



**NIGERIAN ASSOCIATION FOR ENGINEERING
GEOLOGY AND THE ENVIRONMENT (NAEGE)**

**2nd IAEG AFRICA
REGIONAL
CONGRESS**



**4TH NAEGE
ANNUAL INTERNATIONAL
CONFERENCE**

THEME:

**ENVIRONMENTAL
AND ENGINEERING
GEOLOGICAL MAPPING
FOR SUSTAINABLE
DEVELOPMENT**

**CONFERENCE
PROGRAMME
AND
BOOK OF ABSTRACTS**

VENUE:

HOTEL DE BENTLY

PLOT 892 NGOZI OKONJO IWEALA STREET,
UTAKO DISTRICT, ABUJA, NIGERIA

DATE:

27TH - 30TH

OCTOBER, 2019



3rd IAEG AFRICA REGIONAL CONGRESS & 4th ANNUAL INTERNATIONAL CONFERENCE

19	13.30	Engineering Geological Mapping and Investigations for a Fuel Depot In The Marginal Lands of the Niger Delta Sub-Region, Nigeria.	Teme, S.C. / Youdeowei, P.O. ² and Morrison, T. ¹
20	13.45	Evaluation of Suitability of Rocks around Jikuchi Fulani, along Maikunkele Maitumbi road, Minna for Aggregate and Dimension Stone	Abba, I. A., N.M. Waziri
21	14.00	Evaluation of groundwater quality in Shakwatu community, part of Sheet 164 SW, Central Nigeria	Oyetoke, O.M. and Waziri, S.H.
22	14.15	Analysis of Seismic Refraction and Uphole Survey Data of Eastern Niger Delta Basin for Engineering Structures	Tochwuku M. Odoh, Amobi C. E kwe, Elijah E. Nkitnam, George -Best Azuoko and Uche Olodu
23	14.30	Lateral Distribution of Heavy Metal Contaminants from Lead-Zinc Mine Sites within Enyigba, Southeastern Nigeria	Benedicta Ozobialu, Ogonnaya Igwe ¹ , and Chukwuebuka Emeh
24	14.45	Climate Change: Impacts on the Nigerian Tropical And Sub Saharan Environment	Ezeribe I.
25	15.00	Correlation Between CPT and Spt On Cohesioless Soils In Lekki - A Tool In Foundation Engineering	Adeolu, W.O and Orohundusi, O.P



ABSTRACT

The Niger Delta sub-region is the major area of crude oil exploration and exploitation in Nigeria. In addition to the existing three Federal Government refineries situated within the Niger Delta subregion are several Fuel Depots that serve as transient storage points for both refined products and the crude oil. The siting of these Fuel Depots require the detailed engineering geological mapping and investigations to determine the most suitable bearing strata and foundation systems for these structures. This paper gives a detailed site selection protocol, mapping and subsurface geotechnical investigation for such structures. Seven (7) deep borings to depths of 40m carried out at one of the fuel depots showed a sequence of overlying 1.50m – 3.00m of soft, spongy Clays (chicoco) (OH) underlain by between 5.00 – 6.00m of Silty-Clays (CL), 6.00 – 8.00m of Silty-Sands (SM) and more than 27.50m of well-graded coarse-grained Sands and Gravels (SW) to depths beyond the limits of this exploration. Detailed subsurface mapping was used to produce a Fence Diagram of the entire Fuel Depot area that showed the two-dimensional profile of the areas. The overlying Silty-Clays, Silty-Sands and Clays were found to have bearing capacities ranging from 125.72 to 415.35 kPa, computed final settlements based on Undrained – Unconsolidated (UU) tests gave values of 0.0035m over a period of 87.97 years at 90% consolidation settlements. The coarse-grained sands and Gravels at depths of 25.00m and below were found to have Pile Carrying Capacities, based on field SPT N-values, of between 1.897 and 2.040 MN. These layers formed the bearing media for piles of different diameters ranging between 400mm and 1800mm.

Keywords: Engineering geological Investigations; Mapping; Fuel Depots; Marginal Lands; Niger Delta Sub-region.

EVALUATION OF SUITABILITY OF ROCKS AROUND JIKUCHI FULANI, ALONG MAIKUNKELE-MAITUMBI ROAD, MINNA FOR AGGREGATE AND DIMENSION STONE

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ABSTRACT

A detail geotechnical characteristics of rock around Jikuchi Fulani, Minna was carried out for aggregate and dimension suitability. A total number of six rock samples was taken and analysed for physical and mechanical properties. The compressive strength ranging between 105.79 MN/m² to 150.79 MN/m² while tensile strength between 9.69 MN/m² to 16.23 MN/m². The water absorption is between 0.07% to 0.57% while the porosity ranges between 0.5 % to 0.8 %. Petrographic examination to determine the mineralogical composition of the rock samples shows that all the sample free from flaws and deleterious minerals. The physical and mechanical properties test and petrographic assessment shows that the rock in the study area is suitable for dimension stone and aggregate in accordance with specification.

KEYWORDS: Aggregate, dimension stone, physical and mechanical properties.