



BUTUANON RIVER

The Butuanon River is a 23km long river in the Central Visayas region of the Philippines. It is a significant supply of water for home and agricultural usage, but is subject to environmental problems such as pollution from home and industrial sources. These issues are being addressed and the ecological health of the river is being restored.



The Department of Environment and Natural Resources (DENR) – Environmental Management Bureau (EMB) Region 7 report states that the Butuanon river has been used as a dumping area of wastes from industrial, commercial, and residential establishments. It was classified in 2000 as a Class Driver, meaning it is not safe for human consumption and recreation.

THREATS EXISTING IN THE RIVER

A complicated brew of contaminants from numerous sources contribute to the degradation of the Butuanon River. Sewage and solid waste from homes, industrial effluents, and mil-off from upland and urban areas are the main sources of these chemicals. These contaminants lead the river to have a high levels of phosphate, which contaminates the fresh water.



PROPOSED SOLUTION

The Group 12 proposes to strengthen the dykes around the downstream parts of the river dykes by planting vegetation around the insides of the dyke. This will provide additional protection against the erosion of the dyke and the roots of the vegetation will strengthen the core of the dyke.

To find a practical solution, a type of plant is needed that will do 3 things:

- filter large quantities of phosphorus out of the water
- provide additional protection for the dykes by slowing down the velocity, and
- trapping floating garbage and filter macro pollutants such as floating plastics without restricting accessibility for fishing boats in the river.

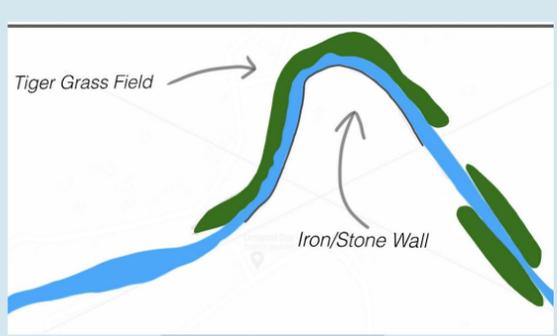
To provide additional protection against flooding during the growth time of the plants, biodegradable seed bags could be used. These are sand/soil bags that also contain the plant seeds. The sandbags provide protection against flooding while the plant seeds take their time to grow. By the time the sandbags have degraded the plants should be fully grown and provide protection for the dyke, as well as slowing down the velocity of the river.

PHRAGMITES AUSTRALIS

Phragmites Australis is the suitable plant that best fits the criteria. This plant can grow nearly anywhere in either brackish or fresh water. It can also absorb large quantities of phosphorus and nitrates in its production of biomass. plant. These properties will essentially make it so the tambo fields function as a halophyte filter inside of the river embankments. The plant also grow fast. This means that the plants will be large enough to provide additional protection for the dyke by slowing down the velocity of the river and trapping plastics without restricting access to the river for fishing boats.



IMPLEMENTATION



To implement this solution, the Butuanon River will need to be widened in the areas where the Tambo Fields will be placed as well as a much more gradual slope. Along this slope, the biodegradable seed bags will be placed with the Tambo seeds inside of them. These seeds eventually grow into Tambo fields that function as halophyte filters. On the other hand, the stone wall that was already been placed last year will protect the south side of the river from flooding.

