

APPLICATION OF GPR INTEGRATED WITH RTK/GPS FOR MAPPING DRAINAGE PIPES AT AN AGRICULTURAL TEST PLOT FACILITY IN BELTSVILLE, MARYLAND

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Ground penetrating radar (GPR) integrated with real time kinematic Global Positioning System (RTK/GPS) technology was employed to map buried drainage pipes at an agricultural test plot facility in Beltsville, Maryland. The total area of the test plots surveyed was 5 ha and was covered by loam classified soils. Approximately 3000 meters of GPR-RTK/GPS transect data were collected at the test plots. The GPR antennas had a center frequency of 250 MHz. Latitude and longitude coordinates for the GPR drainage pipe responses were superimposed on an aerial image of the site to provide insight on the subsurface drainage pipe pattern. The GPR-RTK/GPS results clearly indicate that drain lines trended northeast-southwest in the western portion of the test plot facility, and the drain lines trended northwest-southeast in the eastern portion of the test plot facility. There is also a greater amount of reflected radar energy from the soil profile in the eastern test plots versus the western test plots, which may indicate that the soil profile is less sandy in the western portion of the test plot facility as compared to the eastern portion. Overall, GPR integrated with RTK/GPS proved very effective for characterizing subsurface drainage at this particular site.