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Evaluation of factors contributing to high conductivity values in Talatu Oya, Kiwiliyadda Oya, & Kapuliyadda Oya in the catchment of Victoria reservoir using Geographic Information System (GIS) as a tool

Talatu Oya, Kiwiliyadda Oya, and Kapuliyadda Oya are three sub catchments located within the right bank of the Victoria catchment. The total land coverage of these areas is about 68 km2. The water quality studies conducted in the above tributaries indicated high conductivity values ranging from 190 to 650 (µs/cm) compared to low values recorded in the tributaries of the left bank of the reservoir. Landuse patterns and geology were correlated using GIS with conductivity levels of different tributaries in order to understand the reasons for these high values.

The blue prints (Base maps from survey department) of the contour maps were georeferenced & the contour lines were digitized manually with 20 m interval. The attribute table of contours

was created and the relevant contour value was given into the table. The contour lines were used to create a Digital Elevation Model (DEM) and a slope map was generated by the DEM. it was used to create the slope map. ArcView software package with three extensions, the Image Analyst, Spatial Analyst, 3D Analyst were used in analyzing digital information to obtain the final map, which indicates the causes for high conductivity values in the sub catchments.

The land use practices of the sub catchments indicate presence of Paddy, Tea, Homesteads, Coconut, and Sparsely used cropland, Scrubland, Grassland, Dense forest, Barren land, mixed tree and other perennial crops. The study area is composed of high-grade metamorphic rocks that belong to Highland Complex. Quartzite, Marble, Charnockitic gneisses, Calc gneisses and / or Granulites and Granite gneiss are main rock types in the three catchments.

The final map of the study area, created by using GIS, reveals that the high conductivity values in the tributaries are basically controlled by the underlying geology the land use practices of the basins.