CHAPTER IV

HYDROGEOLOGY AND GEOPHYSICAL STUDIES
OF THE STUDY AREA
CHAPTER-IV

HYDROGEOLOGY AND GEOPHYSICAL STUDIES OF THE STUDY AREA

4.1 INTRODUCTION

The groundwater in a hard rock terrain and that too highly metamorphosed can move only along structural discontinuities like rock cleavage, partitions, joints, faults, unconformities etc.

Geophysical techniques, especially electrical resistivity method give indirect indications of groundwater so that underground hydrological data can be inferred from surface data.

Electrical resistivity using Schlumberger configuration techniques have been used in the present study by the author. These methods are widely used for both detailed survey and regional studies because of their greatest resolving power, wide range of field applicability and comparatively low cost.

4.2 HYDROGEOLOGY

The Salem District is located in the interior part of Tamil Nadu State marked by a number of isolated hills, which form part of eastern ghats. The number of borewells, dugwells and openwells are situated nearly about 165 in a sq. km. The density of population of this district is more than one thousand per sq. km. The chief source of groundwater is being rainwater. After the fall of rain on the land involves the process of surface run-off, infiltration, soil moisture recharge and percolation, evapotranspiration and evaporation from the surface water. Salem district is mostly consisting of hard rock, crystalline rocks with sub-tropical climate.
<table>
<thead>
<tr>
<th>YEARS</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>8.0</td>
<td>-</td>
<td>30.4</td>
<td>-</td>
<td>25.0</td>
<td>65.3</td>
<td>66.4</td>
<td>130.1</td>
<td>282.1</td>
<td>50.6</td>
<td>119.9</td>
<td>43.4</td>
<td>871.2</td>
</tr>
<tr>
<td>1986</td>
<td>35.2</td>
<td>7.0</td>
<td>6.0</td>
<td>30.9</td>
<td>55.5</td>
<td>85.7</td>
<td>54.3</td>
<td>78.2</td>
<td>171.1</td>
<td>140.4</td>
<td>158.1</td>
<td>5.3</td>
<td>829.7</td>
</tr>
<tr>
<td>1987</td>
<td>1.5</td>
<td>-</td>
<td>74.0</td>
<td>48.3</td>
<td>38.8</td>
<td>175.4</td>
<td>54.0</td>
<td>112.2</td>
<td>150.4</td>
<td>309.2</td>
<td>34.8</td>
<td>42.2</td>
<td>1038.9</td>
</tr>
<tr>
<td>1988</td>
<td>-</td>
<td>-</td>
<td>6.3</td>
<td>160.4</td>
<td>157.8</td>
<td>64.0</td>
<td>153.7</td>
<td>72.3</td>
<td>331.1</td>
<td>64.8</td>
<td>10.2</td>
<td>2.3</td>
<td>1023.1</td>
</tr>
<tr>
<td>1989</td>
<td>-</td>
<td>-</td>
<td>12.5</td>
<td>24.2</td>
<td>82.1</td>
<td>70.5</td>
<td>345.1</td>
<td>22.7</td>
<td>244.6</td>
<td>195.0</td>
<td>56.3</td>
<td>1.2</td>
<td>1024.2</td>
</tr>
<tr>
<td>1990</td>
<td>11.8</td>
<td>17.9</td>
<td>12.5</td>
<td>87.0</td>
<td>75.2</td>
<td>25.1</td>
<td>138.0</td>
<td>162.2</td>
<td>171.8</td>
<td>67.5</td>
<td>64.1</td>
<td>13.4</td>
<td>836.2</td>
</tr>
<tr>
<td>1991</td>
<td>82.4</td>
<td>54.2</td>
<td>0.0</td>
<td>104.6</td>
<td>50.7</td>
<td>144.6</td>
<td>34.1</td>
<td>200.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>651.0</td>
</tr>
<tr>
<td>1992</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>13.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13.0</td>
</tr>
<tr>
<td>1993</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.4</td>
<td>39.7</td>
<td>128.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>282.5</td>
</tr>
</tbody>
</table>
Figure 29: Salem District Rainfall Details in MM

Scale: X-axis: 10 MM = 1 Year
Y-axis: 10 MM = 100 MM

Average for 50 Years (7%)
The raingauge station present in the study area is Valapady. The total rainfall of an area can be measured periodically with the help of raingauge. The rainfall data pertaining to the Salem district is presented in the Table III. The average annual rainfall from 1971-1992 is 874 cms. Fig. 28 shows the rainfall details in the Salem district.

The hydrometeorological station in the study area has low to medium rainfall as interpreted from rainfall and evaporation data.

Water-level measurements has been studied by the author. During the tropical monsoons, the rainfall is maximum and the water level in the well is high. From the observations, it is seen that the recharge of the wells mainly depends on rainfall. (Plate X fig.1) shows the flow of Singipuram Aru (river). A well cutting near Seshanchavadi yielding good groundwater is shown in (Plate X fig. 2).

4.3 GEOPHYSICAL INVESTIGATION

The Geophysical techniques have attained a dominant stage in groundwater exploration. The geophysical structures gives valuable assistance to groundwater exploration problems. The various Geophysical methods are used to solve that problems in hydrogeology. They are:
PLATE X

Fig 1. The flow of Singipuram Aru (River)

Fig 2. A well cutting near Seshanchavadi.
1. Electrical method,
2. Seismic method,
3. Gravity method and

In electrical method, electrical resistivity method is most useful and widely applied for groundwater exploration. In geological formations the resistivity varies widely from $10^{-6}$ ohm-metre for graphite to $10^{12}$ ohm-metre for quartzite. Dry geological formation have a higher resistivity and wet geological formations with moisture increases the conductivity gives low resistivity. So geologists use geoelectrical methods which provide information about the presence and depth of groundwater zone.

In this method, the electrical resistance is calculated by applying an electric current (I) to metal stakes (outer electrodes) driven into the ground and measuring the potential difference (V) between two inner electrodes which are buried or driven into the ground surface. Depth of penetration of electric current changes due to the changing of spacing of terminal electrodes and apparent electrical resistivity (pa) is obtained at different depths by measuring the resistance ‘R’ which is equal to V, it is plotted against the depth.

Resistivity of rocks and minerals adopted by Edge and Laby (1931) and by recent authors are shown in the Table (IV).
**Table IV**

**Resistivities of Rocks and Minerals**

<table>
<thead>
<tr>
<th>Class</th>
<th>Material</th>
<th>Resistivity in ohm metre</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Crystalline rocks&lt;br&gt;Granite and other igneous rocks, gneisses and crystalline schists of normal physical character (Some compact sandstones, quartzites, marbles, etc., are in this class)</td>
<td>200 to 10,000</td>
</tr>
<tr>
<td>B</td>
<td>Consolidated sedimentary rocks:&lt;br&gt;Slates, shales, sandstones, Limestones</td>
<td>100 to 1,000</td>
</tr>
<tr>
<td>C</td>
<td>Unconsolidated sedimentary rocks:&lt;br&gt;Marls, clays, sands, alluvium and surface soils (other than those in arid regions)</td>
<td>0.5 to 100</td>
</tr>
<tr>
<td>D</td>
<td>Oil bearing sands</td>
<td>4 to 800</td>
</tr>
<tr>
<td>E</td>
<td>Sulphides and oxides (Ore minerals):&lt;br&gt; (i) Zinc blende, stibnite, wulfrahte, ilmenite, etc.,&lt;br&gt; (ii) Chalcopyrite, pyrite, pyrrhotite, galena, magnetite, specular haematite, etc.,&lt;br&gt; (iii) Molybdenite, graphite</td>
<td>10 to 10,000</td>
</tr>
<tr>
<td>F</td>
<td>Water:&lt;br&gt;Surface-water (in fresh water lakes, rivers, etc.)&lt;br&gt;Normal potable groundwater&lt;br&gt;Saline water: 1% NaCl *&lt;br&gt;5% NaCl *&lt;br&gt;10% NaCl *&lt;br&gt;Mine water</td>
<td>300 to 500&lt;br&gt;10 to 100&lt;br&gt;0.75&lt;br&gt;0.15&lt;br&gt;0.08&lt;br&gt;0.30</td>
</tr>
</tbody>
</table>

*The resistivity of NaCl solution decreases with increase in temperature.*
Table V represents the applied aspects of electrical methods in
determining groundwater geological problems. In practice, the electrical
prospecting techniques are (1) Electrical profiling (2) Dipole electrical
sounding (3) Spontaneous polarization (4) Radial electrical sounding
(5) Electromagnetic sounding (6) Vertical electrical sounding (7) Radio
interference sounding and (8) Radio wave profiling. The above mentioned
methods are widely used for the prospecting of groundwater. This method
involves, when knowledge of the vertical variation in resistivity of geological
formations required. The object of electrical drilling is to deduce the variation
of resistivity with depth below a given point on the ground, available
geological information in order to infer the depths and resistivity of the layers
or formations present. The procedure is based on the fact that the current
penetrates continuously deeper with the increasing separation of the current
electrodes. The principal of vertical electrical sounding methods or
measurements of resistivity is made around a fixed point by successive steps of
increasing electrode separation.

Several electrode spreads have been used in resistivity methods.
Various arrangements for spacing electrodes have been standardized for field
practice. Wenner and schlumberger arrangements are more common.
### TABLE V

APPLIED ASPECTS OF ELECTRICAL METHOD IN SOLVING GROUNDWATER GEOLOGICAL PROBLEMS

<table>
<thead>
<tr>
<th>GROUND WATER PROBLEMS</th>
<th>PRESCRPECTING TECHNIQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determination of sub-surface structure of basins</td>
<td>VES, DES, FEMS, RIS</td>
</tr>
<tr>
<td>2. Determination of Horizontal and vertical distribution of aquifers, their regional boundaries and correlation.</td>
<td>VES, DES, FEMS, RIS</td>
</tr>
<tr>
<td>3. Tracing salt water, fresh water interface in coastal zones.</td>
<td>VES, FEMS, RIS, IP, EP</td>
</tr>
<tr>
<td>4. Tracing the zones of tectonic deformation affecting ground water movement.</td>
<td>VES, EP, RES, RP</td>
</tr>
<tr>
<td>5. Estimating groundwater salinity</td>
<td>VES, FEMS, RIS, IP</td>
</tr>
<tr>
<td>6. Detailed investigation of areas of artificial recharge.</td>
<td>VES, EP, DES, RP</td>
</tr>
<tr>
<td>7. Tracing groundwater movement.</td>
<td>SP</td>
</tr>
<tr>
<td>8. Mapping valley fills</td>
<td>VES, FEMS</td>
</tr>
<tr>
<td>10. Mapping thick sediments lying over impermeable sub-stratum.</td>
<td>VES, RIS, IPVES</td>
</tr>
<tr>
<td>11. Delineation of groundwater potential zones in hard rocks.</td>
<td>VES, EP, RIS, FEMS, IP</td>
</tr>
<tr>
<td>12. Correlation of geophysical and hydrogeological parameters.</td>
<td>VES, IP, RVES</td>
</tr>
<tr>
<td>13. Depth to the groundwater table</td>
<td>VES, IPVES, RIS, FEMS</td>
</tr>
</tbody>
</table>
1. **EP** - ELECTRICAL PROFILING
2. **DES** - DIPOLE ELECTRICAL SOUNDING
3. **FEMS** - FREQUENCY EM SOUNDING
4. **IP** - INDUCED POLARIZATION
5. **SP** - SPONTANEOUS POLARIZATION
6. **RVES** - RADIAL VERTICAL ELECTRICAL SOUNDING
7. **IPVES** - INDUCED POLARIZATION VERTICAL ELECTRICAL SOUNDING
8. **RIS** - RADIO INTERFERENCE SOUNDING
9. **RP** - RADIO WAVE PROFILING
10. **VES** - VERTICAL ELECTRICAL SOUNDING
FIG. 1

TERRAMETER DIRECTLY GIVES
THE RESISTANCE
R IN OHMS

A, B - CURRENT ELECTRODES
M, N - POTENTIAL ELECTRODES
C - CENTRE OF ELECTRODE
SPREAD

SCHLUMBERGER ELECTRODE ARRANGEMENT: L > > D
4.4 Wenner’s Arrangement

In this system (Fig. 29) four electrodes are equally spaced (a) along a straight line and the apparent resistivity \( \rho_a \) is calculated for a measured resistance \( R = \frac{V}{I} \) is given by

\[
\rho = 2\pi a \frac{V}{I}
\]

In this method, the potential electrodes are placed at second and third points between the current electrodes. Values are plotted on a graph paper. \( \rho_a \) in ohm-metres and \( a \) in metres.

4.5 Schlumberger’s Arrangement

In Schlumberger’s system (fig. 30) the distance between the two inner potential electrodes (‘b’ – distance between M and N) is kept constant, for sometimes and the distance between the current electrodes (‘a’ – distance between A and B) is varied. The apparent resistivity “\( \rho_a \)” for a measured resistance \( R = \frac{V}{I} \) is given by

\[
\rho_a = \pi \left( \frac{a^2}{2} - \frac{b^2}{2} \right) \times R
\]
Values are plotted on a graph paper $\rho_a \text{ Vs } \frac{2}{\rho_a}$, where $\rho_a$ is in ohm-metre and $\frac{AB}{2}$ in metres.

4.6 VERTICAL ELECTRICAL SOUNDING DATA IN VALAPADY

Vertical electrical sounding data were obtained during the field work in the study area using Schlumberger method. The following places in the study area were surveyed by Schlumberger method. They are

1. Kavurukkalpatti
2. Chenrayanpalayam
3. Seshanchavadi
4. Muttampatti
5. Valapady
6. Sarkar Valapady
7. Puduppalaiyam
8. Singipuram
9. Mannarpalaiyam
10. Vilaripalayam
11. Palaniyapuram
12. Ponnarampatti
13. Mudiyanur
14. Veppilaippatti
15. Vellalagundam
4.6.1 INTERPRETATION OF VES DATA (INVERSE SLOPE METHOD)

A simple method suggested by Sankaranarayana and Ramanujachari (1967) called the Inverse Slope method is very successful in hard rock terrain. Fig 31 shows the Vertical Electrical Locations of the study area. The data are presented in the Table VI-1 – VI-15. Fig. 32 – 46 shows the method adopted for the above mentioned 15 places. \( a/pa \) is plotted against ‘\( a \)’ and they are joined by straight lines. The depth to different layers and their resistivities are obtained from the intercepts and inverse slopes of the different straight line respectively.

From the curve, to find out the actual resistivity upto a depth OM, the following equation is used.

\[
\text{Resistivity} = \frac{a}{a/pa} \times \frac{\text{horizontal division}}{\text{vertical division}}
\]

But normally vertical division by horizontal division is the slope of a particular straight line (OA). This implies that the resistivity of the strata upto a depth of OM is equal to the inverse of the slope OA.

4.6.2 INFERENCE FROM THE INVERSE SLOPE METHOD

The depth of various layers have been inferred from the depth sounding data and inverse slope methods (Table VII). The depth sounding place, the depth from the ground level, the resistivity of different lithologies and the inferred lithology is given in the (Table VIII).
FIG. 21  MAP SHOWS VERTICAL ELECTRICAL Sounding LOCATIONS
### TABLE V-1
**SCHLUMBERGER METHOD**

**LOCATION-1**  **STATION: KAVURUKKALPATTI**

<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>( \rho_a ) (ohm-m)</th>
<th>( \frac{AB/2}{\rho_a} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>0.856</td>
<td>40.23</td>
<td>0.497</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>0.450</td>
<td>56.25</td>
<td>0.533</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.318</td>
<td>74.73</td>
<td>0.535</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.246</td>
<td>92.74</td>
<td>0.539</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.201</td>
<td>110.55</td>
<td>0.542</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.170</td>
<td>128.18</td>
<td>0.546</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.150</td>
<td>148.35</td>
<td>0.539</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.127</td>
<td>159.51</td>
<td>0.564</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.117</td>
<td>182.05</td>
<td>0.549</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.110</td>
<td>207.35</td>
<td>0.530</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.101</td>
<td>226.74</td>
<td>0.529</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.094</td>
<td>247.87</td>
<td>0.524</td>
</tr>
</tbody>
</table>
FIG 32 INVERSE SLOPE CURVE (VES, SCHLUMBERGER) STATION: KAVURUKAL PATTI

Scale:
- X axis: 1 cm = 10 m
- Y axis: 1 cm = 1000 m/s
<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>$R$ ohms</th>
<th>$\rho_a$ (ohm-m)</th>
<th>$\frac{AB/2}{\rho_a}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>0.591</td>
<td>27.77</td>
<td>0.720</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>0.355</td>
<td>44.58</td>
<td>0.672</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.273</td>
<td>64.15</td>
<td>0.623</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.217</td>
<td>81.80</td>
<td>0.611</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.185</td>
<td>101.75</td>
<td>0.589</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.159</td>
<td>119.88</td>
<td>0.583</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.137</td>
<td>135.49</td>
<td>0.590</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.121</td>
<td>151.97</td>
<td>0.592</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.107</td>
<td>166.49</td>
<td>0.600</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.097</td>
<td>182.84</td>
<td>0.601</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.091</td>
<td>204.29</td>
<td>0.587</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.081</td>
<td>221.50</td>
<td>0.586</td>
</tr>
</tbody>
</table>
FIG 33 INVERSE SLOPE CURVE (VES, SCHLUMBERGER) STATION, CHENRAYANPALAYAM
<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>( \rho_a ) (ohm·m)</th>
<th>AB/2 ( \rho_a )</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>2.80</td>
<td>131.60</td>
<td>0.151</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>1.39</td>
<td>173.75</td>
<td>0.172</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.985</td>
<td>231.47</td>
<td>0.172</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.755</td>
<td>284.63</td>
<td>0.175</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.637</td>
<td>350.35</td>
<td>0.171</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.546</td>
<td>411.68</td>
<td>0.170</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.498</td>
<td>492.52</td>
<td>0.162</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.458</td>
<td>575.24</td>
<td>0.156</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.420</td>
<td>653.24</td>
<td>0.153</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.371</td>
<td>699.33</td>
<td>0.157</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.355</td>
<td>796.97</td>
<td>0.150</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.334</td>
<td>880.75</td>
<td>0.147</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.285</td>
<td>872.38</td>
<td>0.160</td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>0.252</td>
<td>886.03</td>
<td>0.169</td>
</tr>
</tbody>
</table>
FIG. 34 INVERSE SLOPE CURVE (VES, SCHLUMBERGER) STATION: SESHAN CHAVADI

Scale:
X axis: 1 cm = 10 ft
Y axis: 1 cm = 10 ft

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>pa (ohm-m)</th>
<th>AB/2 pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>1.600</td>
<td>75.20</td>
<td>0.265</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>1.025</td>
<td>128.11</td>
<td>0.234</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.672</td>
<td>157.92</td>
<td>0.253</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.517</td>
<td>194.90</td>
<td>0.256</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.412</td>
<td>226.60</td>
<td>0.264</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.337</td>
<td>254.09</td>
<td>0.275</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.281</td>
<td>277.90</td>
<td>0.287</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.241</td>
<td>302.69</td>
<td>0.297</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.220</td>
<td>308.20</td>
<td>0.304</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.174</td>
<td>327.99</td>
<td>0.335</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.152</td>
<td>341.24</td>
<td>0.351</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.135</td>
<td>355.99</td>
<td>0.365</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.121</td>
<td>370.38</td>
<td>0.377</td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>0.113</td>
<td>397.30</td>
<td>0.377</td>
</tr>
<tr>
<td>160</td>
<td>10</td>
<td>0.108</td>
<td>432.37</td>
<td>0.370</td>
</tr>
<tr>
<td>170</td>
<td>10</td>
<td>0.100</td>
<td>452.16</td>
<td>0.373</td>
</tr>
<tr>
<td>180</td>
<td>10</td>
<td>0.093</td>
<td>471.60</td>
<td>0.381</td>
</tr>
<tr>
<td>190</td>
<td>10</td>
<td>0.086</td>
<td>486.07</td>
<td>0.390</td>
</tr>
<tr>
<td>CURRENT ELECTRODE SPACING AB/2 metre</td>
<td>POTENTIAL ELECTRODE SPACING MN/2 metre</td>
<td>Constant K</td>
<td>R ohms</td>
<td>( \rho_a ) (ohm-m)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------</td>
<td>------------</td>
<td>--------</td>
<td>----------------</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>16</td>
<td>1.37</td>
<td>21.92</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>75</td>
<td>0.437</td>
<td>32.77</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>173</td>
<td>0.226</td>
<td>39.09</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>311</td>
<td>0.222</td>
<td>69.04</td>
</tr>
<tr>
<td>25</td>
<td>10</td>
<td>488</td>
<td>0.218</td>
<td>106.38</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>704</td>
<td>0.714</td>
<td>122.49</td>
</tr>
<tr>
<td>35</td>
<td>10</td>
<td>959</td>
<td>0.418</td>
<td>141.93</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>1254</td>
<td>0.127</td>
<td>159.25</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>1961</td>
<td>0.101</td>
<td>198.06</td>
</tr>
<tr>
<td>55</td>
<td>10</td>
<td>2371</td>
<td>0.086</td>
<td>203.96</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>2822</td>
<td>0.076</td>
<td>214.47</td>
</tr>
<tr>
<td>65</td>
<td>10</td>
<td>3313</td>
<td>0.065</td>
<td>215.34</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>3843</td>
<td>0.057</td>
<td>219.05</td>
</tr>
<tr>
<td>75</td>
<td>10</td>
<td>4412</td>
<td>0.05</td>
<td>220.6</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>5020</td>
<td>0.046</td>
<td>233.43</td>
</tr>
<tr>
<td>85</td>
<td>10</td>
<td>5668</td>
<td>0.044</td>
<td>249.39</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>6355</td>
<td>0.036</td>
<td>231.95</td>
</tr>
<tr>
<td>95</td>
<td>10</td>
<td>7081</td>
<td>0.030</td>
<td>215.97</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>7846</td>
<td>0.029</td>
<td>227.5</td>
</tr>
</tbody>
</table>
FIG 36 INVERSE SLOPE CURVE (VES SCHLUMBERGER) STATION: VALAPADY

Scale

X axis 1 cm = 5 ft.

Y axis 1 cm = 1/100 ft.
### TABLE V-6

**SCHLUMBERGER'S ARRANGEMENT**

**LOCATION - 6**

**STATION - SARKAR VALAPADY**

<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>$\rho_a$ (ohm-m)</th>
<th>$\frac{AB/2}{\rho_a}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>7.96</td>
<td>374.12</td>
<td>0.053</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>4.23</td>
<td>528.75</td>
<td>0.056</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>2.48</td>
<td>582.80</td>
<td>0.068</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>1.63</td>
<td>614.51</td>
<td>0.081</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>1.23</td>
<td>676.50</td>
<td>0.086</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.95</td>
<td>716.30</td>
<td>0.097</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.8</td>
<td>791.20</td>
<td>0.101</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.696</td>
<td>844.17</td>
<td>0.102</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.60</td>
<td>933.60</td>
<td>0.107</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.53</td>
<td>999.05</td>
<td>0.110</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.48</td>
<td>1077.60</td>
<td>0.111</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.446</td>
<td>1176.10</td>
<td>0.110</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.403</td>
<td>1233.58</td>
<td>0.113</td>
</tr>
</tbody>
</table>
### TABLE V-7
SCHLUMBERGER'S ARRANGEMENT
LOCATION - 7  STATION: PUDUPALAYAM

<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>ρa (ohm-m)</th>
<th>AB/2 ρa</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>2.90</td>
<td>136.53</td>
<td>0.146</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>1.75</td>
<td>218.75</td>
<td>0.137</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>1.31</td>
<td>307.85</td>
<td>0.129</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.965</td>
<td>363.80</td>
<td>0.137</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.73</td>
<td>401.50</td>
<td>0.149</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.573</td>
<td>432.04</td>
<td>0.162</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.495</td>
<td>489.55</td>
<td>0.163</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.426</td>
<td>535.05</td>
<td>0.168</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.371</td>
<td>577.27</td>
<td>0.173</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.328</td>
<td>618.28</td>
<td>0.177</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.300</td>
<td>673.50</td>
<td>0.178</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.267</td>
<td>704.07</td>
<td>0.184</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.225</td>
<td>688.72</td>
<td>0.203</td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>0.209</td>
<td>734.84</td>
<td>0.204</td>
</tr>
</tbody>
</table>
FIG 38 INVERSE SLOPE CURVE (VES SCHLUMBERGER) STATION: PUDUPALAYAM

Scale
X-axis: 1 cm = 10 m
Y-axis: 1 cm = 100 km m
<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>Constant K</th>
<th>R ohms</th>
<th>ρa (ohm-m)</th>
<th>AB/2 pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10</td>
<td>9.40</td>
<td>6.44</td>
<td>60.53</td>
<td>0.66</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>25.10</td>
<td>2.34</td>
<td>58.73</td>
<td>0.102</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>47.10</td>
<td>1.67</td>
<td>78.65</td>
<td>0.101</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>75.30</td>
<td>1.38</td>
<td>103.91</td>
<td>0.096</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>110.00</td>
<td>1.10</td>
<td>121.00</td>
<td>0.099</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>150.70</td>
<td>0.95</td>
<td>143.16</td>
<td>0.097</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
<td>198.00</td>
<td>0.815</td>
<td>161.37</td>
<td>0.099</td>
</tr>
<tr>
<td>18</td>
<td>10</td>
<td>251.00</td>
<td>0.729</td>
<td>182.97</td>
<td>0.098</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>311.00</td>
<td>0.653</td>
<td>203.08</td>
<td>0.098</td>
</tr>
<tr>
<td>22</td>
<td>10</td>
<td>376.80</td>
<td>0.576</td>
<td>217.03</td>
<td>0.101</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
<td>449.00</td>
<td>0.519</td>
<td>233.03</td>
<td>0.103</td>
</tr>
<tr>
<td>26</td>
<td>10</td>
<td>527.50</td>
<td>0.47</td>
<td>247.92</td>
<td>0.105</td>
</tr>
<tr>
<td>28</td>
<td>10</td>
<td>612.30</td>
<td>0.411</td>
<td>251.65</td>
<td>0.111</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>703.00</td>
<td>0.371</td>
<td>260.81</td>
<td>0.115</td>
</tr>
<tr>
<td>CURRENT ELECTRODE SPACING AB/2 metre</td>
<td>POTENTIAL ELECTRODE SPACING MN/2 metre</td>
<td>R ohms</td>
<td>ρa (ohm-m)</td>
<td>AB/2 ρa</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------------</td>
<td>--------</td>
<td>------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.577</td>
<td>217.52</td>
<td>0.229</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.465</td>
<td>255.75</td>
<td>0.234</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.399</td>
<td>300.84</td>
<td>0.232</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.317</td>
<td>313.51</td>
<td>0.255</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.237</td>
<td>297.67</td>
<td>0.303</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.199</td>
<td>309.64</td>
<td>0.322</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.164</td>
<td>309.14</td>
<td>0.355</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.147</td>
<td>330.01</td>
<td>0.363</td>
<td></td>
</tr>
</tbody>
</table>
FIG 40 INVERSE SLOPE CURVE (VES. SCHLUMBERGER) STATION: MANNARPALAYAM

Scale

x-axis 1 cm = 10 m
y-axis 1 cm = 100 mm
<table>
<thead>
<tr>
<th>AB/2 metre</th>
<th>MN/2 metre</th>
<th>( R \text{ ohms} )</th>
<th>( \rho \text{ } \text{ohm-m} )</th>
<th>AB/2 ( \rho \text{ pa} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>1.23</td>
<td>57.93</td>
<td>0.345</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>0.835</td>
<td>68.80</td>
<td>0.363</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.665</td>
<td>83.52</td>
<td>0.359</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.516</td>
<td>91.07</td>
<td>0.384</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.426</td>
<td>100.11</td>
<td>0.399</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.383</td>
<td>115.74</td>
<td>0.388</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.345</td>
<td>130.16</td>
<td>0.384</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.301</td>
<td>165.55</td>
<td>0.362</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.266</td>
<td>200.56</td>
<td>0.349</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.238</td>
<td>235.38</td>
<td>0.339</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.22</td>
<td>276.32</td>
<td>0.326</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.2</td>
<td>311.20</td>
<td>0.321</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.187</td>
<td>352.31</td>
<td>0.312</td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>0.17</td>
<td>381.65</td>
<td>0.314</td>
</tr>
<tr>
<td>160</td>
<td>10</td>
<td>0.16</td>
<td>421.92</td>
<td>0.308</td>
</tr>
<tr>
<td>170</td>
<td>10</td>
<td>0.148</td>
<td>453.02</td>
<td>0.309</td>
</tr>
</tbody>
</table>
FIG 41 INVERSE SLOPE CURVE (VES SCHLUMBERGER) STATION: VILARI PALAYAM
<table>
<thead>
<tr>
<th>AB/2 metre</th>
<th>MN/2 metre</th>
<th>R ohms</th>
<th>ρa (ohm-m)</th>
<th>AB/2 ρa</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10</td>
<td>3.43</td>
<td>32.24</td>
<td>0.124</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>1.81</td>
<td>45.43</td>
<td>0.132</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>1.4</td>
<td>65.94</td>
<td>0.121</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>1.13</td>
<td>85.08</td>
<td>0.117</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>0.96</td>
<td>105.60</td>
<td>0.113</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>0.81</td>
<td>122.06</td>
<td>0.114</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
<td>0.687</td>
<td>136.02</td>
<td>0.117</td>
</tr>
<tr>
<td>18</td>
<td>10</td>
<td>0.575</td>
<td>144.32</td>
<td>0.125</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>0.472</td>
<td>146.79</td>
<td>0.136</td>
</tr>
<tr>
<td>22</td>
<td>10</td>
<td>0.433</td>
<td>163.15</td>
<td>0.135</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
<td>0.399</td>
<td>179.15</td>
<td>0.134</td>
</tr>
<tr>
<td>26</td>
<td>10</td>
<td>0.351</td>
<td>185.15</td>
<td>0.140</td>
</tr>
<tr>
<td>28</td>
<td>10</td>
<td>0.321</td>
<td>196.54</td>
<td>0.142</td>
</tr>
</tbody>
</table>
### TABLE V-12

SCHLUMBERGER'S ARRANGEMENT

**LOCATION - 12**  
**STATION - PONNARAMPATTI**

<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING (AB/2 metre)</th>
<th>POTENTIAL ELECTRODE SPACING (MN/2 metre)</th>
<th>R (ohm-m)</th>
<th>Constant K (ohm-m)</th>
<th>( \rho_a ) (ohm-m)</th>
<th>( \frac{AB}{2 \rho_a} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>3.82</td>
<td>23.55</td>
<td>89.96</td>
<td>0.111</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>0.40</td>
<td>117.75</td>
<td>161.00</td>
<td>0.124</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>0.79</td>
<td>274.75</td>
<td>217.05</td>
<td>0.138</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.405</td>
<td>494.55</td>
<td>200.29</td>
<td>0.199</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.415</td>
<td>777.15</td>
<td>327.18</td>
<td>0.152</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.333</td>
<td>1122.55</td>
<td>373.80</td>
<td>0.160</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.251</td>
<td>1530.75</td>
<td>384.21</td>
<td>0.182</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.214</td>
<td>2001.75</td>
<td>428.37</td>
<td>0.186</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.190</td>
<td>2535.55</td>
<td>481.75</td>
<td>0.186</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.169</td>
<td>3132.15</td>
<td>529.30</td>
<td>0.188</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.154</td>
<td>3791.55</td>
<td>583.81</td>
<td>0.188</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.137</td>
<td>4513.75</td>
<td>618.28</td>
<td>0.194</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.132</td>
<td>5298.75</td>
<td>699.33</td>
<td>0.185</td>
</tr>
</tbody>
</table>
FIG 4.3 INVERSE SLOPE CURVE (VES SCHLUMBERGER) STATION: PONNARAMPATTI

scale
x axis 1 cm = 10 m
y axis 1 cm = 10 m

119
TABLE V-13
RESISTIVITY DEPTH PROBE
SCHLUMBERGER METHOD
LOCATION -13 STATION – MUDIYANUR

<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>R ohms</th>
<th>ρa (ohm-m)</th>
<th>AB/2 ρa</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10</td>
<td>5.00</td>
<td>235.50</td>
<td>0.85</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>3.6</td>
<td>296.64</td>
<td>0.84</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>2.76</td>
<td>344.65</td>
<td>0.86</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>2.26</td>
<td>399.11</td>
<td>0.87</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>1.86</td>
<td>438.03</td>
<td>0.91</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>1.55</td>
<td>468.41</td>
<td>0.96</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>1.34</td>
<td>505.18</td>
<td>0.99</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>1.06</td>
<td>583.00</td>
<td>0.103</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.82</td>
<td>618.28</td>
<td>0.113</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.68</td>
<td>672.52</td>
<td>0.118</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.59</td>
<td>741.04</td>
<td>0.121</td>
</tr>
</tbody>
</table>
Figure 24: Inverse slope curves for Sambhur clay. Scale: 1 cm = 10 m/s
<table>
<thead>
<tr>
<th>CURRENT ELECTRODE SPACING AB/2 metre</th>
<th>POTENTIAL ELECTRODE SPACING MN/2 metre</th>
<th>Constant K</th>
<th>R ohms (ohm-m)</th>
<th>ρa (ohm-m)</th>
<th>AB/2 pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>23.55</td>
<td>1.97</td>
<td>46.39</td>
<td>0.215</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>117.15</td>
<td>0.565</td>
<td>66.52</td>
<td>0.300</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>274.75</td>
<td>0.285</td>
<td>78.30</td>
<td>0.383</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>494.55</td>
<td>0.185</td>
<td>91.49</td>
<td>0.437</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>777.15</td>
<td>0.138</td>
<td>107.24</td>
<td>0.466</td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>1122.55</td>
<td>0.112</td>
<td>125.72</td>
<td>0.477</td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>1530.75</td>
<td>0.083</td>
<td>127.05</td>
<td>0.550</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>2001.75</td>
<td>0.065</td>
<td>130.11</td>
<td>0.614</td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>2535.55</td>
<td>0.055</td>
<td>139.45</td>
<td>0.645</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>3132.15</td>
<td>0.047</td>
<td>147.21</td>
<td>0.679</td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>3791.55</td>
<td>0.042</td>
<td>159.24</td>
<td>0.690</td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>4513.75</td>
<td>0.038</td>
<td>171.52</td>
<td>0.699</td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>5298.75</td>
<td>0.034</td>
<td>180.15</td>
<td>0.721</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>6146.55</td>
<td>0.032</td>
<td>196.67</td>
<td>0.711</td>
</tr>
<tr>
<td>CURRENT ELECTRODE SPACING AB/2 metre</td>
<td>POTENTIAL ELECTRODE SPACING MN/2 metre</td>
<td>R ohms</td>
<td>$\rho_a$ (ohm-m)</td>
<td>$\frac{AB}{2\rho_a}$</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------</td>
<td>--------</td>
<td>-----------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>2.03</td>
<td>95.64</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>1.05</td>
<td>131.25</td>
<td>0.228</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>0.71</td>
<td>166.85</td>
<td>0.239</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>0.549</td>
<td>206.97</td>
<td>0.241</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>10</td>
<td>0.416</td>
<td>228.80</td>
<td>0.262</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>10</td>
<td>0.329</td>
<td>248.06</td>
<td>0.282</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>0.274</td>
<td>270.98</td>
<td>0.295</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>10</td>
<td>0.233</td>
<td>292.64</td>
<td>0.307</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>10</td>
<td>0.204</td>
<td>317.42</td>
<td>0.315</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>10</td>
<td>0.175</td>
<td>329.87</td>
<td>0.333</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>10</td>
<td>0.161</td>
<td>361.44</td>
<td>0.332</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>10</td>
<td>0.149</td>
<td>392.91</td>
<td>0.330</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>0.131</td>
<td>400.99</td>
<td>0.349</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>10</td>
<td>0.118</td>
<td>414.88</td>
<td>0.361</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>10</td>
<td>0.108</td>
<td>432.32</td>
<td>0.370</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>10</td>
<td>0.094</td>
<td>424.97</td>
<td>0.400</td>
<td></td>
</tr>
<tr>
<td>S.No</td>
<td>Name of the Village</td>
<td>Soil and Weathered Formation</td>
<td>Jointed Fractured / Sheared Formation</td>
<td>Depth to Bed Rock</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
<td>------------------------------</td>
<td>--------------------------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Kavurukalpatti</td>
<td>0-15</td>
<td>15-90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Chenrayanpalayam</td>
<td>0-10</td>
<td>20-50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Seshanchavadi</td>
<td>0-20</td>
<td>20-70</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Muttampatti</td>
<td>0-20</td>
<td>20-50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Valapady</td>
<td>0-5</td>
<td>5-25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Sarkar Valapady</td>
<td>0-20</td>
<td>20-50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Pudupalayam</td>
<td>0-20</td>
<td>20-40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Singipuram</td>
<td>0-10</td>
<td>10-30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mannarpalayam</td>
<td>0-25</td>
<td>25-80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Vilaripalayam</td>
<td>0-20</td>
<td>20-40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Palaniyapuram</td>
<td>0-5</td>
<td>5-30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Ponnarampatti</td>
<td>0-10</td>
<td>10-50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Mudiyanur</td>
<td>0-20</td>
<td>20-60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Veppilaippatti</td>
<td>0-15</td>
<td>15-60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Vellalagundam</td>
<td>0-20</td>
<td>20-70</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE - VIII
THE THICKNESS AND RESISTIVITIES OF DIFFERENT LAYERS

<table>
<thead>
<tr>
<th>S.No</th>
<th>Depth Sounding Place</th>
<th>Depth</th>
<th>Resistivity</th>
<th>Inferred Lithology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Kavurukalpatti</td>
<td>GL-30</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-50</td>
<td>650-1850</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-80</td>
<td>210-310</td>
<td>Jointed/Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-90</td>
<td>342-782</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-110</td>
<td>425</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-130</td>
<td>695-1750</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>2</td>
<td>Chenrayanpalayam</td>
<td>GL-20</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-40</td>
<td>138</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-60</td>
<td>4</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-90</td>
<td>220</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-100</td>
<td>LI</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-120</td>
<td>135</td>
<td>Gniess</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-130</td>
<td>260</td>
<td>Charnockite</td>
</tr>
<tr>
<td>3</td>
<td>Seshanchavadi</td>
<td>GL-20</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-30</td>
<td>89</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-50</td>
<td>215</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-70</td>
<td>89</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-100</td>
<td>888-3584</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-110</td>
<td>564</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-120</td>
<td>650-1250</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-50</td>
<td>471</td>
<td>Weathered zone</td>
</tr>
<tr>
<td>S.No</td>
<td>Depth Sounding Place</td>
<td>Depth</td>
<td>Resistivity</td>
<td>Inferred Lithology</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>4</td>
<td>Muttampatti</td>
<td>GL-10</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-30</td>
<td>200-1665</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-40</td>
<td>334</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-90</td>
<td>490-1425</td>
<td>Massive Charnockites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-110</td>
<td>LI</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-140</td>
<td>2264</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>140-150</td>
<td>262</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150-160</td>
<td>1048</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160-190</td>
<td>592</td>
<td>Fractured zone</td>
</tr>
<tr>
<td>5</td>
<td>Valapady</td>
<td>GL-5</td>
<td>8-32</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-25</td>
<td>25-58</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25-45</td>
<td>141</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45-50</td>
<td>2826</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-60</td>
<td>364</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-75</td>
<td>638</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75-85</td>
<td>87</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>85-95</td>
<td>LI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>95-100</td>
<td>656-4578</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>6</td>
<td>Sarkar Valapady</td>
<td>GL-20</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-50</td>
<td>186-628</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-70</td>
<td>169</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-80</td>
<td>253-560</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-90</td>
<td>75-246</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-110</td>
<td>LI/2263</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-130</td>
<td>215</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130-140</td>
<td>694</td>
<td>Charnockite</td>
</tr>
<tr>
<td>S.No</td>
<td>Depth Sounding Place</td>
<td>Depth</td>
<td>Resistivity</td>
<td>Inferred Lithology</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>-------</td>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>7</td>
<td>Pudupalayam</td>
<td>GL-10</td>
<td>10</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-40</td>
<td>L1</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-70</td>
<td>123</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-80</td>
<td>415-3025</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-110</td>
<td>320</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-120</td>
<td>845-3700</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-130</td>
<td>383</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130-140</td>
<td>806-4781</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>140-150</td>
<td>404</td>
<td>Fractured zone</td>
</tr>
<tr>
<td>8</td>
<td>Singipuram</td>
<td>G-6</td>
<td>18</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-10</td>
<td>249</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-12</td>
<td>51</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-14</td>
<td>2156</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14-20</td>
<td>146-161</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-22</td>
<td>483-1664</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22-26</td>
<td>154-193</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26-30</td>
<td>1044</td>
<td>Charnockite</td>
</tr>
<tr>
<td>9</td>
<td>Mannarpalayam</td>
<td>GL-15</td>
<td>10-24</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15-50</td>
<td>42</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-60</td>
<td>95</td>
<td>Jointed rock formation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-70</td>
<td>66</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-80</td>
<td>570</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-90</td>
<td>246-381</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-100</td>
<td>686-4064</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-110</td>
<td>482</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-120</td>
<td>1372-3774</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>S.No</td>
<td>Depth Sounding Place</td>
<td>Depth</td>
<td>Resistivity</td>
<td>Inferred Lithology</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>-------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Viralipalayam</td>
<td>GL-20</td>
<td>14</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-25</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25-30</td>
<td>142</td>
<td>Jointed formation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-40</td>
<td>301-1625</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-60</td>
<td>636-969</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-90</td>
<td>830-1778</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-110</td>
<td>350</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-120</td>
<td>965-1150</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-130</td>
<td>236</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130-140</td>
<td>1230-1540</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>11</td>
<td>Palaniyapuram</td>
<td>GL-4</td>
<td>2-10</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-6</td>
<td>25-45</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-10</td>
<td>126-206</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-16</td>
<td>75</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16-20</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-24</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24-28</td>
<td>L/1249</td>
<td>Charnockite</td>
</tr>
<tr>
<td>12</td>
<td>Ponnarampatti</td>
<td>GL-10</td>
<td>6-68</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-20</td>
<td>436</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-30</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-50</td>
<td>336</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-70</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-110</td>
<td>94</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>110-130</td>
<td>636-2256</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>S.No</td>
<td>Depth Sounding Place</td>
<td>Depth</td>
<td>Resistivity</td>
<td>Inferred Lithology</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>-------</td>
<td>-------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>13</td>
<td>Mudiyarur</td>
<td>GL-20</td>
<td>Low</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-35</td>
<td>110-547</td>
<td>Weathered zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35-50</td>
<td>235</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-70</td>
<td>378</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-90</td>
<td>296</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td>14</td>
<td>Veppilaipattai</td>
<td>GL-20</td>
<td>14</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-50</td>
<td>25-55</td>
<td>Jointed/Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-60</td>
<td>523</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-80</td>
<td>56</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-100</td>
<td>LI</td>
<td>Massive Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-120</td>
<td>464</td>
<td>Jointed rock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-130</td>
<td>254</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130-140</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td>15</td>
<td>Vellalagundam</td>
<td>GL-10</td>
<td>3-35</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-30</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-50</td>
<td>13</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-60</td>
<td>LI</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-80</td>
<td>42</td>
<td>Fractured/Jointed zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-100</td>
<td>346</td>
<td>Charnockite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-120</td>
<td>1376-1450</td>
<td>Fractured zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-140</td>
<td>4/180</td>
<td>Massive Charnockite</td>
</tr>
</tbody>
</table>
DISCUSSION

The study area brings out the variation in the thickness of top soil, weathered zone, fractured / jointed zones and bedrock. The top soil ranges in thickness from metre to metre. The actual depths to bedrock can be determined in a hard rock terrain. It helps us to find out the different nature of formations below the surface at different depths. The resistivity of each formation can be found.

To demarcate the potential zones of ground water, thick and relatively low resistivity horizons are considered favourable for development of ground water. Normal potable ground water in the areas of crystalline rocks may have resistivities of the order of 25 - 160 ohm mts. In Igneous and Crystalline rocks, ground water usually can be tapped from weathered zones and these are packets which have lower resistivity values when compared to more compact and fresh rocks. They can be located by resistivities surveys. Water tapped in joints and fissures of the undecomposed rocks may also be detected by relatively low resistivity values.