

**United States
Department of
Agriculture**

**Natural
Resources
Conservation
Service**

**c/o USDA Forest Service
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Subject: Soils – Geophysical Field Assistance

Date: 26 August 2005

To: Joseph Delvecchio
State Conservationist
USDA-NRCS,
The Galleries of Syracuse
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Purpose:

A SIR (Subsurface Interface Radar) System-2 ground-penetrating radar (GPR) unit was transferred from the National Soil Survey Center to the Soil Staff in New York. Training was provided to Olga Vargas on the use and operation of the SIR-2 unit and the interpretation of radar data.

Participants:

Jim Doolittle, Research Soil Scientist, USDA-NRCS-NSSC, Newtown Square, PA
Tim Daubert, Soil Scientist, USDA-NRCS, Binghamton, NY
Steve Indrick, State Soil Scientist, USDA-NRCS, Syracuse, NY
Gerald Smith Soil Scientist, USDA-NRCS, Binghamton, NY
Elena Steele, Soil Conservationist, USDA-NRCS, Cortland, NY
Olga Vargas, Soil Scientist, USDA-NRCS, Greenwich, NY

Activities:

All activities were completed on 16 to 18 August 2005.

Summary:

1. The following equipment was transferred to the Soil Staff in New York: (1) one SIR-2 DC-2 radar unit (serial # 1050; AG0002142795), (2) one Model 608P thermal plotter (serial # 10100/26; AG0002518566), (3) one orange 15-ft transmission cable, (4) two 100-ft transmission cable, (5) two backpack harnesses, (6) four 9-volt batteries, (7) all necessary cables.
2. Training was provided to Olga Vargas on the operation and use of the SIR (Subsurface Interface Radar) System-2 ground-penetrating radar unit. Olga is a quick learners and I was deeply impressed by their interest and enthusiasm for GPR.
3. The older SIR-8 and SIR-3 GPR units, formerly operated by Ed Stein in New York, are outdated and are no longer supported by Geophysical Survey System, Inc. (North Salem, New Hampshire). Several units are in need of repairs with required parts and components no longer manufactured or stocked. This equipment has served New York well, but is no longer needed or will be used. This equipment is recommended for surplus.
4. New York's 300 MHz antenna is in need or repair. High levels of background noise plague radar records even in soils that are well suited to GPR (coarse-textured, excessively drained soils).

5. Olga Vargas effectively operated SIR System-2 (with a 400 MHz) in areas of Hoosic (sandy-skeletal, mixed, mesic Typic Dystrudepts), Nassau (loamy-skeletal, mixed, active, mesic Lithic Dystrudepts), Oakville (mixed, mesic Typic Udipsammments), and Otisville (sandy-skeletal, mixed, mesic Typic Udorthents) soils in Washington County. On each soil, Olga properly adjusted the settings and operated the SIR-2 unit, and made appropriate interpretations on the characteristics and depths to stratigraphic layers in outwash or bedrock buried beneath glacial till.
6. In Cortland County, Olga Vargas demonstrated the usefulness of GPR for determining depths to bedrock along traverses conducted in areas of Lordstown (coarse-loamy, mixed, active, mesic Typic Dystrudepts) soils. Lordstown is a ubiquitous soil in Cortland County where it occupies 24 percent of land area. Ground-penetrating radar should be a valuable quality control tool in New York for determining depths to bedrock and improving map unit designs and interpretations.
7. Olga Vargas has been designated as the principal radar operator in New York. Olga has impressed me with her exuberance and eagerness to understand and operate this geophysical tool. The National Soil Survey Center is committed to provide training and assistance to Olga Vargas on the use of ground-penetrating radar.

It was my pleasure to work in New York and with members of your fine staff.

With kind regards,

James A. Doolittle
Research Soil Scientist
National Soil Survey Center

cc:

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