AN INVESTIGATION INTO THE EFFECTIVENESS OF DIFFERENT SOIL EROSION CONTROL BARRIERS IN RECLAMATION PRACTICES AT NEWMONT GHANA GOLD LIMITED KENYASI – BRONG AHAFO REGION

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ABSTRACT

This project on the effectiveness of different erosion control barriers being practiced at Newmont Ghana Gold Limited (NGGL), Ahafo was conducted on three (3) heaps of stockpiles of topsoil and one waste rock stockpile between April and August 2007. It involved (i) vetiver bunding with bahama grass in-between (located near the NGGL security gate (ii) natural vegetation without deliberate planting of vetiver and bahama grass (located near the NGGL security gate (iii) natural vegetation growing over ijute net (located on the Kwaduhia topsoil) and (iv) bahama grass growing over ijute net (located on the Northern embankment of the Tailings dam). For the vetiver bunding with bahama grass in-between, it demonstrated high effectiveness in protecting the topsoil from erosion. For the natural vegetation without deliberate planting of vetiver and bahama grass, there was an appreciable seepage or leakage of soil material (between -4.0mm to -8.0mm) as observed in the bottom quadrat of transect 2 (-6.0mm) and also in the following quadrats of transect 3, viz: bottom (-4.5mm to -5.0mm) middle (-4.0mm) and top (-8.0mm) as observed in Fig. 3.2a ï 3.2c. The natural vegetation growing over ijute net also showed significant erosion of soil or textural materials down the slope as indicated by the creation of deep gullies probably due to the late emergence of vegetation (Plates: 22 and 23). For the portion with bahama grass growing over ijute net, there was a slight but statistically insignificant movement of soil particles or textural materials from the top zone across the middle zone to the bottom zone, whereas the control experiment (i.e., the bare soil)

accumulated slightly higher sediment than all the other six experiments aforementioned; although these differences were also not statistically significant. From the observations, it appeared that the vetiver bunding with bahama grass in-between was the most effective soil erosion control barrier, followed by the natural vegetation without deliberate planting of vetiver and bahama grass, the portion with bahama grass growing over ijute net with the natural vegetation growing over ijute net being the least effective (plates 1 and 2 respectively).

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