JWARP> Vol.4 No.10, October 2012

OPEN ACCESS

Geophysical Contribution for the Determination of Aquifer Properties in Memve Ele, South Cameroon

PDF (Size:1944KB) PP. 885-890 DOI: 10.4236/jwarp.2012.410104

Author(s)

Harlin L. E. Nkoungou, Philippe N. Nouck, Dieudonné Bisso, Stéphane Assembe, Eliézer M. Dicoum

ABSTRACT

This article aims to localise aquifer and to estimate hydraulic parameters such as transmissivity and tranverse resistance in the Memve Ele dam site (26.35 km2) in South-Cameroon region, using audiomagnetotelluric (AMT) method. For this purpose, resistivity data are collected at twenty-two measurement stations distributed along two perpendicular profiles in the study area. The sounding curves of phase and impedance are modelled and interpreted. The geological models and geoelectrical sections are also provided. The transverse resistivity and transmissivity field maps are plotted. The audiomagnetotellurics insights have been compared with boreholes. All these results allow us to localise the area which may be suitable to set up monitoring wells.

KEYWORDS

Hydraulic Parameters, Aquifer, Audio-Magnetotelluric Method, Sounding Curves, Memve Ele

Cite this paper

H. Nkoungou, P. Nouck, D. Bisso, S. Assembe and E. Dicoum, "Geophysical Contribution for the Determination of Aquifer Properties in Memve Ele, South Cameroon," *Journal of Water Resource and Protection*, Vol. 4 No. 10, 2012, pp. 885-890. doi: 10.4236/jwarp.2012.410104.

References

[1] M. Pirttij?rvi, "Joint Interpretation of Electromagnetic and Geoelectrical Soundings Using 1-D Layered Earth Model," User's Guide to Version 1.3, Oulu, 2004, 48 p.

[2] P. Weidelt "The Inverse Problem of Geomagnetic Induction," Journal of Geophysics, Vol. 38, 1972, pp. 257-289.

[3] C. K. Nippon, "Faisability Study on Menve Ele Hydro Electric, Power Development Project," Final Report: AES-SONEL, Cameroon, 1993, 74 p.

[4] V. Caron, E. Ekomane, G. Mahieux, P. Moussango and E. Ndjeng, "The Mintom Formation (New): Sedimentology and Geochemistry of Neoproterozoic, Paralic Succession in South-East Cameroon," Journal of African Earth Sciences, Vol. 57, No. 4, 2009, pp. 367-385. doi:10.1016/j.jafrearsci.2009.11.006

[5] L. Cagniard, "Basic Theory of the Magneto Telluric Method of Geophysical Prospecting," Geophysics, Vol. 18, 1953, pp. 605-635. doi:10.1190/1.1437915

[6] Y. Ogawa, "On Two-Dimensional Modeling of Magnetotelluric Field Data," Geophysics Survey, Vol. 23, No. 2-3, 2002, pp. 251-273. doi:10.1023/A:1015021006018

[7] J. Asfahani, "Neogene Aquifer Properties Specified through the Interpretation of Electrical Sounding Data, Salamiyeh Region, Central Syria," Hydrological Processes, Vol. 21, 2007, pp. 2934-2943. doi:10.1002/hyp.6510

[8] A. A. R. Zohdy, P. G. Eaton and R. D. Mabey, "Application of Surface Geophysics to Groundwater Investigations," US Geological Survey Techniques of Water Water Resources investigations, Book 2,

• Open Special Issues
• Published Special Issues
• Special Issues Guideline

JWARP Subscription

Most popular papers in JWARP

About JWARP News

Frequently Asked Questions

Recommend to Peers

Recommend to Library

Contact Us

1974.

[9] J. L. Meli ' i, P. N. Njandjock and H. D. Gouet, " Magnetotelluric Method for Groundwater Exploration in Crystalline Basement Complex, Cameroon, " Journal of Environmental Hydrology, Vol. 19, 2011, p. 16.