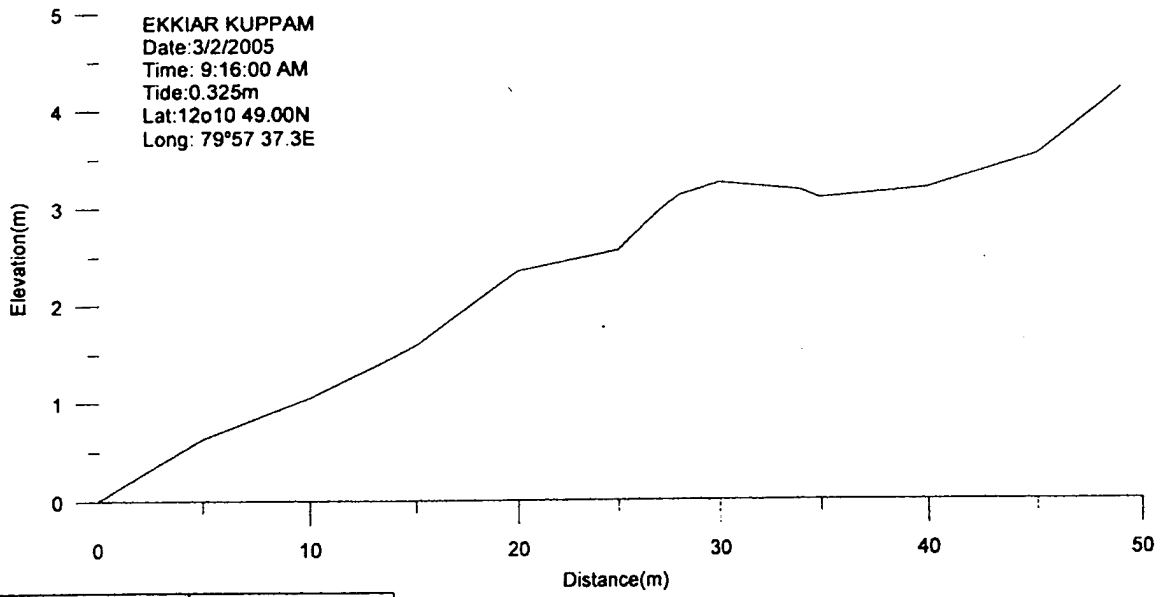


Distance(m)	Elevation(m)
0	0
5	1.22
10	1.785
20	1.22
30	0.65
40	0.595
50	0.44
60	0.74
70	0.885
80	0.96
90	1.05
100	1.16
110	1.48
117	2.27
119	2.395
121	2.34
130	1.89
140	2.175
150	2.59
160	2.76
170	2.935
180	2.93
190	3.155
200	3.435
210	3.555
220	3.74
225	4.055

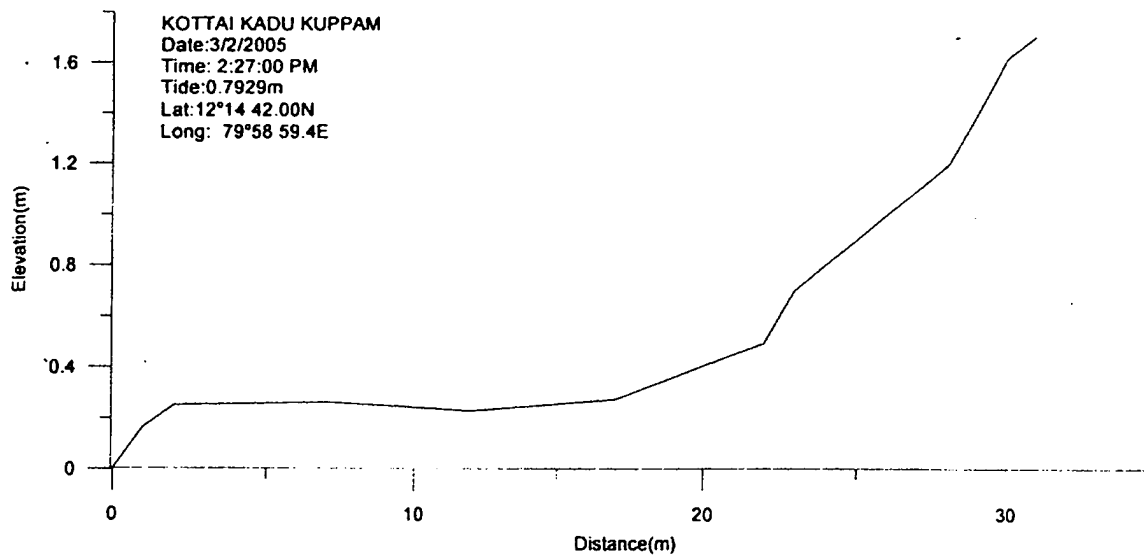
230	4.365
235	5.155
240	5.75
Inundation limit reached	



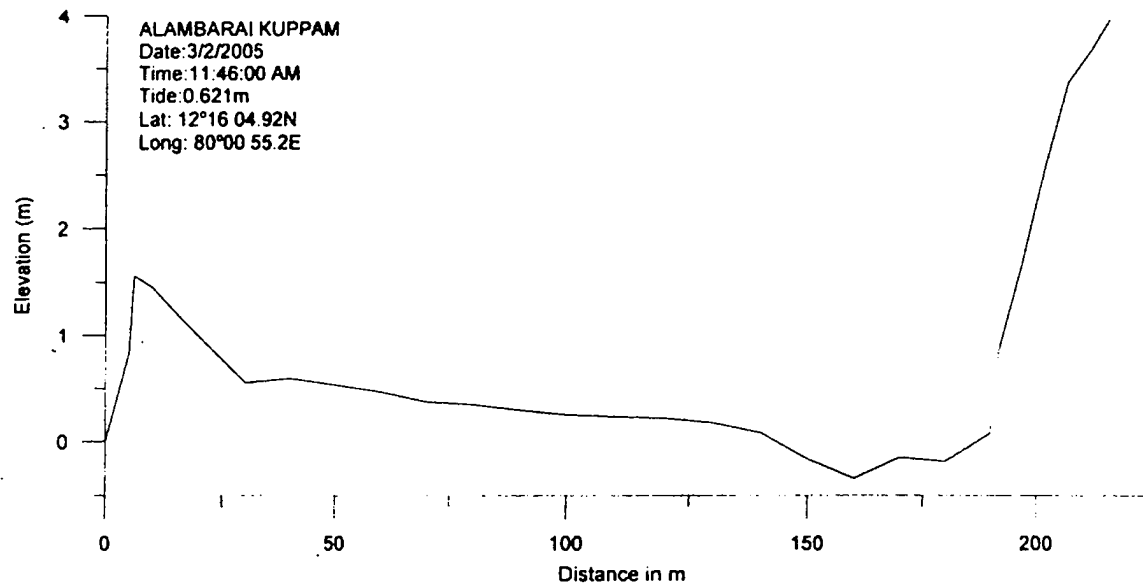
Distance(m)	Elevation(m)
0	0
5	0.915
8	1.525
10	1.49
15	1.255
20	1.34
30	1.61
40	1.965
50	2.105
60	2.107
70	2.155
80	2.5
90	3.01
100	3.647
102	3.73
110	3.98
120	3.895
123	3.955
130	3.825
140	3.587
150	3.325
160	3.08
170	2.825
180	2.885
190	2.885
196	2.97
Inundation limit reached	



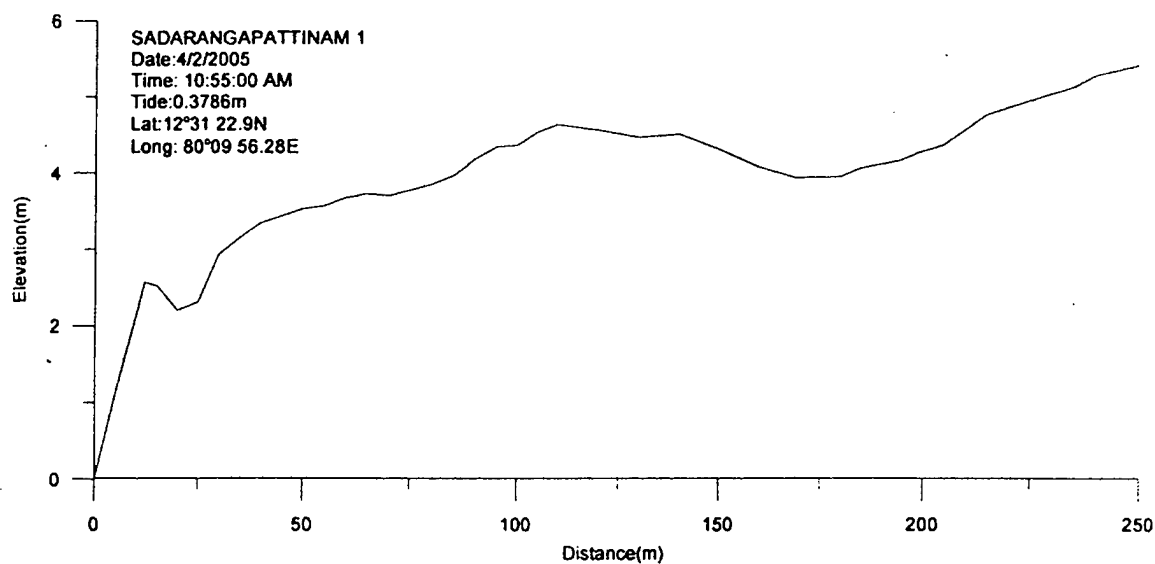
Distance(m)	Elevation(m)
0	0
5	0.633
10	1.05
15	1.593
20	2.355
25	2.56
27	2.96
28	3.12
30	3.25
34	3.175
35	3.09
40	3.19
45	3.525
47	3.865
49	4.2
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
1	0.165
2	0.252
7	0.262
12	0.23
17	0.275
22	0.493
23	0.702
28	1.202
29	1.405
30	1.62
31	1.705
Inundation limit reached	

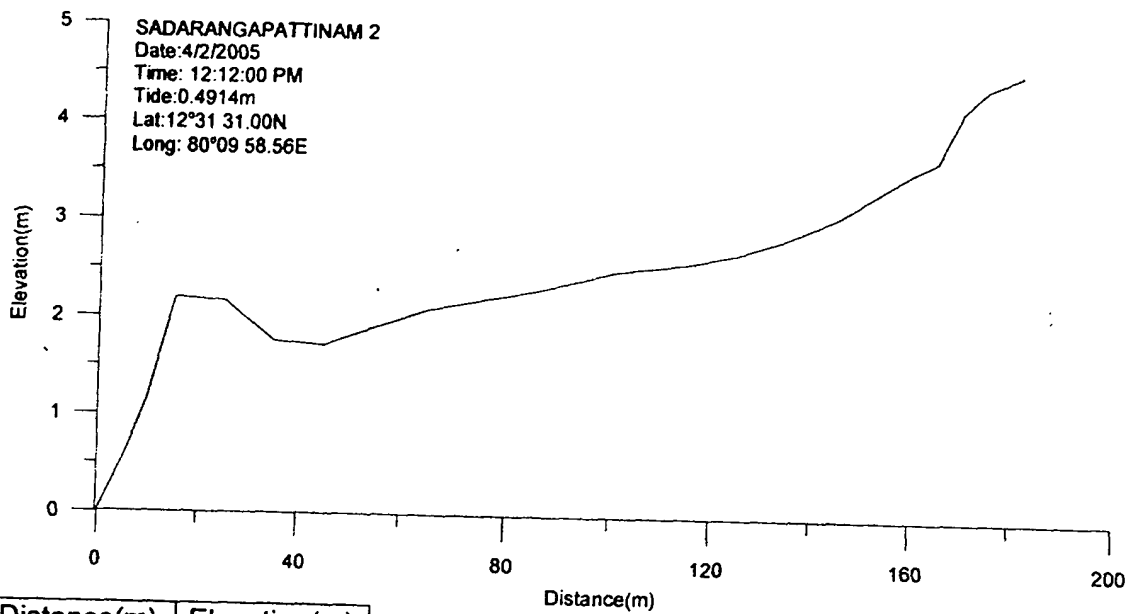


Distance(m)	Elevation(m)
5	0.835
6	1.56
10	1.452
15	1.215
20	0.99
30	0.555
40	0.595
50	0.535
60	0.47
70	0.375
80	0.35
90	0.3
100	0.255
110	0.235
120	0.22
130	0.175
140	0.08
150	-0.165
160	-0.345
170	-0.15
180	-0.185
190	0.075
191	0.54
192	0.845
197	1.66
202	2.56
207	3.365
212	3.667
216	3.955
Inundation limit reached	

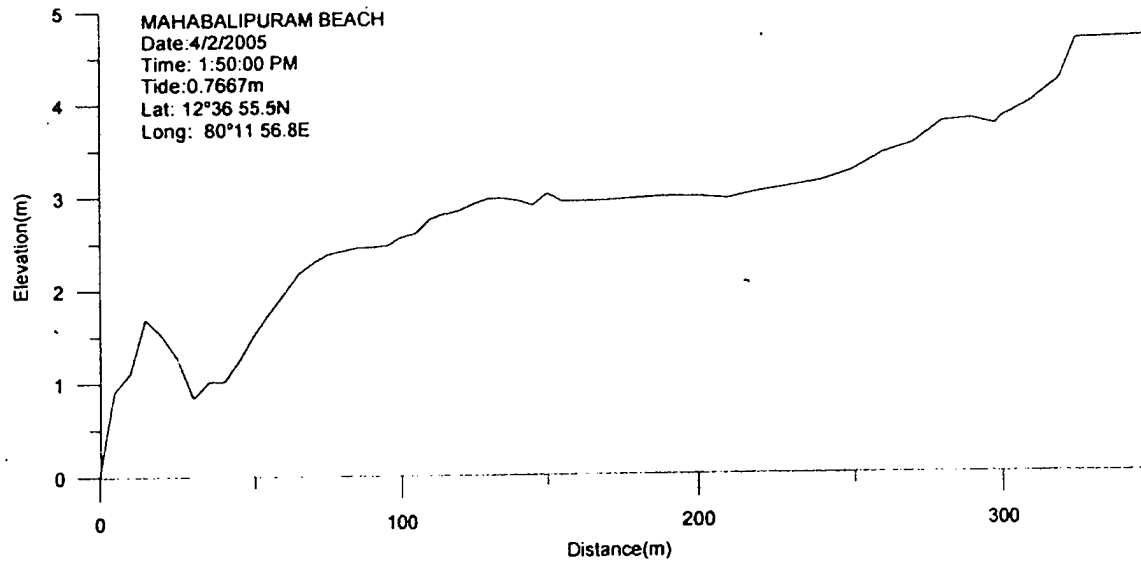


Distance(m)	Elevation(m)
0	0
5	1.115
10	2.145
12	2.57
15	2.525
20	2.205
25	2.31
30	2.93
35	3.15
40	3.345
45	3.435
50	3.53
55	3.565
60	3.675
65	3.727
70	3.705
75	3.775
80	3.85
85	3.965
90	4.19
95	4.35
100	4.37
105	4.542
110	4.642
120	4.57
130	4.475
140	4.513
150	4.32
160	4.083
169	3.945

180	3.953
185	4.068
195	4.173
199	4.273
205	4.375
215	4.773
225	4.955
235	5.135
240	5.285
250	5.41
Inundation limit reached	

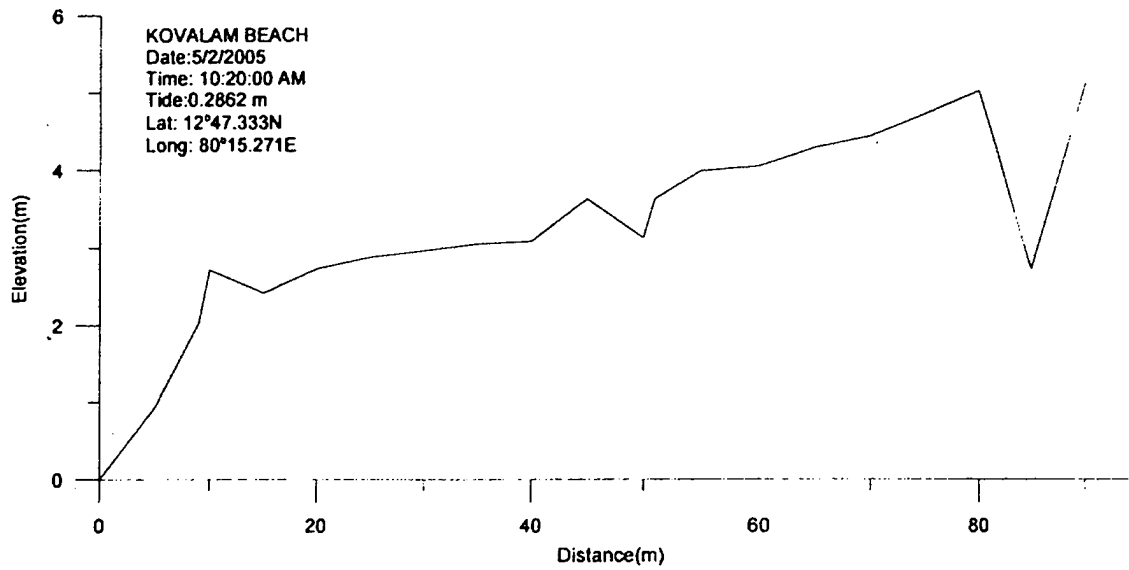


Distance(m)	Elevation(m)
0	0
5	0.545
10	1.205
15	2.195
25	2.165
35	1.76
45	1.72
55	1.915
65	2.1
75	2.205
85	2.305
95	2.435
101	2.515
115	2.6
125	2.707
135	2.875
145	3.09
155	3.405
160	3.56
165	3.69
170	4.195
175	4.425
182	4.58
Inundation limit reached	

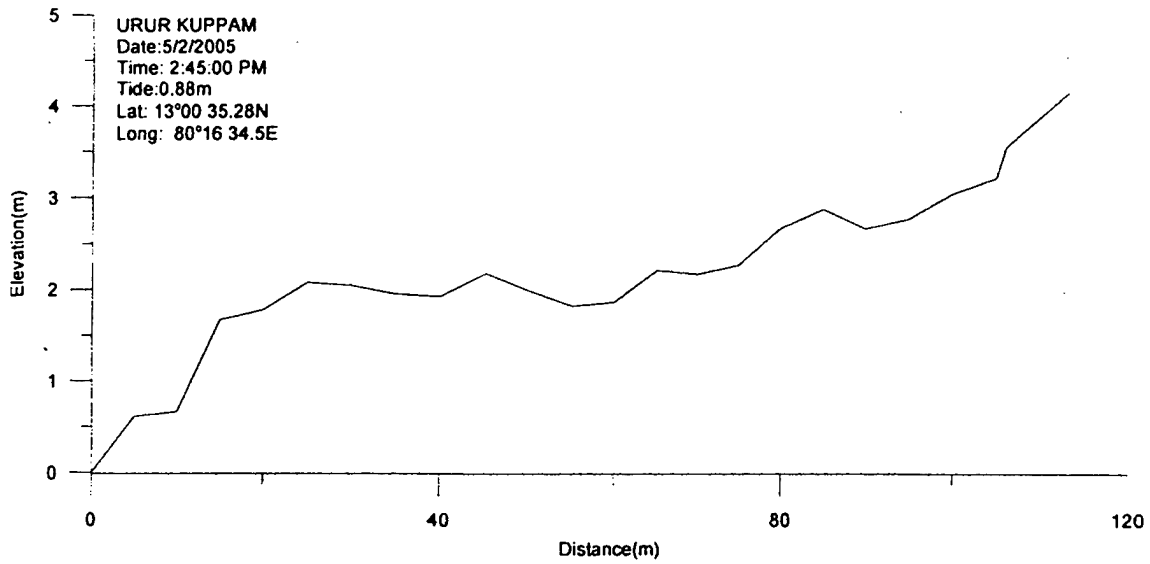


Distance(m)	Elevation(m)
0	0
5	0.915
10	1.11
15	1.69
20	1.52
25	1.275
30	0.84
35	1.015
40	1.015
45	1.245
50	1.52
55	1.745
60	1.96
65	2.175
70	2.29
75	2.38
80	2.415
85	2.45
90	2.455
95	2.47
100	2.56
105	2.597
110	2.75
115	2.805
116	2.805
120	2.835
125	2.91
130	2.965
135	2.968
140	2.945

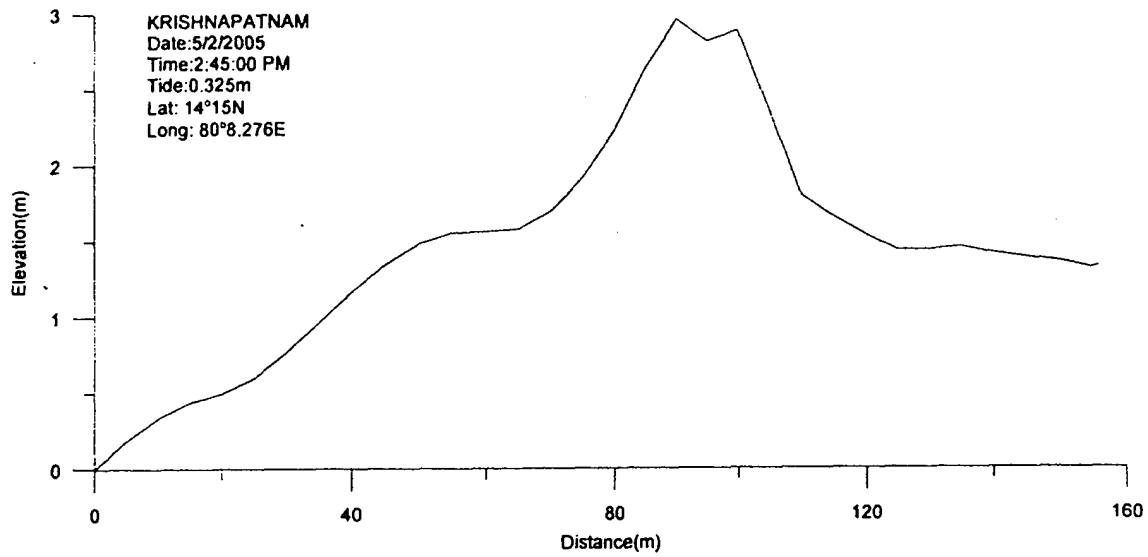
145	2.895
150	3.017
153	2.975
155	2.935
160	2.938
170	2.943
190	2.983
200	2.978
210	2.958
220	3.028
230	3.083
240	3.143
250	3.248
260	3.438
270	3.533
280	3.768
290	3.796
298	3.733
300	3.808
310	3.973
319	4.193
320	4.236
325	4.643
349	4.666
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.94
9	2.025
10	2.715
15	2.413
20	2.728
25	2.88
30	2.964
35	3.054
40	3.09
45	3.635
50	3.133
51	3.638
55	4.001
60	4.058
65	4.303
70	4.448
75	4.728
80	5.028
85	2.728
90	5.133
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.61
10	0.66
15	1.667
20	1.775
25	2.08
30	2.045
35	1.955
40	1.927
45	2.18
50	1.99
55	1.825
60	1.868
65	2.216
70	2.177
75	2.272
80	2.683
85	2.887
90	2.679
95	2.784
100	3.052
105	3.224
106	3.552
113	4.157
Inundation limit reached	



Distance(m)	Elevation(m)
0	0
5	0.185
10	0.335
15	0.44
20	0.495
25	0.595
30	0.765
35	0.96
40	1.16
45	1.34
50	1.477
55	1.55
60	1.56
65	1.577
70	1.695
75	1.915
80	2.225
85	2.64
90	2.96
95	2.815
100	2.885
105	2.36
110	1.795
115	1.655
120	1.535
125	1.435
130	1.435

135	1.455
140	1.415
145	1.385
150	1.362
155	1.317
156	1.327
Inundation limit reached	

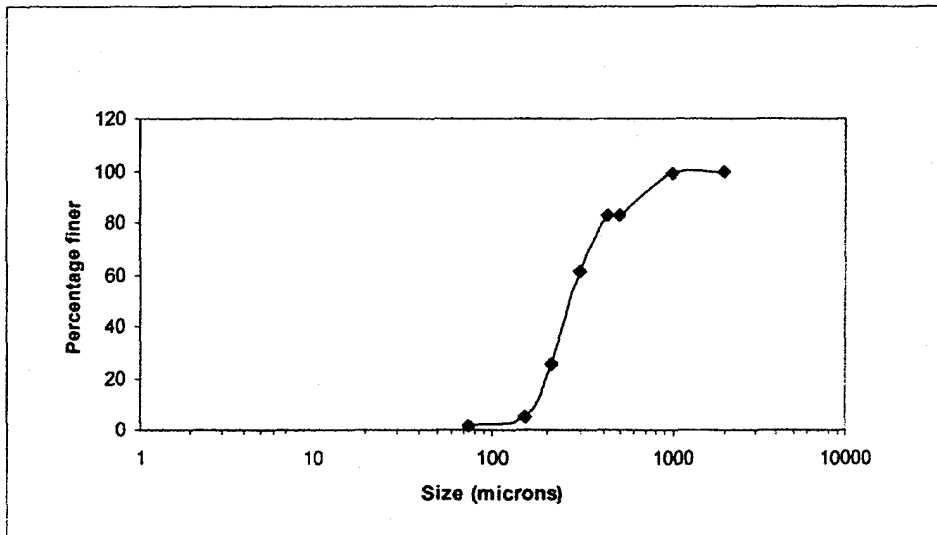
Appendix 2

Station Name: Arukattuthurai (Vedaranyam)

Date of collection: 21/01/2005

Time: 2:35:00 PM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	1.0332	0.715	0.715	99.285	
3	500	23.4376	16.224	16.939	83.061	
4	425	0	0.000	16.939	83.061	
5	300	30.9972	21.457	38.396	61.604	
6	212	52.0916	36.059	74.456	25.544	
7	150	29.0553	20.113	94.569	5.431	
8	75	5.7499	3.980	98.549	1.451	
9	Pan	2.0964	1.451	100.000	0.000	
Total:		144.461				



D₅₀ = 275 microns

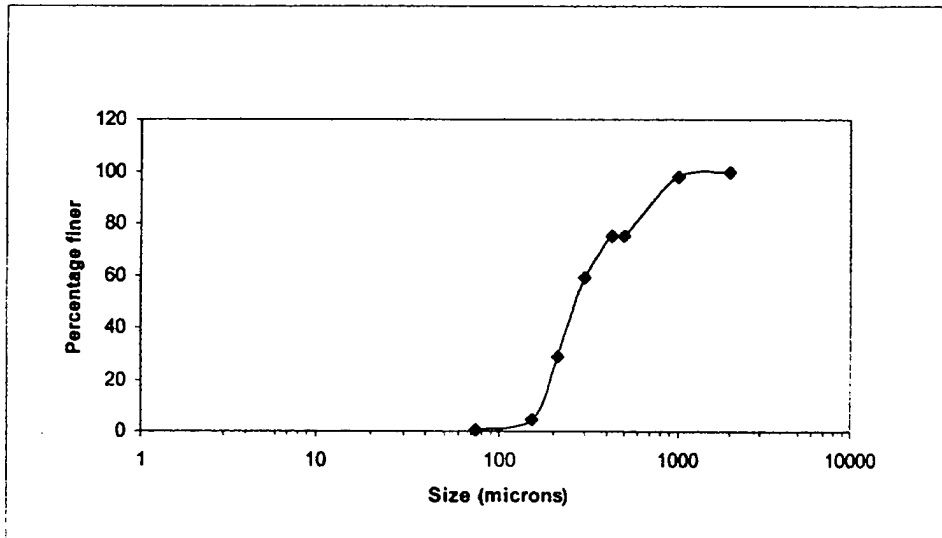
A2-2

Station Name: Velangani

Date of collection: 18/01/05

Time: 2:10:00 PM

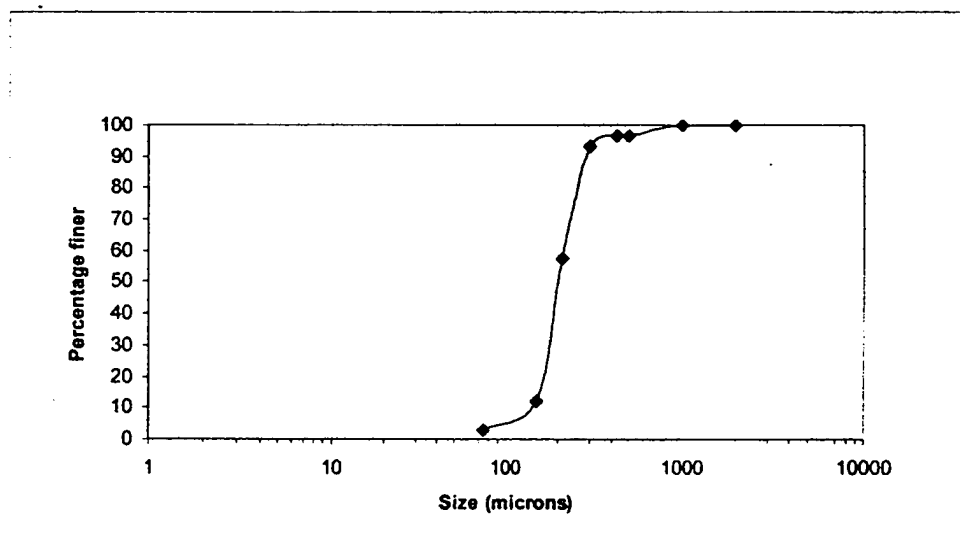
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0.0956	0.053	0.053	99.947	
2	1000	3.1338	1.747	1.801	98.199	
3	500	40.934	22.825	24.626	75.374	
4	425	0	0.000	24.626	75.374	
5	300	29.087	16.219	40.846	59.154	
6	212	53.7056	29.947	70.793	29.207	
7	150	43.6224	24.325	95.117	4.883	
8	75	7.7758	4.336	99.453	0.547	
9	Pan	0.9808	0.547	100.000	0.000	
Total:		179.335				



$D_{50} = 275$ microns

Station Name: Samanthan Pettai
 Date of collection: 20/01/05 Time: 9:23:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	5.5296	3.312	3.312	96.688	
4	425	0	0.000	3.312	96.688	
5	300	6.1384	3.676	6.988	93.012	
6	212	59.6916	35.751	42.740	57.260	
7	150	75.5391	45.243	87.983	12.017	
8	75	14.9416	8.949	96.932	3.068	
9	Pan	5.1229	3.068	100.000	0.000	
Total:		166.963				



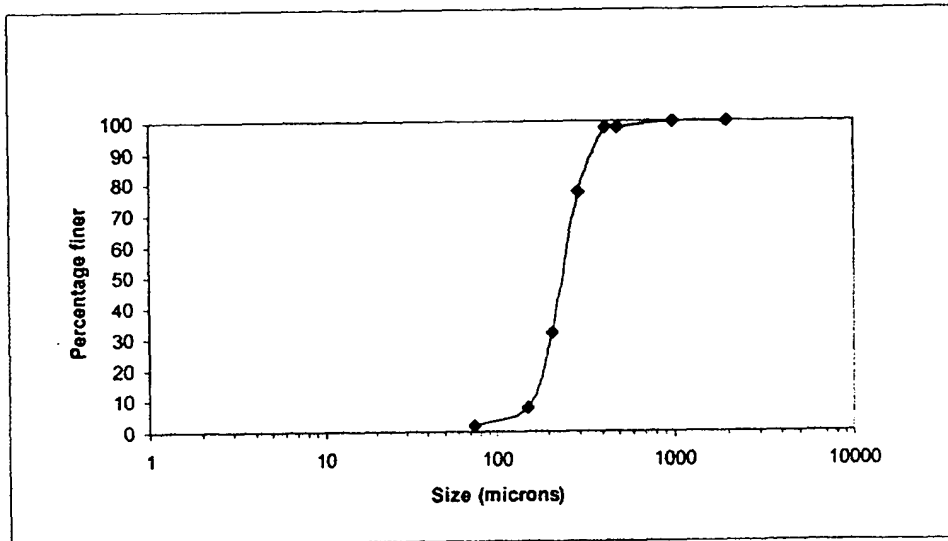
D₅₀ = 200 microns

Station Name: Nagore

Date of collection: 19/01/05

Time: 10:48:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	3.1358	1.929	1.929	98.071	
4	425	0	0.000	1.929	98.071	
5	300	34.13	20.994	22.923	77.077	
6	212	73.3164	45.099	68.022	31.978	
7	150	39.2346	24.134	92.156	7.844	
8	75	9.4612	5.820	97.976	2.024	
9	Pan	3.2906	2.024	100.000	0.000	
Total:		162.569				



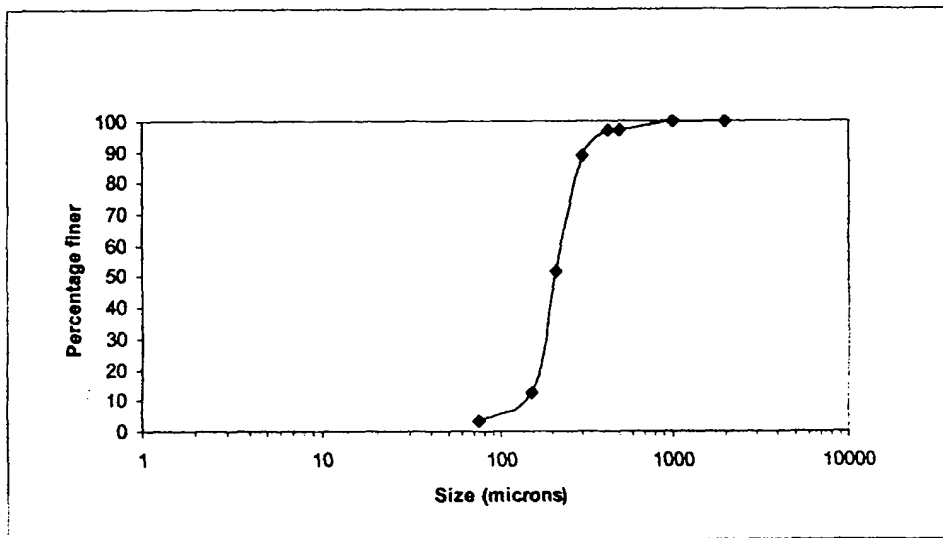
$D_{50} = 250$ microns

A2-5

Station Name: Karaikal
 Date of collection: 22/01/05

Time: 2:44:00 PM

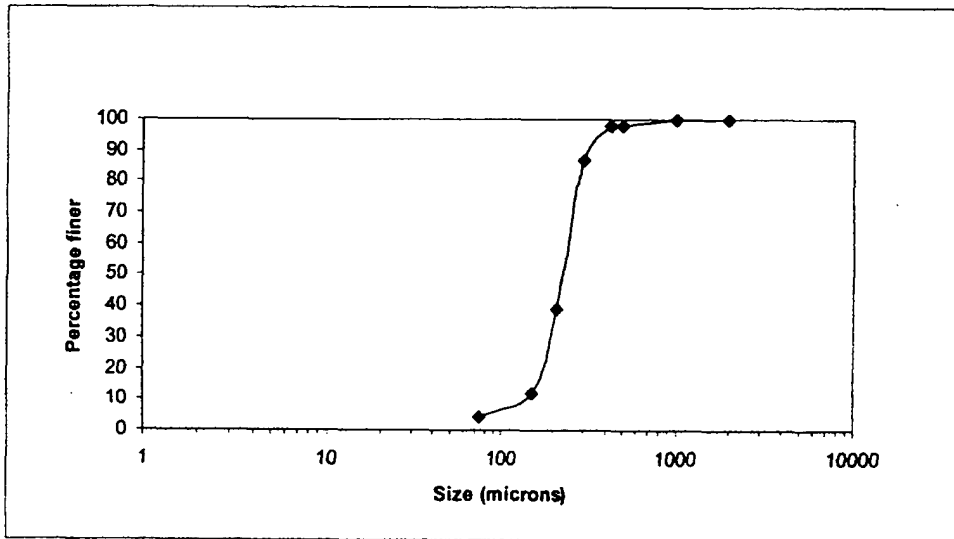
Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.2536	0.160	0.160	99.840	
3	500	4.5844	2.893	3.053	96.947	
4	425	0	0.000	3.053	96.947	
5	300	12.7548	8.050	11.103	88.897	
6	212	58.6972	37.045	48.149	51.851	
7	150	62.1088	39.199	87.347	12.653	
8	75	14.7475	9.308	96.655	3.345	
9	Pan	5.3002	3.345	100.000	0.000	
Total:		158.447				



D₅₀ = 210 microns

Station Name: Tarangambadi
 Date of collection: 22/01/2005 Time: 9:42:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.0568	0.030	0.030	99.970	
3	500	3.5578	1.852	1.882	98.118	
4	425	0	0.000	1.882	98.118	
5	300	21.3657	11.122	13.003	86.997	
6	212	91.9488	47.864	60.867	39.133	
7	150	51.9744	27.055	87.923	12.077	
8	75	14.7024	7.653	95.576	4.424	
9	Pan	8.499	4.424	100.000	0.000	
Total:		192.105				

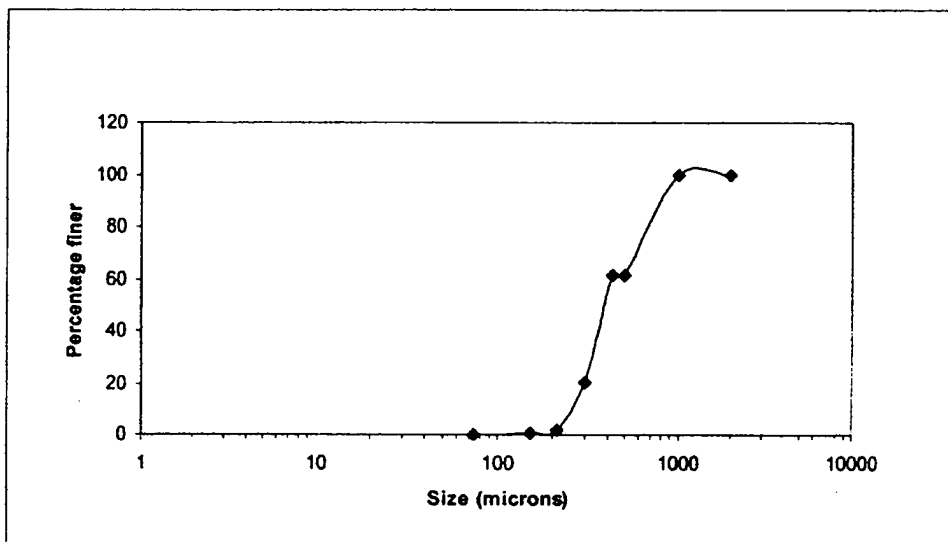


D₅₀ = 230 microns

Station Name: Poompohar -1
 Date of collection: 25/01/05

Time: 1:45:00 PM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	2.8249	1.807	1.807	98.193	
2	1000	22.2387	14.223	16.029	83.971	
3	500	56.4808	36.122	52.151	47.849	
4	425	0	0.000	52.151	47.849	
5	300	26.2976	16.818	68.970	31.030	
6	212	31.4745	20.129	89.099	10.901	
7	150	13.597	8.696	97.795	2.205	
8	75	2.8976	1.853	99.648	0.352	
9	Pan	0.5505	0.352	100.000	0.000	
Total:		156.362				

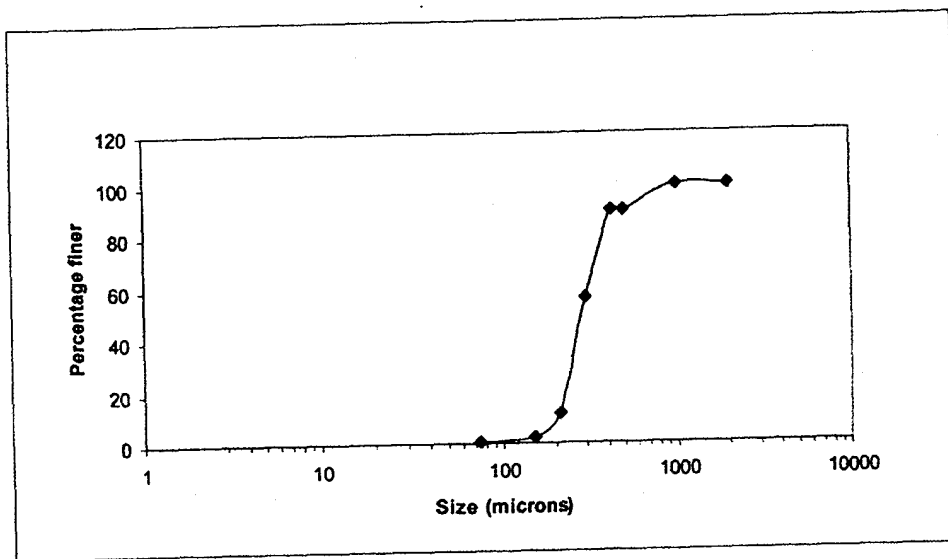


D₅₀ = 530 microns

Station Name: Poompohar -2
 Date of collection: 25/01/05

Time: 11:01:00 AM

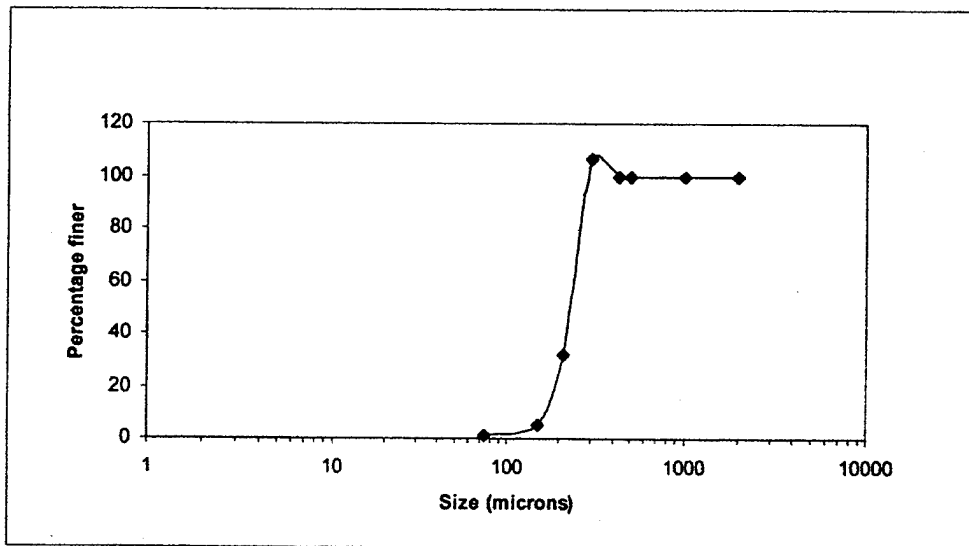
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.119	0.071	0.071	99.929	
3	500	17.0012	10.195	10.267	89.733	
4	425	0	0.000	10.267	89.733	
5	300	55.3891	33.216	43.482	56.518	
6	212	74.7966	44.854	88.336	11.664	
7	150	15.6776	9.402	97.738	2.262	
8	75	3.0788	1.846	99.584	0.416	
9	Pan	0.6932	0.416	100.000	0.000	
Total:		166.756				



D₅₀ = 290 microns

Station Name: Thirumullaivasal
 Date of collection: 26/01/2005 Time: 9:58:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	0.4155	0.430	0.430	99.570	
4	425	0	0.000	0.430	99.570	
5	300	-6.6478	-6.876	-6.447	106.447	
6	212	71.9464	74.420	67.974	32.026	
7	150	26.0597	26.956	94.929	5.071	
8	75	3.6134	3.738	98.667	1.333	
9	Pan	1.2886	1.333	100.000	0.000	
Total:		96.676				



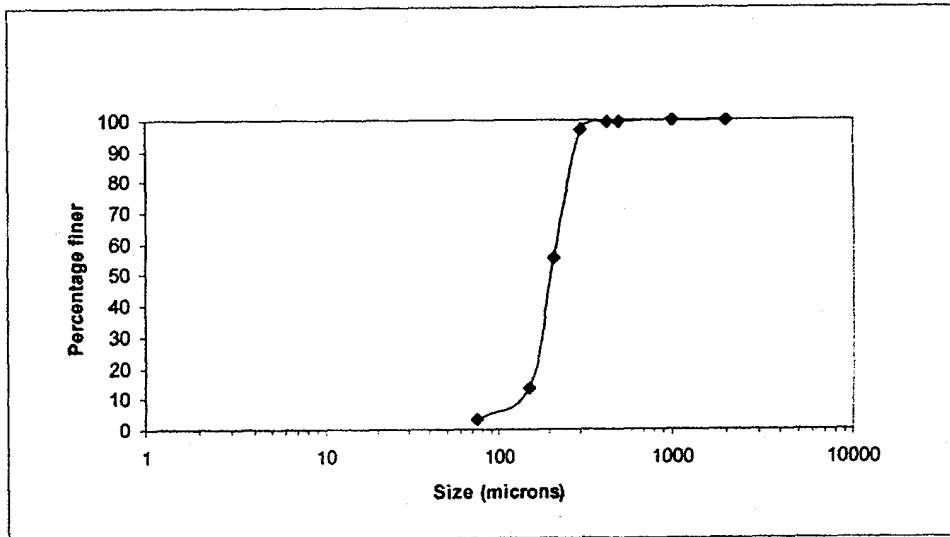
D₅₀ = 270 microns

Station Name: Kodyam palayam -1

Date of collection: 27/01/2005

Time: 10:20:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	0.1704	0.279	0.279	99.721	
4	425	0	0.000	0.279	99.721	
5	300	1.6264	2.662	2.941	97.059	
6	212	25.2993	41.415	44.357	55.643	
7	150	25.7882	42.215	86.572	13.428	
8	75	6.0062	9.832	96.404	3.596	
9	Pan	2.1966	3.596	100.000	0.000	
Total:		61.087				



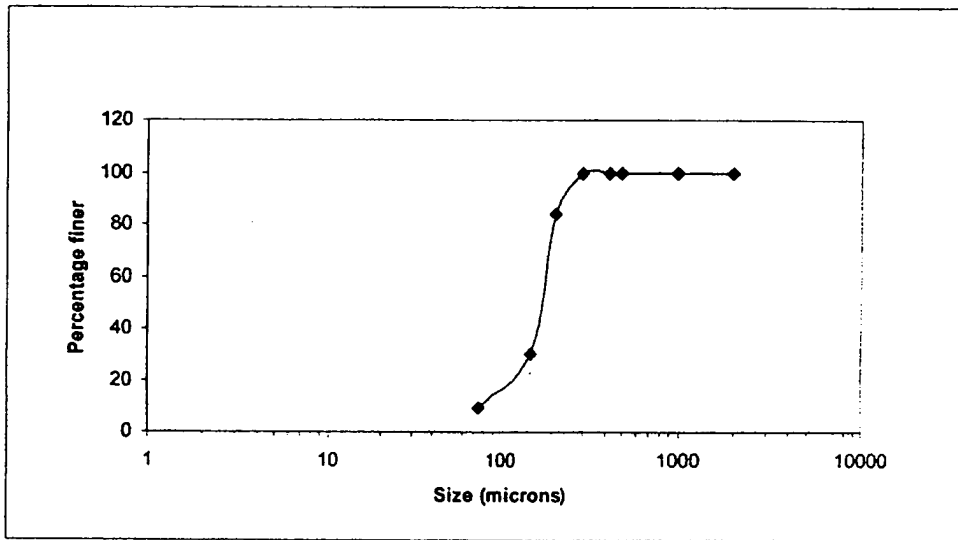
D₅₀ = 200 microns

Station Name: Kodyam Palayam -2

Date of collection: 27/01/2005

Time: 11:15:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	0	0.000	0.000	100.000	0	
2	0	0.000	0.000	100.000	0	
3	0	0.000	0.000	100.000	0	
4	0	0.000	0.000	100.000	0	
5	0.1724	0.144	0.144	99.856	0.1724	
6	19.226	16.058	16.202	83.798	19.226	
7	64.1927	53.615	69.817	30.183	64.1927	
8	25.3308	21.157	90.974	9.026	25.3308	
9	10.8071	9.026	100.000	0.000	10.8071	
Total:		119.729				

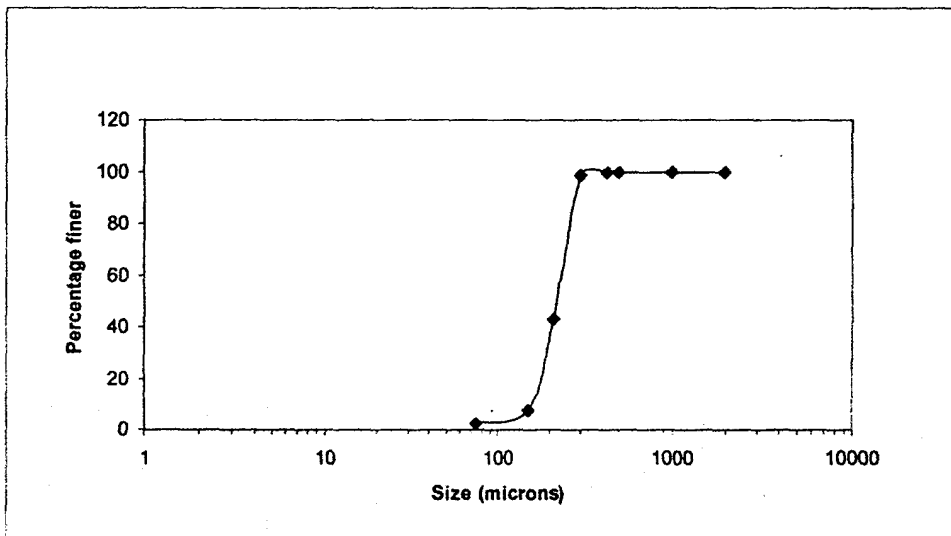


D₅₀ = 175 microns

Station Name: Velangirayan
 Date of collection: 29/01/05

Time: 11:23:00 AM

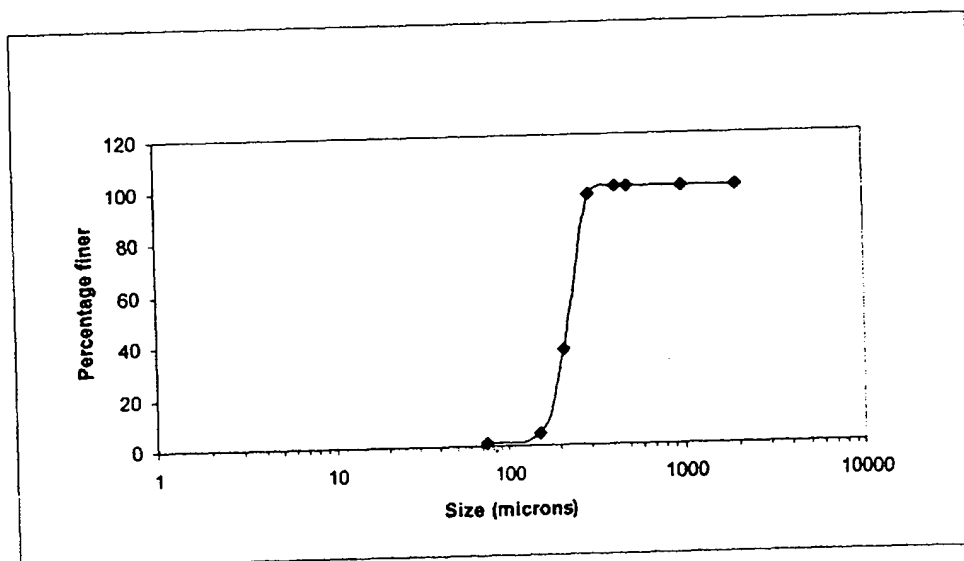
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	0	0.000	0.000	100.000	
4	425	0	0.000	0.000	100.000	
5	300	1.5563	1.423	1.423	98.577	
6	212	60.5654	55.393	56.817	43.183	
7	150	38.9945	35.665	92.481	7.519	
8	75	5.7077	5.220	97.702	2.298	
9	Pan	2.513	2.298	100.000	0.000	
Total:		109.337				



$D_{50} = 225$ microns

Station Name: Reddiyar Pettai
 Date of collection: 02/02/2005 Time: 12:40:00 PM

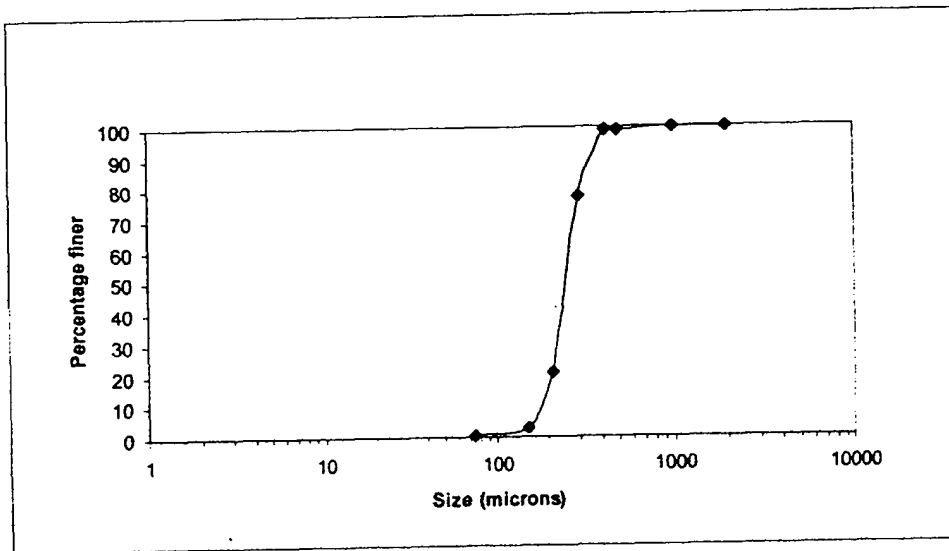
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	0.321	0.194	0.194	99.806	
4	425	0	0.000	0.194	99.806	
5	300	5.3292	3.218	3.412	96.588	
6	212	98.1465	59.273	62.685	37.315	
7	150	53.8978	32.550	95.236	4.764	
8	75	6.2128	3.752	98.988	1.012	
9	Pan	1.6764	1.012	100.000	0.000	
Total:		165.584				



D₅₀ = 230 microns

Station Name: Kurinjipadi
 Date of collection: 2/02/2005 Time: 11:33:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0	0.000	0.000	100.000	
3	500	1.2408	0.862	0.862	99.138	
4	425	0	0.000	0.862	99.138	
5	300	30.6716	21.302	22.163	77.837	
6	212	81.8228	56.826	78.989	21.011	
7	150	26.3237	18.282	97.271	2.729	
8	75	3.079	2.138	99.410	0.590	
9	Pan	0.85	0.590	100.000	0.000	
Total:		143.988				

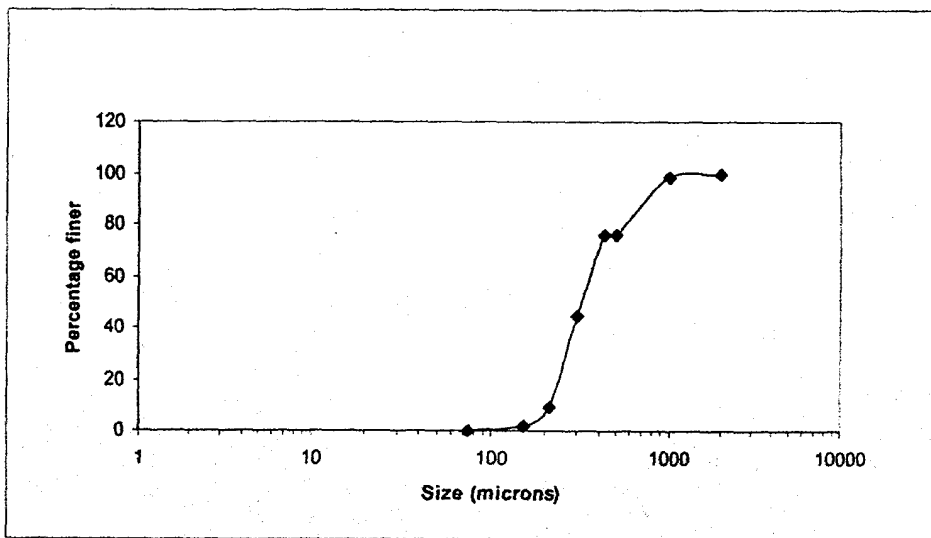


D₅₀ = 260 microns

Station Name: Thevanampattinam

Date of collection: 02/02/2005 Time: 9:21:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	2.5786	1.690	1.690	98.310	
3	500	34.4735	22.596	24.286	75.714	
4	425	0	0.000	24.286	75.714	
5	300	47.3509	31.037	55.323	44.677	
6	212	53.8764	35.314	90.637	9.363	
7	150	11.9972	7.864	98.500	1.500	
8	75	1.892	1.240	99.741	0.259	
9	Pan	0.3958	0.259	100.000	0.000	
Total:		152.564				

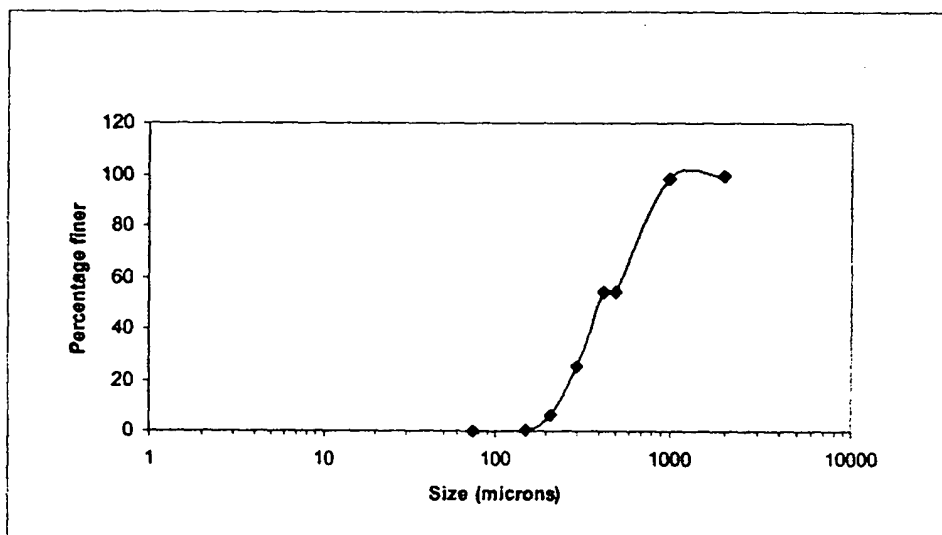


D₅₀ = 320 microns

Station Name: Pudukuppam

Date of collection: 01/02/2005 Time: 3:45:00 PM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	1.7465	1.597	1.597	98.403	
3	500	47.9597	43.860	45.457	54.543	
4	425	0	0.000	45.457	54.543	
5	300	31.6988	28.989	74.447	25.553	
6	212	21.1699	19.360	93.807	6.193	
7	150	5.8594	5.359	99.166	0.834	
8	75	0.755	0.690	99.856	0.144	
9	Pan	0.1574	0.144	100.000	0.000	
Total:		109.347				



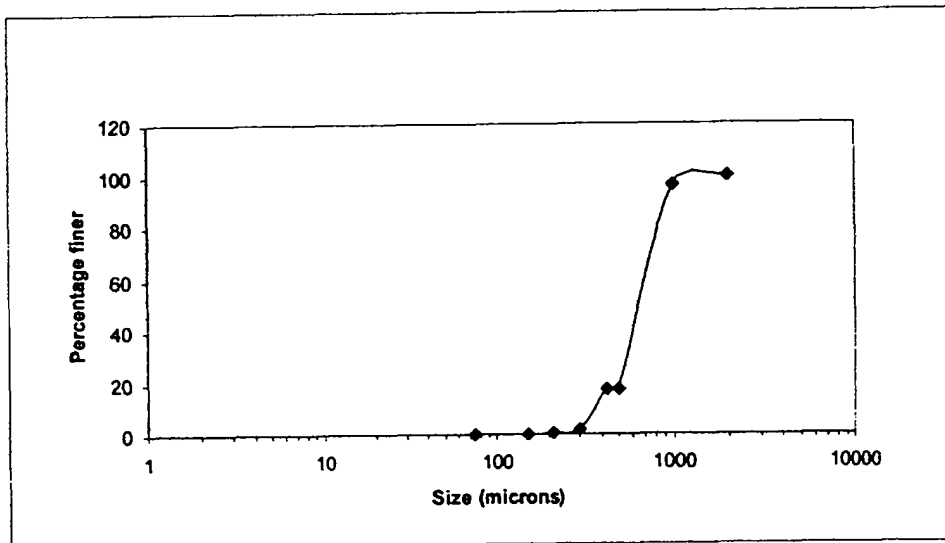
D₅₀ = 405 microns

A2-17

Station Name: Periyakalpet (South)

Date of collection: 01/02/2005 Time: 11:24:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0.132	0.088	0.088	99.912	
2	1000	5.4332	3.642	3.730	96.270	
3	500	117.842	78.987	82.718	17.282	
4	425	0	0.000	82.718	17.282	
5	300	22.872	15.331	98.048	1.952	
6	212	2.433	1.631	99.679	0.321	
7	150	0.3264	0.219	99.898	0.102	
8	75	0.0767	0.051	99.949	0.051	
9	Pan	0.0756	0.051	100.000	0.000	
Total:		149.191				



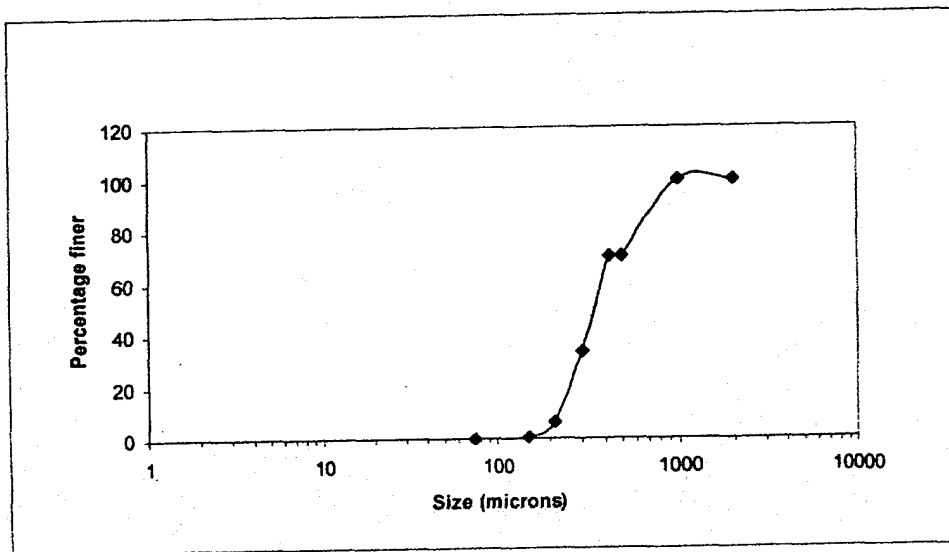
D₅₀ = 710 microns

A2-18

Station Name: Periyakalpet (Middle)

Date of collection: 01/02/2005 Time: 9:46:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.7408	0.410	0.410	99.590	
3	500	53.5152	29.602	30.012	69.988	
4	425	0	0.000	30.012	69.988	
5	300	65.7076	36.347	66.359	33.641	
6	212	49.4324	27.344	93.703	6.297	
7	150	10.4967	5.806	99.509	0.491	
8	75	0.7416	0.410	99.920	0.080	
9	Pan	0.1454	0.080	100.000	0.000	
Total:		180.780				

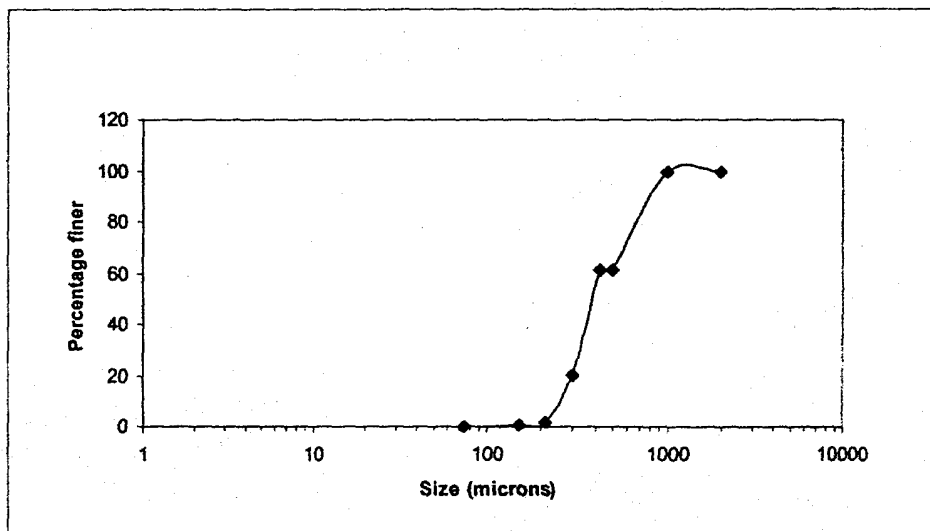


D₅₀ = 360 microns

Station Name: Periyakalpet (North)

Date of collection: 01/02/2005 Time: 1:06:00 AM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.3608	0.253	0.253	99.747	
3	500	54.1996	38.056	38.310	61.690	
4	425	0	0.000	38.310	61.690	
5	300	59.3562	41.677	79.986	20.014	
6	212	26.0894	18.319	98.305	1.695	
7	150	1.9145	1.344	99.649	0.351	
8	75	0.3134	0.220	99.869	0.131	
9	Pan	0.186	0.131	100.000	0.000	
Total:		142.420				



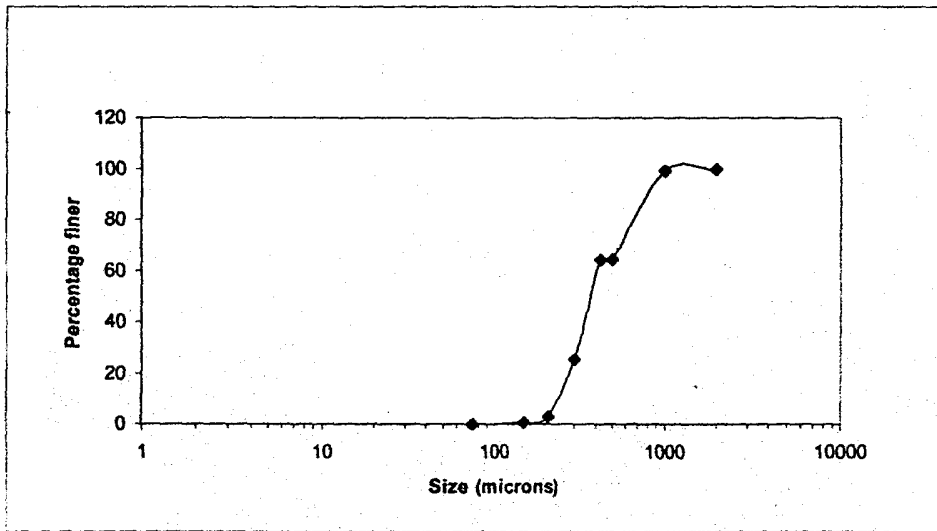
D₅₀ = 390 microns

A2-20

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Station Name: Nochi Kuppam
 Date of collection: 03/02/2005 Time: 4:10:00 PM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	1.0958	0.613	0.613	99.387	
3	500	62.4861	34.965	35.578	64.422	
4	425	0	0.000	35.578	64.422	
5	300	69.0572	38.642	74.220	25.780	
6	212	40.7342	22.793	97.013	2.987	
7	150	4.4664	2.499	99.513	0.487	
8	75	0.6777	0.379	99.892	0.108	
9	Pan	0.1935	0.108	100.000	0.000	
Total:		178.711				

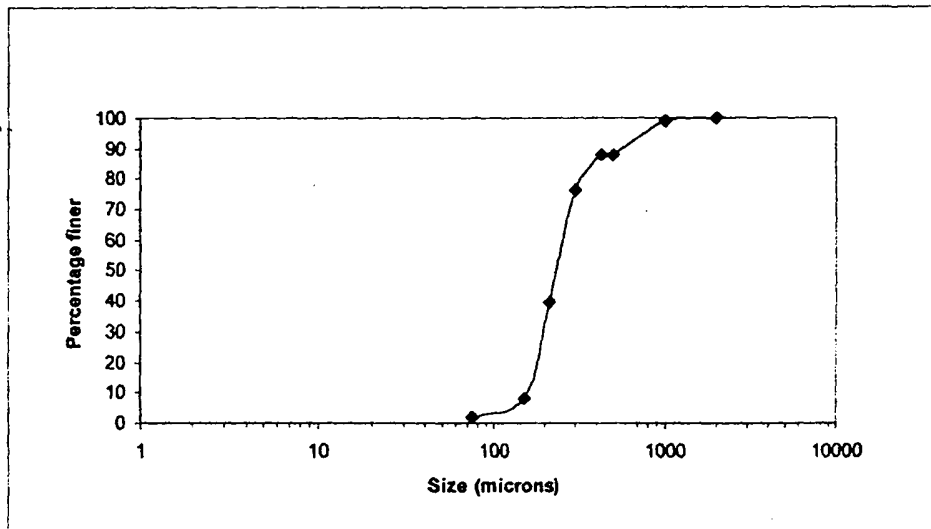


D₅₀ = 380 microns

A2-21

Station Name: Ekkiyar Kuppam
 Date of collection: 03/02/2005 Time: 9:16:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	0	0.000	0.000	100.000	0	
2	1.4863	0.975	0.975	99.025	1.4863	
3	17.2724	11.326	12.301	87.699	17.2724	
4	0	0.000	12.301	87.699	0	
5	17.6998	11.606	23.907	76.093	17.6998	
6	55.6158	36.469	60.376	39.624	55.6158	
7	47.9328	31.431	91.807	8.193	47.9328	
8	9.5702	6.275	98.083	1.917	9.5702	
9	2.9242	1.917	100.000	0.000	2.9242	
Total:		152.502				



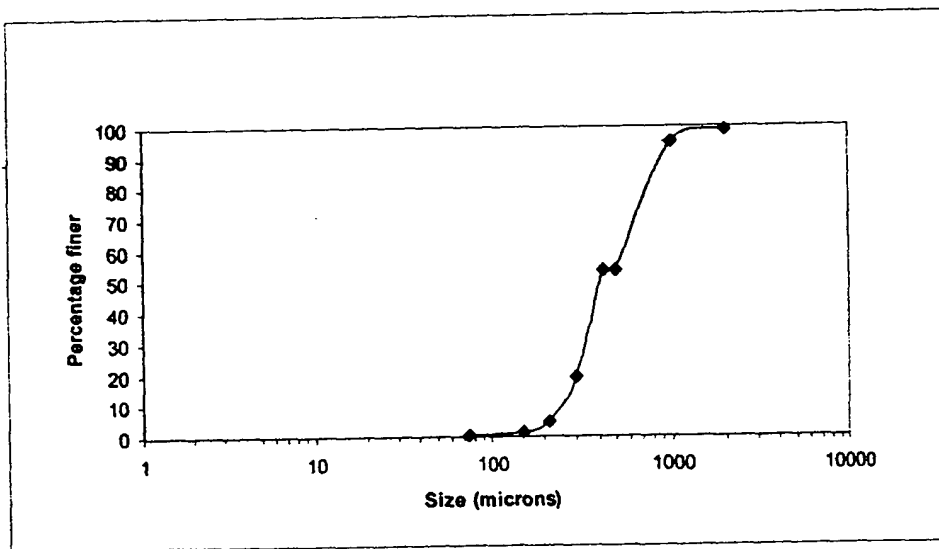
D₅₀ = 240 microns

Station Name: Kottai Kadu Kuppam

Date of collection: 3/2/05

Time: 2:27:00 PM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	1.5655	0.836	0.836	99.164	
2	1000	7.0997	3.790	4.625	95.375	
3	500	78.0598	41.666	46.292	53.708	
4	425	0	0.000	46.292	53.708	
5	300	64.0575	34.192	80.484	19.516	
6	212	27.5646	14.713	95.197	4.803	
7	150	6.1886	3.303	98.501	1.499	
8	75	1.7054	0.910	99.411	0.589	
9	Pan	1.1036	0.589	100.000	0.000	
Total:		187.345				

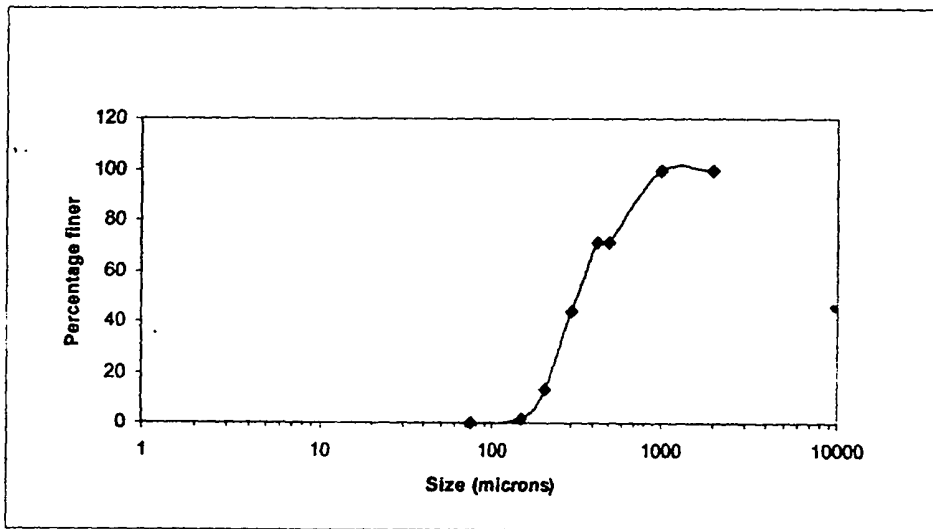


$D_{50} = 415$ microns

Station Name: Alambarai Kuppam

Date of collection: 03/02/2005 Time: 11:46:00 AM

Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.4666	0.389	0.389	99.611	
3	500	33.6369	28.060	28.449	71.551	
4	425	0	0.000	28.449	71.551	
5	300	33.2981	27.777	56.226	43.774	
6	212	36.8084	30.705	86.931	13.069	
7	150	13.7438	11.465	98.396	1.604	
8	75	1.6678	1.391	99.787	0.213	
9	Pan	0.2554	0.213	100.000	0.000	
Total:		119.877				

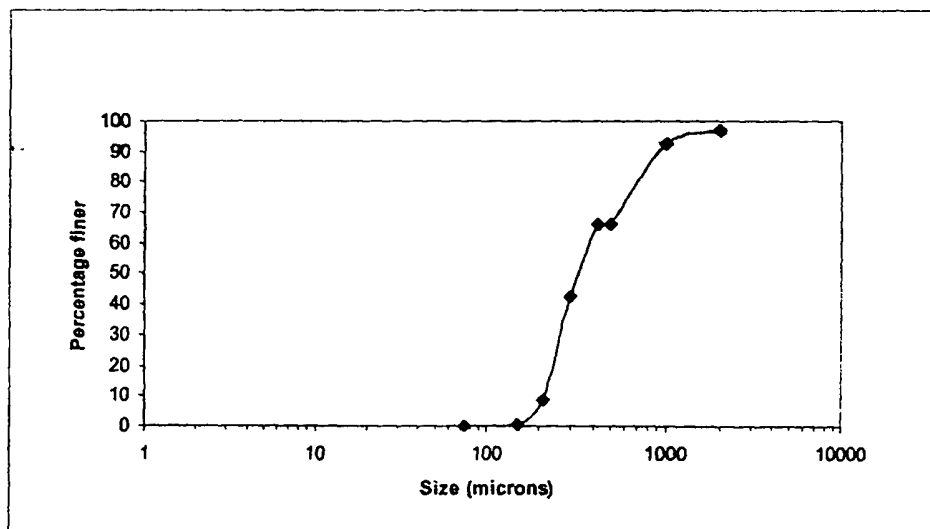


D₅₀ = 330 microns

Station Name: Sadrangpattinam

Date of collection: 04/02/2005 Time: 12:40:00 PM

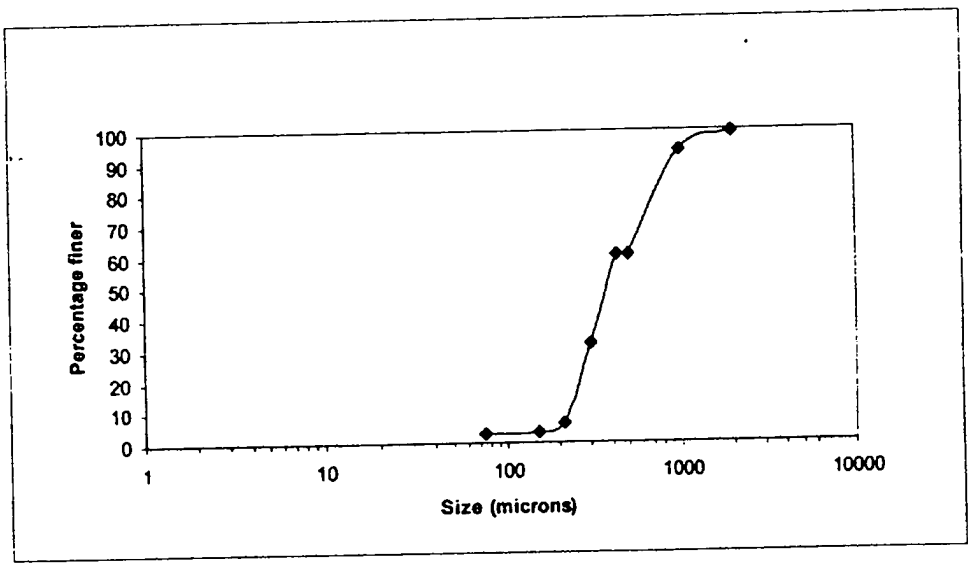
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	4.7754	2.968	2.968	97.032	
2	1000	7.2552	4.509	7.477	92.523	
3	500	42.104	26.167	33.644	66.356	
4	425	0	0.000	33.644	66.356	
5	300	38.753	24.085	57.729	42.271	
6	212	53.6955	33.371	91.100	8.900	
7	150	13.1814	8.192	99.292	0.708	
8	75	0.9513	0.591	99.884	0.116	
9	Pan	0.1872	0.116	100.000	0.000	
Total:		160.903				



$D_{50} = 340$ microns

Station Name: Mahabalipuram
 Date of collection: 04/02/2005 Time: 1:50:00 PM

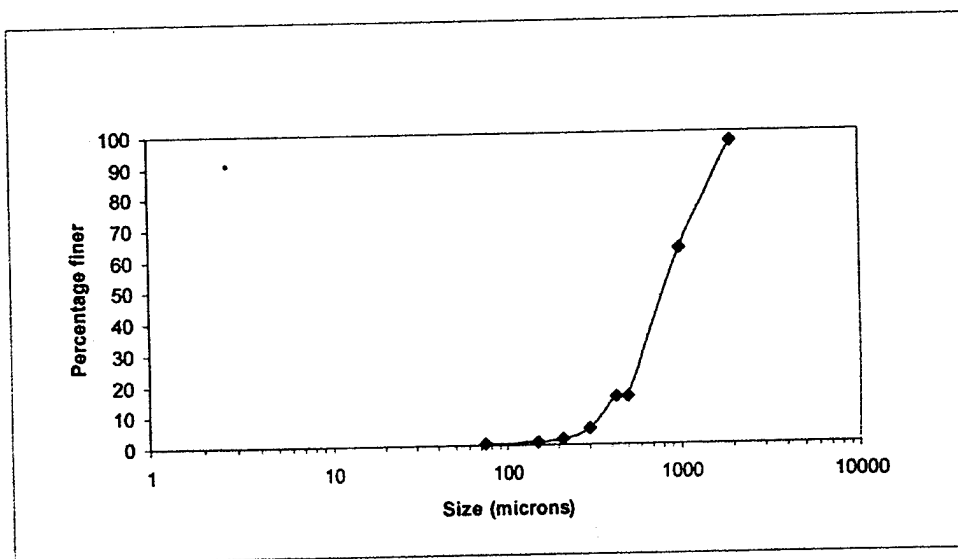
Sr. No	Sieve size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0.4885	0.302	0.302	99.698	
2	1000	9.541	5.895	6.196	93.804	
3	500	53.9781	33.348	39.545	60.455	
4	425	0	0.000	39.545	60.455	
5	300	46.2472	28.572	68.117	31.883	
6	212	41.6726	25.746	93.863	6.137	
7	150	4.545	2.808	96.671	3.329	
8	75	0.8624	0.533	97.203	2.797	
9	Pan	4.5266	2.797	100.000	0.000	
Total:		161.861				



D₅₀ = 380 microns

Station Name: Kovalam beach
 Date of collection: 05/02/2005 Time: 10:20:00 AM

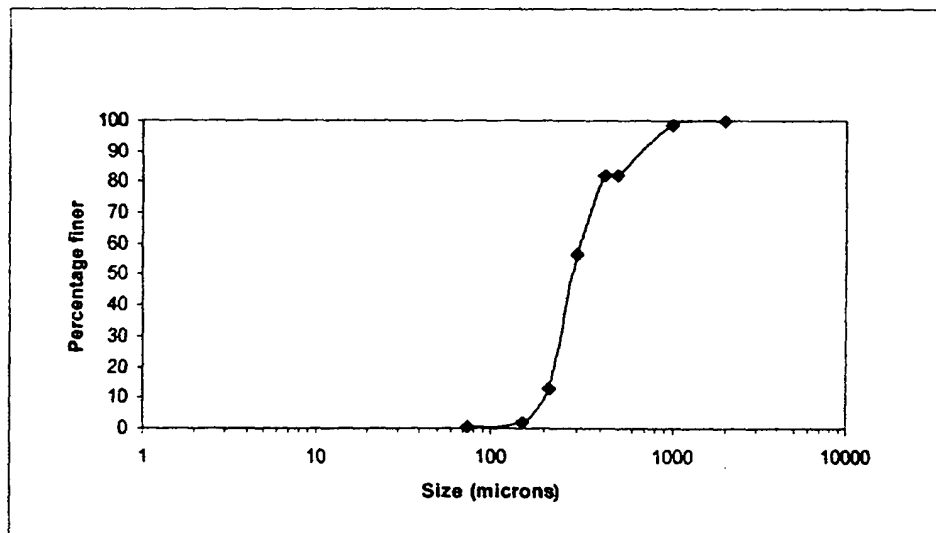
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	4.6488	2.973	2.973	97.027	
2	1000	53.4592	34.184	37.157	62.843	
3	500	74.4402	47.600	84.757	15.243	
4	425	0	0.000	84.757	15.243	
5	300	15.6962	10.037	94.794	5.206	
6	212	5.003	3.199	97.993	2.007	
7	150	1.3213	0.845	98.838	1.162	
8	75	0.7676	0.491	99.329	0.671	
9	Pan	1.0494	0.671	100.000	0.000	
Total:		156.386				



D₅₀ = 865 microns

Station Name: Urur Alcott Kuppam (South of Adayar River – Chennai)
 Date of collection: 05/02/2005 Time: 2:45:00 PM

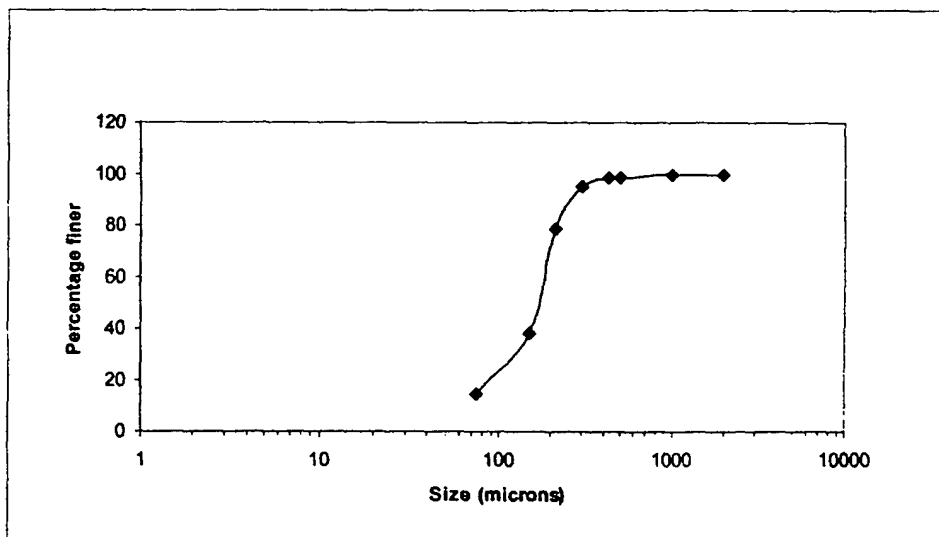
Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	2.3636	1.286	1.286	98.714	
3	500	30.664	16.685	17.971	82.029	
4	425	0	0.000	17.971	82.029	
5	300	46.7198	25.421	43.391	56.609	
6	212	79.9028	43.476	86.867	13.133	
7	150	20.9952	11.424	98.291	1.709	
8	75	2.3481	1.278	99.568	0.432	
9	Pan	0.7936	0.432	100.000	0.000	
Total:		183.787				



D₅₀ = 290 microns

Station Name: Krishnapatanam (Andhra Pradesh)
 Date of collection: 06 /02/2005 Time: 2:45:00 PM

Sr. No	Seive size (microns)	Weight retained (g)	% Weight retained	Cumulative % weight retained	% finer	Remarks
1	2000	0	0.000	0.000	100.000	
2	1000	0.0808	0.052	0.052	99.948	
3	500	2.0108	1.285	1.336	98.664	
4	425	0	0.000	1.336	98.664	
5	300	5.5227	3.528	4.864	95.136	
6	212	25.954	16.580	21.444	78.556	
7	150	62.9269	40.198	61.641	38.359	
8	75	37.3551	23.863	85.504	14.496	
9	Pan	22.6924	14.496	100.000	0.000	
Total:		156.543				



$D_{50} = 165$ microns