

## GEOTECHNICAL ASPECTS OF A GULLY SITE AT OFEKATA II AUTONOMOUS COMMUNITY, AWO-OMAMMA, IMO STATE, SOUTHEASTERN NIGERIA

Jeffrey Chiwuikem Chiaka<sup>1</sup>, Obinna Chigoziem Akakuru<sup>2</sup>, Ozioma Udochukwu  
Akakuru<sup>3</sup> & Bernard E. Benedict Akudinobi<sup>4</sup>

<sup>1</sup>Department of Environmental Technology, Federal University of Technology, Owerri, Nigeria

<sup>2</sup>Department of Geography and Environmental Sciences, Alvan Ikoku Federal College of Education, Owerri, Nigeria

<sup>3</sup>Department of Pure and Applied Chemistry, University of Calabar, Cross River State, Nigeria

<sup>4</sup>Department of Geological Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

### ABSTRACT

*There is a need to evaluate those factors that influence soil erosion and gully in Southeastern Nigeria. This study analyzed some geotechnical aspects of soil in Ofekatta II autonomous community in Awo-omamma in Oru East Local Government Area, Imo State, Southeastern Nigeria which is facing erosion menace, to determine the soil parameters such as Atterberg limits, shear strength, grain size distribution, dry density, bulk and dry unit and the natural moisture content. To substantiate this, the Atterberg limits shows that soil is non-plastic and therefore friable and easily erodible. The grain size distribution data obtained showed clay (12%), silt (6%), sand (82%), and gravel (0%). The Bulk and Dry unit and the Natural Moisture Content show that the moisture content ranged from 11.2 to 14.4% while the dry density ranged from 18.3 to 20kg/m<sup>3</sup>. The dry density values were generally low, signifying that the soil is not compact but loose and thus susceptible to erosion. The computation of the direct shear strength shows that the cohesion values ranged from 4-6 C (KN/m<sup>2</sup>). These low values are a strong indication that the soil is cohesionless and can be eroded with ease when loose.*

**KEYWORDS:** Gully, Erosion; Soil, Direct Shear Test, Atterberg Limit Test

---

### Article History

**Received: 21 Jan 2018 / Revised: 28 Feb 2019 / Accepted: 11 Mar 2019**

---