

# Geophysical Site Evaluation

Location/Case: Tinton Manor Iron Works, Tinton Avenue, Tinton Falls, Monmouth County NJ.

Geophysical Methods Deployed: Electromagnetic Conductivity; Ground Penetrating Radar (GPR).

Field Crew: Jeff Waldner, Dave Hall, Dave Pasicznyk, Ian du Bois.

## Investigation Findings Summary

### Introduction

At the request of the Tinton Falls Historical Society, members of the NJ Geological Survey conducted a subsurface investigation at the Tinton Manor Iron Works, Tinton Falls, New Jersey. The objective of the investigation was to locate a possible African-American burial site as suggested by the Rutgers Center for Public Archaeology.

### Geophysical Survey

Electromagnetic Conductivity: This method can be deployed to determine the bulk conductivity properties of the subsurface. This method produces two data sets, In Phase and Quadrature. The In Phase data is an indication of metallic objects while the Quadrature data represents the conductivity. For this survey, the Geonics EM-31 unit was used

(<http://www.geonics.com/html/conductivitymeters.html>).

A grid pattern was created at the area of interest (See Figure(1)) based on the map of the Rutgers Center for Public Archaeology. Figure(2(a)) shows a higher than normal conductivity as compared to the surrounding soils. It is important to note that the In Phase data, Figure(2(b)) shows no significant change in the same location as the Quadrature data.

GPR: This method is effective in delineating the layers of the subsurface. GPR is useful in detecting cavities in the subsurface or disturbed strata. For this survey, the GSSI SIR-3000 was used, along with the 400 MHz Model 5103 and 200 MHz Model 5106 antennas (<http://www.geophysical.com/sir3000.htm>).

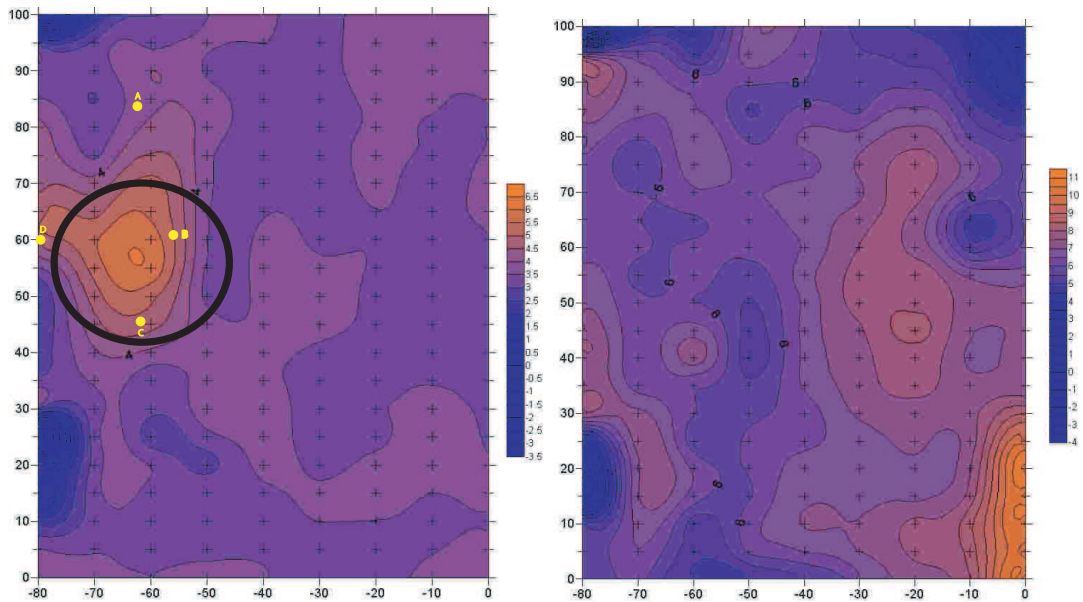
Figure(3) shows the GPR data. The data indicates that this location was an excavation site. This data supports the archeological findings of the Rutgers Center for Public Archaeology. The below Tabular corresponds to the locations on Figure(1).

Location	Northing	Easting	Latitude	Longitude
A	535838.498	603238.262	40° 18' 13.79"	74° 6' 5.71"
B	535843.661	603256.004	40° 18' 13.84"	74° 6' 5.48"
C	535837.184	603275.266	40° 18' 13.77"	74° 6' 5.23"
D	535816.769	603258.556	40° 18' 13.57"	74° 6' 5.45"



Figure 1: Tinton Manor Iron Works with Elerctomagnetic contour map overlaying air photo of investigation area

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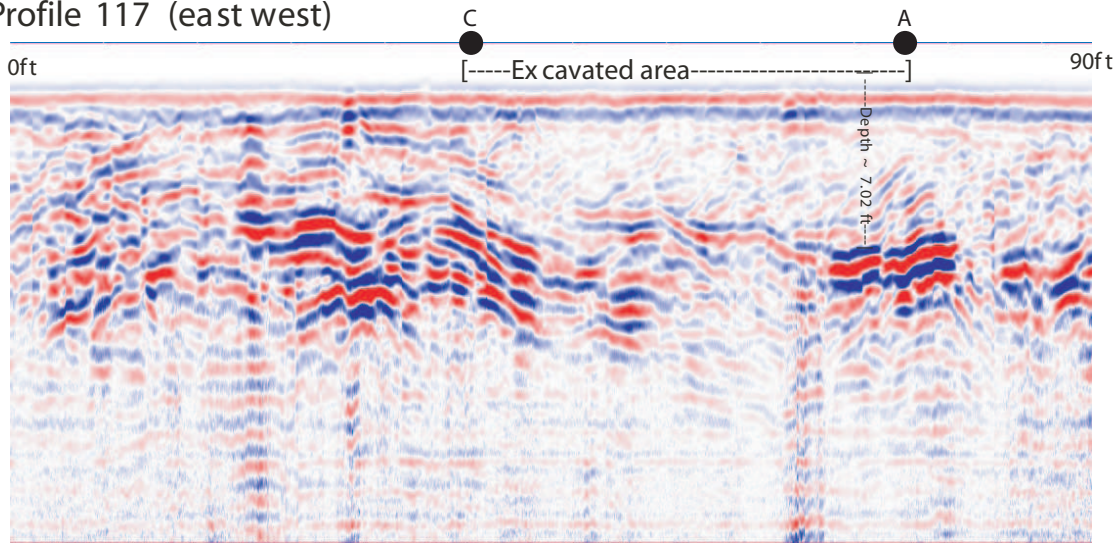


(a) Electromagnetic Conductivity Quadrature. Measurements are in mSiemens/m  
 (b) Electromagnetic Conductivity In Phase. Measurements are in ppt

Figure 2: Electromagnetic Conductivity Data of Investigation area showing both In Phase and Quadrature contour maps. Location of further investigation is noted on Figure(2(a))

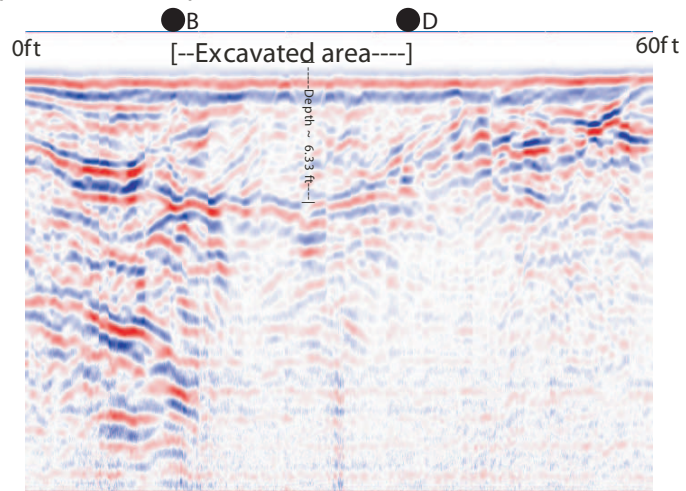
Ground Penetrating Radar (GPR)  
African-American burial ground  
Tinton Manor Iron Works  
Borough of Tinton Falls, NJ

Profile 117 (east west)



GSSI SIR -3000 -200 mhz antenna

Profile 118 (north south)



GSSI SIR -3000 -200 mhz antenna

Figure 3: GPR Data. Locations A,B,C,D correspond to Table on Page(2)

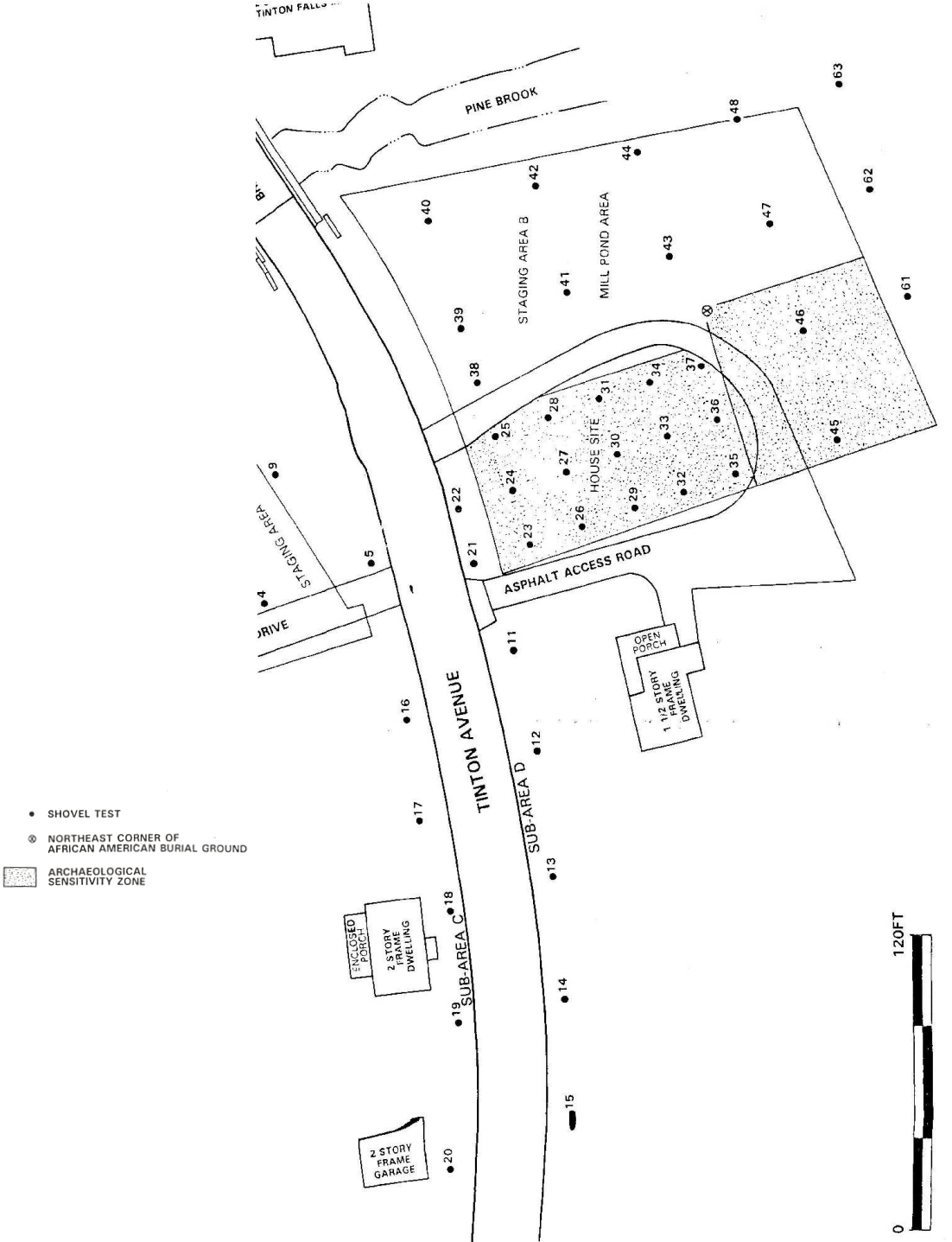


Figure 4: Site map with Legend Modified from the Rutgers Center for Public Archaeology



Borough of  
Tinton Falls  
New Jersey

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January 29, 2009

Dr. Karl Muessig, New Jersey State Geologist  
New Jersey DEP  
Geological Survey  
P.O. Box 427  
Trenton, NJ 08625-0427

Dear Dr. Muessig:

The Borough of Tinton Falls is working to identify a 17<sup>th</sup> century African-American burial ground that we believe exists in our historic district. Several documentary sources refer to a burial ground associated with the iron works at Tinton Falls (known then as the Tinton Manor Iron Works), in which slaves from the iron works were buried. The tract is part of the Crawford house property, owned by the Borough and lying at the heart of our National and State Registered historic district. The Borough is rehabilitating the house (with some funding from the NJ Historic Trust) and is planning for use of the surrounding property; critical to that planning is knowing the location of this burial ground.

I understand that you work with ground-penetrating technology that could survey such a site, and identify the location of remains. I would be most interested in having a survey done of the Crawford house property - can you tell me if that is possible, and if so, how I could make an application? I would also need to know, obviously, what the associated cost would be, though we are exploring the possibility of grants to help defray expenses. Any information you can give me would be most appreciated. You can reach me most directly via email, at [sslowinski@verizon.net](mailto:sslowinski@verizon.net).

Very truly yours,

Stacey Slowinski  
Chair, Tinton Falls Historic Preservation Commission

Figure 5: Letter Requesting the Assistance of the NJ Geological Survey