

## AMBUKLAO DAM UPSTREAM SLOPE (PHASE I)

### AMBUKLAO, BOKOD, BENGUET, CORDILLERA ADMINISTRATIVE REGION, PHILIPPINES

#### Slope Protection

##### Problem

Ambuklao Hydroelectric Plant is located in the mountains of Bokod, Benguet and is about 36 kilometers northeast of Baguio City, the summer capital of the Philippines. Ambuklao HP was designed to provide 75 MW of energy to the Luzon power grid. When SN Aboitiz Power—Benguet, Inc. took over the operation of the power plant, they began major rehabilitation and upgrade of the facility. This included works on the upstream slope of dam slope that suffered major erosion problem since 1999 when the power plant stopped its operation.

In this, a practical and effective erosion protection that can last for the intended design life of the structure was required.

##### Solution

After verifying site conditions and site challenges, the Project Consultant came up with a solution. The designed erosion protection of the upstream slope of the dam was composed of two distinct systems: a) MacFormer grout mattress Type III for the submerged portion of the upstream slope face (Phase I); and b) Galfan-coated gabions underlain with MacTex nonwoven geotextile for the portions above normal dam water level (Phase II).

Made from high-tensile strength woven polypropylene geotextile, the MacFormer's main function is to provide protection against rainfall washouts, high speed scour, and compensate the uneven settlement of the underlying soil by covering and sealing the outer face of the slope.

**Client:** SN- Aboitiz Power - Benguet, Inc.

**Designer / Consultant:** Tonkin & Taylor International

**Contractor:** McConnell Dowell, Philippines (MCD)

##### Products used (Qty.)

- |                               |             |
|-------------------------------|-------------|
| - MacFormer MFMII             | 6,000 sq.m. |
| - MacTex Non-woven Geotextile | 6,000 sq.m. |

**Date of construction:** 12/2009 - 03/2010



Before Construction



Before Construction



During Construction



During Construction



Project Completed



Project Completed