Effect of Wet Blanketing as the Remedial Measures for Water-tightness Problem of Samanalawewa Reservoir

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Wet blanketing (underwater dumping of clay material) has been carried out extensively at the Samanalawewa reservoir of Sri Lanka as remedial measures for the substantial leakage problem encountered during the impounding. The 105m high rock and earth fill dam was being built across the Walawe River, with the aim to generate 120MW hydroelectricity. The leakage incident occurred in 1992, initiated with a sudden water burst when the reservoir level was at 20 m below it's maximum design height of 100m. The amount of leakage at the beginning was estimated to be bigger than 7 m^3/s.

Various studies carried out to investigate this leakage problem revealed that the leakage is taking place along the deep open faults, below the existing 110 m deep grout curtain. The ingress of the leakage is suspected to be extending several hundred meters upstream of the dam on the right abutment. Wet blanketing has been selected as the most feasible remedial measures and was implemented since 1998. Approximately 500,000 m^3 volume of clay have been dumped along the Right bank and bottom of the reservoir, at suspected locations.

The groundwater levels in the Right Bank and the leakage amounts were closely monitored during the dumping operation. The observed drop of the Right Bank groundwater level by 15 m and, the reduction of main leakage at the end of the dumping of first 250,000 m^3 of clay material, revealed that the wet blanketing has affected positively in sealing a certain part of the river bed ingress area.