World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:18, No:02, 2024

Investigation of Lead and Zinc Oxide Deposits Using Geological and Geophysical Techniques at Oshiri Province in Onicha Local Government Area of Ebonyi State Located Within Southeastern Part of Nigeria, West Africa

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Abstract : This paper is centered on the investigation of mineral deposits in selected locations in Oshiri province in Ebonyi State. Mineral deposits contribute immensely to the economic growth of a society. In researching lead and zinc oxide-bearing sites at Oshiri, geological and geophysical research technique was employed. Petrozenith, Earth Resistivity Meter, and Schlumberger setup were selected to examine the electrical characteristics of the subsurface. To determine the apparent resistivity of the subsurface, five soundings were taken, and the field data were processed using WinResist software. The mudstone, lead-shale, shale-granite, and lateritic topsoil were the four geoelectric strata that were found. The third layer, which corresponds to the shale-lead lithology, has a resistivity value between 211.9 m to 807.7 m at a depth of 25 m. Due to its resistivity levels and geological trend, this layer makes an excellent signature for lead-zinc occurrence. This zone is expected to house deposits of lead and zinc oxide in commercial quantity.

Keywords : Schlumberger, current, resistivity, lithology
Conference Title : ICAEP 2024 : International Conference on Atmospheric and Environmental Physics
Conference Location : Melbourne, Australia
Conference Dates : February 01-02, 2024