

## EROSION CONTROL MEASURES FOR HINDALCO'S MINE AT MURI, JHARKHAND

### MURI, JHARKHAND, INDIA

#### Slope Protection

##### Problem

HIL has an aluminium plant in Muri, Jharkhand. The by-product of aluminium extraction process i.e. red mud; gets dumped in a dumping yard. The man made slope of dumped red mud was getting eroded due to surface runoff flow. The red mud is highly alkaline in nature and its physical and chemical properties can limit the plant growth due to high alkalinity and salinity. The dumped soil (over burden at the mining location) was getting transported via. wind causing severe environmental pollution of surrounding areas and was also getting eroded in the monsoon season which was triggering rain cuts.

Rain cuts and gully formation are common phenomenon on exposed slopes of OB dumps from mining operations. These piles of overburden dumps are subjected to erosion of fines and lead to pollution. The major problem at the site is its anticipated failure due to sliding especially during the monsoon season. Lack of timely provision of erosion control measures and inadequate workmanship accelerates the problems of erosion.

To protect the slope from erosion, vegetative measures were required to be adopted.

##### Solution

To protect the slope, Maccaferri used Hydraulically Applied Erosion Control materials - MacFlex, MacGanics and other agronomic amendments such as AquapHix, Jumpstart and Bioprime over a surface area of 30,000 sqm. Based on the agronomic soil tests conducted, determination of the soil nutrients was done and based on the same, required amendments are considered in stipulated dosages along with appropriate plant species.

The seed species have been selected based on the soil type present at site, pH, climate, type of planting, availability of local seeds and discussion with horticulturist. The quantities of hydraulically applied erosion control materials, soil amendments were finalized before mixing in hydro-seeder along with seeds and water in a two step process. The slurry obtained after mixing had been sprayed over the slope surface and maintenance was done by spraying water over the same to avoid drying of the material.

The vegetative measures have been successful in controlling the erosion.

**Client:** Hindalco Industries Limited (HIL)

**Designer / Consultant:** Maccaferri Environmental Solutions Pvt. Ltd.

**Contractor:** Maccaferri Environmental Solutions Pvt Ltd.

**Products used (Qty.)**

- Other Biomaterials	30,000 sqm (MacFlex, MacGanics)
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**Date of construction:** 03/2018 - 01/2019



Photo 1: Initial site condition



Photo 2: Application of MacGanics completed



Photo 3: Application of MacFlex



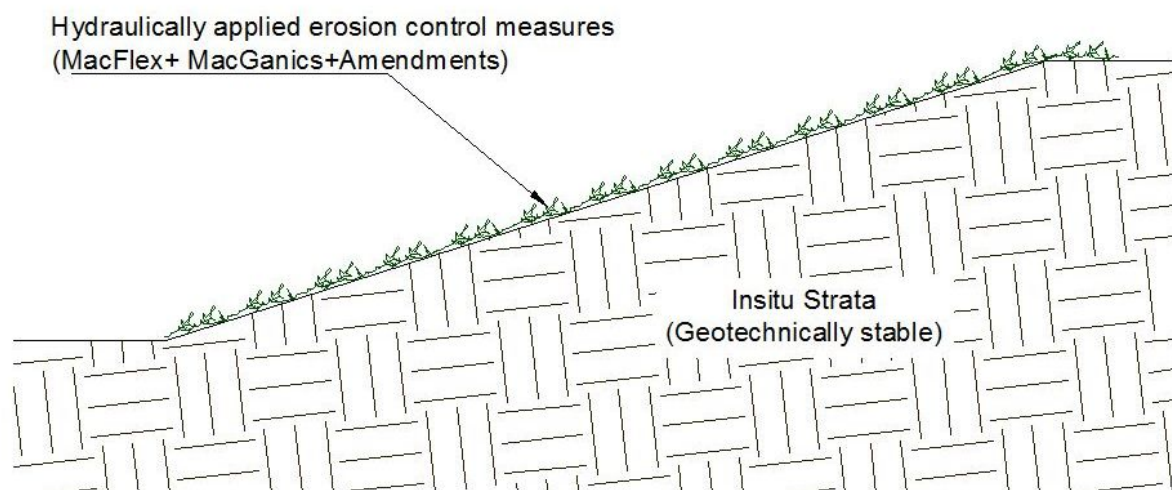
Photo 4: Application of MacFlex completed



Photo 5: Vegetated overburden slopes



Photo 6: Vegetated overburden slopes



## Typical Cross-section

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