

United States  
Department of  
Agriculture

Soil  
Conservation  
Service

160 East 7th Street  
Chester, PA 19013-6092

**Subject:** GPR and EM Field Assistance;      **Date:** 16 December 1991  
Washington County, 13 November 1991

**To:** Robert J. Klumpe  
State Conservationist  
SCS, Annapolis, MD

**Purpose:**

To assess the feasibility of using ground-penetrating radar (GPR) and electromagnetic induction (EM) methods to study the depth to and the thickness of unconsolidated marly sediments in calcareous alluvial deposits within the Maryland portion of Great Valley.

**Activities:**

Two representative sites were selected by Joey Shaw (University of Maryland) in Washington County. At each site, detailed profile descriptions had been collected. All GPR and EM field work was completed on 13 November 1991.

**Discussion:**

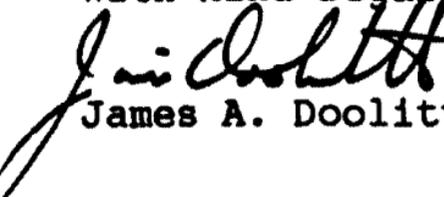
At each site, GPR provided detailed, high resolved, stratigraphic information. GPR was able to scan through as much as 4 to 5 meters of marly sediments and document the depth to the underlying finer textured strata. Profiling depths were restricted by finer-textured substrata or 4 to 5 meters. Because of the success of GPR, the use of EM techniques, while feasible, was deemed inappropriate. Inappropriateness was based on the poorer vertical and horizontal resolution of EM

**Recommendations:**

Ground-penetrating radar can be used to determine the stratigraphy and thickness of marly sediments along the upper and middle reaches of drainageways in Washington County. Where the thickness of marly sediments exceeds 4 meters (lower reaches of drainageways) this technique will provide more limited and generalized information. Radar profiles have been turned over to Dr Rabenhorst and Joey Shaw for reviewed. Results have demonstrated the feasibility of using GPR techniques. I recommend continuation of this study within selected valleys containing marly alluvium. The GPR and RADAN software can be used to prepare multiple, cross-sectional profiles of the marly sediments.

All graphic profiles have been return to Joey Shaw.

With kind regards.

  
James A. Doolittle

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