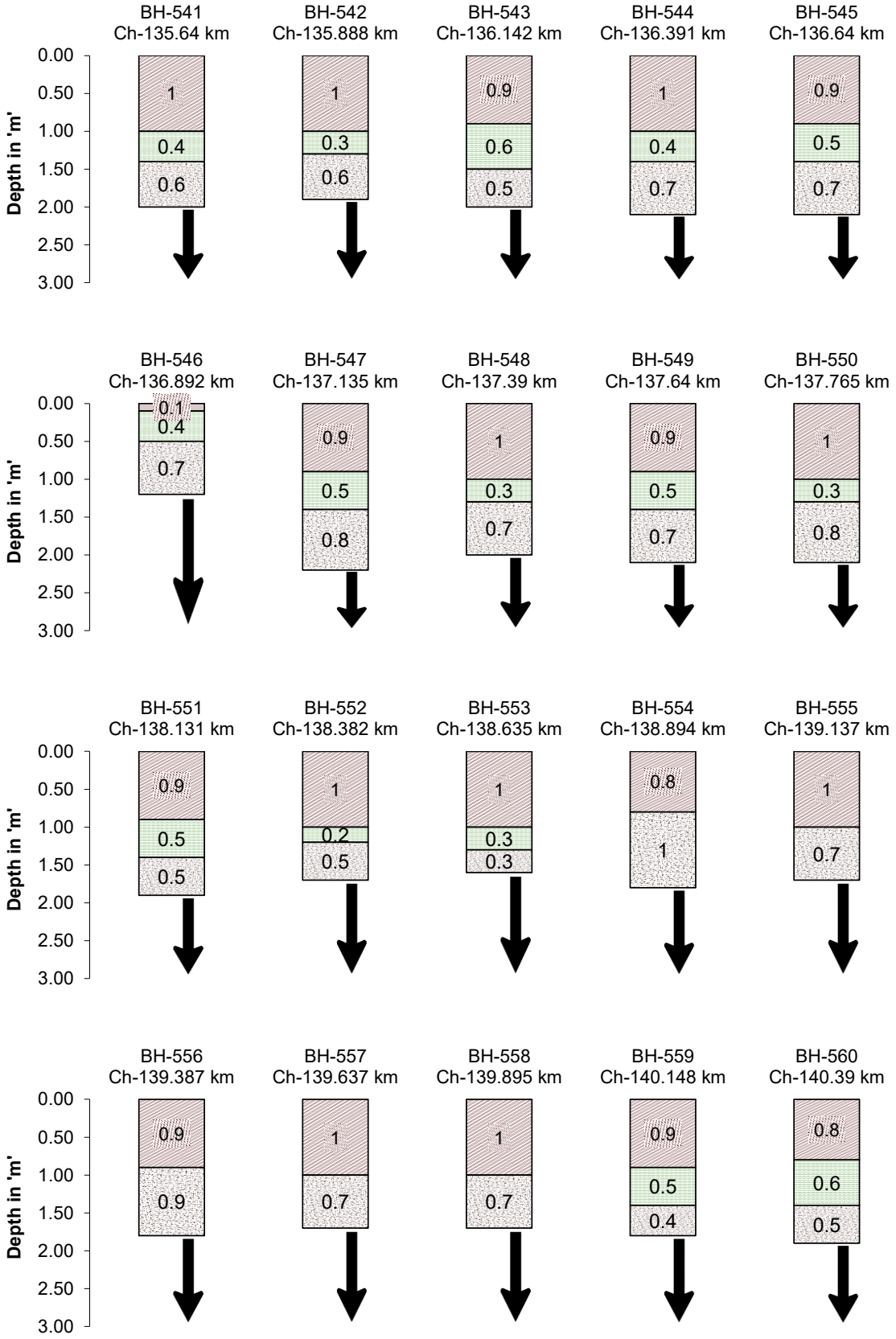
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0.6
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0.5
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0.2
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BH-553
Ch-138.635 km
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0.3
0.3
BH-554
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0.8
1
BH-555
Ch-139.137 km
1
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BH-556
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0.9
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Ch-139.637 km
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Ch-139.895 km
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BH-560
Ch-140.39 km
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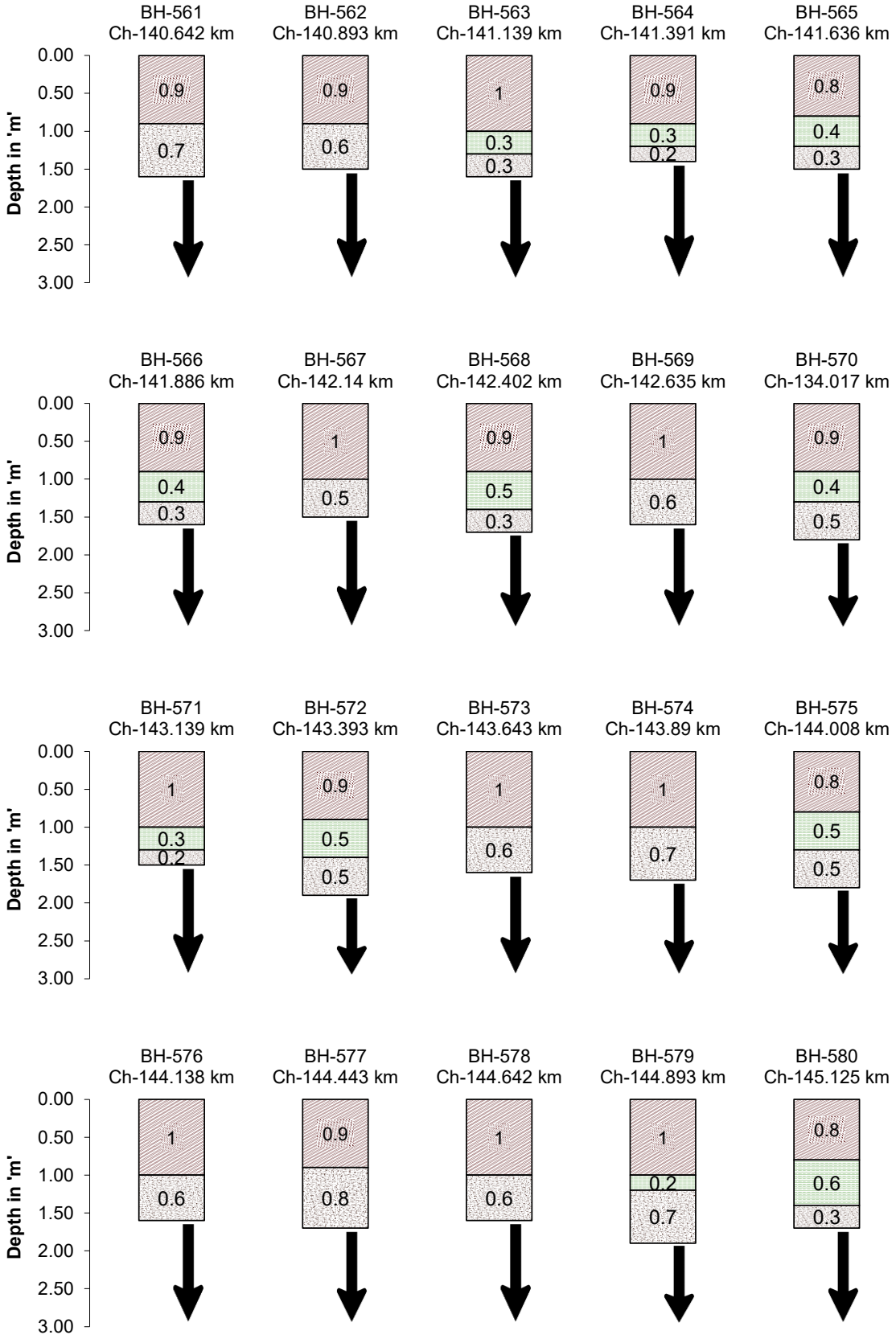
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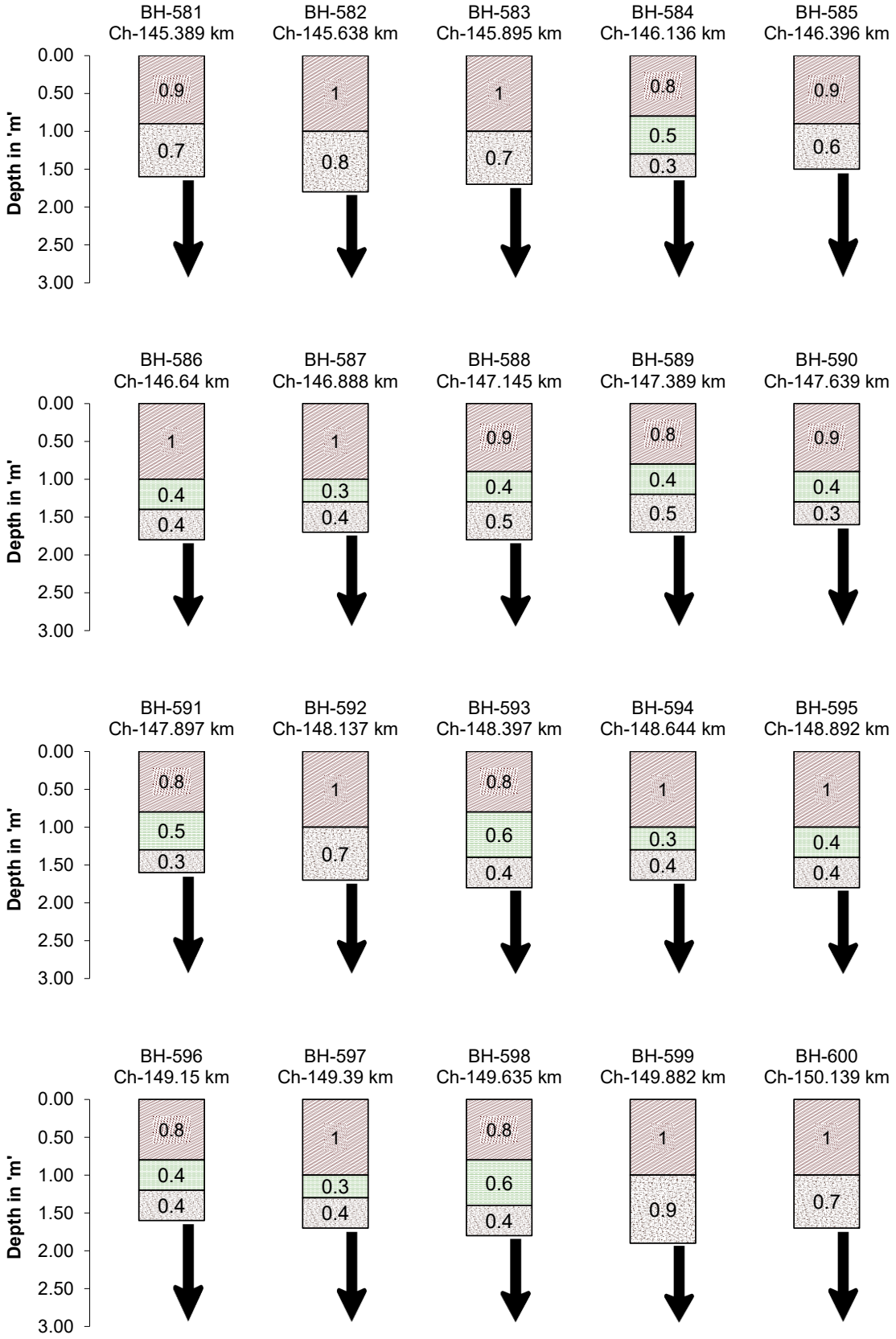
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BH-594
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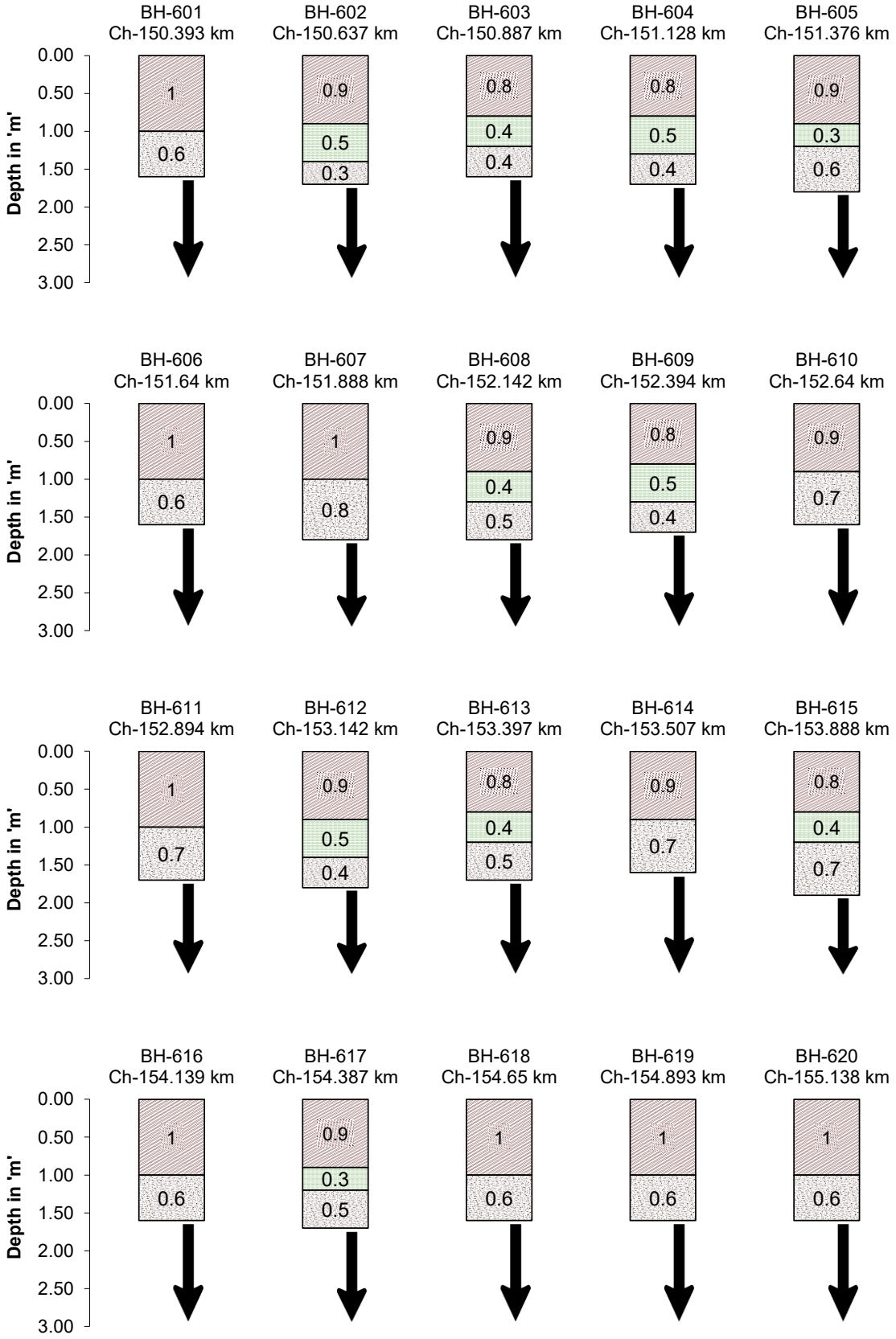
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0.6
BH-607
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0.7
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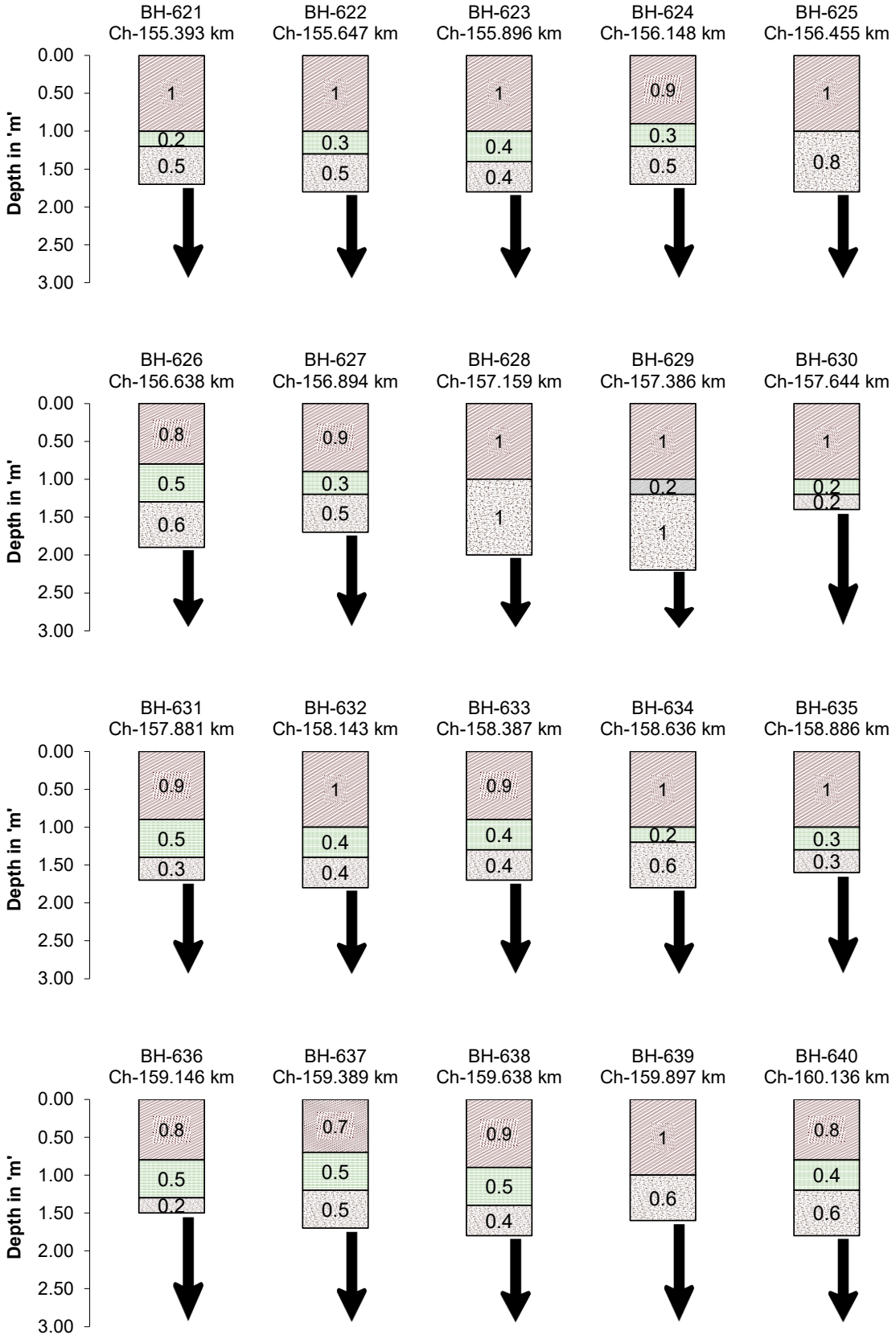
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0.4
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0.9
0.3
0.5
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BH-626
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0.3
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1
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0.2
BH-631
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BH-635
Ch-158.886 km
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Ch-159.638 km
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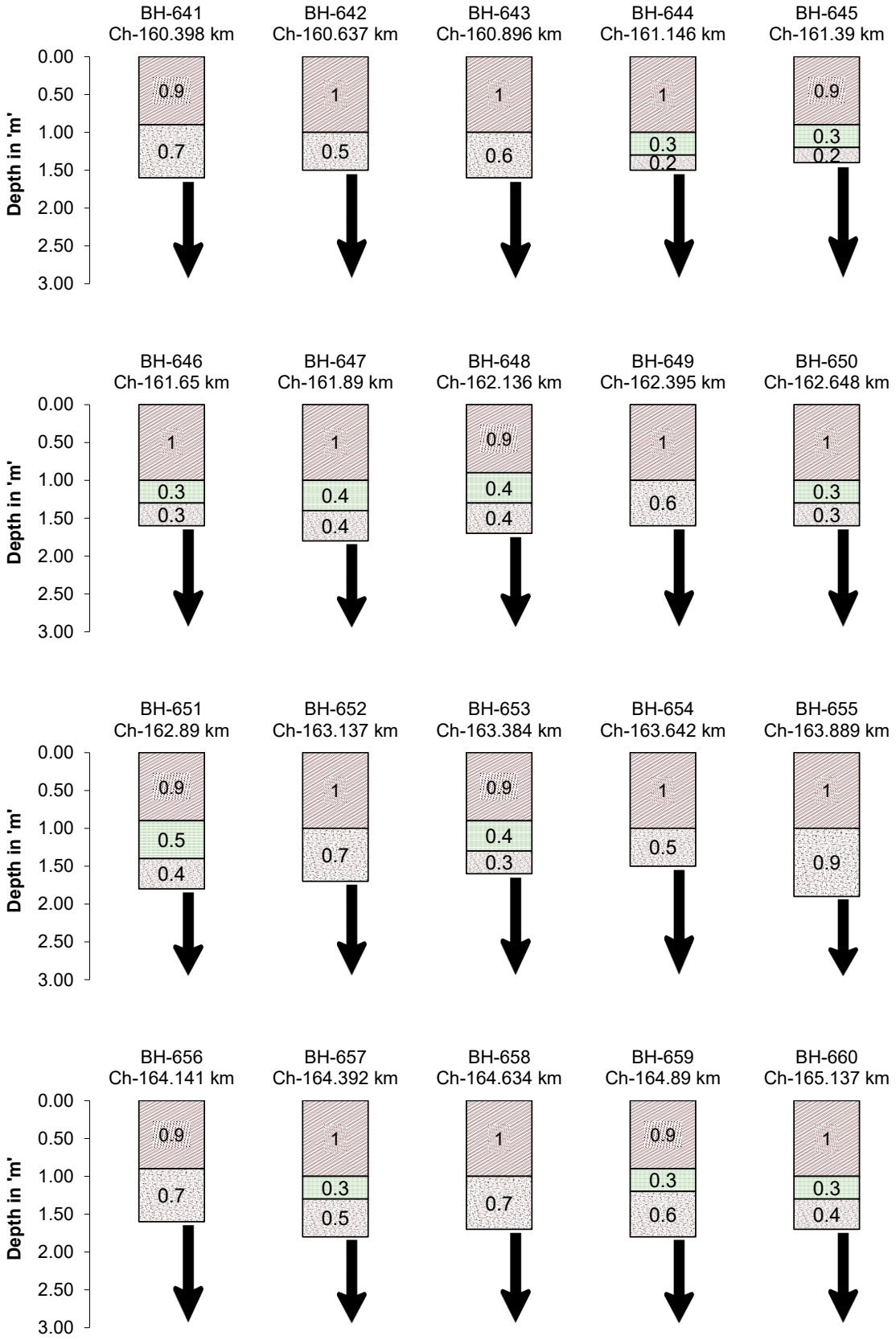
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0.2
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0.7
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Ch-164.392 km
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0.5
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Ch-164.634 km
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BH-659
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0.6
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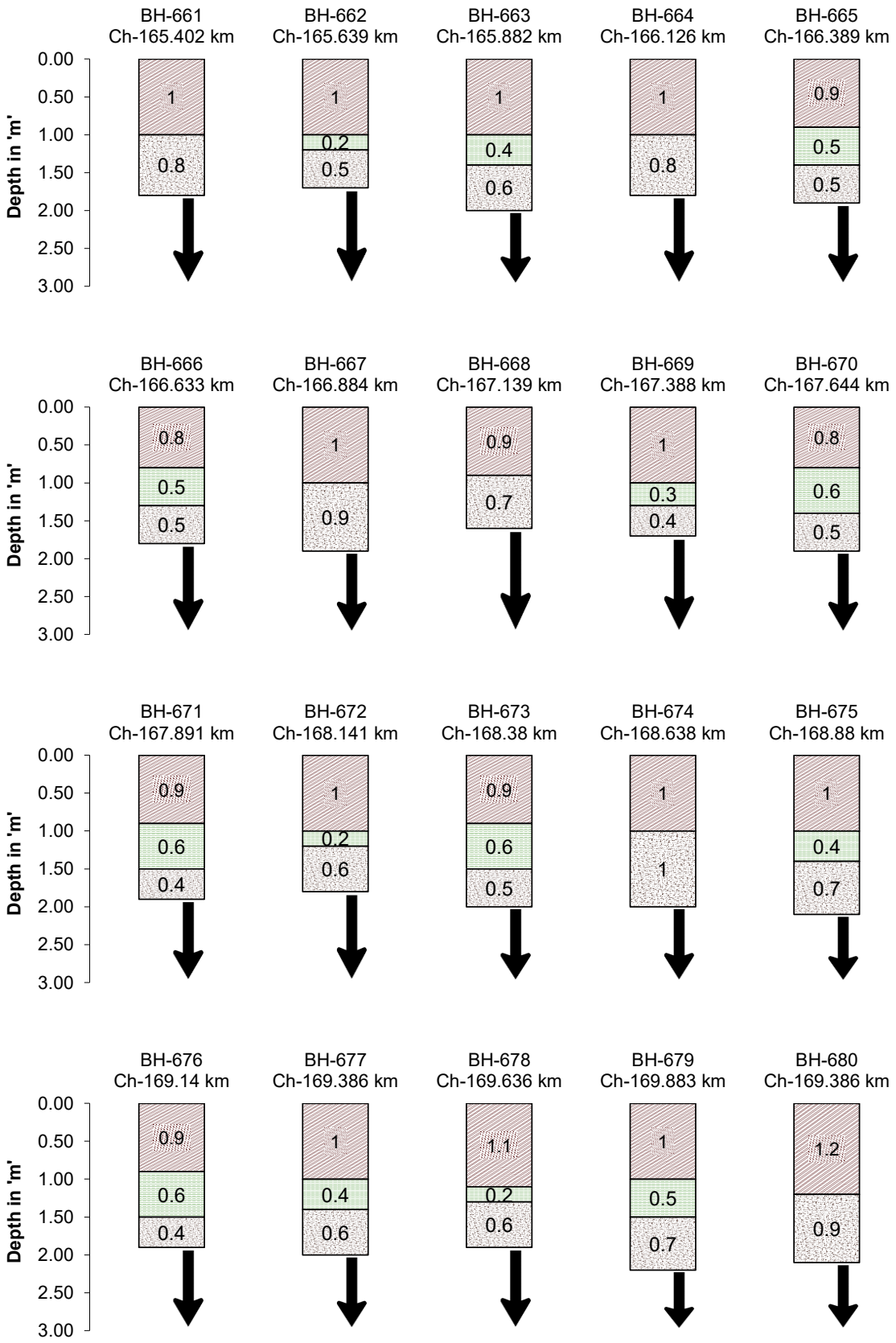
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Ch-166.389 km
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0.5
0.5
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0.7
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0.3
0.4
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0.6
0.5
BH-671
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0.6
0.4
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0.2
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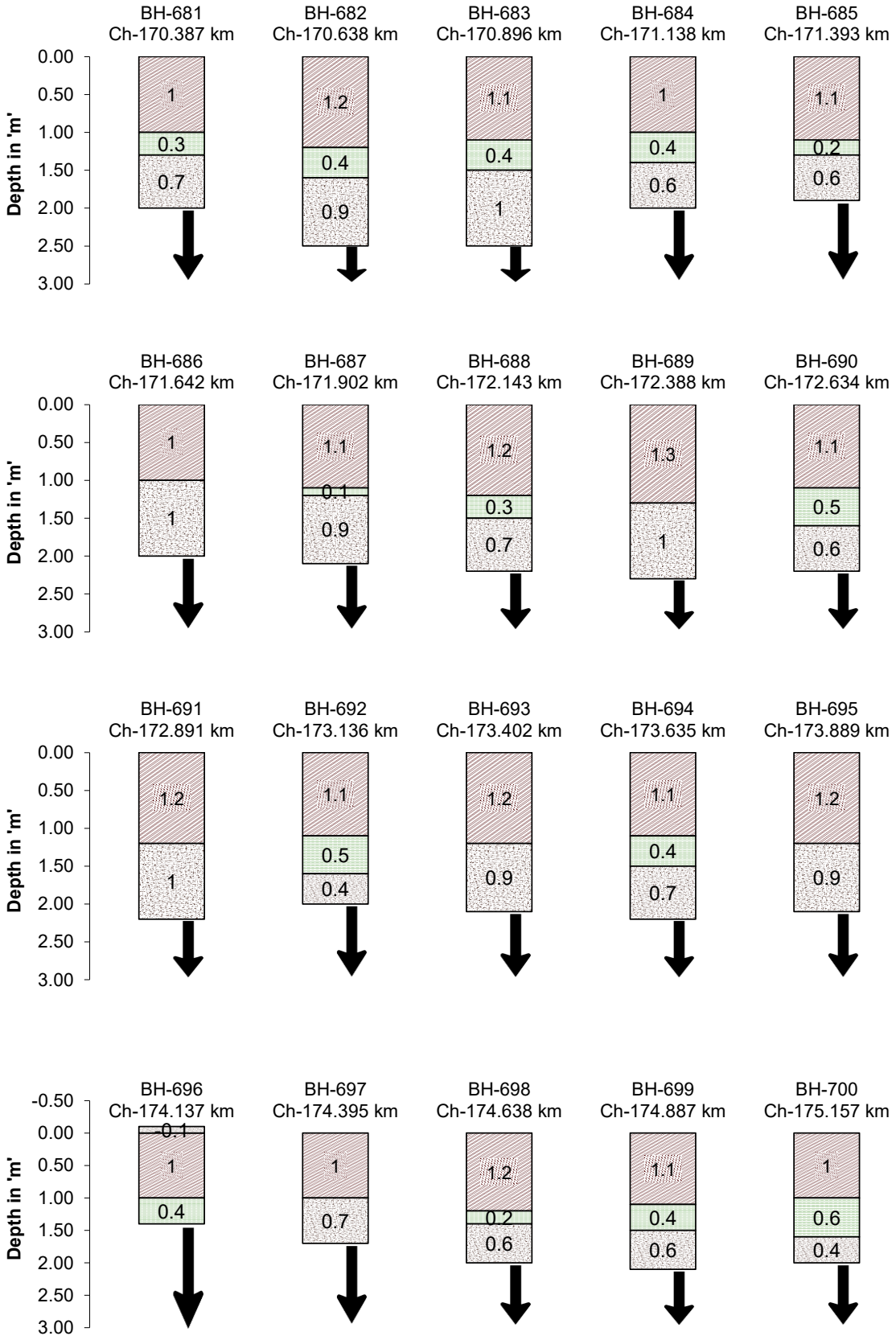
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1.2
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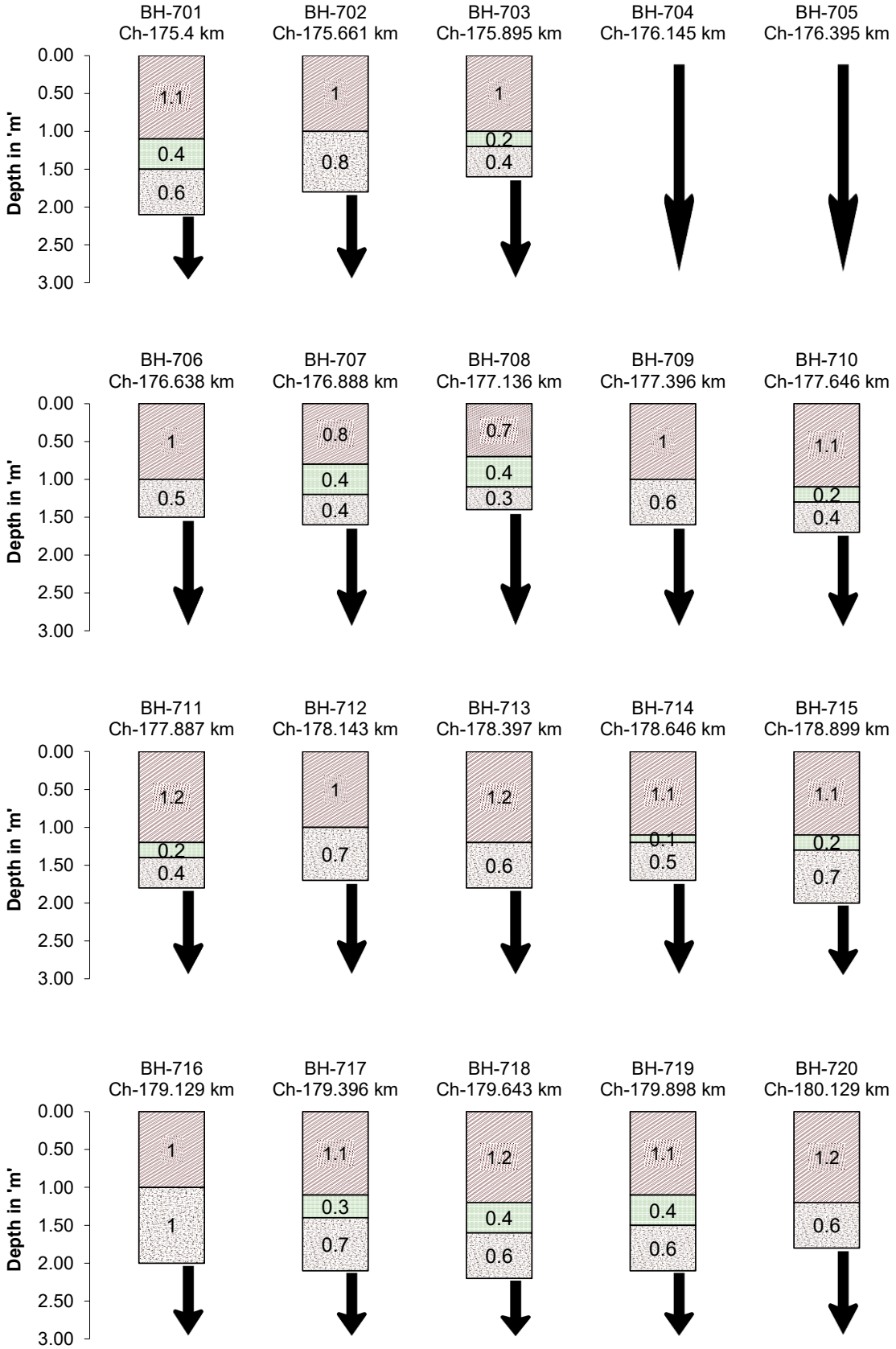
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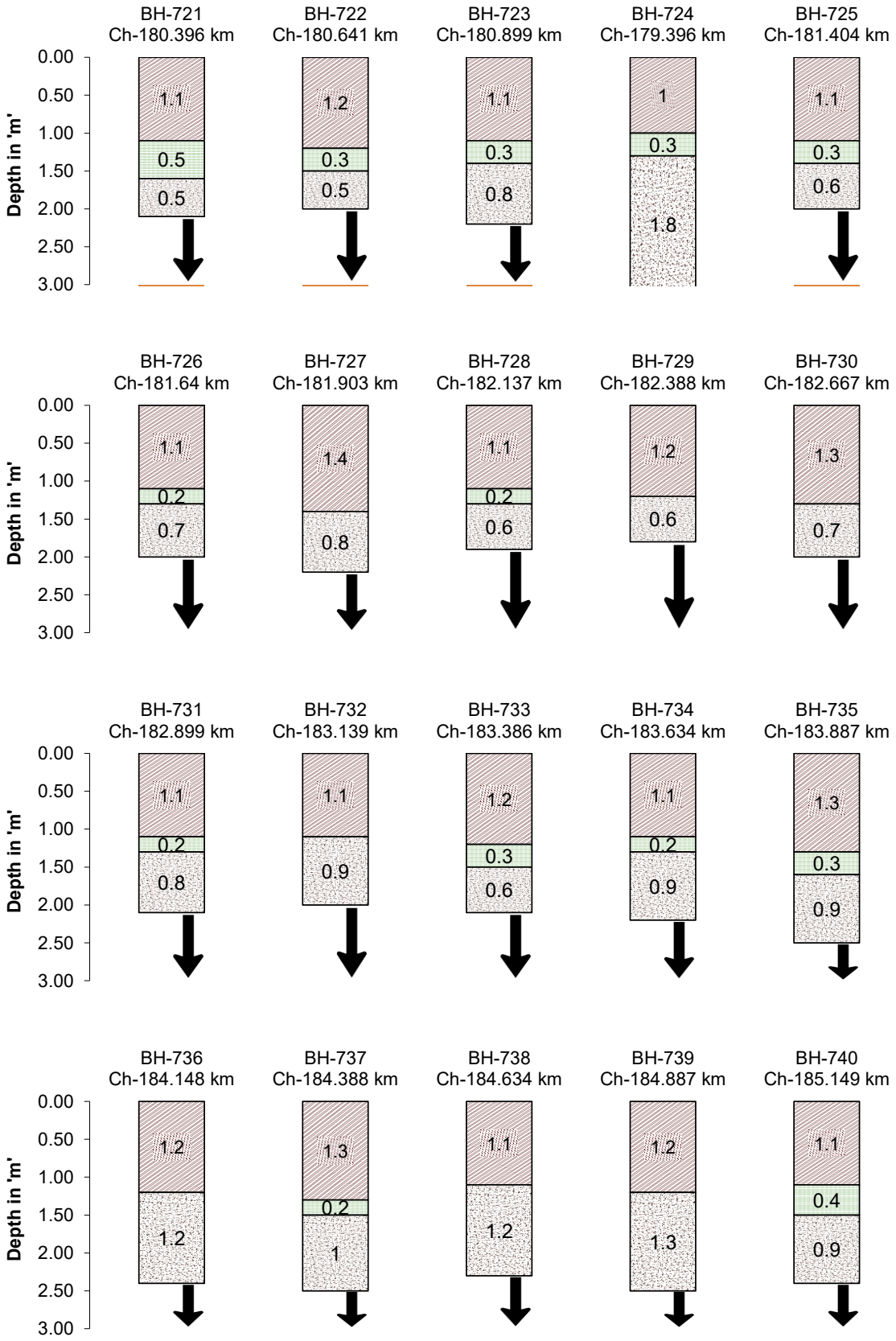
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1.2
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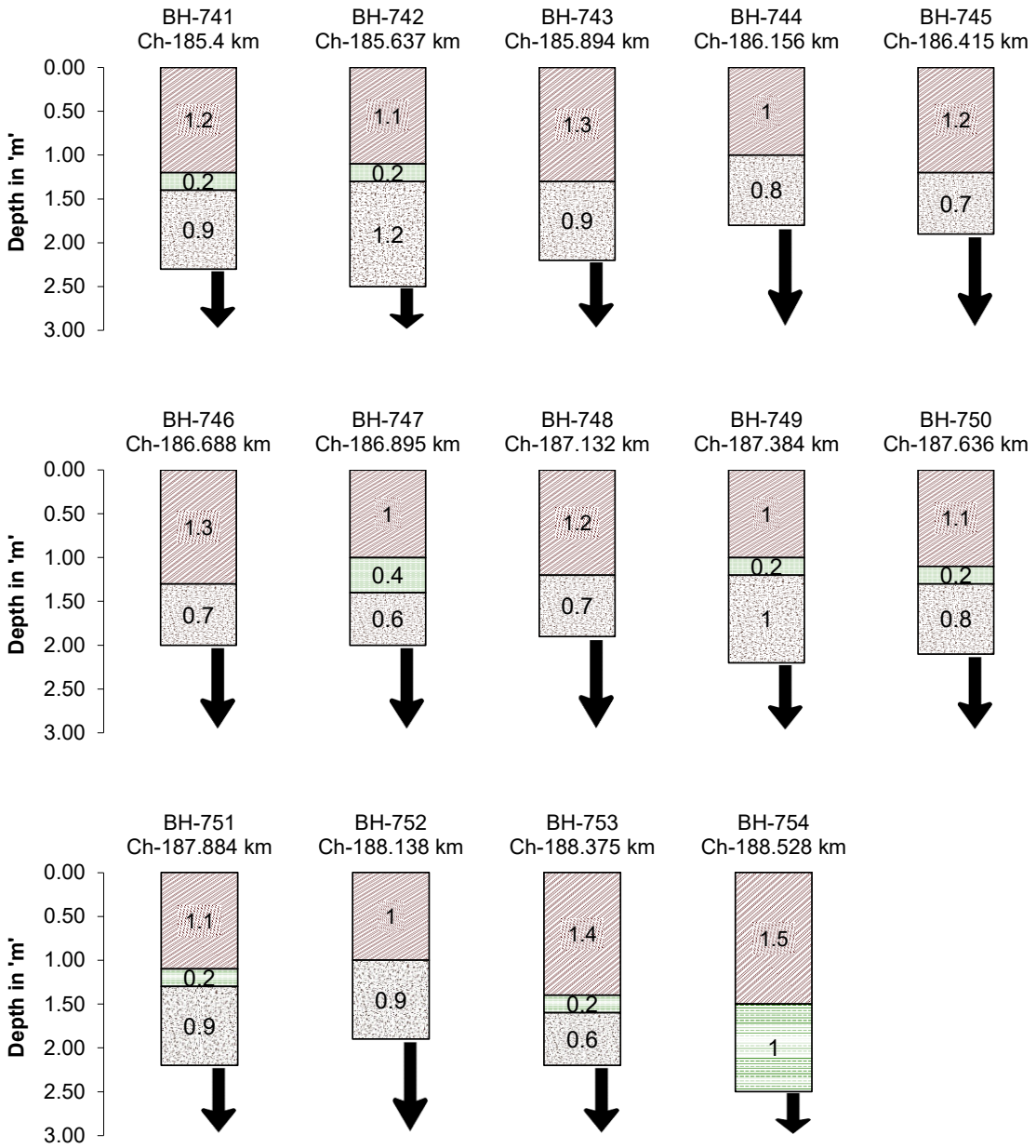
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BH-754
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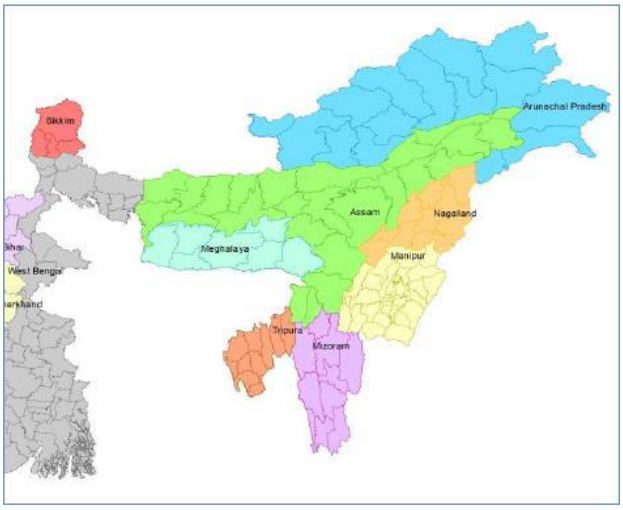
0.50
1.00
1.50
2.00
2.50
3.00

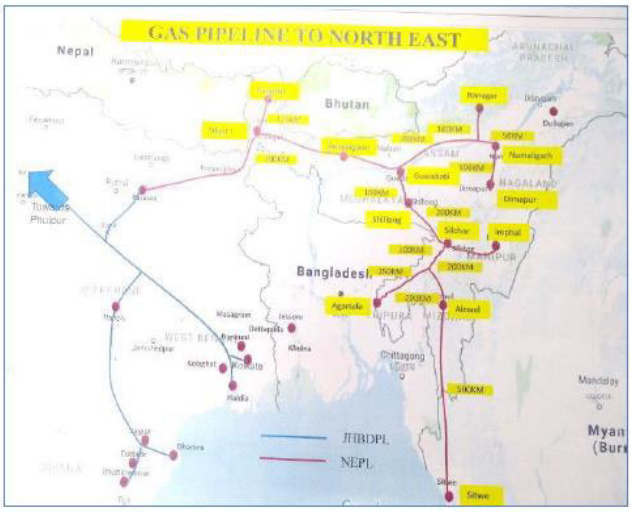
DETAILED ENGINEERING ROUTE SURVEY WORKS FOR PROPOSED NORTH EAST GAS GRID PIPELINE PROJECT – PACKAGE - III

GROUP – D

SILIGURI - GANGTOK NATURAL GAS PIPELINE (NEW LINE)

SOIL RESISTIVITY SURVEY - DRAFT REPORT





Submitted to

Engineer–in–Charge

INDRADHANUSH GAS GRID LIMITED (IGGL)

(A JV OF IOCL, ONGC, GAIL, OIL & NRL)

5th Floor, Central Mall, G. S. Road, Christian Basti

Guwahati - 781005

Submitted by

INDIAN RESOURCES INFORMATION & MANAGEMENT TECHNOLOGIES LTD. (IN-RIMT)

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INDEX

Sr. No	Particulars	Page No.	
		From	To
1.	Chapter-I Introduction	1	2
2.	Chapter-II Methodology	3	4
3.	Chapter-III Observations And Discussions	5	6
4.	Chapter-IV Findings & Recommendations	7	7
5.	Annexure-I Soil Resistivity Survey Data	8	130
6.	Annexure-II Soil Resistivity Graphs	131	150
7.	Annexure-III Soil Resistivity Histogram	151	170
8.	Calibration Certificate	171	171

CHAPTER-I
INTRODUCTION

1.0 Introduction :

Indradhanush Gas Grid Limited, Guwahati has undertaken an activity to lay a pipeline between Siliguri to Gangtok and hence, undertaken to carry out the soil resistivity survey along the route of the pipeline having length 188.528 km.

Indradhanush Gas Grid Limited has entrusted the work of soil resistivity survey on **Indian Resources Information and Management Technologies Ltd. (IN-RIMT)**. Accordingly, the present report covers the study of soil resistivity along the route alignment of Siliguri (Belakoba) to Gangtok (Ranipool) Pipeline.

1.1 The data collected from soil resistivity survey is presented in the form of graphs, tables and histograms. This will facilitate the analysis of data.

1.2 The resistivity data is classified in to five categories as specified in the scope of work.

1.3 The soil resistivity data collected for entire route is presented in the table as Annexure-I and enclosed with this report.

1.4 The resistivity data plotted at depth 100cm, 300cm and 500cm. on y-axis and chainage on x-axis in the semi log graph 1.1 to 1.19. Each graph plotted for 10 Km length and enclosed with this report as Annexure-II.

1.5 The percentage occurrence of soil resistivity presented in the histogram 1.1 to 1.19. Each histogram plotted for 10 Km length and enclosed with this report as Annexure-III.

1.6 The average resistivity measured at depth 100 cm, 300 cm and 500 cm is divided in to lengthwise group and presented in Table 1.1 in this report.

List of Equipments used for Soil Resistivity and Stratification Survey

Sr. No	Name of Equipments	Make/Model/Serial No.	No. of Equipments
1	(Megger Earth Tester) Digital Resistivity Meter with Accessories	Megger/DET4TD2/1000347101987189	1
		Total	1

CHAPTER-II
METHODOLOGY

2.0 Introduction:

Resistivity has historically been used as a broad indicator of soil corrosivity. Resistivity was measure of ionic current, which developed across ground surface. Since ionic current flow is associated with soil corrosion reaction, high soil resistivity will arguable slow down corrosion reaction. Soil resistivity generally decreases with increasing water content and the concentration of ionic species, soil resistivity is by no means the only parameter affecting the risk of corrosion damage. A high soil resistivity alone will not guarantee the absence of serious corrosion.

2.1.0 Scope of Work & Principal & Methodology of Resistivity Survey:

As per the scope of work, Soil resistivity survey using four pin Wenner method is to be carried out at every 125 meter interval with pin spacing equivalent to depth of the pipe for 100 cm, 300 cm & 500 cm depth & average soil resistivity to be recorded.

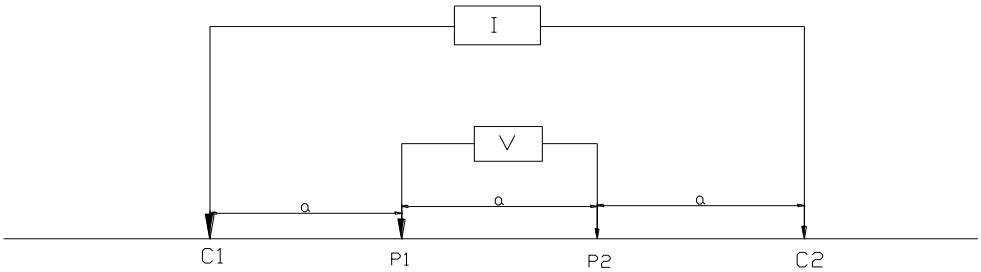
A brief about the principal of resistivity is as under;

2.2.0 Principal & Methodology of Resistivity Survey*:*

The electrical resistivity method is the process to investigate the nature of soil surface formations by studying the variation in electrical properties. The resistivity is defined as the resistance offered by a unit cube substance, to the flow of electric current when the voltage is applied at the opposite faces of the cube.

Resistivity of soil is determined by the entrapped water and the ions dissolved in it, soil resistivity generally decreases with an increase in the moisture content. Thus soil with good drainage properties exhibit relatively large resistivity. Similarly high ionic contents in the soil water decrease resistivity, form different studies & experience it has been found that soil resistivity can serve as a useful indicator to the corrosivity of the soil. Therefore soil resistivity survey often conducted to get estimate of the soil corrosivity.

The most widely used method for measuring soil resistivity is the 4-Pin Wenner's Method. In this method four stainless pins are fixed in to the ground at an equal spacing. The current I is applied to the outer electrode C1, C2 which is called as current electrode and the voltage drop V developed between inner electrode P1, P2 which is called as potential electrode is measured.



The resistivity rho(ρ), at a soil depth approximately equal to the pin spacing is given by

$$\rho = 2a \Pi V/I$$

Measurement conducted at different spacing would give an indication of soil resistivity variations with depth from the ground surface.

On the basis of resistivity observation of soil at various depths, soil is classified in the general five groups indicating the corrosive nature of soil.

Resistivity (Ohm-cm)	**Classification**
Less than 1000	Very High Corrosive
1000-2500	High Corrosive
2500-5000	Medium Corrosive
5000-10000	Low Corrosive
More than 10000	Very low Corrosive

The electrical soil resistivity survey is carried out as per ASTM-G57-06-R2012.

2.1.1 Procedure for Measurement of Resistivity:

As specified in the scope of work, for the measurement of resistivity 4-Pin Wenner Method is used. This method commonly adopted is very convenient & reliable. The resistivity survey has been carried out during month of November to February. The resistivity was measured by advance electronic microprocessor based single stacking resistivity meter manufactured by Megger.

CHAPTER-III
OBSERVATIONS AND DISCUSSIONS

3.1.0 General

In this chapter, the observations and finding from soil resistivity survey are discussed in details. The data collected during the field work through resistivity survey. The scope of work specified by the client is comprehensive to define the character of soil corrosion; it covers various parameters which are related with the corrosivity of soil.

Terrain Condition and Pipe Line Route Description:

The pipeline is proposed in the State of West Bengal and Sikkim.
The pipeline passes through the cultivated land & barren land and along the corridor of NH.
The pipeline is proposed using the Detailed Survey with Total Station and DGPS Instruments.

3.2.0 Relation of Soil Resistivity & Soil Corrosivity:-

Corrosion is an electrochemical reaction based on universal law of nature. All metallic structures corrode. It is just a question of how quickly. Steel for example, is manmade substance produced from iron oxide. The energy added in the refining process is unstable. Given a suitable environment, steel will release this energy and return to its natural state of iron ore. When immersed in an electrolyte, such as soil, water or concrete, metal produce a current which causes iron to leave their surface. The rate of current flow determines the life of structure. One ampere of current consumes approximately 20 pounds of iron per year. Thus, to stop this process of corrosion, it is must to know the exact cause of corrosion.
Corrosion of pipeline wall can occur either internally or externally. The external corrosion is caused due to various factors present in soil as well as other outside factor. The corrosivity of soil mainly depends on texture of soil, moisture content,

acid, alkalies and salts present in soil, electrochemical potential and microorganisms present in soil.

The resistivity survey is a comprehensive tool to measure corrosivity often by soil which is discussed in details as follows.

Soil resistivity was a measure of conductivity of soil, which play an important role for scope of corrosivity. Low resistivity means high corrosive soil and some time it works as a single tool to decide soil corrosivity. Based on resistivity observation of soil at various depths, soil is classified in the general five groups indicating the corrosive nature of soil.

Resistivity (Ohm-cm)	**Classification**
Less than 1000	Very High Corrosive
1000-2500	High Corrosive
2500-5000	Medium Corrosive
5000-10000	Low Corrosive
More than 10000	Very low Corrosive

3.3.1 Observations on Soil Resistivity:

The study and analysis of resistivity of soil is being done by using graphs and histogram. The following observations are made as follows.

Summary Distribution of Soil Resistivity along ROU
Table-1.1

Sr. No.	Nature of Soil	Chainage (Km)		Total Length (Km)	Avg. Resistivity (Ohm-cm)
		From	To		
1	2	3	4	5	6
1.	Very low Corrosive (More than 10000)	0.000	188.528	188.528	280500.648

3.3.2 Soil Resistivity along the Route of Pipeline

The Very Low Corrosive condition is observed for the route i.e. from 0.000 kms to 188.528 kms.

CHAPTER-IV
FINDINGS & RECOMMENDATIONS

4.1 Discussion & Conclusion on Soil Resistivity:

The entire route of the pipeline passes through cultivated, barren land, habitation area and mostly along the corridor of NH. The resistivity observation shows, the soil is Very Low corrosive for corrosivity throughout the route.

Acknowledgement:-

We record our sincere thanks to the officers of IGGL, GUWAHATI for their continuous guidance's and sincere co-operations extended to us from time to time during the field as well as office work of above mentioned work of project.

Annexure-I
Soil Resistivity Survey Data

Annexure-II
Soil Resistivity Graphs

Anne Annexure-III
Soil Resistivity Histograms

SOIL RESISTIVITY SURVEY FOR SILIGURI TO GANGTOK PIPELINE - ANNEXURE - I								
S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1	00+005	100	625	628	392500	657029	2941046	Start Village Khalakerbari
		300	484	1884	911856			
		500	265	3140	832100			
2	00+128	100	607	628	381196	657152	2941043	Farm Land
		300	394	1884	742296			
		500	246	3140	772440			
3	00+249	100	526	628	330328	657252	2941066	Farm Land
		300	366	1884	689544			
		500	206	3140	646840			
4	00+379	100	510	628	320280	657280	2941193	Farm Land
		300	352	1884	663168			
		500	196	3140	615440			
5	00+503	100	529	628	332212	657302	2941315	Farm Land
		300	365	1884	687660			
		500	205	3140	643700			
6	00+642	100	575	628	361100	657341	2941449	Farm Land
		300	345	1884	649980			
		500	260	3140	816400			
7	00+758	100	485	628	304580	657362	2941563	Farm Land
		300	293	1884	552012			
		500	164	3140	514960			
8	00+883	100	556	628	349168	657387	2941685	Farm Land
		300	360	1884	678240			
		500	206	3140	646840			
9	01+007	100	360	628	226080	657411	2941807	Farm Land
		300	196	1884	369264			
		500	86	3140	270040			
10	01+130	100	340	628	213520	657426	2941929	Farm Land
		300	142	1884	267528			
		500	60	3140	188400			
11	01+259	100	240	628	150720	657443	2942057	Farm Land
		300	119	1884	224196			
		500	61	3140	191540			
12	01+395	100	265	628	166420	657458	2942192	Farm Land
		300	142	1884	267528			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	73	3140	229220			
13	01+484	100	160	628	100543	657464	2942281	Railway Line Crossing
		300	72	1884	136402			
		500	36	3140	111470			
14	01+626	100	125	628	78500	657476	2942422	Tea , Farm Land
		300	52	1884	98156			
		500	22	3140	70022			
15	01+770	100	105	628	65940	657494	2942565	Farm Land
		300	48	1884	90809			
		500	21	3140	64684			
16	01+833	100	95	628	59409	657502	2942628	Farm Land
		300	42	1884	79128			
		500	20	3140	62172			
17	02+014	100	179	628	112412	657518	2942808	Farm Land
		300	76	1884	143938			
		500	30	3140	94200			
18	02+123	100	205	628	128740	657533	2942916	Farm Land
		300	81	1884	151850			
		500	39	3140	123716			
19	02+259	100	215	628	135020	657562	2943049	Farm Land
		300	89	1884	168053			
		500	44	3140	139102			
20	02+381	100	196	628	123088	657593	2943167	Farm Land
		300	69	1884	130373			
		500	29	3140	91374			
21	02+504	100	250	628	157000	657618	2943288	Farm Land
		300	122	1884	229094			
		500	76	3140	238954			
22	02+630	100	305	628	191540	657646	2943411	Farm Land
		300	220	1884	414480			
		500	94	3140	295788			
23	02+745	100	286	628	179608	657662	2943525	Farm Land
		300	176	1884	331584			
		500	67	3140	209124			
		100	265	628	166420	657692	2943654	Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
24	02+878	300	162	1884	305208			
		500	86	3140	270040			
25	03+063	100	266	628	167048	657532	2943677	Road Side
		300	152	1884	286368			
		500	71	3140	221370			
26	03+127	100	223	628	140044	657469	2943691	Road Side
		300	109	1884	205356			
		500	47	3140	147266			
27	03+251	100	194	628	121832	657377	2943739	Road Side
		300	96	1884	180110			
		500	37	3140	116180			
28	03+381	100	220	628	138160	657448	2943848	Nala Crossing
		300	130	1884	244920			
		500	51	3140	158884			
29	03+507	100	201	628	125914	657514	2943955	Farm Land
		300	150	1884	282788			
		500	57	3140	178666			
30	03+645	100	229	628	143812	657578	2944077	Farm Land
		300	148	1884	278832			
		500	50	3140	157314			
31	03+760	100	246	628	154488	657651	2944157	Farm Land
		300	156	1884	293904			
		500	50	3140	155744			
32	03+880	100	236	628	148208	657769	2944176	Open Land
		300	153	1884	288252			
		500	56	3140	176154			
33	04+001	100	360	628	226080	657878	2944160	Farm Land
		300	131	1884	246804			
		500	80	3140	252456			
34	04+139	100	280	628	175840	657934	2944212	Farm Land
		300	139	1884	261876			
		500	75	3140	235814			
35	04+224	100	245	628	153860	658018	2944214	Canal Crossing
		300	120	1884	226080			
		500	62	3140	194994			
		100	360	628	226080	658141	2944309	Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
36	04+382	300	136	1884	256224			
		500	84	3140	264388			
37	04+521	100	356	628	223568	658246	2944400	Farm Land
		300	135	1884	254340			
		500	82	3140	257794			
38	04+630	100	346	628	217288	658328	2944472	Farm Land
		300	137	1884	258108			
		500	80	3140	252142			
39	04+760	100	320	628	200960	658420	2944564	Farm Land
		300	130	1884	244920			
		500	69	3140	217288			
40	04+883	100	304	628	190912	658533	2944616	Farm Land
		300	124	1884	233616			
		500	66	3140	207554			
41	05+001	100	294	628	184632	658620	2944696	Farm Land
		300	163	1884	307092			
		500	91	3140	284170			
42	05+125	100	269	628	168932	658710	2944781	Farm Land
		300	124	1884	233616			
		500	65	3140	205042			
43	05+251	100	238	628	149464	658783	2944884	Farm Land
		300	105	1884	197820			
		500	43	3140	134706			
44	05+500	100	196	628	123088	658988	2945012	Farm Land
		300	84	1884	158256			
		500	32	3140	100480			
45	05+647	100	205	628	128740	659079	2945129	Farm Land
		300	94	1884	177096			
		500	48	3140	150720			
46	05+764	100	235	628	147580	659167	2945206	Farm Land
		300	101	1884	190284			
		500	51	3140	158570			
47	05+879	100	305	628	191540	659245	2945291	Farm Land
		300	171	1884	322164			
		500	59	3140	185888			
48	06+003	100	294	628	184632	659334	2945377	Farm Land , Tea
		300	162	1884	305208			
		500	50	3140	157314			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
49	06+133	100	248	628	155744	659432	2945463	Farm Land , Tea
		300	130	1884	244920			
		500	50	3140	157000			
50	06+261	100	266	628	167048	659526	2945549	Farm Land , Tea
		300	135	1884	254340			
		500	53	3140	166106			
51	06+391	100	186	628	116808	659631	2945625	Farm Land , Tea
		300	124	1884	233616			
		500	30	3140	94828			
52	06+508	100	305	628	191540	659715	2945706	Tea , Farm Land
		300	186	1884	350424			
		500	71	3140	222626			
53	06+646	100	269	628	168932	659792	2945821	Tea , Farm Land
		300	125	1884	235500			
		500	43	3140	134706			
54	06+746	100	275	628	172700	659863	2945885	Tea , Farm Land
		300	140	1884	263760			
		500	49	3140	154488			
55	06+888	100	251	628	157628	659999	2945929	River Crossing
		300	120	1884	226080			
		500	46	3140	143184			
56	07+012	100	312	628	195936	660116	2945964	River Crossing
		300	160	1884	301440			
		500	65	3140	204728			
57	07+140	100	409	628	256852	660226	2946030	Farm Land
		300	240	1884	452160			
		500	125	3140	392500			
58	07+246	100	496	628	311488	660306	2946101	Farm Land
		300	251	1884	472884			
		500	142	3140	445880			
59	07+375	100	510	628	320280	660415	2946170	Farm Land , Tea
		300	322	1884	606648			
		500	181	3140	568340			
60	07+502	100	415	628	260620	660519	2946242	Tea , Farm Land
		300	210	1884	395640			
		500	150	3140	471000			
		100	340	628	213520	660621	2946313	Tea , Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
61	07+626	300	184	1884	346656			
		500	130	3140	408200			
62	07+750	100	325	628	204100	660723	2946384	Tea , Farm Land
		300	161	1884	303324			
		500	120	3140	376800			
63	07+876	100	260	628	163280	660826	2946456	Tea , Farm Land
		300	140	1884	263760			
		500	116	3140	364240			
64	08+001	100	255	628	160140	660923	2946532	Tea , Farm Land
		300	123	1884	231732			
		500	84	3140	263760			
65	08+127	100	336	628	211008	660973	2946648	Tea , Farm Land
		300	160	1884	301440			
		500	65	3140	204100			
66	08+251	100	406	628	254968	661025	2946761	Tea , Farm Land
		300	212	1884	399408			
		500	89	3140	279460			
67	08+375	100	386	628	242408	661074	2946875	Tea , Farm Land
		300	170	1884	320280			
		500	75	3140	235500			
68	08+500	100	326	628	204728	661124	2946989	Tea , Farm Land
		300	169	1884	318396			
		500	72	3140	226080			
69	08+626	100	340	628	213520	661194	2947086	Tea , Farm Land
		300	158	1884	297672			
		500	65	3140	204100			
70	08+751	100	405	628	254340	661305	2947144	Tea , Farm Land
		300	210	1884	395640			
		500	100	3140	312430			
71	08+875	100	365	628	229220	661393	2947215	Tea , Farm Land
		300	186	1884	350424			
		500	101	3140	315570			
72	09+000	100	326	628	204728	661396	2947340	Road Side
		300	156	1884	293904			
		500	73	3140	227650			
73	09+125	100	305	628	191540	661399	2947465	Road Side
		300	141	1884	265644			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	62	3140	193110			
74	09+251	100	325	628	204100	661409	2947590	Road Side
		300	156	1884	293904			
		500	56	3140	176154			
75	09+317	100	260	628	163280	661415	2947656	Road Side
		300	105	1884	197820			
		500	42	3140	132194			
76	09+376	100	215	628	135020	661421	2947714	Road Side , Farm Land
		300	109	1884	205356			
		500	47	3140	147266			
77	09+500	100	245	628	153860	661433	2947838	Road Side , Farm Land
		300	123	1884	231732			
		500	54	3140	168304			
78	09+625	100	265	628	166420	661443	2947963	Road Side , Farm Land
		300	126	1884	237384			
		500	58	3140	181806			
79	09+750	100	164	628	102992	661455	2948087	Road Side , Farm Land
		300	73	1884	137344			
		500	33	3140	102364			
80	09+874	100	205	628	128740	661467	2948210	Road Side , Farm Land
		300	96	1884	180864			
		500	39	3140	123402			
81	10+000	100	219	628	137532	661494	2948332	Road Side
		300	103	1884	194052			
		500	43	3140	133450			
82	10+125	100	230	628	144440	661513	2948453	Road Side
		300	115	1884	216660			
		500	45	3140	141614			
83	10+250	100	193	628	121204	661520	2948576	Road Side
		300	93	1884	175212			
		500	35	3140	108644			
84	10+374	100	215	628	135020	661559	2948692	Road Side
		300	105	1884	197820			
		500	46	3140	144754			
85	10+499	100	305	628	191540	661574	2948798	Road Side
		300	164	1884	308976			
		500	76	3140	238640			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
86	10+625	100	285	628	178980	661659	2948823	Road Side
		300	120	1884	226080			
		500	51	3140	160140			
87	10+750	100	206	628	129368	661768	2948762	Road Side
		300	95	1884	178226			
		500	37	3140	115866			
88	10+875	100	260	628	163280	661876	2948698	Road Side
		300	126	1884	237384			
		500	42	3140	132194			
89	11+000	100	276	628	173328	661982	2948632	Road Side
		300	127	1884	239268			
		500	44	3140	137846			
90	11+125	100	193	628	121204	662088	2948566	Road Side
		300	117	1884	220428			
		500	39	3140	123088			
91	11+251	100	306	628	192168	662194	2948498	Road Side
		300	171	1884	322164			
		500	93	3140	290450			
92	11+374	100	260	628	163280	662299	2948434	Open Land
		300	121	1884	227964			
		500	49	3140	154488			
93	11+500	100	186	628	116808	662377	2948475	Open Land
		300	107	1884	201588			
		500	37	3140	114610			
94	11+625	100	200	628	125600	662435	2948586	Open Land
		300	97	1884	181994			
		500	36	3140	112726			
95	11+751	100	127	628	79756	662547	2948638	Farm Land
		300	76	1884	143184			
		500	26	3140	81954			
96	11+874	100	235	628	147580	662663	2948678	Farm Land
		300	106	1884	199704			
		500	39	3140	123716			
97	11+999	100	205	628	128740	662781	2948720	Farm Land
		300	91	1884	170502			
		500	39	3140	123088			
		100	212	628	133136	662932	2948774	Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
98	12+160	300	98	1884	183878			
		500	39	3140	123088			
99	12+261	100	245	628	153860	663028	2948807	Farm Land
		300	105	1884	197820			
		500	43	3140	134078			
100	12+382	100	305	628	191540	663139	2948854	Farm Land
		300	126	1884	237384			
		500	66	3140	207240			
101	12+507	100	492	628	308976	663259	2948892	Farm Land
		300	152	1884	286368			
		500	62	3140	194994			
102	12+636	100	405	628	254340	663379	2948937	Farm Land
		300	160	1884	301440			
		500	60	3140	187144			
103	12+755	100	596	628	374288	663492	2948976	Farm Land
		300	324	1884	610416			
		500	142	3140	445880			
104	12+877	100	607	628	381196	663607	2949016	Farm Land
		300	376	1884	708384			
		500	176	3140	552640			
105	13+010	100	512	628	321536	663732	2949063	Open Land
		300	336	1884	633024			
		500	125	3140	392500			
106	13+078	100	496	628	311488	663796	2949084	River Crossing
		300	205	1884	386220			
		500	97	3140	303324			
107	13+126	100	409	628	256852	663826	2949060	River Crossing
		300	184	1884	346656			
		500	77	3140	240210			
108	13+249	100	460	628	288880	663882	2948950	Farm Land
		300	212	1884	399408			
		500	105	3140	329700			
109	13+341	100	401	628	251828	663945	2948879	Farm Land
		300	185	1884	348540			
		500	95	3140	297044			
110	13+513	100	510	628	320280	664040	2948843	Farm Land
		300	340	1884	640560			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	150	3140	471000			
111	13+631	100	543	628	341004	664139	2948908	Farm Land
		300	350	1884	659400			
		500	162	3140	508680			
112	13+749	100	422	628	265016	664237	2948973	Farm Land
		300	196	1884	369264			
		500	107	3140	335980			
113	13+869	100	506	628	317768	664338	2949039	Farm Land
		300	234	1884	440856			
		500	96	3140	301754			
114	14+005	100	396	628	248688	664453	2949111	River Crossing
		300	184	1884	346656			
		500	103	3140	323420			
115	14+049	100	405	628	254340	664490	2949134	River Area Dry
		300	200	1884	376800			
		500	96	3140	301754			
116	14+203	100	340	628	213520	664621	2949215	River Crossing
		300	145	1884	273180			
		500	96	3140	301440			
117	14+259	100	412	628	258736	664669	2949245	Open Land
		300	156	1884	293904			
		500	97	3140	303010			
118	14+379	100	510	628	320280	664771	2949308	River Crossing
		300	296	1884	557664			
		500	150	3140	471000			
119	14+625	100	420	628	263760	664975	2949445	River Area Dry Sandy
		300	212	1884	399408			
		500	103	3140	323420			
120	14+750	100	460	628	288880	665080	2949513	River Crossing
		300	231	1884	435204			
		500	107	3140	335980			
121	14+889	100	520	628	326560	665195	2949592	Farm Land
		300	305	1884	574620			
		500	129	3140	405060			
122	15+009	100	425	628	266900	665295	2949658	Open Land
		300	210	1884	395640			
		500	96	3140	301440			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
123	15+124	100	415	628	260620	665392	2949719	River Crossing
		300	194	1884	365496			
		500	86	3140	270040			
124	15+500	100	320	628	200960	665711	2949918	River Area Dry
		300	150	1884	282600			
		500	64	3140	200960			
125	15+589	100	421	628	264388	665818	2949917	River Area Dry
		300	183	1884	344772			
		500	89	3140	280088			
126	16+584	100	312	628	195936	666653	2950457	River Crossing
		300	134	1884	252456			
		500	68	3140	213834			
127	16+624	100	215	628	135020	666658	2950524	Farm Land
		300	125	1884	235500			
		500	49	3140	153546			
128	16+749	100	405	628	254340	666763	2950592	Farm Land
		300	201	1884	378684			
		500	87	3140	271610			
129	16+875	100	305	628	191540	666802	2950705	Farm Land
		300	160	1884	301440			
		500	69	3140	216974			
130	17+125	100	240	628	150720	666849	2950951	Farm Land
		300	105	1884	197820			
		500	42	3140	132194			
131	17+250	100	312	628	195936	666873	2951074	Farm Land
		300	153	1884	288252			
		500	47	3140	146010			
132	17+376	100	345	628	216660	666896	2951197	Farm Land
		300	162	1884	305208			
		500	68	3140	213206			
133	17+500	100	235	628	147580	666917	2951320	Farm Land
		300	102	1884	192356			
		500	44	3140	137846			
134	17+628	100	194	628	121832	666945	2951445	Farm Land
		300	87	1884	163720			
		500	40	3140	125600			
		100	206	628	129368	666969	2951568	Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
135	17+754	300	97	1884	181806			
		500	44	3140	136904			
136	17+876	100	223	628	140044	666990	2951688	Farm Land
		300	107	1884	201588			
		500	43	3140	133764			
137	18+011	100	149	628	93572	667010	2951822	Farm Land
		300	63	1884	117750			
		500	27	3140	84780			
138	18+125	100	250	628	157000	667028	2951935	Farm Land
		300	108	1884	203472			
		500	42	3140	132508			
139	18+250	100	222	628	139416	667046	2952058	Farm Land
		300	95	1884	178226			
		500	40	3140	125914			
140	18+376	100	196	628	123088	667064	2952183	Farm Land
		300	121	1884	227964			
		500	53	3140	165164			
141	18+500	100	187	628	117436	667082	2952306	Farm Land
		300	77	1884	144126			
		500	26	3140	80384			
142	18+625	100	212	628	133136	667098	2952430	Farm Land
		300	96	1884	181052			
		500	44	3140	137218			
143	18+751	100	312	628	195936	667118	2952554	Farm Land
		300	134	1884	252456			
		500	57	3140	178980			
144	18+876	100	186	628	116808	667136	2952678	Farm Land
		300	82	1884	154676			
		500	39	3140	123088			
145	19+000	100	205	628	128740	667154	2952800	Farm Land
		300	89	1884	168053			
		500	42	3140	132822			
146	19+184	100	195	628	122460	667180	2952983	Farm Land , Potato
		300	74	1884	139793			
		500	32	3140	100794			
147	19+251	100	170	628	106760	667209	2953045	Farm Land , Potato
		300	66	1884	124532			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	31	3140	95770			
148	19+375	100	151	628	94828	667237	2953166	Farm Land , Potato
		300	61	1884	113982			
		500	25	3140	79442			
149	19+500	100	166	628	104248	667246	2953288	Farm Land , Potato
		300	68	1884	128489			
		500	31	3140	98282			
150	19+626	100	206	628	129368	667223	2953412	Farm Land , Potato
		300	92	1884	173516			
		500	50	3140	157942			
151	19+749	100	192	628	120576	667259	2953526	Farm Land , Potato
		300	87	1884	162966			
		500	40	3140	125600			
152	19+875	100	186	628	116808	667308	2953642	Farm Land , Potato
		300	72	1884	136213			
		500	45	3140	141614			
153	19+943	100	167	628	104876	667335	2953704	Farm Land , Potato
		300	62	1884	116996			
		500	26	3140	81326			
154	20+124	100	234	628	146952	667379	2953880	Potato, Farm Land
		300	116	1884	218544			
		500	65	3140	202530			
155	20+251	100	266	628	167048	667406	2954004	Tea, Farm Land
		300	125	1884	235500			
		500	68	3140	212892			
156	20+376	100	350	628	219800	667434	2954125	Tea, Farm Land
		300	129	1884	243036			
		500	65	3140	202530			
157	20+501	100	320	628	200960	667435	2954248	Tea, Farm Land
		300	126	1884	237384			
		500	61	3140	192796			
158	20+625	100	420	628	263760	667405	2954368	Tea, Farm Land
		300	210	1884	395640			
		500	94	3140	295788			
159	20+750	100	392	628	246176	667375	2954490	Tea, Farm Land
		300	174	1884	327816			
		500	83	3140	259050			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
160	20+876	100	356	628	223568	667345	2954612	Tea, Farm Land
		300	165	1884	310860			
		500	77	3140	240210			
161	21+000	100	410	628	257480	667315	2954732	Tea, Farm Land
		300	203	1884	382452			
		500	94	3140	296102			
162	21+124	100	430	628	270040	667286	2954853	Tea , Farm Land
		300	215	1884	405060			
		500	106	3140	332840			
163	21+250	100	415	628	260620	667258	2954976	Tea , Farm Land
		300	186	1884	350424			
		500	94	3140	295788			
164	21+376	100	405	628	254340	667230	2955098	Tea , Farm Land
		300	200	1884	376800			
		500	86	3140	270354			
165	21+501	100	395	628	248060	667201	2955220	Tea , Farm Land
		300	172	1884	324048			
		500	75	3140	235814			
166	21+629	100	265	628	166420	667175	2955345	Tea , Farm Land
		300	126	1884	237384			
		500	63	3140	196250			
167	21+751	100	246	628	154488	667148	2955464	Tea , Farm Land
		300	115	1884	216660			
		500	60	3140	189342			
168	21+876	100	253	628	158884	667121	2955586	Tea , Farm Land
		300	126	1884	237384			
		500	51	3140	160140			
169	22+001	100	305	628	191540	667094	2955708	Tea , Farm Land
		300	170	1884	320280			
		500	70	3140	220114			
170	22+126	100	176	628	110528	667067	2955830	Tea , Farm Land
		300	69	1884	130373			
		500	26	3140	80384			
171	22+252	100	212	628	133136	667038	2955953	Tea , Farm Land
		300	73	1884	136590			
		500	33	3140	102364			
		100	170	628	106760	667028	2956076	Tea , Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
172	22+375	300	65	1884	122837			
		500	22	3140	70336			
173	22+501	100	206	628	129368	667017	2956201	Tea , Farm Land
		300	98	1884	184632			
		500	55	3140	172700			
174	22+625	100	220	628	138160	667007	2956325	Tea , Farm Land
		300	105	1884	197820			
		500	56	3140	176154			
175	22+751	100	250	628	157000	666997	2956450	Tea , Farm Land
		300	121	1884	227964			
		500	54	3140	169560			
176	22+876	100	322	628	202216	666987	2956575	Tea , Farm Land
		300	160	1884	301440			
		500	76	3140	238954			
177	23+001	100	406	628	254968	667051	2956672	Tea , Farm Land
		300	201	1884	378684			
		500	93	3140	290764			
178	23+125	100	364	628	228592	667140	2956759	Tea , Farm Land
		300	153	1884	288252			
		500	69	3140	217916			
179	23+251	100	387	628	243036	667230	2956847	River Crossing
		300	167	1884	314628			
		500	71	3140	221370			
180	23+500	100	407	628	255596	667337	2957053	River Crossing
		300	172	1884	324048			
		500	74	3140	232988			
181	23+625	100	212	628	133136	667395	2957139	Tea, Farm Land
		300	86	1884	162212			
		500	23	3140	70650			
182	23+751	100	188	628	118064	667514	2957180	Tea , Farm Land
		300	79	1884	149213			
		500	30	3140	92944			
183	23+876	100	166	628	104248	667613	2957249	Tea , Farm Land
		300	50	1884	93446			
		500	20	3140	63114			
184	24+001	100	128	628	80384	667696	2957342	Tea , Farm Land
		300	33	1884	61230			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	11	3140	33284			
185	24+126	100	305	628	191540	667725	2957463	Tea , Farm Land
		300	138	1884	259992			
		500	30	3140	94514			
186	24+250	100	294	628	184632	667750	2957585	Tea , Farm Land
		300	125	1884	235500			
		500	38	3140	119320			
187	24+376	100	175	628	109900	667776	2957708	Tea , Farm Land
		300	60	1884	113605			
		500	23	3140	72534			
188	24+500	100	205	628	128740	667800	2957830	Tea , Farm Land
		300	86	1884	162212			
		500	29	3140	89490			
189	24+625	100	205	628	128740	667827	2957952	Farm Land
		300	82	1884	154676			
		500	40	3140	125600			
190	24+750	100	186	628	116808	667855	2958073	Road Side, Open Land
		300	74	1884	139416			
		500	29	3140	92316			
191	24+877	100	176	628	110528	667887	2958196	Farm Land
		300	68	1884	128300			
		500	35	3140	109900			
192	25+001	100	164	628	102992	667917	2958317	Farm Land
		300	50	1884	94388			
		500	24	3140	74104			
193	25+127	100	182	628	114296	667950	2958438	Farm Land
		300	72	1884	135836			
		500	31	3140	95770			
194	25+251	100	198	628	124344	667947	2958562	Farm Land
		300	76	1884	143372			
		500	32	3140	100480			
195	25+376	100	205	628	128740	667946	2958687	Farm Land
		300	84	1884	158633			
		500	40	3140	125600			
196	25+516	100	160	628	100480	667958	2958827	Farm Land
		300	69	1884	130750			
		500	26	3140	80384			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
197	25+625	100	186	628	116808	667943	2958936	Farm Land
		300	86	1884	162212			
		500	42	3140	131880			
198	25+750	100	157	628	98596	667940	2959061	Farm Land
		300	67	1884	125474			
		500	20	3140	63114			
199	25+875	100	166	628	104248	667938	2959186	Tea , Farm Land
		300	77	1884	144126			
		500	30	3140	92944			
200	26+000	100	286	628	179608	667936	2959311	Tea , Farm Land
		300	118	1884	222312			
		500	61	3140	190284			
201	26+125	100	310	628	194680	667933	2959436	Tea , Farm Land
		300	126	1884	237384			
		500	50	3140	157000			
202	26+250	100	212	628	133136	667930	2959561	Tea , Farm Land
		300	97	1884	181994			
		500	40	3140	125914			
203	26+374	100	276	628	173328	667928	2959685	Tea , Farm Land
		300	113	1884	212892			
		500	39	3140	123716			
204	26+501	100	266	628	167048	667927	2959812	Tea , Farm Land
		300	107	1884	201588			
		500	47	3140	146010			
205	26+626	100	205	628	128740	667995	2959911	Tea, Farm Land
		300	89	1884	167864			
		500	43	3140	133450			
206	26+751	100	296	628	185888	668074	2960008	Tea, Farm Land
		300	136	1884	256224			
		500	60	3140	187144			
207	26+876	100	360	628	226080	668155	2960103	Tea , Farm Land
		300	140	1884	263760			
		500	67	3140	209124			
208	27+003	100	400	628	251200	668236	2960201	Tea , Farm Land
		300	186	1884	350424			
		500	70	3140	221056			
		100	336	628	211008	668316	2960296	Tea , Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
209	27+127	300	172	1884	324048			
		500	66	3140	207240			
210	27+251	100	245	628	153860	668374	2960402	Tea , Farm Land
		300	125	1884	235500			
		500	56	3140	176154			
211	27+376	100	345	628	216660	668398	2960525	Tea , Farm Land
		300	144	1884	271296			
		500	70	3140	219486			
212	27+500	100	267	628	167676	668425	2960646	Tea , Farm Land
		300	118	1884	222312			
		500	26	3140	80384			
213	27+625	100	201	628	126228	668452	2960768	Tea, Farm Land
		300	105	1884	197820			
		500	41	3140	127170			
214	27+751	100	196	628	123088	668478	2960891	Open Land
		300	95	1884	178038			
		500	36	3140	113354			
215	27+875	100	210	628	131880	668544	2960965	Farm Land
		300	120	1884	226080			
		500	51	3140	158570			
216	28+002	100	360	628	226080	668521	2961056	Farm Land
		300	149	1884	280716			
		500	70	3140	218230			
217	28+126	100	287	628	180236	668645	2961065	Farm Land
		300	138	1884	259992			
		500	67	3140	210380			
218	28+250	100	321	628	201588	668769	2961071	Farm Land
		300	141	1884	265644			
		500	72	3140	224510			
219	28+375	100	307	628	192796	668894	2961078	Farm Land
		300	146	1884	275064			
		500	79	3140	246490			
220	28+502	100	275	628	172700	669003	2961126	Farm Land
		300	136	1884	256224			
		500	70	3140	218230			
221	28+625	100	275	628	172700	669089	2961214	Farm Land
		300	141	1884	265644			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	70	3140	218230			
222	28+752	100	306	628	192168	669178	2961304	Farm Land
		300	147	1884	276948			
		500	71	3140	221370			
223	28+877	100	218	628	136904	669266	2961393	Tea , Farm Land
		300	121	1884	227964			
		500	65	3140	205356			
224	29+001	100	266	628	167048	669353	2961481	Tea , Farm Land
		300	125	1884	235500			
		500	69	3140	216974			
225	29+125	100	312	628	195936	669442	2961568	Tea , Farm Land
		300	146	1884	275064			
		500	70	3140	221056			
226	29+251	100	255	628	160140	669529	2961659	Tea , Farm Land
		300	118	1884	222312			
		500	65	3140	204414			
227	29+376	100	307	628	192796	669569	2961775	Tea , Farm Land
		300	141	1884	265644			
		500	72	3140	224510			
228	29+501	100	311	628	195308	669673	2961831	Tea , Farm Land
		300	135	1884	254340			
		500	67	3140	210380			
229	29+626	100	260	628	163280	669786	2961883	Farm Land
		300	125	1884	235500			
		500	61	3140	192796			
230	29+753	100	215	628	135020	669878	2961970	Farm Land
		300	101	1884	190284			
		500	45	3140	141300			
231	29+876	100	194	628	121832	669968	2962054	Farm Land
		300	80	1884	150720			
		500	32	3140	98910			
232	30+001	100	166	628	104248	670059	2962140	Farm Land
		300	71	1884	132822			
		500	32	3140	100794			
233	30+125	100	118	628	74104	670150	2962225	Farm Land
		300	55	1884	103620			
		500	21	3140	64684			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
234	30+251	100	210	628	131880	670240	2962312	River Crossing
		300	106	1884	199704			
		500	65	3140	202530			
235	30+501	100	198	628	124344	670424	2962482	River Crossing
		300	86	1884	162401			
		500	37	3140	114610			
236	30+626	100	220	628	138160	670515	2962567	Farm Land
		300	115	1884	216660			
		500	47	3140	146010			
237	30+750	100	225	628	141300	670540	2962660	Farm Land
		300	108	1884	203472			
		500	44	3140	139102			
238	30+875	100	312	628	195936	670474	2962766	Farm Land
		300	160	1884	301440			
		500	77	3140	240210			
239	31+000	100	415	628	260620	670407	2962872	Open Land
		300	231	1884	435204			
		500	93	3140	290450			
240	31+125	100	401	628	251828	670341	2962978	Farm Land
		300	221	1884	416364			
		500	90	3140	282600			
241	31+125	100	395	628	248060	670274	2963083	Open Land
		300	128	1884	241152			
		500	65	3140	204100			
242	31+375	100	410	628	257480	670208	2963189	Open Land
		300	189	1884	356076			
		500	77	3140	241466			
243	31+500	100	429	628	269412	670140	2963294	Open Land
		300	190	1884	357960			
		500	80	3140	249630			
244	31+623	100	357	628	224196	670073	2963398	Open Land
		300	142	1884	267528			
		500	69	3140	217916			
245	31+751	100	348	628	218544	670006	2963506	Open Land
		300	135	1884	254340			
		500	69	3140	217916			
		100	287	628	180236	669940	2963611	Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
246	31+875	300	124	1884	233616			
		500	52	3140	162966			
247	32+084	100	265	628	166420	669805	2963771	Farm Land
		300	121	1884	227964			
		500	53	3140	167362			
248	32+125	100	261	628	163908	669780	2963804	Farm Land
		300	123	1884	231920			
		500	57	3140	177410			
249	32+250	100	206	628	129368	669699	2963898	Farm Land
		300	100	1884	188400			
		500	40	3140	124344			
250	32+374	100	312	628	195936	669618	2963993	Farm Land
		300	135	1884	254340			
		500	66	3140	207554			
251	32+499	100	294	628	184632	669535	2964086	Farm Land
		300	127	1884	239268			
		500	59	3140	185888			
252	32+623	100	312	628	195936	669454	2964180	Farm Land
		300	130	1884	244920			
		500	62	3140	193110			
253	32+750	100	287	628	180236	669372	2964277	Farm Land
		300	116	1884	218544			
		500	42	3140	132194			
254	32+875	100	301	628	189028	669291	2964372	Farm Land
		300	121	1884	227964			
		500	46	3140	143184			
255	32+999	100	267	628	167676	669210	2964466	Farm Land
		300	107	1884	201588			
		500	41	3140	127484			
256	33+125	100	216	628	135648	669128	2964561	Farm Land
		300	86	1884	162024			
		500	42	3140	131880			
257	33+249	100	312	628	195936	669048	2964656	Farm Land
		300	146	1884	275064			
		500	67	3140	210380			
258	33+375	100	261	628	163908	668967	2964753	Farm Land
		300	130	1884	244920			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	60	3140	187144			
259	33+500	100	307	628	192796	668885	2964847	Farm Land
		300	167	1884	314628			
		500	72	3140	226394			
260	33+625	100	379	628	238012	668802	2964941	Farm Land
		300	186	1884	350424			
		500	94	3140	295788			
261	33+625	100	340	628	213520	668719	2965034	Farm Land
		300	127	1884	239268			
		500	100	3140	314000			
262	33+875	100	266	628	167048	668636	2965128	Farm Land
		300	120	1884	226080			
		500	55	3140	173014			
263	34+000	100	302	628	189656	668553	2965221	Farm Land
		300	150	1884	282600			
		500	66	3140	207240			
264	34+126	100	412	628	258736	668470	2965316	Farm Land
		300	205	1884	386220			
		500	96	3140	301440			
265	34+250	100	545	628	342260	668387	2965408	Farm Land
		300	225	1884	423900			
		500	107	3140	335980			
266	34+375	100	565	628	354820	668306	2965503	Farm Land
		300	241	1884	454044			
		500	115	3140	361100			
267	34+498	100	560	628	351680	668227	2965598	Tea, Farm Land
		300	230	1884	433320			
		500	107	3140	335980			
268	34+625	100	506	628	317768	668149	2965698	Tea, Farm Land
		300	210	1884	395640			
		500	89	3140	280716			
269	34+750	100	535	628	335980	668070	2965795	Tea, Farm Land
		300	209	1884	393756			
		500	95	3140	297044			
270	34+875	100	546	628	342888	667992	2965892	Tea, Farm Land
		300	213	1884	401292			
		500	106	3140	332840			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
271	35+000	100	415	628	260620	667914	2965990	Tea, Farm Land
		300	206	1884	388104			
		500	92	3140	289194			
272	35+125	100	406	628	254968	667835	2966087	Tea, Farm Land
		300	186	1884	350424			
		500	79	3140	248060			
273	35+250	100	360	628	226080	667756	2966184	Tea, Farm Land
		300	166	1884	312744			
		500	69	3140	216974			
274	35+376	100	394	628	247432	667678	2966282	Tea, Farm Land
		300	158	1884	297672			
		500	72	3140	226394			
275	35+501	100	417	628	261876	667598	2966379	Farm Land
		300	180	1884	339120			
		500	82	3140	255910			
276	35+624	100	212	628	133136	667521	2966475	Farm Land
		300	103	1884	194052			
		500	46	3140	144754			
277	35+750	100	254	628	159512	667443	2966574	Open Land
		300	117	1884	220428			
		500	51	3140	158570			
278	35+875	100	305	628	191540	667365	2966671	Farm Land
		300	169	1884	318396			
		500	65	3140	202530			
279	36+000	100	316	628	198448	667287	2966769	Farm Land
		300	178	1884	335352			
		500	70	3140	219486			
280	36+125	100	210	628	131880	667208	2966866	Tea , Farm Land
		300	100	1884	188400			
		500	46	3140	144754			
281	36+251	100	196	628	123088	667128	2966963	Tea , Farm Land
		300	94	1884	177473			
		500	43	3140	133450			
282	36+376	100	226	628	141928	667051	2967061	Tea , Farm Land
		300	105	1884	197820			
		500	43	3140	134706			
		100	315	628	197820	666970	2967158	Tea , Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
283	36+502	300	143	1884	269412			
		500	70	3140	218544			
284	36+623	100	346	628	217288	666895	2967253	Tea , Farm Land
		300	147	1884	276948			
		500	72	3140	224510			
285	36+748	100	400	628	251200	666817	2967351	Tea , Farm Land
		300	185	1884	348540			
		500	76	3140	238640			
286	36+875	100	359	628	225452	666738	2967450	Tea , Farm Land
		300	177	1884	333468			
		500	82	3140	257480			
287	37+002	100	486	628	305208	666660	2967551	Tea , Farm Land
		300	226	1884	425784			
		500	110	3140	345400			
288	37+126	100	446	628	280088	666591	2967653	Tea , Farm Land
		300	221	1884	416364			
		500	106	3140	332840			
289	37+248	100	377	628	236756	666521	2967753	Tea , Farm Land
		300	136	1884	256224			
		500	76	3140	238640			
290	37+376	100	367	628	230476	666448	2967858	Tea , Farm Land
		300	140	1884	263760			
		500	75	3140	235814			
291	37+500	100	425	628	266900	666377	2967960	Tea , Farm Land
		300	210	1884	395640			
		500	93	3140	290450			
292	37+627	100	465	628	292020	666306	2968065	Tea , Farm Land
		300	221	1884	416364			
		500	90	3140	283856			
293	37+750	100	375	628	235500	666234	2968165	Tea , Farm Land
		300	165	1884	310860			
		500	86	3140	271296			
294	37+875	100	385	628	241780	666163	2968268	Tea , Farm Land
		300	168	1884	316512			
		500	89	3140	279460			
295	38+001	100	345	628	216660	666091	2968371	Tea , Farm Land
		300	129	1884	243036			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	65	3140	204414			
296	38+125	100	322	628	202216	666020	2968473	Tea, Farm Land
		300	135	1884	254340			
		500	69	3140	217288			
297	38+250	100	415	628	260620	665948	2968576	Tea, Farm Land
		300	203	1884	382452			
		500	89	3140	280716			
298	38+375	100	406	628	254968	665877	2968678	Tea, Farm Land
		300	187	1884	352308			
		500	85	3140	266900			
299	38+500	100	419	628	263132	665805	2968781	Tea, Farm Land
		300	210	1884	395640			
		500	99	3140	310860			
300	38+625	100	350	628	219800	665766	2968896	Tea, Farm Land
		300	165	1884	310860			
		500	73	3140	227650			
301	38+750	100	412	628	258736	665750	2969020	Tea, Farm Land
		300	203	1884	382452			
		500	87	3140	271610			
302	38+875	100	427	628	268156	665734	2969144	Tea, Farm Land
		300	212	1884	399408			
		500	90	3140	281030			
303	39+000	100	420	628	263760	665718	2969268	Tea, Farm Land
		300	207	1884	389988			
		500	87	3140	274436			
304	39+125	100	390	628	244920	665702	2969392	Tea, Farm Land
		300	171	1884	322164			
		500	69	3140	217916			
305	39+250	100	365	628	229220	665686	2969516	Tea, Farm Land
		300	161	1884	303324			
		500	64	3140	201274			
306	39+375	100	305	628	191540	665667	2969639	Tea, Farm Land
		300	141	1884	265644			
		500	60	3140	187144			
307	39+500	100	396	628	248688	665639	2969761	Tea, Farm Land
		300	178	1884	335352			
		500	85	3140	268156			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
308	39+625	100	362	628	227336	665610	2969883	Farm Land
		300	146	1884	275064			
		500	75	3140	235814			
309	39+750	100	314	628	197192	665581	2970004	Farm Land
		300	139	1884	261876			
		500	70	3140	221056			
310	39+874	100	284	628	178352	665554	2970126	Farm Land
		300	129	1884	243036			
		500	69	3140	217288			
311	40+000	100	266	628	167048	665524	2970248	Farm Land
		300	125	1884	235500			
		500	64	3140	201902			
312	40+125	100	305	628	191540	665495	2970369	Farm Land
		300	150	1884	282600			
		500	67	3140	209752			
313	40+250	100	566	628	355448	665467	2970491	Tea, Farm Land
		300	255	1884	480420			
		500	109	3140	342260			
314	40+376	100	605	628	379940	665444	2970614	Tea, Farm Land
		300	276	1884	519984			
		500	116	3140	364240			
315	40+500	100	626	628	393128	665431	2970738	Tea, Farm Land
		300	271	1884	510564			
		500	118	3140	370520			
316	40+624	100	609	628	382452	665418	2970862	Tea, Farm Land
		300	276	1884	519984			
		500	126	3140	395640			
317	40+750	100	525	628	329700	665402	2970986	Tea, Farm Land
		300	241	1884	454044			
		500	123	3140	386220			
318	40+876	100	479	628	300812	665389	2971112	Tea, Farm Land
		300	230	1884	433320			
		500	105	3140	329700			
319	41+000	100	720	628	452160	665357	2971230	Tea, Farm Land
		300	480	1884	904320			
		500	212	3140	665680			
		100	612	628	384336	665304	2971343	Tea, Farm Land

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
320	41+125	300	367	1884	691428			
		500	205	3140	643700			
321	41+250	100	658	628	413224	665250	2971456	Tea, Farm Land
		300	353	1884	665052			
		500	201	3140	631140			
322	41+375	100	671	628	421388	665166	2971548	Tea, Farm Land
		300	361	1884	680124			
		500	235	3140	737900			
323	41+501	100	780	628	489840	665081	2971640	Tea, Farm Land
		300	455	1884	857220			
		500	220	3140	690800			
324	41+626	100	725	628	455300	665010	2971741	Tea, Farm Land
		300	437	1884	823308			
		500	210	3140	659400			
325	41+750	100	840	628	527520	664959	2971854	Tea, Farm Land
		300	525	1884	989100			
		500	259	3140	813260			
326	41+875	100	805	628	505540	664951	2971979	Tea, Farm Land
		300	501	1884	943884			
		500	246	3140	772440			
327	42+004	100	815	628	511820	664894	2972092	Tea, Farm Land
		300	517	1884	974028			
		500	248	3140	778720			
328	42+125	100	645	628	405060	664830	2972188	Open Land
		300	285	1884	536940			
		500	153	3140	480420			
329	42+250	100	360	628	226080	664747	2972256	Tea, Farm Land
		300	149	1884	280716			
		500	94	3140	295788			
330	42+375	100	453	628	284484	664744	2972381	Tea, Farm Land
		300	231	1884	435204			
		500	126	3140	395640			
331	42+501	100	515	628	323420	664821	2972475	Tea, Farm Land
		300	241	1884	454044			
		500	105	3140	329700			
332	42+625	100	210	628	131880	664838	2972584	Tea, Farm Land
		300	95	1884	178226			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	39	3140	123088			
333	42+745	100	235	628	147580	664815	2972701	Tea, Farm Land
		300	106	1884	199704			
		500	46	3140	143184			
334	42+874	100	225	628	141300	664707	2972744	Tea, Farm Land
		300	93	1884	174270			
		500	40	3140	125600			
335	43+001	100	265	628	166420	664587	2972771	Tea, Farm Land
		300	130	1884	244920			
		500	66	3140	207240			
336	43+126	100	259	628	162652	664494	2972816	Tea, Farm Land
		300	121	1884	227964			
		500	48	3140	150720			
337	43+250	100	152	628	95456	664370	2972832	Tea, Farm Land
		300	56	1884	105316			
		500	20	3140	63114			
338	43+375	100	170	628	106760	664246	2972848	Tea, Farm Land
		300	66	1884	124344			
		500	30	3140	92630			
339	43+501	100	168	628	105504	664123	2972871	Tea, Farm Land
		300	59	1884	111533			
		500	25	3140	78814			
340	43+625	100	208	628	130624	664001	2972897	Tea, Farm Land
		300	96	1884	181052			
		500	45	3140	142242			
341	43+752	100	175	628	109900	663879	2972927	Tea, Farm Land
		300	82	1884	154676			
		500	36	3140	111784			
342	43+875	100	211	628	132508	663757	2972953	Tea, Farm Land
		300	102	1884	192168			
		500	51	3140	158570			
343	43+923	100	176	628	110528	663710	2972962	Tea, Farm Land
		300	83	1884	155430			
		500	31	3140	97026			
344	44+126	100	195	628	122460	663513	2973009	Tea, Farm Land
		300	89	1884	168430			
		500	40	3140	125600			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
345	44+249	100	225	628	141300	663392	2973036	Tea, Farm Land
		300	115	1884	216660			
		500	66	3140	207554			
346	44+375	100	266	628	167048	663270	2973065	Road Side, Tea Land
		300	126	1884	237384			
		500	69	3140	215090			
347	44+500	100	237	628	148836	663196	2973002	Road Side
		300	121	1884	227964			
		500	60	3140	189342			
348	44+624	100	161	628	101108	663162	2972882	Road Side
		300	64	1884	119634			
		500	23	3140	72220			
349	44+751	100	184	628	115552	663134	2972760	Road Side
		300	73	1884	136590			
		500	31	3140	97340			
350	44+751	100	250	628	157000	663104	2972639	Road Side
		300	85	1884	159198			
		500	35	3140	108644			
351	45+000	100	317	628	199076	663074	2972517	Road Side
		300	125	1884	235500			
		500	47	3140	147266			
352	45+125	100	266	628	167048	663044	2972395	Road Side
		300	77	1884	144880			
		500	34	3140	106760			
353	45+249	100	275	628	172700	662970	2972336	Road Side
		300	94	1884	177850			
		500	35	3140	109900			
354	45+373	100	305	628	191540	662845	2972343	Road Side
		300	127	1884	239268			
		500	57	3140	178666			
355	45+498	100	84	628	52752	662720	2972351	Road Side
		300	54	1884	101736			
		500	43	3140	135962			
356	45+626	100	174	628	109272	662594	2972362	Road Side
		300	67	1884	126228			
		500	23	3140	70650			
		100	152	628	95456	662471	2972368	River Crossing

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
357	45+734	300	43	1884	80070			
		500	16	3140	49926			
358	45+849	100	194	628	121832	662372	2972379	River Area
		300	83	1884	155430			
		500	40	3140	125914			
359	46+000	100	206	628	129368	662221	2972386	River Crossing
		300	96	1884	181618			
		500	44	3140	137218			
360	46+126	100	216	628	135648	662095	2972395	Road Side
		300	104	1884	195936			
		500	46	3140	144754			
361	46+250	100	162	628	101736	661972	2972402	Road Side
		300	61	1884	114924			
		500	32	3140	98910			
362	46+375	100	115	628	72220	661847	2972410	Road Side
		300	49	1884	92316			
		500	21	3140	65940			
363	46+500	100	116	628	72848	661723	2972423	Road Side
		300	50	1884	94388			
		500	19	3140	59974			
364	46+625	100	-	628	-	-	-	City road side cemented
		300	-	1884	-			
		500	-	3140	-			
365	46+750	100	-	628	-	-	-	City road side cemented
		300	-	1884	-			
		500	-	3140	-			
366	46+875	100	-	628	-	-	-	City road side cemented
		300	-	1884	-			
		500	-	3140	-			
367	47+000	100	-	628	-	-	-	City road side cemented
		300	-	1884	-			
		500	-	3140	-			
368	47+124	100	166	628	104248	661168	2972702	Road Side
		300	70	1884	132634			
		500	30	3140	92630			
369	47+250	100	364	628	228592	661066	2972775	Road Side
		300	196	1884	369264			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	85	3140	265644			
370	47+375	100	173	628	108644	660968	2972852	Road Side
		300	69	1884	129996			
		500	28	3140	86350			
371	47+500	100	168	628	105504	660873	2972934	Road Side
		300	63	1884	117750			
		500	26	3140	81954			
372	47+625	100	260	628	163280	660779	2973017	Road Side
		300	110	1884	207240			
		500	47	3140	146010			
373	47+750	100	194	628	121832	660685	2973099	Road Side
		300	99	1884	186516			
		500	45	3140	139730			
374	47+875	100	205	628	128740	660588	2973177	Road Side
		300	97	1884	182560			
		500	42	3140	132194			
375	48+001	100	186	628	116808	660486	2973251	Road Side
		300	66	1884	124156			
		500	25	3140	78814			
376	48+125	100	190	628	119320	660384	2973322	Road Side
		300	67	1884	126416			
		500	25	3140	77244			
377	48+250	100	200	628	125600	660282	2973394	Road Side
		300	89	1884	168053			
		500	41	3140	127170			
378	48+374	100	184	628	115552	660181	2973466	Road Side
		300	76	1884	142430			
		500	30	3140	94514			
379	48+500	100	136	628	85408	660072	2973527	Road Side
		300	61	1884	115301			
		500	27	3140	85722			
380	48+724	100	260	628	163280	659854	2973593	River Area
		300	125	1884	235500			
		500	49	3140	152290			
381	49+002	100	361	628	226708	659593	2973668	River Crossing
		300	184	1884	346656			
		500	86	3140	270040			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
382	49+139	100	241	628	151348	659445	2973674	Road Side
		300	105	1884	197820			
		500	45	3140	139730			
383	49+250	100	236	628	148208	659345	2973695	Road Side
		300	117	1884	220428			
		500	43	3140	135020			
384	49+367	100	187	628	117436	659221	2973704	Road Side
		300	105	1884	197820			
		500	49	3140	153860			
385	49+502	100	196	628	123088	659102	2973664	Road Side
		300	120	1884	226080			
		500	66	3140	207554			
386	49+625	100	230	628	144440	658985	2973623	Road Side
		300	79	1884	149024			
		500	35	3140	110842			
387	49+749	100	259	628	162652	658867	2973582	Road Side Bagrakote
		300	90	1884	168618			
		500	44	3140	138474			
388	49+885	100	292	628	183376	658769	2973484	Road Side, Normal Soil
		300	107	1884	201588			
		500	88	3140	276320			
2	49+985	100	304	628	190912	658728	2973580	Railway Crossing
		300	128	1884	241152			
		500	94	3140	295160			
3	50+151	100	335	628	210380	658657	2973714	Road Construction Side
		300	137	1884	258108			
		500	98	3140	307720			
4	50+279	100	290	628	182120	658596	2973829	Road Construction Side
		300	104	1884	195936			
		500	73	3140	229220			
5	50+407	100	264	628	165792	658521	2973933	Road Side
		300	101	1884	190284			
		500	68	3140	213520			
6	50+508	100	370	628	232360	658444	2974001	Road Side
		300	126	1884	237384			
		500	72	3140	226080			
		100	238	628	149464	658358	2974103	Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
7	50+641	300	100	1884	188400			
		500	48	3140	150720			
8	50+765	100	223	628	140044	658282	2974201	Road Side
		300	93	1884	175212			
		500	41	3140	128740			
9	50+911	100	234	628	146952	658176	2974281	Road Side
		300	98	1884	184632			
		500	51	3140	160140			
10	51+030	100	222	628	139416	658069	2974332	Road Side
		300	82	1884	154488			
		500	28	3140	87920			
11	51+160	100	198	628	124344	657954	2974394	Road Side
		300	64	1884	121330			
		500	21	3140	66380			
12	51+266	100	204	628	128112	657856	2974434	Nala Crossing
		300	68	1884	128489			
		500	24	3140	75674			
13	51+408	100	215	628	135020	657729	2974498	Road Side
		300	69	1884	129996			
		500	26	3140	81640			
14	51+529	100	220	628	138160	657617	2974545	Road Side
		300	71	1884	132822			
		500	28	3140	87920			
15	51+653	100	285	628	178980	657507	2974603	Road Side
		300	85	1884	160140			
		500	39	3140	122774			
16	51+787	100	322	628	202216	657384	2974656	Road Side
		300	192	1884	361728			
		500	40	3140	125600			
17	51+905	100	325	628	204100	657278	2974708	Road Side
		300	199	1884	374916			
		500	55	3140	172700			
18	52+037	100	302	628	189656	657158	2974763	Road Side
		300	185	1884	348540			
		500	48	3140	150720			
19	52+164	100	311	628	195308	657043	2974817	Road Side
		300	188	1884	354192			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	46	3140	142870			
20	52+284	100	321	628	201588	656937	2974874	Road Side
		300	190	1884	357960			
		500	47	3140	148208			
21	52+425	100	325	628	204100	656836	2974955	Road Side
		300	184	1884	346656			
		500	49	3140	154174			
22	52+525	100	333	628	209124	656749	2975014	Road Side
		300	193	1884	363612			
		500	51	3140	158570			
23	52+665	100	317	628	199076	656671	2975130	Road Side
		300	175	1884	329700			
		500	40	3140	124030			
24	52+787	100	315	628	197820	656591	2975223	Road Side
		300	170	1884	319903			
		500	37	3140	116808			
25	52+916	100	295	628	185260	656512	2975325	Road Side
		300	157	1884	295788			
		500	29	3140	91060			
26	53+039	100	310	628	194680	656429	2975416	Road Side
		300	165	1884	310860			
		500	41	3140	128740			
27	53+182	100	322	628	202216	656341	2975517	Road Side
		300	178	1884	335352			
		500	44	3140	138788			
28	53+275	100	315	628	197820	656269	2975577	Road Side
		300	169	1884	318396			
		500	35	3140	108330			
29	53+404	100	240	628	150720	656139	2975600	River Crossing
		300	95	1884	178226			
		500	26	3140	80698			
30	53+546	100	270	628	169560	656011	2975623	River Crossing
		300	100	1884	187458			
		500	27	3140	85408			
31	53+673	100	296	628	185888	655891	2975650	Road Side
		300	101	1884	190284			
		500	30	3140	94514			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
32	53+759	100	288	628	180864	655824	2975704	Road Side
		300	100	1884	188588			
		500	30	3140	92630			
33	53+884	100	273	628	171130	655703	2975715	Road Side
		300	92	1884	172951			
		500	28	3140	87292			
34	54+008	100	265	628	166263	655580	2975701	Road Side
		300	88	1884	165133			
		500	27	3140	84623			
35	54+134	100	261	628	163830	655558	2975763	Road Side
		300	86	1884	161223			
		500	27	3140	83289			
36	54+255	100	259	628	162613	655675	2975773	Road Side
		300	85	1884	159269			
		500	26	3140	82621			
37	54+322	100	257	628	161396	655735	2975806	Jungle Area
		300	84	1884	157314			
		500	26	3140	81954			
38	54+440	100	205	628	128740	655813	2975874	Road Side
		300	70	1884	132068			
		500	22	3140	67510			
39	54+604	100	194	628	121832	655796	2975889	Road Side
		300	57	1884	107200			
		500	19	3140	60288			
40	54+739	100	174	628	109272	655726	2975909	Road Side Hill Area
		300	43	1884	81012			
		500	13	3140	39564			
41	54+856	100	184	628	115552	655817	2975950	Road Side Hill Area
		300	48	1884	90620			
		500	13	3140	40820			
42	54+982	100	206	628	129368	655698	2975946	Hill Area Road Side
		300	46	1884	85910			
		500	19	3140	59346			
43	55+095	100	210	628	131880	655580	2975945	Hill Area Road Side
		300	47	1884	88736			
		500	19	3140	59660			
		100	201	628	126228	655479	2976003	Hill Area Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
44	55+210	300	46	1884	87041			
		500	17	3140	53380			
45	55+330	100	104	628	65312	655388	2976042	Hill area , Road Side
		300	42	1884	78186			
		500	19	3140	58090			
46	55+460	100	115	628	72220	655269	2976040	Hill area , Road Side
		300	43	1884	81200			
		500	21	3140	64370			
47	55+578	100	143	628	89804	655282	2976079	Hill area , Road Side
		300	45	1884	84780			
		500	22	3140	68766			
48	55+713	100	162	628	101736	655392	2976115	Hill area , Road Side
		300	47	1884	88548			
		500	22	3140	69080			
49	55+842	100	172	628	108016	655511	2976109	Hill area , Road Side
		300	48	1884	90809			
		500	24	3140	75674			
50	55+975	100	150	628	94200	655613	2976057	Hill area , Road Side
		300	39	1884	73476			
		500	13	3140	40506			
51	56+118	100	139	628	87292	655657	2976173	Hill area , Road Side
		300	30	1884	56708			
		500	12	3140	37366			
52	56+248	100	115	628	72220	655628	2976292	Hill area , Road Side
		300	25	1884	46158			
		500	11	3140	34226			
53	56+362	100	120	628	75360	655578	2976348	Hill area , Road Side
		300	27	1884	51622			
		500	12	3140	37994			
54	56+513	100	121	628	75988	655592	2976206	Hill area , Road Side
		300	27	1884	50680			
		500	12	3140	37680			
55	56+636	100	101	628	63428	655523	2976183	Hill area , Road Side
		300	28	1884	52564			
		500	10	3140	31086			
56	56+762	100	99	628	62423	655448	2976259	Hill area , Road Side
		300	23	1884	42955			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	9	3140	28574			
57	56+903	100	100	628	62863	655431	2976315	Hill area , Road Side
		300	23	1884	43520			
		500	11	3140	32970			
58	57+030	100	99	628	61858	655519	2976246	Hill area , Road Side
		300	22	1884	41448			
		500	10	3140	29830			
59	57+176	100	96	628	60037	655471	2976319	Hill area , Road Side
		300	23	1884	43520			
		500	9	3140	28888			
60	57+296	100	140	628	87920	655452	2976422	Hill area , Road Side
		300	45	1884	84780			
		500	24	3140	74104			
61	57+400	100	170	628	106760	655446	2976512	Hill area , Road Side
		300	60	1884	112286			
		500	26	3140	81326			
62	57+526	100	202	628	126919	655495	2976621	Hill area , Road Side
		300	74	1884	139981			
		500	37	3140	114610			
63	57+661	100	224	628	140672	655473	2976729	Hill area , Road Side
		300	85	1884	159952			
		500	41	3140	128740			
64	57+796	100	241	628	151348	655403	2976824	Hill area , Road Side
		300	90	1884	169748			
		500	45	3140	141300			
65	57+913	100	228	628	143184	655327	2976905	Hill area , Road Side
		300	89	1884	167676			
		500	44	3140	138160			
66	58+048	100	253	628	158884	655278	2977000	Hill area , Road Side
		300	95	1884	178226			
		500	42	3140	132194			
67	58+159	100	242	628	151976	655314	2977103	Hill area , Road Side
		300	99	1884	186328			
		500	41	3140	127170			
68	58+318	100	225	628	141300	655368	2977197	Hill area , Road Side
		300	80	1884	150532			
		500	35	3140	109586			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
69	58+432	100	266	628	167048	655378	2977247	Hill area , Road Side
		300	91	1884	171632			
		500	43	3140	133450			
70	58+536	100	250	628	157000	655274	2977248	Hill area , Road Side
		300	92	1884	173516			
		500	40	3140	126856			
71	58+671	100	242	628	151976	655203	2977318	Hill area , Road Side
		300	90	1884	169560			
		500	43	3140	135020			
72	58+797	100	234	628	146952	655189	2977442	Hill area , Road Side
		300	82	1884	153546			
		500	40	3140	125600			
73	58+925	100	245	628	153860	655156	2977558	Hill area , Road Side
		300	80	1884	150720			
		500	36	3140	111470			
74	59+054	100	274	628	172072	655138	2977680	Hill area , Road Side
		300	100	1884	187458			
		500	43	3140	133764			
75	59+179	100	265	628	166420	655140	2977798	Hill area , Road Side
		300	94	1884	177661			
		500	40	3140	125914			
76	59+332	100	271	628	170188	655215	2977889	Hill area , Road Side
		300	95	1884	179357			
		500	40	3140	124972			
77	59+417	100	300	628	188400	655266	2977989	Hill area , Road Side
		300	101	1884	189342			
		500	65	3140	204100			
78	59+541	100	317	628	199076	655146	2978058	Hill area , Road Side
		300	105	1884	197820			
		500	69	3140	216660			
79	59+696	100	320	628	200960	655183	2978164	Hill area , Road Side
		300	112	1884	211008			
		500	71	3140	222940			
80	59+796	100	313	628	196250	655245	2978189	
		300	111	1884	209124			
		500	68	3140	211950			
		100	305	628	191540	655107	2978176	Hill area , Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
81	59+947	300	110	1884	207240			
		500	64	3140	200960			
82	60+044	100	311	628	195308	655027	2978231	Hill area , Road Side
		300	125	1884	235500			
		500	69	3140	216660			
83	60+170	100	284	628	178352	654983	2978331	Hill area , Road Side
		300	121	1884	227964			
		500	63	3140	197820			
84	60+329	100	256	628	160768	655003	2978448	Hill area , Road Side
		300	126	1884	237384			
		500	60	3140	188400			
85	60+414	100	251	628	157628	654925	2978410	Hill area , Road Side
		300	125	1884	235500			
		500	60	3140	188400			
86	60+502	100	307	628	192796	654852	2978468	Rock Problem
		300	156	1884	293904			
		500	77	3140	240524			
87	60+623	100	301	628	189028	654779	2978548	Rock Problem
		300	151	1884	284484			
		500	66	3140	206926			
88	60+735	100	294	628	184632	654733	2978649	Rock Problem
		300	148	1884	278832			
		500	62	3140	194994			
89	60+874	100	285	628	178980	654733	2978769	Rock Problem
		300	140	1884	263760			
		500	51	3140	160454			
90	61+024	100	281	628	176468	654735	2978892	Rock Problem
		300	142	1884	267528			
		500	47	3140	146324			
91	61+148	100	274	628	172072	654726	2979008	Rock Problem
		300	138	1884	259992			
		500	41	3140	129368			
92	61+278	100	261	628	163908	654767	2979122	Rock Problem Hill Area
		300	135	1884	254340			
		500	67	3140	211322			
93	61+404	100	257	628	161396	654880	2979168	Rock Problem
		300	130	1884	244920			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	61	3140	189970			
94	61+534	100	262	628	164536	654993	2979235	Rock Problem Hill Area
		300	131	1884	246804			
		500	61	3140	190755			
95	61+689	100	265	628	166106	655079	2979280	Rock Problem Hill Area
		300	132	1884	247746			
		500	61	3140	191148			
96	61+841	100	267	628	167676	654927	2979261	Road Side , Hill Area
		300	132	1884	248688			
		500	61	3140	191540			
97	61+957	100	261	628	163908	654922	2979378	Road Side , Hill Area
		300	129	1884	243036			
		500	52	3140	161710			
98	62+091	100	258	628	162024	654978	2979467	Road Side , Hill Area
		300	125	1884	235500			
		500	48	3140	150720			
99	62+218	100	249	628	156372	654892	2979541	Road Side , Hill Area
		300	122	1884	229848			
		500	43	3140	135020			
100	62+353	100	238	628	149464	654830	2979642	Road Side , Hill Area
		300	120	1884	226080			
		500	41	3140	128740			
101	62+480	100	244	628	153232	654804	2979759	Road Side , Hill Area
		300	122	1884	230036			
		500	40	3140	126856			
102	62+608	100	258	628	162024	654866	2979828	Road Side , Hill Area
		300	121	1884	227776			
		500	46	3140	142870			
103	62+745	100	260	628	163280	654965	2979838	Road Side , Hill Area
		300	126	1884	237384			
		500	47	3140	146324			
104	62+868	100	325	628	204100	654894	2979922	Road Side , Hill Area
		300	133	1884	250572			
		500	42	3140	130624			
105	62+961	100	305	628	191540	654803	2980012	Road Side , Hill Area
		300	130	1884	245108			
		500	41	3140	127798			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
106	63+130	100	320	628	200960	654863	2980087	Road Side , Hill Area
		300	126	1884	236630			
		500	42	3140	132822			
107	63+204	100	311	628	195308	654806	2980134	Road Side , Hill Area
		300	123	1884	230790			
		500	40	3140	125914			
108	63+328	100	326	628	204728	654749	2980208	Road Side , Hill Area
		300	125	1884	234746			
		500	41	3140	129054			
109	63+459	100	300	628	188400	654642	2980262	Road Side , Hill Area
		300	180	1884	339120			
		500	96	3140	299870			
110	63+556	100	310	628	194680	654561	2980253	Road Side , Hill Area
		300	145	1884	273180			
		500	86	3140	270354			
111	63+634	100	294	628	184632	654459	2980287	Road Side , Hill Area
		300	130	1884	244920			
		500	73	3140	227650			
112	63+739	100	293	628	184004	654375	2980377	Road Side , Hill Area, further chainage as per Diversion of alingment
		300	143	1884	269412			
		500	70	3140	218544			
113	63+885	100	290	628	181806	654412	2980522	Road Side , Hill Area, further chainage as per
		300	142	1884	267528			
		500	66	3140	207711			
114	64+012	100	288	628	180707	654508	2980514	Road Side , Hill Area
		300	142	1884	266586			
		500	64	3140	202295			
115	64+139	100	287	628	180158	654567	2980403	Road Side , Hill Area
		300	141	1884	266115			
		500	64	3140	199586			
116	64+259	100	286	628	179883	654665	2980448	Road Side , Hill Area
		300	141	1884	265880			
		500	63	3140	198232			
117	64+381	100	286	628	179745	654654	2980563	Road Side , Hill Area
		300	141	1884	265762			
		500	63	3140	197555			
		100	286	628	179677	654657	2980631	Road Side , Hill Area

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
118	64+456	300	141	1884	265703			
		500	63	3140	197217			
119	64+629	100	286	628	179642	654626	2980630	Road Side , Hill Area
		300	142	1884	266710			
		500	66	3140	205996			
120	64+757	100	286	628	179625	654568	2980739	Road Side , Hill Area
		300	141	1884	266177			
		500	64	3140	201437			
121	64+886	100	286	628	179617	654522	2980786	Road Side , Hill Area
		300	141	1884	265910			
		500	63	3140	199158			
122	65+008	100	286	628	179612	654467	2980681	Road Side , Hill Area
		300	141	1884	265777			
		500	63	3140	198018			
123	65+131	100	286	628	179610	654467	2980573	Road Side , Hill Area
		300	141	1884	265711			
		500	63	3140	197448			
124	65+258	100	286	628	179609	654381	2980652	Road Side , Hill Area
		300	141	1884	265677			
		500	63	3140	197163			
125	65+380	100	286	628	179609	654270	2980645	Road Side , Hill Area
		300	141	1884	265661			
		500	63	3140	197020			
126	65+502	100	286	628	179608	654179	2980679	Road Side , Hill Area
		300	141	1884	265652			
		500	63	3140	196949			
127	65+635	100	286	628	179608	654099	2980616	Road Side , Hill Area
		300	141	1884	265648			
		500	63	3140	196914			
128	65+761	100	286	628	179608	654165	2980518	Road Side , Hill Area
		300	141	1884	265646			
		500	63	3140	196896			
129	65+887	100	286	628	179608	654269	2980443	Road Side , Hill Area
		300	141	1884	265644			
		500	63	3140	196878			
130	66+008	100	288	628	180864	654325	2980333	Road Side , Hill Area
		300	142	1884	267716			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	68	3140	214776			
131	66+124	100	265	628	166420	654281	2980356	Road Side , Hill Area
		300	135	1884	254340			
		500	64	3140	200646			
132	66+242	100	267	628	167676	654187	2980426	Road Side , Hill Area
		300	131	1884	246804			
		500	61	3140	189970			
133	66+369	100	255	628	160140	654086	2980503	Road Side , Hill Area
		300	126	1884	237384			
		500	59	3140	185574			
134	66+498	100	258	628	162024	653991	2980589	Road Side , Hill Area
		300	129	1884	243036			
		500	58	3140	180550			
135	66+605	100	260	628	163280	653948	2980659	Road Side , Hill Area
		300	135	1884	255094			
		500	60	3140	188400			
136	66+757	100	275	628	172700	654059	2980735	Road Side , Hill Area
		300	125	1884	235688			
		500	66	3140	207868			
137	66+893	100	279	628	175212	654007	2980723	Road Side , Hill Area
		300	128	1884	241529			
		500	66	3140	207554			
138	67+016	100	266	628	167111	654078	2980784	Road Side , Hill Area
		300	127	1884	239645			
		500	65	3140	205356			
139	67+141	100	254	628	159512	654192	2980829	Road Side , Hill Area
		300	126	1884	237196			
		500	61	3140	192168			
140	67+258	100	261	628	163908	654308	2980818	Road Side , Hill Area
		300	127	1884	239645			
		500	60	3140	188714			
141	67+383	100	265	628	166420	654314	2980944	Road Side , Hill Area
		300	130	1884	243978			
		500	57	3140	178666			
142	67+528	100	268	628	168304	654271	2981014	Road Side , Hill Area
		300	132	1884	248876			
		500	55	3140	173328			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
143	67+711	100	259	628	162652	654320	2981046	Road Side , Hill Area
		300	130	1884	245297			
		500	51	3140	161396			
144	67+809	100	261	628	163908	654353	2981132	Road Side , Hill Area
		300	125	1884	235688			
		500	65	3140	204414			
145	67+955	100	266	628	167048	654361	2981269	Road Side , Hill Area
		300	127	1884	239456			
		500	66	3140	207554			
146	68+078	100	272	628	170816	654322	2981160	Road Side , Hill Area
		300	130	1884	245297			
		500	62	3140	193110			
147	68+233	100	276	628	173077	654241	2981174	Road Side , Hill Area
		300	129	1884	243036			
		500	59	3140	186516			
148	68+404	100	271	628	170314	654166	2981087	Road Side , Hill Area
		300	125	1884	235877			
		500	58	3140	180550			
149	68+530	100	266	628	167048	654156	2981187	Road Side , Hill Area
		300	126	1884	237384			
		500	57	3140	178666			
150	68+663	100	262	628	164536	654160	2981303	Road Side , Hill Area
		300	126	1884	238138			
		500	57	3140	180236			
151	68+782	100	265	628	166420	654099	2981402	Road Side , Hill Area
		300	126	1884	237007			
		500	58	3140	182434			
152	68+912	100	261	628	163908	653981	2981444	Road Side , Hill Area
		300	128	1884	241340			
		500	56	3140	174584			
153	69+062	100	258	628	162024	653918	2981501	Road Side , Hill Area
		300	127	1884	238514			
		500	55	3140	171758			
154	69+201	100	253	628	158884	653795	2981522	Road Side , Hill Area
		300	106	1884	199704			
		500	42	3140	132194			
		100	256	628	160768	653712	2981562	Road Side , Hill Area

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
155	69+332	300	117	1884	220428			
		500	43	3140	136276			
156	69+475	100	254	628	159512	653605	2981576	Road Side , Hill Area
		300	116	1884	218356			
		500	41	3140	129368			
157	69+590	100	250	628	157000	653628	2981667	Road Side , Hill Area
		300	116	1884	219298			
		500	40	3140	126856			
158	69+716	100	258	628	162024	653653	2981758	Road Side , Hill Area
		300	121	1884	227210			
		500	41	3140	127798			
159	69+839	100	260	628	163280	653637	2981640	Road Side , Hill Area
		300	124	1884	233804			
		500	42	3140	130624			
160	69+979	100	264	628	166043	653673	2981688	Road Side , Hill Area
		300	124	1884	233804			
		500	44	3140	138160			
161	70+106	100	266	628	167111	653741	2981774	Road Side , Hill Area
		300	126	1884	237949			
		500	43	3140	133764			
162	70+220	100	222	628	139416	653836	2981836	Road Side , Hill Area
		300	99	1884	187270			
		500	40	3140	125914			
163	70+342	100	210	628	131880	653917	2981922	Road Side , Hill Area
		300	93	1884	175966			
		500	39	3140	122146			
164	70+474	100	198	628	124344	654037	2981880	Road Side , Hill Area
		300	85	1884	159198			
		500	37	3140	115238			
165	70+599	100	197	628	123402	653950	2981862	Road Side , Hill Area
		300	84	1884	157856			
		500	37	3140	115827			
166	70+689	100	195	628	122460	653932	2981786	Road Side , Hill Area
		300	83	1884	156513			
		500	37	3140	116416			
167	70+745	100	193	628	121204	653918	2981741	Road Side , Hill Area
		300	82	1884	153546			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	36	3140	111784			
168	70+852	100	194	628	121832	653951	2981652	Road Side , Hill Area
		300	83	1884	155618			
		500	37	3140	116808			
169	70+875	100	202	628	126856	653977	2981649	Road Side , Hill Area
		300	82	1884	154676			
		500	35	3140	108330			
170	71+000	100	202	628	126856	654094	2981603	Road Side , Hill Area
		300	116	1884	218544			
		500	43	3140	135020			
171	71+131	100	206	628	129368	654160	2981521	Road Side , Hill Area
		300	118	1884	222312			
		500	42	3140	132194			
172	71+265	100	215	628	135020	654226	2981570	Road Side , Hill Area
		300	125	1884	235500			
		500	41	3140	127484			
173	71+397	100	216	628	135648	654280	2981679	Road Side , Hill Area
		300	125	1884	234746			
		500	40	3140	124972			
174	71+517	100	206	628	129368	654347	2981765	Road Side , Hill Area
		300	123	1884	231732			
		500	39	3140	121204			
175	71+662	100	206	628	129431	654434	2981859	Road Side , Hill Area
		300	125	1884	235500			
		500	38	3140	118064			
176	71+758	100	215	628	135020	654510	2981885	Road Side , Hill Area
		300	127	1884	239268			
		500	36	3140	113354			
177	71+872	100	220	628	138160	654522	2981986	Road Side , Hill Area
		300	129	1884	243036			
		500	38	3140	117750			
178	71+999	100	307	628	192859	654585	2982096	Road Side , Hill Area
		300	152	1884	286368			
		500	65	3140	204100			
179	72+115	100	315	628	197820	654606	2982199	Road Side , Hill Area
		300	156	1884	293904			
		500	63	3140	196250			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
180	72+239	100	320	628	200960	654698	2982234	Road Side , Hill Area
		300	158	1884	297672			
		500	61	3140	192168			
181	72+352	100	318	628	199704	654746	2982327	Road Side , Hill Area
		300	156	1884	294092			
		500	59	3140	184946			
182	72+478	100	321	628	201588	654832	2982406	Road Side , Hill Area
		300	166	1884	312744			
		500	60	3140	188714			
183	72+601	100	332	628	208496	654822	2982505	Hill Area, Road Side
		300	162	1884	305208			
		500	60	3140	187144			
184	72+729	100	340	628	213520	654830	2982626	Hill Area, Road Side
		300	170	1884	320468			
		500	66	3140	207554			
185	72+852	100	319	628	200332	654862	2982744	Hill Area, Road Side
		300	164	1884	308976			
		500	64	3140	201902			
186	72+970	100	330	628	207240	654902	2982847	Hill Area , Road Side
		300	180	1884	339120			
		500	66	3140	205670			
187	73+098	100	325	628	204100	654912	2982970	Hill Area , Road Side
		300	178	1884	335352			
		500	60	3140	188714			
188	73+230	100	327	628	205356	655004	2983025	Hill Area , Road Side
		300	171	1884	322164			
		500	63	3140	198448			
189	73+335	100	320	628	200960	654977	2983136	Hill Area , Road Side
		300	169	1884	318396			
		500	59	3140	185888			
190	73+485	100	312	628	195936	655041	2983262	Hill Area , Road Side
		300	165	1884	310860			
		500	58	3140	180550			
191	73+602	100	294	628	184632	655104	2983343	Hill Area , Road Side
		300	164	1884	308976			
		500	57	3140	178038			
		100	291	628	182748	655118	2983378	Hill Area , Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
192	73+744	300	162	1884	305208			
		500	56	3140	174270			
193	73+868	100	288	628	180864	655011	2983318	Hill Area , Road Side
		300	156	1884	293904			
		500	51	3140	160454			
194	74+015	100	266	628	167048	655013	2983347	Hill Area , Road Side
		300	136	1884	256224			
		500	57	3140	177410			
195	74+138	100	268	628	168304	655118	2983410	Hill Area , Road Side
		300	139	1884	261876			
		500	57	3140	180236			
196	74+321	100	270	628	169560	655150	2983525	Hill Area , Road Side
		300	139	1884	261688			
		500	56	3140	177096			
197	74+456	100	264	628	165792	655068	2983605	Hill Area , Road Side
		300	135	1884	254528			
		500	54	3140	170188			
198	74+582	100	305	628	191540	655029	2983709	Hill Area , Road Side
		300	169	1884	318396			
		500	64	3140	200960			
199	74+714	100	317	628	199076	655092	2983819	Hill Area , Road Side
		300	172	1884	324048			
		500	63	3140	197820			
200	74+838	100	320	628	200960	655197	2983877	Hill Area , Road Side
		300	175	1884	329700			
		500	63	3140	197506			
201	74+965	100	322	628	202216	655293	2983951	Hill Area , Road Side
		300	169	1884	318396			
		500	60	3140	189656			
202	75+104	100	250	628	157000	655397	2984020	Hill Area , Road Side
		300	118	1884	222312			
		500	55	3140	172700			
203	75+240	100	266	628	167048	655506	2984061	Hill Area , Road Side
		300	120	1884	226080			
		500	52	3140	163280			
204	75+369	100	273	628	171444	655627	2984086	Hill Area , Road Side
		300	127	1884	239268			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	49	3140	153860			
205	75+505	100	297	628	186516	655745	2984046	Hill Area , Road Side
		300	136	1884	256224			
		500	54	3140	169560			
206	75+626	100	314	628	197192	655852	2983997	Hill Area , Road Side
		300	145	1884	273180			
		500	66	3140	207240			
207	75+755	100	335	628	210380	655956	2984016	Hill Area , Road Side
		300	156	1884	293904			
		500	61	3140	191854			
208	75+954	100	328	628	205984	656086	2984033	Hill Area , Road Side
		300	158	1884	297672			
		500	61	3140	190284			
209	76+060	100	335	628	210380	656209	2984014	Hill Area , Road Side
		300	160	1884	301440			
		500	61	3140	192168			
210	76+166	100	316	628	198448	656282	2983948	Hill Area , Road Side
		300	129	1884	243036			
		500	49	3140	153860			
211	76+297	100	289	628	181492	656409	2983926	Hill Area , Road Side
		300	130	1884	244920			
		500	49	3140	152604			
212	76+408	100	301	628	189028	656510	2983903	Hill Area , Road Side
		300	139	1884	261876			
		500	56	3140	175840			
213	76+537	100	326	628	204728	656504	2984010	Hill Area , Road Side
		300	145	1884	273180			
		500	59	3140	185888			
214	76+675	100	384	628	241152	656398	2984036	Hill Area , Road Side
		300	201	1884	378684			
		500	84	3140	263760			
215	76+800	100	411	628	258108	656342	2984143	Hill Area , Road Side
		300	214	1884	403176			
		500	100	3140	312744			
216	76+916	100	434	628	272552	656314	2984255	Hill Area , Road Side
		300	226	1884	425784			
		500	101	3140	317140			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
217	77+009	100	444	628	278832	656240	2984288	Hill Area , Road Side
		300	230	1884	433320			
		500	112	3140	351680			
218	77+108	100	430	628	270040	656148	2984243	Hill Area, Road Side
		300	201	1884	378684			
		500	101	3140	317140			
219	77+230	100	425	628	266900	656082	2984244	Hill Area, Road Side
		300	198	1884	373032			
		500	101	3140	315570			
220	77+349	100	419	628	263132	656019	2984339	Hill Area, Road Side
		300	192	1884	361728			
		500	100	3140	312744			
221	77+466	100	411	628	258108	655916	2984395	Hill Area, Road Side
		300	186	1884	350424			
		500	95	3140	298928			
222	77+597	100	419	628	263132	655806	2984390	Hill Area, Road Side
		300	184	1884	346656			
		500	93	3140	292020			
223	77+706	100	415	628	260620	655714	2984426	Hill Area, Road Side
		300	174	1884	327816			
		500	91	3140	285426			
224	77+824	100	412	628	258736	655710	2984401	Hill Area, Road Side
		300	175	1884	329700			
		500	91	3140	286368			
225	77+953	100	416	628	261248	655811	2984350	Hill Area, Road Side
		300	182	1884	342888			
		500	90	3140	282600			
226	78+068	100	445	628	279460	655885	2984308	Hill Area, Road Side
		300	231	1884	435204			
		500	109	3140	342260			
227	78+183	100	450	628	282600	655843	2984290	Hill Area, Road Side
		300	221	1884	416364			
		500	102	3140	320280			
228	78+286	100	448	628	281344	655751	2984286	Hill Area, Road Side
		300	216	1884	406944			
		500	99	3140	309290			
		100	394	628	247432	655648	2984335	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
229	78+435	300	185	1884	348540			
		500	92	3140	289822			
230	78+573	100	385	628	241780	655565	2984436	Hill Area, Road Side
		300	172	1884	324048			
		500	89	3140	280402			
231	78+688	100	372	628	233616	655538	2984551	Hill Area, Road Side
		300	166	1884	312744			
		500	84	3140	264388			
232	78+822	100	380	628	238640	655482	2984648	Hill Area, Road Side
		300	162	1884	305208			
		500	82	3140	258422			
233	78+962	100	382	628	239896	655464	2984765	Hill Area, Road Side
		300	160	1884	301440			
		500	80	3140	251514			
234	79+095	100	319	628	200332	655502	2984881	Hill Area, Road Side
		300	194	1884	365496			
		500	70	3140	218858			
235	79+138	100	320	628	200960	655515	2984923	Hill Area, Road Side
		300	192	1884	361728			
		500	71	3140	221370			
236	79+262	100	322	628	202216	655565	2985024	Hill Area, Road Side
		300	184	1884	346656			
		500	65	3140	202530			
237	79+392	100	344	628	216032	655601	2985115	Hill Area, Road Side
		300	200	1884	376988			
		500	80	3140	249630			
238	79+521	100	395	628	248060	655582	2985239	Hill Area, Road Side
		300	210	1884	395640			
		500	84	3140	264074			
239	79+647	100	420	628	263760	655566	2985364	Hill Area, Road Side
		300	215	1884	405060			
		500	89	3140	280088			
240	79+768	100	434	628	272552	655558	2985486	Hill Area, Road Side
		300	210	1884	395640			
		500	94	3140	295474			
241	79+877	100	450	628	282600	655490	2985574	Hill Area, Road Side
		300	220	1884	414480			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	106	3140	331270			
242	80+027	100	460	628	288880	655353	2985612	Hill Area, Road Side
		300	250	1884	471000			
		500	109	3140	342260			
243	80+129	100	435	628	273180	655275	2985666	Hill Area, Road Side
		300	225	1884	423900			
		500	110	3140	345400			
244	80+266	100	445	628	279460	655235	2985695	Hill Area, Road Side
		300	230	1884	433320			
		500	114	3140	357960			
245	80+389	100	446	628	280088	655356	2985694	Hill Area, Road Side
		300	225	1884	423900			
		500	106	3140	331270			
246	80+518	100	429	628	269412	655475	2985641	Hill Area, Road Side
		300	210	1884	395640			
		500	99	3140	310546			
247	80+639	100	415	628	260620	655581	2985642	Hill Area, Road Side
		300	199	1884	374916			
		500	95	3140	298614			
248	80+759	100	432	628	271296	655607	2985753	Hill Area, Road Side
		300	204	1884	384336			
		500	97	3140	303010			
249	80+897	100	445	628	279460	655688	2985850	Hill Area, Road Side
		300	209	1884	393756			
		500	94	3140	295788			
250	81+015	100	455	628	285740	655750	2985913	Hill Area, Road Side
		300	215	1884	405060			
		500	102	3140	320280			
251	81+136	100	442	628	277576	655864	2985950	Hill Area, Road Side
		300	209	1884	393756			
		500	101	3140	317454			
252	81+258	100	450	628	282600	655792	2985955	Hill Area, Road Side
		300	212	1884	399408			
		500	112	3140	351680			
253	81+388	100	430	628	270040	655709	2985935	Hill Area, Road Side
		300	205	1884	386220			
		500	102	3140	320280			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
254	81+523	100	459	628	288252	655762	2986049	Hill Area, Road Side
		300	230	1884	433320			
		500	116	3140	364240			
255	81+651	100	454	628	285112	655654	2985982	Hill Area, Road Side
		300	227	1884	427668			
		500	115	3140	361100			
256	81+772	100	404	628	253712	655630	2986033	Hill Area, Road Side
		300	205	1884	386220			
		500	95	3140	297986			
257	81+891	100	392	628	246176	655731	2986097	Hill Area, Road Side
		300	185	1884	348540			
		500	86	3140	270668			
258	82+015	100	390	628	244920	655844	2986146	Hill Area, Road Side
		300	185	1884	348540			
		500	86	3140	268784			
259	82+142	100	381	628	239268	655965	2986164	Hill Area, Road Side
		300	182	1884	342888			
		500	76	3140	238640			
260	82+272	100	376	628	236128	656027	2986258	Hill Area, Road Side
		300	171	1884	322164			
		500	67	3140	210066			
261	82+385	100	368	628	231104	656070	2986363	Hill Area, Road Side
		300	164	1884	308976			
		500	64	3140	201588			
262	82+511	100	394	628	247432	656090	2986433	Hill Area, Road Side
		300	178	1884	335352			
		500	69	3140	217916			
263	82+642	100	401	628	251828	656008	2986333	Hill Area, Road Side
		300	197	1884	371148			
		500	84	3140	264388			
264	82+767	100	405	628	254340	655931	2986239	Hill Area, Road Side
		300	194	1884	365496			
		500	84	3140	263446			
265	82+896	100	416	628	261248	655824	2986197	Hill Area, Road Side
		300	199	1884	374916			
		500	85	3140	265330			
		100	410	628	257480	655704	2986187	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
266	83+018	300	194	1884	365496			
		500	82	3140	257480			
267	83+136	100	415	628	260620	655587	2986154	Hill Area, Road Side
		300	192	1884	361728			
		500	74	3140	232360			
268	83+275	100	397	628	249316	655467	2986110	Hill Area, Road Side
		300	183	1884	344772			
		500	71	3140	221370			
269	83+388	100	394	628	247432	655380	2986070	Hill Area, Road Side
		300	182	1884	342888			
		500	66	3140	205984			
270	83+524	100	398	628	249944	655304	2985973	Hill Area, Road Side
		300	187	1884	352308			
		500	67	3140	210380			
271	83+651	100	404	628	253712	655308	2986026	Hill Area, Road Side
		300	190	1884	357960			
		500	69	3140	216974			
272	83+754	100	420	628	263760	655319	2986134	Hill Area, Road Side
		300	192	1884	361728			
		500	71	3140	221370			
273	83+832	100	425	628	266900	655275	2986204	Hill Area, Road Side
		300	199	1884	374916			
		500	72	3140	226394			
274	84+014	100	402	628	252456	655148	2986303	Hill Area, Road Side
		300	192	1884	361728			
		500	74	3140	232360			
275	84+128	100	416	628	261248	655074	2986392	Hill Area, Road Side
		300	198	1884	373032			
		500	80	3140	251514			
276	84+324	100	415	628	260620	654970	2986409	Hill Area, Road Side
		300	194	1884	365496			
		500	75	3140	233930			
277	84+426	100	417	628	261876	654971	2986494	Hill Area, Road Side
		300	183	1884	344772			
		500	69	3140	217288			
278	84+512	100	404	628	253712	654895	2986535	Hill Area, Road Side
		300	187	1884	352308			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	68	3140	211950			
279	84+634	100	410	628	257480	654786	2986591	Hill Area, Road Side
		300	190	1884	357960			
		500	78	3140	245234			
280	84+770	100	416	628	261248	654674	2986665	Hill Area, Road Side
		300	192	1884	361728			
		500	72	3140	226080			
281	84+907	100	413	628	259364	654580	2986765	Hill Area, Road Side
		300	190	1884	357960			
		500	70	3140	219800			
282	85+009	100	416	628	261248	654504	2986833	Hill Area, Road Side
		300	201	1884	378684			
		500	95	3140	296730			
283	85+126	100	420	628	263760	654403	2986897	Hill Area, Road Side
		300	194	1884	365496			
		500	93	3140	292334			
284	85+264	100	410	628	257480	654385	2987033	Hill Area, Road Side
		300	192	1884	361728			
		500	91	3140	284170			
285	85+384	100	423	628	265644	654406	2987151	Hill Area, Road Side
		300	195	1884	367380			
		500	92	3140	289822			
286	85+511	100	394	628	247432	654400	2987250	Hill Area, Road Side
		300	182	1884	342888			
		500	84	3140	263760			
287	85+641	100	385	628	241780	654522	2987285	Hill Area, Road Side
		300	175	1884	329700			
		500	66	3140	206926			
288	85+764	100	395	628	248060	654510	2987352	Hill Area, Road Side
		300	169	1884	318396			
		500	64	3140	201588			
289	85+885	100	410	628	257480	654450	2987448	Hill Area, Road Side
		300	178	1884	335352			
		500	66	3140	206926			
290	86+013	100	406	628	254968	654427	2987573	Hill Area, Road Side
		300	200	1884	376612			
		500	95	3140	297044			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
291	86+134	100	413	628	259364	654367	2987664	Hill Area, Road Side
		300	194	1884	365873			
		500	94	3140	294218			
292	86+266	100	426	628	267528	654364	2987752	Hill Area, Road Side
		300	204	1884	384336			
		500	98	3140	308348			
293	86+394	100	415	628	260620	654475	2987814	Hill Area, Road Side
		300	202	1884	380568			
		500	94	3140	296102			
294	86+511	100	414	628	259992	654544	2987897	Hill Area, Road Side
		300	200	1884	376800			
		500	92	3140	289822			
295	86+643	100	420	628	263760	654588	2988016	Hill Area, Road Side
		300	202	1884	380568			
		500	90	3140	283856			
296	86+771	100	405	628	254340	654660	2988101	Hill Area, Road Side
		300	197	1884	370206			
		500	89	3140	279460			
297	86+892	100	407	628	255596	654734	2988202	Hill Area, Road Side
		300	194	1884	365873			
		500	80	3140	250886			
298	87+015	100	416	628	261248	654764	2988310	Hill Area, Road Side
		300	207	1884	389988			
		500	94	3140	296416			
299	87+131	100	405	628	254340	654806	2988397	Hill Area, Road Side
		300	201	1884	378684			
		500	94	3140	295160			
300	87+265	100	394	628	247432	654842	2988516	Hill Area, Road Side
		300	193	1884	363612			
		500	85	3140	265644			
301	87+385	100	385	628	241780	654863	2988633	Hill Area, Road Side
		300	184	1884	346656			
		500	81	3140	252770			
302	87+508	100	389	628	244292	654841	2988753	Hill Area, Road Side
		300	179	1884	337236			
		500	77	3140	240210			
		100	384	628	241152	654853	2988884	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
303	87+643	300	170	1884	320280			
		500	76	3140	238640			
304	87+757	100	381	628	239268	654906	2988976	Hill Area, Road Side
		300	164	1884	308976			
		500	77	3140	242722			
305	87+888	100	398	628	249944	654976	2989089	Hill Area, Road Side
		300	174	1884	327816			
		500	72	3140	226708			
306	88+010	100	401	628	251828	655065	2989170	Hill Area, Road Side
		300	194	1884	365496			
		500	95	3140	296730			
307	88+140	100	398	628	249944	655124	2989278	Hill Area, Road Side
		300	184	1884	346656			
		500	91	3140	284170			
308	88+264	100	385	628	241780	655206	2989372	Hill Area, Road Side
		300	179	1884	337236			
		500	84	3140	264388			
309	88+395	100	455	628	285740	655263	2989481	Hill Area, Road Side
		300	298	1884	561432			
		500	105	3140	328130			
310	88+516	100	402	628	252456	655308	2989562	Hill Area, Road Side
		300	290	1884	546360			
		500	104	3140	325304			
311	88+640	100	415	628	260620	655409	2989634	Hill Area, Road Side
		300	286	1884	538824			
		500	104	3140	327502			
312	88+758	100	412	628	258736	655509	2989668	Hill Area, Road Side
		300	230	1884	433320			
		500	110	3140	345400			
313	88+890	100	404	628	253712	655638	2989686	Hill Area, Road Side
		300	225	1884	423900			
		500	110	3140	345400			
314	89+005	100	406	628	254968	655713	2989774	Hill Area, Road Side
		300	201	1884	378684			
		500	93	3140	292020			
315	89+133	100	396	628	248688	655796	2989872	Hill Area, Road Side
		300	194	1884	365496			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	84	3140	265016			
316	89+259	100	385	628	241780	655883	2989963	Hill Area, Road Side
		300	181	1884	341004			
		500	75	3140	235186			
317	89+387	100	376	628	236128	655982	2990047	Hill Area, Road Side
		300	176	1884	331772			
		500	77	3140	240524			
318	89+514	100	365	628	229220	656085	2990118	Hill Area, Road Side
		300	166	1884	312744			
		500	70	3140	220114			
319	89+640	100	360	628	226080	656167	2990203	Hill Area, Road Side
		300	161	1884	302382			
		500	65	3140	202530			
320	89+768	100	355	628	222940	656294	2990203	Hill Area, Road Side
		300	158	1884	297672			
		500	64	3140	200646			
321	89+893	100	365	628	229220	656399	2990131	Hill Area, Road Side
		300	157	1884	295788			
		500	63	3140	198448			
322	90+005	100	405	628	254340	656480	2990054	Hill Area, Road Side
		300	241	1884	454044			
		500	95	3140	298614			
323	90+135	100	411	628	258108	656611	2990047	Hill Area, Road Side
		300	235	1884	442740			
		500	89	3140	279460			
324	90+257	100	421	628	264388	656694	2989976	Hill Area, Road Side
		300	240	1884	452160			
		500	90	3140	282600			
325	90+383	100	416	628	261248	656748	2989863	Hill Area, Road Side
		300	235	1884	442740			
		500	85	3140	265644			
326	90+512	100	420	628	263760	656790	2989933	Hill Area, Road Side
		300	237	1884	446508			
		500	89	3140	280716			
327	90+652	100	425	628	266900	656727	2990058	Hill Area, Road Side
		300	231	1884	435204			
		500	89	3140	277890			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
328	90+769	100	421	628	264388	656674	2990162	Hill Area, Road Side
		300	228	1884	429552			
		500	86	3140	270354			
329	90+887	100	406	628	254968	656560	2990162	Hill Area, Road Side
		300	197	1884	371148			
		500	85	3140	265330			
330	91+025	100	443	628	278204	656428	2990210	Hill Area, Road Side
		300	205	1884	386220			
		500	100	3140	312430			
331	91+139	100	445	628	279460	656456	2990320	Hill Area, Road Side
		300	210	1884	395640			
		500	99	3140	310860			
332	91+263	100	425	628	266900	656384	2990416	Hill Area, Road Side
		300	200	1884	376800			
		500	90	3140	281030			
333	91+384	100	427	628	268156	656279	2990480	Hill Area, Road Side
		300	202	1884	380568			
		500	85	3140	265330			
334	91+502	100	421	628	264388	656209	2990564	Hill Area, Road Side
		300	199	1884	374162			
		500	82	3140	257794			
335	91+650	100	409	628	256852	656305	2990624	Hill Area, Road Side
		300	186	1884	350612			
		500	81	3140	252770			
336	91+765	100	411	628	258108	656325	2990735	Hill Area, Road Side
		300	175	1884	329700			
		500	77	3140	242408			
337	91+889	100	423	628	265644	656310	2990850	Hill Area, Road Side
		300	170	1884	320280			
		500	73	3140	229848			
338	92+007	100	465	628	292020	656337	2990965	Hill Area, Road Side
		300	210	1884	395640			
		500	95	3140	296730			
339	92+128	100	481	628	302068	656367	2991086	Hill Area, Road Side
		300	220	1884	414480			
		500	101	3140	317768			
		100	501	628	314628	656427	2991207	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
340	92+276	300	250	1884	471000			
		500	115	3140	361100			
341	92+385	100	512	628	321536	656428	2991316	Hill Area, Road Side
		300	247	1884	465348			
		500	112	3140	351680			
342	92+506	100	485	628	304580	656459	2991434	Hill Area, Road Side
		300	101	1884	190284			
		500	92	3140	289508			
343	92+635	100	494	628	310232	656550	2991526	Hill Area, Road Side
		300	105	1884	197820			
		500	97	3140	303324			
344	92+759	100	504	628	316512	656663	2991585	Hill Area, Road Side
		300	121	1884	227964			
		500	95	3140	297044			
345	92+898	100	523	628	328444	656713	2991691	Hill Area, Road Side
		300	130	1884	244920			
		500	105	3140	329700			
346	93+012	100	494	628	310232	656765	2991794	Hill Area, Road Side
		300	206	1884	388104			
		500	99	3140	312116			
347	93+138	100	501	628	314628	656813	2991910	Hill Area, Road Side
		300	210	1884	395640			
		500	97	3140	303324			
348	93+262	100	484	628	303952	656806	2992035	Hill Area, Road Side
		300	198	1884	373032			
		500	92	3140	289194			
349	93+389	100	494	628	310232	656822	2992150	Hill Area, Road Side
		300	201	1884	378684			
		500	100	3140	312744			
350	93+513	100	515	628	323420	656894	2992250	Hill Area, Road Side
		300	210	1884	395640			
		500	101	3140	317140			
351	93+651	100	604	628	379312	656993	2992337	Hill Area, Road Side
		300	265	1884	499260			
		500	148	3140	464720			
352	93+765	100	560	628	351680	657041	2992431	Hill Area, Road Side
		300	229	1884	431436			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	125	3140	392500			
353	93+892	100	600	628	376800	657113	2992530	Hill Area, Road Side
		300	245	1884	461580			
		500	115	3140	361100			
354	94+027	100	580	628	364240	657157	2992647	Hill Area, Road Side
		300	245	1884	461580			
		500	105	3140	329700			
355	94+153	100	606	628	380568	657195	2992752	Hill Area, Road Side
		300	242	1884	455928			
		500	101	3140	317140			
356	94+265	100	612	628	384336	657232	2992858	Hill Area, Road Side
		300	248	1884	467232			
		500	109	3140	342260			
357	94+388	100	640	628	401920	657288	2992968	Hill Area, Road Side
		300	254	1884	478536			
		500	112	3140	351680			
358	94+506	100	635	628	398780	657280	2993065	Hill Area, Road Side
		300	243	1884	457812			
		500	111	3140	346970			
359	94+652	100	624	628	391872	657283	2993172	Hill Area, Road Side
		300	230	1884	433320			
		500	109	3140	343202			
360	94+757	100	605	628	379940	657178	2993178	Hill Area, Road Side
		300	221	1884	416364			
		500	94	3140	296102			
361	94+885	100	629	628	395012	657156	2993208	Hill Area, Road Side
		300	203	1884	382452			
		500	95	3140	297044			
362	95+010	100	650	628	408200	657155	2993257	Hill Area, Road Side
		300	230	1884	433320			
		500	112	3140	351680			
363	95+134	100	643	628	403804	657031	2993270	Hill Area, Road Side
		300	225	1884	423900			
		500	101	3140	317140			
364	95+262	100	641	628	402548	656922	2993292	Hill Area, Road Side
		300	228	1884	429552			
		500	112	3140	351680			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
365	95+382	100	620	628	389360	656897	2993336	Hill Area, Road Side
		300	217	1884	408828			
		500	115	3140	361100			
366	95+510	100	610	628	383080	657025	2993347	Hill Area, Road Side
		300	205	1884	386220			
		500	98	3140	308034			
367	95+639	100	645	628	405060	657065	2993435	Hill Area, Road Side
		300	240	1884	452160			
		500	107	3140	335980			
368	95+763	100	656	628	411968	657005	2993532	Hill Area, Road Side
		300	252	1884	474768			
		500	120	3140	376800			
369	95+897	100	662	628	415736	657024	2993645	Hill Area, Road Side
		300	258	1884	486072			
		500	122	3140	383080			
370	96+022	100	565	628	354820	657124	2993723	Hill Area, Road Side
		300	284	1884	535056			
		500	120	3140	376800			
371	96+134	100	495	628	310860	657186	2993813	Hill Area, Road Side
		300	272	1884	512448			
		500	134	3140	420760			
372	96+263	100	525	628	329700	657288	2993834	Hill Area, Road Side
		300	275	1884	518100			
		500	132	3140	414480			
373	96+390	100	546	628	342888	657408	2993876	Hill Area, Road Side
		300	279	1884	525636			
		500	130	3140	408200			
374	96+513	100	548	628	344144	657508	2993940	Hill Area, Road Side
		300	278	1884	523752			
		500	132	3140	414480			
375	96+640	100	532	628	334096	657620	2993996	Hill Area, Road Side
		300	268	1884	504912			
		500	130	3140	408200			
376	96+766	100	498	628	312744	657537	2994063	Hill Area, Road Side
		300	246	1884	463464			
		500	102	3140	320280			
		100	520	628	326560	657421	2994021	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
377	96+889	300	241	1884	454044			
		500	126	3140	395640			
378	97+012	100	545	628	342260	657307	2993974	Hill Area, Road Side
		300	260	1884	489840			
		500	135	3140	423900			
379	97+144	100	609	628	382452	657184	2993928	Hill Area, Road Side
		300	274	1884	516216			
		500	147	3140	461580			
380	97+265	100	622	628	390616	657138	2993964	Hill Area, Road Side
		300	284	1884	535056			
		500	165	3140	518100			
381	97+389	100	660	628	414480	657244	2994030	Hill Area, Road Side
		300	299	1884	563316			
		500	174	3140	546360			
382	97+514	100	635	628	398780	657330	2994122	Hill Area, Road Side
		300	255	1884	480420			
		500	140	3140	439600			
383	97+638	100	584	628	366752	657445	2994162	Hill Area, Road Side
		300	210	1884	395640			
		500	104	3140	326560			
384	97+760	100	602	628	378056	657552	2994218	Hill Area, Road Side
		300	231	1884	435204			
		500	103	3140	323420			
385	97+890	100	622	628	390616	657668	2994273	Hill Area, Road Side
		300	232	1884	437088			
		500	109	3140	342260			
386	98+014	100	625	628	392500	657787	2994308	Hill Area, Road Side
		300	269	1884	506796			
		500	144	3140	452160			
387	98+137	100	605	628	379940	657910	2994320	Hill Area, Road Side
		300	242	1884	455928			
		500	109	3140	342260			
388	98+263	100	584	628	366752	658006	2994372	Hill Area, Road Side
		300	241	1884	454044			
		500	110	3140	345400			
389	98+387	100	603	628	378684	657930	2994454	Hill Area, Road Side
		300	265	1884	499260			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	139	3140	436460			
390	98+518	100	619	628	388732	658008	2994529	Hill Area, Road Side
		300	254	1884	478536			
		500	125	3140	392500			
391	98+639	100	627	628	393756	658061	2994611	Hill Area, Road Side
		300	250	1884	471000			
		500	122	3140	383080			
392	98+760	100	576	628	361728	658129	2994700	Hill Area, Road Side
		300	214	1884	403176			
		500	100	3140	314314			
393	98+889	100	523	628	328444	658212	2994798	Hill Area, Road Side
		300	209	1884	393756			
		500	95	3140	297044			
394	99+017	100	395	628	248060	658317	2994872	Hill Area, Road Side
		300	184	1884	346656			
		500	85	3140	266900			
395	99+140	100	340	628	213520	658376	2994966	Hill Area, Road Side
		300	166	1884	312744			
		500	65	3140	204100			
396	99+267	100	325	628	204100	658421	2995086	Hill Area, Road Side
		300	160	1884	301440			
		500	62	3140	194680			
397	99+388	100	298	628	187144	658513	2995156	Hill Area, Road Side
		300	150	1884	282600			
		500	44	3140	138474			
398	99+512	100	284	628	178352	658400	2995135	Hill Area, Road Side
		300	142	1884	267528			
		500	43	3140	134706			
399	99+626	100	282	628	177096	658429	2995170	Hill Area, Road Side
		300	149	1884	280716			
		500	44	3140	136590			
400	99+768	100	305	628	191540	658530	2995270	Hill Area, Road Side
		300	148	1884	279020			
		500	44	3140	138788			
401	99+876	100	321	628	201588	658605	2995328	Hill Area, Road Side
		300	150	1884	282977			
		500	46	3140	143184			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
402	100+016	100	352	628	221056	658478	2995262	Hill Area, Road Side
		300	165	1884	310860			
		500	80	3140	252456			
403	100+142	100	365	628	229220	658564	2995346	Hill Area, Road Side
		300	170	1884	320280			
		500	82	3140	255910			
404	100+257	100	406	628	254968	658629	2995406	Hill Area, Road Side
		300	189	1884	356076			
		500	81	3140	254026			
405	100+381	100	412	628	258736	658517	2995372	Hill Area, Road Side
		300	190	1884	357960			
		500	83	3140	259050			
406	100+520	100	425	628	266900	658588	2995446	Hill Area, Road Side
		300	202	1884	380568			
		500	99	3140	309290			
407	100+649	100	418	628	262504	658670	2995496	Hill Area, Road Side
		300	200	1884	376612			
		500	95	3140	297044			
408	100+763	100	409	628	256852	658604	2995512	Hill Area, Road Side
		300	195	1884	366626			
		500	94	3140	294218			
409	100+891	100	417	628	261876	658712	2995570	Hill Area, Road Side
		300	201	1884	378684			
		500	100	3140	313686			
410	101+012	100	344	628	216032	658825	2995612	Hill Area, Road Side
		300	182	1884	342888			
		500	97	3140	303324			
411	101+142	100	325	628	204100	658953	2995636	Hill Area, Road Side
		300	179	1884	337236			
		500	90	3140	281344			
412	101+286	100	319	628	200332	659035	2995760	Hill Area, Road Side
		300	184	1884	346656			
		500	88	3140	277576			
413	101+394	100	307	628	192796	659153	2995696	Hill Area, Road Side
		300	180	1884	339120			
		500	83	3140	259364			
		100	294	628	184632	659252	2995648	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
414	101+509	300	169	1884	318396			
		500	78	3140	245548			
415	101+631	100	289	628	181492	659320	2995591	Hill Area, Road Side
		300	172	1884	324048			
		500	79	3140	249316			
416	101+774	100	315	628	197820	659241	2995709	Hill Area, Road Side
		300	185	1884	348540			
		500	81	3140	252770			
417	101+878	100	309	628	194052	659156	2995783	Hill Area, Road Side
		300	180	1884	339120			
		500	81	3140	253084			
418	102+017	100	393	628	246804	659257	2995738	Hill Area, Road Side
		300	184	1884	346656			
		500	90	3140	282600			
419	102+141	100	384	628	241152	659357	2995665	Hill Area, Road Side
		300	182	1884	342888			
		500	92	3140	289194			
420	102+262	100	376	628	236128	659467	2995646	Hill Area, Road Side
		300	176	1884	331584			
		500	93	3140	292648			
421	102+389	100	352	628	221056	659589	2995668	Hill Area, Road Side
		300	164	1884	308976			
		500	85	3140	265644			
422	102+517	100	338	628	212264	659698	2995637	Hill Area, Road Side
		300	157	1884	294846			
		500	84	3140	262190			
423	102+638	100	322	628	202216	659805	2995580	Hill Area, Road Side
		300	151	1884	285238			
		500	80	3140	249944			
424	102+763	100	315	628	197820	659869	2995474	Hill Area, Road Side
		300	147	1884	276760			
		500	70	3140	218858			
425	102+907	100	355	628	222940	659971	2995373	Hill Area, Road Side
		300	164	1884	308976			
		500	83	3140	259050			
426	103+009	100	294	628	184632	660070	2995360	Hill Area, Road Side
		300	134	1884	252456			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	65	3140	203786			
427	103+147	100	305	628	191540	660179	2995320	Hill Area, Road Side
		300	152	1884	286368			
		500	69	3140	217916			
428	103+267	100	325	628	204100	660265	2995257	Hill Area, Road Side
		300	163	1884	307092			
		500	70	3140	220742			
429	103+387	100	323	628	202844	660344	2995175	Hill Area, Road Side
		300	168	1884	316512			
		500	70	3140	218230			
430	103+513	100	314	628	197192	660435	2995104	Hill Area, Road Side
		300	161	1884	303136			
		500	67	3140	209752			
431	103+635	100	312	628	195936	660542	2995058	Hill Area, Road Side
		300	162	1884	305773			
		500	68	3140	214776			
432	103+773	100	317	628	199076	660636	2994987	Hill Area, Road Side
		300	163	1884	307846			
		500	69	3140	217288			
433	103+887	100	321	628	201588	660679	2994889	Hill Area, Road Side
		300	165	1884	311237			
		500	70	3140	219800			
434	104+012	100	322	628	202216	660740	2994927	Hill Area, Road Side
		300	174	1884	327816			
		500	86	3140	271296			
435	104+146	100	334	628	209752	660779	2995014	Hill Area, Road Side
		300	175	1884	329700			
		500	87	3140	274122			
436	104+264	100	356	628	223568	660820	2995074	Hill Area, Road Side
		300	182	1884	342888			
		500	87	3140	272866			
437	104+387	100	351	628	220428	660942	2995059	Hill Area, Road Side
		300	183	1884	344772			
		500	85	3140	266586			
438	104+519	100	346	628	217288	660922	2995124	Hill Area, Road Side
		300	178	1884	335352			
		500	83	3140	260306			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
439	104+643	100	343	628	215404	660843	2995202	Hill Area, Road Side
		300	179	1884	337236			
		500	77	3140	241466			
440	104+761	100	339	628	212892	660843	2995317	Hill Area, Road Side
		300	176	1884	331961			
		500	75	3140	233930			
441	104+887	100	348	628	218544	660897	2995427	Hill Area, Road Side
		300	190	1884	357018			
		500	86	3140	270040			
442	105+009	100	406	628	254968	660956	2995517	Hill Area, Road Side
		300	201	1884	378684			
		500	125	3140	392500			
443	105+134	100	446	628	280088	660987	2995631	Hill Area, Road Side
		300	236	1884	444624			
		500	116	3140	364240			
444	105+255	100	507	628	318396	660984	2995749	Hill Area, Road Side
		300	274	1884	516216			
		500	164	3140	514960			
445	105+385	100	569	628	357332	661034	2995850	Hill Area, Road Side
		300	305	1884	574620			
		500	179	3140	562374			
446	105+519	100	585	628	367380	661125	2995931	Hill Area, Road Side
		300	325	1884	612300			
		500	181	3140	566770			
447	105+633	100	596	628	374288	661233	2995946	Hill Area, Road Side
		300	345	1884	649980			
		500	182	3140	570224			
448	105+773	100	609	628	382452	661324	2996049	Hill Area, Road Side
		300	359	1884	676356			
		500	190	3140	597856			
449	105+902	100	615	628	386220	661424	2996120	Hill Area, Road Side
		300	362	1884	682008			
		500	189	3140	594088			
450	106+018	100	614	628	385592	661521	2996167	Hill Area, Road Side
		300	306	1884	576504			
		500	194	3140	609160			
		100	645	628	405060	661643	2996163	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
451	106+142	300	320	1884	602880			
		500	201	3140	631140			
452	106+264	100	659	628	413852	661733	2996213	Hill Area, Road Side
		300	305	1884	574620			
		500	194	3140	609160			
453	106+389	100	642	628	403176	661851	2996253	Hill Area, Road Side
		300	312	1884	587808			
		500	184	3140	577760			
454	106+518	100	464	628	291392	661967	2996311	Hill Area, Road Side
		300	298	1884	561620			
		500	104	3140	326560			
455	106+640	100	475	628	298300	662084	2996347	Hill Area, Road Side
		300	299	1884	563316			
		500	110	3140	343830			
456	106+766	100	507	628	318396	662193	2996411	Hill Area, Road Side
		300	300	1884	565577			
		500	115	3140	361100			
457	106+890	100	516	628	324048	662307	2996460	Hill Area, Road Side
		300	312	1884	587808			
		500	118	3140	370520			
458	107+022	100	525	628	329700	662420	2996472	Hill Area, Road Side
		300	320	1884	602880			
		500	120	3140	376800			
459	107+143	100	545	628	342260	662547	2996497	Hill Area, Road Side
		300	325	1884	612300			
		500	122	3140	383080			
460	107+271	100	559	628	351052	662648	2996554	Hill Area, Road Side
		300	329	1884	619836			
		500	125	3140	392500			
461	107+384	100	494	628	310232	662701	2996654	Hill Area, Road Side
		300	264	1884	497376			
		500	105	3140	329700			
462	107+532	100	429	628	269412	662797	2996713	Hill Area, Road Side
		300	285	1884	536940			
		500	101	3140	317140			
463	107+636	100	384	628	241152	662870	2996779	Hill Area, Road Side
		300	196	1884	369264			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	85	3140	266900			
464	107+759	100	376	628	236128	662960	2996854	Hill Area, Road Side
		300	184	1884	346656			
		500	81	3140	254968			
465	107+909	100	369	628	231732	663042	2996949	Hill Area, Road Side
		300	174	1884	327816			
		500	77	3140	240210			
466	108+004	100	365	628	229220	663127	2996996	Hill Area, Road Side
		300	173	1884	325932			
		500	75	3140	233930			
467	108+132	100	363	628	227964	663200	2997082	Hill Area, Road Side
		300	172	1884	324048			
		500	73	3140	228906			
468	108+265	100	359	628	225452	663285	2997168	Hill Area, Road Side
		300	170	1884	320280			
		500	69	3140	217916			
469	108+390	100	344	628	216032	663389	2997226	Hill Area, Road Side
		300	164	1884	309164			
		500	65	3140	205042			
470	108+517	100	389	628	244292	663479	2997242	Hill Area, Road Side
		300	274	1884	516216			
		500	104	3140	326560			
471	108+652	100	376	628	236128	663579	2997326	Hill Area, Road Side
		300	265	1884	499260			
		500	101	3140	317140			
472	108+769	100	370	628	232360	663670	2997348	Hill Area, Road Side
		300	261	1884	491724			
		500	105	3140	329700			
473	108+884	100	381	628	239268	663787	2997352	Hill Area, Road Side
		300	265	1884	499260			
		500	107	3140	335980			
474	109+009	100	387	628	243036	663889	2997378	Hill Area, Road Side
		300	274	1884	516216			
		500	110	3140	345400			
475	109+143	100	376	628	236128	663914	2997252	Hill Area, Road Side
		300	269	1884	506796			
		500	111	3140	348540			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
476	109+267	100	384	628	241152	664015	2997186	Hill Area, Road Side
		300	272	1884	512448			
		500	113	3140	354820			
477	109+376	100	405	628	254340	664000	2997205	Hill Area, Road Side
		300	298	1884	561620			
		500	115	3140	361100			
478	109+515	100	365	628	229220	663930	2997319	Hill Area, Road Side
		300	193	1884	363612			
		500	66	3140	205984			
479	109+642	100	375	628	235500	663918	2997438	Hill Area, Road Side
		300	190	1884	357960			
		500	67	3140	209438			
480	109+760	100	372	628	233616	663823	2997447	Hill Area, Road Side
		300	188	1884	354192			
		500	70	3140	218230			
481	109+885	100	379	628	238012	663707	2997478	Hill Area, Road Side
		300	174	1884	327816			
		500	71	3140	222626			
482	110+007	100	385	628	241780	663625	2997529	Hill Area, Road Side
		300	180	1884	339120			
		500	75	3140	236128			
483	110+144	100	387	628	243036	663613	2997624	Hill Area, Road Side
		300	183	1884	344772			
		500	77	3140	243036			
484	110+258	100	389	628	244292	663570	2997709	Hill Area, Road Side
		300	194	1884	365496			
		500	73	3140	227650			
485	110+384	100	391	628	245548	663491	2997761	Hill Area, Road Side
		300	185	1884	348540			
		500	69	3140	217916			
486	110+513	100	365	628	229220	663403	2997831	Hill Area, Road Side
		300	185	1884	348540			
		500	86	3140	270040			
487	110+635	100	370	628	232360	663294	2997870	Hill Area, Road Side
		300	182	1884	342888			
		500	74	3140	232360			
		100	375	628	235500	663224	2997924	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
488	110+765	300	183	1884	344772			
		500	74	3140	232046			
489	110+884	100	406	628	254968	663212	2998033	Hill Area, Road Side
		300	189	1884	356076			
		500	72	3140	226394			
490	111+012	100	420	628	263760	663135	2998116	Hill Area, Road Side
		300	186	1884	350424			
		500	71	3140	221370			
491	111+156	100	418	628	262504	663085	2998212	Hill Area, Road Side
		300	182	1884	342888			
		500	65	3140	203786			
492	111+260	100	419	628	263132	663014	2998283	Hill Area, Road Side
		300	179	1884	337236			
		500	62	3140	195936			
493	111+393	100	417	628	261876	662966	2998353	Hill Area, Road Side
		300	181	1884	341004			
		500	66	3140	205984			
494	111+516	100	419	628	263132	662870	2998280	Hill Area, Road Side
		300	284	1884	535056			
		500	104	3140	326560			
495	111+632	100	425	628	266900	662772	2998306	Hill Area, Road Side
		300	294	1884	553896			
		500	103	3140	323420			
496	111+763	100	416	628	261248	662666	2998243	Hill Area, Road Side
		300	290	1884	546360			
		500	101	3140	317140			
497	111+891	100	411	628	258108	662557	2998211	Hill Area, Road Side
		300	284	1884	535056			
		500	96	3140	301126			
498	112+000	100	408	628	256224	662497	2998170	Hill Area, Road Side
		300	282	1884	531288			
		500	95	3140	297044			
499	112+143	100	415	628	260620	662628	2998189	Hill Area, Road Side
		300	294	1884	553896			
		500	96	3140	301754			
500	112+264	100	429	628	269412	662541	2998159	Hill Area, Road Side
		300	301	1884	567084			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	102	3140	320280			
501	112+387	100	456	628	286368	662432	2998146	Hill Area, Road Side
		300	309	1884	582156			
		500	106	3140	332840			
502	112+549	100	409	628	256852	662444	2998282	Hill Area, Road Side
		300	294	1884	553896			
		500	105	3140	329700			
503	112+634	100	415	628	260620	662459	2998352	Hill Area, Road Side
		300	302	1884	568968			
		500	100	3140	313686			
504	112+763	100	429	628	269412	662508	2998461	Hill Area, Road Side
		300	315	1884	593460			
		500	104	3140	326560			
505	112+886	100	455	628	285740	662559	2998560	Hill Area, Road Side
		300	326	1884	614184			
		500	119	3140	373660			
506	113+011	100	312	628	195936	662621	2998669	Hill Area, Road Side
		300	174	1884	327816			
		500	65	3140	203786			
507	113+129	100	370	628	232360	662705	2998750	Hill Area, Road Side
		300	180	1884	339120			
		500	75	3140	233930			
508	113+275	100	340	628	213520	662807	2998853	Hill Area, Road Side
		300	175	1884	329700			
		500	70	3140	218544			
509	113+372	100	315	628	197820	662827	2998936	Hill Area, Road Side
		300	172	1884	324048			
		500	65	3140	205042			
510	113+514	100	325	628	204100	662694	2998953	Hill Area, Road Side
		300	170	1884	320280			
		500	69	3140	217916			
511	113+631	100	329	628	206612	662593	2999014	Hill Area, Road Side
		300	168	1884	316512			
		500	68	3140	213834			
512	113+763	100	305	628	191540	662491	2999068	Hill Area, Road Side
		300	165	1884	310860			
		500	65	3140	204414			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
513	113+890	100	334	628	209752	662371	2999111	Hill Area, Road Side
		300	187	1884	352308			
		500	80	3140	249944			
514	114+007	100	320	628	200960	662342	2999083	Hill Area, Road Side
		300	164	1884	308976			
		500	65	3140	204100			
515	114+133	100	326	628	204728	662461	2999047	Hill Area, Road Side
		300	163	1884	307092			
		500	67	3140	210066			
516	114+261	100	331	628	207868	662366	2999040	Hill Area, Road Side
		300	170	1884	320280			
		500	68	3140	213834			
517	114+389	100	307	628	192796	662256	2999014	Hill Area, Road Side
		300	154	1884	290136			
		500	69	3140	217602			
518	114+513	100	299	628	187772	662369	2999020	Hill Area, Road Side
		300	145	1884	273180			
		500	49	3140	154488			
519	114+639	100	301	628	189028	662488	2998987	Hill Area, Road Side
		300	156	1884	293904			
		500	56	3140	176154			
520	114+769	100	285	628	178980	662360	2998992	Hill Area, Road Side
		300	149	1884	280716			
		500	53	3140	164850			
521	114+887	100	288	628	180864	662247	2998951	Hill Area, Road Side
		300	144	1884	271296			
		500	60	3140	187144			
522	115+017	100	294	628	184632	662149	2998890	Hill Area, Road Side
		300	153	1884	288252			
		500	49	3140	154488			
523	115+156	100	309	628	194052	662043	2998810	Hill Area, Road Side
		300	174	1884	327816			
		500	59	3140	185888			
524	115+273	100	312	628	195936	661960	2998750	Hill Area, Road Side
		300	173	1884	325932			
		500	66	3140	207554			
		100	322	628	202216	661864	2998702	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
525	115+387	300	174	1884	327816			
		500	67	3140	211008			
526	115+510	100	342	628	214776	661743	2998692	Hill Area, Road Side
		300	178	1884	335352			
		500	69	3140	217288			
527	115+628	100	341	628	214148	661642	2998635	Hill Area, Road Side
		300	172	1884	324048			
		500	66	3140	205670			
528	115+763	100	352	628	221056	661559	2998544	Hill Area, Road Side
		300	183	1884	344772			
		500	67	3140	211636			
529	115+887	100	343	628	215404	661525	2998465	Hill Area, Road Side
		300	181	1884	341004			
		500	69	3140	217916			
530	116+014	100	310	628	194680	661426	2998514	Hill Area, Road Side
		300	166	1884	312744			
		500	72	3140	226394			
531	116+141	100	322	628	202216	661307	2998529	Hill Area, Road Side
		300	163	1884	307092			
		500	71	3140	221370			
532	116+256	100	349	628	219172	661210	2998479	Hill Area, Road Side
		300	174	1884	327816			
		500	70	3140	218230			
533	116+388	100	364	628	228592	661115	2998406	Hill Area, Road Side
		300	169	1884	318396			
		500	71	3140	221684			
534	116+501	100	379	628	238012	661053	2998457	Hill Area, Road Side
		300	184	1884	346656			
		500	76	3140	237384			
535	116+641	100	402	628	252456	660953	2998495	Hill Area, Road Side
		300	190	1884	357772			
		500	78	3140	245548			
536	116+782	100	406	628	254968	660924	2998384	Hill Area, Road Side
		300	196	1884	369452			
		500	73	3140	227650			
537	116+883	100	415	628	260620	660839	2998425	Hill Area, Road Side
		300	198	1884	373032			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	76	3140	237384			
538	117+019	100	416	628	261248	660827	2998305	Hill Area, Road Side
		300	203	1884	382452			
		500	101	3140	317140			
539	117+145	100	418	628	262504	660769	2998221	Hill Area, Road Side
		300	201	1884	378684			
		500	104	3140	326560			
540	117+256	100	426	628	267528	660694	2998178	Hill Area, Road Side
		300	209	1884	393756			
		500	109	3140	342260			
541	117+395	100	436	628	273808	660568	2998143	Hill Area, Road Side
		300	210	1884	395640			
		500	112	3140	351680			
542	117+518	100	427	628	268156	660470	2998228	Hill Area, Road Side
		300	209	1884	393756			
		500	115	3140	361100			
543	117+640	100	394	628	247432	660404	2998325	Hill Area, Road Side
		300	196	1884	369264			
		500	98	3140	306778			
544	117+769	100	379	628	238012	660316	2998308	Hill Area, Road Side
		300	184	1884	346656			
		500	97	3140	303324			
545	117+887	100	378	628	237384	660219	2998368	Hill Area, Road Side
		300	181	1884	341004			
		500	90	3140	282914			
546	118+007	100	374	628	234872	660186	2998320	Hill Area, Road Side
		300	173	1884	325932			
		500	85	3140	265330			
547	118+137	100	406	628	254968	660114	2998312	Hill Area, Road Side
		300	184	1884	346656			
		500	82	3140	257794			
548	118+261	100	410	628	257480	660046	2998288	Hill Area, Road Side
		300	190	1884	357960			
		500	91	3140	284170			
549	118+403	100	392	628	246176	659931	2998247	Hill Area, Road Side
		300	185	1884	348540			
		500	94	3140	295788			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
550	118+510	100	407	628	255596	659835	2998249	Hill Area, Road Side
		300	196	1884	369264			
		500	100	3140	312744			
551	118+641	100	416	628	261248	659756	2998240	Hill Area, Road Side
		300	206	1884	388104			
		500	100	3140	313686			
552	118+771	100	411	628	258108	659663	2998152	Hill Area, Road Side
		300	196	1884	369264			
		500	98	3140	306464			
553	118+888	100	420	628	263760	659592	2998069	Hill Area, Road Side
		300	201	1884	378684			
		500	106	3140	332840			
554	119+024	100	435	628	273180	659499	2998119	Hill Area, Road Side
		300	220	1884	414480			
		500	116	3140	362984			
555	119+149	100	415	628	260620	659422	2998152	Hill Area, Road Side
		300	207	1884	389988			
		500	105	3140	329700			
556	119+264	100	399	628	250572	659335	2998170	Hill Area, Road Side
		300	194	1884	365496			
		500	96	3140	302068			
557	119+389	100	401	628	251828	659233	2998217	Hill Area, Road Side
		300	206	1884	388104			
		500	108	3140	337864			
558	119+526	100	406	628	254968	659107	2998212	Hill Area, Road Side
		300	202	1884	380568			
		500	106	3140	333154			
559	119+642	100	411	628	258108	659000	2998179	Hill Area, Road Side
		300	207	1884	389988			
		500	101	3140	317140			
560	119+766	100	409	628	256852	658884	2998164	Hill Area, Road Side
		300	215	1884	405060			
		500	105	3140	329700			
561	119+884	100	415	628	260620	658816	2998081	Hill Area, Road Side
		300	209	1884	393756			
		500	100	3140	312744			
		100	345	628	216660	658705	2998040	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
562	120+013	300	225	1884	423900			
		500	101	3140	317140			
563	120+137	100	366	628	229848	658597	2998097	Hill Area, Road Side
		300	228	1884	429552			
		500	107	3140	335980			
564	120+270	100	375	628	235500	658494	2998160	Hill Area, Road Side
		300	232	1884	437088			
		500	112	3140	351680			
565	120+393	100	409	628	256852	658380	2998154	Hill Area, Road Side
		300	231	1884	435204			
		500	115	3140	361100			
566	120+517	100	415	628	260620	658323	2998213	Hill Area, Road Side
		300	227	1884	427668			
		500	113	3140	354820			
567	120+636	100	389	628	244292	658370	2998319	Hill Area, Road Side
		300	196	1884	369264			
		500	86	3140	270040			
568	120+765	100	396	628	248688	658385	2998441	Hill Area, Road Side
		300	199	1884	375104			
		500	77	3140	241466			
569	120+889	100	401	628	251828	658396	2998560	Hill Area, Road Side
		300	205	1884	386220			
		500	89	3140	279774			
570	121+015	100	385	628	241780	658430	2998680	Hill Area, Road Side
		300	186	1884	350424			
		500	94	3140	295160			
571	121+141	100	376	628	236128	658491	2998790	Hill Area, Road Side
		300	172	1884	324048			
		500	85	3140	266900			
572	121+265	100	372	628	233616	658473	2998912	Hill Area, Road Side
		300	169	1884	318396			
		500	82	3140	257794			
573	121+389	100	364	628	228592	658419	2999013	Hill Area, Road Side
		300	168	1884	316512			
		500	85	3140	265330			
574	121+522	100	361	628	226708	658327	2999096	Hill Area, Road Side
		300	166	1884	312744			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	82	3140	257794			
575	121+644	100	374	628	234872	658265	2999199	Hill Area, Road Side
		300	167	1884	314628			
		500	82	3140	257166			
576	121+762	100	393	628	246804	658194	2999271	Hill Area, Road Side
		300	175	1884	329700			
		500	79	3140	249316			
577	121+904	100	401	628	251828	658122	2999388	Hill Area, Road Side
		300	200	1884	376988			
		500	87	3140	271610			
578	122+013	100	416	628	261248	658099	2999492	Hill Area, Road Side
		300	212	1884	399408			
		500	106	3140	332840			
579	122+164	100	430	628	270040	658178	2999615	Hill Area, Road Side
		300	219	1884	412596			
		500	110	3140	345400			
580	122+268	100	394	628	247432	658176	2999701	Hill Area, Road Side
		300	189	1884	356076			
		500	94	3140	295788			
581	122+391	100	415	628	260620	658087	2999785	Hill Area, Road Side
		300	187	1884	352308			
		500	93	3140	290450			
582	122+525	100	432	628	271296	658006	2999893	Hill Area, Road Side
		300	196	1884	369264			
		500	95	3140	297044			
583	122+652	100	320	628	200960	657990	3000016	Hill Area, Road Side
		300	184	1884	346656			
		500	93	3140	292648			
584	122+765	100	359	628	225452	657956	3000100	Hill Area, Road Side
		300	169	1884	318396			
		500	85	3140	267528			
585	122+892	100	357	628	224196	657910	3000201	Hill Area, Road Side
		300	165	1884	310860			
		500	85	3140	266586			
586	123+020	100	369	628	231732	657801	3000265	Hill Area, Road Side
		300	194	1884	365496			
		500	87	3140	271610			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
587	123+149	100	374	628	234872	657765	3000374	Hill Area, Road Side
		300	195	1884	367380			
		500	75	3140	234244			
588	123+264	100	384	628	241152	657692	3000463	Hill Area, Road Side
		300	199	1884	374916			
		500	80	3140	249944			
589	123+398	100	381	628	239268	657639	3000585	Hill Area, Road Side
		300	194	1884	365496			
		500	77	3140	240524			
590	123+514	100	395	628	248060	657566	3000670	Hill Area, Road Side
		300	201	1884	378684			
		500	77	3140	242408			
591	123+640	100	390	628	244920	657462	3000730	Hill Area, Road Side
		300	196	1884	369641			
		500	79	3140	249316			
592	123+762	100	395	628	248060	657468	3000849	Hill Area, Road Side
		300	198	1884	373597			
		500	81	3140	252770			
593	123+895	100	390	628	244920	657412	3000960	Hill Area, Road Side
		300	193	1884	363800			
		500	77	3140	240524			
594	124+008	100	367	628	230476	657457	3001055	Hill Area, Road Side
		300	186	1884	350424			
		500	69	3140	217916			
595	124+143	100	378	628	237384	657458	3001183	Hill Area, Road Side
		300	184	1884	346656			
		500	70	3140	220428			
596	124+268	100	384	628	241152	657422	3001294	Hill Area, Road Side
		300	189	1884	356076			
		500	70	3140	218230			
597	124+386	100	392	628	246176	657440	3001406	Hill Area, Road Side
		300	192	1884	361728			
		500	94	3140	293590			
598	124+509	100	394	628	247432	657456	3001527	Hill Area, Road Side
		300	185	1884	348540			
		500	89	3140	280088			
		100	402	628	252456	657526	3001637	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
599	124+643	300	206	1884	388104			
		500	91	3140	284484			
600	124+752	100	392	628	246176	657562	3001734	Hill Area, Road Side
		300	196	1884	370018			
		500	96	3140	299870			
601	124+884	100	382	628	239896	657614	3001846	Hill Area, Road Side
		300	174	1884	328381			
		500	94	3140	295788			
602	125+011	100	344	628	216032	657706	3001916	Hill Area, Road Side
		300	169	1884	318396			
		500	69	3140	217916			
603	125+156	100	394	628	247432	657793	3002024	Hill Area, Road Side
		300	171	1884	322164			
		500	70	3140	220428			
604	125+265	100	310	628	194680	657872	3002099	Hill Area, Road Side
		300	165	1884	310860			
		500	62	3140	195622			
605	125+386	100	325	628	204100	657964	3002177	Hill Area, Road Side
		300	171	1884	322164			
		500	60	3140	189656			
606	125+509	100	364	628	228592	658036	3002268	Hill Area, Road Side
		300	179	1884	337236			
		500	62	3140	194994			
607	125+637	100	374	628	234872	658069	3002389	Hill Area, Road Side
		300	185	1884	348540			
		500	66	3140	205670			
608	125+767	100	386	628	242408	658119	3002497	Hill Area, Road Side
		300	188	1884	354192			
		500	63	3140	196878			
609	125+889	100	403	628	253084	658205	3002550	Hill Area, Road Side
		300	209	1884	393756			
		500	69	3140	215090			
610	126+014	100	405	628	254340	658241	3002609	Hill Area, Road Side
		300	216	1884	406944			
		500	104	3140	326560			
611	126+171	100	420	628	263760	658352	3002660	Hill Area, Road Side
		300	210	1884	395640			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	98	3140	308034			
612	126+272	100	395	628	248060	658444	3002711	Hill Area, Road Side
		300	198	1884	373032			
		500	97	3140	303010			
613	126+384	100	420	628	263760	658395	3002630	Hill Area, Road Side
		300	209	1884	393756			
		500	92	3140	289822			
614	126+520	100	406	628	254968	658505	3002673	Hill Area, Road Side
		300	205	1884	386220			
		500	86	3140	270668			
615	126+641	100	415	628	260620	658616	3002695	Hill Area, Road Side
		300	210	1884	395640			
		500	88	3140	276006			
616	126+764	100	377	628	236756	658673	3002801	Hill Area, Road Side
		300	185	1884	348540			
		500	79	3140	249316			
617	126+893	100	406	628	254968	658712	3002923	Hill Area, Road Side
		300	201	1884	378684			
		500	87	3140	271610			
618	127+016	100	320	628	200960	658758	3003038	Hill Area, Road Side
		300	186	1884	350424			
		500	78	3140	244920			
619	127+142	100	357	628	224196	658813	3003147	Hill Area, Road Side
		300	188	1884	354192			
		500	69	3140	217916			
620	127+265	100	366	628	229848	658871	3003256	Hill Area, Road Side
		300	184	1884	346656			
		500	65	3140	204728			
621	127+395	100	369	628	231732	658924	3003367	Hill Area, Road Side
		300	185	1884	348540			
		500	68	3140	213206			
622	127+507	100	378	628	237384	659017	3003419	Hill Area, Road Side
		300	187	1884	352308			
		500	70	3140	218230			
623	127+645	100	422	628	265016	659082	3003508	Hill Area, Road Side
		300	212	1884	399408			
		500	86	3140	270354			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
624	127+763	100	452	628	283856	659111	3003616	Hill Area, Road Side
		300	224	1884	422016			
		500	110	3140	343830			
625	127+899	100	466	628	292648	659139	3003746	Hill Area, Road Side
		300	250	1884	471000			
		500	125	3140	392500			
626	128+012	100	415	628	260620	659212	3003824	Hill Area, Road Side
		300	212	1884	399408			
		500	101	3140	317140			
627	128+149	100	418	628	262504	659257	3003945	Hill Area, Road Side
		300	209	1884	393756			
		500	100	3140	312744			
628	128+263	100	427	628	268156	659337	3004019	Hill Area, Road Side
		300	210	1884	395640			
		500	105	3140	329700			
629	128+385	100	420	628	263760	659361	3004127	Hill Area, Road Side
		300	205	1884	386220			
		500	98	3140	308976			
630	128+521	100	389	628	244292	659471	3004199	Hill Area, Road Side
		300	198	1884	373032			
		500	97	3140	303324			
631	128+638	100	402	628	252456	659528	3004297	Hill Area, Road Side
		300	209	1884	393756			
		500	86	3140	271296			
632	128+766	100	394	628	247432	659558	3004410	Hill Area, Road Side
		300	193	1884	363612			
		500	84	3140	263760			
633	128+898	100	386	628	242408	659623	3004524	Hill Area, Road Side
		300	192	1884	361728			
		500	83	3140	259050			
634	129+015	100	350	628	219800	659707	3004595	Hill Area, Road Side
		300	174	1884	327816			
		500	64	3140	200960			
635	129+137	100	365	628	229220	659792	3004670	Hill Area, Road Side
		300	186	1884	350424			
		500	69	3140	216660			
		100	353	628	221370	659850.5413	3004769	City Area ,

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
636	129+265	300	178	1884	334410			Road side
		500	67	3140	210380			
637	129+406	100	340	628	213520	659879	3004900	Hill Area, Road Side
		300	169	1884	318396			
		500	65	3140	204100			
638	129+528	100	315	628	197820	659946	3004995	Hill Area, Road Side
		300	146	1884	275064			
		500	55	3140	172700			
639	129+643	100	326	628	204728	660024	3005072	Hill Area, Road Side
		300	161	1884	303324			
		500	64	3140	200960			
640	129+767	100	384	628	241152	660103	3005167	Hill Area, Road Side
		300	196	1884	369264			
		500	87	3140	271610			
641	129+892	100	401	628	251828	660156	3005274	Hill Area, Road Side
		300	202	1884	380380			
		500	89	3140	279774			
642	130+006	100	386	628	242408	660212	3005286	Hill Area, Road Side
		300	186	1884	350424			
		500	73	3140	227650			
643	130+144	100	410	628	257480	660152	3005178	Hill Area, Road Side
		300	216	1884	406944			
		500	94	3140	293590			
644	130+266	100	360	628	226080	660117	3005058	Hill Area, Road Side
		300	197	1884	371148			
		500	87	3140	271610			
645	130+385	100	384	628	241152	660135	3005042	Hill Area, Road Side
		300	189	1884	356076			
		500	88	3140	276006			
646	130+524	100	420	628	263760	660185	3005168	Hill Area, Road Side
		300	206	1884	388104			
		500	98	3140	308976			
647	130+639	100	444	628	278832	660279	3005212	Hill Area, Road Side
		300	212	1884	399408			
		500	106	3140	332840			
648	130+766	100	450	628	282600	660338	3005320	Hill Area, Road Side
		300	209	1884	393756			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	104	3140	326560			
649	130+888	100	446	628	280088	660418	3005408	Hill Area, Road Side
		300	211	1884	397524			
		500	102	3140	320280			
650	131+020	100	398	628	249944	660518	3005492	Hill Area, Road Side
		300	189	1884	356076			
		500	86	3140	271296			
651	131+133	100	406	628	254968	660482	3005410	Hill Area, Road Side
		300	203	1884	382452			
		500	81	3140	254026			
652	131+262	100	412	628	258736	660485	3005376	Hill Area, Road Side
		300	214	1884	403176			
		500	86	3140	270354			
653	131+385	100	425	628	266900	660603	3005411	Hill Area, Road Side
		300	213	1884	401292			
		500	85	3140	268156			
654	131+495	100	394	628	247432	660638	3005415	Hill Area, Road Side
		300	204	1884	384336			
		500	87	3140	274436			
655	131+633	100	446	628	280088	660541	3005320	Hill Area, Road Side
		300	210	1884	395640			
		500	105	3140	329700			
656	131+768	100	443	628	278204	660591	3005271	Hill Area, Road Side
		300	209	1884	393756			
		500	102	3140	320280			
657	131+898	100	464	628	291392	660661	3005377	Hill Area, Road Side
		300	265	1884	499260			
		500	105	3140	329700			
658	132+017	100	396	628	248688	660702	3005477	Hill Area, Road Side
		300	186	1884	350424			
		500	85	3140	267842			
659	132+139	100	392	628	246176	660722	3005483	Hill Area, Road Side
		300	187	1884	352308			
		500	85	3140	265644			
660	132+268	100	344	628	216032	660710	3005367	Hill Area, Road Side
		300	195	1884	367380			
		500	86	3140	270668			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
661	132+390	100	369	628	231732	660778	3005335	Hill Area, Road Side
		300	186	1884	350424			
		500	95	3140	298928			
662	132+510	100	406	628	254968	660719	3005283	Hill Area, Road Side
		300	187	1884	352308			
		500	96	3140	301754			
663	132+642	100	410	628	257480	660715	3005153	Hill Area, Road Side
		300	201	1884	378684			
		500	101	3140	317140			
664	132+749	100	415	628	260620	660667	3005065	Hill Area, Road Side
		300	204	1884	384336			
		500	100	3140	314000			
665	132+878	100	426	628	267528	660742	3005139	Hill Area, Road Side
		300	210	1884	395640			
		500	109	3140	342260			
666	133+023	100	450	628	282600	660786	3005161	Hill Area, Road Side
		300	240	1884	452160			
		500	120	3140	376800			
667	133+142	100	430	628	270040	660896	3005302	Hill Area, Road Side
		300	225	1884	423900			
		500	115	3140	361100			
668	133+260	100	406	628	254968	660912	3005382	Hill Area, Road Side
		300	221	1884	416364			
		500	120	3140	376800			
669	133+389	100	412	628	258736	660883	3005265	Hill Area, Road Side
		300	219	1884	412596			
		500	115	3140	361100			
670	133+524	100	435	628	273180	660879	3005156	Hill Area, Road Side
		300	225	1884	423900			
		500	117	3140	367380			
671	133+637	100	440	628	276320	660908	3005263	Hill Area, Road Side
		300	229	1884	431436			
		500	118	3140	370520			
672	133+762	100	426	628	267528	661000	3005339	Hill Area, Road Side
		300	235	1884	442740			
		500	120	3140	376800			
		100	430	628	270040	660956	3005267	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
673	133+879	300	240	1884	452160			
		500	122	3140	383080			
674	134+017	100	398	628	249944	661004	3005182	Hill Area, Road Side
		300	186	1884	350612			
		500	105	3140	329700			
675	134+138	100	409	628	256852	661022	3005257	Hill Area, Road Side
		300	201	1884	378684			
		500	99	3140	309290			
676	134+256	100	412	628	258736	661030	3005217	Hill Area, Road Side
		300	210	1884	395640			
		500	97	3140	303010			
677	134+383	100	444	628	278832	661065	3005208	Hill Area, Road Side
		300	225	1884	423900			
		500	109	3140	342260			
678	134+508	100	435	628	273180	660994	3005117	Hill Area, Road Side
		300	219	1884	412596			
		500	118	3140	370520			
679	134+634	100	427	628	268156	660972	3005021	Hill Area, Road Side
		300	208	1884	391872			
		500	105	3140	329700			
680	134+762	100	406	628	254968	660995	3004968	Hill Area, Road Side
		300	215	1884	405060			
		500	100	3140	312430			
681	134+884	100	415	628	260620	661018	3005078	Hill Area, Road Side
		300	218	1884	410712			
		500	98	3140	308034			
682	135+013	100	398	628	249944	661104	3005142	Hill Area, Road Side
		300	194	1884	365496			
		500	101	3140	317140			
683	135+152	100	420	628	263760	661158	3005256	Hill Area, Road Side
		300	215	1884	405060			
		500	115	3140	361100			
684	135+266	100	419	628	263132	661259	3005312	Hill Area, Road Side
		300	206	1884	388104			
		500	102	3140	320280			
685	135+396	100	415	628	260620	661198	3005215	Hill Area, Road Side
		300	213	1884	401292			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	114	3140	357960			
686	135+504	100	394	628	247432	661168	3005128	Hill Area, Road Side
		300	186	1884	350424			
		500	94	3140	295788			
687	135+640	100	412	628	258736	661213	3005158	Hill Area, Road Side
		300	225	1884	423900			
		500	125	3140	392500			
688	135+766	100	396	628	248688	661299	3005245	Hill Area, Road Side
		300	210	1884	395640			
		500	105	3140	329700			
689	135+888	100	405	628	254340	661358	3005317	Hill Area, Road Side
		300	222	1884	418248			
		500	112	3140	351680			
690	136+012	100	420	628	263760	661318	3005386	Hill Area, Road Side
		300	215	1884	405060			
		500	109	3140	342260			
691	136+142	100	427	628	268156	661190	3005405	Hill Area, Road Side
		300	223	1884	420132			
		500	119	3140	373660			
692	136+262	100	436	628	273808	661125	3005494	Hill Area, Road Side
		300	228	1884	429552			
		500	125	3140	392500			
693	136+391	100	346	628	217288	661084	3005608	Hill Area, Road Side
		300	186	1884	350424			
		500	92	3140	287310			
694	136+514	100	398	628	249944	660998	3005685	Hill Area, Road Side
		300	196	1884	369264			
		500	87	3140	272238			
695	136+640	100	425	628	266900	660935	3005790	Hill Area, Road Side
		300	205	1884	386220			
		500	127	3140	398780			
696	136+765	100	435	628	273180	660858	3005875	Hill Area, Road Side
		300	210	1884	395640			
		500	124	3140	389360			
697	136+892	100	440	628	276320	660855	3005998	Hill Area, Road Side
		300	227	1884	427668			
		500	145	3140	455300			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
698	137+019	100	429	628	269412	660824	3006120	Hill Area, Road Side
		300	225	1884	423900			
		500	105	3140	329700			
699	137+135	100	422	628	265016	660883	3006215	Hill Area, Road Side
		300	240	1884	452160			
		500	117	3140	367380			
700	137+257	100	405	628	254340	660950	3006316	Hill Area, Road Side
		300	227	1884	427668			
		500	118	3140	370520			
701	137+390	100	415	628	260620	660963	3006287	Hill Area, Road Side
		300	215	1884	405060			
		500	110	3140	345400			
702	137+524	100	394	628	247432	660906	3006166	Hill Area, Road Side
		300	192	1884	361728			
		500	83	3140	259050			
703	137+640	100	406	628	254968	660909	3006056	Hill Area, Road Side
		300	201	1884	378684			
		500	105	3140	329700			
704	137+761	100	415	628	260620	660932	3005941	Hill Area, Road Side
		300	212	1884	399408			
		500	110	3140	345400			
705	137+884	100	422	628	265016	661035	3005875	Hill Area, Road Side
		300	227	1884	427668			
		500	117	3140	367380			
706	138+016	100	425	628	266900	661106	3005768	Hill Area, Road Side
		300	230	1884	433320			
		500	116	3140	364240			
707	138+131	100	428	628	268784	661116	3005834	Hill Area, Road Side
		300	228	1884	429552			
		500	114	3140	357960			
708	138+268	100	432	628	271296	661039	3005941	Hill Area, Road Side
		300	221	1884	416364			
		500	108	3140	339120			
709	138+382	100	450	628	282600	661028	3006053	Hill Area, Road Side
		300	255	1884	480420			
		500	143	3140	449020			
		100	399	628	250572	661067	3006164	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
710	138+514	300	185	1884	348540			
		500	89	3140	280088			
711	138+635	100	405	628	254340	661077	3006071	Hill Area, Road Side
		300	209	1884	393756			
		500	103	3140	323420			
712	138+766	100	395	628	248060	661114	3005955	Hill Area, Road Side
		300	196	1884	369264			
		500	97	3140	303010			
713	138+894	100	407	628	255596	661206	3005868	Hill Area, Road Side
		300	204	1884	384336			
		500	105	3140	329700			
714	139+012	100	417	628	261876	661270	3005820	Hill Area, Road Side
		300	212	1884	399408			
		500	116	3140	364240			
715	139+137	100	440	628	276320	661374	3005831	Hill Area, Road Side
		300	225	1884	423900			
		500	119	3140	373660			
716	139+252	100	394	628	247432	661476	3005830	Hill Area, Road Side
		300	192	1884	361728			
		500	96	3140	301754			
717	139+387	100	402	628	252456	661577	3005761	Hill Area, Road Side
		300	210	1884	395640			
		500	100	3140	312430			
718	139+513	100	394	628	247432	661596	3005680	Hill Area, Road Side
		300	187	1884	352308			
		500	87	3140	271610			
719	139+637	100	402	628	252456	661572	3005592	Hill Area, Road Side
		300	205	1884	386220			
		500	94	3140	295788			
720	139+763	100	435	628	273180	661624	3005497	Hill Area, Road Side
		300	215	1884	405060			
		500	96	3140	301754			
721	139+895	100	438	628	275064	661685	3005404	Hill Area, Road Side
		300	227	1884	427668			
		500	99	3140	309290			
722	140+014	100	425	628	266900	661680	3005293	Hill Area, Road Side
		300	223	1884	420132			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	99	3140	312116			
723	140+148	100	416	628	261248	661796	3005244	Hill Area, Road Side
		300	225	1884	423900			
		500	105	3140	329700			
724	140+264	100	419	628	263132	661887	3005186	Hill Area, Road Side
		300	230	1884	433320			
		500	117	3140	367380			
725	140+390	100	425	628	266900	661951	3005099	Hill Area, Road Side
		300	226	1884	425784			
		500	119	3140	373660			
726	140+520	100	427	628	268156	661866	3005002	Hill Area, Road Side
		300	220	1884	414480			
		500	110	3140	345400			
727	140+642	100	450	628	282600	661823	3004896	Hill Area, Road Side
		300	260	1884	489840			
		500	135	3140	423900			
728	140+771	100	429	628	269412	661747	3004802	Hill Area, Road Side
		300	254	1884	478536			
		500	132	3140	414480			
729	140+893	100	421	628	264388	661829	3004716	Hill Area, Road Side
		300	242	1884	455928			
		500	124	3140	389360			
730	141+015	100	429	628	269412	661873	3004604	Hill Area, Road Side
		300	235	1884	442740			
		500	128	3140	401920			
731	141+139	100	426	628	267528	661818	3004501	Hill Area, Road Side
		300	231	1884	435204			
		500	125	3140	392500			
732	141+266	100	430	628	270040	661757	3004394	Hill Area, Road Side
		300	227	1884	427668			
		500	121	3140	379940			
733	141+391	100	409	628	256852	661808	3004284	Hill Area, Road Side
		300	226	1884	425784			
		500	119	3140	373660			
734	141+509	100	394	628	247432	661813	3004203	Hill Area, Road Side
		300	186	1884	350424			
		500	77	3140	241466			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
735	141+636	100	406	628	254968	661840	3004248	Hill Area, Road Side
		300	215	1884	405060			
		500	90	3140	282286			
736	141+760	100	425	628	266900	661865	3004268	Hill Area, Road Side
		300	230	1884	433320			
		500	110	3140	345400			
737	141+886	100	394	628	247432	661869	3004345	Hill Area, Road Side
		300	195	1884	366626			
		500	100	3140	314314			
738	142+022	100	402	628	252456	661930	3004435	Hill Area, Road Side
		300	200	1884	376988			
		500	106	3140	332840			
739	142+140	100	421	628	264388	661990	3004532	Hill Area, Road Side
		300	215	1884	405060			
		500	110	3140	345400			
740	142+266	100	415	628	260620	661965	3004655	Hill Area, Road Side
		300	212	1884	399408			
		500	116	3140	364240			
741	142+402	100	395	628	248060	661955	3004767	Hill Area, Road Side
		300	194	1884	365496			
		500	102	3140	320280			
742	142+512	100	386	628	242408	662039	3004833	Hill Area, Road Side
		300	174	1884	327816			
		500	86	3140	270354			
743	142+635	100	401	628	251828	662074	3004948	Hill Area, Road Side
		300	216	1884	406944			
		500	116	3140	362670			
744	142+760	100	410	628	257480	662099	3005065	Hill Area, Road Side
		300	223	1884	420132			
		500	117	3140	367380			
745	142+895	100	395	628	248060	662127	3005182	Hill Area, Road Side
		300	221	1884	416364			
		500	119	3140	373660			
746	143+010	100	395	628	248060	662108	3005248	Hill Area, Road Side
		300	207	1884	389988			
		500	99	3140	310232			
		100	412	628	258736	662099	3005314	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
747	143+139	300	225	1884	423900			
		500	110	3140	345400			
748	143+263	100	386	628	242408	662162	3005215	Hill Area, Road Side
		300	187	1884	352308			
		500	104	3140	326560			
749	143+393	100	392	628	246176	662189	3005251	Hill Area, Road Side
		300	186	1884	350424			
		500	106	3140	332840			
750	143+520	100	396	628	248688	662148	3005370	Hill Area, Road Side
		300	189	1884	356076			
		500	111	3140	348540			
751	143+643	100	392	628	246176	662147	3005486	Hill Area, Road Side
		300	196	1884	369264			
		500	109	3140	342260			
752	143+762	100	413	628	259364	662097	3005597	Hill Area, Road Side
		300	203	1884	382452			
		500	112	3140	351680			
753	143+890	100	426	628	267528	662101	3005722	Hill Area, Road Side
		300	213	1884	401292			
		500	116	3140	364240			
754	144+008	100	384	628	241152	662029	3005815	Hill Area, Road Side
		300	196	1884	369264			
		500	101	3140	317140			
755	144+138	100	409	628	256852	662077	3005913	Hill Area, Road Side
		300	205	1884	386220			
		500	116	3140	364240			
756	144+261	100	460	628	288880	662049	3006029	Hill Area, Road Side
		300	197	1884	371148			
		500	90	3140	282286			
757	144+443	100	452	628	283856	662066	3006157	Hill Area, Road Side
		300	394	1884	742296			
		500	179	3140	562060			
758	144+517	100	386	628	242408	662131	3006185	Hill Area, Road Side
		300	199	1884	374916			
		500	104	3140	326560			
759	144+642	100	407	628	255596	662216	3006270	Hill Area, Road Side
		300	184	1884	346656			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	88	3140	275064			
760	144+768	100	410	628	257480	662152	3006356	Hill Area, Road Side
		300	244	1884	459696			
		500	124	3140	389360			
761	144+893	100	422	628	265016	662149	3006461	Hill Area, Road Side
		300	246	1884	463464			
		500	127	3140	398780			
762	145+007	100	394	628	247432	662167	3006550	Hill Area, Road Side
		300	194	1884	365496			
		500	117	3140	367380			
763	145+125	100	386	628	242408	662093	3006631	Hill Area, Road Side
		300	185	1884	348540			
		500	119	3140	373974			
764	145+263	100	409	628	256852	662028	3006744	Hill Area, Road Side
		300	187	1884	352308			
		500	120	3140	376800			
765	145+389	100	420	628	263760	661946	3006838	Hill Area, Road Side
		300	254	1884	478536			
		500	135	3140	423900			
766	145+507	100	406	628	254968	661885	3006938	Hill Area, Road Side
		300	246	1884	463464			
		500	140	3140	439600			
767	145+638	100	415	628	260620	661794	3007025	Hill Area, Road Side
		300	256	1884	482304			
		500	144	3140	452160			
768	145+760	100	430	628	270040	661685	3007052	Hill Area, Road Side
		300	259	1884	487956			
		500	136	3140	427040			
769	145+895	100	425	628	266900	661630	3007168	Hill Area, Road Side
		300	256	1884	482304			
		500	132	3140	414480			
770	146+015	100	410	628	257480	661574	3007272	Hill Area, Road Side
		300	264	1884	497376			
		500	152	3140	477280			
771	146+136	100	445	628	279460	661518	3007367	Hill Area, Road Side
		300	310	1884	584040			
		500	172	3140	540080			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
772	146+271	100	436	628	273808	661617	3007280	Hill Area, Road Side
		300	294	1884	553896			
		500	163	3140	511820			
773	146+396	100	420	628	263760	661685	3007177	Hill Area, Road Side
		300	292	1884	550128			
		500	166	3140	521240			
774	146+514	100	390	628	244920	661777	3007124	Hill Area, Road Side
		300	287	1884	540708			
		500	156	3140	489840			
775	146+640	100	392	628	246176	661894	3007081	Hill Area, Road Side
		300	286	1884	538824			
		500	152	3140	477280			
776	146+762	100	402	628	252456	662010	3007056	Hill Area, Road Side
		300	309	1884	582156			
		500	186	3140	584040			
777	146+888	100	415	628	260620	662061	3006975	Hill Area, Road Side
		300	286	1884	538824			
		500	157	3140	492980			
778	147+022	100	426	628	267528	662153	3006928	Hill Area, Road Side
		300	284	1884	535056			
		500	172	3140	540080			
779	147+145	100	407	628	255596	662231	3006863	Hill Area, Road Side
		300	276	1884	519984			
		500	166	3140	521240			
780	147+263	100	416	628	261248	662316	3006790	Hill Area, Road Side
		300	268	1884	504912			
		500	162	3140	508680			
781	147+389	100	425	628	266900	662440	3006781	Hill Area, Road Side
		300	262	1884	493608			
		500	165	3140	518100			
782	147+514	100	421	628	264388	662506	3006705	Hill Area, Road Side
		300	269	1884	506796			
		500	166	3140	521240			
783	147+639	100	422	628	265016	662573	3006601	Hill Area, Road Side
		300	268	1884	504912			
		500	164	3140	514960			
		100	435	628	273180	662587	3006490	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
784	147+765	300	284	1884	535056			
		500	156	3140	489840			
785	147+897	100	394	628	247432	662594	3006610	Hill Area, Road Side
		300	252	1884	474768			
		500	105	3140	329700			
786	148+013	100	405	628	254340	662553	3006719	Hill Area, Road Side
		300	286	1884	538824			
		500	117	3140	367380			
787	148+137	100	425	628	266900	662514	3006834	Hill Area, Road Side
		300	284	1884	535056			
		500	119	3140	373660			
788	148+260	100	393	628	246804	662399	3006877	Hill Area, Road Side
		300	280	1884	527520			
		500	117	3140	367380			
789	148+397	100	386	628	242408	662351	3007007	Hill Area, Road Side
		300	264	1884	497376			
		500	98	3140	308976			
790	148+515	100	394	628	247432	662308	3007114	Hill Area, Road Side
		300	251	1884	472884			
		500	94	3140	295788			
791	148+644	100	401	628	251828	662235	3007197	Hill Area, Road Side
		300	248	1884	467232			
		500	86	3140	271296			
792	148+761	100	425	628	266900	662130	3007245	Hill Area, Road Side
		300	245	1884	461580			
		500	84	3140	264388			
793	148+892	100	387	628	243036	662033	3007316	Hill Area, Road Side
		300	212	1884	399408			
		500	86	3140	270668			
794	149+013	100	405	628	254340	661915	3007316	Hill Area, Road Side
		300	326	1884	614184			
		500	194	3140	609160			
795	149+150	100	420	628	263760	661880	3007426	Hill Area, Road Side
		300	305	1884	574620			
		500	182	3140	571480			
796	149+274	100	394	628	247432	661903	3007541	Hill Area, Road Side
		300	185	1884	348540			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	104	3140	326560			
797	149+390	100	407	628	255596	661875	3007654	Hill Area, Road Side
		300	208	1884	391872			
		500	98	3140	308976			
798	149+520	100	418	628	262504	661822	3007771	Hill Area, Road Side
		300	212	1884	399408			
		500	100	3140	314314			
799	149+635	100	422	628	265016	661740	3007853	Hill Area, Road Side
		300	210	1884	395640			
		500	105	3140	329700			
800	149+758	100	426	628	267528	661671	3007951	Hill Area, Road Side
		300	211	1884	397524			
		500	101	3140	317140			
801	149+882	100	436	628	273808	661556	3007997	Hill Area, Road Side
		300	244	1884	459696			
		500	117	3140	367380			
802	150+009	100	396	628	248688	661433	3008023	Hill Area, Road Side
		300	216	1884	406944			
		500	104	3140	326560			
803	150+139	100	412	628	258736	661314	3008076	Hill Area, Road Side
		300	244	1884	459696			
		500	109	3140	342260			
804	150+263	100	440	628	276320	661212	3008140	Hill Area, Road Side
		300	247	1884	465348			
		500	115	3140	361100			
805	150+393	100	423	628	265644	661139	3008241	Hill Area, Road Side
		300	252	1884	474768			
		500	130	3140	408200			
806	150+507	100	426	628	267528	661044	3008305	Hill Area, Road Side
		300	306	1884	576504			
		500	194	3140	609160			
807	150+637	100	430	628	270040	660928	3008346	Hill Area, Road Side
		300	312	1884	587808			
		500	186	3140	584040			
808	150+754	100	425	628	266900	661001	3008370	Hill Area, Road Side
		300	301	1884	567084			
		500	186	3140	584040			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
809	150+887	100	398	628	249944	661122	3008422	Hill Area, Road Side
		300	296	1884	557664			
		500	154	3140	483560			
810	151+008	100	406	628	254968	661156	3008486	Hill Area, Road Side
		300	312	1884	587808			
		500	152	3140	477280			
811	151+128	100	386	628	242408	661054	3008424	Hill Area, Road Side
		300	310	1884	584040			
		500	164	3140	514960			
812	151+267	100	407	628	255596	660927	3008483	Hill Area, Road Side
		300	306	1884	576504			
		500	186	3140	584040			
813	151+376	100	415	628	260620	660952	3008510	Hill Area, Road Side
		300	305	1884	574620			
		500	187	3140	587180			
814	151+525	100	415	628	260620	661094	3008512	Hill Area, Road Side
		300	307	1884	578388			
		500	190	3140	596600			
815	151+640	100	429	628	269412	661184	3008578	Hill Area, Road Side
		300	319	1884	600996			
		500	185	3140	580900			
816	151+765	100	445	628	279460	661298	3008600	Hill Area, Road Side
		300	321	1884	604764			
		500	180	3140	565200			
817	151+888	100	447	628	280716	661336	3008717	Hill Area, Road Side
		300	318	1884	599112			
		500	176	3140	552640			
818	152+015	100	426	628	267528	661364	3008794	Hill Area, Road Side
		300	305	1884	574620			
		500	169	3140	530660			
819	152+142	100	340	628	213520	661288	3008696	Hill Area, Road Side
		300	166	1884	312744			
		500	84	3140	264074			
820	152+268	100	406	628	254968	661197	3008614	Hill Area, Road Side
		300	198	1884	373032			
		500	89	3140	280088			
		100	430	628	270040	661077	3008639	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
821	152+394	300	225	1884	423900			
		500	90	3140	282914			
822	152+539	100	360	628	226080	660967	3008646	Hill Area, Road Side
		300	186	1884	350424			
		500	77	3140	241466			
823	152+640	100	376	628	236128	661061	3008669	Hill Area, Road Side
		300	184	1884	346656			
		500	78	3140	243664			
824	152+762	100	420	628	263760	661179	3008698	Hill Area, Road Side
		300	254	1884	478536			
		500	106	3140	332840			
825	152+894	100	435	628	273180	661253	3008793	Hill Area, Road Side
		300	306	1884	576504			
		500	113	3140	354820			
826	153+011	100	425	628	266900	661211	3008899	Hill Area, Road Side
		300	310	1884	584040			
		500	114	3140	357960			
827	153+142	100	445	628	279460	661137	3009001	Hill Area, Road Side
		300	286	1884	538824			
		500	170	3140	533800			
828	153+264	100	436	628	273808	661110	3009027	Hill Area, Road Side
		300	289	1884	544476			
		500	177	3140	555780			
829	153+397	100	420	628	263760	661140	3008903	Hill Area, Road Side
		300	230	1884	433320			
		500	60	3140	188400			
830	153+507	100	320	628	200960	661130	3008820	Hill Area, Road Side
		300	146	1884	275064			
		500	64	3140	201588			
831	153+635	100	325	628	204100	661004	3008820	Hill Area, Road Side
		300	147	1884	276948			
		500	62	3140	194994			
832	153+760	100	333	628	208810			Road Side
		300	147	1884	276006			
		500	64	3140	200960			
833	153+888	100	340	628	213520	660773	3008762	Hill Area, Road Side
		300	146	1884	275064			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	66	3140	206926			
834	154+014	100	349	628	219172	660680	3008751	Hill Area, Road Side
		300	156	1884	293904			
		500	63	3140	197506			
835	154+139	100	420	628	263760	660758	3008810	Hill Area, Road Side
		300	151	1884	284484			
		500	65	3140	204728			
836	154+273	100	436	628	273808	660873	3008874	Hill Area, Road Side
		300	158	1884	297672			
		500	68	3140	212892			
837	154+387	100	365	628	229220	660972	3008909	Hill Area, Road Side
		300	167	1884	314628			
		500	69	3140	217916			
838	154+521	100	396	628	248688	660972	3009027	Hill Area, Road Side
		300	205	1884	386220			
		500	114	3140	357960			
839	154+650	100	406	628	254968	660935	3008977	Hill Area, Road Side
		300	233	1884	438972			
		500	115	3140	361100			
840	154+769	100	312	628	195936	660846	3008962	Hill Area, Road Side
		300	166	1884	312744			
		500	59	3140	185574			
841	154+893	100	315	628	197820	660744	3008892	Hill Area, Road Side
		300	168	1884	316512			
		500	69	3140	217916			
842	155+016	100	342	628	214776	660624	3008906	Hill Area, Road Side
		300	166	1884	312744			
		500	71	3140	221684			
843	155+138	100	354	628	222312	660662	3008928	Hill Area, Road Side
		300	178	1884	335352			
		500	82	3140	255910			
844	155+264	100	365	628	229220	660773	3008960	Hill Area, Road Side
		300	169	1884	318396			
		500	79	3140	248060			
845	155+393	100	260	628	163280	660813	3009020	Hill Area, Road Side
		300	120	1884	226080			
		500	57	3140	177410			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
846	155+505	100	370	628	232360	660720	3008965	Hill Area, Road Side
		300	260	1884	489840			
		500	105	3140	329700			
847	155+647	100	340	628	213520	660586	3008976	Hill Area, Road Side
		300	216	1884	406944			
		500	75	3140	234244			
848	155+767	100	345	628	216660	660477	3008994	Hill Area, Road Side
		300	210	1884	395640			
		500	86	3140	270354			
849	155+896	100	406	628	254968	660358	3009002	Hill Area, Road Side
		300	320	1884	602880			
		500	186	3140	584040			
850	156+012	100	415	628	260620	660236	3009023	Hill Area, Road Side
		300	305	1884	574620			
		500	174	3140	546360			
851	156+148	100	396	628	248688	660108	3009005	Hill Area, Road Side
		300	165	1884	310860			
		500	77	3140	240524			
852	156+272	100	390	628	244920	659990	3008955	Hill Area, Road Side
		300	166	1884	312744			
		500	79	3140	247746			
853	156+455	100	410	628	257480	659827	3008900	Hill Area, Road Side
		300	216	1884	406944			
		500	90	3140	281344			
854	156+530	100	425	628	266900	659754	3008884	Hill Area, Road Side
		300	289	1884	544476			
		500	101	3140	317140			
855	156+638	100	406	628	254968	659650	3008882	Hill Area, Road Side
		300	305	1884	574620			
		500	125	3140	392500			
856	156+759	100	417	628	261876	659550	3008848	Hill Area, Road Side
		300	298	1884	561432			
		500	112	3140	351680			
857	156+894	100	406	628	254968	659461	3008895	Hill Area, Road Side
		300	306	1884	576504			
		500	99	3140	310232			
		100	415	628	260620	659351	3008933	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
858	157+013	300	310	1884	584040			
		500	107	3140	335980			
859	157+159	100	390	628	244920	659282	3009026	River Crossing
		300	210	1884	395640			
		500	95	3140	296730			
860	157+266	100	398	628	249944			Bridge Side
		300	254	1884	478536			
		500	95	3140	297829			
861	157+386	100	406	628	254968	659388	3009178	River Crossing
		300	298	1884	561432			
		500	95	3140	298928			
862	157+514	100	410	628	257480	659499	3009144	Hill Area, Road Side
		300	298	1884	561432			
		500	94	3140	295788			
863	157+644	100	430	628	270040	659590	3009154	Hill Area, Road Side
		300	312	1884	587808			
		500	100	3140	314314			
864	157+778	100	359	628	225452	659593	3009283	Hill Area, Road Side
		300	194	1884	365496			
		500	86	3140	270668			
865	157+881	100	378	628	237384	659530	3009280	Hill Area, Road Side
		300	201	1884	378684			
		500	79	3140	249316			
866	158+005	100	375	628	235500	659441	3009196	Hill Area, Road Side
		300	194	1884	365496			
		500	101	3140	317140			
867	158+143	100	394	628	247432	659323	3009255	Hill Area, Road Side
		300	201	1884	378684			
		500	99	3140	311488			
868	158+263	100	379	628	238012	659246	3009340	Hill Area, Road Side
		300	194	1884	365496			
		500	86	3140	270668			
869	158+387	100	385	628	241780	659336	3009372	Hill Area, Road Side
		300	206	1884	388104			
		500	89	3140	280716			
870	158+528	100	405	628	254340	659240	3009474	Hill Area, Road Side
		300	210	1884	395640			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	84	3140	264388			
871	158+636	100	425	628	266900	659150	3009517	Hill Area, Road Side
		300	235	1884	442740			
		500	89	3140	280402			
872	158+766	100	445	628	279460	659095	3009534	Hill Area, Road Side
		300	206	1884	388104			
		500	102	3140	320280			
873	158+886	100	396	628	248688	659209	3009569	Hill Area, Road Side
		300	212	1884	399408			
		500	100	3140	314314			
874	159+021	100	370	628	232360	659319	3009510	Hill Area, Road Side
		300	186	1884	350424			
		500	100	3140	314000			
875	159+146	100	410	628	257480	659375	3009603	Hill Area, Road Side
		300	205	1884	386220			
		500	106	3140	332840			
876	159+265	100	425	628	266900	659357	3009722	Hill Area, Road Side
		300	220	1884	414480			
		500	117	3140	367380			
877	159+389	100	430	628	270040	659315	3009832	Hill Area, Road Side
		300	215	1884	405060			
		500	105	3140	329700			
878	159+513	100	386	628	242408	659335	3009953	Hill Area, Road Side
		300	211	1884	397524			
		500	103	3140	323420			
879	159+638	100	375	628	235500	659383	3010064	Hill Area, Road Side
		300	194	1884	365496			
		500	98	3140	308976			
880	159+774	100	380	628	238640	659419	3010171	Hill Area, Road Side
		300	201	1884	378684			
		500	96	3140	299870			
881	159+897	100	376	628	236128	659456	3010289	Hill Area, Road Side
		300	194	1884	365496			
		500	91	3140	284484			
882	160+019	100	405	628	254340	659452	3010405	Hill Area, Road Side
		300	220	1884	414480			
		500	110	3140	345400			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
883	160+136	100	415	628	260620	659440	3010422	Hill Area, Road Side
		300	217	1884	408828			
		500	117	3140	368322			
884	160+275	100	427	628	268156	659414	3010293	Hill Area, Road Side
		300	216	1884	406944			
		500	120	3140	376800			
885	160+398	100	410	628	257480	659344	3010209	Hill Area, Road Side
		300	225	1884	423900			
		500	127	3140	398780			
886	160+521	100	395	628	248060	659329	3010101	Hill Area, Road Side
		300	221	1884	416364			
		500	107	3140	335980			
887	160+637	100	386	628	242408	659273	3009998	Hill Area, Road Side
		300	220	1884	414480			
		500	110	3140	345400			
888	160+781	100	375	628	235500	659221	3009868	Hill Area, Road Side
		300	212	1884	399408			
		500	126	3140	395640			
889	160+896	100	360	628	226080	659193	3009757	Hill Area, Road Side
		300	210	1884	395640			
		500	121	3140	379940			
890	161+018	100	387	628	243036	659171	3009720	Hill Area, Road Side
		300	210	1884	395640			
		500	100	3140	313372			
891	161+146	100	396	628	248688	659183	3009847	Hill Area, Road Side
		300	209	1884	393756			
		500	104	3140	326560			
892	161+271	100	401	628	251828	659196	3009968	Hill Area, Road Side
		300	212	1884	399408			
		500	100	3140	314628			
893	161+390	100	394	628	247432	659230	3010081	Hill Area, Road Side
		300	205	1884	386220			
		500	110	3140	345400			
894	161+424	100	386	628	242408	659230	3010117	Hill Area, Road Side
		300	210	1884	395640			
		500	110	3140	345400			
		100	410	628	257480	659240	3010281	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
895	161+650	300	199	1884	374916			
		500	135	3140	423900			
896	161+772	100	430	628	270040	659274	3010384	Hill Area, Road Side
		300	235	1884	442740			
		500	116	3140	364240			
897	161+890	100	396	628	248688	659296	3010493	Hill Area, Road Side
		300	205	1884	386220			
		500	103	3140	323420			
898	162+010	100	350	628	219800	659335	3010606	Hill Area, Road Side
		300	196	1884	369264			
		500	101	3140	317140			
899	162+136	100	393	628	246804	659352	3010726	Hill Area, Road Side
		300	204	1884	384336			
		500	107	3140	335980			
900	162+265	100	410	628	257480	659411	3010838	Hill Area, Road Side
		300	209	1884	393756			
		500	116	3140	364240			
901	162+395	100	407	628	255596	659389	3010967	Hill Area, Road Side
		300	194	1884	365496			
		500	105	3140	329700			
902	162+515	100	394	628	247432	659343	3011073	Hill Area, Road Side
		300	201	1884	378684			
		500	101	3140	315570			
903	162+648	100	402	628	252456	659282	3011183	Hill Area, Road Side
		300	216	1884	406944			
		500	98	3140	308976			
904	162+764	100	420	628	263760	659296	3011077	Hill Area, Road Side
		300	231	1884	435204			
		500	107	3140	335980			
905	162+890	100	410	628	257480	659333	3010959	Hill Area, Road Side
		300	226	1884	425784			
		500	118	3140	370520			
906	163+004	100	417	628	261876	659321	3010866	Hill Area, Road Side
		300	214	1884	403176			
		500	104	3140	326560			
907	163+137	100	394	628	247432	659264	3010966	Hill Area, Road Side
		300	196	1884	369264			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	91	3140	284170			
908	163+271	100	387	628	243036	659235	3010837	Hill Area, Road Side
		300	205	1884	386220			
		500	99	3140	309604			
909	163+384	100	406	628	254968	659214	3010800	Hill Area, Road Side
		300	232	1884	437088			
		500	110	3140	344144			
910	163+519	100	410	628	257480	659227	3010931	Hill Area, Road Side
		300	225	1884	423900			
		500	105	3140	330328			
911	163+642	100	392	628	246176	659183	3010879	Hill Area, Road Side
		300	203	1884	382452			
		500	101	3140	317140			
912	163+770	100	390	628	244920	659152	3010759	Hill Area, Road Side
		300	210	1884	395640			
		500	98	3140	308976			
913	163+889	100	396	628	248688	659119	3010653	Hill Area, Road Side
		300	194	1884	365496			
		500	90	3140	281030			
914	164+016	100	401	628	251828	659080	3010534	Hill Area, Road Side
		300	213	1884	401292			
		500	104	3140	326560			
915	164+141	100	393	628	246804	659055	3010412	Hill Area, Road Side
		300	204	1884	384336			
		500	99	3140	309290			
916	164+271	100	405	628	254340	658965	3010330	Hill Area, Road Side
		300	207	1884	389988			
		500	99	3140	309290			
917	164+392	100	326	628	204728	658952	3010218	Hill Area, Road Side
		300	186	1884	350424			
		500	85	3140	266900			
918	164+516	100	296	628	185888	658946	3010091	Hill Area, Road Side
		300	164	1884	308976			
		500	70	3140	218230			
919	164+634	100	285	628	178980	658858	3010020	Hill Area, Road Side
		300	170	1884	320280			
		500	66	3140	205670			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
920	164+767	100	317	628	199076	658906	3010121	Hill Area, Road Side
		300	176	1884	331584			
		500	69	3140	216346			
921	164+890	100	335	628	210380	658908	3010244	Hill Area, Road Side
		300	173	1884	325932			
		500	71	3140	221370			
922	165+014	100	360	628	226080	658865	3010360	Hill Area, Road Side
		300	196	1884	369264			
		500	104	3140	326560			
923	165+137	100	375	628	235500	658909	3010465	Hill Area, Road Side
		300	192	1884	361728			
		500	102	3140	320280			
924	165+265	100	377	628	236756	658925	3010587	Hill Area, Road Side
		300	194	1884	365496			
		500	100	3140	315256			
925	165+402	100	382	628	239896	658959	3010720	Hill Area, Road Side
		300	186	1884	350424			
		500	105	3140	330014			
926	165+520	100	405	628	254340	658978	3010835	Hill Area, Road Side
		300	201	1884	378684			
		500	115	3140	361100			
927	165+639	100	412	628	258736	658968	3010954	Hill Area, Road Side
		300	210	1884	395640			
		500	136	3140	427040			
928	165+772	100	440	628	276320	658917	3010836	Hill Area, Road Side
		300	250	1884	471000			
		500	144	3140	452160			
929	165+882	100	366	628	229848	658885	3010744	Hill Area, Road Side
		300	194	1884	365496			
		500	104	3140	326560			
930	166+007	100	396	628	248688	658843	3010627	Hill Area, Road Side
		300	194	1884	365496			
		500	90	3140	281030			
931	166+126	100	402	628	252456	658809	3010513	Hill Area, Road Side
		300	212	1884	399408			
		500	106	3140	332840			
		100	460	628	288880	658761	3010382	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
932	166+270	300	235	1884	442740			
		500	127	3140	398780			
933	166+389	100	420	628	263760	658732	3010269	Hill Area, Road Side
		300	215	1884	405060			
		500	130	3140	408200			
934	166+513	100	392	628	246176	658671	3010167	Hill Area, Road Side
		300	206	1884	388104			
		500	128	3140	401920			
935	166+633	100	386	628	242408	658590	3010148	Hill Area, Road Side
		300	218	1884	410712			
		500	132	3140	414480			
936	166+764	100	392	628	246176	658565	3010028	Hill Area, Road Side
		300	207	1884	389988			
		500	128	3140	401920			
937	166+884	100	396	628	248688	658550	3010019	Hill Area, Road Side
		300	215	1884	405060			
		500	131	3140	411340			
938	167+008	100	375	628	235500	658554	3010126	Hill Area, Road Side
		300	196	1884	369264			
		500	101	3140	317140			
939	167+139	100	401	628	251828	658580	3010229	Hill Area, Road Side
		300	206	1884	388104			
		500	127	3140	398780			
940	167+272	100	415	628	260620	658668	3010329	Hill Area, Road Side
		300	212	1884	399408			
		500	128	3140	401920			
941	167+388	100	412	628	258736	658703	3010429	Hill Area, Road Side
		300	220	1884	414480			
		500	126	3140	395640			
942	167+514	100	435	628	273180	658704	3010551	Hill Area, Road Side
		300	227	1884	427668			
		500	130	3140	408200			
943	167+644	100	394	628	247432	658718	3010681	Hill Area, Road Side
		300	215	1884	405060			
		500	127	3140	398780			
944	167+781	100	362	628	227336	658734	3010815	Hill Area, Road Side
		300	207	1884	389988			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	121	3140	379940			
945	167+891	100	379	628	238012	658713	3010920	Hill Area, Road Side
		300	217	1884	408828			
		500	125	3140	392500			
946	168+015	100	329	628	206612	658654	3011025	Hill Area, Road Side
		300	186	1884	350424			
		500	101	3140	317140			
947	168+141	100	359	628	225452	658650	3011125	Hill Area, Road Side
		300	189	1884	356076			
		500	116	3140	364240			
948	168+262	100	384	628	241152	658657	3011233	Hill Area, Road Side
		300	193	1884	363612			
		500	119	3140	373660			
949	168+380	100	409	628	256852	658739	3011308	Hill Area, Road Side
		300	201	1884	378684			
		500	121	3140	379940			
950	168+522	100	427	628	268156	658818	3011422	Hill Area, Road Side
		300	223	1884	420132			
		500	105	3140	329700			
951	168+638	100	398	628	249944	658753	3011511	Hill Area, Road Side
		300	192	1884	361728			
		500	117	3140	367380			
952	168+765	100	345	628	216660	658770	3011431	Hill Area, Road Side
		300	188	1884	354192			
		500	93	3140	290450			
953	168+880	100	405	628	254340	658684	3011503	Hill Area, Road Side
		300	196	1884	369264			
		500	105	3140	329700			
954	169+009	100	322	628	202216	658669	3011508	Hill Area, Road Side
		300	174	1884	327816			
		500	65	3140	202530			
955	169+140	100	345	628	216660	658763	3011412	Hill Area, Road Side
		300	173	1884	325932			
		500	65	3140	204728			
956	169+265	100	312	628	195936	658664	3011470	Hill Area, Road Side
		300	162	1884	305208			
		500	63	3140	196250			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
957	169+386	100	309	628	194052	658630	3011578	Hill Area, Road Side
		300	159	1884	299556			
		500	65	3140	204728			
958	169+512	100	325	628	204100	658564	3011679	Hill Area, Road Side
		300	162	1884	305208			
		500	67	3140	210694			
959	169+636	100	407	628	255596	658478	3011746	Hill Area, Road Side
		300	184	1884	346656			
		500	106	3140	332840			
960	169+768	100	415	628	260620	658396	3011834	Hill Area, Road Side
		300	196	1884	369264			
		500	114	3140	357960			
961	169+883	100	382	628	239896	658386	3011797	Hill Area, Road Side
		300	182	1884	342888			
		500	102	3140	320280			
962	170+011	100	377	628	236756	658463	3011694	Hill Area, Road Side
		300	196	1884	369264			
		500	105	3140	329700			
963	170+142	100	364	628	228592	658512	3011578	Hill Area, Road Side
		300	196	1884	369264			
		500	96	3140	302696			
964	170+258	100	345	628	216660	658525	3011466	Hill Area, Road Side
		300	162	1884	305208			
		500	87	3140	271924			
965	170+387	100	402	628	252456	658510	3011536	Hill Area, Road Side
		300	186	1884	350424			
		500	80	3140	251828			
966	170+518	100	392	628	246176	658450	3011651	Hill Area, Road Side
		300	196	1884	369264			
		500	104	3140	326560			
967	170+638	100	406	628	254968	658367	3011737	Hill Area, Road Side
		300	201	1884	378684			
		500	106	3140	332840			
968	170+759	100	420	628	263760	658296	3011816	Hill Area, Road Side
		300	254	1884	478536			
		500	125	3140	392500			
		100	396	628	248688	658164	3011802	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
969	170+896	300	246	1884	463464			
		500	122	3140	383080			
970	171+014	100	358	628	224824	658170	3011899	Hill Area, Road Side
		300	174	1884	327816			
		500	103	3140	323420			
971	171+138	100	364	628	228592	658177	3012006	Hill Area, Road Side
		300	186	1884	350424			
		500	113	3140	354820			
972	171+269	100	420	628	263760	658198	3012110	Hill Area, Road Side
		300	205	1884	386220			
		500	115	3140	361100			
973	171+393	100	435	628	273180	658108	3012191	Hill Area, Road Side
		300	210	1884	395640			
		500	101	3140	317140			
974	171+515	100	406	628	254968	658009	3012254	Hill Area, Road Side
		300	200	1884	376046			
		500	110	3140	346342			
975	171+642	100	399	628	250572	657915	3012337	Hill Area, Road Side
		300	201	1884	378684			
		500	115	3140	361100			
976	171+770	100	401	628	251828	657911	3012458	Hill Area, Road Side
		300	212	1884	399408			
		500	119	3140	373660			
977	171+902	100	426	628	267528	657890	3012574	Hill Area, Road Side
		300	225	1884	423900			
		500	104	3140	326560			
978	172+024	100	398	628	249944	657922	3012679	Hill Area, Road Side
		300	194	1884	365496			
		500	87	3140	271610			
979	172+143	100	386	628	242408	657991	3012768	Hill Area, Road Side
		300	192	1884	361728			
		500	101	3140	317140			
980	172+264	100	420	628	263760	658007	3012884	Hill Area, Road Side
		300	204	1884	384336			
		500	112	3140	351680			
981	172+388	100	443	628	278204	658065	3012993	Hill Area, Road Side
		300	215	1884	405060			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	113	3140	354820			
982	172+520	100	398	628	249944	658053	3013124	Hill Area, Road Side
		300	201	1884	378684			
		500	115	3140	361100			
983	172+634	100	421	628	264388	658048	3013238	Hill Area, Road Side
		300	205	1884	386220			
		500	125	3140	392500			
984	172+770	100	318	628	199704	657996	3013119	Hill Area, Road Side
		300	156	1884	293904			
		500	59	3140	185260			
985	172+891	100	276	628	173328	658001	3013001	Hill Area, Road Side
		300	142	1884	267528			
		500	47	3140	146324			
986	173+016	100	289	628	181492	657921	3012931	Hill Area, Road Side
		300	147	1884	276948			
		500	57	3140	178666			
987	173+136	100	310	628	194680	657853	3012832	Hill Area, Road Side
		300	169	1884	318396			
		500	66	3140	208496			
988	173+267	100	326	628	204728	657775	3012744	Hill Area, Road Side
		300	178	1884	335352			
		500	68	3140	214776			
989	173+402	100	385	628	241780	657699	3012639	Hill Area, Road Side
		300	180	1884	339120			
		500	69	3140	217602			
990	173+518	100	396	628	248688	657666	3012533	Hill Area, Road Side
		300	182	1884	342888			
		500	70	3140	220428			
991	173+635	100	406	628	254968	657620	3012430	Hill Area, Road Side
		300	203	1884	382452			
		500	86	3140	268784			
992	173+774	100	416	628	261248	657657	3012546	Hill Area, Road Side
		300	215	1884	405060			
		500	91	3140	285426			
993	173+889	100	379	628	238012	657661	3012660	Hill Area, Road Side
		300	209	1884	393756			
		500	87	3140	271610			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
994	174+011	100	392	628	246176	657679	3012770	Hill Area, Road Side
		300	186	1884	350424			
		500	95	3140	296730			
995	174+137	100	394	628	247432	657687	3012895	Hill Area, Road Side
		300	196	1884	369264			
		500	96	3140	302068			
996	174+265	100	403	628	253084	657720	3013010	Hill Area, Road Side
		300	205	1884	386220			
		500	89	3140	280716			
997	174+395	100	396	628	248688	657781	3013123	Hill Area, Road Side
		300	211	1884	397524			
		500	96	3140	302068			
998	174+515	100	376	628	236128	657810	3013240	Hill Area, Road Side
		300	184	1884	346656			
		500	85	3140	265330			
999	174+638	100	386	628	242408	657762	3013342	Hill Area, Road Side
		300	182	1884	342888			
		500	89	3140	280402			
1000	174+770	100	381	628	239268	657799	3013457	Hill Area, Road Side
		300	174	1884	327816			
		500	92	3140	289822			
1001	174+887	100	390	628	244920	657742	3013556	Hill Area, Road Side
		300	189	1884	356076			
		500	94	3140	293590			
1002	175+023	100	396	628	248688	657787	3013624	Hill Area, Road Side
		300	194	1884	365496			
		500	104	3140	327188			
1003	175+157	100	364	628	228592	657799	3013756	Hill Area, Road Side
		300	182	1884	342888			
		500	96	3140	301754			
1004	175+258	100	363	628	227964	657772	3013769	Hill Area, Road Side
		300	185	1884	348540			
		500	87	3140	271610			
1005	175+400	100	369	628	231732	657720	3013650	Hill Area, Road Side
		300	174	1884	327816			
		500	82	3140	258736			
		100	384	628	241152	657744	3013733	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1006	175+517	300	196	1884	369264			
		500	79	3140	248688			
1007	175+661	100	405	628	254340	657739	3013863	Hill Area, Road Side
		300	203	1884	382452			
		500	87	3140	271610			
1008	175+764	100	441	628	276948	657805	3013930	Hill Area, Road Side
		300	225	1884	423900			
		500	94	3140	296102			
1009	175+895	100	394	628	247432	657819	3014050	Hill Area, Road Side
		300	205	1884	386220			
		500	93	3140	290764			
1010	176+045	100	394	628	247432	657837	3014182	Hill Area, Road Side
		300	182	1884	342888			
		500	96	3140	302068			
1011	176+135	100		628				City, Road Side Cemented
		300		1884				
		500		3140				
1012	176+260	100		628				City, Road Side Cemented
		300		1884				
		500		3140				
1013	176+385	100		628				City, Road Side Cemented
		300		1884				
		500		3140				
1014	176+510	100		628				City, Road Side Cemented
		300		1884				
		500		3140				
1015	176+638	100	274	628	172072	658327	3014429	Hill Area, Road Side
		300	105	1884	197820			
		500	86	3140	270040			
1016	176+770	100	304	628	190912	658457	3014431	Hill Area, Road Side
		300	118	1884	222312			
		500	92	3140	289194			
1017	176+888	100	345	628	216660	658552	3014488	Hill Area, Road Side
		300	169	1884	318396			
		500	87	3140	271610			
1018	177+015	100	420	628	263760	658676	3014469	Hill Area, Road Side
		300	250	1884	471000			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	146	3140	458440			
1019	177+136	100	427	628	268156	658782	3014515	Hill Area, Road Side
		300	266	1884	501144			
		500	150	3140	471000			
1020	177+264	100	450	628	282600	658908	3014526	Hill Area, Road Side
		300	270	1884	508680			
		500	146	3140	458440			
1021	177+396	100	466	628	292648	659015	3014588	Hill Area, Road Side
		300	310	1884	584040			
		500	157	3140	492980			
1022	177+525	100	455	628	285740	659104	3014664	Hill Area, Road Side
		300	305	1884	574620			
		500	156	3140	489840			
1023	177+646	100	446	628	280088	659161	3014759	Hill Area, Road Side
		300	312	1884	587808			
		500	160	3140	502400			
1024	177+767	100	425	628	266900	659106	3014833	Hill Area, Road Side
		300	306	1884	576504			
		500	156	3140	489840			
1025	177+887	100	419	628	263132	659148	3014940	Hill Area, Road Side
		300	326	1884	614184			
		500	160	3140	502400			
1026	178+006	100	401	628	251828	659168	3015021	Hill Area, Road Side
		300	294	1884	553896			
		500	101	3140	317140			
1027	178+143	100	394	628	247432	659103	3014903	Hill Area, Road Side
		300	280	1884	527520			
		500	144	3140	452160			
1028	178+260	100	406	628	254968	659088	3014797	Hill Area, Road Side
		300	275	1884	518100			
		500	146	3140	458440			
1029	178+397	100	394	628	247432	659035	3014682	Hill Area, Road Side
		300	235	1884	442740			
		500	105	3140	329700			
1030	178+521	100	386	628	242408	658940	3014652	Hill Area, Road Side
		300	206	1884	388104			
		500	96	3140	302696			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1031	178+646	100	396	628	248688	658838	3014684	Hill Area, Road Side
		300	212	1884	399408			
		500	94	3140	295788			
1032	178+765	100	386	628	242408	658719	3014672	Hill Area, Road Side
		300	209	1884	393756			
		500	91	3140	284170			
1033	178+899	100	394	628	247432	658604	3014620	Hill Area, Road Side
		300	212	1884	399408			
		500	96	3140	302696			
1034	179+025	100	406	628	254968	658478	3014629	Hill Area, Road Side
		300	284	1884	535056			
		500	124	3140	389360			
1035	179+129	100	412	628	258736	658383	3014650	Hill Area, Road Side
		300	265	1884	499260			
		500	120	3140	376800			
1036	179+274	100	430	628	270040	658321	3014751	Hill Area, Road Side
		300	271	1884	510564			
		500	124	3140	389360			
1037	179+396	100	412	628	258736	658234	3014836	Hill Area, Road Side
		300	276	1884	519984			
		500	126	3140	395640			
1038	179+525	100	406	628	254968	658155	3014919	Hill Area, Road Side
		300	278	1884	523752			
		500	135	3140	423900			
1039	179+643	100	422	628	265016	658086	3014994	Hill Area, Road Side
		300	282	1884	531288			
		500	145	3140	455300			
1040	179+767	100	403	628	253084	657990	3015069	Hill Area, Road Side
		300	274	1884	516216			
		500	147	3140	461580			
1041	179+898	100	384	628	241152	657988	3015196	Hill Area, Road Side
		300	265	1884	499260			
		500	102	3140	320280			
1042	180+014	100	401	628	251828	657997	3015193	Hill Area, Road Side
		300	255	1884	480420			
		500	186	3140	584040			
		100	394	628	247432	658006	3015086	Hill Area, Road Side

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1043	180+129	300	240	1884	452160			
		500	175	3140	549500			
1044	180+269	100	382	628	239896	658134	3015038	Hill Area, Road Side
		300	235	1884	442740			
		500	166	3140	521240			
1045	180+396	100	399	628	250572	658201	3014930	Hill Area, Road Side
		300	245	1884	461580			
		500	168	3140	527520			
1046	180+515	100	406	628	254968	658303	3014870	Hill Area, Road Side
		300	256	1884	482304			
		500	170	3140	533800			
1047	180+641	100	312	628	195936	658407	3014808	Hill Area, Road Side
		300	166	1884	312744			
		500	72	3140	226080			
1048	180+773	100	350	628	219800	658532	3014768	Hill Area, Road Side
		300	162	1884	305208			
		500	68	3140	213520			
1049	180+899	100	366	628	229848	658648	3014790	Hill Area, Road Side
		300	168	1884	316512			
		500	70	3140	220428			
1050	181+013	100	430	628	270040	658745	3014831	Hill Area, Road Side
		300	286	1884	538824			
		500	135	3140	423900			
1051	181+137	100	420	628	263760	658875	3014836	Hill Area, Road Side
		300	275	1884	518100			
		500	129	3140	405060			
1052	181+268	100	394	628	247432	658899	3014957	Hill Area, Road Side
		300	245	1884	461580			
		500	127	3140	398780			
1053	181+404	100	386	628	242408	658908	3015082	Hill Area, Road Side
		300	236	1884	444624			
		500	125	3140	392500			
1054	181+514	100	375	628	235500	658928	3015185	Hill Area, Road Side
		300	186	1884	350424			
		500	104	3140	326560			
1055	181+640	100	407	628	255596	658949	3015237	Hill Area, Road Side
		300	189	1884	356076			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	102	3140	320280			
1056	181+772	100	413	628	259364	658855	3015149	Hill Area, Road Side
		300	194	1884	365496			
		500	112	3140	351680			
1057	181+903	100	396	628	248688	658844	3015024	Hill Area, Road Side
		300	184	1884	346656			
		500	120	3140	376800			
1058	182+020	100	394	628	247432	658811	3015078	Hill Area, Road Side
		300	183	1884	344772			
		500	121	3140	379940			
1059	182+137	100	407	628	255596	658831	3015190	Hill Area, Road Side
		300	224	1884	422016			
		500	140	3140	439600			
1060	182+265	100	412	628	258736	658887	3015302	Hill Area, Road Side
		300	196	1884	369264			
		500	135	3140	423900			
1061	182+388	100	388	628	243664	658998	3015350	Hill Area, Road Side
		300	176	1884	331584			
		500	104	3140	326560			
1062	182+513	100	396	628	248688	659060	3015457	Hill Area, Road Side
		300	194	1884	365496			
		500	115	3140	361100			
1063	182+667	100	401	628	251828	659185	3015405	Hill Area, Road Side
		300	205	1884	386220			
		500	120	3140	376800			
1064	182+768	100	440	628	276320	659189	3015435	Hill Area, Road Side
		300	255	1884	480420			
		500	137	3140	430180			
1065	182+899	100	407	628	255596	659099	3015531	Hill Area, Road Side
		300	242	1884	455928			
		500	131	3140	411340			
1066	183+016	100	411	628	258108	659002	3015547	Hill Area, Road Side
		300	256	1884	482304			
		500	134	3140	420760			
1067	183+139	100	390	628	244920	658893	3015572	Hill Area, Road Side
		300	243	1884	457812			
		500	117	3140	367380			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1068	55+148	100	385	628	241780	658819	3015474	Hill Area, Road Side
		300	240	1884	452160			
		500	119	3140	373660			
1069	183+386	100	416	628	261248	658762	3015409	Hill Area, Road Side
		300	210	1884	395640			
		500	104	3140	326560			
1070	183+517	100	385	628	241780	658808	3015528	Hill Area, Road Side
		300	167	1884	314628			
		500	121	3140	379940			
1071	183+634	100	407	628	255596	658817	3015639	Hill Area, Road Side
		300	169	1884	318396			
		500	125	3140	392500			
1072	183+768	100	435	628	273180	658777	3015594	Hill Area, Road Side
		300	186	1884	350424			
		500	132	3140	414480			
1073	183+887	100	455	628	285740	658793	3015706	Hill Area, Road Side
		300	294	1884	553896			
		500	186	3140	584040			
1074	184+022	100	425	628	266900	658743	3015706	Hill Area, Road Side
		300	278	1884	523752			
		500	170	3140	533800			
1075	184+148	100	406	628	254968	658710	3015719	Hill Area, Road Side
		300	276	1884	519984			
		500	162	3140	508680			
1076	184+267	100	360	628	226080	658779	3015779	Hill Area, Road Side
		300	237	1884	446508			
		500	95	3140	297044			
1077	184+388	100	389	628	244292	658867	3015810	Hill Area, Road Side
		300	265	1884	499260			
		500	104	3140	326560			
1078	184+521	100	401	628	251828	658762	3015849	Hill Area, Road Side
		300	296	1884	557664			
		500	145	3140	455300			
1079	184+634	100	423	628	265644	658660	3015841	Hill Area, Road Side
		300	291	1884	548244			
		500	146	3140	458440			
		100	427	628	268156	658637	3015967	Hill Area, Road Side

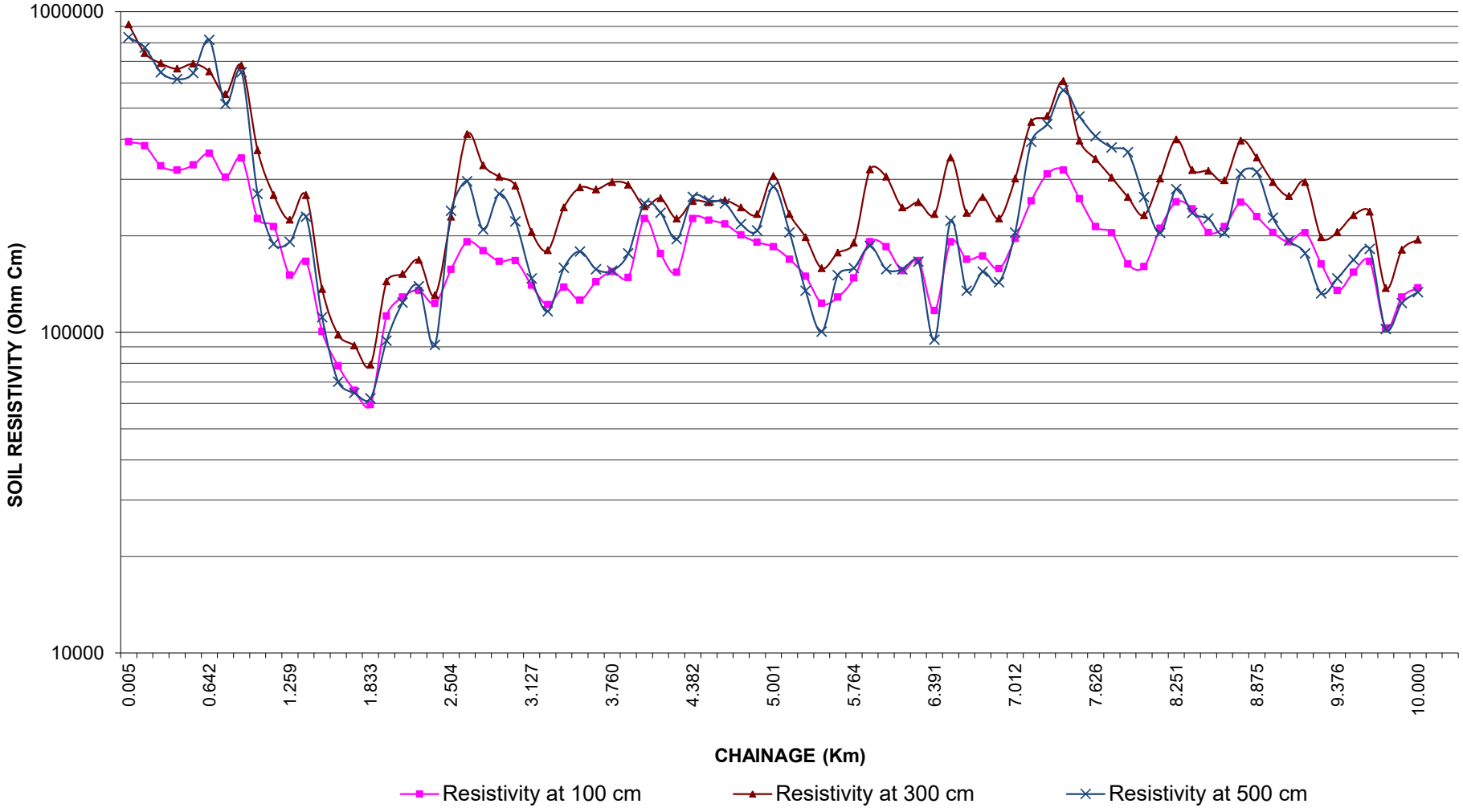
S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1080	184+777	300	294	1884	553896			
		500	142	3140	445880			
1081	184+887	100	394	628	247432	658617	3016074	Hill Area, Road Side
		300	235	1884	442740			
		500	146	3140	458440			
1082	185+029	100	407	628	255596	658640	3016211	Hill Area, Road Side
		300	246	1884	463464			
		500	137	3140	430180			
1083	185+149	100	412	628	258736	658626	3016282	Hill Area, Road Side
		300	256	1884	482304			
		500	147	3140	461580			
1084	185+266	100	374	628	234872	658529	3016351	Hill Area, Road Side
		300	239	1884	450276			
		500	105	3140	329700			
1085	185+400	100	390	628	244920	658492	3016470	Hill Area, Road Side
		300	237	1884	446508			
		500	111	3140	348540			
1086	185+512	100	420	628	263760	658428	3016541	Hill Area, Road Side
		300	246	1884	463464			
		500	126	3140	395640			
1087	185+637	100	394	628	247432	658496	3016627	Hill Area, Road Side
		300	234	1884	440856			
		500	128	3140	401920			
1088	185+780	100	390	628	244920	658393	3016726	Hill Area, Road Side
		300	231	1884	435204			
		500	126	3140	395640			
1089	185+894	100	405	628	254340	658340	3016824	Hill Area, Road Side
		300	237	1884	446508			
		500	128	3140	401920			
1090	186+027	100	440	628	276320	658285	3016938	Hill Area, Road Side
		300	260	1884	489840			
		500	136	3140	427040			
1091	186+156	100	442	628	277576	658194	3016990	Hill Area, Road Side
		300	262	1884	493608			
		500	135	3140	423900			
1092	186+277	100	399	628	250572	658113	3017066	Hill Area, Road Side
		300	267	1884	503028			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
		500	136	3140	427040			
1093	186+415	100	410	628	257480	658006	3017142	Hill Area, Road Side
		300	269	1884	506796			
		500	146	3140	458440			
1094	186+507	100	394	628	247432	657930	3017190	Hill Area, Road Side
		300	266	1884	501144			
		500	104	3140	326560			
1095	186+688	100	426	628	267528	657750	3017199	Hill Area, Road Side
		300	284	1884	535056			
		500	158	3140	496120			
1096	186+762	100	385	628	241780	657752	3017275	Hill Area, Road Side
		300	276	1884	519984			
		500	157	3140	492980			
1097	186+895	100	406	628	254968	657876	3017316	Hill Area, Road Side
		300	301	1884	567084			
		500	194	3140	609160			
1098	187+015	100	396	628	248688	657998	3017321	Hill Area, Road Side
		300	292	1884	550128			
		500	135	3140	423900			
1099	187+132	100	399	628	250572	657970	3017368	Hill Area, Road Side
		300	286	1884	538824			
		500	140	3140	439600			
1100	187+284	100	410	628	257480	657826	3017331	Hill Area, Road Side
		300	294	1884	553896			
		500	144	3140	452160			
1101	187+384	100	440	628	276320	657730	3017326	Hill Area, Road Side
		300	299	1884	563316			
		500	156	3140	489840			
1102	187+491	100	294	628	184632	657796	3017347	Hill Area, Road Side
		300	160	1884	301440			
		500	76	3140	238640			
1103	187+636	100	340	628	213520	657910	3017410	Hill Area, Road Side
		300	182	1884	342888			
		500	102	3140	320280			
1104	187+768	100	460	628	288880	658032	3017449	Hill Area, Road Side
		300	294	1884	553896			
		500	180	3140	565200			

S.N.	Actual Chainage (Km)	Depth 'D' in cms	Earth Resistance 'R' in ohms.	Multiplier	Resistivity Ohm-cm	Easting	Northing	Remarks (Crossing etc.)
1105	187+884	100	455	628	285740	658116	3017519	Nala Crossing
		300	360	1884	678240			
		500	192	3140	602880			
1106	188+014	100	360	628	226080	657998	3017548	Hill Area, Road Side
		300	188	1884	354192			
		500	94	3140	295160			
1107	188+138	100	406	628	254968	657931	3017649	Hill Area, Road Side
		300	255	1884	480420			
		500	160	3140	502400			
1108	188+240	100	412	628	258736	657919	3017743	Hill Area, Road Side
		300	306	1884	576504			
		500	184	3140	577760			
1109	188+375	100	445	628	279460	657970	3017868	Hill Area, Road Side
		300	317	1884	597228			
		500	179	3140	562060			
1110	188+515	100	340	628	213520	657998	3017998	Hill Area, Road Side
		300	166	1884	312744			
		500	85	3140	265330			
1111	188+528	100	215	628	135020	657990	3018009	Near Saromsa Garden and
		300	122	1884	229848			Village - Chotta Singham
		500	64	3140	200960			

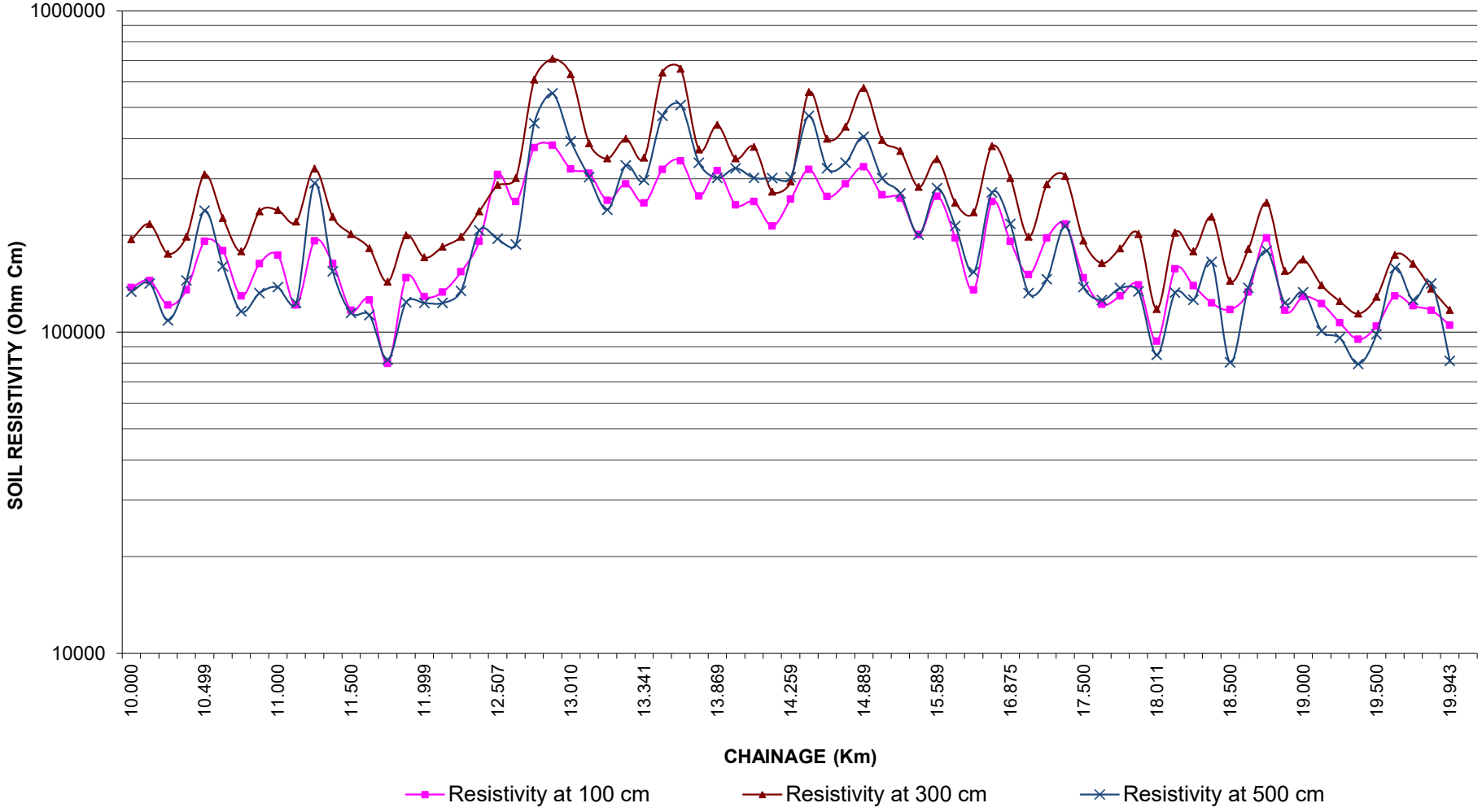
GRAPH - 1.1

GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 0.000 Km To 10.000Km



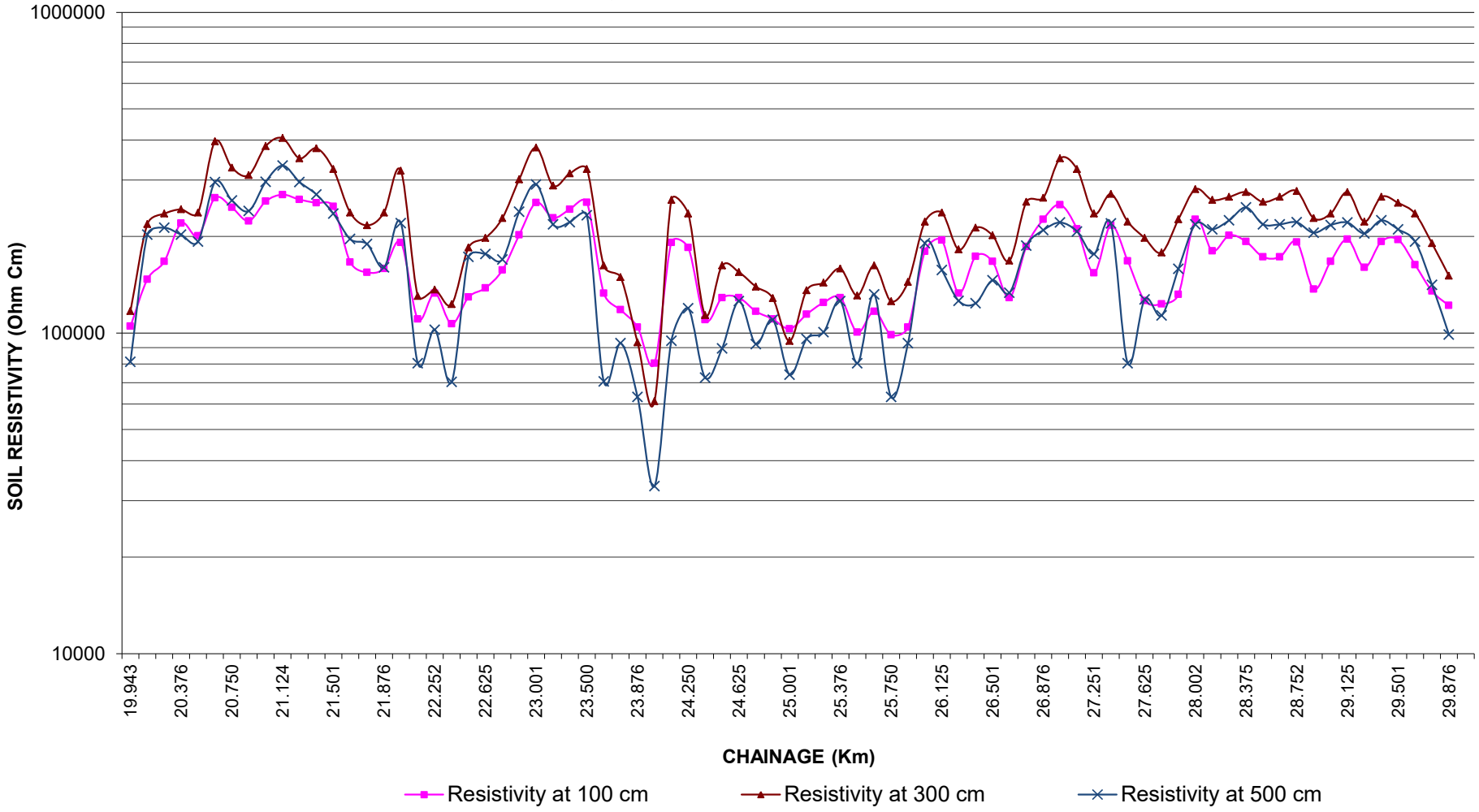
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 10.000 Km To 19.943 Km

GRAPH - 1.2



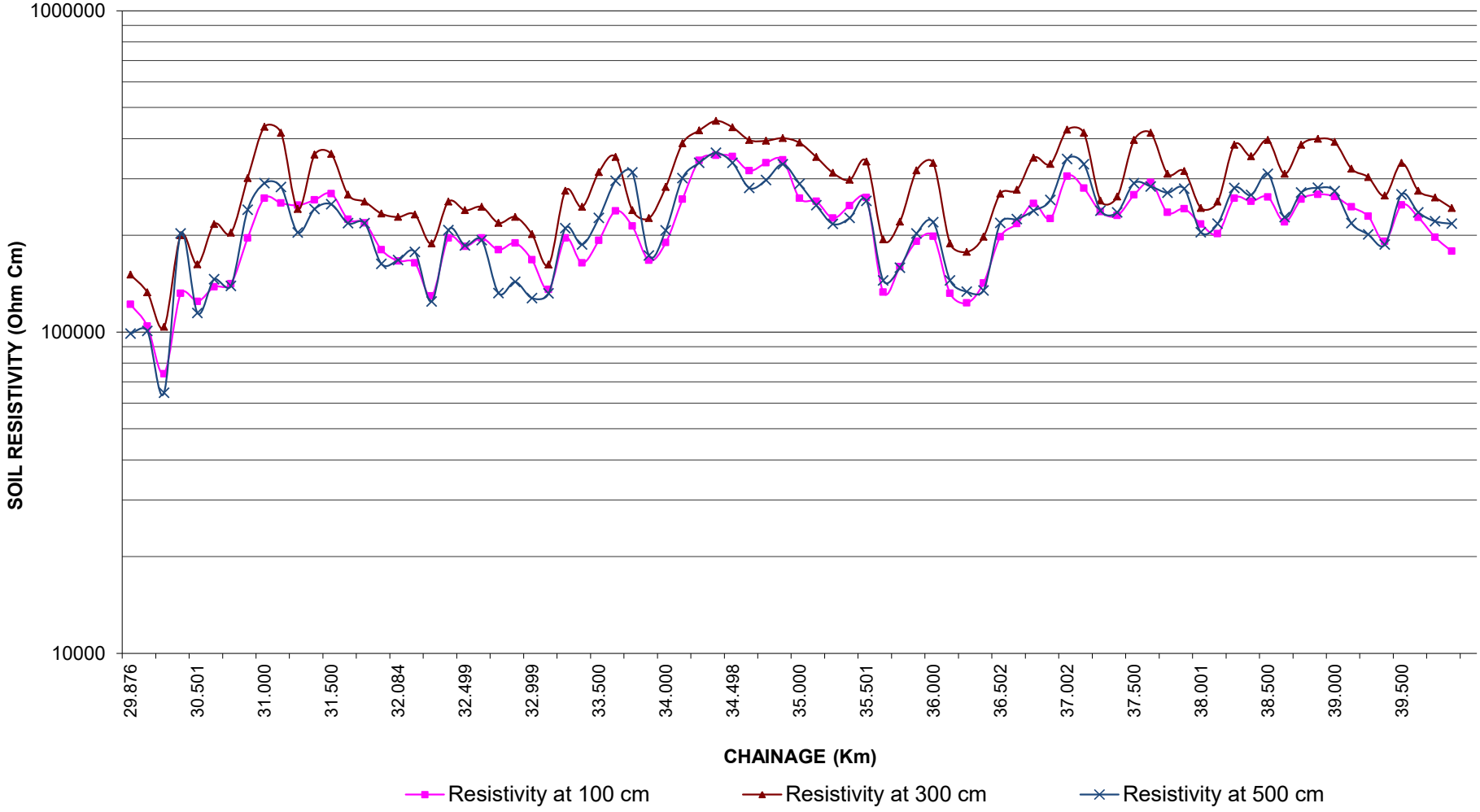
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 19.943 Km To 29.876 Km

GRAPH - 1.3



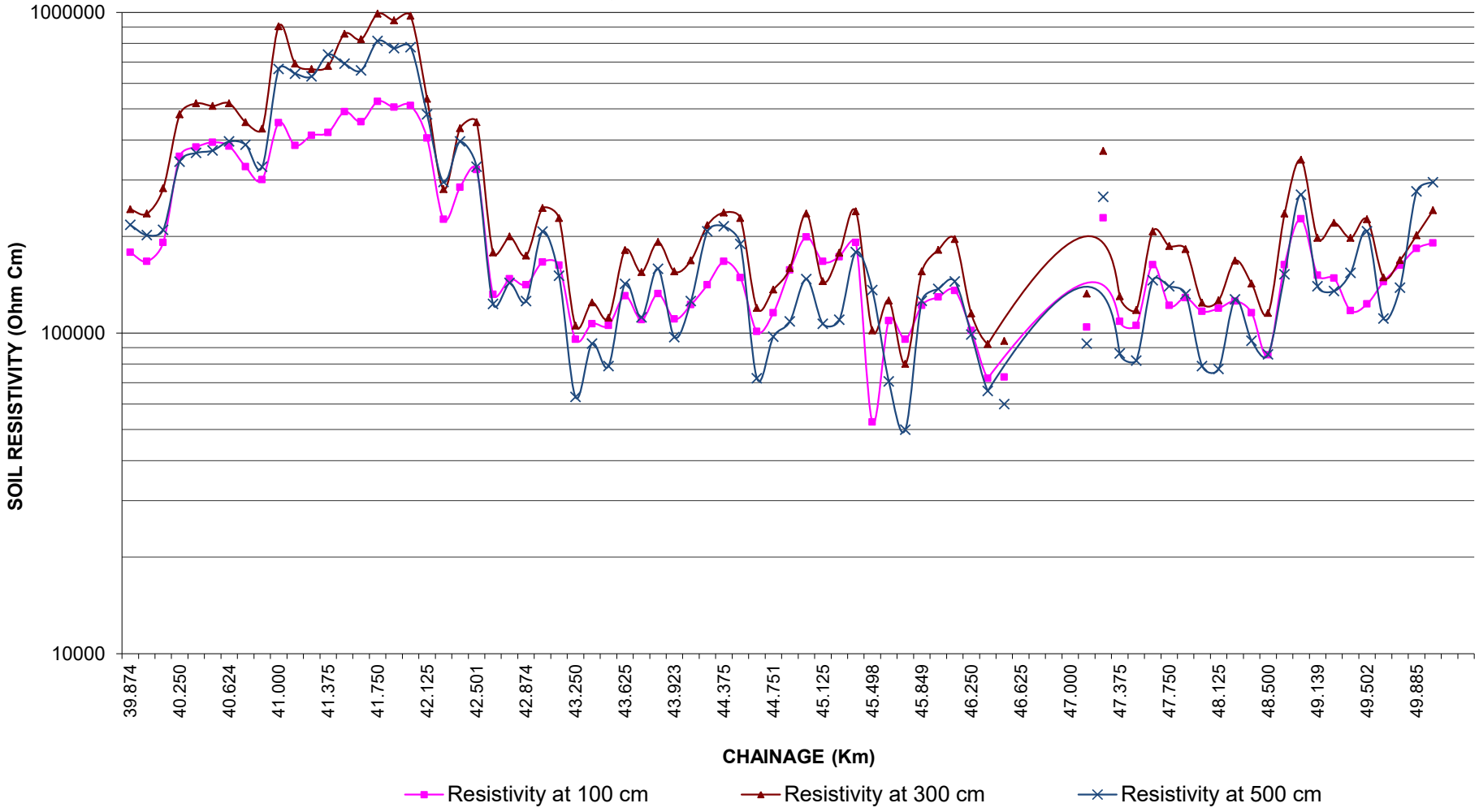
GRAPH - 1.4

GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 29.876 Km To 39.874Km



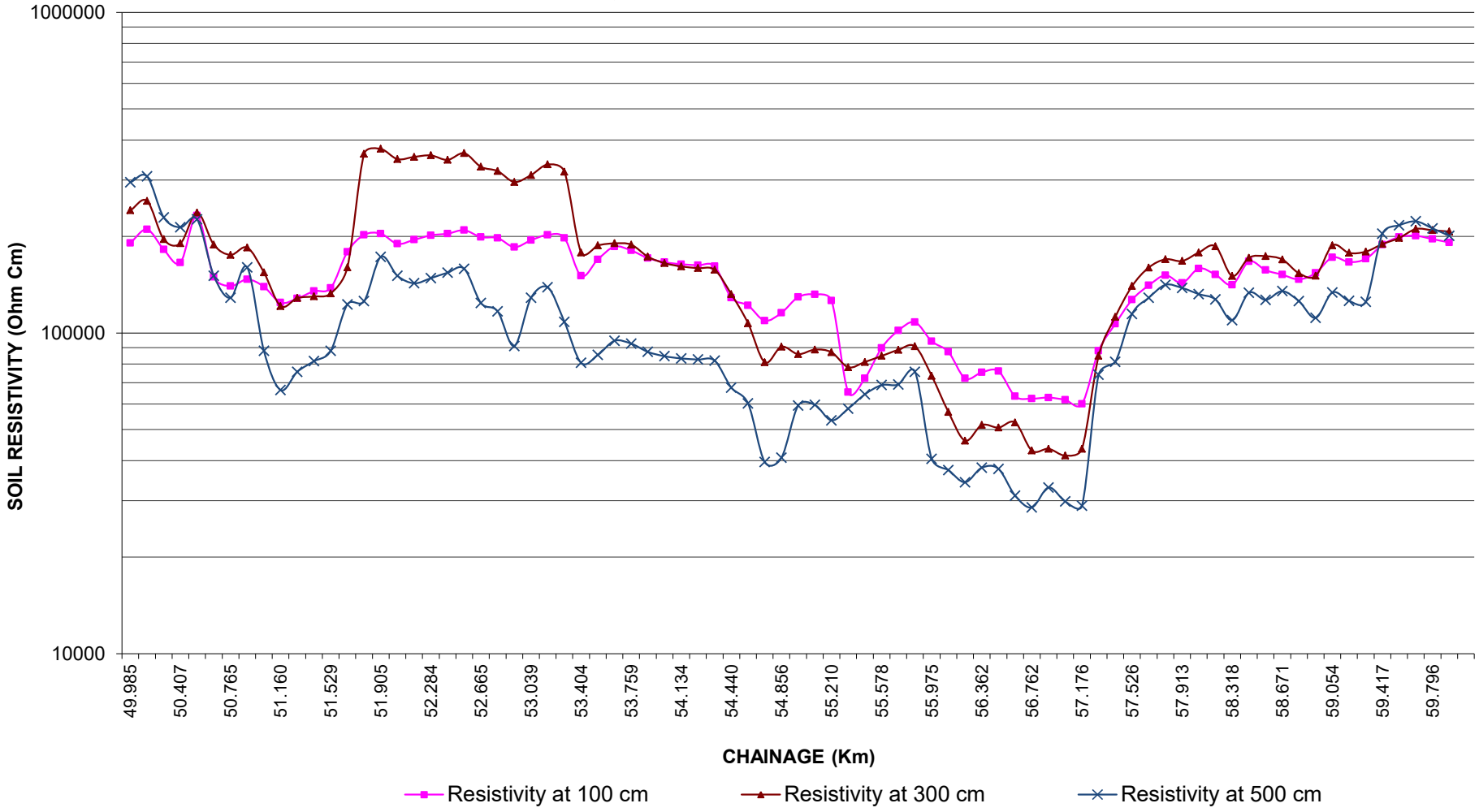
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 39.874 Km To 49.985 Km

GRAPH - 1.5



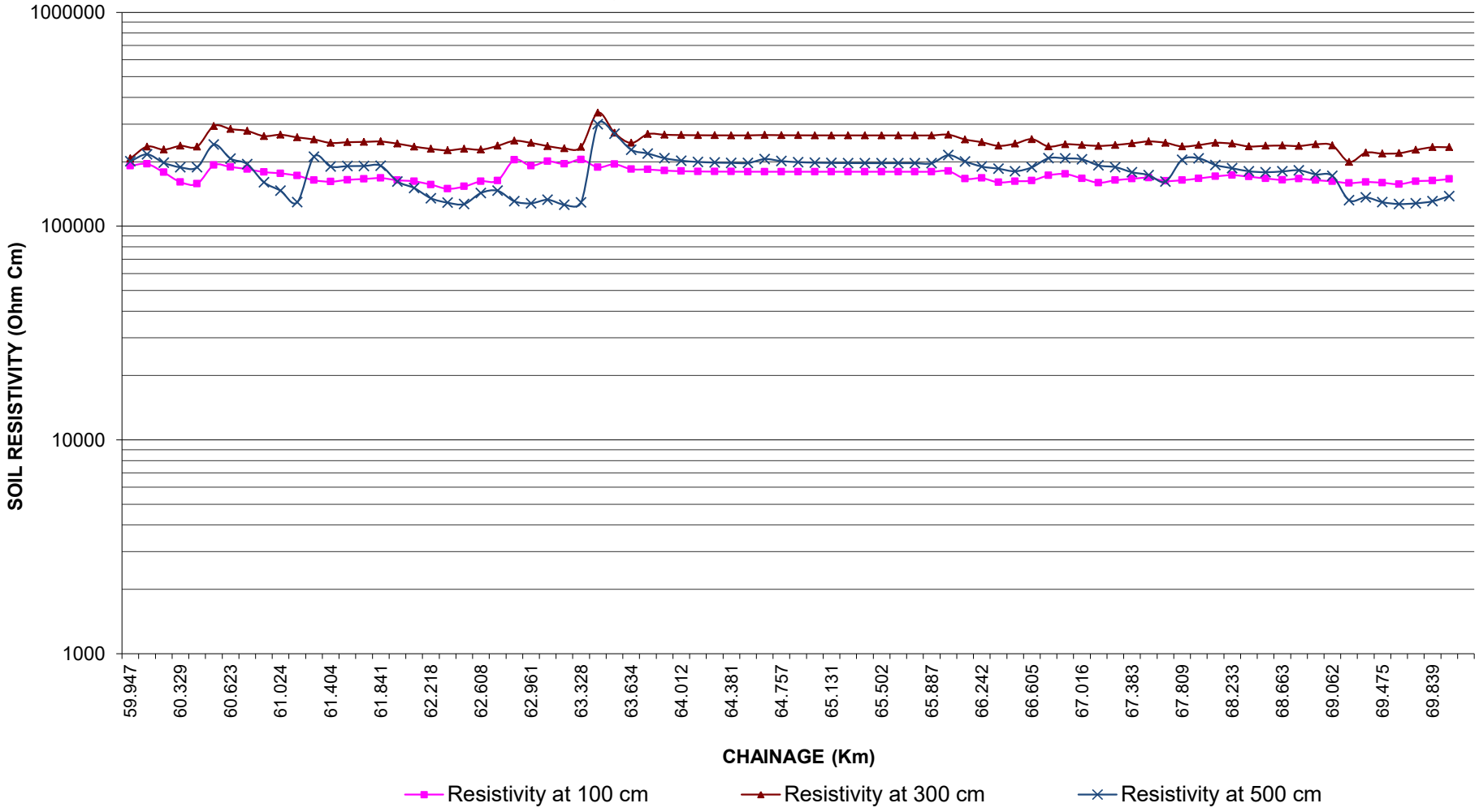
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 49.985Km To 59.947 Km

GRAPH - 1.6



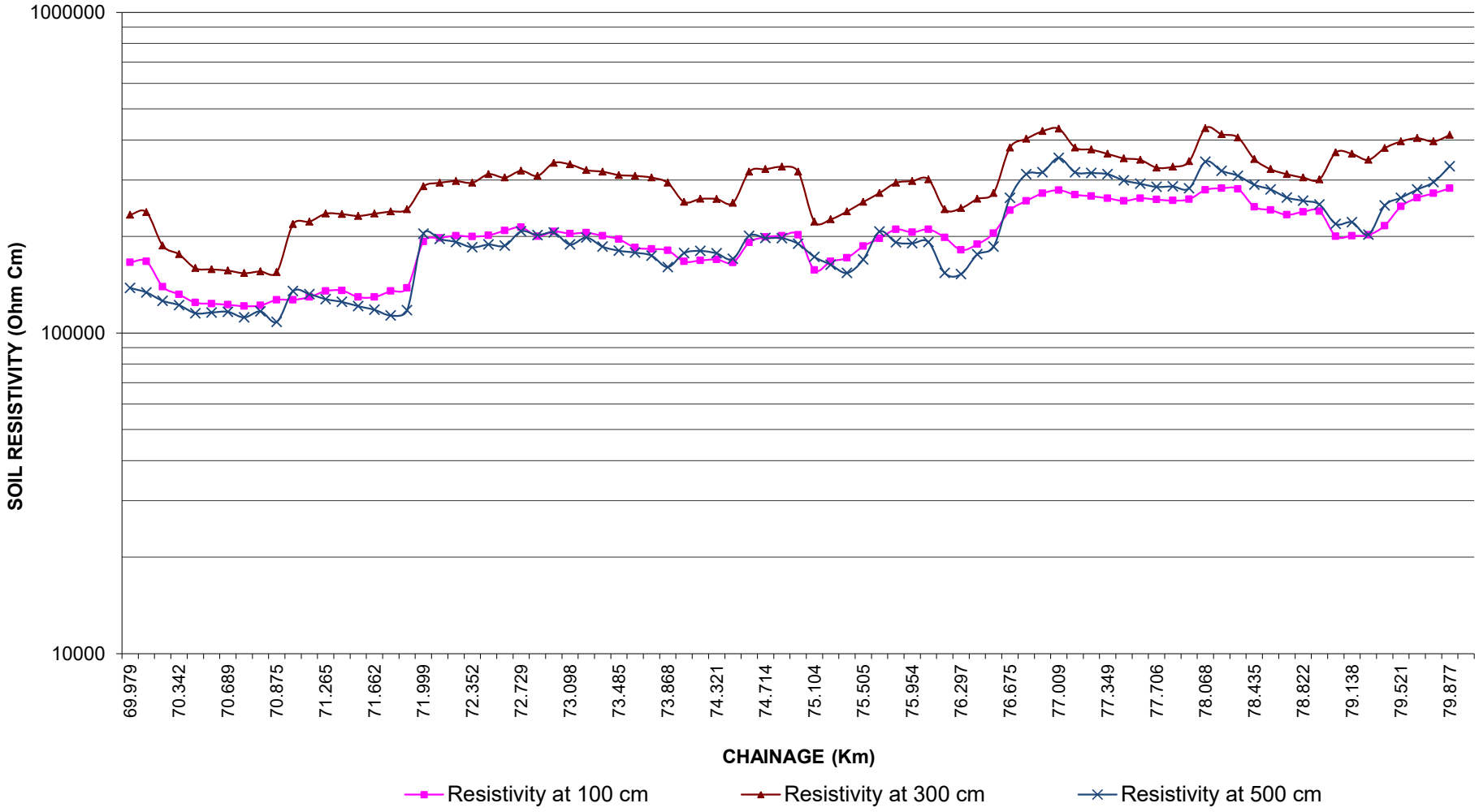
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 59.947 Km To 69.979Km

GRAPH - 1.7



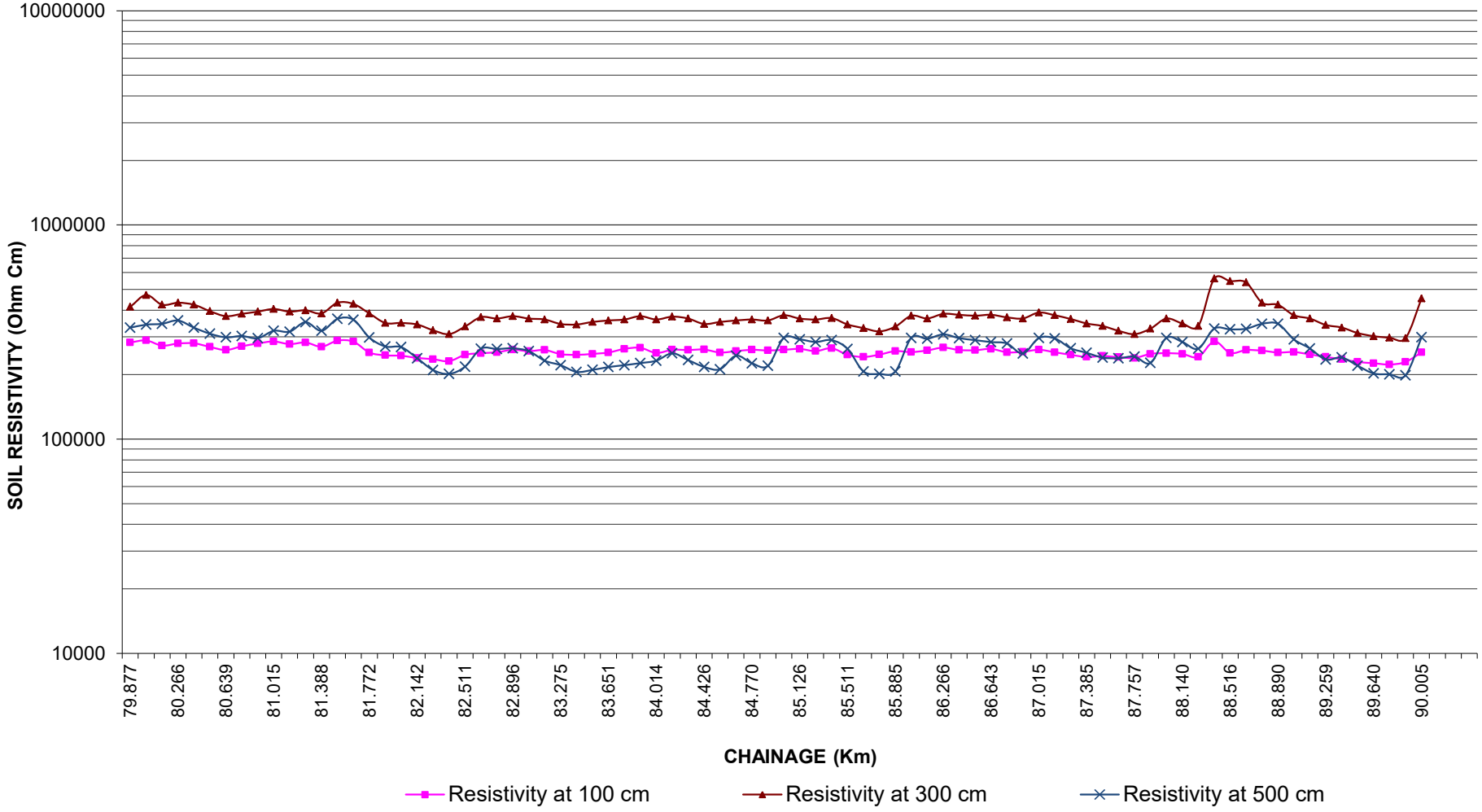
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 69.979Km To 79.877Km

GRAPH - 1.8



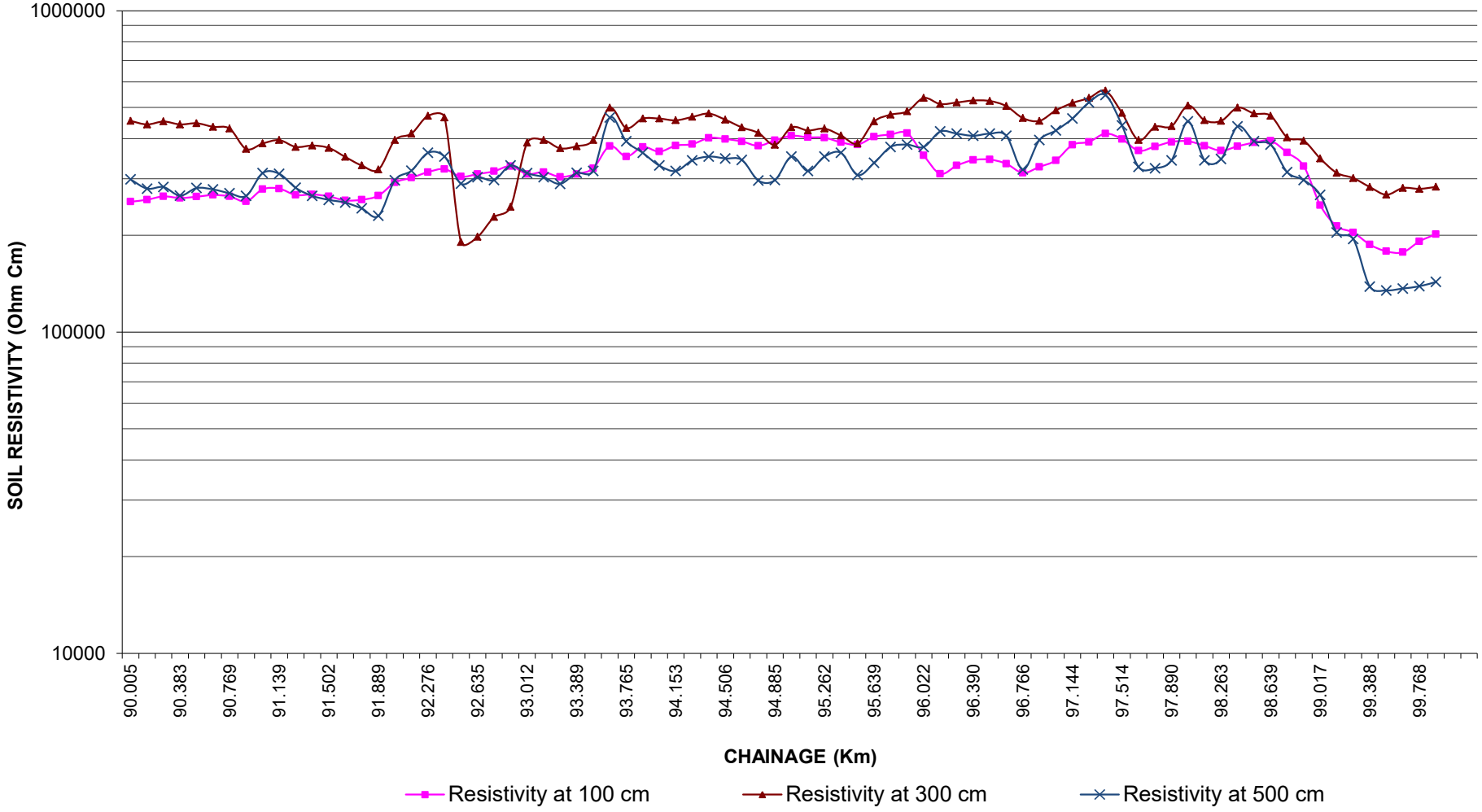
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 79.877 Km To 90.005 Km

GRAPH - 1.9



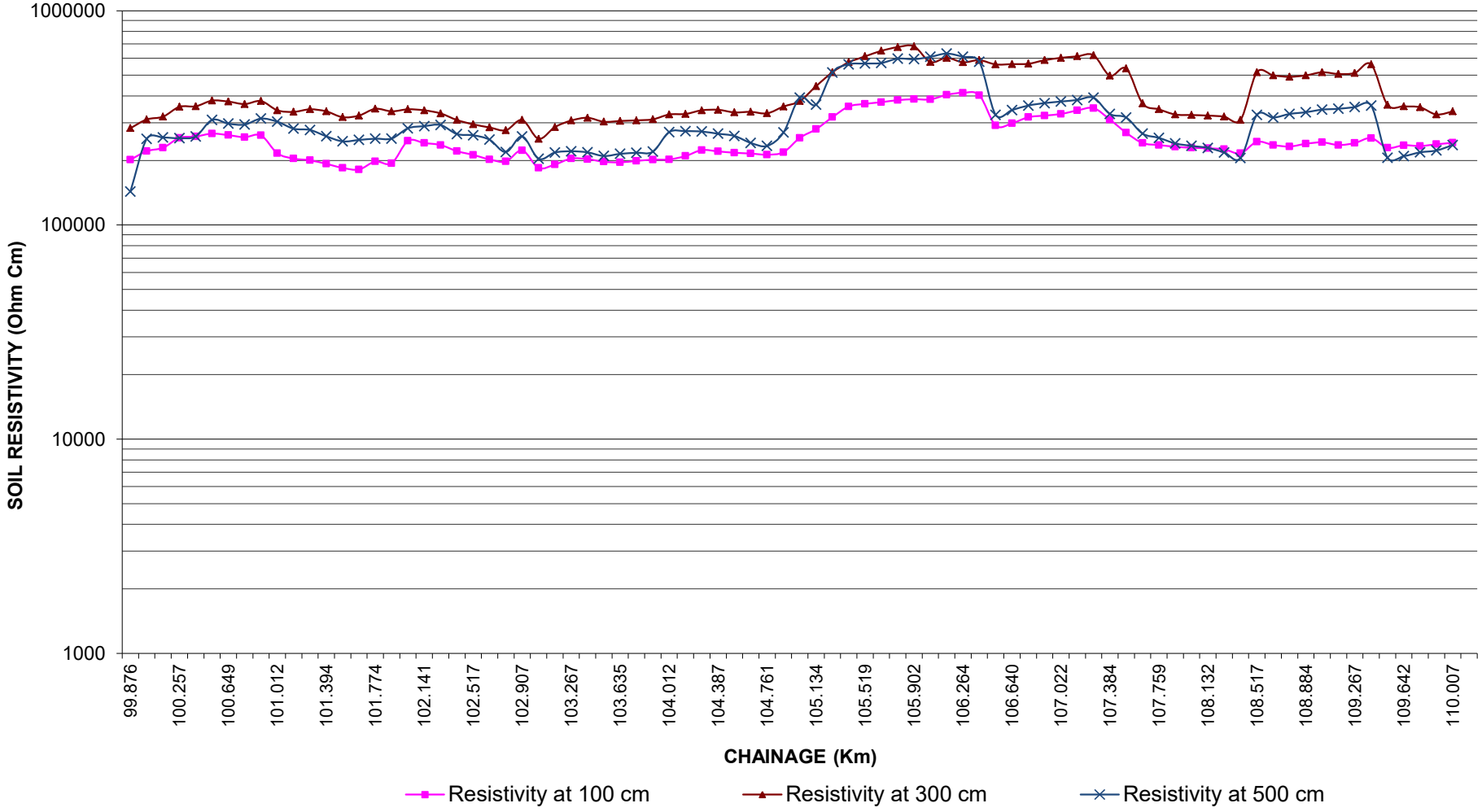
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 90.005 Km To 99.876 Km

GRAPH - 1.10



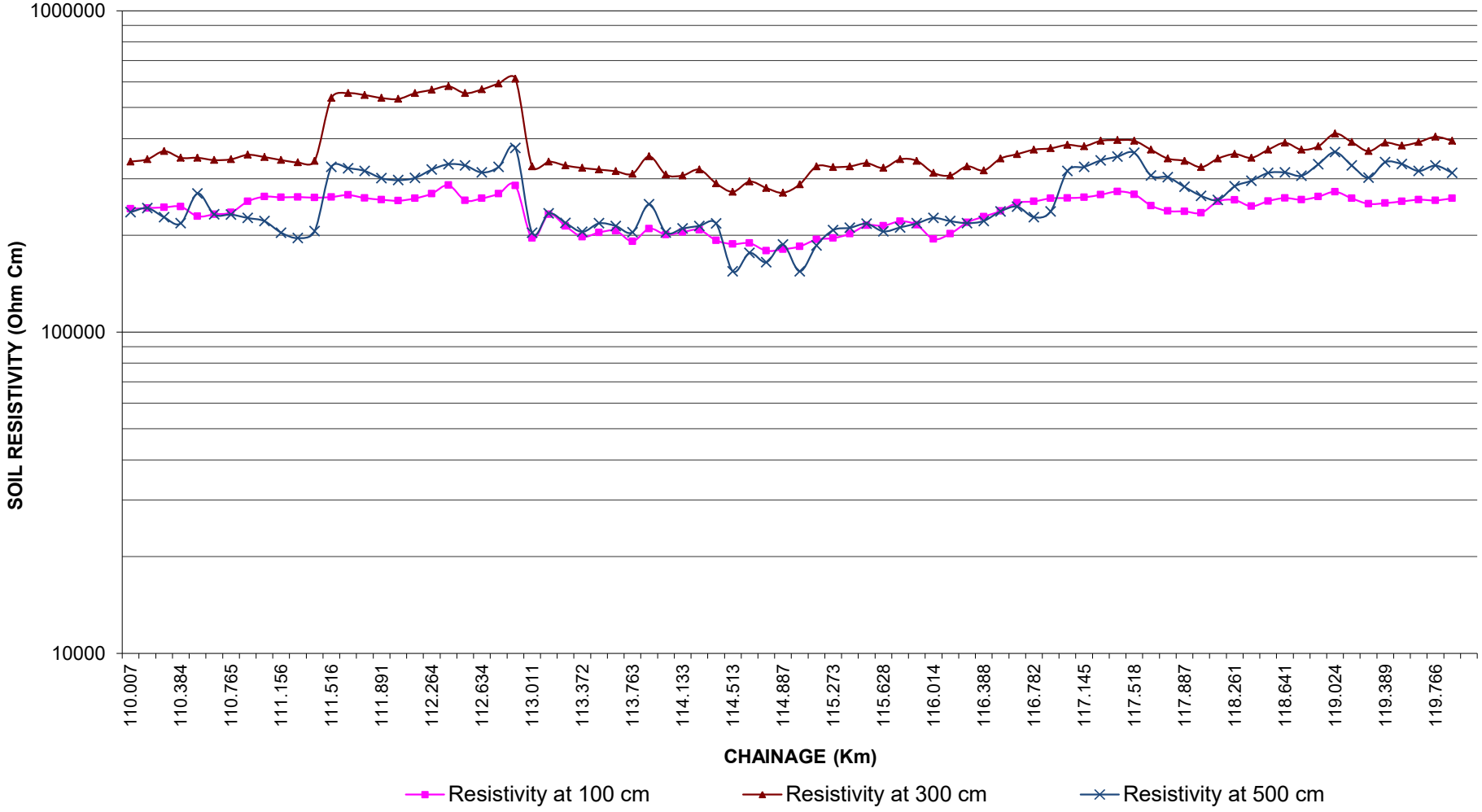
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 99.876Km To 110.007 Km

GRAPH - 1.11



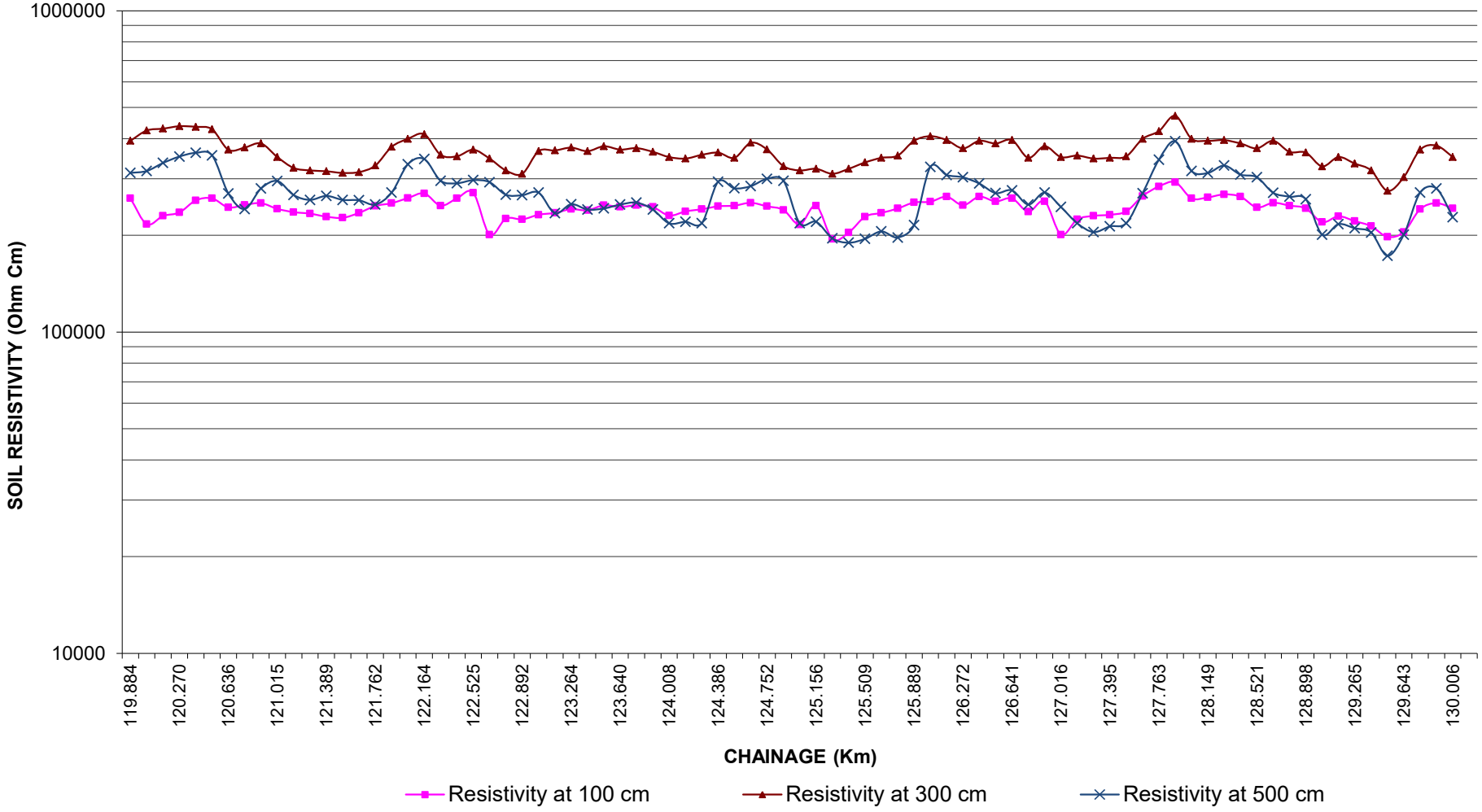
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 110.007 Km To 119.884 Km

GRAPH - 1.12



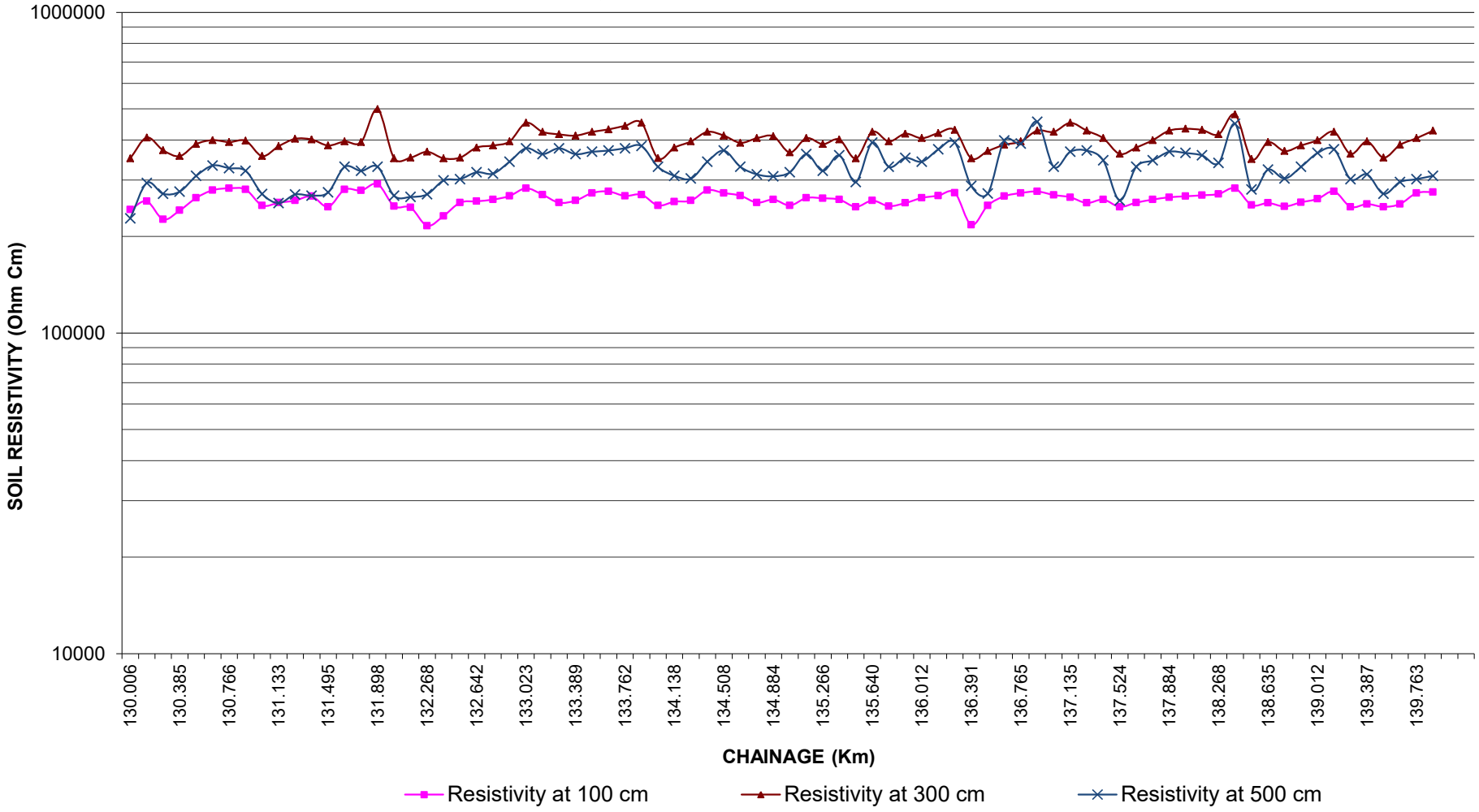
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 119.884 Km To 130.006 Km

GRAPH - 1.13



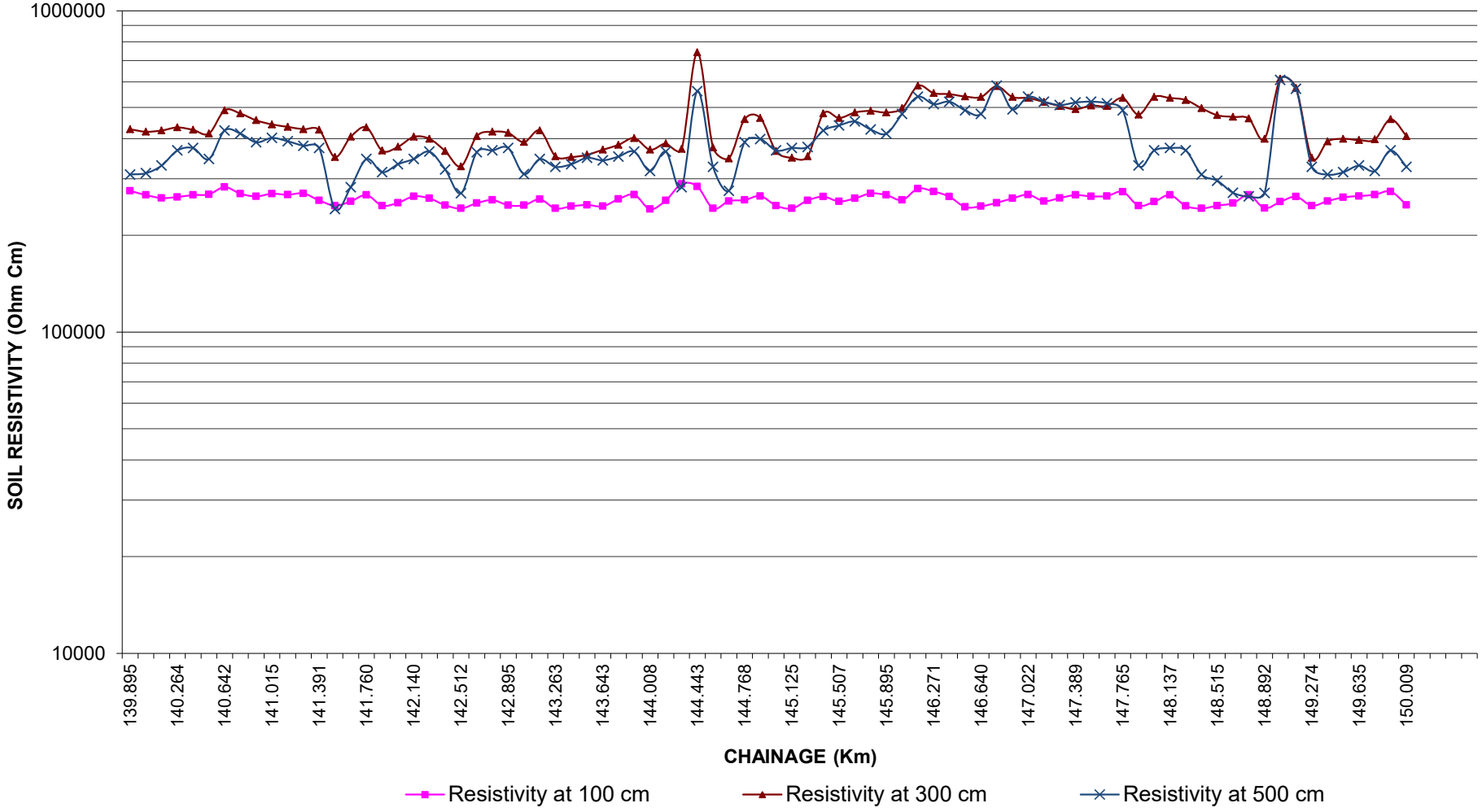
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 130.006 Km To 139.895 Km

GRAPH - 1.14



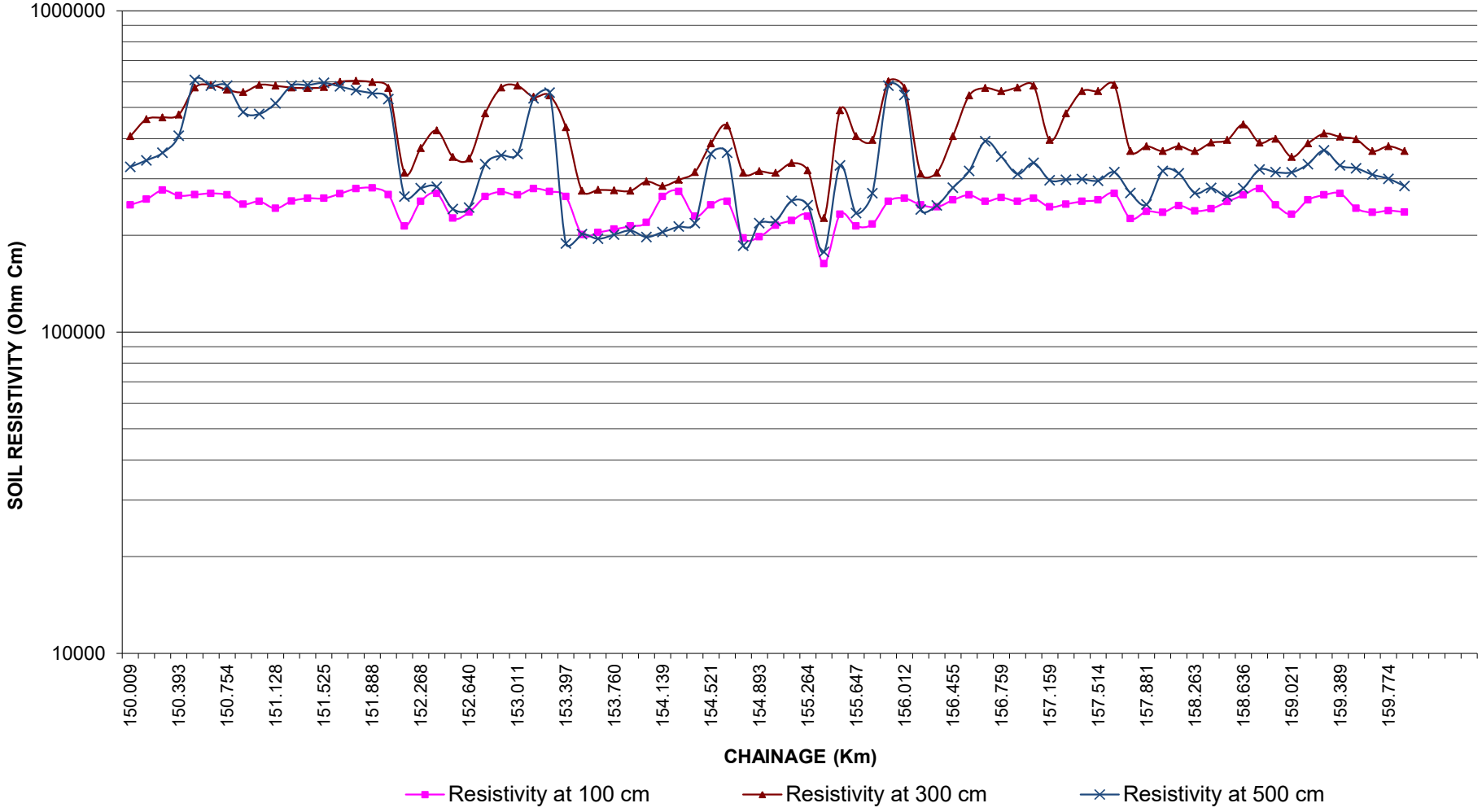
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 139.895 Km To 150.009 Km

GRAPH - 1.15



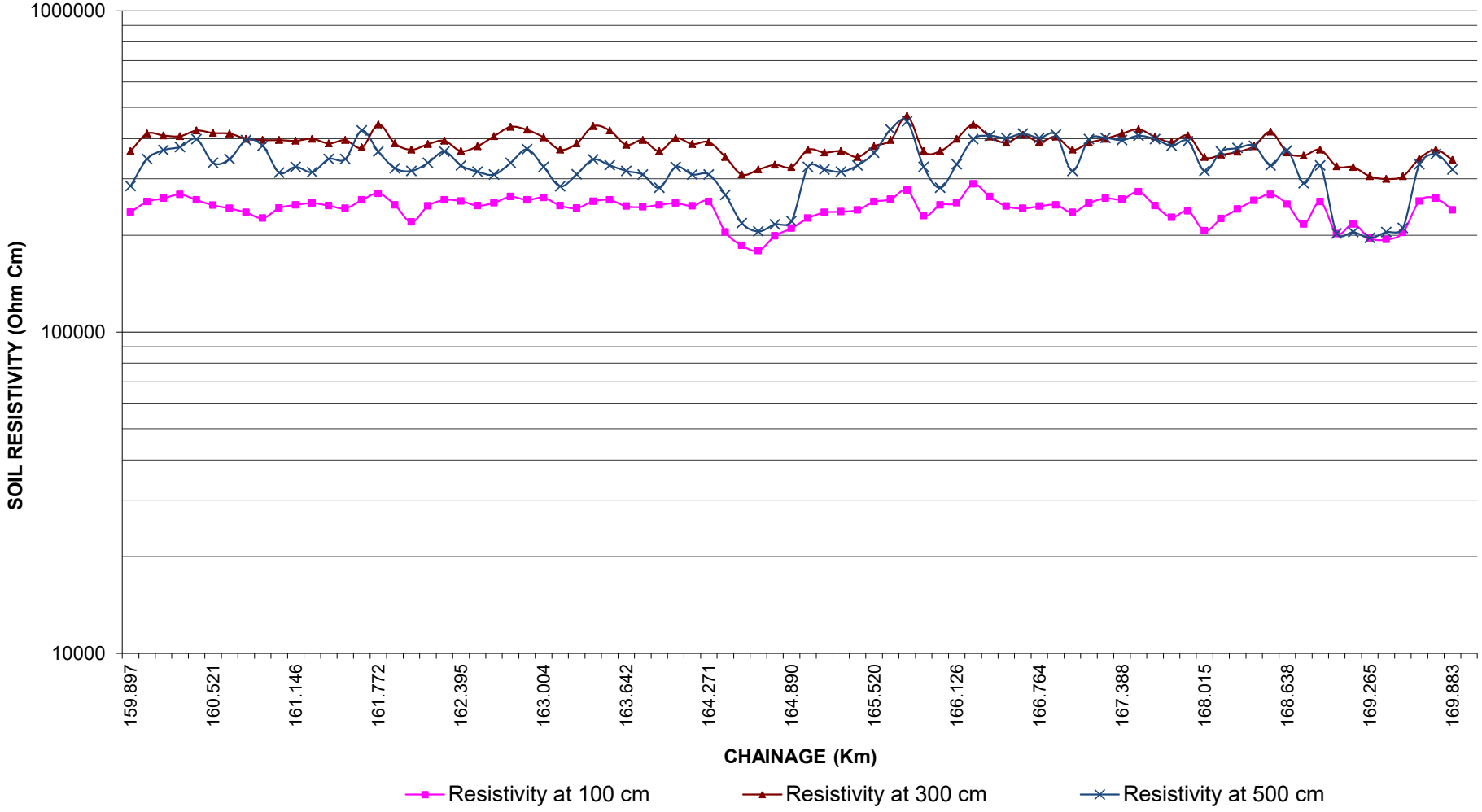
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 150.009 Km To 159.897 Km

GRAPH - 1.16



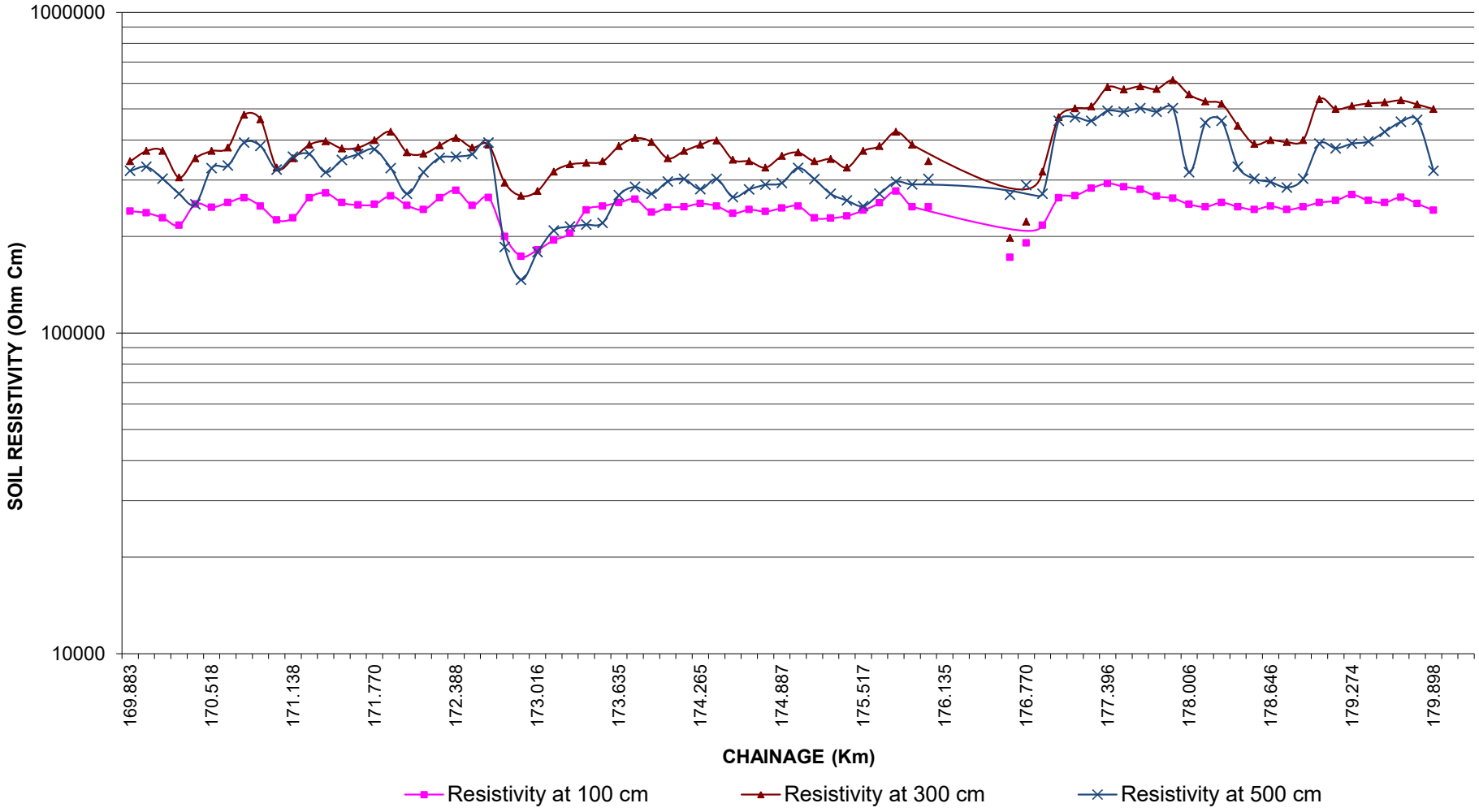
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 159.897 Km To 169.883 Km

GRAPH - 1.17



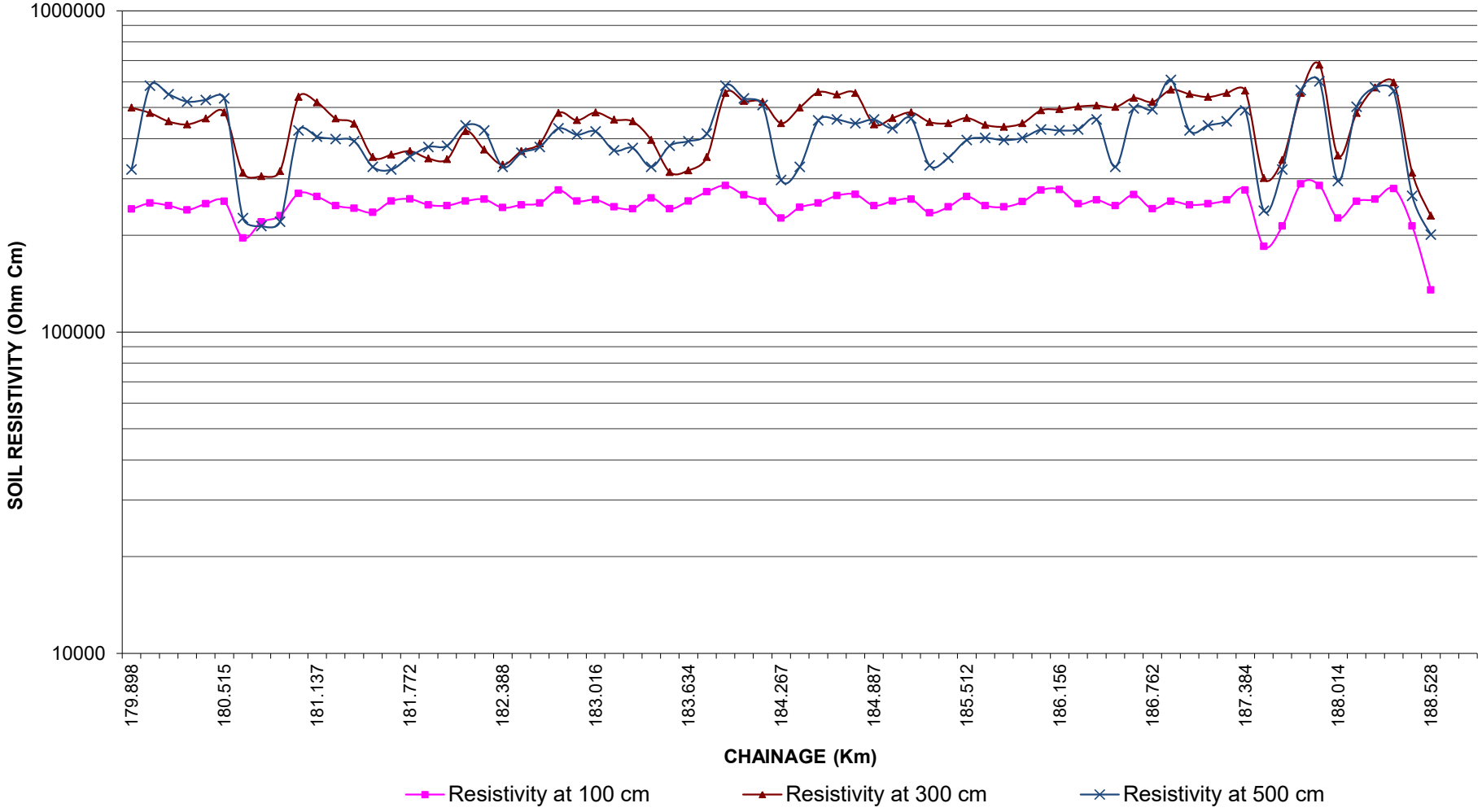
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 169.883 Km To 179.898 Km

GRAPH - 1.18



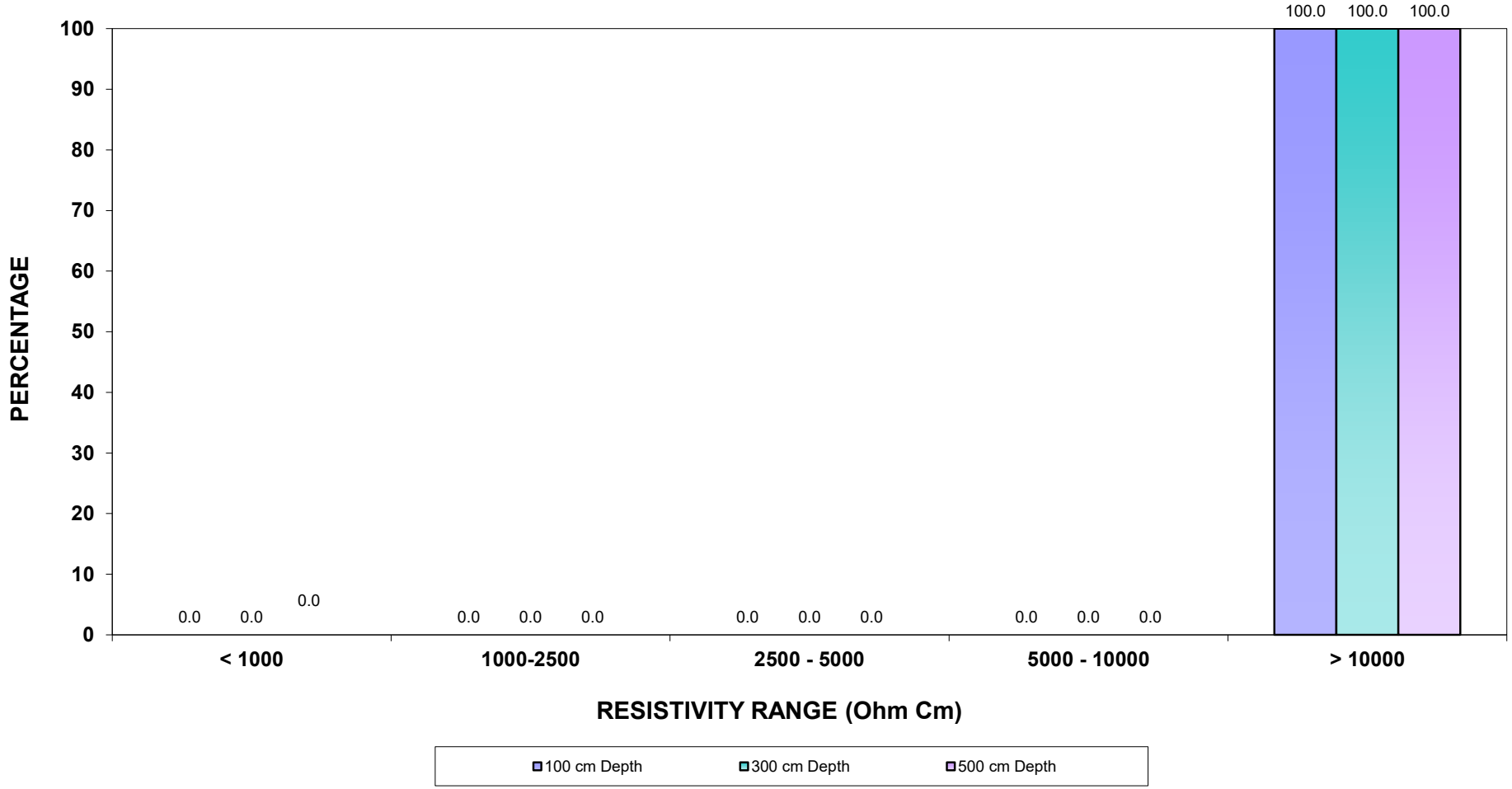
GRAPHICAL DISPLAY OF SOIL RESISTIVITY
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 179.898 Km To 188.528 Km

GRAPH - 1.19



Histogram- 1.1

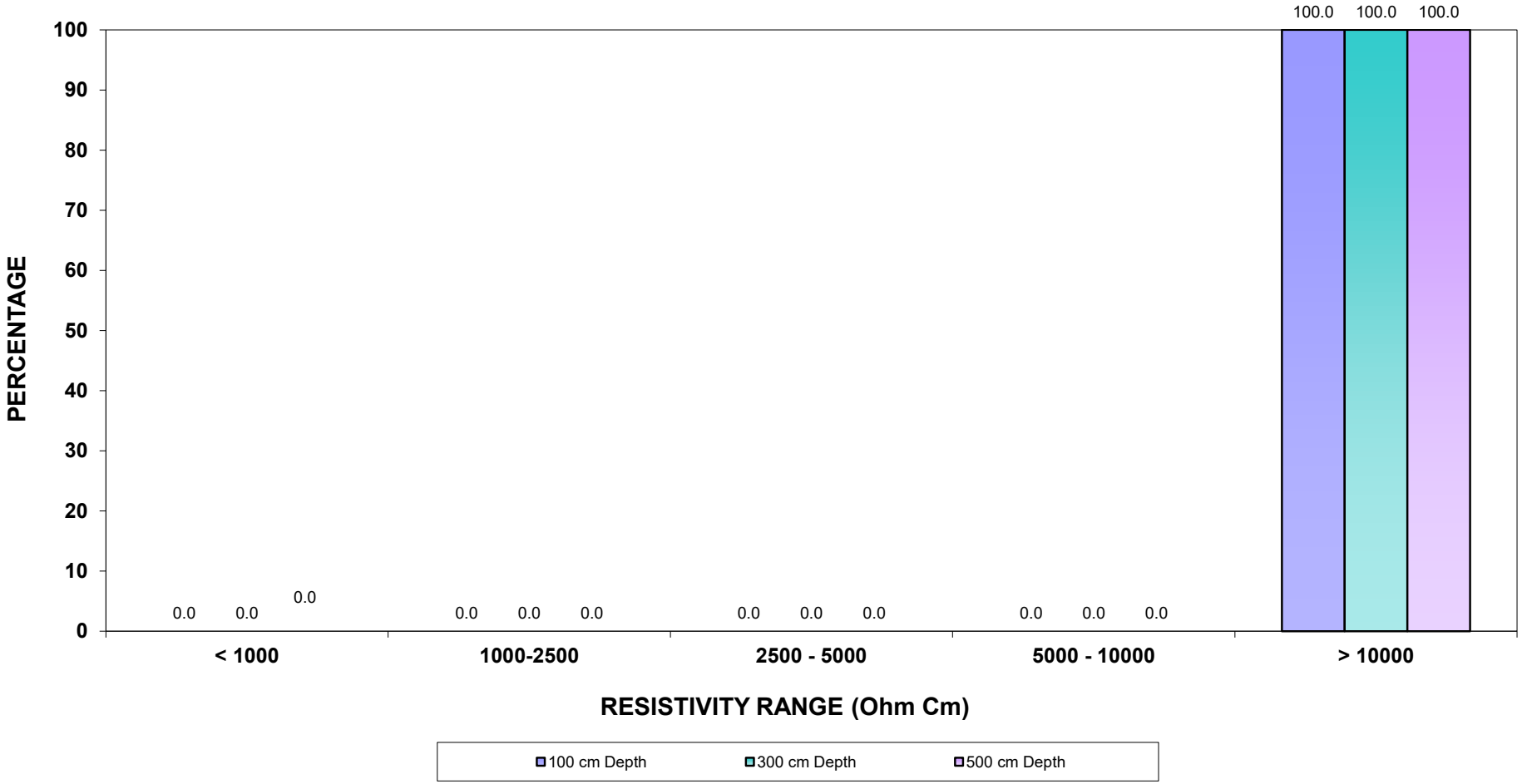
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 0.000 Km To 10.000Km



Annexure-III

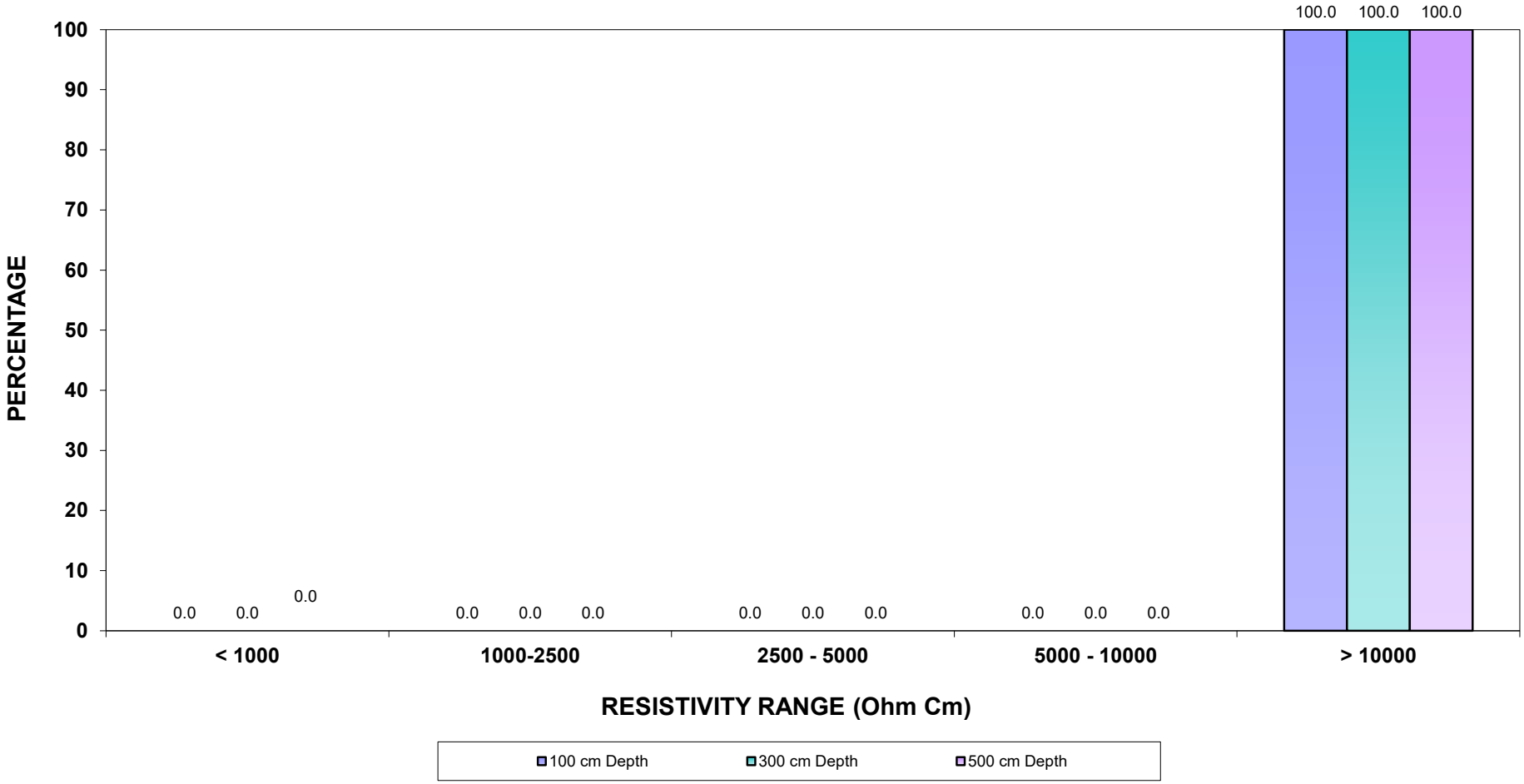
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 10.000 Km To 19.943 Km

Histogram- 1.2



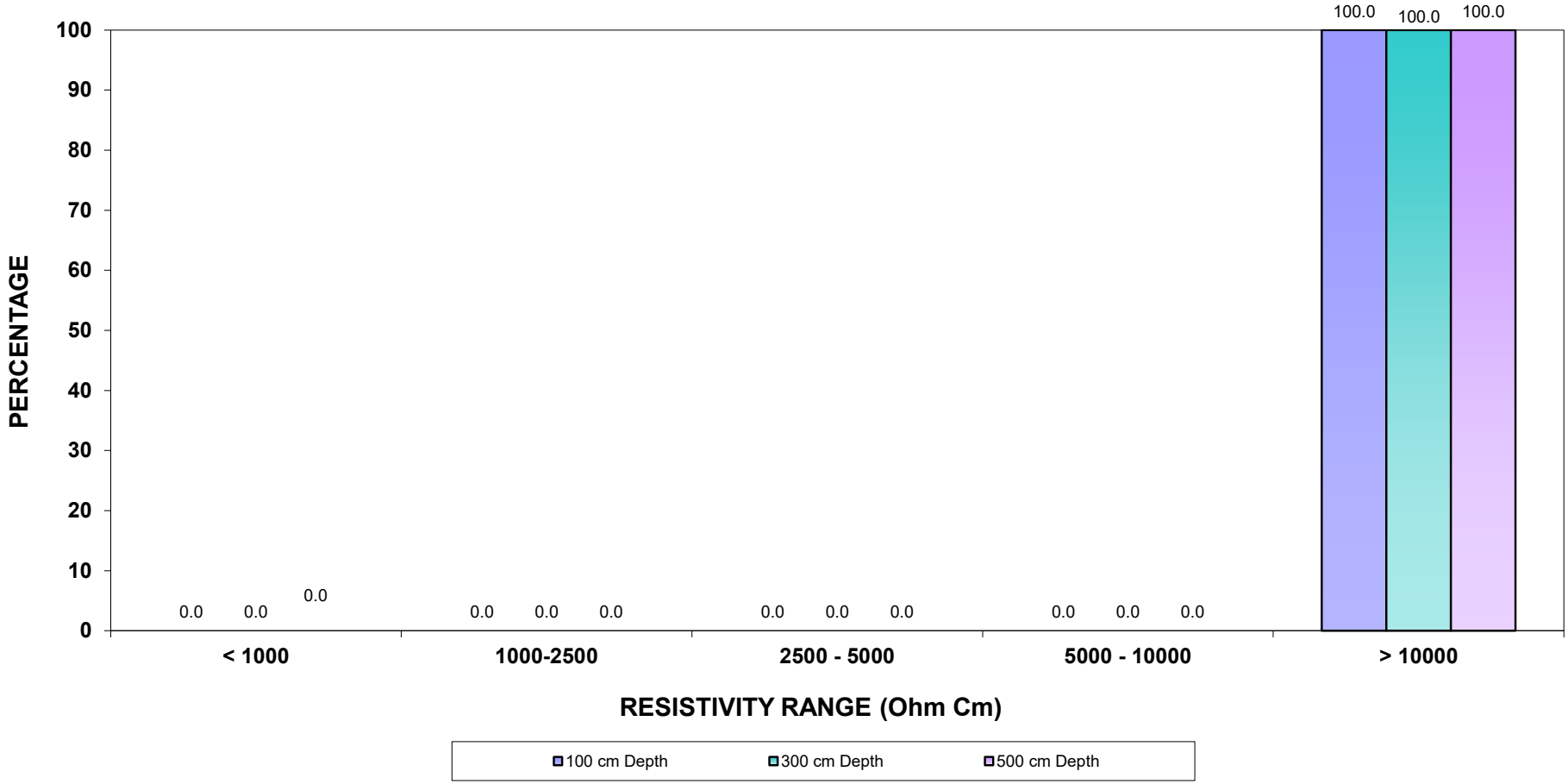
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 19.943 Km To 29.876 Km

Histogram- 1.3



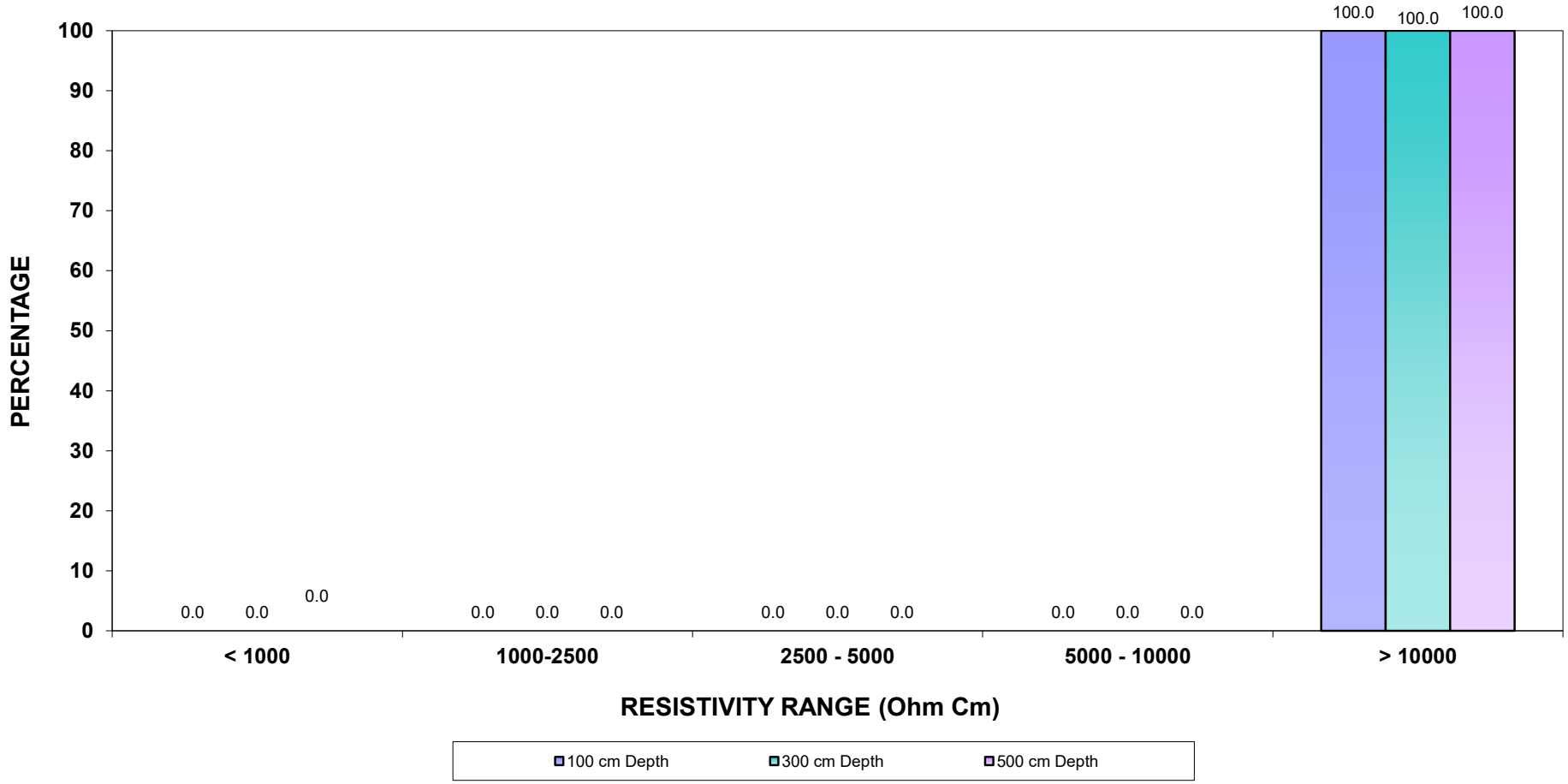
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 29.876 Km To 39.874 Km

Histogram- 1.4



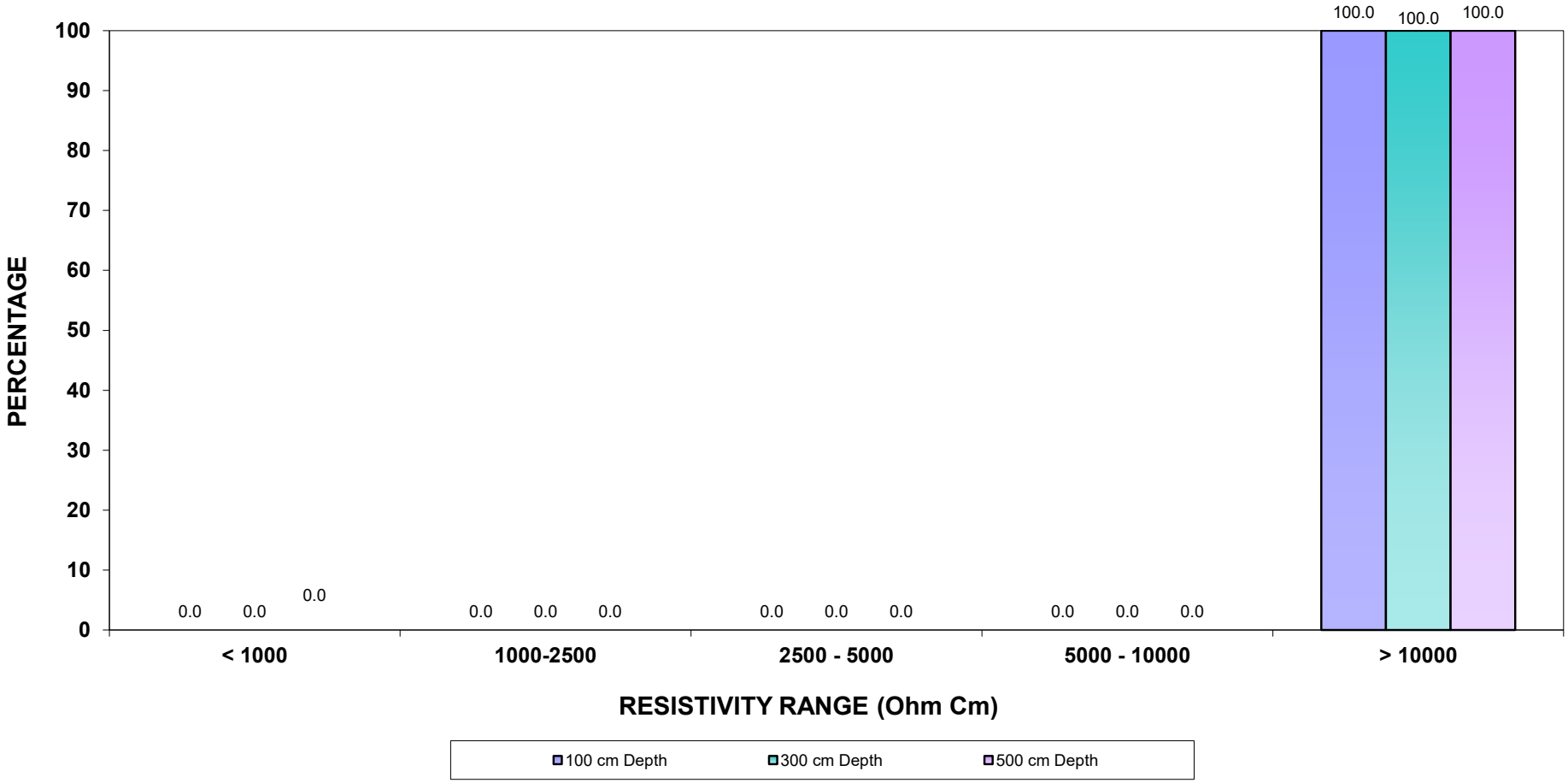
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 39.874 Km To 49.985Km

Histogram- 1.5



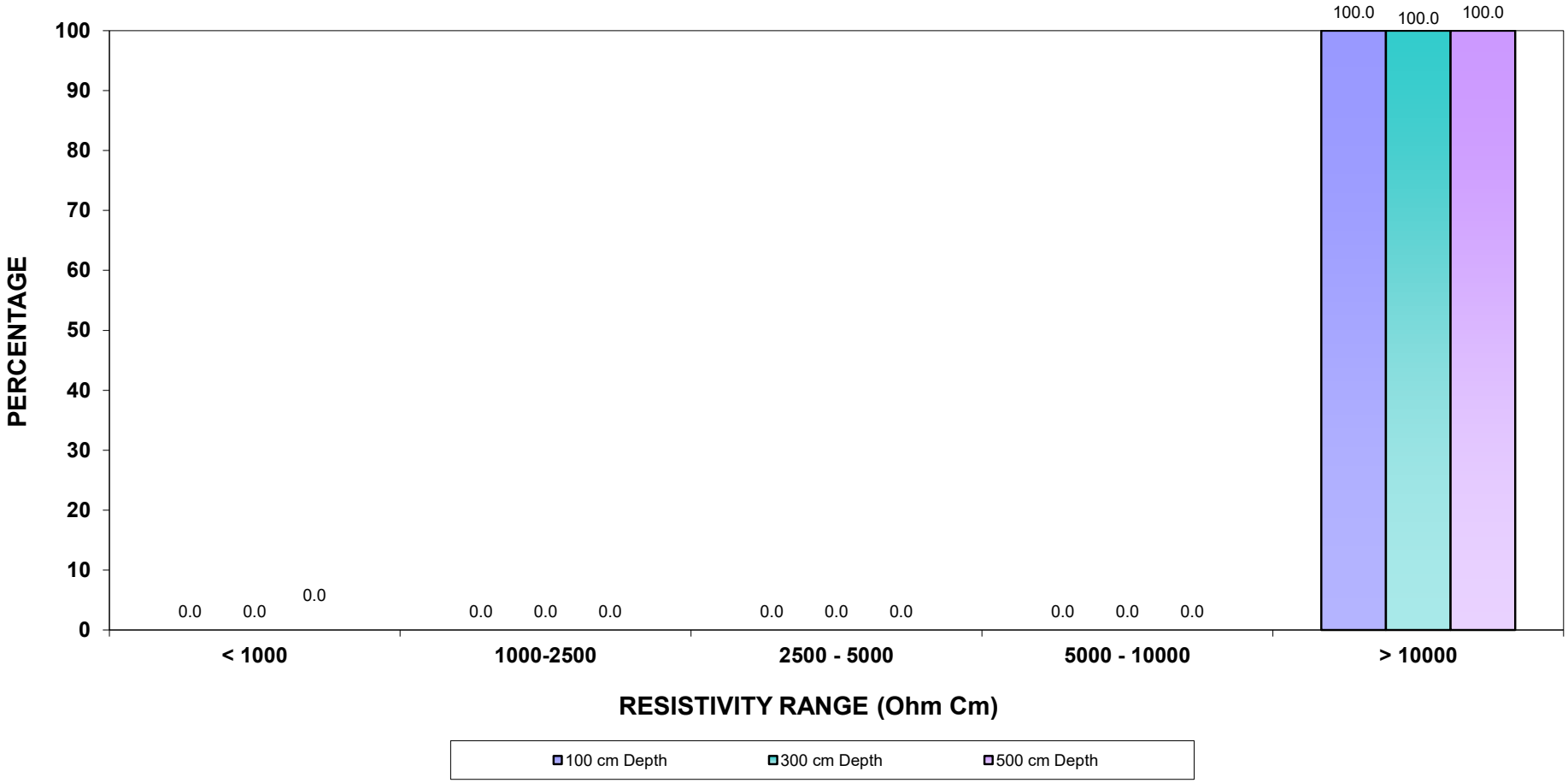
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 49.985 Km To 59.947Km

Histogram- 1.6



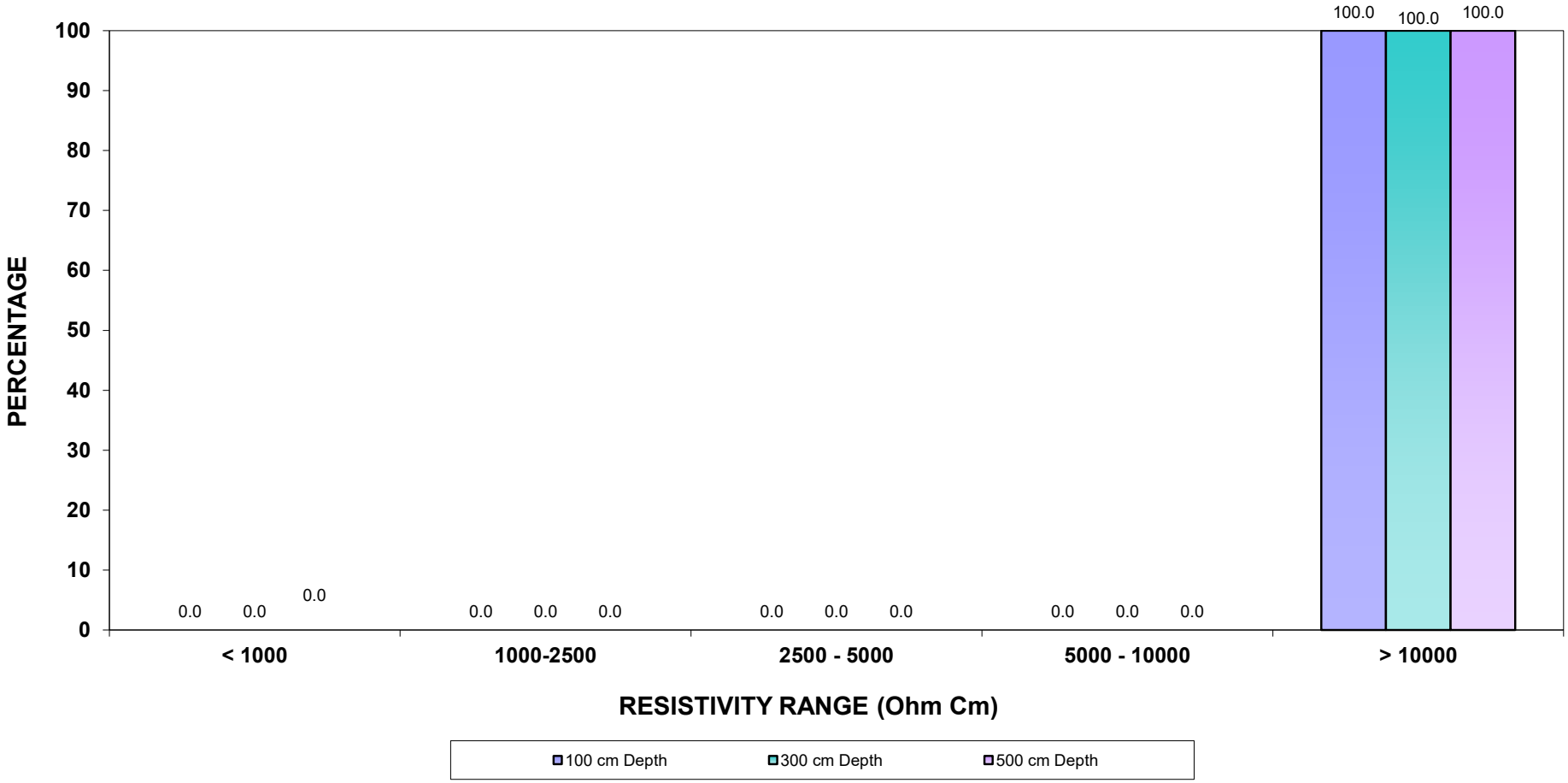
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 59.947 Km To 69.979 Km

Histogram- 1.7



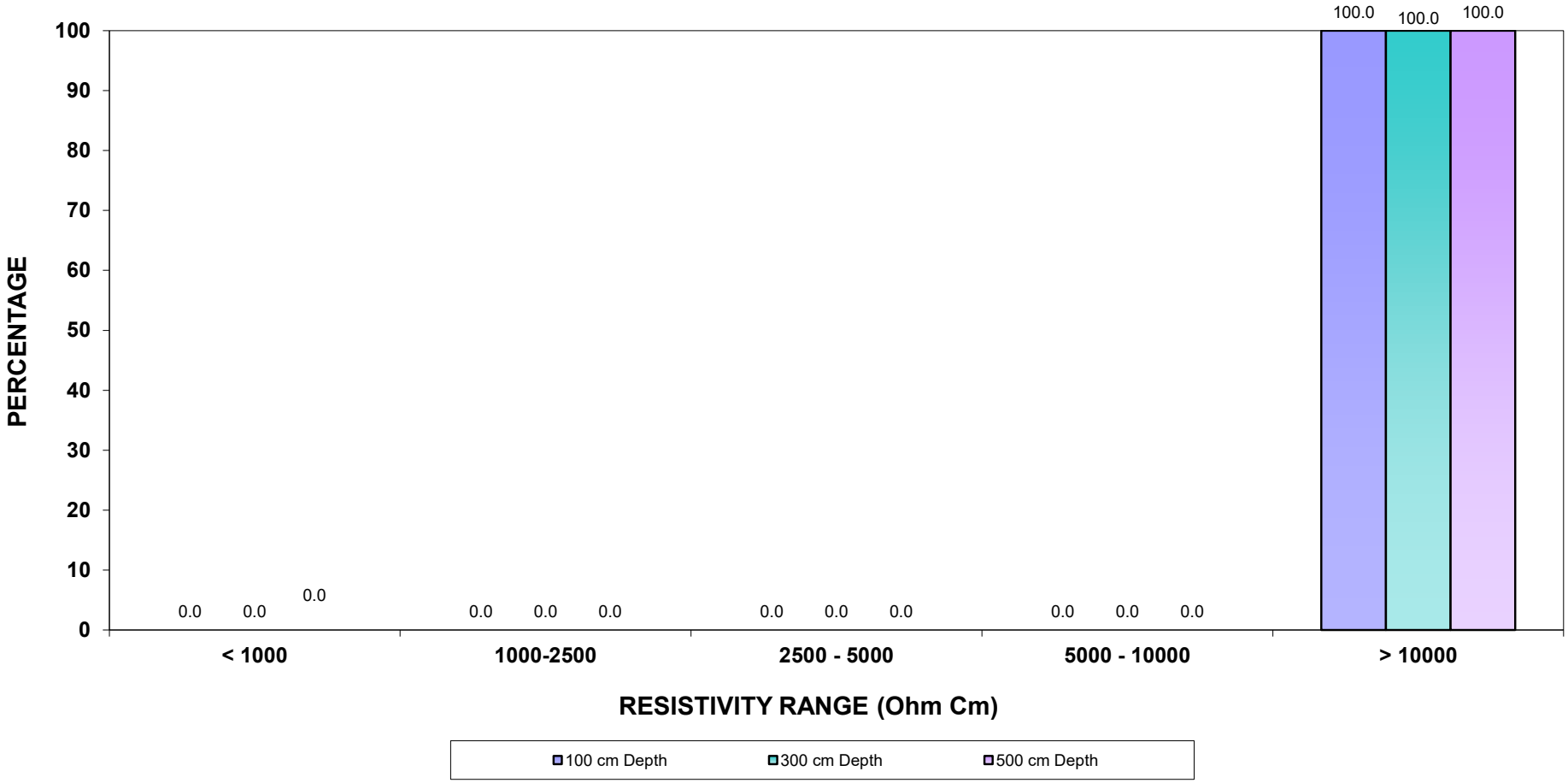
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 69.979 Km To 79.877 Km

Histogram- 1.8



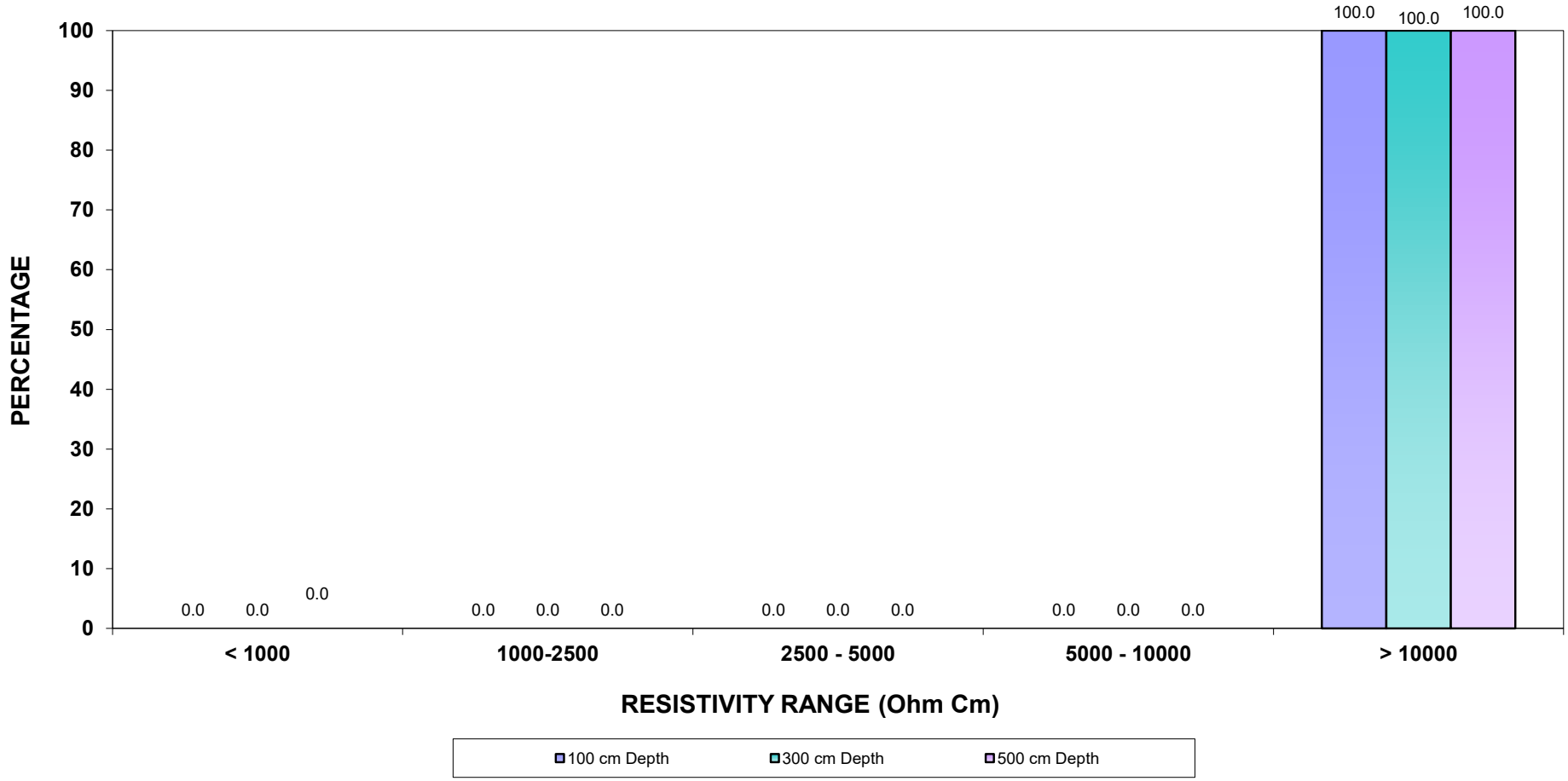
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 79.877Km To 90.005 Km

Histogram- 1.9



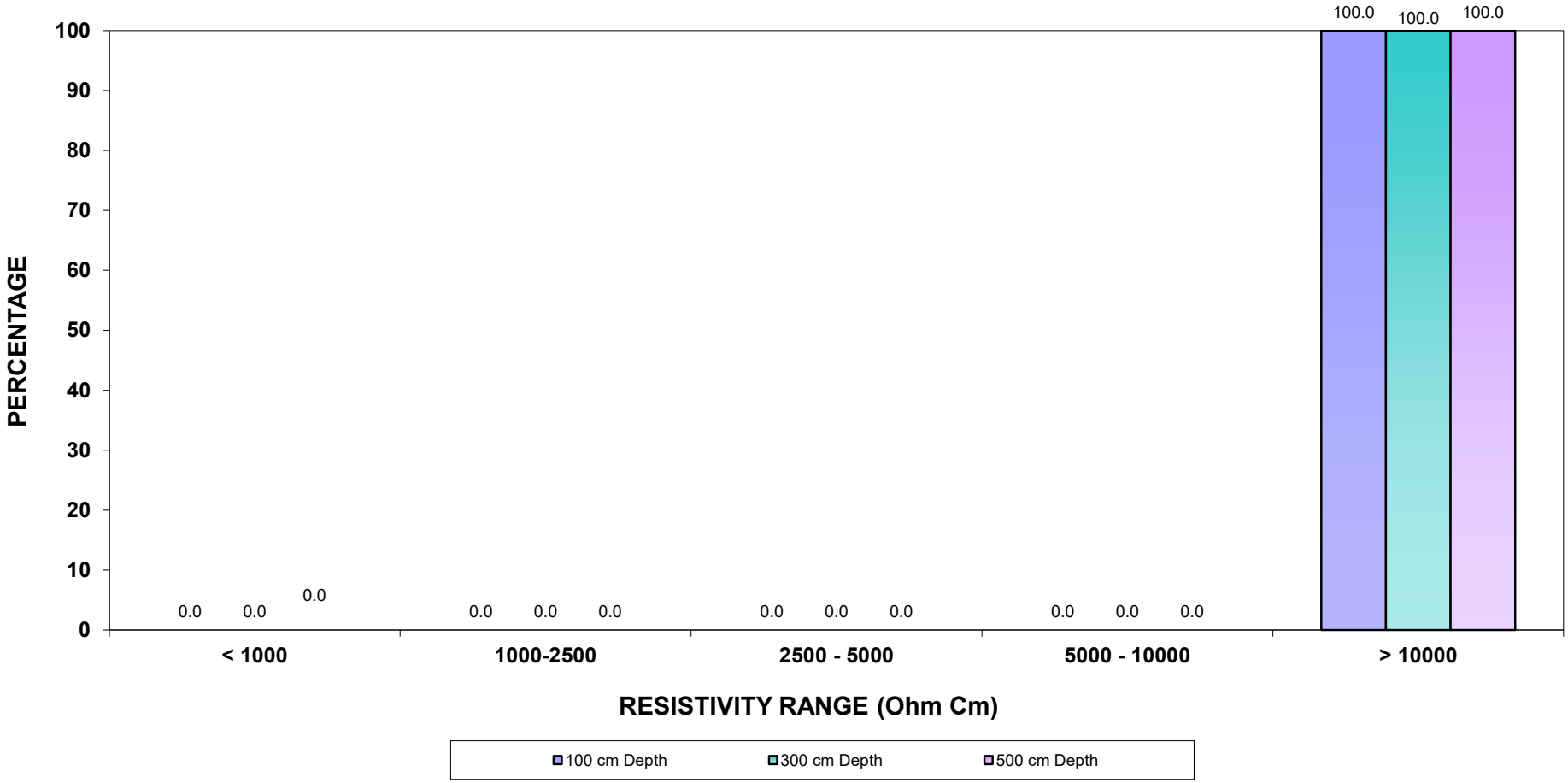
Histogram- 1.10

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 90.005 Km To 99.876 Km



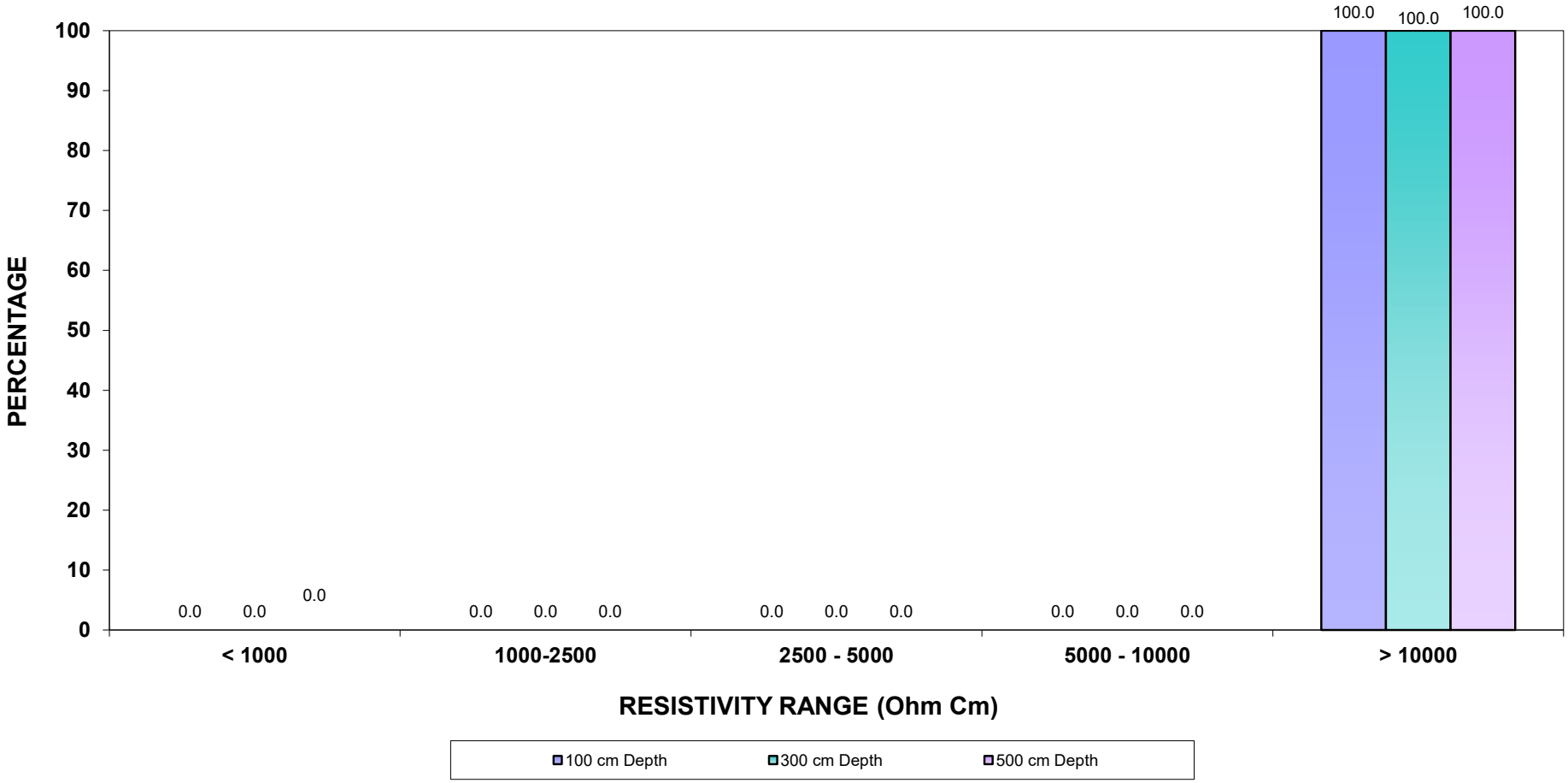
Histogram- 1.11

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 99.876 Km To 110.007 Km



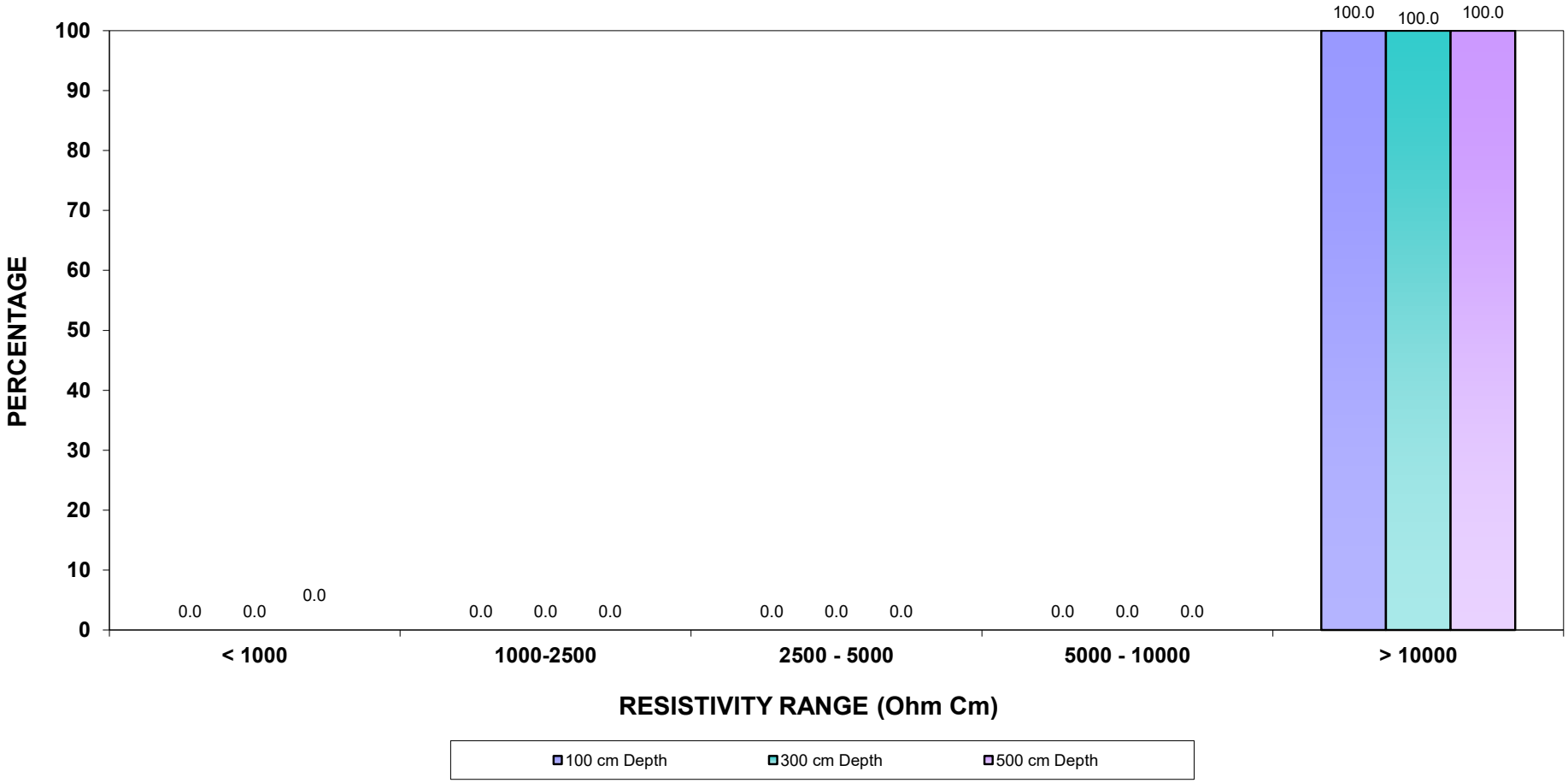
Histogram- 1.12

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 110.007 Km To 119.884 Km



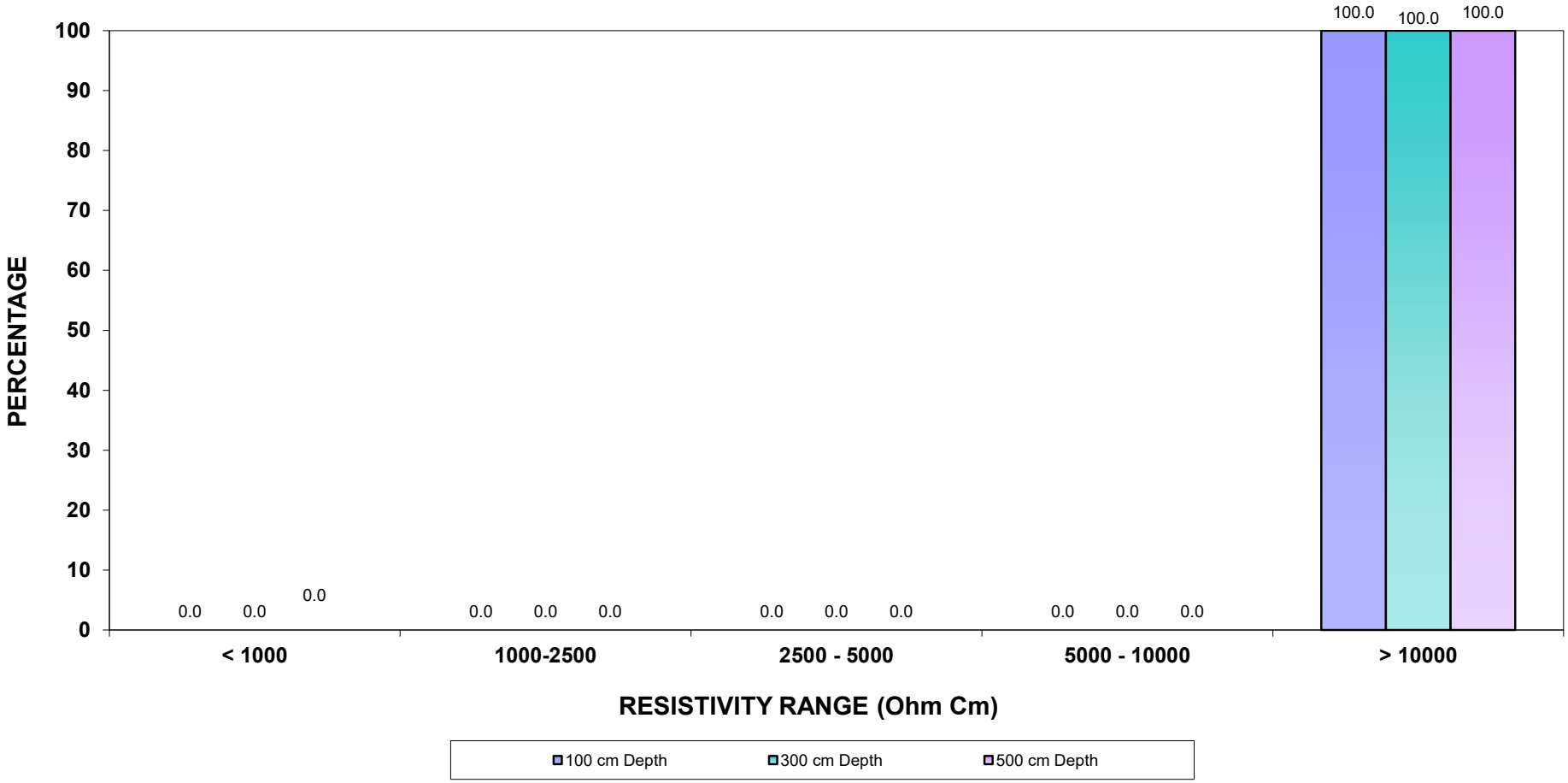
Histogram- 1.13

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 119.884 Km To 130.006 Km



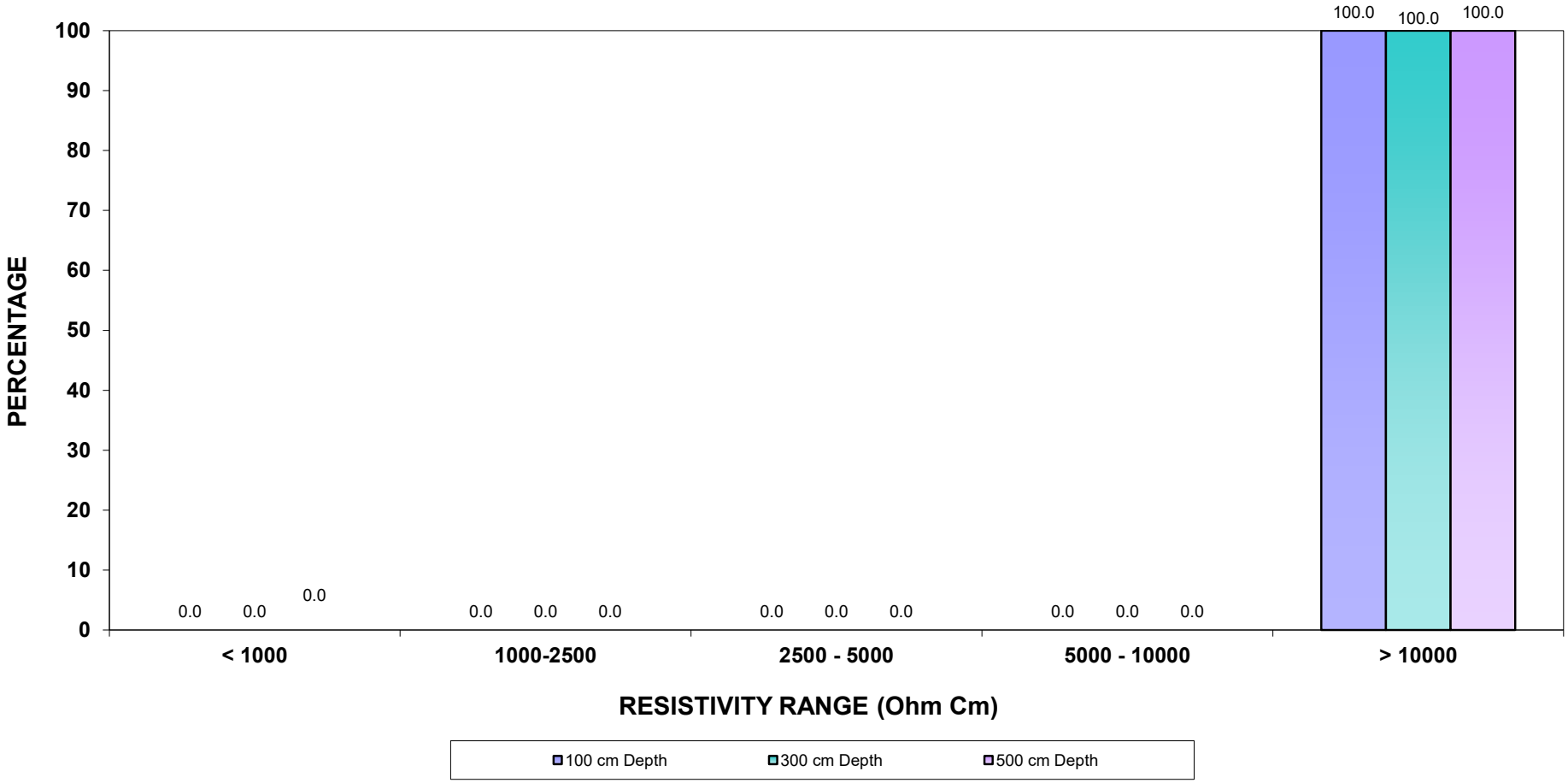
Histogram- 1.14

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 130.006 Km To 139.895 Km



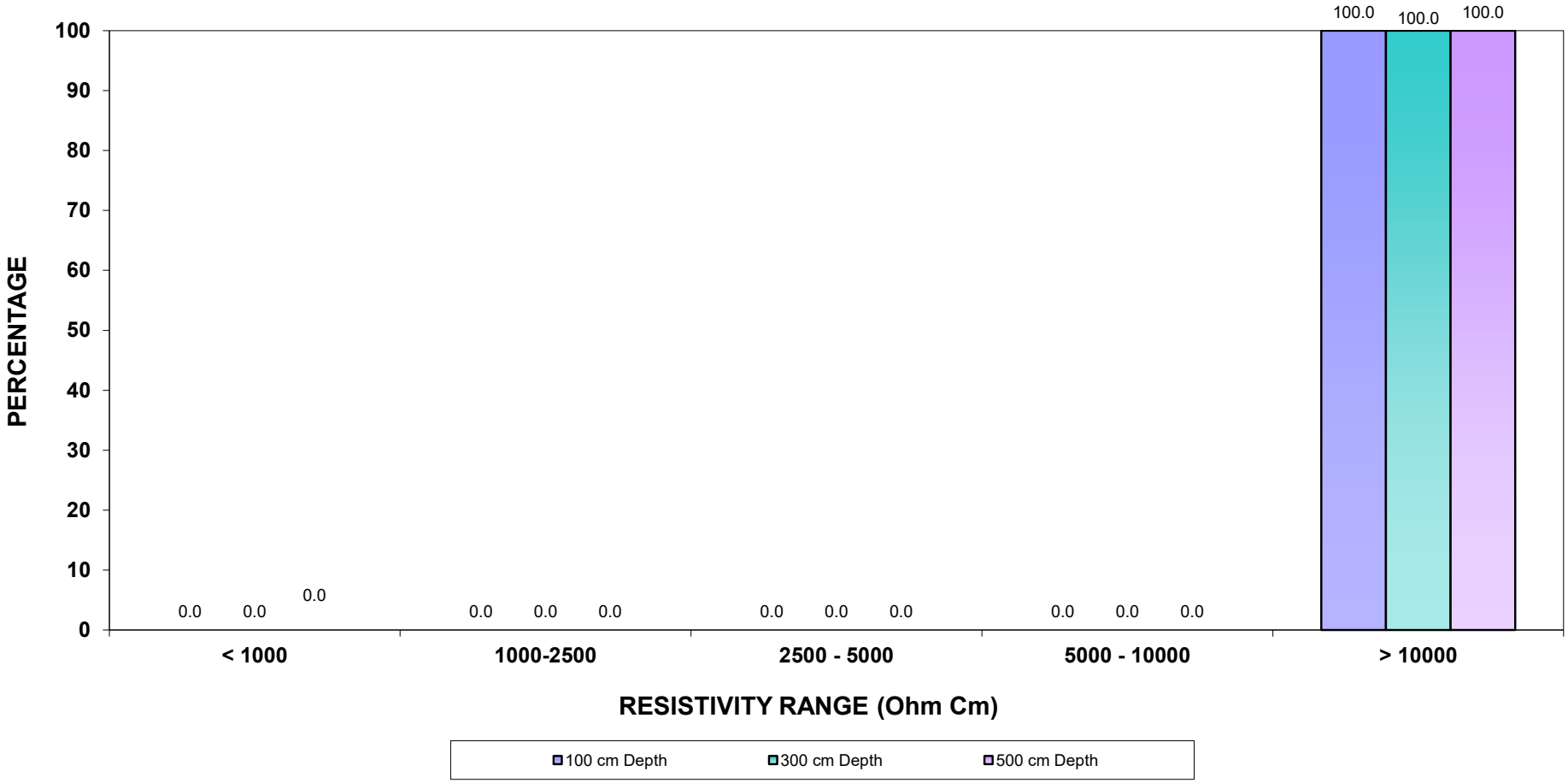
RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 139.895 Km To 150.009 Km

Histogram- 1.15



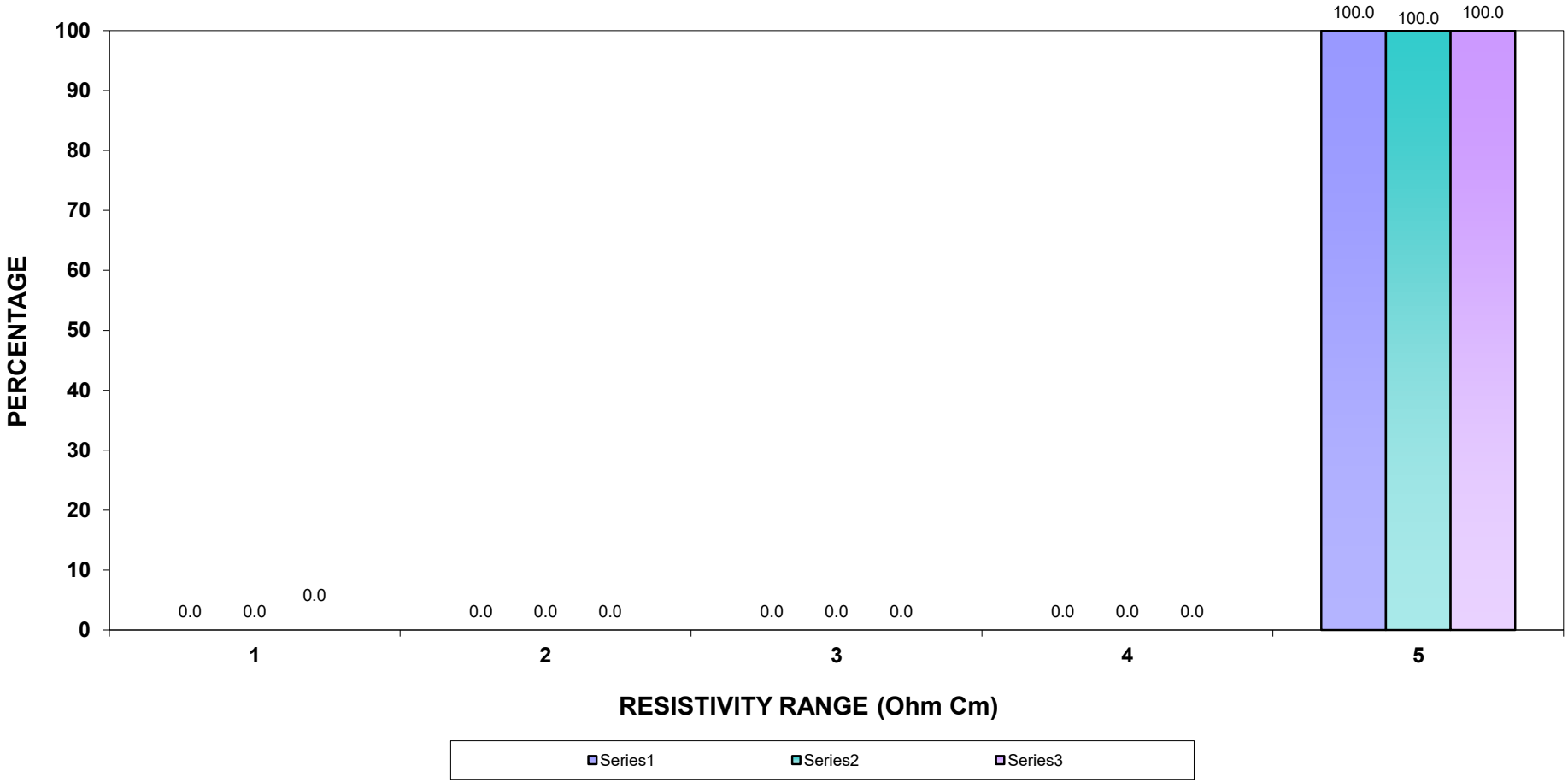
Histogram- 1.16

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 150.009 Km To 159.897 Km



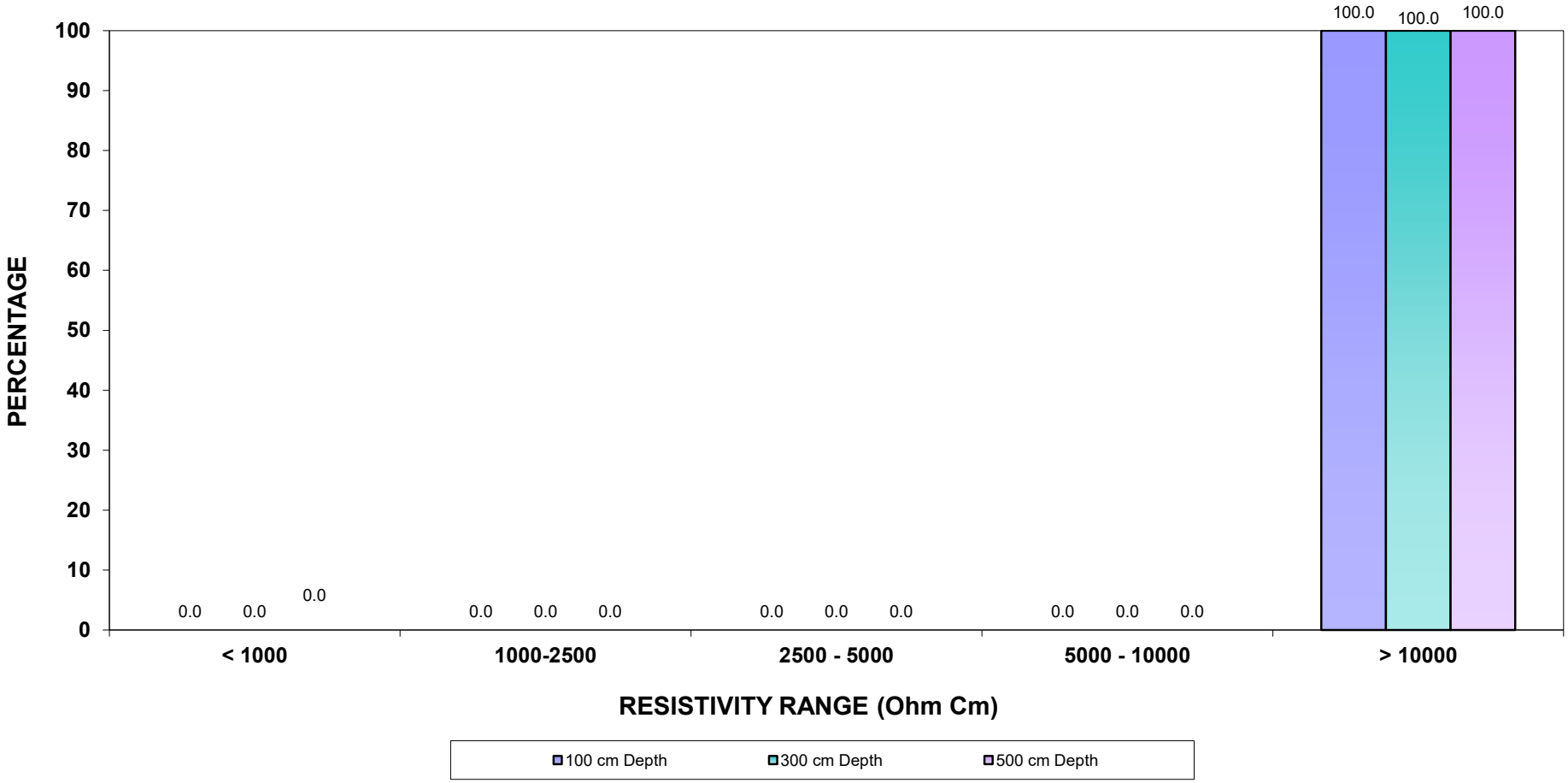
Histogram- 1.17

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 159.897Km To 169.883 Km



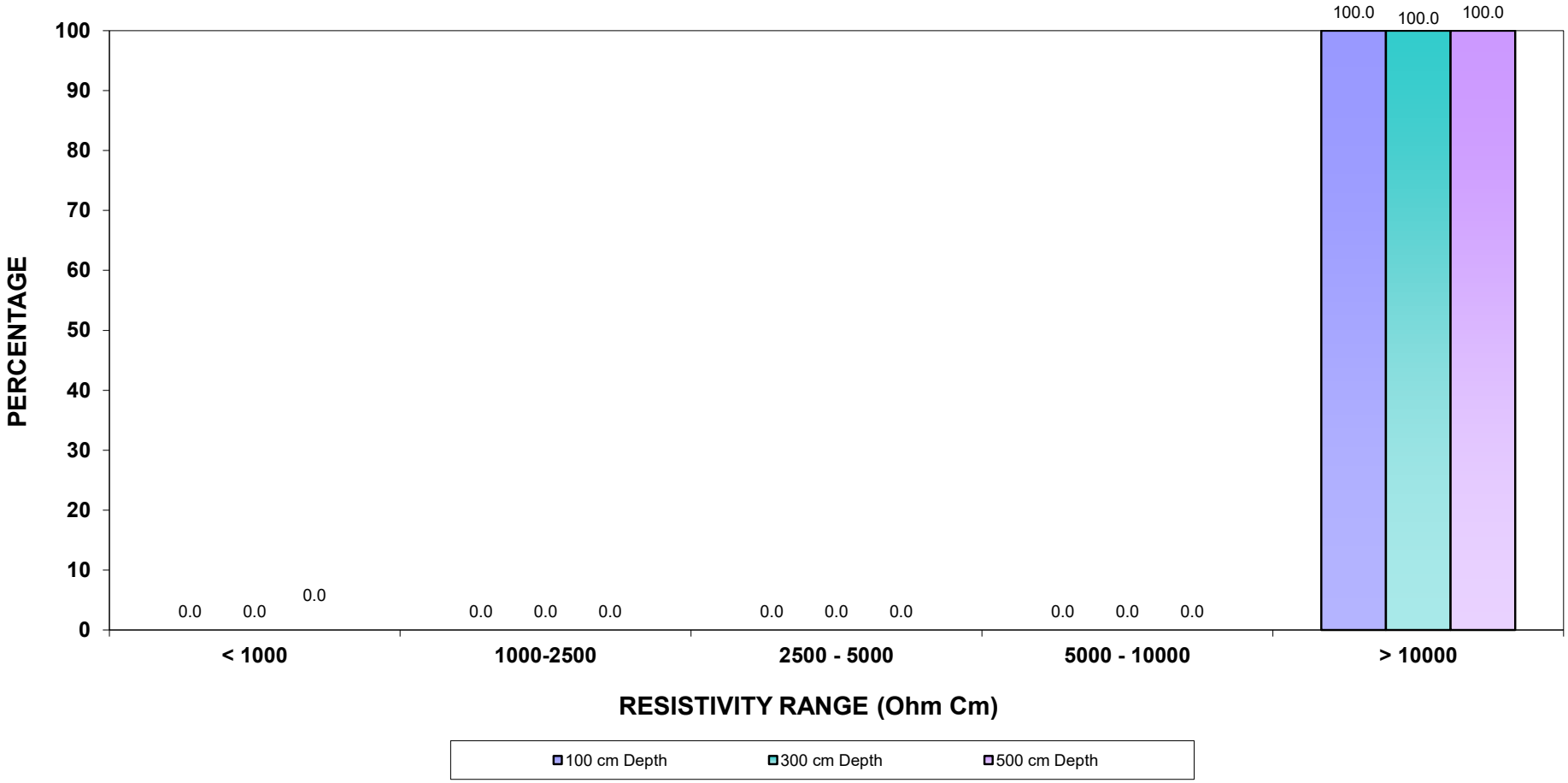
Histogram- 1.18

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 169.883 Km To 179.898 Km



Histogram- 1.19

RESISTIVITY HISTOGRAM
BELAKOBA TO RANIPOOL PIPELINE
Chainage From 179.898 Km To 188.528 Km



Certificate of Calibration

Megger

Issued by: Megger Instruments Limited
Archcliffe Road
Dover
Kent CT17 9EN
www.megger.com

Instrument Details

Model	DET4TD2
Description	Megger Earth Tester
Serial Number	1000347101987189

Environment Details

Temperature	Relative Humidity	Mains Frequency	Mains Voltage	Date Tested	23-Apr-2021
20°C ± 3°C	50% ± 20%	50Hz ± 0.5Hz	230V -2% + 10%	Date Commissioned	

Traceability Information

Serial No	Test Equipment Description	Procedure Version
T2421	Universal Earth Tester	V7.8

Test Title	Applied Value	Reading Value	Tolerance	Uncertainties	Pass/Fail
Voltage Ranges					
100 Vac	100 V	100 V	4 V	±1% ±1d	Pass
Resistance Ranges					
0 Ω	0.02702 Ω	0 Ω	0.04 Ω	±0.5% ±1d	Pass
10 Ω	10 Ω	9.96 Ω	0.23 Ω	±0.5% ±1d	Pass
25 Ω	25 Ω	24.9 Ω	0.8 Ω	±0.5% ±1d	Pass
180 Ω	180 Ω	180 Ω	3.9 Ω	±0.5% ±1d	Pass
1.8 KΩ	1.8 KΩ	1.8 KΩ	39 Ω	±0.5% ±1d	Pass
18 KΩ	18 KΩ	17.96 KΩ	390 Ω	±0.5% ±1d	Pass

This certificate provides traceability of measurement to certified National Standards, and to the units of measurement realised at the National Physical Laboratory or other recognised National Standards Laboratories.

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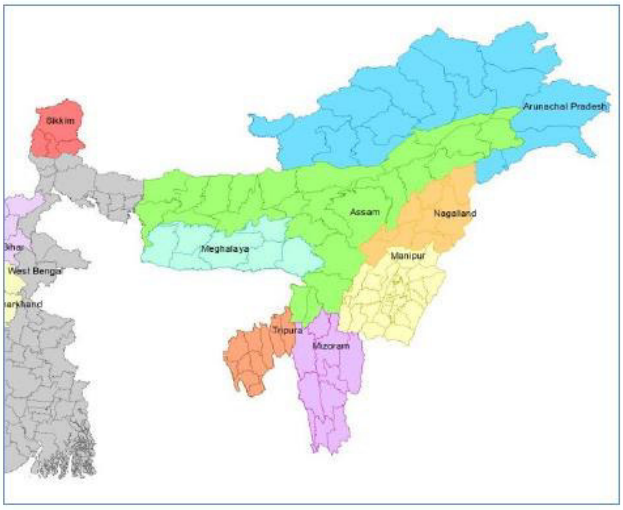
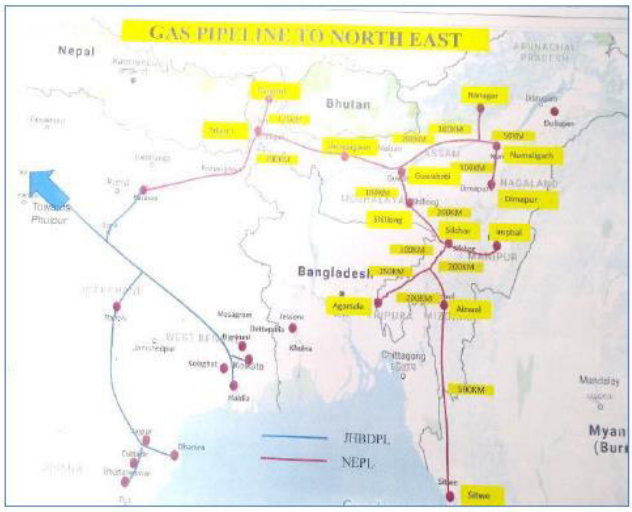
DETAILED ENGINEERING ROUTE SURVEY WORKS FOR PROPOSED NORTH EAST GAS GRID PIPELINE PROJECT – PACKAGE - III

GROUP – D

SILIGURI - GANGTOK NATURAL GAS PIPELINE (NEW LINE)

SOIL CHEMICAL ANALYSIS – DRAFT REPORT





Submitted to

Engineer–in–Charge

INDRADHANUSH GAS GRID LIMITED (IGGL)

(A JV OF IOCL, ONGC, GAIL, OIL & NRL)

5th Floor, Central Mall, G. S. Road, Christian Basti

Guwahati - 781005

Submitted by

INDIAN RESOURCES INFORMATION & MANAGEMENT TECHNOLOGIES LTD. (IN-RIMT)

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INDEX

Sr. No	Particulars	Page No.	
		From	To
1.	Chapter-I Introduction	1	4
2.	Chapter-II Methodology	5	26
3.	Chapter-III Observations And Discussions	27	30
4.	Chapter-IV Findings & Recommendations	31	31
5.	Annexure-I Chemical Analysis of Soil Sample	32	40
6.	Laboratory Test Reports.	41	331
7.	Certificate of Accreditation	332	332

CHAPTER – I

INTRODUCTION

1.0 **Indradhanush Gas Grid Limited, Guwahati** has undertaken an activity to lay a pipeline between Siliguri (Belakoba) to Gangtok (Ranipool) and hence, undertaken to carry out the soil Chemical Analysis along the route of the pipeline having a length of 188.528 Km.

Indradhanush Gas Grid Limited has entrusted the work of Soil Chemical Analysis on **Indian Resource Information and Management Technologies (IN-RIMT) Ltd**. Accordingly, the present report covers the study of soil Chemical Analysis along the route alignment of Siliguri (Belakoba) to Gangtok (Ranipool) pipeline.

Auger boring is conducted along the route of the pipeline and soil samples are collected at two depths as per specifications at specified intervals.

The chemical analysis of soil samples is carried out at **M/s. Nilawar Laboratory (A Unit of MNEC Consultants Pvt. Ltd.)**. The laboratory is **NABL Accredited** whereas M/s. Nilawar Laboratory is also an **ISO 9001:2015, ISO 14001:2005 & ISO 18001:2015** certified laboratory. The certificates are attached with this report.

Total 436 soil samples were collected in the main line of the pipeline. Thus, the results of above samples are discussed in this report.

1.1 ***Soil Chemical Analysis:***

The chemical analysis for soil sample collected at every 1 km interval at two depths of top and bottom surface level of the pipeline. The procedure for this analysis adopted from IS Code manual. The detail of chemical analysis is discussed in later chapter. Some of the important findings are given below.

Out of 436 soil sample 68 soil samples are highly corrosive and 368 soil samples are Medium corrosive.

The highest moisture content is 42.5 % at CH: 142.14 km & depth 1.00 m. The route passes through the Hilly Cultivated and barren Land.
Lowest pH observed is 4.07 at CH: 130.89 km & depth 1.60 m.
The highest chloride percentage observed is 0.0085%. at Ch 15.50 Km.
The traces of Sulphide are found in soil throughout pipeline length except at, Ch 0.00 km, Ch.4.25 km, Ch.5.00 km, Ch. 7.00 km, Ch.10.00 km, Ch: 11.00 km, Ch.14.38 km, Ch. 14.63 km, Ch.15.00 km, Ch.15.50 km, Ch. 15.63 km, Ch.18.00 km, Ch.24.00 km, Ch.29.00 km, Ch.32.00 km, Ch.42.00, Ch.43.00, Ch.51.27 km, Ch.53.55 km, Ch.54.32 km, Ch.58.43 km, Ch.61.84 km, Ch.62.87 km, Ch.63.74 km, Ch.72.97 km, Ch.74.01 km, Ch.76.17 km, Ch.77.35 km, Ch.79.10 km, Ch.81.89 km, Ch.88.89 km, Ch.93.89 km, Ch.98.89 km, Ch.102.91 km, Ch.109.89 km, Ch.111.89 km, Ch.115.89 km, Ch.116.88 km, Ch.123.89 km, Ch.124.88 km, Ch.126.89 km, Ch.128.90 km, Ch.129.89 km. Ch.132.88 km, Ch.139.89 km, Ch.114.01 km, Ch.147.90 km, Ch.151.89 km, Ch. 154.89 km, Ch.155.90 km, Ch.157.16 km, Ch.157.39 km, Ch.164.89 km, Ch.165.88 km, Ch.167.89 km, Ch.171.90 km, Ch.172.89 km, Ch.174.89 km, Ch.178.90 km, Ch. 179.90 km, and at Ch.182.89 km.

All the Observation data obtained are further treated for evaluating and discussion in the next Chapter.

1.2 ***Equipments:-***

The equipments used for soil resistivity measurement and laboratory equipments used for chemical analysis are most advanced, having maximum accuracy and precision. The detail list is given below.

List of Equipments used for Soil Chemical Analysis:

Sr. No.	Name of Equipments	Make/Model	No. of Equipments
1.	Atomic Absorption Spectrophotometer with Auto Hydride Generator.	GBC - Sens AA	1
2.	Gas Chromatograph	Shimadzu - GC-2010AF	1
3.	Digital Flame Photometer (Including Na & K Filter)	Aimil/048000	1
4.	Ca Filter	Aimil	1
5.	Digital Spectrophotometer	Chemito-D215D	1
6.	Electronic Single Pan Balance	Toposons	2
7.	pH Meter (Lab)	Equiptronics	1
8.	pH Meter (Pocket)	Equiptronics	3
9.	Oven (Alu) 250° C 18x18x18	Labline	1
10.	Hot Air Oven	Labline	3
11.	Distilled Water Plant	Labline	2
12.	Hot Plate	Labline	5
13.	Magnetic Stirrer with 2 needle & heater	Labline	3
14.	Heating Mentle 2-3 Lits Cap.	Labline	4
15.	Muffle Furnace 800° c	Labline	1
16.	Auto Clave 12x12	Labline	2
17.	Bacteriological Incubator 450x450x450	Labline	2
18.	Colony Counter	Equiptronics	1
19.	Digital TDS Meter	Equiptronics	2
20.	Digital DO Meter	Equiptronics	2
21.	Centrifuge Machine	Labline	1
22.	Fuming Chamber	Labline	1
23.	Refrigerator	Godrej	1
24.	Test Sieves Sets (As per IS)	Labline	2

Sr. No.	Name of Equipments	Make/Model	No. of Equipments
25.	Sieve Shaker	Labline	1
26.	Cone Penetrometer	Aimil	1
27.	Consolidation Test Apparatus with Guide Ring	Aimil	1
28.	Direct Share Apparatus	Aimil	1
29.	Mechanical Liquid Limit Device	ELI	1
30.	Grooving Tools (AGTM Type)	ELI	1
31.	Hydro Meter	Hyco	1
32.	100 mm Dia Cylindrical Metal Mould with Base Plate	ELI	1
33.	Metal Rammer (2.60 Kg with 310 mm drop)	ELI	1
34.	Shrinkage Limit Container	Aimil	1
35.	Vane Shear Apparatus	Aimil	1
36.	Swell Test Apparatus	ELI	1
37.	Liquid Limit Device	ELI	1
38.	Permeability Apparatus	Hyco	1
39.	Aggregate Impact Testing Machine	Jainsons	1
40.	Balance 20 Kg Capacity	Top sons	1

CHAPTER – II

METHODOLOGY

2.0 ***Soil Chemical Analysis:***

The corrosivity of soil depends on several variables. Therefore the chemical analysis of the soil is essential. The scope of work specified the necessary tests, which are comprehensive to assign corrosivity of soil.

The chemical tests are divided into the 4 categories as follows.

1) General Test	-	Moisture percentage.
	-	pH Value.
	-	Total Dissolved Solids
	-	Redox Potential
2) Cations	-	Calcium
	-	Magnesium
	-	Sodium
	-	Potassium.
3) Anions	-	Chloride
	-	Fluoride
	-	Sulfate
	-	Sulfide
	-	Carbonate
	-	Nitrate
	-	Nitrite
4) Microbial	-	Anaerobic bacteria
	-	Sulfate reducing bacteria (SRB)

2.1 ***Principle and Methodology:***

I) The following methods are prepared using the standard literature as listed below:-

1) Standard Methods of American Public Health Association (APHA), Washington.
2) Manual on Water & Waste Water Analysis, NEERI, Nagpur.
3) Analytical Agricultural Chemistry by S L Chopra, J S Kanwar.

4) Vogel's Textbook of Quantitative Chemical Analysis, ELBS, England

II) Processing Of Soil Samples:-

1) Air-dry the sample by spreading it over filter/news paper under fan with proper labeling. Soil not to be dried under direct sun light.

2) Grind about 70 g sample to a fine powder and sieve it.

3) Take 50 g sample in 250 ml plastic beaker & add 100 ml distilled water to it. Shake it for 10 min. and allow it to stand for 1 hour. After measuring pH and mV of this solution, add 150 ml water to it, shake well. Take 10 ml of this fresh solution add 40 ml water mix well and measure its TDS by TDS meter, then allow it to stand. Use the clear supernatant liquid for other cations & anions.

III) Parameter To Be Tested:-

1) pH 2) Moisture 2) Total dissolved solids (TDS) 3) Redox Potential 4)Calcium 5)Magnesium 6) Sodium 7) Potassium 8) Chlorides 9) Sulphates 10) Sulphides 11) Bicarbonate 12) Nitrite 13) Nitrate 14) Carbonate 15) Anaerobic Bacteria 16) SRB

1) Determination of pH:-

a) Principle:

The **pH** is determined by measurement of the electromotive force of a cell comprising an indicator electrode (an electrode responsive to hydrogen ions such as glass electrode) immersed in the test solution and a reference electrode (usually a calomel electrode). The contact between the test solution and the reference electrode is usually achieved by means of a liquid junction, which forms a part of the reference electrode. PH meter measures the E.M.F. of this cell.

b) Reagents:

i) Buffer solution of pH 4 : Dissolve 1.02 gm anhydrous potassium biphthalate, KHC_8H_4 in boiled and cooled distilled water. Dilute to 100 ml. Or use buffer tablet.

ii) Buffer solution of pH 9.2 : Dissolve 0.953 gm borax ($Na_2B_4O_7.10H_2O$) in boiled & cooled distilled water. Dilute to 250 ml. Or use buffer tablet.

c) Equipment: pH Meter

d) Procedure:

a) Clean the pH electrode before and after each measurement.

b) Calibrate the pH meter using buffer solution.

c) Take solution of soil (1:2 dilution as prepared in processing of soil samples) in 100ml beaker so that the electrode is properly inside the solution.

d) Put the select switch of pH meter to read pH and note the pH of solution.

2) Determination of Redox Potential:-

The sample which is prepared for pH measurement is used for the measurement of oxygen activity. Platinum electrode and the Calomel reference electrode are introduced into the soil suspension as per specifications. The Oxygen activity (Ep) value is recorded directly from the display after it stablises. The Redox Potential (Eh), at pH 7, of the soil suspension is calculated as shown below.

Calculation :-

Redox Potential (mV), Eh=Ep+E□η+□pH-7)

Where,

Eh	=	Standard Redox Potential of soil suspension, in mV
Ep	=	Oxygen activity measured with reference to Calomel reference electrode having a potential of E□□□□in mV.
E□η	=	□mV for Calomel reference electrode
pH	=	PH of the soil.

3) <u>Determination of moisture:-</u>

a) Principle:

The soil sample when air - dried for several days the most of its water content is evaporated. Even after such air-drying of soil for a long period, some amount of water remains inside the sample. This remaining water content, which is removed when the sample is dried in oven at 105 oC for several hours, is the moisture of the soil.

b) Equipment:

Petri dishes, oven, desiccators, Analytical balance

c) Procedure:

1) Take the weight of dry empty Petri dish.

2) Take about 10g air dry sieved soil sample in Petri dish and note the weight.

3) Dry in oven at 105 ºC for 12 hours.

4) Cool in a desiccator and weigh. = 100 x% Moisture weight loss / Weight of soil taken

4) Determination of Total dissolved solids (TDS):-

a) Principle:

All the dissolved inorganic, organic substances in the water together are called as total dissolved solids (TDS). These dissolved ionic substances impart conductivity to the solution. From the conductivity of the solution, the TDS is measured using TDS meter. Or alternately evaporate 50 ml of the solution to dryness and report the dried residue as TDS.

b) Equipment:

Beakers 100ml cap, Oven, TDS meter

c) Procedure:

i) By Using TDS Meter:

1. Take 10ml of 1:5 soil solution of step 3 under processing of samples.
2. Add 40 ml distilled water to this solution & using TDS meter, measure the TDS.

ii) By evaporation technique:

a) Take 50 ml of aqueous soil extracts in a tarred dish & evaporate on the water bath.

b) When the volume is reduced to about 5 ml add 2 ml 20% H_2O to oxidize the organic matter.

c) Evaporate to dryness in an air oven at 105ºC for 1 hour.

d) Cool in desiccators and weight.

e) Calculate the TDS from the weight of dry residue and the amount of soil taken for solution.

5) Determination of Ca &:-

6) Determination of Mg:(or by AAS)

i) Hardness of Water:

a) Principle:

Water hardness is the traditional measure of the capacity of water to react with soap, hard water required a considerable amount of soap to produce lather. Scaling of hot water pipes, boilers and other household appliances is due to hard water. Hardness of water is a variable and complex mixture of captions and anions. It is caused by dissolved polyvalent metallic ions. In fresh water, the main hardness causing ions are calcium & magnesium. However, the Iron, Strontium, Barium, Manganese also contribute to hardness. The degree of hardness of drinking water has been classified in terms of the equivalent Ca CO_3 concentration as follows:

Soft: 0 – 60 mg/L Hard:,120 – 180 mg/L,

Medium: 60 – 120 mg/L Very hard > 180 mg/L

Although hardness is caused by cations, it may also be discussed in terms of carbonate (temporary) and non-carbonate (permanent) hardness. Carbonate hardness refers to the amount of carbonate & bicarbonates in solution that can be removed or precipitated by boiling. This type of hardness is responsible for the deposition of scale in hot water pipes, boilers and kettles. Non–carbonate hardness is caused by the association of the hardness causing cations with sulphate, chloride or nitrate and is called as 'permanent hardness' as it cannot be removed by boiling.

In alkaline condition, EDTA reacts with Ca & Mg to form a soluble chelated complex. Ca & Mg ions develop wine red colour with Eriochrome black T. When EDTA is added as a titrant, Ca & Mg divalent ions get complex resulting in a sharp change from wine red to blue, which indicates end point of the titration. The pH for the titration has to be maintained at 10.0 $\pm$ 0.1. At higher pH i.e. at about 12.0 Mg^{++} ion precipitates and only Ca^{++} ion remains in solution. At this pH Murexide indicator forms a pink colour with Ca^{++} ion. When EDTA is added Ca^{++} ion gets complex resulting in a change from pink to purple, which indicates end point of the reaction.

Interferences: Interference of metal ions can be overcome by addition of inhibitors.

a) Reagents:

1) Buffer solution 2) Inhibitor 3) Eriochrome black T indicator 4) Murexide indicator,

5) Sodium hydroxide 2N. 6) Standard EDTA solution 0.01 N 7) Standard Calcium solution

1. *Buffer solution*: - Dissolve 16.9g NH_4Cl in 143ml NH_4OH. Add 1.25g magnesium salt of EDTA to obtain sharp change in colour of indicator and dilute to 250ml. If Mg salt of EDTA is unavailable, dissolve 1.179g di-sodium salt of EDTA (AR grade) & 780mg $MgSO_4.7H_2O$ or 644mg $MgCl_2.6H_2O$ in 50ml distilled water. Add to above solution of NH_4Cl in NH_4OH and dilute to 250ml.
2. *Inhibitor:* Dissolve 4.5g-hydroxyl amine hydrochloride in 100ml 95% ethyl/ isopropyl alcohol.
3. *Eriochrome black T indicator:* Mix 0.5g dye with 100 ml NaCl to prepare dry powder.
4. *Murexide indicator:* Prepare a ground mixture of 200mg of Murexide with 100g of NaCl.
5. *Sodium hydroxide 2N:* Dissolve 80g NaOH and dilute to 1000ml.
6. *Standard EDTA solution 0.01 N:* Dissolve 3.723 g EDTA sodium salt and dilute to 1000ml. Standardize against standard Ca solution, 1ml = 1mg $CaCO_3$.
7. *Standard Calcium solution:* Take accurately 1g AR grade $CaCO_3$ in a 250ml conical flask. Add 1:1 HCl till $CaCO_3$ dissolves completely. Add 200ml of distilled water and boil for 30 minutes to expel CO_2.Cool & add few drops of methyl red indicator. Add 3N NH_4OH till intermediate orange colour develops. Dilute to 1L to obtain 1ml=1mg $CaCO_3$.

II) <u>Total Hardness(Ca + Mg):</u>

a) <u>Procedure:</u>

Take 10 to 50 ml sample in a conical flask.

Add 1-2 ml buffer solution followed by 1ml inhibitor.

dd a pinch of Eriochrome black T and titrate with standard EDTA(0.01M) till wine red colour changes to blue. Note the volume of EDTA required (A ml).

Run a reagent blank. Note the volume of EDTA (B ml).

Calculate volume of EDTA required by sample,

C = (A - B)

Total hardness as $CaCO_3$ (mg/L) = CxDx1000/ volume of sample\D = mg $CaCO_3$ equivalent to 1.0 ml EDTA titrant.

III) Calcium Hardness:

Take 10 to 50 ml sample in a conical flask.

Add 1 ml NaOH to raise pH to 12.0 and a pinch of Murexide indicator

Titrate immediately with EDTA till pink colour changes to purple. Note volume of EDTA (A).

Run a reagent blank. Note the volume of EDTA & keep it aside for comparison.

Standardised the EDTA (0.1M) solution following the procedure of Calcium hardness from 1 to 4 using standard Calcium solution.

Calcium hardness as $CaCO_3$ (mg/L) = A'xDx1000/ volume of sample D is mg of $CaCO_3$ equivalent to 1.0 ml EDTA titrant.

IV) Magnesium Hardness:

Magnesium Hardness=Total Hardness–Calcium hardness

7) Determination of Na &

8) Determination of K(Flame Photometry / AAS)

9) Determination of Chlorides:-

a) Principle:

Chloride in the water extract of soil can be determined by titrating the extract against $AgNO_3$ solution using potassium chromate as indicator. Silver chloride is first quantitatively precipitated before red silver chromate is formed.

If the solution is too coloured or turbid to allow the end point to be readily detected, this interference may be reduced by the following treatment with a suspension of aluminium hydroxide. Add 3 ml aluminium hydroxide suspension to the measured quantity of sample. Stir thoroughly, set aside for a few minutes and filter. Wash the ppt with distilled water and collect the washings with the filtrate.

$NaCl + AgNO_3 = AgCl$ (white ppt) $+ NaNO_3$

$K_2CrO_4 + 2AgNO_3 = Ag_2CrO_4$ (red ppt) $+ 2KNO_3$

b) Reagents:

Potassium chromate indicator, Silver nitrate 0.015N, Sodium chloride 0.015 N,

1. Potassium chromate indicator:- Dissolve 5g K_2CrO_4 in 50ml distilled water. Add small amounts of $AgNO_3$ till definite red precipitate is formed. Allow to stand for 12 hrs. Filter and dilute to 100ml.

2. Silver nitrate 0.015N**:-** Dissolve 1.2g $AgNO_3$ in distilled water and make up the volume to 500ml. Standardize against 0.03 N NaCl.

3. Sodium chloride 0.03 N:- Dissolve 1.5g NaCl (dried at 140°C) & make up the volume to 1000ml by distilled water.

4. Aluminum Hydroxide Suspension**:** Special reagent to remove colour and turbidity: Dissolve 125g $AlK(SO_4)_2.12H_2O$ or $AlNH_4(SO_4)_2.12H_2O$ & dilute to 1000ml. Warm to 60°C & add 55-60ml conc. NH_4OH slowly. Allow to stand for 1 hour. Transfer to a large bottle and wash precipitate by successive addition of distilled water with through mixing & decanting until free from chloride when freshly prepared. Finally after settling, decant off as much clean liquid as possible, leaving only the concentrated suspension.

c) Procedure:

Take 5 – 20ml well mixed sample adjusted to pH 7.0–8.0 and add1.0ml K_2CrO_4. Titrate with standard $AgNO_3$ solution till **Red** Ag_2CrO_4 starts precipitating. Standardize $AgNO_3$ against standard NaCl. For better accuracy titrate distilled water in the same way to establish reagent blank.

Calculate as follows:

Chloride mg/L = (A – B) x N x 35.45 x 1000 / ml of sample

Where, A – ml of $AgNO_3$ required for sample

B - ml of $AgNO_3$ required for blank

N – Normality of $AgNO_3$

10) Determination of Sulphates:-

a) Principle: Sulphate ion (SO_4^{2-}) is precipitated in an acidic medium with Barium Chloride so as to form Barium Sulphate crystals of uniform size. Light absorbance of the $BaSO_4$ suspension is measured at 420 nm by a spectrophotometer or the scattering of light by Nephelometer.

Interferences: Colour, turbidity and silica in the concentration of 500 ppm interfere in this estimation. Filtration is adopted to remove turbidity. In presence of organic matter, precipitation of barium sulfate may not be satisfactory. Colour is removed using Aluminium Hydroxide Suspension as done for chloride above.

b) Reagents:

1. Conditioning Reagent: Mix 50 ml glycerol with a solution containing 30 ml conc. HCl, 300 ml distilled water, 100 ml 95% ethyl or isopropyl alcohol and 75 g sodium chloride

2 Barium Chloride*:* Crystals 20 – 30 mesh

3 Standard Sulphate solution: Dissolve 0.074 g anhydrous sodium sulphate (Na_2SO_4) in distilled water and dilute to 500 ml.

1 ml = 100gm of SO_4

c) Procedure:

1) For calibration graph, prepare the following system in 11 volumetric flask of 100 ml capacity each. After addition of $BaCl_2$ make up the volume to 100ml.

No.	1	2	3	4	5	6	7	8	9	10	Blank
Ml of SO_4	1	2	3	4	5	6	7	8	9	10	@
H_2O ml	50	50	50	50	50	50	50	50	50	50	50
Reagent	5	5	5	5	5	5	5	5	5	5	5
$BaCl_2$ gm	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	Nil

@–To correct for sample colour and turbidity, add that volume of sample in blank, which is added for analysis of sample. If sample solution is colourless, distilled water may be used.

a) After stirring for 5 minutes measure the O.D. of each container at 420 nm. Keep a period of 5 minutes between addition of $BaCl_2$ and measurement of O.D. for stirring each container.

b) Plot a graph of concentration against O.D.

c) Take about 2-10 ml of sample (taking equal amount for blank without $BaCl_2$ in 100ml volumetric flask. Add about 50 ml water and 5 ml conditioning reagent. Add 2-3 gm of $BaCl_2$ shake it for 5 minutes and measure O.D.

d) Calculate the SO_4 concentration in sample using calibration graph.

11) <u>Determination of Sulphides:</u>

a) Principle:

Iodometric Method: In acidic condition standard iodine solution added in excess oxidizes sulphide. Residual iodine is back titrated with Sodium thiosulphate using starch as an indicator.

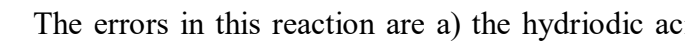
b) Reagents:

Hydrochloric Acid: 6N

Standard Iodine Solution 0.025N: Dissolve 12-13 gm KI in about 40-50ml of water taken in 500ml volumetric flask. Add 1.6 gm Iodine to it. After iodine has dissolved completely, make up the volume to 500ml and *standardize* against 0.025N Sodium thiosulphate using starch as indicator. *Sodium Thiosulphate solution* 0.025N: Dissolve 3.1025g Sodium Thiosulphate 500ml water.

i) Standardisation of Sodium thiosulphate by Potassium dichromate: (Vogel)

Potassium dichromate is reduced by an acid solution of potassium iodide, & iodine is set free:



$$Cr_2O_7^{2-} + 6I^- + 14\,H^+ \rightarrow 2Cr^{3+} + 3I_2 + 7H_2O$$

The errors in this reaction are a) the hydriodic acid (from excess of iodide and acid) is readily oxidised by air, especially in the presence of chromium (III) salts & b) it is not instantaneous.

Following method utilizes a trace of $CuSO_4$ as a catalyst to increase the speed of the reaction & a weaker acid is employed to reduce the extent of atmospheric oxidation of hydriodic acid. Take 25ml of 0.02N potassium dichromate in a 250ml conical flask, add 5ml glacial acetic acid, 5ml 0.001N copper sulphate, and wash the sides of the flask with distilled water. Add 30 ml of 10% KI solution & titrate the liberated iodine with 0.025N sodium thiosulphate solution using starch as an indicator near the end point. At the end point blue colour of the solution disappears. Subtract 0.05 ml to allow for the iodine liberated by the copper sulphate.

Potassium dichromate 0.02N**:** (Mol. Wt= 294.184, Eq. Wt.= 49.031)

Make a fine powder & dry at 140 – 150ºC for about 40 –60 minutes. After cooling in a desiccator, dissolve 0.245g of dry potassium dichromate and make up the volume to 250ml. Calculate the exact strength from the actual weight of the sample taken.

a) Procedure:

1. Take 10ml Iodine solution in to 250ml flask, add about20ml water and 2ml 6N HCl to it.
2. Add 2-10 ml sample (discharging sample under solution surface in the flask). If Iodine colour disappears, add more iodine so that colour remains.
3. Back titrate the excess iodine with Sodium thiosulphate solution. Add few drops of freshly prepared starch near the end point and continue the titration till blue colour disappears.

1ml 0.025N Iodine = 0.4 mg Sulphide (S^{2-})

Sulphide in gm/kg of soil = $[(AxN_1) - (BxN_2)]x400$/ wt of soil per 250ml

Where: A – ml of iodine solution,N_1 – Normality of Iodine solution
B – ml of Sodium thiosulphate,
N_2 – Normality of Sodium thiosulphate

12) Determination of Total Phosphate:

a) Principle:

Organically combined phosphorus & all phosphate including polyphosphate are first converted to orthophosphate by digestion and then it is determined by spectrophotometer.

b) Equipment: Spectrophotometer 690 nm. & glass wares

c) Reagents:

1. Stock phosphate solution: Dissolve 0.7111g anhydrous KH_2PO_4 and dilute to 1000ml. 1ml = 0.5 mg PO_4 = 500 ppm PO_4
2. Phosphate working solution: Dilute 20ml stock solution to 500ml using distilled water. 1ml = 20 ppm PO_4
3. Ammonium Molybdate solution:

Dissolve 31.4 g in about 200ml of distilled water. Add carefully 250 ml conc. H_2SO_4 to 400ml of distilled water. Cool and add 3 – 4ml conc. HNO_3 to this solution add molybdate solution and dilute to 1000 ml.

4. Strong Acid Reagent: Add 300ml conc. H_2SO_4 to 600ml-distilled water. Add 4ml conc. HNO_3 cool, dilute to 1000 ml.
5. Sodium Hydroxide: (3N) Dissolve 12 g NaOH and dilute to 100ml.
6. Phenolphthalein Indicator: Dissolve 0.05 g in 50 ml 95% ethanol. Add 50 ml of distilled water. Add drops wise 0.02N NaOH till faint pink colour appears.
7. Ansa Reagent (1-Amino 2-Napthol 4-Sulphonic Acid)*:* Take separately 0.75g ANSA, 42g Na_2SO_3, and 70g $Na_2S_2O_5$. Grind ANSA with small portion of $Na_2S_2O_5$ in mortars. Prepare solution of remaining salts in a small quantity of water. Dissolve the above mixture in this solution. Dilute to 1000 ml & filter through Whatman filter paper no.42.

a) Procedure:

Preparation of Calibration Curve:

1. Take 1, 2, 5, 8, 10, 12, 15, 18 & 20ml working PO_4 solution in 100ml volumetric flask.
2. Add 2ml ammonium molybdate solution to each flask & mix properly.

3. Add 2ml ANSA solution to each flask & make up the volume to 100ml each.
4. Prepare blank using distilled water in the same way.
5. Measure the OD of blue coloured complex at 690 nm between 10-12 minutes after the development of the colour.
6. Prepare a calibration graph.

Preparation of Sample:

1. Take 10 ml sample, add 1 drop of phenolphthalein indicator.
2. If red colour develops, add drop wise H_2SO_4 solution till colour disappears.
3. Add 1ml H_2SO_4 solution in excess & boil gently for 100 min. maintaining volume to ~ 25ml.
4. Cool, add 1drop phenolphthalein & neutralise by NaOH to faint pink colour. Filter if required.
5. Then taking this entire sample, follow the steps 2 – 5 of the *Preparation of Calibration Curve.*
6. Comparing with calibration curve, calculate the PO_4 concentration of sample.

13) <u>Determination of Nitrite:-</u>

a) Principle:

Nitrite (NO_2^-) is determined through formation of a reddish purple azodye produced at pH 2.0 – 2.5 by reacting diazotized sulphanilic acid with N-(1-Naphthyl) ethylenediamine dihydrochloride (NED- dihydrochloride). The method is suitable for determination of nitrite down to 10g/L at 543 nm.

Chlorides in the sample or nitrogen trichloride, which normally coexist with nitrite, produce a false colour. This can be minimised by addition of the NED dihydrochloride reagent first and then the sulfanilic acid reagent.

b) Reagents:

1 *Sulfanilamide reagent:* Dissolve 5g sulfanilamide in a mixture of 50ml conc. HCl solution and about 300ml water. Dilute to 500ml with water. The solution is stable for many months.

2 *NED- dihydrochloride solution:* Dissolve 500mg N-(1-naphthyl)-ethylenediamine dihydrochloride in 500ml water. Store in a dark bottle. Replace monthly or immediately when it develops a strong brown colour

3 *Stock nitrite solution:* Dissolve 1.232g sodium nitrite in distilled water and dilute to 1000ml using distilled water.

1ml = 821.5 □g of nitrite.

Standardisation of stock nitrite solution: Take 50ml 0.05N $KMnO_4$ add 5ml conc. H_2SO_4 and 50ml stock nitrite solution well below surface by pipette. Warm to 70 – 80 ºC. Titrate excess $KMnO_4$ using 0.05N sodium oxalate. Calculate nitrite by the following equation:

A = [B*C – D*E] x 7/ F

Where - A– mg of nitrite per ml B – Total ml of $KMnO_4$ used

C – Normality of $KMnO_4$ D – standard sodium oxalate added.

E – Normality of sodium oxalate F – ml of stock nitrite used

1725mg of sodium nitrite consumes 1ml of 0.05N $KMnO_4$

4 Standard nitrite solution: Dilute the above standardised nitrite solution suitably to get about 5 – 10 ppm solution.

d) Procedure:

1. If sample contains suspended solids, filter through filter paper and take 10 ml clear sample.
2. Add 1 ml sulfanilamide solution. Let reagent react for 2-8 min.
3. Add 1ml NED dihydro chloride solution and mix immediately.
4. Measure absorbance after 10min. but before 2 hours at 543nm.
5. Prepare blank in the same way substituting water for the sample.
6. Prepare calibration curve by taking 3, 5, 8, 10, 12, 15, 20, 25, and 30ml standard nitrite solution and following the steps 2 – 5.
7. Calculate the nitrite concentration in the sample by comparing with calibration curve.

14) Determination of Nitrate:

a) Principle:

In general Nitrate is the product of the aerobic decomposition of the organic nitrogenous matter. Significant sources of nitrate are chemical fertilizers, decayed vegetable and

animal matter, domestic effluents, sewage sludge disposal to land, industrial discharge, leachates from refuse dumps and atmospheric washout.

Phenol Disulphonic Acid (PDA) Method: Nitrate reacts with PDA and produces a nitro derivative, which in alkaline solution develops yellow colour due to rearrangement of its structure. The colour produced follows Beer's law and is proportional to the concentration of NO_3 present in the sample.

Chloride and nitrite are the two main sources of interference. Pretreatment of sample is necessary when the interfering radicals are present.

b) Equipment: Spectrophotometer410nm., glassware, Water bath

c) Reagents:

1. Standard Silver Sulphate: Dissolve 2.2g Ag_2SO_4 in distilled water and dilute to 500ml using distilled water.
2. Phenol Disulphonic Acid: (PDA) : Dissolve 25g white phenol in 150ml conc. H_2SO_4. Add 75ml-fuming H_2SO_4 (15% free SO_3) stir well and heat for 2 hours on water bath. If fuming H_2SO_4 is not available add additional 85ml conc. H_2SO_4 to the 150 ml H_2SO_4 stir well and heat for 2 hours on water bath.
3. Ammonium Hydroxide: Concentrated
4. Potassium Hydroxide 12N: Dissolve 336.5g KOH in distilled water and make up the volume to 500ml using distilled water.
5. Stock Nitrate Solution: Dissolve 721.8mg anhydrous potassium nitrate and dilute to 1000ml with distilled water. 1ml = 100 µg N
6. Standard Nitrate Solution: Evaporate 50ml stock nitrate solution to dryness on water bath. Dissolve residue in 2ml PDA reagent and dilute to 500ml.

   1ml = 10 µg N
7. EDTA reagent: Rub 50g EDTA with 20ml distilled water to form a paste. Add 60ml ammonium hydroxide and mix well.
8. Aluminum Hydroxide Suspension: Special reagent to remove colour and turbidity: Dissolve 125g $AlK(SO_4)_2.12H_2O$ or $AlNH_4(SO_4)_2.12H_2O$ & dilute to 1000ml. Warm to 60 °C & add 55-60ml conc. NH_4OH slowly. Allow to stand for 1 hour. Transfer to a large bottle and wash precipitate by successive addition of distilled water with through

mixing & decanting until free from chloride when freshly prepared. Finally after settling, decant off as much clean liquid as possible, leaving only the concentrated suspension.

d) Procedure:

a) *Pretreatment of sample:*

1) *Colour removal:* If the sample has an intense colour, add 3-4 drops of aluminium hydroxide suspension to 20ml sample. Stir well and allow settling for a few min. Filter and using the filtrate for analysis.

Nitrite removal: Add sulfamic acid to the sample to suppress nitrite interference.

Chloride removal: Determine the Cl contents of the sample and precipitate out as AgCl by adding appropriate amount of Ag_2SO_4 solution. Excess Ag_2SO_4 should be avoided.

b) Colour development:

1) Neutralize the clarified sample to pH 7.0.

1) Take 10 ml of the sample in a beaker and evaporate to dryness on water bath.

2) Dissolve the residue with 2ml PDA reagent using glass rod. Transfer to 100ml volumetric flask using distilled water.

3) Add 5ml ammonium hydroxide or KOH. If turbidity is developed add the EDTA reagent drop wise till it dissolves. Filter and make up to 100ml. To avoid turbidity add ammonium hydroxide only.

4) Prepare blank in the same way using distilled water instead of sample.

5) Measure the OD at 410 nm.

6) Prepare calibration curve using 3, 5, 8, 10, 12, 15, 20, 25, 30ml of treated (following above steps 2-6) standard nitrate solution (50ppm).

15) Determination of Carbonate:

a) Principle: The alkalinity of water is a measure of its capacity to neutralize acids. The alkalinity of natural water is due to the dissolved salts of carbonates, bicarbonates, borates, silicates and phosphates along with the hydroxyl ions in the free state. However, the major portion of the alkalinity in natural water is caused by hydroxide, carbonate and bicarbonate. Alkalinity values provide guidance in applying proper doses of chemicals in

water and wastewater treatment processes, particularly in coagulation, softening and operational control of anaerobic digestion.

Alkalinity of sample can be estimated by titrating with standard sulfuric acid. Titration to pH 8.3 or decolourization of phenolphthalein indicator will indicate complete neutralization of OH and ½ of CO_3 while to pH 4.5 or sharp change from yellow to orange of methyl orange indicator will indicate total alkalinity, (complete neutralization of OH, CO_3, HCO_3).

c) Reagents: Standard H_2SO_4, 0.02 N, Phenolphthalein indicator, Methyl orange indicator

1. *Standard Oxalic Acid*:- Take about 0.315 gm of AR/GR grade oxalic acid in 250 ml volumetric flask, dissolve it in water. Make up the volume to 250 ml.
2. *NaOH Solution 0.02N:-* Take about 0.4 gm of NaOH in 500 ml volumetric flask, dissolve it in water. Make up the volume to 500ml. Standardize this NaOH solution against oxalic acid using Phenolphthalein indicator. At the end point, excess of NaOH will give pink colour.
3. *H_2SO_4 Solution 0.02N*:- Dilute 0.5ml of concentrated H_2SO_4 to 1000ml by distilled water and standardize against standard 0.02N NaOH using phenolphthalein indicator. By addition of NaOH to H_2SO_4 containing Phenolphthalein indicator, the colour at the end point will change to pink.

d) Procedure:

i. Take 10 ml sample in a conical flask & add 2 – 3 drops of phenolphthalein indicator.
ii. If pink colour develops titrate with 0.02 N H_2SO_4 till it disappears or attains a pH of 8.3.If not, then go to step 3.
iii. Add 2-3 drops of methyl orange to the same flask, & continue titration till pH comes down to 4.5 or yellow colour changes to orange.
iv. Calculate total (T), phenolphthalein (P), and methyl orange (M) alkalinity as follows & express in mg/l of $CaCO_3$.

P – Alkalinity, mg/l of $CaCO_3$. Ax1000/ volume of sample

T – Alkalinity, mg/l of $CaCO_3$. = Bx1000/ volume of sample

In case H_2SO_4 is not 0.02 N apply the following formula:

Alkalinity, mg/l of $CaCO_3$. = AxBxNx50000/ volume of sample

Where, A = volume of H_2SO_4 required to bring the pH to 8.3

B = volume of H_2SO_4 required to bring the pH to 4.5

N is normality of H_2SO_4

Once, the phenolphthalein and total alkalinity are determined, then three types of alkalinities i.e. hydroxide, carbonate and bicarbonate are easily calculated from the table given below:

Values of P & T	OH	CO_3	HCO_3
P = 0	0	0	T
P < ½ < T	0	2P	T – 2P
P = ½ T	0	2P	0
P > ½ T	2P-T	2(T-P)	0
P = T	T	0	0

Once carbonate & bicarbonate alkalinities are known then their conversions to milligrams per liter of CO_3^{--} or HCO_3^{-} are possible.

mg/l of CO_3^{--} = mg/l carbonate alkalinity x 0.6

mg/l of HCO_3^{-} = mg/l bicarbonate alkalinity x 1.22

16) Determination of Anaerobic Bacteria

1) Processing of Sample:

Prepare a 10% soil suspension by dissolving 5g in 50ml **Ringer solution**. Shake to get homogeneous solution.

2) Preparation of Media:

Media : Cooked Meat Media

Composition**:** Peptone = 20 g

Meat = 454 g

NaCl = 5 g

Dextrose =2 g

Auger = 15g

Distilled water= 1000ml

PH to maintain at 7.2 ± 0.

3) Dissolve the above ingredients in 1000ml distilled water. For double strength medium, double the concentration of each ingradient in a 1000ml water.

Distribute 20ml of cooked meat media (double strength) in 30 ml capacity of screw cap bottle. Add requisite concentration of meat and sterilize the medium at 121 °C for 15 minutes.

Distribute 10ml of single strength cooked meat medium in a screw cap bottle of 15ml capacity and add meat to the medium and sterilize at 121 °C for 15 minutes.

For inoculation of above 10ml soil suspension double strength medium is used and for 1ml and less, single strength medium is used.

4)For each sample 10ml of each of homogeneous soil suspension prepared in Ringer solution was inoculated in to three screw cap bottles containing double strength medium and 1ml of each or less than it is inoculated in the small screw cap bottles containing single strength medium. Incase the space is left out in the screw cap bottle, additional medium is added so that bottles is completely filled .

Incubate these bottles at 30 ± 0.5°C for about 3-5 days. Observe the blackening of medium every day. Number of positive bottles (with black colour at bottom) are noted and MPN value is calculated. Results are expressed as number of organisms per 100grams of the soil.

17) Determination of Sulphate Reducing Bacteria in soil sample by MPN Method

1.0 Introduction

The term sulphate-reducing bacteria refers to anaerobic organisms which obtain energy by dissimilatory reduction of sulphate to sulphide.

The organisms can cause anaerobic corrosion of buried iron or steel, spoil stored petrol and cutting oil emulsions, corrode oil well casings, block oil or las producing sand., blacken

paper pulp. Form hydrogen sulphide in natural and manufactured spoil rice crop., contaminate fluors, form deposits of oil. Metal sulphides. Elementary sulphur, soda and chalk in soil. Spoil canned food.. blacken and deteriorate metals and paint work of ships, corrode hot water systems and cause foulinl of filter beds in water works.
Although many microorganisms can play a part in corrosion processes, the chief culprits are the sulphate reducing bacteria

2.0 Principle

Viable sulphate-reducing bacteria are usually counted by a most-probable-number (MPN) technique in liquid media, or by colony counts in solid or semi –solid media.

3.0 Material and Methods

Media –

Medium B, Medium C. Medium E, Medium F medium modified from one used by Kimata. Medium recommended by lSI (18) and ASTM (19) were prepared as directed. The pH of the media was adjusted to 7 ±0.1 by IN NaOH.

Composition of Media : Medium B

Potassium dihydrogen phosphate	0.5 gm
Ammonium Chloride	1.0 gm
Calcium Sulphate	1.0 gm
Magnesium sulphate heptahydrate	2.0 gm
Sodium Lactate	3.5 gm
Yeast extract	1.0 gm
Ascorbic acid	0.1 gm
Thiglycollic acid	0.1 gm
Ferrous Sulphate heptahydrate	0.5 gm
Tap water	1.0 Ltr.

Medium C

Pota.sium dlhydrogeo phosphate	0.5 gm
Ammonium chloride	1.0 gm
Sodium sulphate	4.5 gm
Calcium chloride hexahydrate	0.06 gm
Magnesium sulphate heptahydrate	0.06 gm
Sodium lactate	6.0 gm
Yeast extract	1.0 gm
Ferrous sulphate beptahydrate	0.004 gm
Sodium citrate dehydrate	0.3 gm

Demineralized water	1 ltr.

Medium E

Potassium dihydrogen phosphate	0.5 gm
Ammordum chloride	1.0 gm
Sodium sulphate	1.0 gm
Calcium chloride hexahydrate	1.0 gm
Magnesium chloride heptahydrate	2.0 gm
Sodium lactate	3.5 gm
Yeast extracts	1.0 gm
Ascorbic acid	0.1 gm
Thioglycollic acid	0.1 gm
Ferrous sulphate beptahydrate	0.5 gm
Tap water	1 ltr.

Medium F

Tryptone	10.0 gm
Sodium sulphite	0.5 gm
Iron citrate	0.5 gm
Sodium lactate	3.5 gm
Mapellum lulpbate beptahydrate	0.2 gm
Demineralized wter	1 Ltr.

Kimata'I medium (modified by Lewis)

Sodium Lactate	3.5gm
Beef Extract	1.0gm
Peptone	2.0gm
Magnesium Sulphate heptahydrate	2.0gm
Sodium Sulphate	1.5gm
Dipotassium hydrogen phosphate	0.5gm
Ferrous ammonium sulphate	0.33gm
Calcium Chloride	0.1gm
Sodium ascorbate	0.1gm
Demineralised water	1L

Medium recommended by ISI

Sodium lactate	3.5g
Ammonium chloride	1.0g

Dipotassium hydrogen phosphate	0.5g
Magnesium sulphate heptahydrate	2.0g
Calcium chloride dehydrate	0.1g
Tap Water	1L

A small crystal (5 to 10 m,) of ammonium ferrous sulphate sterilized in flame is placed in the screw cap tubes. The tubes are filled to half capacity with recently sterile. And cooled medium.

Medium recommended by ASTM

Dipotassium hydrogen phosphate	0.5gm
Ammonium Chloride	1.0gm
Magnesium sulphate heptahydrate	2.5gm
Sodium lactate	6.0gm
Ferrous ammonium sulphate hexahydrate	0.1gm
Calcium chloride dehydrate	0.1gm
Tap water	Upto 1L

25 x 200 mm (for 10 ml aliquots) and 15 x 125 mm (for 1 ml and lesser aliquots) screw cap tubes were filled with the media upto about three-quarter height before autoclaving at 121 °C for 15 min.

Inoculation and Incubation of Media

Serial ten-fold dilution of the samples, prepared in normal saline, were inoculated under laminar air flow into five replicate tubes per dilution as soon as the media were cooled. The inoculated tubes were completely filled with respective sterilized stock medium to exclude air, stoppered tightly and incubated at 37 °C ±1 °C upto 30 days.

MPN Estimates

Blackenig of the medium was considered as positive reaction indicating growth of anaerobic sulphate-reducin C bacteria. On the basis of the combination of positive and negative tubes, the MPH values were computed by referring to the standard statistical table.

CHAPTER - III

OBSERVATIONS & DISCUSSION

3.1 Corrosion Factor Method of Assessment of Aggresivity of Soil

The corrosion is an electrochemical reaction. Hence soil acts as an electrolyte for pipe made from steel. The important factor affecting steel pipe are discussed below.

1) Moisture: Water represents the essential electrolyte requirement for electrochemical corrosion and also acts as a solvent for soluble salts present in soil. The corrosivity of soil is very low at dry regions.

2) pH: Soil usually have a pH range of 5-8. In this range pH is generally not considered to be the dominant variable affecting corrosion rate. More acidic soils obviously represent a serious corrosion risk to common construction material such as steel, cast iron and zinc coatings. Soil acidity is produced by mineral leaching, decomposition of acidic plants, industrial works, acidic certain form of rain and microbiological activities. Alkaline tend to have high sodium, potassium, magnesium and calcium content. The latter two elements tend to form calcareous deposits on buried structure with protective properties against corrosion. The pH level can affect the solubility of corrosion products and also the nature of microbiological activity.

3) Redox Potential: The redox potential essentially is a measure of the degree of aeration in a soil. As high redox potential indicates high oxygen level. Low redox value may provide an indication that, conditions are conductive to anaerobic microbiological activity. Soils, which are low in oxygen, are subject to sulphate reducing bacteria corrosion.

4) Chloride Level: Chloride ions are generally harmful, as they participate directly in anodic dissolution reaction of metals and their presence tends to decrease the soil resistivity. They may be found naturally in soils as a result of brackish ground water and historical geological seabeds or from external sources such as de-icing salts applied to roadways. The chloride ions concentration in the corrosive aqueous soil electrolyte will vary, as soil conditions alternate between wet and dry.

5) Sulphate Level: Compared to the corrosive effect of chloride ions levels, sulphates are generally considered to be more benign in their corrosive action towards metallic

materials. However concrete may be attacked as a result of high sulphate levels. Presence of sulphate does pose a major risk for metallic material in the sense that sulphate can be converted in to highly corrosive sulphide by anaerobic sulphate reducing bacteria.

6) Sulphide: Sulphate reducing bacteria converts sulphate in to hydrogen sulphide which is at high concentration are high corrosive.

7) Soluble Soil Salts: Sub surface water acts as solvent for salts derived from the soil. In areas of average rain fall the solution is relatively dilute. The total salt contents in the dry areas salt content is generally high since ions are transported from deeper region to the surface because of water evaporation. The main ions founds includes, Na^{+}, K^{+}, Ca^{++}, Mg^{++}, Cl^{-}, $So4^{--}$. The type of ionic species and their content of found in a soil could also be attend by the use of fertilizers or the dumping of industrial waste.

8) Microbiologically Influenced Conditions (MIC):

Microbiologically influenced condition (MIC) refers to corrosion that is influenced by the presence and activities of microorganisms and their metabolic. Bacteria, fungi and other microorganism can play a major part in soil corrosion. Spectacularly rapid corrosion failures have been observed in soil due to microbial action and it is becoming increasingly apparent that most metallic alloys are susceptible to some form of MIC.

9) Soil Resistivity: Soil resistivity was a measure of conductivity of soil, which play an important role for scope of corrosivity. Low resistivity means high corrosive soil and some time it is work as a single tool to decide soil corrosivity.

10) Assessment of Corrosion Factor: The point system for predicting soil corrosivity, which is most commonly used is adopted here to assign corrosion factor of soil. The most of the part of pipeline passes through cultivated land and strata is silty clay thus moisture content is low and redox potential is towards lower side. The point system used for redox potential is based on AWWA C-105 standard (American Water Works Association).

Sr. No.	Parameter	Range	C.F.
1.	Soil Type	Most of the pipeline passes through hilly and barren land, thus the soil type does not have major impact on corrosiveness.	0
2.	Moisture Content	Less than 20.000% More than 20.000%	0 -1
3.	PH	Greater than 5 Less than 5	0 -1
4.	Redox Potential	>400 mV 300 – 400mV 200 – 300 mV < 200 mV	+2 0 -1 -2
5.	Calcium, Magnesium and Carbonate content	> 5.0 1 % to 5.0 % < 1.0%	+2 +1 0
6.	Chloride level	< 0.010 % > 0.010 %	0 -1
7.	Sulphate	< 0.020 % 0.020 to 0.050 % > 0.050 %	0 -1 -2
8.	Sulphide	Absent Traces	0 -2
9.	Soil Resistivity	> 10000 Ohm cm 1000 to 10000 Ohm cm < 1000 Ohm cm	-2 -4 -6
10.	Presence of coke or coal particles	Very strong presence Strong presence Moderate presence Slight presence Trace or absent	-4 -3 -2 -1 0

On the basis of above factor, all soil survey data tabulated for each sample. The sum of all assign corrosion factor gives clear idea about corrosivity of soil and following norms are used to decide corrosivity of soil.

Sr. No.	Sum of Corrosion Factor	Category
1.	> 0	Low to very low Corrosive
2.	0 to –5	Medium corrosive
3.	-6 to –9	Highly corrosive
4.	< -9	Very high corrosive

3.2 Classification Of Corrosivity Of Soil Based On Corrosion Factor :-

On the basis of above combine corrosion factor the soil classified in to different categories to assign corrosivity. Generally moisture content, pH, redox potential, chloride, sulphate and resistivity are dominant character. The table, given above briefs the classification on the basis of corrosion factor.

Annexure I present data of dominant chemical content for Soil Sample collected at a lateral depth top and bottom surface level for entire route of pipeline.

CHAPTER-IV

FINDINGS & RECOMMENDATIONS

Total 436 nos. of Soil samples were collected across the pipeline length to carry out soil chemical analysis. Samples were collected at lateral depths of top and bottom surface level of pipeline. Details of location wise soil chemical composition for the samples collected across the pipeline length is placed at Annexure I.

Based on the results obtained from the soil chemical analysis following has been observed:

SRB and Anaerobic Bacteria are present in all the samples collected along the route.

CHEMICAL ANALYSIS OF SOIL SAMPLES FOR SILIGURI (BELAKOBA) TO GANGTOK (RANIPOOL) PIPELINE - ANNEXURE - I

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
1	0.00	1.00	1	657029	2941046	29.84	1	6.02	0	0.127	289	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0032	0.0007	0.0210	0.0043	0	0.53	0.0036	0	0.0001	-2	0.4044	0.0050	0.0000	98	< 3.0	1600	392500	-2	-4	Medium Corrosive	Start village
2		2.50				41.59	1	5.77	0	0.140	273	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0033	0.0012	0.0280	0.0057	0	0.31	0.0036	0	0.0000	0	0.3401	0.0044	0.0000	97	11	1600	911856	-2	-2	Medium Corrosive	
3	1.00	1.00	5	657411	2941807	12.16	0	5.78	0	0.110	274	-1	0.0122	0.0122	0.0052	0.0000	0.0020	0.0019	0.0039	0	0.0055	0.0031	0.0300	0.0028	0	4.37	0.0047	0	0.0001	-2	0.3621	0.0000	0.0001	97	3	1600	226080	-2	s	Medium Corrosive	sample collected
4		2.50				18.23	0	6.08	0	0.099	291	-1	0.0122	0.0122	0.0044	0.0000	0.0032	0.0007	0.0039	0	0.0059	0.0032	0.0350	0.0043	0	4.84	0.0048	0	0.0001	-2	0.1726	0.0000	0.0002	96	11	1600	369264	-2	-5	Medium Corrosive	
5	1.50	1.00	7	657464	2942281	9.91	0	6.05	0	0.072	297	-1	0.0122	0.0122	0.0056	0.0000	0.0044	0.0007	0.0051	0	0.0049	0.0073	0.0510	0.0057	0	0.31	0.0044	0	0.0001	-2	0.0680	0.0005	0.0001	104	< 3.0	1600	100542.8	-2	-5	Medium Corrosive	Railway crossing sample collected
6		2.50				3.86	0	6.85	0	0.081	329	0	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0046	0.0069	0.0390	0.0071	0	0.34	0.0036	0	0.0001	-2	0.0687	0.0005	0.0001	88	< 3.0	900	136401.6	-2	-4	Medium Corrosive	
7	2.00	1.00	9	657518	2942808	16.57	0	6.05	0	0.126	282	-1	0.0122	0.0122	0.0020	0.0000	0.0012	0.0005	0.0017	0	0.0071	0.0014	0.0400	0.0043	0	3.10	0.0023	0	0.0001	-2	0.0580	0.0072	0.0001	89	3	1600	112412	-2	-5	Medium Corrosive	sample collected
8		2.50				16.78	0	6.27	0	0.101	296	-1	0.0122	0.0122	0.0028	0.0000	0.0024	0.0002	0.0026	0	0.0074	0.0015	0.0560	0.0057	0	2.76	0.0047	0	0.0001	-2	0.0423	0.0073	0.0001	90	3	1600	143937.6	-2	-5	Medium Corrosive	
9	3.00	1.00	13	657532	2943677	34.89	1	6.45	0	0.045	309	0	0.0122	0.0122	0.0048	0.0000	0.0044	0.0002	0.0046	0	0.0065	0.0109	0.0600	0.0043	0	1.12	0.0016	0	0.0001	-2	0.1120	0.0022	0.0001	92	< 3.0	1600	167048	-2	-3	Medium Corrosive	Road side sample collected
10		2.50				19.51	0	6.38	0	0.084	308	0	0.0122	0.0122	0.0060	0.0000	0.0032	0.0017	0.0049	0	0.0066	0.0110	0.0280	0.0028	0	0.56	0.0016	0	0.0001	-2	0.0910	0.0000	0.0001	95	< 3.0	1600	286368	-2	-4	Medium Corrosive	
11	3.38	1.00	15	657448	2943848	14.18	0	5.24	0	0.164	242	-1	0.0122	0.0122	0.0028	0.0000	0.0016	0.0007	0.0023	0	0.0044	0.0017	0.0200	0.0057	0	2.45	0.0022	0	0.0001	-2	0.0963	0.0000	0.0001	98	3.6	1600	138160	-2	-5	Medium Corrosive	nala crossing sample collected
12		2.50				17.34	0	6.85	0	0.115	340	0	0.0122	0.0122	0.0036	0.0000	0.0032	0.0002	0.0034	0	0.0045	0.0011	0.0220	0.0057	0	2.36	0.0022	0	0.0001	-2	0.0868	0.0000	0.0001	99	7.4	1600	244920	-2	-4	Medium Corrosive	
13	4.00	1.00	18	657878	2944160	14.25	0	6.34	0	0.049	310	0	0.0122	0.0122	0.0040	0.0000	0.0036	0.0002	0.0038	0	0.0027	0.0019	0.0420	0.0043	0	0.50	0.0007	0	0.0001	-2	0.0535	0.0000	0.0001	100	3	1600	226080	-2	-4	Medium Corrosive	Road side sample collected
14		2.50				10.91	0	6.10	0	0.035	293	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0005	0.0025	0	0.0026	0.0013	0.0230	0.0043	0	0.34	0.0006	0	0.0001	-2	0.0579	0.0000	0.0001	97	3.6	1600	246804	-2	-5	Medium Corrosive	
15	4.25	1.00	19	658018	2944214	14.11	0	5.71	0	0.054	268	-1	0.0244	0.0244	0.0032	0.0000	0.0024	0.0005	0.0029	0	0.0032	0.0030	0.0180	0.0043	0	1.58	0.0010	0	0.0000	0	0.0408	0.0000	0.0001	95	< 3.0	900	153860	-2	-3	Medium Corrosive	canal crossing sample collected
16		2.50				8.07	0	5.61	0	0.075	261	-1	0.0122	0.0122	0.0036	0.0000	0.0032	0.0002	0.0034	0	0.0028	0.0031	0.0190	0.0043	0	1.43	0.0009	0	0.0000	0	0.0389	0.0000	0.0001	94	< 3.0	1600	226080	-2	-3	Medium Corrosive	
17	5.00	1	22	658620	2944696	10.78	0	5.72	0	0.084	269	-1	0.0122	0.0122	0.0068	0.0000	0.0052	0.0010	0.0062	0	0.0063	0.0031	0.02	0.0057	0	1.12	0.0009	0	0.0000	0	0.0318	0.0000	0.0001	96	< 3.0	1600	184632	-2	-3	Medium Corrosive	sample collected
18		2.5				13.57	0	5.86	0	0.065	277	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0054	0.0031	0.022	0.0057	0	1.58	0.0010	0	0.0001	-2	0.0277	0.0000	0.0002	95	< 3.0	1600	307092	-2	-5	Medium Corrosive	
19	6.00	1	26	659432	2945463	21.60	1	5.75	0	0.129	270	-1	0.0122	0.0122	0.0048	0.0000	0.0040	0.0005	0.0045	0	0.0046	0.0038	0.033	0.0028	0	1.74	0.0005	0	0.0001	-2	0.0291	0.0000	0.0002	95	< 3.0	1600	184632	-2	-4	Medium Corrosive	tea from land sample collected
20		2.5				39.40	1	5.89	0	0.137	278	-1	0.0122	0.0122	0.0060	0.0000	0.0048	0.0007	0.0055	0	0.0047	0.0039	0.034	0.0028	0	1.43	0.0004	0	0.0001	-2	0.0305	0.0000	0.0002	95	< 3.0	1600	305208	-2	-4	Medium Corrosive	
21	6.75	1	29	659999	2945929	19.92	0	6.45	0	0.081	315	0	0.0122	0.0122	0.0068	0.0000	0.0024	0.0027	0.0051	0	0.0039	0.0007	0.028	0.0028	0	0.50	0.0004	0	0.0001	-2	0.0330	0.0000	0.0001	98	3	900	172700	-2	-4	Medium Corrosive	river crossing sample collected
22		2.5				18.38	0	6.02	0	0.04	283	-1	0.0122	0.0122	0.0060	0.0000	0.0032	0.0017	0.0049	0	0.0038	0.0006	0.032	0.0028	0	0.19	0.0007	0	0.0001	-2	0.0315	0.0000	0.0001	92	< 3.0	1600	263760	-2	-5	Medium Corrosive	
23	6.88	1	30	660116	2945964	12.65	0	5.83	0	0.09	279	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0041	0.0057	0.031	0.0014	0	2.05	0.0042	0	0.0001	-2	0.0291	0.0000	0.0001	99	< 3.0	1600	157628	-2	-5	Medium Corrosive	river crossing sample collected
24		2.5				7.09	0	6.08	0	0.077	289	-1	0.0122	0.0122	0.0036	0.0000	0.0028	0.0005	0.0033	0	0.0043	0.0057	0.037	0.0043	0	1.74	0.0032	0	0.0001	-2	0.0313	0.0000	0.0002	94	< 3.0	1600	226080	-2	-5	Medium Corrosive	
25	7.00	1	31	660226	2946030	2.11	0	6.45	0	0.099	303	0	0.0122	0.0122	0.0028	0.0000	0.0020	0.0005	0.0025	0	0.0059	0.0014	0.016	0.0043	0	0.78	0.0005	0	0.0000	0	0.0369	0.0000	0.0000	86	16	1600	195936	-2	-2	Medium Corrosive	tea from land sample collected
26		2.5				4.06	0	6.04	0	0.082	291	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0066	0.0013	0.018	0.0028	0	0.56	0.0005	0	0.0001	-2	0.0345	0.0000	0.0001	99	11	1600	301440	-2	-5	Medium Corrosive	
27	8.00	1	35	660973	2946648	20.27	1	5.01	0	0.086	232	-1	0.0122	0.0122	0.0020	0.0000	0.0012	0.0005	0.0017	0	0.0074	0.0042	0.023	0.0028	0	6.20	0.0144	0	0.0001	-2	0.0293	0.0009	0.0001	101	3	900	160140	-2	-4	Medium Corrosive	sample collected
28		2.5				15.71	0	6.09	0	0.065	285	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0075	0.0041	0.019	0.0057	0	1.12	0.0138	0	0.0001	-2	0.0279	0.0009	0.0002	90	3	1600	231732	-2	-5	Medium Corrosive	
29	9.00	1	39	661399	2947465	37.27	1	6.07	0	0.099	289	-1	0.0122	0.0122	0.0168	0.0000	0.0136	0.0019	0.0155	0	0.0041	0.0164	0.016	0.0028	0	1.43	0.0026	0	0.0001	-2	0.0338	0.0001	0.0001	95	< 3.0	1600	204728	-2	-4	Medium Corrosive	sample collected road side
30		2.5				19.42	0	6.15	0	0.12	297	-1	0.0122	0.0122	0.0140	0.0000	0.0100	0.0024	0.0124	0	0.0044	0.0161	0.064	0.0043	0	0.25	0.0026	0	0.0001	-2	0.0335	0.0001	0.0001	98	< 3.0	1600	293904	-2	-5	Medium Corrosive	
31	10.00	1	43	661494	2948332	17.02	0	5.60	0	0.128	261	-1	0.0122	0.0122	0.0028	0.0000	0.0012	0.0010	0.0022	0	0.0047	0.0029	0.042	0.0028	0	1.12	0.0019	0	0.0000	0	0.0589	0.0000	0.0001	95	< 3.0	1600	137532	-2	-3	Medium Corrosive	sample collected from land
32		2.5				14.49	0	5.31	0	0.115	248	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0046	0.0030	0.025	0.0028	0	0.78	0.0018	0	0.0001	-2	0.0646	0.0000	0.0001	99	< 3.0	1600	194052	-2	-5	Medium Corrosive	
33	11.00	1	47	661982	2948632	9.81	0	5.39	0	0.072	248	-1	0.0122	0.0122	0.0120	0.0000	0.0072	0.0029	0.0101	0	0.0049	0.0045	0.04	0.0014	0	0.56	0.0080	0	0.0000	0	0.0506	0.0000	0.0001	95	< 3.0	1600	173328	-2	-3	Medium Corrosive	sample collected
34		2.5				6.00	0	5.66	0	0.065	262	-1	0.0122	0.0122	0.0088	0.0000	0.0060	0.0017	0.0077	0	0.0049	0.0044	0.061	0.0014	0	0.22	0.0088	0	0.0001	-2	0.0484	0.0000	0.0001	92	< 3.0	1600	239268	-2	-5	Medium Corrosive	
35	12.00	1	51	662781	2948720	4.34	0	5.68	0	0.159	268	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0012	0.0052	0	0.0058	0.0041	0.022	0.0028	0	1.43	0.0072	0	0.0001	-2	0.0460	0.0000	0.0002	97	3	1600	128740	-2	-5	Medium Corrosive	from land
36		2.5				3.21	0	6.72	0	0.105	332	0	0.0122	0.0122	0.0080	0.0000	0.0052	0.0017	0.0069	0	0.0058	0.0040	0.025	0.0028	0	1.12	0.0060	0	0.0001	-2	0.0455	0.0000	0.0001	99	< 3.0	1600	170502	-2	-4	Medium Corrosive	
37	13.00	1	55	663732	2949063	2.50	0	6.15	0	0.052	289	-1	0.0122	0.0122	0.0052	0.0000	0.0040	0.0007	0.0047	0	0.0030	0.0008	0.043	0.0028	0	0.50	0.0009	0	0.0001	-2	0.0325	0.0000	0.0001	90	< 3.0	1600	321536	-2	-5	Medium Corrosive	sample collected
38		2.5				4.90	0	6.45	0	0.038	311	0	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0031	0.0009	0.044	0.0043	0	0.19	0.0005	0	0.0001	-2	0.0311	0.0000	0.0001	94	< 3.0	1600	633024	-2	-4	Medium Corrosive	
39	13.08	1	56	663796	2949084	2.81	0	6.40	0	0.05	310	0	0.0122	0.0122	0.0036	0.0000	0.0020	0.0010	0.0030	0	0.0040	0.0024	0.04	0.0043	0	0.28	0.0001	0	0.0001	-2	0.0320	0.0004	0.0001	96	20	1600	311488	-2	-4	Medium Corrosive	river crossing sample collected
40		2.5				1.19	0	6.01	0	0.049	290	-1	0.0122	0.0122	0.0048	0.0000	0.0028	0.0012	0.0040	0	0.0044	0.0024	0.015	0.0028	0	0.81	0.0002	0	0.0001	-2	0.0318	0.0004	0.0001	99	15	1600	386220	-2	-5	Medium Corrosive	
41	13.13	1	57	663826	2949060	17.06	0	5.99	0	0.072	279	-1	0.0122	0.0122	0.0068	0.0000	0.0056	0.0007	0.0063	0	0.0026	0.0027	0.027	0.0043	0	1.12	0.0004	0	0.0001	-2	0.0201	0.0004	0.0001	90	< 3.0	1600	256852	-2	-5	Medium Corrosive	river crossing sample collected
42		2.5				19.53	0	6.45	0	0.054	315	0	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0026	0.0027	0.03	0.0043	0	0.34	0.0004	0	0.0001	-2	0.0205	0.0004	0.0000	98	3	1600	346656	-2	-4	Medium Corrosive	
43	14.00	1	61	664453	2949111	13.51	0	5.76	0	0.045	275	-1	0.0244	0.0000	0.0024	0.0120	0.0020	0.0002	0.0142	0	0.0090	0.0006	0.032	0.0057	0	0.40	0.0001	0	0.0001	-2	0.0264	0.0005	0.0000	99	3	900	248688	-2	-5	Medium Corrosive	river crossing sample collected
44		2.5				8.51	0	5.99	0	0.072	289	-1	0.0122	0.0122	0.0036	0.0000	0.0032	0.0002	0.0034	0	0.0089	0.0009	0.023	0.0057	0	0.47	0.0001	0	0.0001	-2	0.0301	0.0005	0.0000	100	3	1600	346656	-2	-5	Medium Corrosive	
45	14.05	1	62	664490	2949134	6.92	0	5.82	0	0.084	281	-1	0.0122	0.0122	0.0040	0.0000	0.0024	0.0010	0.0034	0	0.0041	0.0007	0.019	0.0057	0	0.81	0.0007	0	0.0001	-2	0.0291	0.0004	0.0000	102	21	1600	254340	-2	-5	Medium Corrosive	river crossing sample collected
46		2.5				3.95	0	5.85	0	0.083	281	-1	0.0122	0.0122	0.0032	0.0000	0.0024	0.0005	0.0029	0	0.0042	0.0008	0.013	0.0071	0	0.34	0.0006	0	0.0002	-2	0.0311	0.0003	0.0000	100	15	1600	376800	-2	-5	Medium Corrosive	
47	14.19	1	63	664621	2949215	13.45	0	5.65	0	0.083	264	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0005	0.0025	0	0.0049	0.0018	0.014	0.0071	0	0.84	0.0007	0	0.0001	-2	0.0347	0.0004	0.0001	95	3	1600	213520	-2	-5	Medium Corrosive	river crossing sample collected
48		2.5				11.75	0	6.04	0	0.084	287	-1	0.0122	0.0122	0.0064	0.0000	0.0060	0.0002	0.0062	0	0.0050	0.0018	0.027	0.0071	0	1.18	0.0007	0	0.0001	-2	0.0365	0.0004	0.0001	95	3	1600	273180	-2	-5	Medium Corrosive	
49	14.38	1	65	664771	2949308	0.98	0	6.87	0	0.071	338	0	0.0122	0.0122	0.0052	0.0000	0.0036	0.0010	0.0046	0	0.0051	0.0007	0.014	0.0057	0	0.53	0.0004	0	0.0001	-2	0.0323	0.0002	0.0001	96	21	1600	320280	-2	-4	Medium Corrosive	river crossing sample collected
50		2.5				1.64	0	6.05	0	0.106	291	-1	0.0122	0.0122	0.0040	0.0000	0.0020	0.0012	0.0032	0	0.0052	0.0007	0.047	0.0057	0	0.40	0.0004	0	0.0000	0	0.0320	0.0002	0.0001	98	28	1600	557664	-2	-3	Medium Corrosive	
51	14.63	1	66	664975	2949445	16.31	0	6.67	0	0.062	322	0	0.0122	0.0122	0.0032	0.0000	0.0028	0.0002	0.0030	0	0.0027	0.0008	0.076	0.0057	0	0.56	0.0033	0	0.0000	0	0.0301	0.0002	0.0000	92	< 3.0	1600	263760	-2	-2	Medium Corrosive	river area
52		2.5				9.47	0	6.35	0	0.089	309	0	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0028	0.0009	0.022	0.0043	0	0.87	0.0032	0	0.0001	-2	0.0338	0.0002	0.0000	98	3	1600	399408	-2	-4	Medium Corrosive	
53	14.75	1	67	665080	2949513	8.99	0	6.52	0	0.115	318	0	0.0122	0.0122	0.0020	0.0000	0.0012	0.0005	0.0017	0	0.0049	0.0042	0.023	0.0043	0	0.50	0.0011	0	0.0001	-2	0.0315	0.0006	0.0000	97	3	1600	288880	-2	-4	Medium Corrosive	river crossing sample collected
54		2.5				6.06	0	6.60	0	0.104	322	0	0.0122	0.0122	0.0024	0.0000	0.0020	0.0002	0.0022	0	0.0049	0.0041	0.076	0.0043	0	0.34	0.0011	0	0.0001	-2	0.0313	0.0005	0.0000	96	3	1600	435204	-2	-4	Medium Corrosive	
55	15.00	1	68	665295	2949658	7.91	0	6.73	0	0.033	321	0	0.0122	0.0122	0.0028	0.0000	0.0016	0.0007	0.0023	0	0.0038	0.0006	0.022	0.0028	0	0.43	0.0018	0	0.0001	-2	0.0406	0.0005	0.0000	87	< 3.0	1600	266900	-2	-4	Medium Corrosive	sample collected
56		2.5				7.77	0	6.84	0	0.045	335	0	0.0122	0.0122	0.0040	0.0000	0.0024	0.0010	0.0034	0	0.0038	0.0006	0.009	0.0014	0	0.53	0.0018	0	0.0000	0	0.0411	0.0005	0.0001	95	3	1600	395640	-2	-2	Medium Corrosive	
57	15.13	1	69	665392	2949719	17.34	0	6.31	0	0.072	312	0	0.0122	0.0122	0.0048	0.0000	0.0032	0.0010	0.0042	0	0.0044	0.0012	0.022	0.0028	0	0.84	0.0001	0	0.0001	-2	0.0416	0.0000	0.0001	103	< 3.0	1600	260620	-2	-4	Medium Corrosive	river crossing sample collected
58		2.5				12.85	0	6.27	0	0.053	307	0	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0043	0.0011	0.035	0.0028	0	0.59	0.0001	0	0.0001	-2	0.0403	0.0000	0.0000	101	< 3.0	1600	365496	-2	-4	Medium Corrosive	
59	15.50	1	70	665711	2949918	3.91	0	6.84	0	0.058	337	0	0.0122	0.0122	0.0036	0.0000	0.0020	0.0010	0.0030	0	0.0101	0.0191	0.051	0.0085	0	0.16	0.0001	0	0.0000	0	0.0298	0.0002	0.0000	97	20	1600	200960	-2	-2	Medium Corrosive	river area dry water problem
60		2.5				0.23	0	6.92	0	0.069	339	0	0.0122	0.0122	0.0032	0.0000	0.0028	0.0002	0.0030	0	0.0101	0.0191	0.026	0.0085	0	0.50	0.0009	0	0.0001	-2	0.0320	0.0002	0.0000	94	12	1600	282600	-2	-4	Medium Corrosive	
61	15.63	1	71	665818	2949917	15.23	0	5.72	0	0.099	268	-1	0.0122	0.0122	0.0040	0.0000	0.0036	0.0002	0.0038	0	0.0039	0.0011	0.024	0.0057	0	0.53	0.0009	0	0.0001	-2	0.0223	0.0000	0.0001	95	3	1600	264388	-2	-5	Medium Corrosive	river area dry water problem
62		1.8				12.49	0	6.80	0	0.1	336	0	0.0122	0.0122	0.0032	0.0000	0.0020	0.0007	0.0027	0	0.0038	0.0010	0.032	0.0043	0	0.31	0.0012	0	0.0000	0	0.0233	0.0000	0.0001	98	3	1600	344772	-2	-2	Medium Corrosive	
63	16.50	1	72	666653	2950457	2.01	0	7.10	0	0.119	352	0	0.0122	0.0122	0.0048	0.0000	0.0036	0.0007	0.0043	0	0.0096	0.0035	0.016	0.0057	0	0.22	0.0003	0	0.0001	-2	0.0415	0.0016	0.0000	96	3	1600	195936	-2	-4	Medium Corrosive	river crossing sample collected
64		2.5				7.37	0	7.15	0	0.127	351	0	0.0122	0.0122	0.0060	0.0000	0.0056	0.0002	0.0058	0	0.0097	0.0036	0.012	0.0057	0	1.12	0.0002	0	0.0001	-2	0.0462	0.0018	0.0001	92	3.6	1600	252456	-2	-4	Medium Corrosive	

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
65	17.00	1	74	666826	2950829	13.53	0	6.27	0	0.099	301	0	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0059	0.0029	0.029	0.0057	0	0.90	0.0027	0	0.0001	-2	0.0645	0.0006	0.0001	95	< 3.0	1600	150720	-2	-4	Medium Corrosive	sample collected from land
66		2.5				19.10	0	6.15	0	0.09	296	-1	0.0122	0.0122	0.0036	0.0000	0.0020	0.0010	0.0030	0	0.0060	0.0028	0.031	0.0043	0	0.53	0.0029	0	0.0001	-2	0.0516	0.0006	0.0001	97	< 3.0	1600	197820	-2	-5	Medium Corrosive	
67	18.00	1	78	667010	2951822	35.19	1	5.72	0	0.15	271	-1	0.0122	0.0122	0.0032	0.0000	0.0024	0.0005	0.0029	0	0.0051	0.0038	0.033	0.0043	0	0.81	0.0007	0	0.0001	-2	0.0462	0.0012	0.0002	98	< 3.0	1600	93572	-2	-4	Medium Corrosive	sample collected
68		2.5				7.47	0	5.84	0	0.158	279	-1	0.0122	0.0122	0.0048	0.0000	0.0040	0.0005	0.0045	0	0.0053	0.0039	0.019	0.0043	0	0.84	0.0009	0	0.0000	0	0.0431	0.0013	0.0002	99	3	1600	117750	-2	-3	Medium Corrosive	
69	19.00	1	82	667154	2952800	9.05	0	5.89	0	0.072	274	-1	0.0122	0.0122	0.0036	0.0000	0.0032	0.0002	0.0034	0	0.0041	0.0036	0.024	0.0057	0	0.53	0.0002	0	0.0001	-2	0.0313	0.0001	0.0001	91	< 3.0	900	128740	-2	-5	Medium Corrosive	sample collected rock problem
70		2.5				11.16	0	6.60	0	0.084	323	0	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0040	0.0035	0.023	0.0043	0	0.31	0.0001	0	0.0001	-2	0.0320	0.0001	0.0001	97	7.4	1600	168052.8	-2	-4	Medium Corrosive	
71	20.00	1	86	667335	2953704	17.90	0	5.79	0	0.045	272	-1	0.0122	0.0122	0.0060	0.0000	0.0036	0.0015	0.0051	0	0.0035	0.0013	0.019	0.0028	0	1.83	0.0054	0	0.0001	-2	0.0459	0.0000	0.0002	95	< 3.0	1600	104876	-2	-5	Medium Corrosive	sample collected from land
72		2.5				18.99	0	6.15	0	0.062	292	-1	0.0122	0.0122	0.0064	0.0000	0.0028	0.0022	0.0050	0	0.0039	0.0014	0.018	0.0028	0	1.49	0.0053	0	0.0001	-2	0.0420	0.0000	0.0002	93	3.6	1600	116996.4	-2	-5	Medium Corrosive	
73	21.00	1	90	667315	2954732	10.24	0	5.84	0	0.099	277	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0106	0.0202	0.016	0.0043	0	0.81	0.0022	0	0.0001	-2	0.0200	0.0000	0.0000	97	< 3.0	1600	257480	-2	-5	Medium Corrosive	sample collected tea from land
74		2.5				10.27	0	4.73	-1	0.088	213	-1	0.0122	0.0122	0.0016	0.0000	0.0012	0.0002	0.0014	0	0.0108	0.0202	0.017	0.0043	0	0.74	0.0022	0	0.0001	-2	0.0306	0.0000	0.0000	99	< 3.0	1600	382452	-2	-6	Highly Corrosive	
75	22.00	1	94	667094	2955708	10.54	0	4.93	-1	0.095	226	-1	0.0122	0.0122	0.0012	0.0000	0.0008	0.0002	0.0010	0	0.0031	0.0027	0.033	0.0028	0	2.26	0.0008	0	0.0001	-2	0.0237	0.0000	0.0002	100	3.6	1600	191540	-2	-6	Highly Corrosive	sample collected
76		2.5				18.41	0	5.72	0	0.085	273	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0031	0.0027	0.027	0.0028	0	2.05	0.0009	0	0.0001	-2	0.0250	0.0000	0.0002	100	< 3.0	1600	320280	-2	-5	Medium Corrosive	
77	23.00	1	98	667051	2956672	10.98	0	6.92	0	0.127	339	0	0.0122	0.0122	0.0024	0.0000	0.0012	0.0007	0.0019	0	0.0056	0.0020	0.032	0.0028	0	0.81	0.0032	0	0.0001	-2	0.0335	0.0000	0.0001	94	< 3.0	1600	254968	-2	-4	Medium Corrosive	sample collected tea from land
78		2.5				17.81	0	5.79	0	0.116	270	-1	0.0122	0.0122	0.0020	0.0000	0.0008	0.0007	0.0015	0	0.0058	0.0019	0.022	0.0043	0	0.99	0.0032	0	0.0001	-2	0.0315	0.0000	0.0001	93	< 3.0	1600	378684	-2	-5	Medium Corrosive	
79	23.50	1	100	667337	2957053	14.37	0	5.71	0	0.081	268	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0002	0.0030	0	0.0050	0.0044	0.032	0.0043	0	0.31	0.0018	0	0.0001	-2	0.0250	0.0000	0.0001	95	9.2	900	255596	-2	-5	Medium Corrosive	river crossing sample collected
80		2.5				19.60	0	6.01	0	0.072	289	-1	0.0122	0.0122	0.0016	0.0000	0.0012	0.0002	0.0014	0	0.0051	0.0041	0.031	0.0057	0	0.22	0.0016	0	0.0001	-2	0.0269	0.0000	0.0001	98	15	900	324048	-2	-5	Medium Corrosive	
81	24.00	1	102	667696	2957342	13.01	0	6.15	0	0.048	296	-1	0.0122	0.0122	0.0024	0.0000	0.0012	0.0007	0.0019	0	0.0051	0.0016	0.023	0.0043	0	1.09	0.0004	0	0.0000	0	0.0288	0.0003	0.0001	97	< 3.0	1600	80384	-2	-3	Medium Corrosive	sample collected
82		2.5				17.04	0	5.39	0	0.056	252	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0053	0.0015	0.022	0.0057	0	1.15	0.0005	0	0.0001	-2	0.0291	0.0003	0.0000	99	< 3.0	1600	61230	-2	-5	Medium Corrosive	
83	25.00	1	106	667917	2958317	11.73	0	5.53	0	0.11	249	-1	0.0244	0.0244	0.0048	0.0000	0.0036	0.0007	0.0043	0	0.0076	0.0015	0.027	0.0057	0	2.17	0.0005	0	0.0001	-2	0.0269	0.0019	0.0001	87	9.2	1600	102992	-2	-5	Medium Corrosive	sample collected from land
84		2.5				19.17	0	5.84	0	0.084	276	-1	0.0122	0.0122	0.0056	0.0000	0.0044	0.0007	0.0051	0	0.0081	0.0013	0.025	0.0071	0	2.05	0.0005	0	0.0001	-2	0.0276	0.0020	0.0001	96	11	1600	94388.4	-2	-5	Medium Corrosive	
85	26.00	1	110	667936	2959311	9.86	0	5.92	0	0.056	277	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0054	0.0017	0.02	0.0043	0	0.59	0.0007	0	0.0001	-2	0.1267	0.0000	0.0001	92	< 3.0	1600	179608	-2	-5	Medium Corrosive	sample collected tea from land
86		2.5				15.63	0	5.55	0	0.073	257	-1	0.0122	0.0122	0.0028	0.0000	0.0012	0.0010	0.0022	0	0.0051	0.0017	0.013	0.0043	0	0.47	0.0070	0	0.0001	-2	0.1333	0.0000	0.0001	94	< 3.0	900	222312	-2	-5	Medium Corrosive	
87	27.00	1	114	668236	2960201	18.58	0	5.20	0	0.046	231	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0020	0.0013	0.014	0.0043	0	1.55	0.0017	0	0.0001	-2	0.0269	0.0003	0.0001	89	3	1600	251200	-2	-5	Medium Corrosive	sample collected tea from land
88		2.5				12.05	0	5.34	0	0.072	249	-1	0.0122	0.0122	0.0020	0.0000	0.0012	0.0005	0.0017	0	0.0021	0.0012	0.017	0.0028	0	1.43	0.0017	0	0.0001	-2	0.0276	0.0004	0.0001	99	3	1600	350424	-2	-5	Medium Corrosive	
89	28.00	1	118	668521	2961056	9.25	0	5.52	0	0.043	259	-1	0.0122	0.0122	0.0040	0.0000	0.0020	0.0012	0.0032	0	0.0108	0.0057	0.018	0.0043	0	1.55	0.0012	0	0.0001	-2	0.0489	0.0000	0.0001	98	< 3.0	1600	226080	-2	-5	Medium Corrosive	sample collected
90		2.5				12.97	0	5.45	0	0.065	247	-1	0.0122	0.0122	0.0048	0.0000	0.0032	0.0010	0.0042	0	0.0107	0.0056	0.022	0.0043	0	1.64	0.0013	0	0.0001	-2	0.0164	0.0000	0.0002	90	< 3.0	1600	280716	-2	-5	Medium Corrosive	
91	29.00	1	122	669353	2961481	19.45	0	5.39	0	0.061	246	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0040	0.0013	0.018	0.0043	0	1.46	0.0004	0	0.0000	0	0.0206	0.0000	0.0002	93	3.6	1600	167048	-2	-3	Medium Corrosive	sample collected tea from land
92		2.5				13.16	0	6.05	0	0.082	288	-1	0.0122	0.0122	0.0092	0.0000	0.0064	0.0017	0.0081	0	0.0042	0.0015	0.019	0.0028	0	1.43	0.0003	0	0.0001	-2	0.0245	0.0000	0.0002	95	< 3.0	1600	235500	-2	-5	Medium Corrosive	
93	30.00	1	126	670059	2962140	18.98	0	6.11	0	0.085	287	-1	0.0122	0.0122	0.0048	0.0000	0.0032	0.0010	0.0042	0	0.0031	0.0016	0.025	0.0028	0	1.12	0.0004	0	0.0001	-2	0.0335	0.0000	0.0001	90	3	1600	104248	-2	-5	Medium Corrosive	sample collected
94		2.5				14.25	0	5.99	0	0.051	286	-1	0.0122	0.0122	0.0032	0.0000	0.0020	0.0007	0.0027	0	0.0033	0.0015	0.011	0.0043	0	0.31	0.0005	0	0.0001	-2	0.0347	0.0000	0.0000	97	< 3.0	1600	132822	-2	-5	Medium Corrosive	
95	30.25	1	127	670240	2962312	3.22	0	6.14	0	0.041	294	-1	0.0122	0.0122	0.0028	0.0000	0.0024	0.0002	0.0026	0	0.0085	0.0013	0.013	0.0043	0	0.40	0.0002	0	0.0001	-2	0.0408	0.0007	0.0000	96	3	900	131880	-2	-5	Medium Corrosive	river crossing sample collected
96		2.5				1.20	0	6.18	0	0.061	298	-1	0.0122	0.0122	0.0032	0.0000	0.0020	0.0007	0.0027	0	0.0080	0.0011	0.015	0.0028	0	0.53	0.0003	0	0.0001	-2	0.0465	0.0007	0.0000	97	< 3.0	900	199704	-2	-5	Medium Corrosive	
97	30.50	1	128	670424	2962482	3.19	0	6.22	0	0.081	302	0	0.0122	0.0122	0.0028	0.0000	0.0024	0.0002	0.0026	0	0.0027	0.0009	0.017	0.0043	0	0.43	0.0001	0	0.0001	-2	0.0315	0.0004	0.0001	99	3.6	1600	124344	-2	-4	Medium Corrosive	river crossing sample collected
98		2.5				10.62	0	7.18	0	0.044	358	0	0.0122	0.0122	0.0024	0.0000	0.0020	0.0002	0.0022	0	0.0026	0.0008	0.022	0.0043	0	0.16	0.0007	0	0.0001	-2	0.0261	0.0005	0.0001	97	3	1600	162400.8	-2	-4	Medium Corrosive	
99	31.00	1	130	670407	2962872	14.43	0	7.04	0	0.011	349	0	0.0122	0.0122	0.0016	0.0000	0.0012	0.0002	0.0014	0	0.0049	0.0010	0.029	0.0043	0	0.37	0.0002	0	0.0001	-2	0.0301	0.0000	0.0001	97	< 3.0	1600	260620	-2	-4	Medium Corrosive	sample collected open land
100		2.5				18.81	0	7.09	0	0.02	347	0	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0050	0.0009	0.032	0.0057	0	0.81	0.0003	0	0.0001	-2	0.0269	0.0000	0.0001	92	3.6	1600	435204	-2	-4	Medium Corrosive	
101	32.00	1	134	669805	2963771	7.49	0	7.12	0	0.04	355	0	0.0122	0.0122	0.0028	0.0000	0.0024	0.0002	0.0026	0	0.0033	0.0024	0.017	0.0057	0	0.47	0.0002	0	0.0000	0	0.0277	0.0000	0.0000	98	3	1600	166420	-2	-2	Medium Corrosive	sample collected open land
102		2.5				7.58	0	6.04	0	0.021	287	-1	0.0122	0.0122	0.0024	0.0000	0.0012	0.0007	0.0019	0	0.0031	0.0021	0.013	0.0057	0	0.09	0.0007	0	0.0001	-2	0.0283	0.0000	0.0000	95	3.6	1600	227964	-2	-5	Medium Corrosive	
103	33.00	1	138	669210	2964466	4.99	0	6.50	0	0.018	316	0	0.0122	0.0122	0.0036	0.0000	0.0024	0.0007	0.0031	0	0.0032	0.0012	0.02	0.0057	0	0.34	0.0004	0	0.0001	-2	0.0276	0.0003	0.0001	96	7.2	1600	167676	-2	-4	Medium Corrosive	sample collected
104		2.5				8.67	0	6.55	0	0.01	322	0	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0033	0.0011	0.021	0.0057	0	0.19	0.0003	0	0.0001	-2	0.0462	0.0002	0.0001	99	3	1600	201588	-2	-4	Medium Corrosive	
105	33.50	1	140	668885	2964847	18.41	0	6.45	0	0.017	319	0	0.0122	0.0122	0.0040	0.0000	0.0024	0.0010	0.0034	0	0.0045	0.0035	0.024	0.0043	0	0.84	0.0005	0	0.0001	-2	0.0438	0.0000	0.0001	102	11	1600	163908	-2	-4	Medium Corrosive	from land
106		2.5				13.88	0	5.63	0	0.013	264	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0012	0.0052	0	0.0046	0.0034	0.018	0.0043	0	1.24	0.0006	0	0.0001	-2	0.0357	0.0000	0.0000	96	9.2	1600	244920	-2	-5	Medium Corrosive	
107	34.00	1	142	668553	2965221	15.79	0	6.11	0	0.024	296	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0031	0.0035	0.01	0.0057	0	0.59	0.0002	0	0.0001	-2	0.0235	0.0000	0.0001	99	3	1600	189656	-2	-5	Medium Corrosive	sample collected
108		2.5				19.53	0	6.13	0	0.02	295	-1	0.0122	0.0122	0.0044	0.0000	0.0028	0.0010	0.0038	0	0.0032	0.0037	0.013	0.0057	0	0.47	0.0001	0	0.0001	-2	0.0244	0.0000	0.0001	97	3	1600	282600	-2	-5	Medium Corrosive	
109	35.00	1	146	667914	2965990	16.80	0	6.18	0	0.024	300	-1	0.0122	0.0122	0.0028	0.0000	0.0012	0.0010	0.0022	0	0.0058	0.0070	0.016	0.0057	0	1.77	0.0278	-1	0.0001	-2	0.0291	0.0012	0.0001	99	3.6	1600	260620	-2	-6	Highly Corrosive	sample collected
110		2.5				12.27	0	5.11	0	0.056	236	-1	0.0122	0.0122	0.0032	0.0000	0.0020	0.0007	0.0027	0	0.0059	0.0071	0.013	0.0071	0	2.11	0.0211	-1	0.0001	-2	0.0257	0.0014	0.0001	99	< 3.0	1600	388104	-2	-6	Highly Corrosive	
111	36.00	1	150	667287	2966769	9.83	0	4.79	-1	0.046	221	-1	0.0122	0.0122	0.0044	0.0000	0.0028	0.0010	0.0038	0	0.0060	0.0041	0.041	0.0043	0	1.18	0.0011	0	0.0001	-2	0.0206	0.0005	0.0001	104	< 3.0	1600	198448	-2	-6	Highly Corrosive	sample collected from land
112		2.5				9.86	0	4.85	-1	0.065	219	-1	0.0122	0.0122	0.0032	0.0000	0.0020	0.0007	0.0027	0	0.0062	0.0043	0.045	0.0043	0	1.36	0.0011	0	0.0001	-2	0.0174	0.0003	0.0001	98	< 3.0	1600	335352	-2	-6	Highly Corrosive	
113	37.00	1	154	666660	2967551	12.00	0	4.61	-1	0.055	205	-1	0.0122	0.0122	0.0040	0.0000	0.0020	0.0012	0.0032	0	0.0043	0.0074	0.035	0.0071	0	1.74	0.0029	0	0.0001	-2	0.0315	0.0004	0.0001	98	3.6	500	305208	-2	-6	Highly Corrosive	from land sample collected
114		2.5				5.47	0	4.99	-1	0.047	224	-1	0.0122	0.0122	0.0068	0.0000	0.0048	0.0012	0.0060	0	0.0041	0.0073	0.034	0.0071	0	1.77	0.0024	0	0.0001	-2	0.0247	0.0012	0.0001	95	< 3.0	1600	425784	-2	-6	Highly Corrosive	
115	38.00	1	158	666091	2968371	12.75	0	5.33	0	0.018	249	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0002	0.0018	0	0.0052	0.0057	0.019	0.0057	0	1.55	0.0097	0	0.0001	-2	0.0232	0.0003	0.0001	99	3.6	900	216660	-2	-5	Medium Corrosive	sample collected
116		2.5				10.34	0	5.42	0	0.019	252	-1	0.0122	0.0122	0.0024	0.0000	0.0012	0.0007	0.0019	0	0.0053	0.0058	0.024	0.0043	0	1.43	0.0171	0	0.0001	-2	0.0240	0.0003	0.0001	97	< 3.0	1600	243036	-2	-5	Medium Corrosive	
117	39.00	1	162	665718	2969268	4.69	0	5.20	0	0.034	236	-1	0.0122	0.0122	0.0020	0.0000	0.0008	0.0007	0.0015	0	0.0062	0.0045	0.027	0.0043	0	0.43	0.0025	0	0.0001	-2	0.0658	0.0000	0.0001	94	21	1600	263760	-2	-5	Medium Corrosive	sample collected tea from land
118		2.5				7.98	0	5.34	0	0.022	245	-1	0.0122	0.0122	0.0012	0.0000	0.0008	0.0002	0.0010	0	0.0061	0.0045	0.014	0.0043	0	0.74	0.0024	0	0.0001	-2	0.0660	0.0000	0.0000	95	28	1600	389988	-2	-5	Medium Corrosive	
119	40.00	1	166	665524	2970248	4.84	0	5.27	0	0.023	242	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0002	0.0030	0	0.0033	0.0017	0.024	0.0043	0	1.77	0.0060	0	0.0001	-2	0.0360	0.0005	0.0001	96	20	900	167048	-2	-5	Medium Corrosive	sample collected
120		2.5				8.42	0	5.90	0	0.031	284	-1	0.0122	0.0122	0.0036	0.0000	0.0028	0.0005	0.0033	0	0.0034	0.0018	0.021	0.0043	0	1.40	0.0063	0	0.0001	-2	0.0438	0.0004	0.0001	100	3.6	1600	235500	-2	-5	Medium Corrosive	
121	41.00	1	170	665357	2971230	9.79	0	5.00	0	0.051	220	-1	0.0122	0.0122	0.0016	0.0000	0.0008	0.0005	0.0013	0	0.0030	0.0038	0.023	0.0043	0	1.77	0.0015	0	0.0001	-2	0.0277	0.0005	0.0001	90	< 3.0	1600	452160	-2	-5	Medium Corrosive	sample collected
122		2.5				9.89	0	4.92	-1	0.041	220	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0005	0.0021	0	0.0032	0.0040	0.021	0.0057	0	2.33	0.0014	0	0.0001	-2	0.0283	0.0005	0.0001	95	< 3.0	1600	904320	-2	-6	Highly Corrosive	
123	42.00	1	174	664894	2972092	11.19	0	5.77	0	0.056	263	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0048	0.0048	0.025	0.0043	0	1.61	0.0202	-1	0.0000	0	0.0232	0.0003	0.0000	87	< 3.0	1600	511820	-2	-4	Medium Corrosive	sample collected

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
124	[illegible]	2.5	[illegible]	[illegible]	[illegible]	5.78	0	6.01	0	0.066	288	-1	0.0122	0.0122	0.0060	0.0000	0.0032	0.0017	0.0049	0	0.0047	0.0049	0.027	0.0057	0	1.43	0.0213	-1	0.0001	-2	0.0217	0.0003	0.0000	97	3.6	1600	974028	-2	-6	Highly Corrosive	[illegible]
125	43.00	1	178	664587	2972771	17.04	0	6.04	0	0.032	288	-1	0.0122	0.0122	0.0040	0.0000	0.0036	0.0002	0.0038	0	0.0039	0.0022	0.024	0.0057	0	0.96	0.0035	0	0.0001	-2	0.0239	0.0000	0.0001	96	7.4	500	166420	-2	-5	Medium Corrosive	sample collected
126		2.5				17.23	0	5.49	0	0.035	252	-1	0.0122	0.0122	0.0024	0.0000	0.0020	0.0002	0.0022	0	0.0040	0.0023	0.043	0.0057	0	1.27	0.0034	0	0.0000	0	0.0233	0.0000	0.0001	93	11	1600	244920	-2	-3	Medium Corrosive	
127	44.00	1	182	663710	2972962	11.88	0	5.05	0	0.06	223	-1	0.0122	0.0122	0.0052	0.0000	0.0024	0.0017	0.0041	0	0.0042	0.0027	0.028	0.0043	0	1.86	0.0018	0	0.0001	-2	0.0269	0.0028	0.0000	90	3.6	1600	110528	-2	-5	Medium Corrosive	sample collected tea from land
128		2.5				22.76	1	5.27	0	0.052	246	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0005	0.0037	0	0.0043	0.0029	0.032	0.0043	0	1.46	0.0019	0	0.0001	-2	0.0267	0.0026	0.0001	100	3	1600	155430	-2	-4	Medium Corrosive	
129	45.00	1	186	663074	2972517	12.39	0	6.01	0	0.062	287	-1	0.0122	0.0122	0.0016	0.0000	0.0012	0.0002	0.0014	0	0.0055	0.0030	0.044	0.0043	0	1.12	0.0005	0	0.0001	-2	0.0274	0.0002	0.0001	96	< 3.0	1600	199076	-2	-5	Medium Corrosive	sample collected
130		2.5				19.87	0	5.69	0	0.058	267	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0050	0.0032	0.047	0.0057	0	0.68	0.0006	0	0.0001	-2	0.0284	0.0001	0.0001	96	< 3.0	1600	235500	-2	-5	Medium Corrosive	
131	45.75	1	189	662471	2972368	7.10	0	6.06	0	0.03	288	-1	0.0122	0.0122	0.0028	0.0000	0.0016	0.0007	0.0023	0	0.0038	0.0013	0.035	0.0057	0	0.59	0.0018	0	0.0001	-2	0.0508	0.0004	0.0001	94	< 3.0	1600	95456	-2	-5	Medium Corrosive	river crossing sample collected
132		2.5				14.37	0	6.09	0	0.039	285	-1	0.0122	0.0122	0.0024	0.0000	0.0020	0.0002	0.0022	0	0.0035	0.0015	0.015	0.0057	0	0.43	0.0018	0	0.0001	-2	0.0504	0.0004	0.0001	90	< 3.0	1600	80070	-2	-5	Medium Corrosive	
133	45.85	1	190	662372	2972379	9.83	0	7.01	0	0.072	352	0	0.0122	0.0122	0.0032	0.0000	0.0012	0.0012	0.0024	0	0.0035	0.0019	0.017	0.0057	0	0.22	0.0016	0	0.0001	-2	0.0469	0.0004	0.0001	101	< 3.0	1600	121832	-2	-4	Medium Corrosive	sample collected open land
134		2.5				9.86	0	6.33	0	0.057	306	0	0.0122	0.0122	0.0040	0.0000	0.0028	0.0007	0.0035	0	0.0034	0.0020	0.015	0.0043	0	0.12	0.0014	0	0.0001	-2	0.0301	0.0004	0.0001	96	< 3.0	1600	155430	-2	-4	Medium Corrosive	
135	46.00	1	191	662221	2972386	8.98	0	6.61	0	0.046	326	0	0.0122	0.0122	0.0124	0.0000	0.0100	0.0015	0.0115	0	0.0031	0.0021	0.028	0.0028	0	2.51	0.0012	0	0.0001	-2	0.0250	0.0005	0.0002	99	3.6	1600	129368	-2	-4	Medium Corrosive	sample collected open land
136		2.5				3.86	0	6.84	0	0.057	336	0	0.0122	0.0122	0.0072	0.0000	0.0056	0.0010	0.0066	0	0.0032	0.0020	0.033	0.0028	0	2.08	0.0013	0	0.0001	-2	0.0266	0.0005	0.0002	96	9.2	1600	181617.6	-2	-4	Medium Corrosive	
137	48.00	1	199	660486	2973251	12.75	0	5.94	0	0.039	276	-1	0.0122	0.0122	0.0048	0.0000	0.0040	0.0005	0.0045	0	0.0045	0.0040	0.035	0.0043	0	1.43	0.0007	0	0.0002	-2	0.0479	0.0030	0.0001	90	3.6	1600	116808	-2	-5	Medium Corrosive	sample collected rock problem
138		2.5				19.84	0	5.92	0	0.035	282	-1	0.0122	0.0122	0.0068	0.0000	0.0044	0.0015	0.0059	0	0.0044	0.0039	0.042	0.0043	0	1.55	0.0008	0	0.0001	-2	0.0497	0.0031	0.0001	97	20	500	124155.6	-2	-5	Medium Corrosive	
139	48.50	1	201	660072	2973527	7.20	0	6.57	0	0.077	322	0	0.0122	0.0122	0.0092	0.0000	0.0064	0.0017	0.0081	0	0.0030	0.0033	0.029	0.0043	0	0.99	0.0001	0	0.0001	-2	0.0277	0.0032	0.0001	98	20	1600	85408	-2	-4	Medium Corrosive	sample collected from land
140		2.5				8.48	0	6.94	0	0.084	332	0	0.0122	0.0122	0.0068	0.0000	0.0044	0.0015	0.0059	0	0.0031	0.0031	0.032	0.0028	0	0.81	0.0001	0	0.0001	-2	0.0293	0.0040	0.0001	86	15	900	115300.8	-2	-4	Medium Corrosive	
141	48.75	1	202	659854	2973593	11.56	0	5.99	0	0.039	286	-1	0.0122	0.0122	0.0080	0.0000	0.0036	0.0027	0.0063	0	0.0045	0.0027	0.027	0.0043	0	1.15	0.0112	0	0.0001	-2	0.0218	0.0006	0.0000	97	9.2	900	163280	-2	-5	Medium Corrosive	sample collected tea from land
142		2				7.58	0	6.35	0	0.026	307	0	0.0122	0.0122	0.0052	0.0000	0.0048	0.0002	0.0050	0	0.0044	0.0028	0.041	0.0043	0	1.09	0.0113	0	0.0001	-2	0.0233	0.0005	0.0001	96	3.6	1600	235500	-2	-4	Medium Corrosive	
143	49.00	1	203	659593	2973668	7.95	0	6.72	0	0.127	326	0	0.0122	0.0122	0.0124	0.0000	0.0068	0.0034	0.0102	0	0.0040	0.0033	0.028	0.0028	0	0.59	0.0003	0	0.0001	-2	0.0276	0.0000	0.0001	93	3.6	1600	226708	-2	-4	Medium Corrosive	sample collected
144		2				13.80	0	6.84	0	0.15	330	0	0.0122	0.0122	0.0100	0.0000	0.0080	0.0012	0.0092	0	0.0041	0.0033	0.024	0.0028	0	0.47	0.0004	0	0.0001	-2	0.0240	0.0000	0.0001	90	< 3.0	1600	346656	-2	-4	Medium Corrosive	
145	49.75	1	206	658867	2973582	17.55	0	5.99	0	0.039	285	-1	0.0122	0.0122	0.0024	0.0000	0.0020	0.0002	0.0022	0	0.0053	0.0021	0.058	0.0028	0	0.34	0.0021	0	0.0001	-2	0.0195	0.0000	0.0000	96	< 3.0	1600	162652	-2	-5	Medium Corrosive	sample collected tea from land
146		2.5				11.75	0	4.99	-1	0.026	222	-1	0.0122	0.0122	0.0016	0.0000	0.0012	0.0002	0.0014	0	0.0056	0.0022	0.019	0.0028	0	0.28	0.0017	0	0.0001	-2	0.0242	0.0000	0.0001	93	7.4	1600	168618	-2	-6	Highly Corrosive	
147	49.89	1.00	207	658769	2973484	19.88	0	4.95	-1	0.031	222	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0021	0.0012	0.0150	0.0014	0	0.48	0.0267	-1	0.0001	-2	0.1946	0.0000	0.0003	95	3	1600	183376.00	-2	-7	Highly Corrosive	Road side
148		2.50				18.23	0	4.90	-1	0.035	219	-1	0.0122	0.0122	0.0040	0.0000	0.0012	0.0028	0.0040	0	0.0020	0.0014	0.0140	0.0014	0	0.60	0.0193	0	0.0001	-2	0.1937	0.0000	0.0003	95	< 3.0	1600	201588.00	-2	-6	Highly Corrosive	
149	49.98	1.00	208	658728	2973580	9.15	0	5.32	0	0.086	246	-1	0.0122	0.0122	0.0040	0.0000	0.0012	0.0028	0.0040	0	0.0016	0.0014	0.0120	0.0014	0	0.57	0.0052	0	0.0001	-2	0.0963	0.0000	0.0004	97	3	1600	190912.00	-2	-5	Medium Corrosive	Railway crossing
150		2.70				12.82	0	4.91	-1	0.025	220	-1	0.0122	0.0122	0.0048	0.0000	0.0016	0.0032	0.0048	0	0.0016	0.0017	0.0130	0.0014	0	0.51	0.0052	0	0.0001	-2	0.1047	0.0000	0.0006	95	< 3.0	1600	241152.00	-2	-6	Highly Corrosive	
151	50.91	1.00	212	658176	2974281	8.08	0	5.06	0	0.064	230	-1	0.0244	0.0244	0.0048	0.0000	0.0032	0.0016	0.0048	0	0.0017	0.0014	0.0160	0.0028	0	1.62	0.0124	0	0.0001	-2	0.0660	0.0000	0.0004	96	< 3.0	900	146952.00	-2	-5	Medium Corrosive	sample collected
152		2.50				5.00	0	5.68	0	0.042	259	-1	0.0122	0.0122	0.0040	0.0000	0.0020	0.0020	0.0040	0	0.0019	0.0066	0.0180	0.0028	0	1.68	0.0096	0	0.0001	-2	0.0577	0.0000	0.0004	88	3.6	1600	184632.00	-2	-5	Medium Corrosive	
153	51.27	1.00	214	657856	2974434	13.35	0	5.40	0	0.051	249	-1	0.0122	0.0122	0.0060	0.0000	0.0048	0.0012	0.0060	0	0.0015	0.0064	0.0200	0.0043	0	1.33	0.0136	0	0.0000	0	0.0335	0.0070	0.0001	95	3	1600	128112.00	-2	-3	Medium Corrosive	Nala crossing
154		2.00				15.08	0	5.07	0	0.079	228	-1	0.0122	0.0122	0.0064	0.0000	0.0044	0.0020	0.0064	0	0.0019	0.0036	0.0280	0.0028	0	0.64	0.0391	-1	0.0001	-2	0.0342	0.0080	0.0001	94	3.6	1600	128488.80	-2	-6	Highly Corrosive	
155	51.91	1.00	217	657278	2974708	8.98	0	5.40	0	0.040	246	-1	0.0122	0.0122	0.0052	0.0000	0.0040	0.0012	0.0052	0	0.0018	0.0063	0.0200	0.0028	0	2.41	0.0204	-1	0.0001	-2	0.0296	0.0000	0.0002	92	< 3.0	1600	204100.00	-2	-6	Highly Corrosive	Road side
156		2.80				5.49	0	5.37	0	0.042	247	-1	0.0244	0.0000	0.0072	0.0120	0.0044	0.0028	0.0192	0	0.0020	0.0060	0.0170	0.0028	0	2.29	0.0182	0	0.0001	-2	0.0259	0.0000	0.0002	95	< 3.0	1600	348540.00	-2	-5	Medium Corrosive	
157	52.43	1.00	219	656836	2974955	12.75	0	5.63	0	0.035	266	-1	0.0122	0.0122	0.0072	0.0000	0.0056	0.0016	0.0072	0	0.0024	0.0033	0.0090	0.0014	0	0.76	0.0177	0	0.0001	-2	0.0252	0.0000	0.0002	98	< 3.0	300	185260.00	-2	-5	Medium Corrosive	Road side
158		2.50				17.34	0	5.59	0	0.032	252	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0004	0.0032	0	0.0025	0.0026	0.0080	0.0014	0	0.38	0.0193	0	0.0001	-2	0.0272	0.0000	0.0003	87	< 3.0	900	295788.00	-2	-5	Medium Corrosive	
159	53.40	1.00	223	656139	2975660	7.44	0	4.96	-1	0.038	228	-1	0.0122	0.0122	0.0036	0.0000	0.0020	0.0016	0.0036	0	0.0012	0.0017	0.0130	0.0028	0	1.02	0.0024	0	0.0001	-2	0.0227	0.0000	0.0002	100	11	1600	150720.00	-2	-6	Highly Corrosive	River crossing sample collected
160		2.50				7.54	0	4.51	-1	0.064	198	-2	0.0122	0.0122	0.0172	0.0000	0.0128	0.0044	0.0172	0	0.0013	0.0021	0.0100	0.0014	0	1.59	0.0024	0	0.0001	-2	0.0220	0.0000	0.0002	97	3.6	1600	178226.40	-2	-7	Highly Corrosive	
161	53.55	1.00	224	656011	2975623	4.88	0	4.99	-1	0.041	224	-1	0.0244	0.0244	0.0016	0.0000	0.0008	0.0008	0.0016	0	0.0013	0.0045	0.0140	0.0014	0	0.89	0.0024	0	0.0000	0	0.0201	0.0000	0.0003	95	< 3.0	1600	169560.00	-2	-4	Medium Corrosive	River crossing sample collected
162		2.50				5.07	0	6.80	0	0.094	332	0	0.0122	0.0122	0.0180	0.0000	0.0132	0.0048	0.0180	0	0.0013	0.0046	0.0170	0.0014	0	0.54	0.0313	-1	0.0000	0	0.0215	0.0000	0.0004	94	< 3.0	1600	187458.00	-2	-3	Medium Corrosive	
163	54.32	1.00	226	655735	2975806	9.85	0	5.72	0	0.043	269	-1	0.0122	0.0122	0.0092	0.0000	0.0060	0.0032	0.0092	0	0.0018	0.0045	0.026	0.0043	0	1.71	0.0059	0	0.0000	0	0.0157	0.0000	0.0001	96	9.2	500	171130.00	-2	-3	Medium Corrosive	sample collected jungle area
164		2.60				8.56	0	5.63	0	0.061	262	-1	0.0366	0.0122	0.0064	0.0120	0.0036	0.0028	0.0184	0	0.0017	0.0046	0.029	0.0043	0	1.49	0.0050	0	0.0000	0	0.0151	0.0000	0.0002	94	11	1600	172951.20	-2	-3	Medium Corrosive	
165	55.33	1.00	230	655388	2976042	11.41	0	5.61	0	0.065	262	-1	0.0244	0.0244	0.0120	0.0000	0.0056	0.0064	0.0120	0	0.0015	0.0043	0.014	0.0028	0	0.92	0.0052	0	0.0001	-2	0.0108	0.0000	0.0005	95	3	1600	129368.00	-2	-5	Medium Corrosive	sample collected rock problem
166		1.80				12.62	0	6.21	0	0.023	298	-1	0.0122	0.0122	0.0144	0.0000	0.0132	0.0012	0.0144	0	0.0015	0.0039	0.016	0.0043	0	0.38	0.0052	0	0.0001	-2	0.0096	0.0000	0.0005	95	3.6	1600	85910.40	-2	-5	Medium Corrosive	
167	56.36	1.00	234	655578	2976348	13.20	0	6.14	0	0.026	292	-1	0.0366	0.0366	0.0128	0.0000	0.0068	0.0060	0.0128	0	0.0013	0.0041	0.022	0.0028	0	0.32	0.0385	-1	0.0001	-2	0.0281	0.0000	0.0009	94	< 3.0	1600	94200.00	-2	-6	Highly Corrosive	sample collected rock problem
168		1.80				10.65	0	8.02	0	0.151	409	2	0.0244	0.0244	0.0148	0.0000	0.0076	0.0072	0.0148	0	0.0013	0.0043	0.02	0.0028	0	0.22	0.0204	-1	0.0001	-2	0.0266	0.0000	0.0008	98	< 3.0	1600	73476.00	-2	-3	Medium Corrosive	
169	57.40	1.00	238	655446	2976512	13.00	0	5.85	0	0.041	280	-1	0.0244	0.0244	0.0220	0.0000	0.0060	0.0160	0.0220	0	0.0015	0.0045	0.02	0.0028	0	0.32	0.0226	-1	0.0001	-2	0.0152	0.0000	0.0005	99	< 3.0	900	62862.80	-2	-6	Highly Corrosive	sample collected rock problem
170		1.50				9.34	0	5.72	0	0.11	267	-1	0.0122	0.0122	0.0204	0.0000	0.0080	0.0124	0.0204	0	0.0018	0.0046	0.022	0.0028	0	0.22	0.0188	0	0.0001	-2	0.0161	0.0000	0.0007	94	3	900	43520.40	-2	-5	Medium Corrosive	
171	58.43	1.00	242	655378	2977247	5.51	0	6.61	0	0.037	313	0	0.0122	0.0122	0.0244	0.0000	0.0220	0.0024	0.0244	0	0.0029	0.0071	0.042	0.0028	0	0.32	0.0198	0	0.0000	0	0.0215	0.0000	0.0009	86	< 3.0	1600	143184.00	-2	-2	Medium Corrosive	sample collected rock problem
172		1.40				4.06	0	6.32	0	0.047	308	0	0.0122	0.0122	0.0240	0.0000	0.0188	0.0052	0.0240	0	0.0024	0.0070	0.042	0.0028	0	0.22	0.0363	-1	0.0001	-2	0.0223	0.0000	0.0007	99	< 3.0	1600	167676.00	-2	-5	Medium Corrosive	
173	59.45	1.00	246	655208	2977994	19.19	0	6.75	0	0.054	328	0	0.0122	0.0122	0.0172	0.0000	0.0092	0.0080	0.0172	0	0.0012	0.0014	0.016	0.0043	0	0.25	0.0399	-1	0.0001	-2	0.0195	0.0000	0.0002	93	20	900	153860.00	-2	-5	Medium Corrosive	sample collected rock problem
174		1.70				23.47	-1	5.40	0	0.051	244	-1	0.0122	0.0122	0.0180	0.0000	0.0100	0.0080	0.0180	0	0.0015	0.0020	0.018	0.0028	0	0.19	0.0472	-1	0.0001	-2	0.0191	0.0000	0.0002	90	15	1600	150720.00	-2	-7	Highly Corrosive	
175	60.50	1.00	250	654852	2978466	17.61	0	8.78	0	0.111	452	2	0.0122	0.0122	0.0301	0.0000	0.0261	0.0040	0.0301	0	0.0030	0.0031	0.018	0.0028	0	0.22	0.0459	-1	0.0001	-2	0.0443	0.0000	0.0003	95	< 3.0	1600	191540.00	-2	-3	Medium Corrosive	sample collected rock problem
176		1.50				22.30	-1	8.52	0	0.099	439	2	0.0122	0.0122	0.0321	0.0000	0.0224	0.0096	0.0321	0	0.0031	0.0033	0.012	0.0014	0	0.10	0.0207	-1	0.0001	-2	0.0448	0.0000	0.0002	98	< 3.0	1600	207240.00	-2	-4	Medium Corrosive	
177	61.84	1.00	254	654927	2979261	18.41	0	7.35	0	0.092	366	0	0.0122	0.0122	0.0220	0.0000	0.0124	0.0096	0.0220	0	0.0017	0.0032	0.015	0.0014	0	0.19	0.0223	-1	0.0000	0	0.0223	0.0000	0.0002	95	< 3.0	1600	176468.00	-2	-3	Medium Corrosive	sample collected rock problem
178		1.70				14.49	0	6.25	0	0.065	304	0	0.0122	0.0122	0.0216	0.0000	0.0100	0.0116	0.0216	0	0.0018	0.0034	0.016	0.0014	0	0.29	0.0238	-1	0.0001	-2	0.0264	0.0000	0.0003	99	< 3.0	1600	267528.00	-2	-5	Medium Corrosive	
179	62.87	1.50	258	654894	2979922	5.88	0	6.43	0	0.054	308	0	0.0122	0.0122	0.0084	0.0000	0.0060	0.0024	0.0084	0	0.0012	0.0022	0.021	0.0014	0	0.35	0.0467	-1	0.0000	0	0.0286	0.0000	0.0003	92	< 3.0	1600	163908.00	-2	-3	Medium Corrosive	sample collected rock problem
180		1.70				5.75	0	6.66	0	0.059	322	0	0.0122	0.0122	0.0080	0.0000	0.0040	0.0040	0.0080	0	0.0015	0.0026	0.022	0.0014	0	0.32	0.0335	-1	0.0001	-2	0.0320	0.0000	0.0003	92	< 3.0	1600	243036.00	-2	-5	Medium Corrosive	
181	63.74	1.00	262	654375	2980377	5.87	0	7.22	0	0.085	360	0	0.0122	0.0122	0.0040	0.0000	0.0028	0.0012	0.0040	0	0.0015	0.0028	0.026	0.0014	0	0.22	0.0371	-1	0.0000	0	0.0293	0.0000	0.0002	97	< 3.0	1600	191540.00	-2	-3	Medium Corrosive	sample collected hill area problem
182		1.50				3.21	0	7.13	0	0.081	352	0	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0017	0.0027	0.025	0.0014	0	0.25	0.0499	-1	0.0001	-2	0.0315	0.0000	0.0002	94	< 3.0	1600	245108.40	-2	-5	Medium Corrosive	

IGGL, GUWAHATI
Siliguri-Gangtok New Pipeline
Soil Chemical Analysis Report

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
183	66.76	0.50	266	654059	2980735	3.91	0	5.78	0	0.082	267	-1	0.0122	0.0122	0.0024	0.0000	0.0008	0.0016	0.0024	0	0.0017	0.0015	0.021	0.0028	0	0.16	0.0074	0	0.0001	-2	0.0291	0.0000	0.0016	90	< 3.0	1600	181806.00	-2	-5	Medium Corrosive	sample collected rock problem
184		1.20				4.90	0	5.70	0	0.07	266	-1	0.0244	0.0244	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0017	0.0017	0.02	0.0014	0	0.03	0.0086	0	0.0001	-2	0.0286	0.0000	0.0015	94	< 3.0	1600	267528.00	-2	-5	Medium Corrosive	
185	67.81	1.00	270	654353	29811320	6.69	0	5.76	0	0.075	270	-1	0.0122	0.0122	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0018	0.0019	0.012	0.0014	0	0.00	0.0083	0	0.0001	-2	0.0242	0.0082	0.0001	94	< 3.0	1600	179616.59	-2	-5	Medium Corrosive	sample collected hill area problem
186		1.60				4.16	0	5.48	0	0.151	257	-1	0.0122	0.0122	0.0024	0.0000	0.0008	0.0016	0.0024	0	0.0016	0.0021	0.014	0.0028	0	0.03	0.0066	0	0.0001	-2	0.0262	0.0085	0.0001	98	< 3.0	1600	265910.41	-2	-5	Medium Corrosive	
187	68.91	1.00	274	653981	2981444	17.06	0	7.47	0	0.097	368	0	0.0122	0.0122	0.0016	0.0000	0.0008	0.0008	0.0016	0	0.0010	0.0025	0.015	0.0014	0	0.06	0.0038	0	0.0001	-2	0.0354	0.0000	0.0003	90	< 3.0	1600	179608.00	-2	-4	Medium Corrosive	sample collected rock problem
188		1.40				19.53	0	7.40	0	0.091	372	0	0.0122	0.0122	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0010	0.0026	0.014	0.0014	0	0.13	0.0040	0	0.0001	-2	0.0284	0.0000	0.0003	98	< 3.0	900	265644.00	-2	-4	Medium Corrosive	
189	69.98	1.00	278	653673	2981688	11.83	0	7.49	0	0.063	378	0	0.0244	0.0000	0.0052	0.0120	0.0044	0.0008	0.0172	0	0.0009	0.0011	0.017	0.0028	0	0.60	0.0078	0	0.0001	-2	0.0335	0.0000	0.0001	99	3	500	175212.00	-2	-4	Medium Corrosive	rock problem
190		1.50				8.51	0	7.70	0	0.065	394	0	0.0122	0.0122	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0007	0.0012	0.016	0.0028	0	1.27	0.0069	0	0.0001	-2	0.0327	0.0000	0.0001	102	< 3.0	1600	241528.80	-2	-4	Medium Corrosive	
191	71.00	1.00	282	654094	2951603	6.92	0	5.57	0	0.049	262	-1	0.0122	0.0122	0.0052	0.0000	0.0028	0.0024	0.0052	0	0.0014	0.0043	0.025	0.0014	0	0.86	0.0043	0	0.0001	-2	0.0328	0.0000	0.0001	98	< 3.0	1600	167048.00	-2	-5	Medium Corrosive	sample collected rock problem
192		1.50				1.88	0	5.50	0	0.051	260	-1	0.0122	0.0122	0.0048	0.0000	0.0020	0.0028	0.0048	0	0.0014	0.0044	0.031	0.0014	0	0.67	0.0038	0	0.0001	-2	0.0408	0.0000	0.0001	100	< 3.0	1600	239456.40	-2	-5	Medium Corrosive	
193	71.99	1.00	286	654581	2982093	7.20	0	5.37	0	0.062	247	-1	0.0122	0.0122	0.0040	0.0000	0.0024	0.0016	0.0040	0	0.0019	0.0015	0.015	0.0028	0	0.64	0.0047	0	0.0001	-2	0.0503	0.0000	0.0002	95	< 3.0	1600	163908.00	-2	-5	Medium Corrosive	sample collected rock problem
194		1.60				11.75	0	4.98	-1	0.04	224	-1	0.0122	0.0122	0.0024	0.0000	0.0012	0.0012	0.0024	0	0.0023	0.0018	0.013	0.0028	0	0.98	0.0050	0	0.0001	-2	0.0513	0.0000	0.0002	95	< 3.0	1600	241340.40	-2	-6	Highly Corrosive	
195	72.97	1.00	290	654902	2982847	11.56	0	5.62	0	0.03	263	-1	0.0122	0.0122	0.0032	0.0000	0.0020	0.0012	0.0032	0	0.0012	0.0006	0.011	0.0043	0	0.03	0.0032	0	0.0001	-2	0.0286	0.0000	0.0002	96	< 3.0	1600	166043.20	-2	-5	Medium Corrosive	Sample collected hill, rock problem
196		1.50				8.42	0	5.60	0	0.032	259	-1	0.0122	0.0122	0.0028	0.0000	0.0024	0.0004	0.0028	0	0.0013	0.0007	0.01	0.0057	0	0.10	0.0040	0	0.0000	0	0.0232	0.0000	0.0002	93	< 3.0	1600	233804.40	-2	-3	Medium Corrosive	
197	74.01	1.00	294	655013	2983347	12.28	0	5.76	0	0.029	268	-1	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0014	0.0058	0.01	0.0043	0	0.92	0.0041	0	0.0000	0	0.0252	0.0000	0.0001	92	< 3.0	1600	126856.00	-2	-3	Medium Corrosive	Sample collected hill, rock problem
198		1.50				11.19	0	5.90	0	0.042	282	-1	0.0122	0.0122	0.0052	0.0000	0.0028	0.0024	0.0052	0	0.0014	0.0061	0.012	0.0043	0	1.24	0.0031	0	0.0001	-2	0.0240	0.0000	0.0001	98	< 3.0	1600	218544.00	-2	-5	Medium Corrosive	
199	75.10	1.00	298	655397	2984020	12.39	0	5.60	0	0.06	262	-1	0.0122	0.0122	0.0048	0.0000	0.0036	0.0012	0.0048	0	0.0011	0.0039	0.035	0.0043	0	1.81	0.0058	0	0.0001	-2	0.0169	0.0000	0.0001	96	9.2	1600	192858.80	-2	-5	Medium Corrosive	sample collected rock problem
200		1.60				17.26	0	5.39	0	0.058	248	-1	0.0244	0.0244	0.0040	0.0000	0.0036	0.0004	0.0040	0	0.0012	0.0040	0.047	0.0043	0	2.22	0.0046	0	0.0001	-2	0.0162	0.0000	0.0001	95	11	1600	286368.00	-2	-5	Medium Corrosive	
201	76.17	1.00	302	656282	2983948	7.91	0	5.76	0	0.062	275	-1	0.0488	0.0488	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0013	0.0057	0.027	0.0043	0	0.89	0.0010	0	0.0001	-2	0.0223	0.0131	0.0001	99	< 3.0	1600	207240.00	-2	-5	Medium Corrosive	sample collected rock problem
202		1.70				11.89	0	6.92	0	0.045	340	0	0.0244	0.0244	0.0024	0.0000	0.0020	0.0004	0.0024	0	0.0012	0.0056	0.023	0.0028	0	0.44	0.0009	0	0.0000	0	0.0237	0.0159	0.0001	95	< 3.0	1600	339120.00	-2	-2	Medium Corrosive	
203	77.11	1.00	306	656148	2984243	17.34	0	5.91	0	0.032	288	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0004	0.0020	0	0.0011	0.0021	0.022	0.0028	0	0.03	0.0021	0	0.0001	-2	0.0261	0.0000	0.0003	103	3	1600	167048.00	-2	-5	Medium Corrosive	sample collected rock problem
204		1.60				12.85	0	5.97	0	0.04	293	-1	0.0122	0.0122	0.0020	0.0000	0.0012	0.0008	0.0020	0	0.0012	0.0022	0.02	0.0028	0	0.03	0.0025	0	0.0001	-2	0.0233	0.0000	0.0002	105	< 3.0	1600	256224.00	-2	-5	Medium Corrosive	
205	77.35	1.00	307	656019	2984339	9.79	0	6.02	0	0.042	288	-1	0.0122	0.0122	0.0048	0.0000	0.0032	0.0016	0.0048	0	0.0016	0.0064	0.05	0.0014	0	0.06	0.0066	0	0.0000	0	0.0218	0.0000	0.0002	97	< 3.0	1600	202216.00	-2	-3	Medium Corrosive	sample collected rock problem
206		1.60				6.05	0	5.86	0	0.086	276	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0012	0.0040	0	0.0019	0.0061	0.04	0.0028	0	0.35	0.0053	0	0.0000	0	0.0228	0.0000	0.0001	94	3	1600	318396.00	-2	-3	Medium Corrosive	
207	79.10	1.00	314	655502	2984881	11.19	0	6.27	0	0.033	301	0	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0012	0.0017	0.02	0.0028	0	0.80	0.0035	0	0.0001	-2	0.0151	0.0000	0.0002	95	15	1600	205984.00	-2	-4	Medium Corrosive	collected rock problem old CH-26.0 New (
208		1.50				8.06	0	6.35	0	0.047	309	0	0.0122	0.0122	0.0028	0.0000	0.0024	0.0004	0.0028	0	0.0014	0.0019	0.021	0.0028	0	0.89	0.0050	0	0.0000	0	0.0157	0.0000	-0.0002	98	20	1600	297672.00	-2	-2	Medium Corrosive	
209	79.88	1.00	318	655490	2985574	4.34	0	6.34	0	0.07	302	0	0.0244	0.0244	0.0028	0.0000	0.0020	0.0008	0.0028	0	0.0014	0.0037	0.022	0.0028	0	0.92	0.0056	0	0.0001	-2	0.0113	0.0000	0.0001	92	3	900	282600.00	-2	-4	Medium Corrosive	sample collected rock problem
210		1.50				7.37	0	5.57	0	0.056	256	-1	0.0244	0.0244	0.0032	0.0000	0.0016	0.0016	0.0032	0	0.0015	0.0039	0.024	0.0028	0	0.95	0.0041	0	0.0001	-2	0.0157	0.0000	0.0001	92	3.6	900	414480.00	-2	-5	Medium Corrosive	
211	80.90	1.00	322	655688	2985850	11.88	0	5.69	0	0.055	266	-1	0.0122	0.0122	0.0048	0.0000	0.0040	0.0008	0.0048	0	0.0022	0.0046	0.028	0.0014	0	1.34	0.0062	0	0.0001	-2	0.0135	0.0003	0.0001	95	3	1600	279460.00	-2	-5	Medium Corrosive	sample collected rock problem
212		1.60				20.69	-1	5.70	0	0.06	269	-1	0.0244	0.0000	0.0040	0.0120	0.0032	0.0008	0.0160	0	0.0023	0.0049	0.031	0.0014	0	1.28	0.0055	0	0.0001	-2	0.0132	0.0002	0.0001	97	3	1600	393756.00	-2	-6	Highly Corrosive	
213	81.89	1.00	326	655731	2986097	12.39	0	4.34	-1	0.062	180	-2	0.0122	0.0122	0.0024	0.0000	0.0012	0.0012	0.0024	0	0.0023	0.0055	0.023	0.0014	0	2.38	0.0140	0	0.0001	-2	0.0154	0.0000	0.0001	90	< 3.0	1600	246176.00	-2	-7	Highly Corrosive	sample collected rock problem
214		1.40				17.26	0	4.95	-1	0.17	219	-1	0.0122	0.0122	0.0028	0.0000	0.0008	0.0020	0.0028	0	0.0023	0.0055	0.026	0.0014	0	2.71	0.0143	0	0.0000	0	0.0179	0.0000	0.0002	92	3	1600	348540.00	-2	-4	Medium Corrosive	
215	82.90	1.00	330	655824	2986197	7.91	0	5.27	0	0.018	237	-1	0.0122	0.0122	0.0036	0.0000	0.0020	0.0016	0.0036	0	0.0015	0.0014	0.037	0.0014	0	0.66	0.0130	0	0.0001	-2	0.0164	0.0000	0.0001	91	3.6	1600	261248.00	-2	-5	Medium Corrosive	sample collected rock problem
216		1.60				11.89	0	5.64	0	0.022	265	-1	0.0122	0.0122	0.0028	0.0000	0.0016	0.0012	0.0028	0	0.0016	0.0015	0.04	0.0014	0	0.74	0.0126	0	0.0001	-2	0.0117	0.0000	0.0001	97	7.4	1600	374916.00	-2	-5	Medium Corrosive	
217	83.83	1.00	334	655275	208620	16.67	0	5.30	0	0.024	243	-1	0.0122	0.0122	0.0044	0.0000	0.0024	0.0020	0.0044	0	0.0016	0.0031	0.037	0.0043	0	0.92	0.0297	-1	0.0001	-2	0.0118	0.0021	0.0003	95	< 3.0	1600	266900.00	-2	-6	Highly Corrosive	sample collected rock problem
218		1.50				23.36	-1	5.23	0	0.036	237	-1	0.0244	0.0244	0.0040	0.0000	0.0028	0.0012	0.0040	0	0.0016	0.0033	0.039	0.0028	0	1.01	0.0332	-1	0.0001	-2	0.0132	0.0022	0.0003	93	3.6	1600	374916.00	-2	-7	Highly Corrosive	
219	84.91	1.00	338	654580	2986765	13.20	0	5.45	0	0.044	254	-1	0.0122	0.0122	0.0040	0.0000	0.0036	0.0004	0.0040	0	0.0016	0.0029	0.028	0.0028	0	1.01	0.0065	0	0.0001	-2	0.0130	0.0000	0.0002	97	< 3.0	1600	259364.00	-2	-5	Medium Corrosive	sample collected rock problem
220		1.50				10.65	0	5.64	0	0.055	267	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0004	0.0032	0	0.0016	0.0027	0.027	0.0043	0	0.92	0.0066	0	0.0001	-2	0.0107	0.0000	0.0002	99	< 3.0	1600	357960.00	-2	-5	Medium Corrosive	
221	85.89	1.00	342	654450	2987448	22.30	-1	5.49	0	0.063	263	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0008	0.0024	0	0.0013	0.0039	0.007	0.0043	0	0.74	0.0089	0	0.0001	-2	0.0098	0.0000	0.0002	104	3.6	1600	257480.00	-2	-6	Highly Corrosive	sample collected rock problem
222		1.60				18.41	0	5.44	0	0.022	256	-1	0.0122	0.0122	0.0020	0.0000	0.0008	0.0012	0.0020	0	0.0014	0.0040	0.009	0.0043	0	0.45	0.0052	0	0.0001	-2	0.0124	0.0000	0.0002	100	< 3.0	1600	335352.00	-2	-5	Medium Corrosive	
223	86.89	1.00	346	654734	2988202	10.98	0	5.05	0	0.032	227	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0004	0.0032	0	0.0020	0.0023	0.013	0.0043	0	3.13	0.0109	0	0.0001	-2	0.0105	0.0000	0.0002	94	< 3.0	1600	25559.60	-2	-5	Medium Corrosive	sample collected rock problem
224		1.60				8.97	0	5.15	0	0.035	232	-1	0.0122	0.0122	0.0032	0.0000	0.0024	0.0008	0.0032	0	0.0020	0.0024	0.01	0.0043	0	3.42	0.0103	0	0.0001	-2	0.0102	0.0000	0.0003	93	< 3.0	1600	365872.80	-2	-5	Medium Corrosive	
225	87.89	1.00	350	654976	2989089	14.00	0	5.27	0	0.05	241	-1	0.0122	0.0122	0.0060	0.0000	0.0036	0.0024	0.0060	0	0.0019	0.0021	0.012	0.0043	0	0.12	0.0037	0	0.0001	-2	0.0218	0.0000	0.0002	95	9.2	1600	249944.00	-2	-5	Medium Corrosive	sample collected rock problem
226		1.50				19.19	0	5.62	0	0.037	262	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0008	0.0040	0	0.0020	0.0022	0.016	0.0043	0	0.03	0.0032	0	0.0001	-2	0.0228	0.0000	0.0001	95	15	1600	327816.00	-2	-5	Medium Corrosive	
227	88.89	1.00	354	655635	2989686	14.09	0	4.23	-1	0.589	181	-2	0.0244	0.0000	0.0024	0.0120	0.0020	0.0004	0.0144	0	0.0060	0.0135	0.166	0.0043	0	0.06	0.0096	0	0.0000	0	0.0118	0.0491	0.0002	97	< 3.0	1600	253712.00	-2	-5	Medium Corrosive	sample collected rock problem
228		1.60				15.62	0	4.35	-1	0.435	190	-2	0.0366	0.0122	0.0028	0.0120	0.0020	0.0008	0.0148	0	0.0062	0.0136	0.15	0.0043	0	0.09	0.0099	0	0.0001	-2	0.0140	0.0466	0.0002	99	< 3.0	1600	423900.00	-2	-7	Highly Corrosive	
229	89.89	1.00	358	656399	2990131	14.49	0	4.56	-1	0.23	198	-2	0.0366	0.0366	0.0032	0.0000	0.0028	0.0004	0.0032	0	0.0026	0.0045	0.059	0.0043	0	3.66	0.0325	-1	0.0001	-2	0.0235	0.0058	0.0006	94	3	900	229220.00	-2	-8	Highly Corrosive	sample collected rock problem
230		1.50				17.06	0	4.85	-1	0.121	217	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0008	0.0028	0	0.0028	0.0044	0.023	0.0028	0	4.02	0.0337	-1	0.0001	-2	0.0416	0.0061	0.0007	96	3	1600	295788.00	-2	-7	Highly Corrosive	
231	90.77	1.00	362	656560	2990162	6.58	0	5.02	0	0.09	223	-1	0.0122	0.0122	0.0036	0.0000	0.0028	0.0008	0.0036	0	0.0023	0.0027	0.028	0.0028	0	0.92	0.0105	0	0.0001	-2	0.0162	0.0035	0.0002	92	< 3.0	1600	254968.00	-2	-5	Medium Corrosive	sample collected rock problem
232		1.10				11.83	0	5.64	0	0.092	262	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0012	0.0040	0	0.0021	0.0028	0.03	0.0028	0	0.71	0.0103	0	0.0001	-2	0.0168	0.0022	0.0002	94	< 3.0	1600	371148.00	-2	-5	Medium Corrosive	
233	91.89	1.00	366	656310	2990850	42.55	-1	5.45	0	0.091	255	-1	0.0122	0.0122	0.0040	0.0000	0.0020	0.0020	0.0040	0	0.0019	0.0035	0.02	0.0028	0	5.15	0.0134	0	0.0001	-2	0.0081	0.0027	0.0002	98	9.2	1600	265644.00	-2	-6	Highly Corrosive	sample collected rock problem
234		1.60				21.34	-1	4.78	-1	0.055	216	-1	0.0122	0.0122	0.0048	0.0000	0.0036	0.0012	0.0048	0	0.0016	0.0036	0.022	0.0028	0	4.97	0.0177	0	0.0001	-2	0.0095	0.0030	0.0002	99	3	1600	320280.00	-2	-7	Highly Corrosive	
235	92.90	1.00	370	656713	2991691	13.70	0	5.39	0	0.024	246	-1	0.0122	0.0122	0.0040	0.0000	0.0036	0.0004	0.0040	0	0.0017	0.0025	0.014	0.0014	0	0.03	0.0126	0	0.0001	-2	0.0173	0.0000	0.0002	93	< 3.0	1600	328444.00	-2	-5	Medium Corrosive	sample collected rock problem
236		1.60				21.53	-1	5.72	0	0.032	268	-1	0.0122	0.0122	0.0044	0.0000	0.0024	0.0020	0.0044	0	0.0019	0.0028	0.012	0.0014	0	0.12	0.0120	0	0.0001	-2	0.0164	0.0000	0.0002	95	< 3.0	1600	244920.00	-2	-6	Highly Corrosive	
237	93.89	1.00	374	657113	2992530	19.45	0	5.64	0	0.06	261	-1	0.0122	0.0122	0.0160	0.0000	0.0120	0.0040	0.0160	0	0.0021	0.0041	0.019	0.0014	0	0.18	0.0061	0	0.0000	0	0.0227	0.0000	0.0003	93	3.6	1600	376800.00	-2	-3	Medium Corrosive	sample collected rock problem
238		1.70				23.80	-1	5.26	0	0.032	241	-1	0.0122	0.0122	0.0128	0.0000	0.0100	0.0028	0.0128	0	0.0022	0.0040	0.022	0.0014	0	0.03	0.0083	0	0.0001	-2	0.0212	0.0000	0.0002	95	3.6	1600	461580.00	-2	-6	Highly Corrosive	
239	94.88	1.00	378	657156	2993208	18.14	0	5.55	0	0.027	253	-1	0.0122	0.0122	0.0032	0.0000	0.0024	0.0008	0.0032	0	0.0022	0.0026	0.011	0.0014	0	0.12	0.0028	0	0.0001	-2	0.0162	0.0000	0.0002	90	< 3.0	1600	395012.00	-2	-5	Medium Corrosive	sample collected rock problem
240		1.80				22.90	-1	5.41	0	0.021	252	-1	0.0366	0.0366	0.0036	0.0000	0.0020	0.0016	0.0036	0	0.0023	0.0029	0.026	0.0014	0	0.21	0.0021	0	0.0001	-2	0.0151	0.0000	0.0004	97	< 3.0	1600	382452.00	-2	-6	Highly Corrosive	
241	95.90	1.00	382	657024	2993645	3.22	0	5.28	0	0.03	243	-1	0.0244	0.0244	0.0020	0.0000	0.0016	0.0004	0.0020	0	0.0024	0.0030	0.02	0.0014	0	0.48	0.0046	0	0.0001	-2	0.0210	0.0007	0.0003	96	3	500	415736.00	-2	-5	Medium Corrosive	sample collected rock problem

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
242	[illegible]	1.70	[illegible]	[illegible]	[illegible]	9.93	0	5.69	0	0.045	261	-1	0.0244	0.0244	0.0016	0.0000	0.0008	0.0008	0.0016	0	0.0024	0.0030	0.019	0.0014	0	0.21	0.0052	0	0.0001	-2	0.0225	0.0009	-0.0003	90	< 3.0	1600	486072.00	-2	-5	Medium Corrosive	sample collected rock problem
243	96.89	1.00	386	657421	2994021	19.08	0	5.10	0	0.039	235	-1	0.0244	0.0244	0.0036	0.0000	0.0028	0.0008	0.0036	0	0.0027	0.0016	0.016	0.0014	0	0.06	0.0050	0	0.0001	-2	0.0245	0.0000	0.0002	99	3.6	1600	326560.00	-2	-5	Medium Corrosive	sample collected rock problem
244		1.80				20.46	-1	5.12	0	0.042	239	-1	0.0122	0.0122	0.0060	0.0000	0.0056	0.0004	0.0060	0	0.0027	0.0018	0.018	0.0028	0	0.68	0.0103	0	0.0001	-2	0.0269	0.0000	0.0001	102	9.2	1600	454044.00	-2	-6	Highly Corrosive	
245	97.89	1.00	390	657668	2994273	14.43	0	5.69	0	0.048	268	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0027	0.0030	0.02	0.0028	0	0.54	0.0068	0	0.0001	-2	0.0227	0.0000	0.0006	97	< 3.0	900	390616.00	-2	-5	Medium Corrosive	sample collected rock problem
246		1.70				13.74	0	5.63	0	0.049	260	-1	0.0122	0.0122	0.0048	0.0000	0.0040	0.0008	0.0048	0	0.0027	0.0032	0.024	0.0028	0	0.03	0.0065	0	0.0001	-2	0.0233	0.0000	0.0006	92	3.6	1600	437088.00	-2	-5	Medium Corrosive	
247	98.89	1.00	394	658212	2994798	12.73	0	4.61	-1	0.136	205	-1	0.0122	0.0122	0.0052	0.0000	0.0032	0.0020	0.0052	0	0.0028	0.0092	0.036	0.0043	0	0.51	0.0360	-1	0.0000	0	0.0272	0.0000	0.0010	98	3	1600	328444.00	-2	-5	Medium Corrosive	sample collected rock problem
248		1.80				12.04	0	4.60	-1	0.132	205	-1	0.0122	0.0122	0.0040	0.0000	0.0028	0.0012	0.0040	0	0.0029	0.0092	0.04	0.0043	0	0.39	0.0340	-1	0.0001	-2	0.0262	0.0000	0.0010	99	< 3.0	1600	393756.00	-2	-7	Highly Corrosive	
249	99.88	1.00	398	658602	2995328	14.82	0	5.77	0	0.032	275	-1	0.0122	0.0122	0.0064	0.0000	0.0052	0.0012	0.0064	0	0.0026	0.0079	0.0150	0.0043	0	3.44	0.0031	0	0.0001	-2	0.0799	0.0000	0.0001	99	< 3.0	1600	201588.00	-2	-5	Medium Corrosive	sample collected rock problem
250		2.40				12.21	0	5.70	0	0.034	267	-1	0.0122	0.0122	0.0068	0.0000	0.0044	0.0024	0.0068	0	0.0025	0.0064	0.0160	0.0043	0	0.08	0.0031	0	0.0001	-2	0.0827	0.0000	0.0001	95	3	1600	282976.80	-2	-5	Medium Corrosive	
251	100.89	1.00	402	658712	2995570	9.15	0	5.62	0	0.029	266	-1	0.0122	0.0122	0.0028	0.0000	0.0016	0.0012	0.0028	0	0.0021	0.0064	0.0150	0.0043	0	0.11	0.0090	0	0.0001	-2	0.0276	0.0037	0.0003	99	3	1600	261876.00	-2	-5	Medium Corrosive	sample collected rock problem
252		1.50				6.22	0	4.85	-1	0.021	216	-1	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0023	0.0014	0.0140	0.0043	0	0.05	0.0089	0	0.0001	-2	0.0288	0.0038	0.0003	95	< 3.0	1600	378684.00	-2	-6	Highly Corrosive	
253	101.88	1.50	406	659156	2995753	8.38	0	4.19	-1	0.051	181	-2	0.0122	0.0122	0.0012	0.0000	0.0008	0.0004	0.0012	0	0.0027	0.0013	0.0230	0.0043	0	5.03	0.0267	-1	0.0001	-2	0.0262	0.0049	0.0024	100	< 3.0	1600	194052.00	-2	-8	Highly Corrosive	sample collected rock problem
254		1.90				16.79	0	4.65	-1	0.049	201	-1	0.0122	0.0122	0.0016	0.0000	0.0004	0.0012	0.0016	0	0.0029	0.0047	0.0220	0.0043	0	0.21	0.0273	-1	0.0001	-2	0.0233	0.0047	0.0026	92	3.6	1600	339120.00	-2	-7	Highly Corrosive	
255	102.91	1.00	410	659971	2995373	17.29	0	5.20	0	0.021	237	-1	0.0122	0.0122	0.0132	0.0000	0.0108	0.0024	0.0132	0	0.0031	0.0041	0.0170	0.0028	0	0.61	0.0041	0	0.0000	0	0.0337	0.0014	0.0002	95	3	1600	222940.00	-2	-3	Medium Corrosive	sample collected rock problem
256		1.90				7.30	0	5.14	0	0.023	232	-1	0.0122	0.0122	0.0144	0.0000	0.0120	0.0024	0.0144	0	0.0031	0.0035	0.0160	0.0028	0	0.85	0.0056	0	0.0001	-2	0.0374	0.0016	0.0001	94	3.6	1600	308976.00	-2	-5	Medium Corrosive	
257	103.89	1.00	414	660679	2994889	5.31	0	4.69	-1	0.069	206	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0036	0.0102	0.0160	0.0028	0	0.00	0.0062	0	0.0001	-2	0.0398	0.0004	0.0001	95	3.6	900	201588.00	-2	-6	Highly Corrosive	sample collected rock problem
258		1.90				13.51	0	4.98	-1	0.062	224	-1	0.0122	0.0122	0.0068	0.0000	0.0048	0.0020	0.0068	0	0.0037	0.0097	0.0170	0.0057	0	0.05	0.0069	0	0.0001	-2	0.0580	0.0005	0.0001	95	< 3.0	1600	311236.80	-2	-6	Highly Corrosive	
259	104.89	1.00	418	660897	2995427	9.72	0	4.22	-1	0.057	181	-2	0.0122	0.0122	0.0309	0.0000	0.0240	0.0068	0.0309	0	0.0040	0.0095	0.0320	0.0057	0	0.34	0.0066	0	0.0001	-2	0.0438	0.0000	0.0004	98	15	1600	218544.00	-2	-7	Highly Corrosive	sample collected rock problem
260		2.00				3.09	0	4.39	-1	0.059	180	-2	0.0122	0.0122	0.0317	0.0000	0.0281	0.0036	0.0317	0	0.0042	0.0090	0.0300	0.0043	0	12.45	0.0058	0	0.0001	-2	0.0408	0.0000	0.0004	87	< 3.0	1600	357018.00	-2	-7	Highly Corrosive	
261	105.90	1.00	422	661424	2996120	10.36	0	4.32	-1	0.035	184	-2	0.0122	0.0122	0.0052	0.0000	0.0040	0.0012	0.0052	0	0.0026	0.0059	0.0320	0.0043	0	13.77	0.0028	0	0.0001	-2	0.0264	0.0031	0.0009	95	3.6	1600	386220.00	-2	-7	Highly Corrosive	sample collected rock problem
262		2.10				2.53	0	4.71	-1	0.034	210	-1	0.0122	0.0122	0.0044	0.0000	0.0036	0.0008	0.0044	0	0.0027	0.0055	0.0330	0.0057	0	0.74	0.0025	0	0.0001	-2	0.0283	0.0032	0.0009	97	3.6	1600	682008.00	-2	-6	Highly Corrosive	
263	106.89	1.00	426	662367	2996480	4.88	0	4.70	-1	0.08	207	-1	0.0122	0.0122	0.0064	0.0000	0.0052	0.0012	0.0064	0	0.0031	0.0048	0.0210	0.0043	0	1.69	0.0040	0	0.0001	-2	0.0420	0.0064	0.0008	95	< 3.0	1600	324048.00	-2	-6	Highly Corrosive	sample collected rock problem
264		2.20				5.07	0	4.79	-1	0.085	211	-1	0.0122	0.0122	0.0076	0.0000	0.0060	0.0016	0.0076	0	0.0033	0.0049	0.0240	0.0043	0	0.79	0.0040	0	0.0001	-2	0.0526	0.0065	0.0008	94	< 3.0	1600	587808.00	-2	-6	Highly Corrosive	
265	107.91	1.00	430	663042	2996949	4.07	0	5.04	0	0.029	230	-1	0.0122	0.0122	0.0265	0.0000	0.0236	0.0028	0.0265	0	0.0030	0.0364	0.0450	0.0043	0	21.72	0.0015	0	0.0001	-2	0.0545	0.0004	0.0004	98	9.2	1600	231732.00	-2	-5	Medium Corrosive	sample collected rock problem
266		2.10				13.17	0	6.70	0	0.031	326	0	0.0122	0.0122	0.0261	0.0000	0.0224	0.0036	0.0261	0	0.0031	0.0352	0.0430	0.0028	0	0.21	0.0027	0	0.0001	-2	0.0582	0.0004	0.0004	94	7.4	1600	327816.00	-2	-4	Medium Corrosive	
267	108.88	1.00	434	663787	2997352	13.48	0	4.70	-1	0.015	207	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0008	0.0028	0	0.0028	0.0030	0.0180	0.0043	0	0.08	0.0077	0	0.0001	-2	0.0492	0.0041	0.0003	95	3	1600	239268.00	-2	-6	Highly Corrosive	sample collected rock problem
268		2.20				9.73	0	4.43	-1	0.011	192	-2	0.0122	0.0122	0.0036	0.0000	0.0016	0.0020	0.0036	0	0.0027	0.0033	0.0180	0.0043	0	2.36	0.0084	0	0.0001	-2	0.0318	0.0040	0.0003	96	3.6	1600	499260.00	-2	-7	Highly Corrosive	
269	109.89	1.00	438	663707	2997473	13.20	0	4.77	-1	0.023	210	-1	0.0122	0.0122	0.0052	0.0000	0.0036	0.0016	0.0052	0	0.0027	0.0035	0.0090	0.0028	0	0.64	0.0087	0	0.0000	0	0.0279	0.0000	0.0004	94	< 3.0	1600	238012.00	-2	-4	Medium Corrosive	sample collected rock problem
270		2.30				12.14	0	4.83	-1	0.02	223	-1	0.0122	0.0122	0.0044	0.0000	0.0040	0.0004	0.0044	0	0.0030	0.0030	0.0080	0.0028	0	0.48	0.0083	0	0.0001	-2	0.0305	0.0000	0.0004	103	< 3.0	1600	327816.00	-2	-6	Highly Corrosive	
271	110.88	1.00	442	663212	2998033	13.00	0	5.60	0	0.029	265	-1	0.0122	0.0122	0.0148	0.0000	0.0112	0.0036	0.0148	0	0.0096	0.0087	0.0120	0.0014	0	0.21	0.0062	0	0.0001	-2	0.0372	0.0000	0.0002	99	< 3.0	1600	254968.00	-2	-5	Medium Corrosive	sample collected rock problem
272		2.30				9.34	0	5.75	0	0.024	269	-1	0.0122	0.0122	0.0180	0.0000	0.0140	0.0040	0.0180	0	0.0100	0.0090	0.0140	0.0014	0	1.96	0.0063	0	0.0001	-2	0.0362	0.0000	0.0002	94	3	1600	356076.00	-2	-5	Medium Corrosive	
273	111.89	1.00	446	662557	2998211	5.51	0	5.01	0	0.017	217	-1	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0065	0.0036	0.0140	0.0014	0	2.22	0.0068	0	0.0000	0	0.0332	0.0000	0.0001	86	< 3.0	1600	258108.00	-2	-3	Medium Corrosive	sample collected rock problem
274		2.10				18.87	0	5.15	0	0.013	238	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0008	0.0028	0	0.0064	0.0044	0.0130	0.0014	0	1.69	0.0068	0	0.0001	-2	0.0303	0.0000	0.0002	99	< 3.0	1600	535056.00	-2	-5	Medium Corrosive	
275	112.89	1.00	450	662559	2998560	20.69	-1	5.13	0	0.039	231	-1	0.0122	0.0122	0.0044	0.0000	0.0032	0.0012	0.0044	0	0.0035	0.0075	0.0120	0.0014	0	0.21	0.0112	0	0.0001	-2	0.0281	0.0000	0.0003	93	20	1600	285740.00	-2	-6	Highly Corrosive	sample collected rock problem
276		2.40				13.18	0	5.89	0	0.041	273	-1	0.0122	0.0122	0.0048	0.0000	0.0036	0.0012	0.0048	0	0.0034	0.0078	0.0130	0.0014	0	0.37	0.0069	0	0.0001	-2	0.0250	0.0000	0.0003	90	15	1600	614184.00	-2	-5	Medium Corrosive	
277	113.89	1.00	454	662371	2999111	17.61	0	6.21	0	0.036	302	0	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0025	0.0205	0.0270	0.0028	0	1.43	0.0049	0	0.0001	-2	0.0110	0.0000	0.0001	99	< 3.0	900	209752.00	-2	-4	Medium Corrosive	sample collected rock problem
278		2.20				22.30	-1	6.74	0	0.037	332	0	0.0122	0.0122	0.0052	0.0000	0.0048	0.0004	0.0052	0	0.0016	0.0206	0.0250	0.0028	0	0.37	0.0050	0	0.0001	-2	0.0036	0.0000	0.0002	98	3	1600	352308.00	-2	-5	Medium Corrosive	
279	114.89	1.00	458	662247	2998951	18.41	0	5.70	0	0.019	267	-1	0.0122	0.0122	0.0112	0.0000	0.0064	0.0048	0.0112	0	0.0036	0.0075	0.0180	0.0028	0	0.40	0.0035	0	0.0001	-2	0.0014	0.0000	0.0003	95	< 3.0	1600	180864.00	-2	-5	Medium Corrosive	sample collected rock problem
280		2.10				14.49	0	5.86	0	0.018	281	-1	0.0122	0.0122	0.0120	0.0000	0.0116	0.0004	0.0120	0	0.0039	0.0076	0.0190	0.0028	0	0.79	0.0022	0	0.0001	-2	0.0020	0.0000	0.0003	99	< 3.0	1600	271296.00	-2	-5	Medium Corrosive	
281	115.89	1.00	462	661307	2998529	5.88	0	6.20	0	0.02	294	-1	0.0122	0.0122	0.0088	0.0000	0.0080	0.0008	0.0088	0	0.0027	0.0143	0.0360	0.0043	0	2.22	0.0084	0	0.0000	0	0.0235	0.0000	0.0002	92	< 3.0	900	215404.00	-2	-3	Medium Corrosive	sample collected rock problem
282		2.10				5.75	0	6.34	0	0.041	302		0.0122	0.0122	0.0080	0.0000	0.0068	0.0012	0.0080	0	0.0028	0.0145	0.0350	0.0043	0	1.99	0.0068	0	0.0001	-2	0.0267	0.0000	0.0002	92	< 3.0	1600	341004.00	-2	-4	Medium Corrosive	
283	116.88	1.00	466	660839	2998425	5.87	0	5.31	0	0.019	249	-1	0.0122	0.0122	0.0040	0.0000	0.0032	0.0008	0.0040	0	0.0029	0.0095	0.0160	0.0057	0	1.09	0.0534	-2	0.0000	0	0.0262	0.0000	0.0001	100	< 3.0	1600	260620.00	-2	-5	Medium Corrosive	sample collected rock problem
284		2.00				3.21	0	5.33	0	0.017	244	-1	0.0122	0.0122	0.0060	0.0000	0.0024	0.0036	0.0060	0	0.0030	0.0092	0.0140	0.0043	0	1.11	0.0477	-1	0.0001	-2	0.0240	0.0000	0.0001	94	< 3.0	1600	373032.00	-2	-6	Highly Corrosive	
285	117.89	1.00	470	660219	2998368	3.91	0	5.70	0	0.021	262	-1	0.0122	0.0122	0.0036	0.0000	0.0024	0.0012	0.0036	0	0.0026	0.0062	0.0130	0.0043	0	0.50	0.0108	0	0.0001	-2	0.0269	0.0000	0.0001	90	< 3.0	1600	237384.00	-2	-5	Medium Corrosive	sample collected rock problem
286		2.20				4.90	0	5.75	0	0.025	269	-1	0.0122	0.0122	0.0032	0.0000	0.0028	0.0004	0.0032	0	0.0028	0.0060	0.0150	0.0043	0	0.00	0.0092	0	0.0001	-2	0.0210	0.0000	0.0001	94	< 3.0	1600	341004.00	-2	-5	Medium Corrosive	
287	118.89	1.00	474	659592	2998069	22.25	-1	5.13	0	0.036	232	-1	0.0122	0.0122	0.0236	0.0000	0.0232	0.0004	0.0236	0	0.0021	0.0035	0.0200	0.0028	0	1.43	0.0078	0	0.0001	-2	0.0349	0.0082	0.0002	94	< 3.0	1600	263760.00	-2	-6	Highly Corrosive	sample collected rock problem
288		2.20				4.16	0	5.04	0	0.037	230	-1	0.0122	0.0122	0.0240	0.0000	0.0236	0.0004	0.0240	0	0.0022	0.0034	0.0230	0.0043	0	1.83	0.0092	0	0.0001	-2	0.0362	0.0085	0.0001	98	< 3.0	1600	378684.00	-2	-5	Medium Corrosive	
289	119.88	1.00	478	658816	2998081	17.06	0	6.37	0	0.042	306	0	0.0122	0.0122	0.0044	0.0000	0.0040	0.0004	0.0044	0	0.0047	0.0334	0.0170	0.0028	0	3.15	0.0344	-1	0.0001	-2	0.0355	0.0000	0.0002	94	< 3.0	1600	260620.00	-2	-5	Medium Corrosive	sample collected rock problem
290		2.00				6.21	0	6.70	0	0.046	330	0	0.0122	0.0122	0.0040	0.0000	0.0036	0.0004	0.0040	0	0.0045	0.0338	0.0160	0.0028	0	1.43	0.0397	-1	0.0001	-2	0.0421	0.0000	0.0002	98	< 3.0	1600	393756.00	-2	-5	Medium Corrosive	
291	120.89	1.00	482	658396	2998560	11.83	0	7.00	0	0.072	349	0	0.0122	0.0122	0.0144	0.0000	0.0128	0.0016	0.0144	0	0.0044	0.0201	0.0600	0.0014	0	1.40	0.0201	-1	0.0001	-2	0.0425	0.0000	0.0003	99	3	1600	251828.00	-2	-5	Medium Corrosive	sample collected rock problem
292		1.90				8.51	0	7.35	0	0.021	373	0	0.0122	0.0122	0.0152	0.0000	0.0136	0.0016	0.0152	0	0.0034	0.0179	0.0650	0.0014	0	1.77	0.0254	-1	0.0001	-2	0.0347	0.0000	0.0003	102	< 3.0	1600	386220.00	-2	-5	Medium Corrosive	
293	121.90	1.00	486	658122	2999388	6.92	0	6.01	0	0.026	289	-1	0.0122	0.0122	0.0180	0.0000	0.0156	0.0024	0.0180	0	0.0066	0.0207	0.0170	0.0028	0	1.38	0.0043	0	0.0001	-2	0.0401	0.0000	0.0002	98	< 3.0	1600	251828.00	-2	-5	Medium Corrosive	sample collected rock problem
294		1.50				1.88	0	5.81	0	0.063	279	-1	0.0122	0.0122	0.0172	0.0000	0.0132	0.0040	0.0172	0	0.0052	0.0203	0.0180	0.0028	0	1.09	0.0044	0	0.0001	-2	0.0394	0.0000	0.0003	100	< 3.0	1600	376988.40	-2	-5	Medium Corrosive	
295	122.89	1.00	490	657910	3000201	7.20	0	5.75	0	0.092	270	-1	0.0122	0.0122	0.0076	0.0000	0.0064	0.0012	0.0076	0	0.0041	0.0168	0.0150	0.0043	0	1.93	0.0068	0	0.0001	-2	0.0382	0.0000	0.0001	95	< 3.0	1600	224196.00	-2	-5	Medium Corrosive	sample collected rock problem
296		1.60				11.75	0	5.78	0	0.09	272	-1	0.0122	0.0122	0.0080	0.0000	0.0076	0.0004	0.0080	0	0.0033	0.0160	0.0170	0.0028	0	2.09	0.0068	0	0.0001	-2	0.0438	0.0000	0.0001	95	< 3.0	1600	310860.00	-2	-5	Medium Corrosive	
297	123.89	1.00	494	657412	3000960	11.56	0	5.96	0	0.026	284	-1	0.0122	0.0122	0.0096	0.0000	0.0076	0.0020	0.0096	0	0.0025	0.0051	0.0190	0.0043	0	2.28	0.0025	0	0.0001	-2	0.0364	0.0000	0.0001	96	< 3.0	500	244920.00	-2	-5	Medium Corrosive	sample collected rock problem
298		1.70				8.42	0	5.94	0	0.06	282	-1	0.0122	0.0122	0.0104	0.0000	0.0076	0.0028	0.0104	0	0.0021	0.0056	0.0200	0.0043	0	1.93	0.0025	0	0.0000	0	0.0452	0.0000	0.0001	96	< 3.0	1600	363800.40	-2	-3	Medium Corrosive	

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
299	124.88	1.00	498	657614	3001846	12.28	0	6.10	0	0.062	288	-1	0.0122	0.0122	0.0092	0.0000	0.0068	0.0024	0.0092	0	0.0024	0.0053	0.0470	0.0057	0	1.67	0.0112	0	0.0000	0	0.0355	0.0069	0.0001	92	< 3.0	1600	239896.00	-2	-3	Medium Corrosive	sample collected rock problem
300		1.50				11.19	0	6.14	0	0.066	296	-1	0.0122	0.0122	0.0100	0.0000	0.0072	0.0028	0.0100	0	0.0021	0.0049	0.0480	0.0043	0	1.75	0.0217	-1	0.0001	-2	0.0462	0.0072	0.0001	98	< 3.0	1600	328381.20	-2	-6	Highly Corrosive	
301	125.89	1.00	502	659205	3002550	12.39	0	6.32	0	0.052	305	0	0.0122	0.0122	0.0104	0.0000	0.0076	0.0028	0.0104	0	0.0032	0.0056	0.0230	0.0057	0	1.93	0.0391	-1	0.0001	-2	0.0242	0.0000	0.0003	96	9.2	1600	253084.00	-2	-5	Medium Corrosive	sample collected rock problem
302		1.70				17.26	0	6.30	0	0.055	303	0	0.0122	0.0122	0.0088	0.0000	0.0076	0.0012	0.0088	0	0.0039	0.0050	0.0220	0.0057	0	3.52	0.0474	-1	0.0001	-2	0.0255	0.0000	0.0003	95	11	1600	393756.00	-2	-5	Medium Corrosive	
303	126.89	1.00	506	658719	3002923	7.91	0	6.72	0	0.062	332	0	0.0122	0.0122	0.0088	0.0000	0.0044	0.0044	0.0088	0	0.0032	0.0047	0.0360	0.0028	0	1.93	0.0108	0	0.0001	-2	0.0286	0.0131	0.0006	99	< 3.0	1600	254968.00	-2	-4	Medium Corrosive	sample collected rock problem
304		1.60				11.89	0	6.73	0	0.033	329	0	0.0122	0.0122	0.0084	0.0000	0.0080	0.0004	0.0084	0	0.0022	0.0045	0.0350	0.0028	0	3.65	0.0118	0	0.0000	0	0.0250	0.0159	0.0005	95	< 3.0	1600	378684.00	-2	-2	Medium Corrosive	
305	127.90	1.00	510	659136	3003746	17.34	0	4.35	-1	0.046	194	-2	0.0122	0.0122	0.0120	0.0000	0.0116	0.0004	0.0120	0	0.0036	0.0026	0.0170	0.0014	0	2.20	0.0232	-1	0.0001	-2	0.0421	0.0000	0.0012	103	3	1600	292648.00	-2	-8	Highly Corrosive	sample collected rock problem
306		1.60				12.85	0	4.30	-1	0.045	193	-2	0.0122	0.0122	0.0116	0.0000	0.0084	0.0032	0.0116	0	0.0041	0.0031	0.0180	0.0014	0	2.15	0.0210	-1	0.0001	-2	0.0425	0.0000	0.0010	105	< 3.0	1600	471000.00	-2	-8	Highly Corrosive	
307	128.90	1.00	514	659623	3004524	9.79	0	4.89	-1	0.092	220	-1	0.0122	0.0122	0.0128	0.0000	0.0072	0.0056	0.0128	0	0.0101	0.0130	0.0340	0.0028	0	1.46	0.0053	0	0.0001	-2	0.0589	0.0000	0.0002	97	< 3.0	1600	292648.00	-2	-6	Highly Corrosive	sample collected rock problem
308		1.70				6.05	0	4.87	-1	0.115	216	-1	0.0122	0.0122	0.0132	0.0000	0.0080	0.0052	0.0132	0	0.0102	0.0134	0.0370	0.0028	0	1.43	0.0040	0	0.0000	0	0.0575	0.0000	0.0002	94	3	1600	471000.00	-2	-4	Medium Corrosive	
309	129.89	1.00	518	660156	3005274	11.19	0	5.12	0	0.146	232	-1	0.0122	0.0122	0.0184	0.0000	0.0160	0.0024	0.0184	0	0.0134	0.0204	0.0890	0.0014	0	2.60	0.0028	0	0.0001	-2	0.1272	0.0002	0.0006	95	9.2	900	242408.00	-2	-5	Medium Corrosive	sample collected rock problem
310		1.50				8.06	0	5.72	0	0.139	271	-1	0.0122	0.0122	0.0192	0.0000	0.0160	0.0032	0.0192	0	0.0131	0.0205	0.0900	0.0014	0	2.46	0.0027	0	0.0000	0	0.1272	0.0003	0.0007	98	3.6	1600	361728.00	-2	-3	Medium Corrosive	
311	130.89	1.00	522	660418	3005408	4.34	0	5.64	0	0.122	264	-1	0.0122	0.0122	0.0064	0.0000	0.0040	0.0024	0.0064	0	0.0129	0.0209	0.0980	0.0014	0	2.41	0.0053	0	0.0001	-2	0.1328	0.0022	0.0019	96	3	1600	280088.00	-2	-5	Medium Corrosive	sample collected rock problem
312		1.60				7.37	0	4.07	-1	0.118	166	-2	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0128	0.0212	0.1160	0.0028	0	2.49	0.0056	0	0.0001	-2	0.1301	0.0023	0.0020	92	3.6	1600	397524.00	-2	-7	Highly Corrosive	
313	131.90	1.00	526	660661	3005377	11.88	0	6.11	0	0.051	292	-1	0.0122	0.0122	0.0104	0.0000	0.0076	0.0028	0.0104	0	0.0089	0.0053	0.0200	0.0043	0	2.09	0.0030	0	0.0001	-2	0.0286	0.0000	0.0002	95	3	1600	280088.00	-2	-5	Medium Corrosive	sample collected rock problem
314		1.80				20.69	-1	6.70	0	0.054	329	0	0.0122	0.0122	0.0096	0.0000	0.0052	0.0044	0.0096	0	0.0081	0.0053	0.0220	0.0028	0	1.93	0.0028	0	0.0001	-2	0.0349	0.0000	0.0002	97	3	1600	397524.00	-2	-5	Medium Corrosive	
315	132.88	1.00	530	660742	3005139	12.39	0	6.75	0	0.069	325	0	0.0122	0.0122	0.0144	0.0000	0.0104	0.0040	0.0144	0	0.0068	0.0055	0.0360	0.0028	0	1.67	0.0035	0	0.0001	-2	0.0398	0.0000	0.0004	90	< 3.0	1600	267528.00	-2	-4	Medium Corrosive	sample collected rock problem
316		1.70				17.26	0	6.83	0	0.087	332	0	0.0122	0.0122	0.0152	0.0000	0.0116	0.0036	0.0152	0	0.0063	0.0059	0.0370	0.0028	0	2.60	0.0034	0	0.0000	0	0.0389	0.0000	0.0003	92	3	1600	395640.00	-2	-2	Medium Corrosive	
317	133.88	1.00	534	660956	3005267	7.91	0	7.17	0	0.168	351	0	0.0122	0.0122	0.0200	0.0000	0.0192	0.0008	0.0200	0	0.0130	0.0082	0.0200	0.0014	0	13.51	0.0040	0	0.0001	-2	0.0362	0.0000	0.0002	91	3.6	1600	270040.00	-2	-4	Medium Corrosive	sample collected rock problem
318		1.90				11.89	0	7.23	0	0.173	361	0	0.0122	0.0122	0.0216	0.0000	0.0124	0.0092	0.0216	0	0.0121	0.0084	0.0210	0.0014	0	1.62	0.0038	0	0.0001	-2	0.0421	0.0000	0.0002	97	7.4	1600	452160.00	-2	-4	Medium Corrosive	
319	134.88	1.00	538	651018	3005078	16.67	0	5.70	0	0.236	267	-1	0.0122	0.0122	0.0068	0.0000	0.0036	0.0032	0.0068	0	0.0073	0.0025	0.0180	0.0014	0	1.96	0.0058	0	0.0001	-2	0.0404	0.0000	0.0002	95	< 3.0	1600	260620.00	-2	-5	Medium Corrosive	sample collected rock problem
320		2.00				23.36	-1	5.41	0	0.229	248	-1	0.0122	0.0122	0.0072	0.0000	0.0036	0.0036	0.0072	0	0.0067	0.0025	0.0190	0.0014	0	1.83	0.0068	0	0.0001	-2	0.0455	0.0000	0.0003	93	3.6	1600	410712.00	-2	-6	Highly Corrosive	
321	135.89	1.00	542	661358	3005317	13.20	0	5.60	0	0.049	263	-1	0.0122	0.0122	0.0068	0.0000	0.0040	0.0028	0.0068	0	0.0073	0.0025	0.0150	0.0014	0	1.96	0.0037	0	0.0001	-2	0.0315	0.0000	0.0001	97	< 3.0	1600	254340.00	-2	-5	Medium Corrosive	sample collected rock problem
322		1.90				10.65	0	5.63	0	0.076	267	-1	0.0122	0.0122	0.0072	0.0000	0.0032	0.0040	0.0072	0	0.0074	0.0026	0.0140	0.0028	0	1.93	0.0040	0	0.0001	-2	0.0274	0.0000	0.0001	99	< 3.0	1600	418248.00	-2	-5	Medium Corrosive	
323	136.89	1.00	546	660855	3005998	22.30	-1	5.70	0	0.073	267	-1	0.0122	0.0122	0.0092	0.0000	0.0072	0.0020	0.0092	0	0.0075	0.0010	0.0220	0.0028	0	1.35	0.0143	0	0.0001	-2	0.0421	0.0000	0.0002	95	3.6	1600	276320.00	-2	-6	Highly Corrosive	sample collected rock problem
324		2.10				18.41	0	5.66	0	0.119	270	-1	0.0122	0.0122	0.0096	0.0000	0.0080	0.0016	0.0096	0	0.0077	0.0012	0.0230	0.0014	0	0.00	0.0162	0	0.0001	-2	0.0425	0.0000	0.0002	100	< 3.0	1600	427668.00	-2	-5	Medium Corrosive	
325	137.76	1.00	550	661035	3005875	10.98	0	6.06	0	0.033	288	-1	0.0122	0.0122	0.0036	0.0000	0.0032	0.0004	0.0036	0	0.0061	0.0004	0.0230	0.0014	0	0.03	0.0121	0	0.0001	-2	0.0523	0.0000	0.0001	94	3	1600	265016.00	-2	-5	Medium Corrosive	sample collected rock problem
326		2.00				8.97	0	6.70	0	0.039	331	0	0.0122	0.0122	0.0032	0.0000	0.0016	0.0016	0.0032	0	0.0066	0.0004	0.0200	0.0014	0	0.03	0.0112	0	0.0001	-2	0.0548	0.0000	0.0002	99	3	1600	427668.00	-2	-4	Medium Corrosive	
327	138.89	1.00	554	661206	3005863	14.00	0	6.56	0	0.045	319	0	0.0122	0.0122	0.0056	0.0000	0.0020	0.0036	0.0056	0	0.0076	0.0012	0.0400	0.0028	0	0.35	0.0146	0	0.0001	-2	0.0469	0.0000	0.0001	95	9.2	1600	255596.00	-2	-4	Medium Corrosive	sample collected rock problem
328		1.80				19.19	0	5.77	0	0.02	271	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0077	0.0010	0.0430	0.0014	0	0.19	0.0276	-1	0.0001	-2	0.0472	0.0000	0.0001	95	15	1600	384336.00	-2	-6	Highly Corrosive	
329	139.89	1.00	558	661685	3005404	14.09	0	6.56	0	0.016	321	0	0.0122	0.0122	0.0036	0.0000	0.0040	-0.0004	0.0036	0	0.0098	0.0016	0.0510	0.0028	0	0.76	0.0356	-1	0.0000	0	0.0352	0.0000	0.0001	97	21	1600	275064.00	-2	-3	Medium Corrosive	sample collected rock problem
330		1.70				15.62	0	6.23	0	0.064	304	0	0.0122	0.0122	0.0032	0.0000	0.0012	0.0020	0.0032	0	0.0091	0.0011	0.0520	0.0014	0	1.02	0.0348	-1	0.0001	-2	0.0379	0.0000	0.0002	100	< 3.0	1600	427668.00	-2	-5	Medium Corrosive	
331	140.89	1.00	562	661829	3004716	14.49	0	6.52	0	0.037	315	0	0.0122	0.0122	0.0056	0.0000	0.0044	0.0012	0.0056	0	0.0071	0.0009	0.0180	0.0043	0	0.67	0.0055	0	0.0001	-2	0.0259	0.0000	0.0001	94	3	1600	264388.00	-2	-4	Medium Corrosive	sample collected rock problem
332		1.50				17.06	0	6.75	0	0.028	331	0	0.0122	0.0122	0.0060	0.0000	0.0056	0.0004	0.0060	0	0.0067	0.0006	0.0170	0.0028	0	0.48	0.0041	0	0.0001	-2	0.0320	0.0000	0.0001	96	3	1600	455928.00	-2	-4	Medium Corrosive	
333	141.89	1.00	566	661869	3004345	6.58	0	6.73	0	0.032	326	0	0.0122	0.0122	0.0072	0.0000	0.0036	0.0036	0.0072	0	0.0069	0.0014	0.0400	0.0014	0	0.38	0.0059	0	0.0001	-2	0.0330	0.0019	0.0001	92	< 3.0	1600	247432.00	-2	-4	Medium Corrosive	sample collected rock problem
334		1.60				11.83	0	6.80	0	0.064	332	0	0.0122	0.0122	0.0064	0.0000	0.0028	0.0036	0.0064	0	0.0068	0.0015	0.0380	0.0014	0	0.35	0.0053	0	0.0001	-2	0.0337	0.0017	0.0001	94	< 3.0	1600	366626.40	-2	-4	Medium Corrosive	
335	142.14	1.00	570	662127	3005182	42.55	-1	6.32	0	0.047	307	0	0.0122	0.0122	0.0024	0.0000	0.0016	0.0008	0.0024	0	0.0068	0.0011	0.0170	0.0028	0	0.44	0.0142	0	0.0001	-2	0.0318	0.0000	0.0001	98	9.2	1600	248060.00	-2	-5	Medium Corrosive	sample collected rock problem
336		1.80				21.34	-1	6.15	0	0.057	298	-1	0.0122	0.0122	0.0028	0.0000	0.0024	0.0004	0.0028	0	0.0068	0.0010	0.0160	0.0028	0	0.64	0.0168	0	0.0001	-2	0.0311	0.0000	0.0001	99	3	900	416364.00	-2	-6	Highly Corrosive	
337	143.89	1.00	574	662101	3005722	13.70	0	6.55	0	0.074	316	0	0.0122	0.0122	0.0032	0.0000	0.0020	0.0012	0.0032	0	0.0066	0.0008	0.0200	0.0028	0	0.13	0.0139	0	0.0001	-2	0.0330	0.0000	0.0002	93	< 3.0	1600	267528.00	-2	-4	Medium Corrosive	sample collected rock problem
338		1.70				21.53	-1	6.33	0	0.064	305	0	0.0122	0.0122	0.0036	0.0000	0.0016	0.0020	0.0036	0	0.0066	0.0005	0.0210	0.0028	0	0.06	0.0139	0	0.0001	-2	0.0347	0.0000	0.0002	95	< 3.0	1600	401292.00	-2	-5	Medium Corrosive	
339	144.01	1.00	575	662029	3005815	19.45	0	5.64	0	0.049	265	-1	0.0122	0.0122	0.0024	0.0000	0.0016	0.0008	0.0024	0	0.0065	0.0005	0.0210	0.0028	0	0.19	0.0128	0	0.0000	0	0.0360	0.0000	0.0001	97	3.6	1600	267528.00	-2	-3	Medium Corrosive	small river crossing rock problem
340		1.80				23.80	-1	5.59	0	0.024	258	-1	0.0122	0.0122	0.0020	0.0000	0.0016	0.0004	0.0020	0	0.0064	0.0005	0.0200	0.0028	0	0.13	0.0134	0	0.0001	-2	0.0459	0.0000	0.0001	93	3.6	500	401292.00	-2	-6	Highly Corrosive	
341	144.14	1.00	576	662022	3006157	18.14	0	5.29	0	0.073	237	-1	0.0122	0.0122	0.0040	0.0000	0.0036	0.0004	0.0040	0	0.0093	0.0005	0.0240	0.0014	0	0.29	0.0038	0	0.0001	-2	0.0462	0.0000	0.0001	90	< 3.0	1600	241152.00	-2	-5	Medium Corrosive	sample collected rock problem
342		1.60				22.90	-1	5.38	0	0.087	252	-1	0.0122	0.0122	0.0056	0.0000	0.0048	0.0008	0.0056	0	0.0091	0.0007	0.0250	0.0014	0	0.32	0.0038	0	0.0001	-2	0.0472	0.0000	0.0001	99	< 3.0	1600	369264.00	-2	-6	Highly Corrosive	
343	144.89	1.00	579	662149	3006461	3.22	0	5.52	0	0.076	257	-1	0.0122	0.0122	0.0028	0.0000	0.0012	0.0016	0.0028	0	0.0026	0.0071	0.0000	0.0028	0	0.67	0.0041	0	0.0001	-2	0.0364	0.0000	0.0002	96	3	1600	265016.00	-2	-5	Medium Corrosive	sample collected rock problem
344		1.90				9.93	0	6.51	0	0.021	311	0	0.0122	0.0122	0.0032	0.0000	0.0024	0.0008	0.0032	0	0.0028	0.0071	0.0190	0.0028	0	0.79	0.0035	0	0.0001	-2	0.0404	0.0000	0.0002	90	< 3.0	1600	463464.00	-2	-4	Medium Corrosive	
345	145.89	1.00	583	661630	3007168	19.08	0	6.57	0	0.031	323	0	0.0122	0.0122	0.0028	0.0000	0.0024	0.0004	0.0028	0	0.0032	0.0069	0.0160	0.0028	0	0.73	0.0027	0	0.0001	-2	0.0335	0.0000	0.0002	99	3.6	1600	266900.00	-2	-4	Medium Corrosive	sample collected rock problem
346		1.70				20.46	-1	6.32	0	0.064	311	0	0.0122	0.0122	0.0032	0.0000	0.0020	0.0012	0.0032	0	0.0031	0.0064	0.0180	0.0028	0	0.60	0.0021	0	0.0001	-2	0.0352	0.0000	0.0001	102	9.2	1600	482304.00	-2	-5	Medium Corrosive	
347	146.89	1.00	587	662061	3006975	3.10	0	6.42	0	0.046	312	0	0.0122	0.0122	0.0120	0.0000	0.0112	0.0008	0.0120	0	0.0033	0.0026	0.0200	0.0043	0	1.94	0.0031	0	0.0001	-2	0.0288	0.0000	0.0001	97	< 3.0	900	260620.00	-2	-4	Medium Corrosive	sample collected rock problem
348		1.70				7.18	0	6.76	0	0.044	328	0	0.0122	0.0122	0.0124	0.0000	0.0116	0.0008	0.0124	0	0.0034	0.0020	0.0240	0.0043	0	2.54	0.0047	0	0.0001	-2	0.0301	0.0000	0.0001	92	3.6	1600	538824.00	-2	-4	Medium Corrosive	
349	147.90	1.00	591	662594	3006610	14.98	0	6.89	0	0.068	341	0	0.0122	0.0122	0.0140	0.0000	0.0120	0.0020	0.0140	0	0.0030	0.0045	0.0360	0.0028	0	1.97	0.0032	0	0.0000	0	0.0496	0.0000	0.0001	98	3	1600	247432.00	-2	-2	Medium Corrosive	sample collected rock problem
350		1.60				10.68	0	6.78	0	0.061	336	0	0.0122	0.0122	0.0148	0.0000	0.0144	0.0004	0.0148	0	0.0028	0.0046	0.0400	0.0028	0	1.37	0.0035	0	0.0001	-2	0.0504	0.0000	0.0001	99	< 3.0	1600	474768.00	-2	-4	Medium Corrosive	
351	148.89	1.00	595	662033	3007316	18.14	0	6.33	0	0.09	306	0	0.0244	0.0244	0.0044	0.0000	0.0040	0.0004	0.0044	0	0.0022	0.0016	0.0450	0.0028	0	0.25	0.0027	0	0.0001	-2	0.0372	0.0000	0.0001	96	3	1600	243036.00	-2	-4	Medium Corrosive	sample collected rock problem
352		1.80				13.30	0	6.09	0	0.098	292	-1	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0022	0.0012	0.0340	0.0028	0	0.19	0.0025	0	0.0001	-2	0.0404	0.0000	0.0001	97	< 3.0	1600	399408.00	-2	-5	Medium Corrosive	
353	149.88	1.00	599	661556	3007997	7.01	0	6.79	0	0.06	337	0	0.0122	0.0122	0.0084	0.0000	0.0080	0.0004	0.0084	0	0.0028	0.0039	0.0300	0.0028	0	1.65	0.0021	0	0.0001	-2	0.0591	0.0000	0.0001	100	3.6	1600	273808.00	-2	-4	Medium Corrosive	sample collected rock problem
354		1.90				6.02	0	6.56	0	0.053	328	0	0.0122	0.0122	0.0076	0.0000	0.0056	0.0020	0.0076	0	0.0029	0.0044	0.0280	0.0028	0	0.70	0.0025	0	0.0001	-2	0.0582	0.0000	0.0001	104	< 3.0	1600	459696.00	-2	-4	Medium Corrosive	
355	150.89	1.00	603	661122	3008422	12.04	0	6.21	0	0.048	298	-1	0.0122	0.0122	0.0200	0.0000	0.0128	0.0072	0.0200	0	0.0033	0.0036	0.0580	0.0043	0	2.89	0.0046	0	0.0001	-2	0.0450	0.0000	0.0001	95	< 3.0	1600	249944.00	-2	-5	Medium Corrosive	sample collected rock problem
356		1.60				12.19	0	6.95	0	0.051	344	0	0.0122	0.0122	0.0160	0.0000	0.0116	0.0044	0.0160	0	0.0034	0.0034	0.0600	0.0043	0	3.21	0.0032	0	0.0001	-2	0.0460	0.0000	0.0001	97	< 3.0	1600	557664.00	-2	-4	Medium Corrosive	
357	151.89	1.00	607	661336	3008717	19.19	0	7.35	0	0.17	364	0	0.0122	0.0122	0.0136	0.0000	0.0112	0.0024	0.0136	0	0.0038	0.0025	0.0300	0.0043	0	2.64	0.0031	0	0.0000	0	0.0286	0.0000	0.0001	93	< 3.0	1600	280716.00	-2	-2	Medium Corrosive	sample collected rock problem

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
358	[illegible]	1.80	[illegible]	[illegible]	[illegible]	8.93	0	7.91	0	0.113	404	2	0.0122	0.0122	0.0132	0.0000	0.0112	0.0020	0.0132	0	0.0038	0.0020	0.0330	0.0043	0	2.57	0.0031	0	0.0000	0	0.0342	0.0000	0.0001	99	< 3.0	1600	599112.00	-2	0	Medium Corrosive	sample collected rock problem
359	152.89	1.00	611	661253	3008793	17.61	0	8.05	0	0.065	410	2	0.0122	0.0122	0.0088	0.0000	0.0068	0.0020	0.0088	0	0.0031	0.0023	0.0250	0.0043	0	0.32	0.0025	0	0.0001	-2	0.0306	0.0000	0.0001	97	< 3.0	1600	273180.00	-2	-2	Medium Corrosive	sample collected rock problem
360		1.70				22.30	-1	8.19	0	0.051	423	2	0.0122	0.0122	0.0080	0.0000	0.0076	0.0004	0.0080	0	0.0031	0.0024	0.0320	0.0028	0	0.29	0.0024	0	0.0001	-2	0.0327	0.0000	0.0001	102	< 3.0	1600	576504.00	-2	-3	Medium Corrosive	
361	153.89	1.00	615	660773	3008762	18.41	0	7.36	0	0.035	369	0	0.0122	0.0122	0.0112	0.0000	0.0072	0.0040	0.0112	0	0.0024	0.0026	0.0280	0.0028	0	0.13	0.0019	0	0.0001	-2	0.0169	0.0000	0.0001	97	< 3.0	1600	213520.00	-2	-4	Medium Corrosive	sample collected rock problem
362		1.50				14.49	0	7.81	0	0.03	398	0	0.0244	0.0244	0.0108	0.0000	0.0072	0.0036	0.0108	0	0.0024	0.0026	0.0290	0.0028	0	0.03	0.0018	0	0.0001	-2	0.0333	0.0000	0.0002	99	< 3.0	1600	275064.00	-2	-4	Medium Corrosive	
363	154.89	1.00	619	660744	3008892	17.06	0	7.75	0	0.039	391	0	0.0122	0.0122	0.0060	0.0000	0.0052	0.0008	0.0060	0	0.0029	0.0024	0.0490	0.0043	0	0.10	0.0010	0	0.0000	0	0.0448	0.0000	0.0001	96	21	1600	197820.00	-2	-2	Medium Corrosive	sample collected rock problem
364		1.60				19.53	0	7.95	0	0.061	408	2	0.0122	0.0122	0.0068	0.0000	0.0036	0.0032	0.0068	0	0.0028	0.0024	0.0520	0.0028	0	0.38	0.0012	0	0.0001	-2	0.0442	0.0000	0.0001	101	28	1600	316512.00	-2	-2	Medium Corrosive	
365	155.90	1.00	623	660358	3009002	11.83	0	8.13	0	0.065	415	2	0.0122	0.0122	0.0060	0.0000	0.0040	0.0020	0.0060	0	0.0023	0.0022	0.0160	0.0014	0	0.60	0.0000	0	0.0001	-2	0.0420	0.0000	0.0001	97	< 3.0	1600	254968.00	-2	-2	Medium Corrosive	sample collected rock problem
366		1.80				8.51	0	8.41	0	0.062	434	2	0.0122	0.0122	0.0068	0.0000	0.0044	0.0024	0.0068	0	0.0023	0.0022	0.0180	0.0028	0	0.35	0.0018	0	0.0000	0	0.0450	0.0000	0.0001	99	< 3.0	1600	602880.00	-2	0	Medium Corrosive	
367	156.89	1.00	627	659461	3008895	6.86	0	7.40	0	0.03	370	0	0.0122	0.0122	0.0100	0.0000	0.0056	0.0044	0.0100	0	0.0023	0.0027	0.0360	0.0043	0	0.64	0.0027	0	0.0001	-2	0.0190	0.0000	0.0002	96	< 3.0	1600	254968.00	-2	-4	Medium Corrosive	sample collected rock problem
368		1.70				4.30	0	7.56	0	0.035	382	0	0.0366	0.0122	0.0104	0.0120	0.0076	0.0028	0.0224	0	0.0023	0.0028	0.0380	0.0028	0	0.67	0.0025	0	0.0001	-2	0.0233	0.0000	0.0001	98	< 3.0	1600	576504.00	-2	-4	Medium Corrosive	
369	157.16	1.00	628	659282	3009026	8.80	0	6.59	0	0.115	320	0	0.0122	0.0122	0.0100	0.0000	0.0096	0.0004	0.0100	0	0.0023	0.0035	0.1430	0.0043	0	0.60	0.0025	0	0.0000	0	0.0421	0.0000	0.0001	95	< 3.0	1600	244920.00	-2	-2	Medium Corrosive	river crossing rock problem
370		2.00				2.37	0	6.13	0	0.123	295	-1	0.0122	0.0122	0.0104	0.0000	0.0040	0.0064	0.0104	0	0.0024	0.0036	0.1440	0.0043	0	0.44	0.0821	-2	0.0001	-2	0.0393	0.0000	0.0001	97	< 3.0	1600	395640.00	-2	-7	Highly Corrosive	
371	157.39	1.00	629	659388	3009178	8.98	0	7.10	0	0.481	351	0	0.0122	0.0122	0.0116	0.0000	0.0096	0.0020	0.0116	0	0.0026	0.0028	0.0380	0.0028	0	0.19	0.0650	-2	0.0000	0	0.0330	0.0000	0.0001	95	< 3.0	1600	254968.00	-2	-4	Medium Corrosive	river crossing rock problem
372		2.20				5.47	0	7.37	0	0.501	362	0	0.0122	0.0122	0.0120	0.0000	0.0112	0.0008	0.0120	0	0.0027	0.0028	0.0390	0.0014	0	0.22	0.0093	0	0.0000	0	0.0333	0.0000	0.0001	90	< 3.0	1600	561432.00	-2	-2	Medium Corrosive	
373	157.88	1.00	631	659530	3009280	11.94	0	7.78	0	0.082	393	0	0.0122	0.0122	0.0140	0.0000	0.0136	0.0004	0.0140	0	0.0022	0.0027	0.0290	0.0028	0	2.89	0.0049	0	0.0001	-2	0.0540	0.0000	0.0002	96	< 3.0	1600	237384.00	-2	-4	Medium Corrosive	sample collected rock problem
374		1.70				12.73	0	7.41	0	0.091	367	0	0.0122	0.0122	0.0144	0.0000	0.0108	0.0036	0.0144	0	0.0022	0.0027	0.0260	0.0043	0	2.25	0.0032	0	0.0001	-2	0.0525	0.0000	0.0002	92	< 3.0	1600	378684.00	-2	-4	Medium Corrosive	
375	158.89	1.00	635	659209	3009569	7.20	0	6.47	0	0.06	318	0	0.0122	0.0122	0.0084	0.0000	0.0056	0.0028	0.0084	0	0.0017	0.0037	0.0420	0.0028	0	0.41	0.0143	0	0.0001	-2	0.0359	0.0000	0.0002	100	< 3.0	1600	248688.00	-2	-4	Medium Corrosive	sample collected rock problem
376		1.60				11.75	0	6.58	0	0.065	322	0	0.0122	0.0122	0.0080	0.0000	0.0052	0.0028	0.0080	0	0.0018	0.0036	0.0450	0.0028	0	0.48	0.0092	0	0.0001	-2	0.0421	0.0000	0.0002	97	< 3.0	1600	399408.00	-2	-4	Medium Corrosive	
377	159.90	1.00	639	659456	3010289	11.56	0	6.75	0	0.172	325	0	0.0122	0.0122	0.0236	0.0000	0.0160	0.0076	0.0236	0	0.0021	0.0032	0.0540	0.0043	0	0.44	0.0027	0	0.0001	-2	0.0403	0.0000	0.0002	90	< 3.0	1600	236128.00	-2	-4	Medium Corrosive	sample collected rock problem
378		1.60				8.42	0	6.37	0	0.142	305	0	0.0122	0.0122	0.0257	0.0000	0.0232	0.0024	0.0257	0	0.0024	0.0031	0.0560	0.0028	0	0.35	0.0027	0	0.0001	-2	0.0423	0.0000	0.0002	93	< 3.0	1600	365496.00	-2	-4	Medium Corrosive	
379	160.90	1.00	643	659193	3009757	9.79	0	8.59	0	0.084	441	2	0.0122	0.0122	0.0068	0.0000	0.0048	0.0020	0.0068	0	0.0028	0.0038	0.0120	0.0028	0	1.78	0.0031	0	0.0001	-2	0.0212	0.0000	0.0001	96	< 3.0	1600	226080.00	-2	-2	Medium Corrosive	sample collected rock problem
380		1.60				6.05	0	8.65	0	0.09	448	2	0.0122	0.0122	0.0072	0.0000	0.0044	0.0028	0.0072	0	0.0029	0.0038	0.0110	0.0014	0	2.70	0.0037	0	0.0001	-2	0.0286	0.0000	0.0002	99	< 3.0	1600	395640.00	-2	-2	Medium Corrosive	
381	161.89	1.00	647	659296	3010493	11.19	0	5.15	0	0.02	242	-1	0.0122	0.0122	0.0092	0.0000	0.0072	0.0020	0.0092	0	0.0022	0.0022	0.0160	0.0028	0	1.87	0.0025	0	0.0001	-2	0.0250	0.0000	0.0001	103	21	900	248688.00	-2	-5	Medium Corrosive	sample collected rock problem
382		1.80				8.06	0	5.39	0	0.027	250	-1	0.0122	0.0122	0.0100	0.0000	0.0048	0.0052	0.0100	0	0.0023	0.0022	0.0180	0.0043	0	1.68	0.0018	0	0.0001	-2	0.0254	0.0000	0.0001	97	9.2	500	386220.00	-2	-5	Medium Corrosive	
383	162.89	1.00	651	659333	3010959	10.38	0	6.23	0	0.041	303	0	0.0122	0.0122	0.0132	0.0000	0.0104	0.0028	0.0132	0	0.0022	0.0024	0.0340	0.0043	0	1.94	0.0019	0	0.0001	-2	0.0365	0.0000	0.0003	99	< 3.0	1600	257480.00	-2	-4	Medium Corrosive	sample collected rock problem
384		1.80				10.65	0	6.29	0	0.047	302	0	0.0122	0.0122	0.0124	0.0000	0.0100	0.0024	0.0124	0	0.0022	0.0024	0.0370	0.0043	0	2.25	0.0021	0	0.0001	-2	0.0403	0.0000	0.0003	95	< 3.0	1600	425784.00	-2	-4	Medium Corrosive	
385	163.89	1.00	655	659119	3010653	13.30	0	7.85	0	0.064	399	0	0.0366	0.0122	0.0160	0.0120	0.0140	0.0020	0.0280	0	0.0026	0.0117	0.0620	0.0043	0	1.46	0.0028	0	0.0001	-2	0.0406	0.0000	0.0002	98	< 3.0	1600	248688.00	-2	-4	Medium Corrosive	sample collected rock problem
386		1.90				8.57	0	7.10	0	0.058	352	0	0.0122	0.0122	0.0172	0.0000	0.0160	0.0012	0.0172	0	0.0026	0.0118	0.0600	0.0043	0	1.30	0.0027	0	0.0001	-2	0.0391	0.0000	0.0002	96	< 3.0	1600	365496.00	-2	-4	Medium Corrosive	
387	164.89	1.00	659	658908	3010244	12.75	0	7.64	0	0.089	378	0	0.0122	0.0122	0.0056	0.0000	0.0040	0.0016	0.0056	0	0.0021	0.0042	0.0200	0.0028	0	3.52	0.0022	0	0.0000	0	0.0369	0.0000	0.0002	90	< 3.0	1600	210380.00	-2	-2	Medium Corrosive	sample collected rock problem
388		1.80				13.63	0	7.55	0	0.092	378	0	0.0122	0.0122	0.0052	0.0000	0.0116	-0.0064	0.0052	0	0.0021	0.0042	0.0210	0.0014	0	3.62	0.0021	0	0.0001	-2	0.0403	0.0000	0.0003	95	< 3.0	1600	325932.00	-2	-4	Medium Corrosive	
389	165.88	1.00	663	658885	3010744	5.60	0	7.60	0	0.052	383	0	0.0122	0.0122	0.0080	0.0000	0.0072	0.0008	0.0080	0	0.0017	0.0016	0.0160	0.0043	0	1.02	0.0025	0	0.0000	0	0.0509	0.0000	0.0002	97	< 3.0	1600	229848.00	-2	-2	Medium Corrosive	sample collected rock problem
390		2.00				7.54	0	6.77	0	0.045	330	0	0.0122	0.0122	0.0084	0.0000	0.0056	0.0028	0.0084	0	0.0017	0.0018	0.0190	0.0043	0	0.98	0.0022	0	0.0001	-2	0.0423	0.0000	0.0003	94	< 3.0	1600	365496.00	-2	-4	Medium Corrosive	
391	166.88	1.00	667	658550	3010019	4.88	0	5.42	0	0.048	246	-1	0.0366	0.0366	0.0108	0.0000	0.0080	0.0028	0.0108	0	0.0022	0.0051	0.0120	0.0028	0	0.98	0.0126	0	0.0001	-2	0.0641	0.0000	0.0001	91	< 3.0	1600	229848.00	-2	-5	Medium Corrosive	sample collected rock problem
392		1.90				7.10	0	5.70	0	0.07	262	-1	0.0122	0.0122	0.0100	0.0000	0.0084	0.0016	0.0100	0	0.0022	0.0051	0.0150	0.0028	0	2.06	0.0112	0	0.0001	-2	0.0606	0.0000	0.0002	90	< 3.0	1600	365496.00	-2	-5	Medium Corrosive	
393	167.89	1.00	671	658713	3010920	7.76	0	5.61	0	0.042	269	-1	0.0122	0.0122	0.0240	0.0000	0.0228	0.0012	0.0240	0	0.0027	0.0044	0.0690	0.0043	0	8.57	0.0049	0	0.0000	0	0.0240	0.0000	0.0002	102	< 3.0	1600	248688.00	-2	-3	Medium Corrosive	sample collected rock problem
394		1.90				8.56	0	5.55	0	0.036	262	-1	0.0122	0.0122	0.0289	0.0000	0.0244	0.0044	0.0289	0	0.0027	0.0045	0.0600	0.0043	0	0.95	0.0058	0	0.0001	-2	0.0254	0.0000	0.0002	99	3	1600	405060.00	-2	-5	Medium Corrosive	
395	168.88	1.00	675	658684	3011503	11.41	0	7.66	0	0.134	384	0	0.0122	0.0122	0.0092	0.0000	0.0064	0.0028	0.0092	0	0.0038	0.0122	0.0210	0.0043	0	0.67	0.0062	0	0.0001	-2	0.0306	0.0000	0.0002	94	3	1600	238012.00	-2	-4	Medium Corrosive	sample collected rock problem
396		2.10				12.62	0	8.05	0	0.164	408	2	0.0122	0.0122	0.0084	0.0000	0.0076	0.0008	0.0084	0	0.0038	0.0122	0.0230	0.0028	0	0.83	0.0063	0	0.0001	-2	0.0332	0.0000	0.0002	95	< 3.0	1600	408828.00	-2	-2	Medium Corrosive	
397	169.88	1.00	679	658386	3011797	12.31	0	7.81	0	0.042	398	0	0.0122	0.0122	0.0120	0.0000	0.0112	0.0008	0.0120	0	0.0023	0.0031	0.0160	0.0028	0	3.24	0.0016	0	0.0001	-2	0.0301	0.0000	0.0002	99	< 3.0	1600	254340.00	-2	-4	Medium Corrosive	sample collected rock problem
398		2.20				10.65	0	7.72	0	0.038	391	0	0.0122	0.0122	0.0140	0.0000	0.0088	0.0052	0.0140	0	0.0022	0.0032	0.0180	0.0028	0	3.21	0.0016	0	0.0001	-2	0.0313	0.0000	0.0001	98	3..6	1600	369264.00	-2	-4	Medium Corrosive	
399	170.90	1.00	683	658164	3011802	13.00	0	5.21	0	0.051	233	-1	0.0122	0.0122	0.0076	0.0000	0.0036	0.0040	0.0076	0	0.0030	0.0016	0.0170	0.0043	0	3.05	0.0074	0	0.0001	-2	0.0591	0.0000	0.0003	90	3	1600	248688.00	-2	-5	Medium Corrosive	sample collected rock problem
400		2.50				9.34	0	5.64	0	0.053	255	-1	0.0122	0.0122	0.0116	0.0000	0.0100	0.0016	0.0116	0	0.0030	0.0016	0.0180	0.0028	0	3.18	0.0053	0	0.0001	-2	0.0335	0.0000	0.0003	87	7.4	1600	463464.00	-2	-5	Medium Corrosive	
401	171.90	1.00	687	657890	3012574	15.27	0	6.81	0	0.02	329	0	0.0122	0.0122	0.0156	0.0000	0.0120	0.0036	0.0156	0	0.0023	0.0064	0.0140	0.0043	0	3.08	0.0030	0	0.0000	0	0.0340	0.0000	0.0002	90	< 3.0	1600	267528.00	-2	-2	Medium Corrosive	sample collected rock problem
402		2.10				11.05	0	6.87	0	0.028	337	0	0.0122	0.0122	0.0176	0.0000	0.0112	0.0064	0.0176	0	0.0023	0.0064	0.0150	0.0043	0	2.89	0.0035	0	0.0000	0	0.0308	0.0000	0.0002	95	< 3.0	1600	423900.00	-2	-2	Medium Corrosive	
403	172.89	1.00	691	658001	3013001	18.59	0	5.50	0	0.036	251	-1	0.0122	0.0122	0.0064	0.0000	0.0040	0.0024	0.0064	0	0.0024	0.0022	0.0300	0.0043	0	0.67	0.0072	0	0.0000	0	0.0308	0.0000	0.0001	91	< 3.0	1600	173328.00	-2	-3	Medium Corrosive	sample collected rock problem
404		2.20				23.47	-1	5.69	0	0.042	271	-1	0.0122	0.0122	0.0112	0.0000	0.0072	0.0040	0.0112	0	0.0024	0.0023	0.0320	0.0043	0	0.89	0.0038	0	0.0000	0	0.0286	0.0000	0.0001	100	< 3.0	1600	267528.00	-2	-4	Medium Corrosive	
405	173.89	1.00	695	657661	3012660	15.49	0	5.31	0	0.045	248	-1	0.0122	0.0122	0.0196	0.0000	0.0120	0.0076	0.0196	0	0.0028	0.0018	0.0640	0.0028	0	2.76	0.0038	0	0.0001	-2	0.0531	0.0000	0.0002	99	< 3.0	1600	238012.00	-2	-5	Medium Corrosive	sample collected rock problem
406		2.10				13.20	0	5.58	0	0.073	258	-1	0.0122	0.0122	0.0232	0.0000	0.0136	0.0096	0.0232	0	0.0030	0.0018	0.0620	0.0043	0	2.67	0.0035	0	0.0001	-2	0.0589	0.0000	0.0002	93	< 3.0	1600	393756.00	-2	-5	Medium Corrosive	
407	174.89	1.60	699	657742	3013556	5.88	0	7.93	0	0.161	401	2	0.0122	0.0122	0.0309	0.0000	0.0244	0.0064	0.0309	0	0.0031	0.0053	0.0600	0.0043	0	1.30	0.0118	0	0.0001	-2	0.0382	0.0000	0.0001	95	< 3.0	1600	244920.00	-2	-2	Medium Corrosive	sample collected rock problem
408		2.10				3.12	0	8.01	0	0.165	410	2	0.0122	0.0122	0.0317	0.0000	0.0236	0.0080	0.0317	0	0.0031	0.0053	0.0650	0.0028	0	1.43	0.0086	0	0.0000	0	0.0408	0.0000	0.0001	99	< 3.0	1600	356076.00	-2	0	Medium corrosive	
409	175.89	1.00	703	657819	3014050	4.69	0	8.15	0	0.09	422	2	0.0122	0.0122	0.0361	0.0000	0.0325	0.0036	0.0361	0	0.0031	0.0098	0.0630	0.0043	0	2.73	0.0068	0	0.0001	-2	0.0316	0.0000	0.0002	103	< 3.0	1600	247432.00	-2	-2	Medium Corrosive	sample collected rock problem
410		1.60				3.21	0	8.06	0	0.094	412	2	0.0122	0.0122	0.0401	0.0000	0.0100	0.0301	0.0401	0	0.0031	0.0098	0.0620	0.0043	0	2.57	0.0049	0	0.0001	-2	0.0299	0.0000	0.0002	98	< 3.0	1600	386220.00	-2	-2	Medium Corrosive	
411	176.89	1.00	707	658552	3014488	3.91	0	7.03	0	0.152	346	0	0.0122	0.0122	0.0140	0.0000	0.0124	0.0016	0.0140	0	0.0039	0.0089	0.0220	0.0028	0	2.48	0.0069	0	0.0001	-2	0.0450	0.0000	0.0001	94	< 3.0	1600	216660.00	-2	-4	Medium Corrosive	sample collected rock problem
412		2.50				4.90	0	7.15	0	0.164	355	0	0.0122	0.0122	0.0160	0.0000	0.0156	0.0004	0.0160	0	0.0039	0.0088	0.0240	0.0028	0	2.38	0.0096	0	0.0001	-2	0.0415	0.0000	0.0002	96	< 3.0	1600	318396.00	-2	-4	Medium Corrosive	
413	177.89	1.00	711	659148	3014940	6.69	0	5.64	0	0.068	264	-1	0.0122	0.0122	0.0044	0.0000	0.0040	0.0004	0.0044	0	0.0020	0.0024	0.0800	0.0028	0	3.08	0.0032	0	0.0001	-2	0.0371	0.0000	0.0001	96	< 3.0	1600	263132.00	-2	-5	Medium Corrosive	sample collected rock problem
414		1.70				4.16	0	5.71	0	0.063	272	-1	0.0122	0.0122	0.0052	0.0000	0.0036	0.0016	0.0052	0	0.0020	0.0024	0.0850	0.0043	0	3.18	0.0035	0	0.0001	-2	0.0398	0.0000	0.0001	99	< 3.0	1600	614184.00	-2	-5	Medium Corrosive	
415	178.90	1.00	715	658604	3014620	17.06	0	8.08	0	0.149	409	2	0.0122	0.0122	0.0401	0.0000	0.0172	0.0228	0.0401	0	0.0029	0.0154	0.0210	0.0028	0	1.27	0.0230	-1	0.0001	-2	0.0646	0.0000	0.0001	94	< 3.0	1600	247432.00	-2	-3	Medium Corrosive	sample collected rock problem
416		2.00				19.53	0	8.15	0	0.156	413	2	0.0122	0.0122	0.0441	0.0000	0.0433	0.0008	0.0441	0	0.0029	0.0154	0.0250	0.0028	0	1.30	0.0089	0	0.0000	0	0.0591	0.0000	0.0001	94	< 3.0	900	399408.00	-2	0	Medium Corrosive	

IGGL, GUWAHATI
Siliguri-Gangtok New Pipeline
Soil Chemical Analysis Report

Sr. No.	Chainage	Depth	BH No	Easting (X Coord)	Northing (Y Coord)	Moisture Percentage		pH		Conductivity (ms/cm)	Redox Potential		Total Alkalinity	Bicarbonate	Total Hardness	Carbonate	Calcium	Magnesium	Total 20 =(17+18+19)		Sodium	Potassium	TDS	Chloride		Organic matter	Sulphate		Sulphide		Phosphate	Nitrate	Nitrite	Oxygen activity	Anaerobic bacteria	SRB	Soil Resistivity		Total Corrosion Factor	Remark Based on Total CF	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Km	m				%	CF		CF	ms/cm	mV	CF	%	%	%	%	%	%	%	CF	%	%	%	%	CF	(%)	%	CF	%	CF	%	%	%		MPN/100ml	MPN/100ml	Ohm Cm	CF	CF		
417	179.90	1.00	719	657988	3015196	11.83	0	7.01	0	0.07	352	0	0.0122	0.0122	0.0144	0.0000	0.0140	0.0004	0.0144	0	0.0024	0.0026	0.0260	0.0028	0	2.45	0.0043	0	0.0001	-2	0.0354	0.0000	0.0001	101	< 3.0	1600	241152.00	-2	-4	Medium Corrosive	sample collected rock problem
418		2.10				7.27	0	6.20	0	0.05	298	-1	0.0122	0.0122	0.0104	0.0000	0.0060	0.0044	0.0104	0	0.0024	0.0026	0.0240	0.0028	0	2.57	0.0043	0	0.0000	0	0.0327	0.0000	0.0001	96	< 3.0	1600	499260.00	-2	-3	Medium Corrosive	
419	180.90	1.00	723	658648	3014790	21.63	-1	5.56	0	0.055	261	-1	0.0122	0.0122	0.0092	0.0000	0.0076	0.0016	0.0092	0	0.0030	0.0044	0.0250	0.0043	0	1.62	0.0086	0	0.0001	-2	0.0350	0.0011	0.0001	97	3.6	1600	229848.00	-2	-6	Highly Corrosive	sample collected rock problem
420		2.20				18.83	0	6.58	0	0.065	324	0	0.0122	0.0122	0.0084	0.0000	0.0068	0.0016	0.0084	0	0.0031	0.0044	0.0220	0.0028	0	1.75	0.0083	0	0.0001	-2	0.0347	0.0010	0.0001	99	3.6	1600	316512.00	-2	-4	Medium Corrosive	
421	181.90	1.00	727	658844	3015024	7.20	0	6.70	0	0.062	330	0	0.0122	0.0122	0.0096	0.0000	0.0080	0.0016	0.0096	0	0.0031	0.0074	0.0250	0.0043	0	4.41	0.0025	0	0.0001	-2	0.0411	0.0000	0.0001	98	< 3.0	900	248688.00	-2	-4	Medium Corrosive	sample collected rock problem
422		2.20				10.96	0	6.56	0	0.041	323	0	0.0122	0.0122	0.0104	0.0000	0.0092	0.0012	0.0104	0	0.0031	0.0074	0.0310	0.0043	0	4.16	0.0028	0	0.0001	-2	0.0435	0.0000	0.0001	99	< 3.0	900	346656.00	-2	-4	Medium Corrosive	
423	182.90	1.00	731	659099	3015531	11.56	0	6.83	0	0.061	339	0	0.0122	0.0122	0.0100	0.0000	0.0080	0.0020	0.0100	0	0.0044	0.0094	0.0160	0.0043	0	2.51	0.0038	0	0.0001	-2	0.0349	0.0000	0.0001	99	< 3.0	1600	255596.00	-2	-4	Medium Corrosive	sample collected rock problem
424		2.10				8.42	0	6.95	0	0.075	342	0	0.0122	0.0122	0.0104	0.0000	0.0084	0.0020	0.0104	0	0.0044	0.0094	0.0180	0.0043	0	2.10	0.0034	0	0.0001	-2	0.0333	0.0000	0.0001	95	< 3.0	1600	455928.00	-2	-4	Medium Corrosive	
425	183.89	1.00	735	658793	3015706	12.28	0	5.81	0	0.051	270	-1	0.0122	0.0122	0.0028	0.0000	0.0020	0.0008	0.0028	0	0.0020	0.0020	0.0200	0.0028	0	0.25	0.0041	0	0.0001	-2	0.0315	0.0000	0.0001	91	< 3.0	1600	285740.00	-2	-5	Medium Corrosive	sample collected rock problem
426		2.50				11.19	0	5.83	0	0.046	280	-1	0.0122	0.0122	0.0028	0.0000	0.0024	0.0004	0.0028	0	0.0019	0.0020	0.0180	0.0028	0	0.32	0.0044	0	0.0001	-2	0.0347	0.0000	0.0002	100	< 3.0	1600	553896.00	-2	-5	Medium Corrosive	
427	184.89	1.00	739	658617	3016074	12.39	0	5.18	0	0.054	235	-1	0.0122	0.0122	0.0052	0.0000	0.0024	0.0028	0.0052	0	0.0025	0.0014	0.0120	0.0014	0	1.62	0.0047	0	0.0001	-2	0.0223	0.0000	0.0001	94	3.6	1600	247432.00	-2	-5	Medium Corrosive	sample collected rock problem
428		2.50				13.74	0	5.80	0	0.049	275	-1	0.0122	0.0122	0.0116	0.0000	0.0076	0.0040	0.0116	0	0.0026	0.0014	0.0140	0.0014	0	1.71	0.0046	0	0.0001	-2	0.0240	0.0000	0.0002	97	< 3.0	1600	442740.00	-2	-5	Medium Corrosive	
429	185.89	1.00	743	658340	3016824	12.93	0	5.15	0	0.038	234	-1	0.0122	0.0122	0.0068	0.0000	0.0040	0.0028	0.0068	0	0.0014	0.0056	0.0200	0.0028	0	0.60	0.0046	0	0.0000	0	0.0217	0.0000	0.0002	95	< 3.0	1600	254340.00	-2	-3	Medium Corrosive	sample collected rock problem
430		2.20				11.89	0	5.70	0	0.026	271	-1	0.0122	0.0122	0.0072	0.0000	0.0032	0.0040	0.0072	0	0.0015	0.0056	0.0190	0.0043	0	0.51	0.0043	0	0.0001	-2	0.0311	0.0000	0.0002	99	< 3.0	1600	446508.00	-2	-5	Medium Corrosive	
431	186.90	1.00	747	657876	3017316	12.32	0	5.92	0	0.034	287	-1	0.0488	0.0244	0.0092	0.0120	0.0064	0.0028	0.0212	0	0.0018	0.0034	0.0190	0.0043	0	0.98	0.0040	0	0.0001	-2	0.0371	0.0000	0.0003	102	< 3.0	900	254968.00	-2	-5	Medium Corrosive	sample collected rock problem
432		2.00				17.57	0	5.64	0	0.045	171	-2	0.0122	0.0122	0.0052	0.0000	0.0044	0.0008	0.0052	0	0.0018	0.0034	0.0160	0.0043	0	1.24	0.0037	0	0.0001	-2	0.0415	0.0000	0.0002	3	< 3.0	1600	567084.00	-2	-6	Highly Corrosive	
433	187.88	1.00	751	658116	3017519	6.69	0	5.34	0	0.069	242	-1	0.0122	0.0122	0.0120	0.0000	0.0108	0.0012	0.0120	0	0.0044	0.0019	0.0230	0.0043	0	1.33	0.0053	0	0.0001	-2	0.0308	0.0000	0.0001	92	20	1600	285740.00	-2	-5	Medium Corrosive	nala crossing sample collected
434		2.20				5.12	0	5.88	0	0.049	282	-1	0.0244	0.0244	0.0116	0.0000	0.0084	0.0032	0.0116	0	0.0043	0.0019	0.0210	0.0028	0	1.30	0.0061	0	0.0001	-2	0.0303	0.0000	0.0001	99	14	900	678240.00	-2	-5	Medium Corrosive	
435	188.53	1.00	754	657990	3018009	10.72	0	6.26	0	0.064	300	-1	0.0122	0.0122	0.0248	0.0000	0.0168	0.0080	0.0248	0	0.0034	0.0108	0.0340	0.0028	0	1.91	0.0012	0	0.0001	-2	0.0447	0.0000	0.0001	94	3	1600	135020.00	-2	-5	Medium Corrosive	normal soil near garden & village chhota singtun
436		2.50				5.85	0	6.78	0	0.076	339	0	0.0122	0.0122	0.0236	0.0000	0.0220	0.0016	0.0236	0	0.0034	0.0109	0.0280	0.0014	0	2.22	0.0012	0	0.0001	-2	0.0438	0.0000	0.0002	102	< 3.0	1600	229848.00	-2	-4	Medium Corrosive	

National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

NILAWAR LABORATORIES (A UNIT OF MNEC CONSULTANTS PVT. LTD.)

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

AT KM STONE 16.5, AMRAVATI ROAD, WADDHAMANA, NAGPUR, MAHARASHTRA, INDIA

in the field of

TESTING

Certificate Number: TC-9782

Issue Date: 23/08/2021 **Valid Until:** 22/08/2023

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity : MNEC CONSULTANTS PRIVATE LIMITED

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

VOLUME IV OF IV

CROSSING LIST FOR
SILIGURI PIPELINE SECTION

(APPLICABLE FOR ALL SPREAD OF PART C, D & E)

BIDDER TO IDENTIFIED THEIR SPREAD WISE SCOPE AS PER SPREAD WISE CHAINAGE SHOWN IN SCHEMATIC.

LIST OF ALL CROSSINGS - Annexure - 2 - SGPL

S.No.	Crossing Id	Crossing Type	Width(m)	Location of Occurance TP Points	Chainage (KM)	Crossing Drawing No.	Method of Crossing
1	CS-001	Minor Road	4.820	TP101-TP102	30.487	SGPL-CRS-RD-01	Open cut Method
2	CS-002	Minor Road	5.580	TP103-TP104	30.733	SGPL-CRS-RD-02	Open cut Method
3	CS-003	Minor Road	4.000	TP105-TP106	30.932	SGPL-CRS-RD-03	Open cut Method
4	CS-004	Canal	22.020	TP105-TP106	30.960	SGPL-CRS-CAN-01	Open cut Method
5	CS-005	Minor Road	8.370	TP108-TP109	31.334	SGPL-CRS-RD-04	Open cut Method
6	CS-006	Minor Road	9.600	TP109-TP110	31.427	SGPL-CRS-RD-05	Open cut Method
7	CS-007	Major Road	14.460	TP109-TP110	31.538	SGPL-CRS-RD-06	Open cut Method
8	CS-008	Minor Road	7.000	TP111-TP112	31.791	SGPL-CRS-RD-07	Open cut Method
9	CS-009	Minor Road	3.000	TP112-TP113	32.502	SGPL-CRS-RD-08	Open cut Method
10	CS-010	Minor Road	2.100	TP112-TP113	32.567	SGPL-CRS-RD-09	Open cut Method
11	CS-011	Minor Road	3.000	TP113-TP114	33.002	SGPL-CRS-RD-10	Open cut Method
12	CS-012	Minor Road	3.030	TP114-TP115	33.801	SGPL-CRS-RD-11	Open cut Method
13	CS-013	Minor Road	4.140	TP115-TP116	34.221	SGPL-CRS-RD-12	Open cut Method
14	CS-014	Minor Road	7.020	TP116-TP117	34.409	SGPL-CRS-RD-13	Open cut Method
15	CS-015	Minor Road	3.100	TP116-TP117	34.424	SGPL-CRS-RD-14	Open cut Method
16	CS-016	Minor Road	3.500	TP119-TP120	34.485	SGPL-CRS-RD-15	Open cut Method
17	CS-017	Minor Road	8.700	TP121-TP122	34.584	SGPL-CRS-RD-16	Open cut Method
18	CS-018	Minor Road	2.000	TP123-TP124	34.802	SGPL-CRS-RD-17	Open cut Method
19	CS-019	Major Road	30	TP123-TP124	34.929	SGPL-CRS-RD-18	Open cut Method
20	CS-020	Minor Road	9.320	TP124-TP125	35.213	SGPL-CRS-RD-19	Open cut Method
21	CS-021	Minor Road	6.540	TP124-TP125	35.488	SGPL-CRS-RD-20	Open cut Method
22	CS-022	Minor Road	5.090	TP124-TP125	35.507	SGPL-CRS-RD-21	Open cut Method
23	CS-023	Minor Drain	7.960	TP124-TP125	35.670	SGPL-CRS-NAL-01	Open cut Method
24	CS-024	Minor Drain	8.260	TP124-TP125	35.804	SGPL-CRS-NAL-02	Open cut Method
25	CS-025	Minor Road	3.140	TP126-TP127	36.616	SGPL-CRS-RD-22	Open cut Method
26	CS-026	Nipuchhapur River	407.99	TP126-TP127	36.906	SGPL-CRS-RIV-01	HDD Method
27	CS-027	Minor Nala	7.940	TP126-TP127	37.208	SGPL-CRS-NAL-03	Open cut Method
28	CS-028	Minor Road	4.000	TP127-TP128	37.966	SGPL-CRS-RD-23	Open cut Method
29	CS-029	Minor Drain	3.030	TP127-TP128	37.971	SGPL-CRS-NAL-04	Open cut Method
30	CS-030	Minor Drain	4.960	TP127-TP128	38.094	SGPL-CRS-NAL-05	Open cut Method
31	CS-031	Minor Drain	3.300	TP129-TP130	38.844	SGPL-CRS-NAL-06	Open cut Method
32	CS-032	Minor Road	3.410	TP131-TP132	39.233	SGPL-CRS-RD-24	Open cut Method
33	CS-033	Minor Drain	3.390	TP131-TP132	39.245	SGPL-CRS-NAL-07	Open cut Method
34	CS-034	Minor Road	3.000	TP131-TP132	39.462	SGPL-CRS-RD-25	Open cut Method
35	CS-035	Minor Road	3.270	TP132-TP133	39.641	SGPL-CRS-RD-26	Open cut Method
36	CS-036	Minor Road	3.330	TP132-TP133	39.665	SGPL-CRS-RD-27	Open cut Method
37	CS-037	Minor Road	4.550	TP132-TP133	39.818	SGPL-CRS-RD-28	Open cut Method
38	CS-038	Minor Drain	4.330	TP133-TP134	39.972	SGPL-CRS-NAL-08	Open cut Method
39	CS-039	Minor Drain	2.900	TP133-TP134	40.206	SGPL-CRS-NAL-09	Open cut Method
40	CS-040	Minor Road	6.990	TP133-TP134	40.726	SGPL-CRS-RD-29	Open cut Method
41	CS-041	Minor Drain	5.350	TP133-TP134	40.975	SGPL-CRS-NAL-10	Open cut Method
42	CS-042	Minor Drain	7.000	TP133-TP134	41.265	SGPL-CRS-NAL-11	Open cut Method
43	CS-043	Minor Drain	4.080	TP133-TP134	41.322	SGPL-CRS-NAL-12	Open cut Method
44	CS-044	Minor Drain	4.430	TP133-TP134	41.412	SGPL-CRS-NAL-13	Open cut Method
45	CS-045	Minor Drain	5.110	TP134-TP135	41.556	SGPL-CRS-NAL-14	Open cut Method
46	CS-046	Minor Drain	5.380	TP134-TP135	41.827	SGPL-CRS-NAL-15	Open cut Method
47	CS-047	Water Logged in Agriculture Fields	26.000	TP134-TP135	41.896		Open cut Method
48	CS-048	Water Logged in Agriculture Fields	27.000	TP134-TP135	41.935		Open cut Method
49	CS-049	Nala	25.780	TP135-TP136	42.386	SGPL-CRS-NAL-16	Open cut Method

50	CS-050	Nala	21.930	TP135-TP136	42.517	SGPL-CRS-NAL-17	Open cut Method
51	CS-051	Minor Drain	4.540	TP135-TP136	42.616	SGPL-CRS-NAL-18	Open cut Method
52	CS-052	Nala	77.480	TP135-TP136	42.748	SGPL-CRS-NAL-19	Open cut Method
53	CS-053	Major Road	12.410	TP135-TP136	42.916	SGPL-CRS-RD-30	Open cut Method
54	CS-054	Nala	20.460	TP135-TP136	43.201	SGPL-CRS-NAL-20	Open cut Method
55	CS-055	Minor Road	4.000	TP135-TP136	43.475	SGPL-CRS-RD-31	Open cut Method
56	CS-056	Minor Road	5.000	TP135-TP136	43.687	SGPL-CRS-RD-32	Open cut Method
57	CS-057	Minor Road	5.270	TP136-TP137	43.819	SGPL-CRS-RD-33	Open cut Method
58	CS-058	Major Road	15.980	TP136-TP137	43.934	SGPL-CRS-RD-34	Open cut Method
59	CS-059	Minor Road	5.000	TP136-TP137	44.101	SGPL-CRS-RD-35	Open cut Method
60	CS-060	Minor Nala	10.000	TP136-TP137	44.179	SGPL-CRS-NAL-21	Open cut Method
61	CS-061	Minor Road	12.220	TP136-TP137	44.305	SGPL-CRS-RD-36	Open cut Method
62	CS-062	Nala	28.780	TP136-TP137	44.518	SGPL-CRS-NAL-22	Open cut Method
63	CS-063	Minor Road	10.640	TP136-TP137	44.669	SGPL-CRS-RD-37	Open cut Method
64	CS-064	Minor Road	4.000	TP136-TP137	44.983	SGPL-CRS-RD-38	Open cut Method
65	CS-065	Water Logged in Agriculture Fields	29.270	TP136-TP137	45.029		Open cut Method
66	CS-066	Minor Road	5.898	TP137-TP138	45.360	SGPL-CRS-RD-39	Open cut Method
67	CS-067	Minor Road	7.642	TP137-TP138	45.402	SGPL-CRS-RD-40	Open cut Method
68	CS-068	Minor Road	8.820	TP137-TP138	45.723	SGPL-CRS-RD-41	Open cut Method
69	CS-069	BT Road	10.430	TP137-TP138	45.773	SGPL-CRS-RD-42	Open cut Method
70	CS-070	Minor Road	4.060	TP137-TP138	45.905	SGPL-CRS-RD-43	Open cut Method
71	CS-071	Minor Road	10.600	TP138-TP139	46.094	SGPL-CRS-RD-44	Open cut Method
72	CS-072	Major Road	14.620	TP139-TP140	46.292	SGPL-CRS-RD-45	Open cut Method
73	CS-073	Minor Road	4.450	TP139-TP140	46.364	SGPL-CRS-RD-46	Open cut Method
74	CS-074	Drain	16.700	TP139-TP140	46.610	SGPL-CRS-NAL-23	Open cut Method
75	CS-075	Minor Road	4.090	TP140-TP141	46.850	SGPL-CRS-RD-47	Open cut Method
76	CS-076	Minor Road	5.271	TP141-TP142	47.316	SGPL-CRS-RD-48	Open cut Method
77	CS-077	Minor Road	6.270	TP142-TP143	47.639	SGPL-CRS-RD-49	Open cut Method
78	CS-078	Minor Road	5.000	TP143-TP144	47.765	SGPL-CRS-RD-50	Open cut Method
79	CS-079	Minor Drain	4.000	TP144-TP145	47.812	SGPL-CRS-NAL-24	Open cut Method
80	CS-080	Minor Road	10.530	TP144-TP145	47.879	SGPL-CRS-RD-51	Open cut Method
81	CS-081	Drain	16.220	TP144-TP145	47.929	SGPL-CRS-NAL-25	Open cut Method
82	CS-082	Nala	24.130	TP145-TP146	48.167	SGPL-CRS-NAL-26	Open cut Method
83	CS-083	Minor Road	6.790	TP145-TP146	48.267	SGPL-CRS-RD-52	Open cut Method
84	CS-084	Minor Drain	4.320	TP147-TP148	48.575	SGPL-CRS-NAL-27	Open cut Method
85	CS-085	Nala	23.000	TP148-TP149	48.725	SGPL-CRS-NAL-28	Open cut Method
86	CS-086	Railway	30.00	TP150-TP151	48.878	SILIGURI-CRS-RLY-01	HDD Method
87	CS-087	Minor Road	4.000	TP150-TP151	48.917	SGPL-CRS-RD-53	Open cut Method
88	CS-088	Minor Drain	5.660	TP150-TP151	48.943	SGPL-CRS-NAL-29	Open cut Method
89	CS-089	Minor Drain	2.680	TP151-TP152	49.143	SGPL-CRS-NAL-30	Open cut Method
90	CS-090	Minor Drain	4.160	TP151-TP152	49.182	SGPL-CRS-NAL-31	Open cut Method
91	CS-091	Minor Drain	5.810	TP152-TP153	49.215	SGPL-CRS-NAL-32	Open cut Method
92	CS-092	Minor Road	8.100	TP152-TP153	49.404	SGPL-CRS-RD-54	Open cut Method
93	CS-093	HT Line (66KV)		TP153-IP153/1	49.494		
94	CS-094	Minor Road	2.710	TP153-IP153/1	49.508	SGPL-CRS-RD-55	Open cut Method
95	CS-095	Nala	16.510	IP153/1-IP153/2	49.759	SGPL-CRS-NAL-33	Open cut Method
96	CS-096	Nala	14.710	IP153/1-IP153/2	49.796	SGPL-CRS-NAL-34	Open cut Method
97	CS-097	HT Line (66KV)		IP153/1-IP153/2	49.853		
98	CS-098	Nala	19.660	IP153/1-IP153/2	49.866	SGPL-CRS-NAL-35	Open cut Method
99	CS-099	Nala	27.460	IP153/2-IP153/3	50.021	SGPL-CRS-NAL-36	Open cut Method
100	CS-100	OIL PIPE LINE	16.670	IP153/2-IP153/3	50.055		Open cut Method
101	CS-101	Nala	52.370	IP153/2-IP153/3	50.097	SGPL-CRS-NAL-37	Open cut Method
102	CS-102	Minor Nala	4.770	IP153/3-IP153/4	50.169	SGPL-CRS-NAL-38	Open cut Method
103	CS-103	HT Line (66KV)		IP153/3-IP153/4	50.309		
104	CS-104	BT Road	3.810	IP153/4-IP153/5	50.395	SGPL-CRS-RD-56	Open cut Method
105	CS-105	HT Line (11KV)		TP154-IP154/1	50.545		
106	CS-106	Minor Nala	4.460	TP154-IP154/1	50.551	SGPL-CRS-NAL-39	Open cut Method

107	CS-107	NH	9.63	IP154/1-IP154/2	50.563	SGPL-CRS-NH-01	HDD Method
108	CS-108	HT Line (11KV)		IP154/2-TP155	50.574		
109	CS-109	Minor Nala	3.400	IP154/2-TP155	50.575	SGPL-CRS-NAL-40	Open cut Method
110	CS-110	Nala	33.200	TP155-IP155/1	50.755	SGPL-CRS-NAL-41	Open cut Method
111	CS-111	Minor Nala	4.210	TP155-IP155/1	50.865	SGPL-CRS-NAL-42	Open cut Method
112	CS-112	HT Line (11KV)		TP155-IP155/1	50.911		
113	CS-113	BT Road	3.910	IP155/1-IP155/2	50.917	SGPL-CRS-RD-57	Open cut Method
114	CS-114	Minor Road	4.770	IP155/2-IP155/3	50.928	SGPL-CRS-RD-58	Open cut Method
115	CS-115	Nala	114.760	IP155/3-IP155/4	51.233	SGPL-CRS-NAL-43	Open cut Method
116	CS-116	Minor Road	3.220	IP155/4-IP155/5	51.381	SGPL-CRS-RD-59	Open cut Method
117	CS-117	Nala	21.690	IP155/4-IP155/5	51.491	SGPL-CRS-NAL-44	Open cut Method
118	CS-118	Manabari /Chel River	366.96	IP156/2-IP156/3	52.445	SGPL-CRS-RIV-02	HDD Method
119	CS-119	HT Line (11KV)		IP156/3-IP156/4	52.698		
120	CS-120	CHANNEL	3.210	IP156/3-IP156/4	52.703	SGPL-CRS-CAN-02	Open cut Method
121	CS-121	HT Line (11KV)		IP156/3-IP156/4	52.711		
122	CS-122	BT Road	5.500	IP156/5-IP156/6	53.037	SGPL-CRS-RD-60	Open cut Method
123	CS-123	CHANNEL	4.520	IP157/1-IP157/2	53.521	SGPL-CRS-CAN-03	Open cut Method
124	CS-124	Minor Road	5.620	IP157/2-IP157/3	53.671	SGPL-CRS-RD-61	Open cut Method
125	CS-125	Minor Nala	8.930	IP157/3-IP157/4	53.862	SGPL-CRS-NAL-45	Open cut Method
126	CS-126	Minor Nala	7.710	TP158-IP158/1	54.444	SGPL-CRS-NAL-46	Open cut Method
127	CS-127	Ghees River	1172.02	IP158/2-IP158/5	55.269	SGPL-CRS-RIV-03	HDD Method
128	CS-128	Minor Road	2.960	IP158/6-IP158/7	56.207	SGPL-CRS-RD-62	Open cut Method
129	CS-129	HT Line (66KV)		TP159-IP159/1	56.939		
130	CS-130	NH-717A	11.23	TP159-TP160	56.959	SGPL-CRS-NH-02	HDD Method
131	CS-131	Nala	27.92	TP162-TP163	57.325	SGPL-CRS-NAL-47	Open cut Method
132	CS-132	STREAM	52.59	TP189-TP190	59.515	SGPL-CRS-CAN-04	Open cut Method
139	CS-139	TRANSMISSION LINE		TP215-TP216	60.206		
133	CS-133	NH-717A	10.63	TP229-TP230	60.510	SGPL-CRS-NH-03	HDD Method
134	CS-134	NH-717A	11.77	TP230-TP231	60.538	SGPL-CRS-NH-04	HDD Method
135	CS-135	NH-717A	10.24	TP232-TP233	60.588	SGPL-CRS-NH-05	HDD Method
143	CS-143	TRANSMISSION LINE		TP257-TP258	61.027		
144	CS-144	TRANSMISSION LINE		TP257-TP259	61.032		
145	CS-145	TRANSMISSION LINE		TP262-TP263	61.126		
146	CS-146	HT Line(220KV)		TP262-TP264	61.130		
136	CS-136	NH-717A	12.17	TP268-TP269	61.204	SGPL-CRS-NH-06	HDD Method
148	CS-148	HT Line(220KV)		TP270-TP271	61.222		
149	CS-149	TRANSMISSION LINE		TP298-TP299	61.716		
150	CS-150	TRANSMISSION LINE		TP304-TP305	61.856		
151	CS-151	TRANSMISSION LINE		TP312-TP313	61.936		
137	CS-137	NH-717A	28.67	TP320-TP321	62.050	SGPL-CRS-NH-07	HDD Method
138	CS-138	NH-717A	12.78	TP343-TP344	62.383	SGPL-CRS-NH-08	HDD Method
139	CS-139	NH-717A	12.75	TP355-TP356	62.496	SGPL-CRS-NH-09	HDD Method
140	CS-140	NH-717A	12.69	TP357-TP358	62.581	SGPL-CRS-NH-10	HDD Method
156	CS-156	TRANSMISSION LINE		TP384-TP385	63.093		
157	CS-157	TRANSMISSION LINE		TP412-TP413	63.608		
158	CS-158	TRANSMISSION LINE		TP412-TP413	63.611		
159	CS-159	TRANSMISSION LINE		TP630-TP631	67.901		
160	CS-160	HT Line(220KV)		TP649-TP650	68.079		
161	CS-161	HT Line(220KV)		TP696-TP697	68.711		
162	CS-162	HT Line(220KV)		TP712-TP713	68.894		
163	CS-163	HT Line(220KV)		TP722-TP723	68.980		
141	CS-141	NH-717A	11.86	TP757-TP758	69.415	SGPL-CRS-NH-11	HDD Method
165	CS-165	MINOR ROAD	3.67	TP773-TP774	69.666		Open cut Method
166	CS-166	HT Line(220KV)		TP787-TP788	69.935		
142	CS-142	NH-717A	11.19	TP862-TP863	70.866	SGPL-CRS-NH-12	HDD Method
168	CS-168	MINOR ROAD	4.01	TP897-TP898	71.372		Open cut Method
143	CS-143	NH-717A	13.50	TP914-TP915	71.622	SGPL-CRS-NH-13	HDD Method
144	CS-144	NH-717A	11.09	TP930-TP931	71.832	SGPL-CRS-NH-14	HDD Method

171	CS-171	MINOR ROAD	15.30	TP931-TP932	71.842		Open cut Method
172	CS-172	HT Line(220KV)		TP950-TP951	72.152		
145	CS-145	NH-717A	11.27	TP998-TP999	72.699	SGPL-CRS-NH-15	HDD Method
146	CS-146	NH-717A	10.63	TP1034-TP1035	73.087	SGPL-CRS-NH-16	HDD Method
174	CS-174	HT Line(220KV)		TP1020-TP1021	72.961		
147	CS-147	NH-717A	11.98	TP1049-TP1050	73.306	SGPL-CRS-NH-17	HDD Method
148	CS-148	NH-717A	10.63	TP1116-TP1117	74.257	SGPL-CRS-NH-18	HDD Method
149	CS-149	NH-717A	12.05	TP1135-TP1136	74.483	SGPL-CRS-NH-19	HDD Method
150	CS-150	NH-717A	11.90	TP1177-TP1178	75.132	SGPL-CRS-NH-20	HDD Method
180	CS-180	MINOR ROAD	3.16	TP1208-TP1209	75.474		Open cut Method
181	CS-181	HT Line(220KV)		TP1232-TP1233	75.873		
182	CS-182	HT Line(220KV)		TP1237-TP1238	75.922		
183	CS-183	HT Line(220KV)		TP1247-TP1248	76.061		
184	CS-184	HT Line(220KV)		TP1248-TP1249	76.125		
185	CS-185	MINOR ROAD	5.31	TP1248-TP1249	76.130		Open cut Method
186	CS-186	HT Line(220KV)		TP1258-TP1259	76.238		
151	CS-151	NH-717A	11.46	TP1258-TP1259	76.243	SGPL-CRS-NH-21	HDD Method
188	CS-188	HT Line(220KV)		TP1263-TP1264	76.299		
189	CS-189	HT Line(220KV)		TP1269-TP1270	76.371		
190	CS-190	TRANSMISSION LINE		TP1277-TP1278	76.484		
152	CS-152	NH-717A	11.00	TP1330-TP1331	77.464	SGPL-CRS-NH-22	HDD Method
153	CS-153	NH-717A	11.34	TP1384-TP1385	78.235	SGPL-CRS-NH-23	HDD Method
154	CS-154	NH-717A	10.53	TP1401-TP1402	78.481	SGPL-CRS-NH-24	HDD Method
155	CS-155	NH-717A	9.16	TP1599-TP1600	81.930	SGPL-CRS-NH-25	HDD Method
156	CS-156	NH-717A	9.30	TP1637-TP1638	82.339	SGPL-CRS-NH-26	HDD Method
157	CS-157	NH-717A	9.24	TP1723-TP1724	83.475	SGPL-CRS-NH-27	HDD Method
158	CS-158	NH-717A	9.69	TP1779-TP1780	84.278	SGPL-CRS-NH-28	HDD Method
159	CS-159	NH-717A	9.88	TP1884-TP1885	85.259	SGPL-CRS-NH-29	HDD Method
160	CS-160	NH-717A	9.70	TP1913-TP1914	85.542	SGPL-CRS-NH-30	HDD Method
161	CS-161	NH-717A	9.60	TP1946-TP1947	85.833	SGPL-CRS-NH-31	HDD Method
162	CS-162	NH-717A	9.00	TP1979-TP1980	86.138	SGPL-CRS-NH-32	HDD Method
163	CS-163	NH-717A	10.00	TP2048-TP2049	86.939	SGPL-CRS-NH-33	HDD Method
164	CS-164	NH-717A	10.00	TP2139-TP2140	87.997	SGPL-CRS-NH-34	HDD Method
165	CS-165	NH-717A	10.00	TP2175-TP2176	88.324	SGPL-CRS-NH-35	HDD Method
166	CS-166	NH-717A	9.00	TP2196-TP2197	88.531	SGPL-CRS-NH-36	HDD Method
167	CS-167	NH-717A	10.00	TP2271-TP2272	89.233	SGPL-CRS-NH-37	HDD Method
168	CS-168	NH-717A	9.00	TP2327-TP2328	89.697	SGPL-CRS-NH-38	HDD Method
169	CS-169	NH-717A	10.00	TP2538-TP2539	92.240	SGPL-CRS-NH-39	HDD Method
170	CS-170	NH-717A	10.00	TP2555-TP2556	92.545	SGPL-CRS-NH-40	HDD Method
171	CS-171	NH-717A	11.00	TP2689-TP2690	94.777	SGPL-CRS-NH-41	HDD Method
172	CS-172	NH-717A	9.00	TP2731-TP2732	95.580	SGPL-CRS-NH-42	HDD Method
173	CS-173	NH-717A	10.68	TP2778-TP2779	96.216	SGPL-CRS-NH-43	HDD Method
174	CS-174	NH-717A	11.00	TP2793-TP2794	96.423	SGPL-CRS-NH-44	HDD Method
175	CS-175	NH-717A	12.00	TP2834-TP2835	96.854	SGPL-CRS-NH-45	HDD Method
176	CS-176	NH-717A	11.00	TP2840-TP2841	96.950	SGPL-CRS-NH-46	HDD Method
177	CS-177	NH-717A	10.54	TP3063-TP3064	100.317	SGPL-CRS-NH-47	HDD Method
178	CS-178	NH-717A	10.37	TP3102-TP3103	100.732	SGPL-CRS-NH-48	HDD Method
179	CS-179	NH-717A	10.05	TP3115-TP3116	100.867	SGPL-CRS-NH-49	HDD Method
180	CS-180	NH-717A	10.45	TP3143-TP3144	101.230	SGPL-CRS-NH-50	HDD Method
181	CS-181	NH-717A	8.97	TP3242-TP3243	102.546	SGPL-CRS-NH-51	HDD Method
182	CS-182	NH-717A	10.04	TP3279-TP3280	103.088	SGPL-CRS-NH-52	HDD Method
183	CS-183	NH-717A	10.00	TP3419-TP3420	105.165	SGPL-CRS-NH-53	HDD Method
184	CS-184	NH-717A	10.87	TP3435-TP3436	105.361	SGPL-CRS-NH-54	HDD Method
185	CS-185	NH-717A	10.00	TP3460-TP3461	105.702	SGPL-CRS-NH-55	HDD Method
186	CS-186	NH-717A	10.00	TP3478-TP3479	105.936	SGPL-CRS-NH-56	HDD Method
187	CS-187	NH-717A	10.00	TP3499-TP3500	106.213	SGPL-CRS-NH-57	HDD Method
188	CS-188	NH-717A	10.00	TP3511-TP3512	106.408	SGPL-CRS-NH-58	HDD Method
189	CS-189	NH-717A	10.87	TP3530-TP3531	106.724	SGPL-CRS-NH-59	HDD Method

190	CS-190	NH-717A	10.00	TP3545-TP3546	106.941	SGPL-CRS-NH-60	HDD Method
191	CS-191	NH-717A	11.00	TP3595-TP3596	107.791	SGPL-CRS-NH-61	HDD Method
192	CS-192	NH-717A	11.00	TP3609-TP3610	108.074	SGPL-CRS-NH-62	HDD Method
193	CS-193	NH-717A	11.00	TP3998-TP3999	113.464	SGPL-CRS-NH-63	HDD Method
194	CS-194	NH-717A	11.87	TP4012-TP4013	113.698	SGPL-CRS-NH-64	HDD Method
195	CS-195	NH-717A	8.39	TP4098 -TP4099	117.993	SGPL-CRS-NH-65	HDD Method
196	CS-196	NH-717A	6.19	TP4162-TP4163	118.279	SGPL-CRS-NH-66	HDD Method
197	CS-197	NH-717A	6.56	TP4170-TP4171	120.028	SGPL-CRS-NH-67	HDD Method
198	CS-198	NH-717A	6.86	TP4217-TP4218	120.220	SGPL-CRS-NH-68	HDD Method
199	CS-199	NH-717A	6.29	TP4222-TP4223	120.435	SGPL-CRS-NH-69	HDD Method
200	CS-200	NH-717A	5.33	TP4228-TP4229	120.720	SGPL-CRS-NH-70	HDD Method
201	CS-201	NH-717A	4.49	TP4239-TP4240	122.406	SGPL-CRS-NH-71	HDD Method
202	CS-202	NH-717A	6.33	TP4464-TP4465	130.669	SGPL-CRS-NH-72	HDD Method
203	CS-203	NH-717A	5.00	TP4623-TP4624	132.236	SGPL-CRS-NH-73	HDD Method
204	CS-204	NH-717A	5.00	TP4638-TP4639	132.377	SGPL-CRS-NH-74	HDD Method
205	CS-205	NH-717A	11.00	TP4721-TP4722	134.393	SGPL-CRS-NH-75	HDD Method
206	CS-206	NH-717A	11.00	TP4739-TP4740	134.812	SGPL-CRS-NH-76	HDD Method
207	CS-207	NH-717A	11.00	TP4759-TP4760	135.272	SGPL-CRS-NH-77	HDD Method
208	CS-208	NH-717A	11.90	TP4782-TP4783	135.738	SGPL-CRS-NH-78	HDD Method
209	CS-209	NH-717A	11.00	TP4811-TP4812	136.173	SGPL-CRS-NH-79	HDD Method
210	CS-210	NH-717A	11.00	TP4863-TP4864	137.255	SGPL-CRS-NH-80	HDD Method
211	CS-211	NH-717A	11.90	TP4957-TP4958	140.045	SGPL-CRS-NH-81	HDD Method
212	CS-212	NH-717A	12.00	TP4976-TP4977	140.279	SGPL-CRS-NH-82	HDD Method
213	CS-213	NH-717A	12.00	TP4991-TP4992	140.512	SGPL-CRS-NH-83	HDD Method
214	CS-214	NH-717A	12.00	TP5007-TP5008	140.750	SGPL-CRS-NH-84	HDD Method
215	CS-215	NH-717A	12.00	TP5021-TP5022	140.937	SGPL-CRS-NH-85	HDD Method
216	CS-216	NH-717A	12.00	TP5058-TP5059	141.431	SGPL-CRS-NH-86	HDD Method
217	CS-217	NH-717A	12.00	TP5091-TP5092	141.960	SGPL-CRS-NH-87	HDD Method
218	CS-218	NH-717A	11.00	TP5105-TP5106	142.147	SGPL-CRS-NH-88	HDD Method
219	CS-219	NH-717A	11.00	TP5186-TP5187	143.874	SGPL-CRS-NH-89	HDD Method
220	CS-220	NH-717A	11.00	TP5221-TP5222	144.604	SGPL-CRS-NH-90	HDD Method
221	CS-221	NH-717A	11.00	TP5252-TP5253	145.096	SGPL-CRS-NH-91	HDD Method
222	CS-222	NH-717A	11.00	TP5410-TP5411	147.927	SGPL-CRS-NH-92	HDD Method
223	CS-223	NH-717A	11.02	TP5473-TP5474	149.269	SGPL-CRS-NH-93	HDD Method
224	CS-224	NH-717A	11.00	TP5489-TP5490	149.511	SGPL-CRS-NH-94	HDD Method
225	CS-225	Rishi Khola River	58.60	TP5520-TP5521	150.281	SGPL-CRS-RIV-04	HDD Method
226	CS-226	NH-717A	5.65	TP5523-TP5524	150.340	SGPL-CRS-NH-95	HDD Method
227	CS-227	NH-717A	5.23	TP5569-TP5570	152.292	SGPL-CRS-NH-96	HDD Method
228	CS-228	NH-717A	6.30	TP5606-TP5607	153.856	SGPL-CRS-NH-97	HDD Method
229	CS-229	NH-717B	17.67	TP5675-TP5676	157.048	SGPL-CRS-NH-98	HDD Method
230	CS-230	NH-717B	17.15	TP5686-TP5687	157.340	SGPL-CRS-NH-99	HDD Method
231	CS-231	NH-717B	16.53	TP5710-TP5711	158.053	SGPL-CRS-NH-100	HDD Method
232	CS-232	NH-717B	16.99	TP5729-TP5730	158.676	SGPL-CRS-NH-101	HDD Method
233	CS-233	NH-717B	17.74	TP5750-TP5751	159.404	SGPL-CRS-NH-102	HDD Method
234	CS-234	NH-717B	18.28	TP5776-TP5777	160.311	SGPL-CRS-NH-103	HDD Method
235	CS-235	NH-717B	17.59	TP5794-TP5795	160.968	SGPL-CRS-NH-104	HDD Method
236	CS-236	NH-717B	16.25	TP5805-TP5806	161.549	SGPL-CRS-NH-105	HDD Method
237	CS-237	NH-717B	16.49	TP5815-TP5816	161.887	SGPL-CRS-NH-106	HDD Method
238	CS-238	Rangpo Chu River	120.64	TP5843-TP5844	163.762	SGPL-CRS-RIV-05	HDD Method
239	CS-239	NH-717B	15.94	TP5862-TP5863	164.294	SGPL-CRS-NH-107	HDD Method
240	CS-240	NH-717B	17.21	TP5873-TP5874	164.706	SGPL-CRS-NH-108	HDD Method
241	CS-241	NH-717B	16.72	TP5887-TP5888	165.148	SGPL-CRS-NH-109	HDD Method
242	CS-242	NH-717B	17.03	TP5908-TP5909	165.935	SGPL-CRS-NH-110	HDD Method
243	CS-243	NH-717B	16.59	TP5943-TP5944	167.364	SGPL-CRS-NH-111	HDD Method
244	CS-244	NH-717B	16.09	TP5967-TP5968	168.269	SGPL-CRS-NH-112	HDD Method
245	CS-245	NH-717B	16.45	TP5999-TP6000	169.878	SGPL-CRS-NH-113	HDD Method
246	CS-246	NH-717B	16.34	TP6010-TP6011	170.235	SGPL-CRS-NH-114	HDD Method
247	CS-247	NH-717B	17.29	TP6018-TP6019	170.400	SGPL-CRS-NH-115	HDD Method

248	CS-248	NH-717B	17.12	TP6025-TP6026	170.576	SGPL-CRS-NH-116	HDD Method
249	CS-249	NH-717B	16.75	TP6034-TP6035	170.761	SGPL-CRS-NH-117	HDD Method
250	CS-250	NH-717B	16.77	TP6057-TP6058	171.848	SGPL-CRS-NH-118	HDD Method
251	CS-251	NH-717B	16.88	TP6086-TP6087	172.861	SGPL-CRS-NH-119	HDD Method
252	CS-252	NH-717B	16.41	TP6120-TP6121	174.021	SGPL-CRS-NH-120	HDD Method
253	CS-253	NH-717B	16.62	TP6171-TP6172	175.880	SGPL-CRS-NH-121	HDD Method
254	CS-254	NH-717B	16.56	TP6181-TP6182	176.119	SGPL-CRS-NH-122	HDD Method
255	CS-255	NH-717B	17.06	TP6202-TP6203	176.768	SGPL-CRS-NH-123	HDD Method
256	CS-256	NH-717B	16.51	TP6215-TP6216	177.268	SGPL-CRS-NH-124	HDD Method
257	CS-257	NH-717B	16.70	TP6280-TP6281	179.526	SGPL-CRS-NH-125	HDD Method
258	CS-258	NH-717B	16.35	TP6311-TP6312	180.529	SGPL-CRS-NH-126	HDD Method
259	CS-259	NH-717B	16.54	TP6357-TP6358	182.070	SGPL-CRS-NH-127	HDD Method
260	CS-260	NH-717B	16.39	TP6368-TP6369	182.257	SGPL-CRS-NH-128	HDD Method
261	CS-261	NH-717B	4.21	TP-6398-TP-6399	183.291	SGPL-CRS-NH-129	HDD Method
262	CS-262	NH-717B	2.79	TP-6439-TP-6440	184.819	SGPL-CRS-NH-130	HDD Method
263	CS-263	NH-717B	5.90	TP-6490-TP-6491	186.771	SGPL-CRS-NH-131	HDD Method
264	CS-264	NH-717B	2.35	TP-6528-TP-6529	188.398	SGPL-CRS-NH-132	HDD Method
265	CS-265	NH-717B	2.68	TP-6538-TP-6539	188.692	SGPL-CRS-NH-133	HDD Method
266	CS-266	NH-717B	8.80	TP-6561-TP-6562	189.678	SGPL-CRS-NH-134	HDD Method
267	CS-267	NH-717B	5.57	TP-6571-TP-6572	190.090	SGPL-CRS-NH-135	HDD Method
268	CS-268	NH-717B	7.51	TP-6576-TP-6577	190.366	SGPL-CRS-NH-136	HDD Method
269	CS-269	NH-717B	3.17	TP-6580-TP-6581	190.447	SGPL-CRS-NH-137	HDD Method
270	CS-270	NH-717B	4.15	TP-6584-TP-6585	190.545	SGPL-CRS-NH-138	HDD Method
271	CS-271	NH-717B	4.86	TP-6587-TP-6588	190.613	SGPL-CRS-NH-139	HDD Method
272	CS-272	NH-717B	5.53	TP-6590-TP-6591	190.683	SGPL-CRS-NH-140	HDD Method
273	CS-273	NH-717B	3.97	TP-6593-TP-6594	190.739	SGPL-CRS-NH-141	HDD Method
274	CS-274	NH-717B	4.20	TP-6616-TP-6617	191.518	SGPL-CRS-NH-142	HDD Method
275	CS-275	NH-717B	3.32	TP-6620-TP-6621	191.619	SGPL-CRS-NH-143	HDD Method
276	CS-276	NH-717B	5.03	TP-6679-TP-6680	193.836	SGPL-CRS-NH-144	HDD Method
277	CS-277	NH-717B	4.40	TP-6687-TP-6688	194.131	SGPL-CRS-NH-145	HDD Method