

BATHYMETRY AND SEDIMENT ACCUMULATION OF FAYLOR LAKE, PA USING A NEWLY UPDATED ASSEMBLED GPR APPARATUS

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Accumulation of sediment in manmade reservoirs can be a major problem because it reduces the potential of water storage. Exploring a lake's bathymetry with electromagnetic techniques is one way to identify the magnitude of sediment accumulation in these reservoirs. In this study, the bathymetry and sediment accumulation of Faylor Lake; a man-made reservoir on Middle Creek near Troxelville, PA were explored with ground penetrating radar (GPR) using a 400MHz antenna. A newly redesigned assembled apparatus including a GPR antenna operating with a sub-metric GPS system assembled on an inflatable boat powered by an electrical trolling motor. Twenty-one segments were acquired covered the surface of the entire reservoir has generated the bathymetry, the sub-bathymetry, the sediment load. An annual sediment accumulation rate was also calculated for the period ranging between 1973 to present. The study showed i) a bathymetry with a maximum depth of 4.5 m near the dam, ii) a deposition of sediment taking place along the old channel of Middle Creek and near the inlet and iii) the sedimentation gradually decreases toward the dam, ranging between 0 and 1.90 m in terms of bulk sediment volume.