

AJALI WATER WORKS GULLY EROSION
NSUDE, ENUGU STATE

EROSION CONTROL

Product: Gabions, Reno Mattress and Geotextiles

Problem

Ajali water works gully erosion site is located in Nsude community, Enugu state.

The gully is made up of two tributaries. The first gully is about 0.8km long, with the width varying from 15-25m and a depth ranging from 6-15m.

The second gully is about 350m long and the depth varies from 3-6m.

These gullies were caused by uncontrolled discharge of water overflow from the twin water tank/reservoir situated at the apex of the hill.

The Ajali Water Works site is underlain by friable, unconsolidated and poorly sorted Ajali sandstone which is easily washed away by concentrated run-off from prolonged and torrential rainfall.

Solution

Mitigation adopted by the designer was the construction of hydraulic structures which includes:

- Introduction of Active vegetative measures along the corridor with Checkdam to stabilize the gully bed and arrest the erosion.
- The use of chute with reinforced concrete designed to resist abrasive problems of high flow velocity which develop on their structures.

In analysing the stability of the checkdam which involves the use of gabion basket, Maccaferri Software was adopted, achieving an overall stability factor of 3.18.

Benefits:

- The issue of surface run-offs is addressed.
- The construction of check dams greatly dissipates inflow energy thereby addressing the problem of erosion.
- Revegetation of the environment is successful.
- The construction is cost effective as rocks used are sourced from a local quarry.
- The gully bed is stabilized.

Client:

WORLD BANK/FGN

Main contractor:

CHEZ-AVIV LIMITED

Designer:

NEST ENGINEERING LIMITED

Products used:

GABION, RENO MATTRESS, GEOTEXTILE

Date of construction

2015—2017



During Construction of Checkdam



View of Checkdam constructed at Interval



Vegetation gradually being restored just after construction

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