Geotechnical Investigation

Senoia Radio Tower
300 Howard Road
Senoia, Coweta County, Georgia

Submitted to:

PM&A
30 Mansell Court, Suite 103
Roswell, Georgia 30076

by:

Environmental Corporation of America
1375 Union Hill Industrial Ct, Suite A
Alpharetta, Georgia 30004
ECA Project No. L-568-3

ENVIRONMENTAL CORPORATION OF AMERICA

November 22, 2010

PM&A
30 Mansell Court, Suite 103
Roswell, Georgia 30076

Attention: Mr. Matt Chastain

Subject: **Report of Geotechnical Investigation**
Senoia Radio Tower
300 Howard Road
Senoia, Coweta County, Georgia
ECA Project No. L-568-3

Dear Mr. Chastain:

Environmental Corporation of America (ECA) is pleased to submit this report of our investigation for the proposed project. Our services were provided as authorized by PM&A on October 26, 2010.

This report presents a review of the information provided to us, a description of the site and subsurface conditions, and our recommendations. The appendices contain a Boring Location Plan, Boring Logs, and Resistivity Data.

Purpose and Scope of Work

The purpose of this exploration was to obtain specific subsurface data at the site and to provide geotechnical-related design parameters and construction recommendations for the proposed tower.

Our scope of work included the following:

- Three soil test borings were drilled to depths of 40 feet below the ground surface (bgs). Figure 1 shows the boring locations. Standard penetration tests (SPTs) were conducted to obtain soil samples and SPT (N) values, in accordance with ASTM D1586.

- The depth to groundwater, if any, was measured in the borings after drilling was completed.

- The soil samples were visually classified and boring logs were prepared. The soil conditions were evaluated by a registered professional engineer and this geotechnical report was prepared with our recommendations.

- Electrical resistivity measurements were taken using the Wenner 4-electrode method (ASTM G57). Electrode spacings of 2 to 40-feet were recorded.

No physical testing of soil samples has been conducted to calculate site specific bearing capacities or settlements. We have recommended design parameters and settlements based on the SPT (N) values, an examination of the soil samples, and our experience with similar soil conditions and structures.

Project Information

The Property is located in a wooded area just west of Leroy Johnson Park.

We understand that plans call for construction a 340-foot tall self-support tower on the subject site, approximately as shown on the attached Figure 1. We assume that the equipment building(s) will be a pre-fabricated structure supported on a perimeter grade beam or spread footing.

Site Conditions

The fieldwork was conducted on November 12, 2010. Information obtained from the borings was used to help us evaluate the subsurface conditions and to assist in formulating our recommendations.

Subsurface Conditions

The subsurface conditions were explored with three soil test borings, drilled approximately as shown on Figure 1. The legs of the proposed tower had been staked prior to our visit.

The boring encountered weathered Piedmont soils grading from silty clay to sandy silt to silty sand with depth. The soils classified as CL, ML, and SM soil types based on the Unified Soil Classification System (USCS). The N-values in the borings were relatively uniform with depth as well as between borings and ranged from 8 to 39 blows per foot (bpf).

Groundwater was present in the borings at about 31 feet deep at the time of drilling.

Soil Resistivity: Electrical resistivity testing was conducted approximately as shown on Figure 1. Resistivity values recorded averaged 750 ohm-m. A table of the data is provided in Appendix C.

Recommendations

Tower Foundations: The subsurface conditions are suitable for support of the tower using a caisson or pad and pier foundation.

For a caisson foundation design, we recommend a friction design with the length of the caisson dependent on the capacity required. However, soil parameters for the soils that may be of use in design are as follows:

	Depth below Ground		
	0-10 ft	10-25 ft	25-40 ft
Coefficient of passive earth pressure	1.2	2.2	3.0
Unit weight of soil (pcf)	115	115	60
Lateral subgrade modulus (pci)	150	200	150
Cohesion (psf)	1500	700	200
Angle of internal friction (deg)	5	22	30
Allowable skin friction (ksf)	0.25	0.45	0.8
Allowable end bearing (ksf)	4	5	4

Groundwater will be encountered in caisson borings deeper than about 25 feet. Therefore, the contractor should be prepared to case the holes and to remove seepage and softened soils before concrete placement.

For a pad and pier foundation design, we recommend a maximum net allowable soil bearing pressure of 4 kips per ft^2 (ksf) with the base bearing at or below 4-feet from existing grade. Total and differential settlement should be less than 1-inch and ½-inch, respectively.

Groundwater will not likely be encountered in a pad foundation excavation. However, the contractor should be prepared to remove seepage and softened soils before concrete placement.

Building Foundations: The proposed equipment building can be supported on a spread footing foundation. A maximum allowable net bearing pressure of 2.0 ksf should be used to design the building foundation. Total and differential settlements should be less than 1/2-inch and 1/4-inch, respectively.

Foundation Excavations: To avoid softening of the shallow soils exposed at the foundation bearing level, excavations should not be left open for extended periods, prior to placing reinforcing steel and concrete. If rain or freezing weather is expected, excavations should not be completed. Leaving the excavations at least 1 ft above final grade should protect the bearing soils from deterioration.

If the excavation must remain open overnight or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 2 to 4-inch thick "mud-mat" of "lean" (2000 psi) concrete be placed on the bearing soils before the placement of reinforcing steel. If the bearing

soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete.

Fill Placement: The amount of fill required for this project depends on the planned final grades, but we expect it to be minimal. Any required fill should be placed in maximum 8-inch thick lifts. The soil moisture content should be close to the optimum moisture content. The soil should be compacted to at least 98% of the maximum dry density, as determined by the standard Proctor method (ASTM D-698).

In areas supporting floor slabs or pavements, the upper 18 inches of fill should be compacted to 100% of the standard Proctor density. As no laboratory testing has been conducted, we do not know the capability of the surficial soil to support pavements. However, we suggest that the upper soils be replaced by granular fill in areas of heavy traffic to improve the subgrade support capabilities and moisture sensitivity.

Field density tests should be conducted at routine intervals, as the fill is being placed, to verify that adequate compaction is achieved.

Prior to placing any new fill, any soft or loose near surface soils should be removed and the area proofrolled with a heavy vehicle to confirm that any unsuitable soil conditions have been discovered.

Basis for Recommendations

The subsurface conditions encountered at the boring locations are shown on the Boring Logs in Appendix B. The Boring Logs represents our interpretation of the subsurface conditions based on the field logs and visual examination of field samples by an engineer. The lines designating the interface between various strata on the Boring Logs represent the approximate interface locations. In addition, the transition between strata may be gradual. The water level shown on the Boring Logs, if any, represents the condition only at the time of our exploration.

The recommendations contained herein are based in part on project information provided to us and only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, please let us know so that we may review the validity of our recommendations.

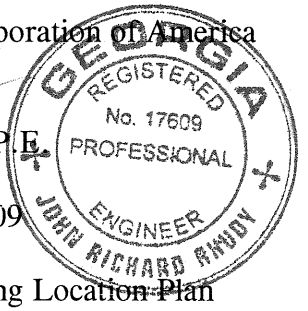
Regardless of the thoroughness of a geotechnical investigation, there is always a possibility that conditions between borings will be different from those at specific boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. ECA is best

qualified to provide this service based on our familiarity with the project, the subsurface conditions, and the intent of the recommendations and design.

We wish to remind you that we will store the soil samples for 30 days. The samples will then be discarded unless you request otherwise.

We will be happy to discuss our recommendations with you and look forward to providing the additional studies or services necessary to complete this project. We appreciate the opportunity to be of service. Please call us with any questions at (770) 667-2040.

Sincerely,
Environmental Corporation of America



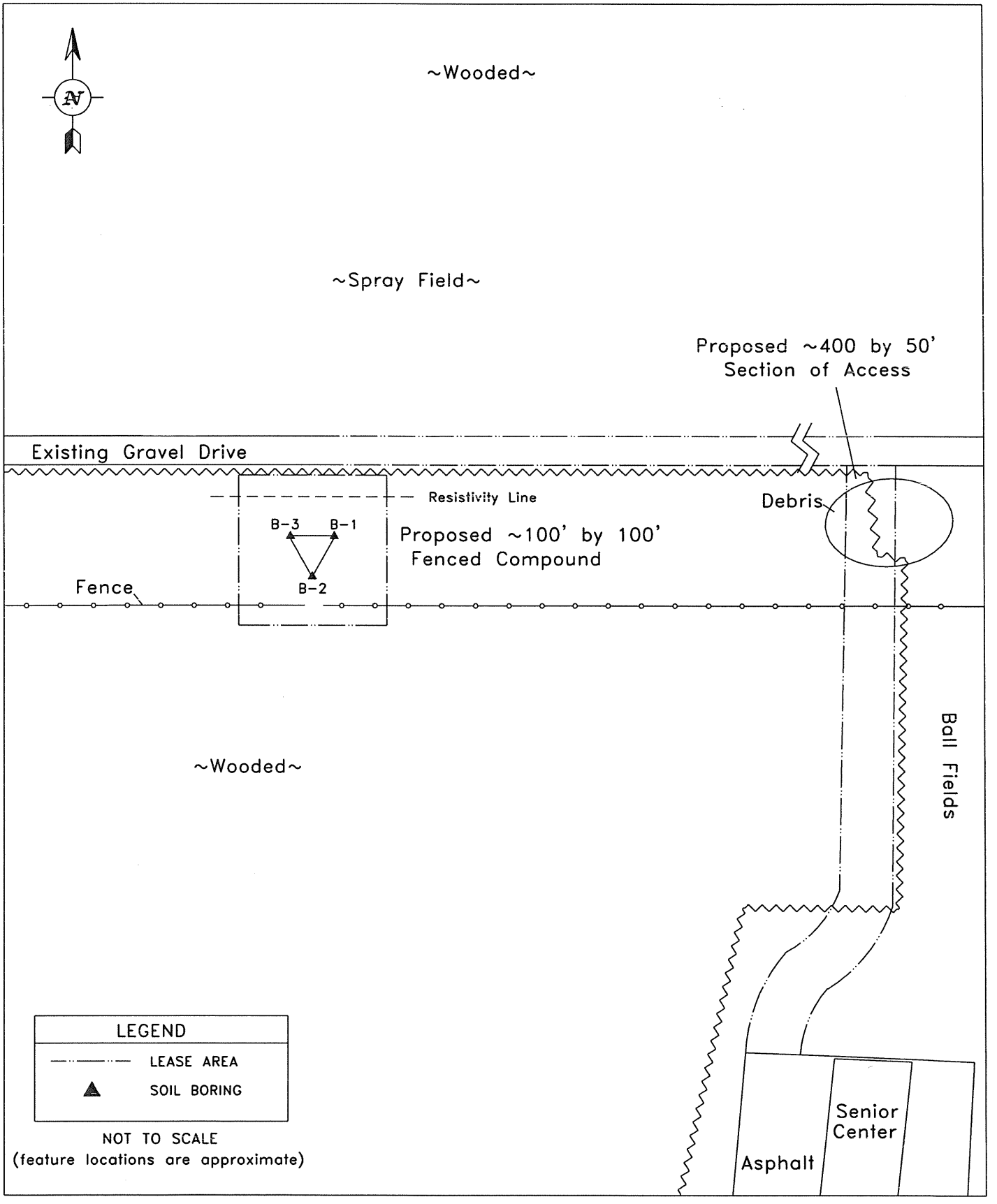
J. Richard Rhudy, P.E.
Principal Engineer
Georgia Reg. #17609

Kelby Williams
Project Manager

Appendix A Boring Location Plan
Appendix B Boring Logs
Appendix C Resistivity Data

APPENDIX A

FIGURE



Senoia Radio Tower
300 Howard Road
Senoia, Coweta County, Georgia
Figure 1: Boring Location Plan

SOURCE: 2008 Google Earth Aerial Photograph and ECA Site Visit

DRAWN BY: KMM/JRR DATE: 11/21/2010
FILE NAME: F:\%\L568.dwg

ECA Project # L-568-3

APPENDIX B

BORING LOG

Project: Senoia Radio Tower

City, State Senoia, GA

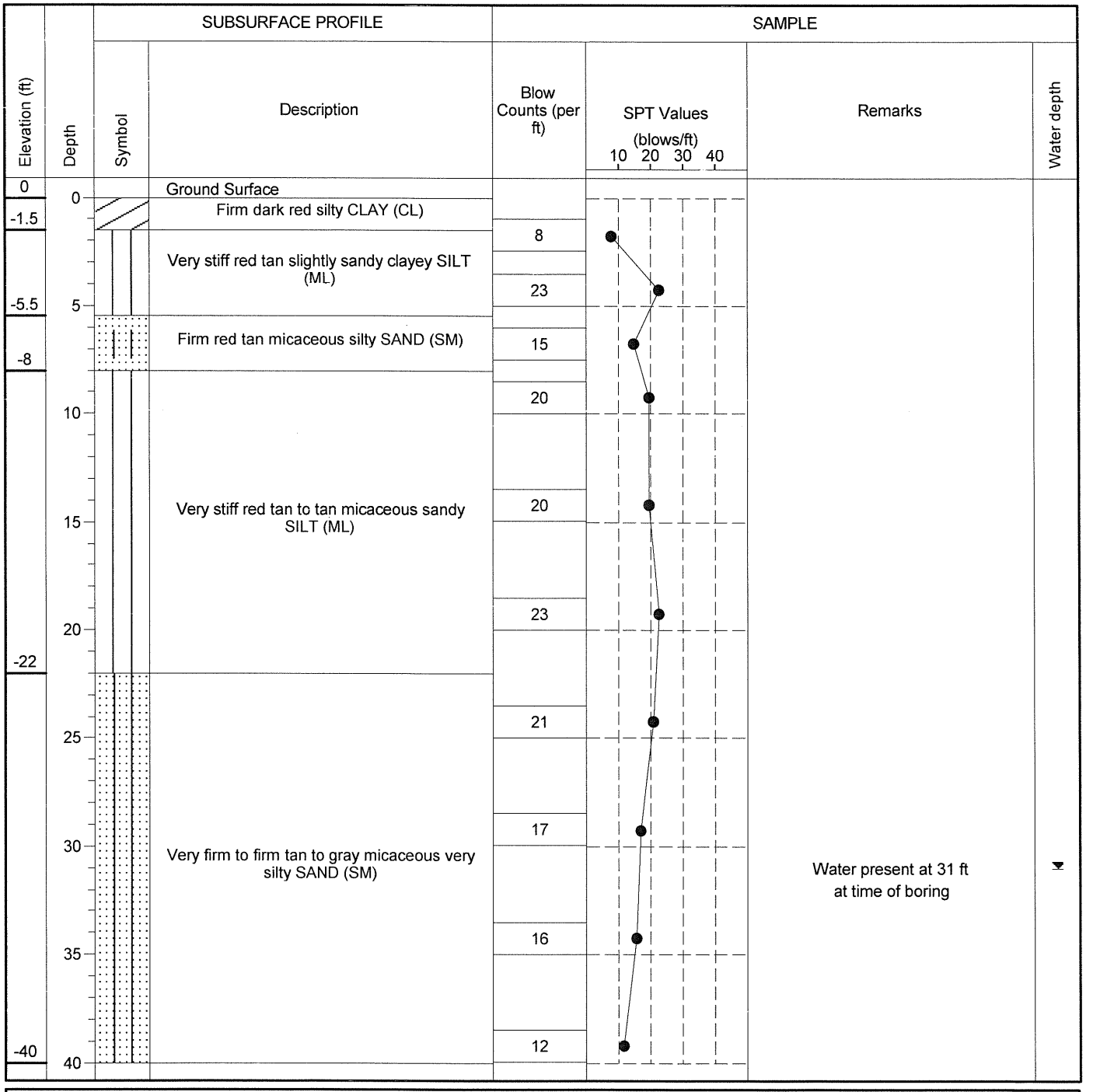
Client: PM&A

ECA Job No: L-568-3

Log of Boring: B-1

Drill Date: November 12, 2010

Field Rep: Tommy



Drilled By: Drill Crews

Borehole Size: 2.25" ID

Drill Method: Hollow Stem Auger

Depth to Water: 31 ft

Total Depth: 40 ft

Sheet: 1 of 1

Environmental Corp. of America
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Alpharetta, GA 30004
(770) 667-2040

Project: Senoia Radio Tower

City, State Senoia, GA

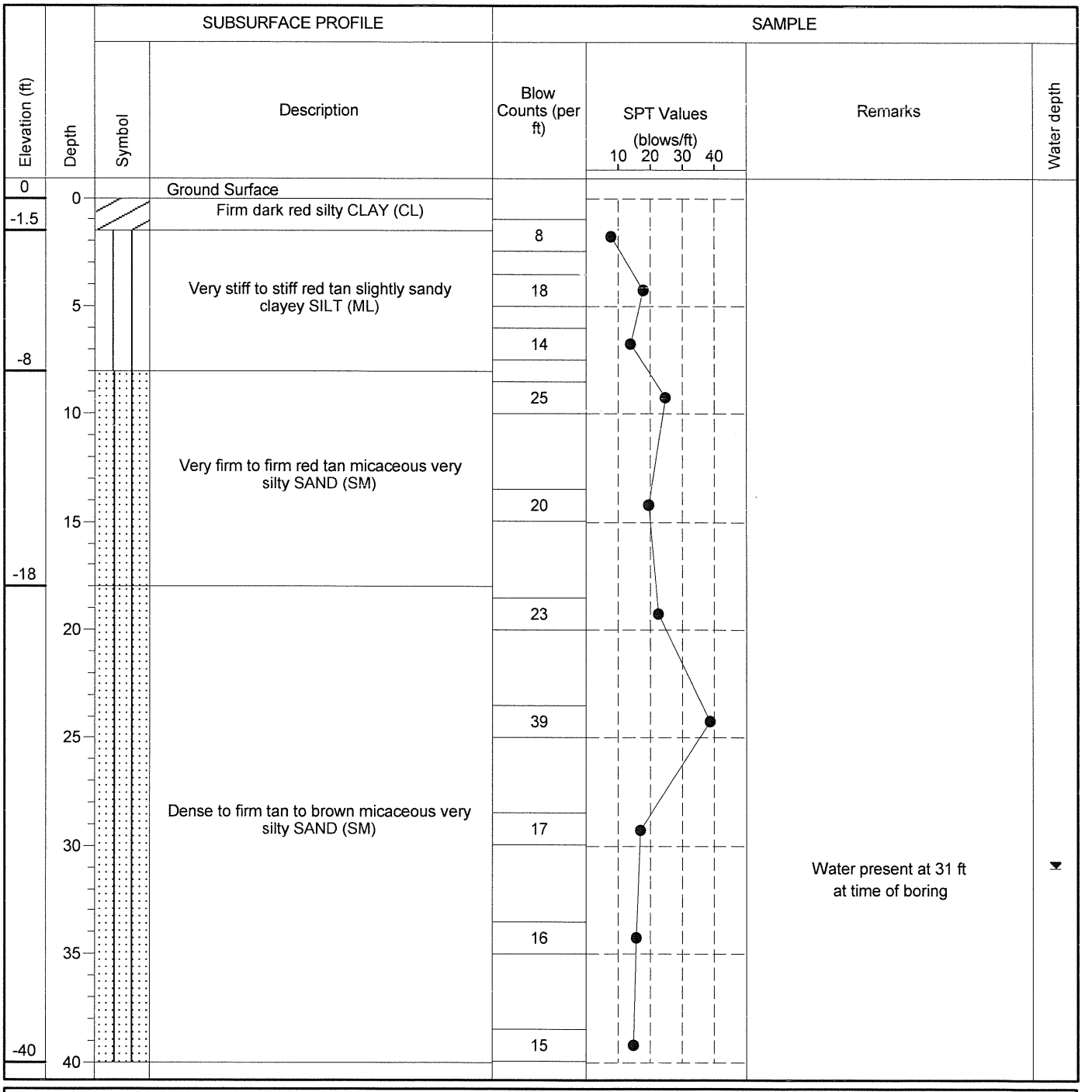
Client: PM&A

ECA Job No: L-568-3

Log of Boring: B-2

Drill Date: November 12, 2010

Field Rep: Tommy



Drilled By: Drill Crews

Borehole Size: 2.25" ID

Drill Method: Hollow Stem Auger

Depth to Water: 31 ft

Total Depth: 40 ft

Sheet: 1 of 1

Environmental Corp. of America
1375 Union Hill Indus. Ct., Ste A
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Project: Senoia Radio Tower

City, State Senoia, GA

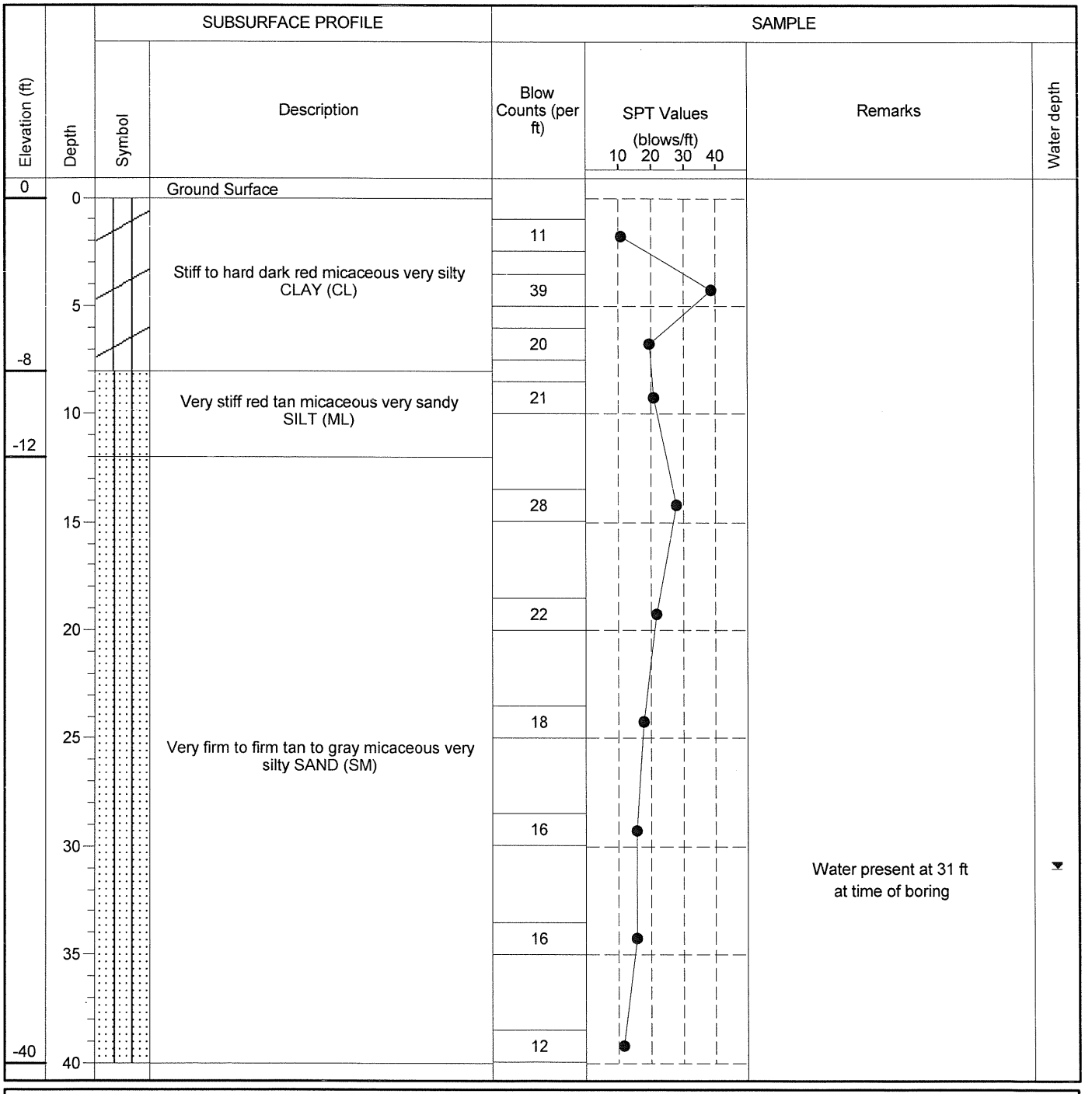
Client: PM&A

ECA Job No: L-568-3

Log of Boring: B-3

Drill Date: November 12, 2010

Field Rep: Tommy



Drilled By: Drill Crews

Borehole Size: 2.25" ID

Drill Method: Hollow Stem Auger

Depth to Water: 31 ft

Total Depth: 40 ft

Sheet: 1 of 1

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APPENDIX C

RESISTIVITY DATA

Soil Resistivity
ASTM G57
SITE: Senoia Radio Tower

Rod Spacing (ft)	Meter Reading (ohms)	Resistivity (ohm-m)
2	99	379
4	72	552
8	54.2	830
16	33	1011
25	20.6	986
40	9.7	743
Average		**750**

Readings obtained with a Megger Digital Earth Tester, DET5/2, by AVO Biddle

Resistivity = 1.915 x Rod Spc (ft) x Ohms