APPENDIX C

GEOPHYSICAL REPORT

GEOPHYSICAL ENGINEERING SURVEY REPORT

Commercial Property

700 E 241st Street
Bronx, New York 10470

NOVA PROJECT NUMBER
15-0522

DATED
January 27, 2015

PREPARED FOR:

LANGAN

Long Warf Maritime Center –
555 Long Warf Drive
New Haven, CT 06511

PREPARED BY:

NOVA
GEOPHYSICAL
ENGINEERING
Subsurface Mapping Solutions

56-01 Marathon Parkway # 765
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NOVA GEOPHYSICAL SERVICES

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January 27, 2015

Ryan J Wohlstrom, P.E. LEED AP
Project Engineer
LANGAN
Long Warf Maritime Center –
555 Long Warf Drive
New Haven, CT 06511
Direct: 203.784.3069
Mobile: 203.464.2731

Re: Geophysical Engineering Survey (GES) Report
Commercial Property
700 East 241st Street
Bronx, New Jersey 10470

Dear Mr. Wohlstrom:

Nova Geophysical Services (NOVA) is pleased to provide findings of the geophysical engineering survey (GES) at the above referenced project site: Commercial Property, 700 East 241st Street, Bronx, New York (the "Site"). Please see attached Site Location and Geophysical Survey maps for more details.

INTRODUCTION TO GEOPHYSICAL ENGINEERING SURVEY (GES)

NOVA performed a Geophysical engineering surveys (GES) consisting of a Ground Penetrating Radar (GPR) survey at the site. The purpose of this survey is to locate and identify USTs, anomalies, utilities and other substructures and to clear and mark proposed environmental boring areas on January 23, 2015.

The equipment selected for this investigation was Noggin's 250 MHz ground penetrating radar (GPR) shielded antenna.

A GPR system consists of a radar control unit, control cable and a transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 250 MHz. The trigger pulse is sent to the transmitter electronics in the transducer via the control cable. The transmitter electronics amplify the trigger pulses into bipolar pulses that are radiated to the surface. The transformed pulses vary in shape and frequency according to the transducer used. In the subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit and are represented as color graphic images for interpolation.

GEOPHYSICAL METHODS

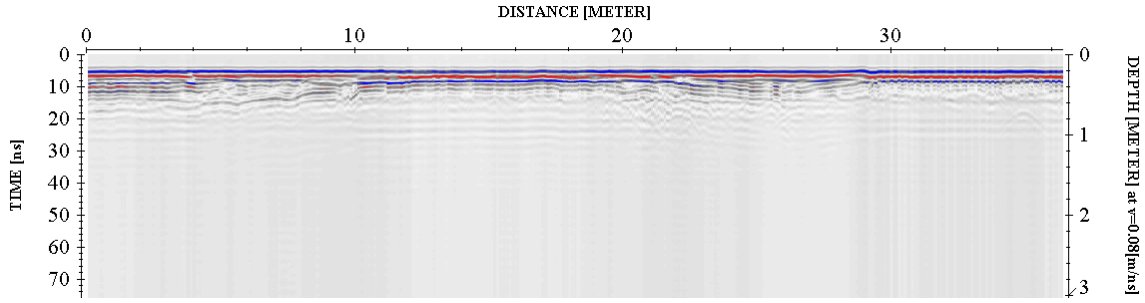
The project site was screened using the GPR to search the entire area and inspected for reflections, which could be indicative of major anomalies and substructures. Specific borehole locations were screened in a smaller grid prior to finalizing placement.

GPR data profiles were collected for the areas of the Site specified by the client. The surveyed areas consisted of dirt, concrete and asphalt surfaces.

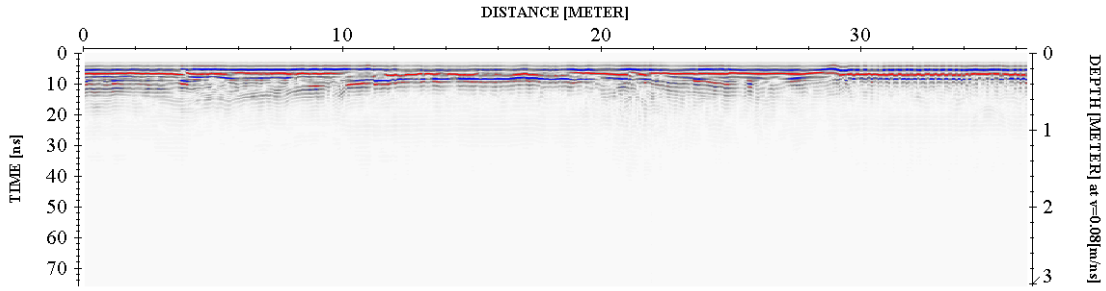
DATA PROCESSING

In order to improve the quality of the results and to better identify subsurface anomalies NOVA processed the collected data. The processes flow is briefly described at this section.

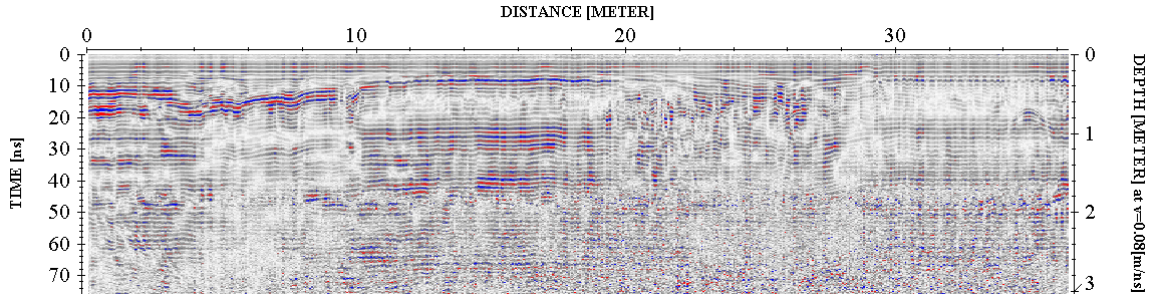
Step 1. Import raw RAMAC data to standard processing format



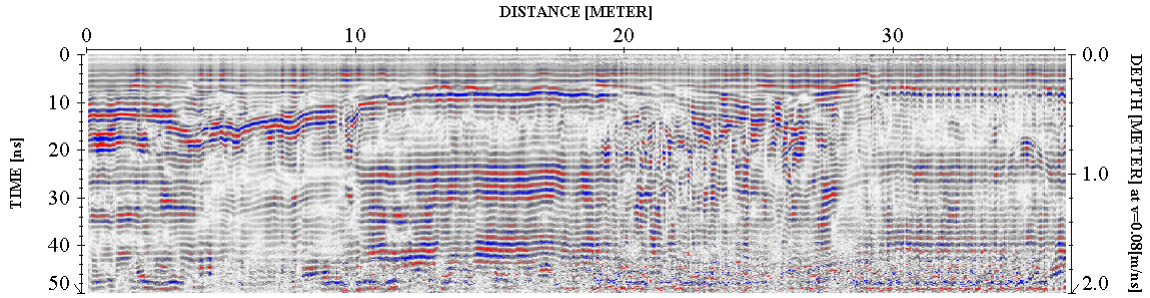
Step 2. Remove instrument noise *(dewow)*



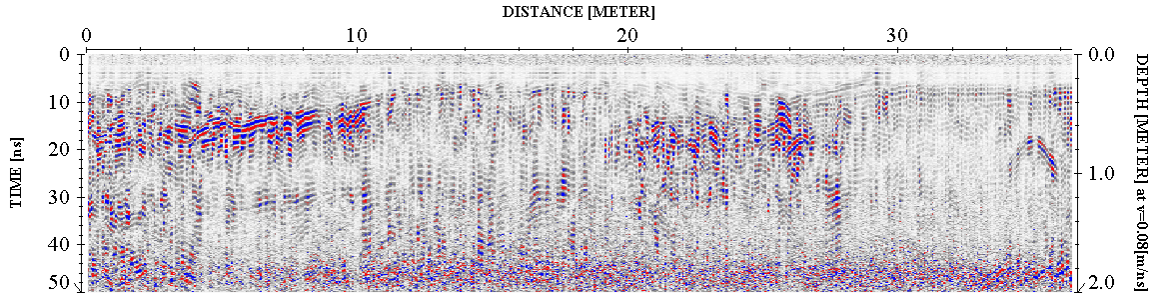
Step 3. Correct for attenuation losses *(energy decay function)*



Step 4. Remove static from bottom of profile *(time cut)*



Step 5. Mute horizontal ringing/noise *(subtracting average)*



The above example shows the significance of data processing. The last image (step 5) has higher resolution than the starting image (raw data – step 1) and describes the subsurface anomalies more accurately.

PHYSICAL SETTINGS

Nova observed following physical conditions at the time of the survey:

The weather: Sunny

Temp: 35 Degrees (F).

Surface: Dirt and paved (concrete-asphalt) surfaces

Geophysical Noise Level (GNL): Geophysical Noise Level (GNL) was medium to high at the site. The noise was a direct result of the survey site being located in an urban environment. Ice on the fround prevented some areas from being surveyed.

RESULTS

The results of the geophysical engineering survey (GES) identified following at the project Site:

- GES survey identified scattered anomalies located throughout the project site. Based on their rates and proximity, these anomalies were inconsistent with any USTs. These areas were indicated on the on-site markout.
- Several utilities (sewer, water) were located on the site. These were marked out both at the site and on the survey map (subsurface only).
- Several large anomalies, consistent with potential USTs, were located on the site. These are indicated both at the site and on the survey map.
- Geophysical Survey Plan portrays the areas investigated during the geophysical survey.

If you have any questions please do not hesitate to contact the undersigned.
Sincerely,

NOVA Geophysical Services

Levent Eskicakit, P.G., E.P.
Project Engineer

Attachments:
Figure 1 Site Location Map
Geophysical Survey Plan
Geophysical Images

N

200 ft.

FIGURE 1
SITE LOCATION MAP

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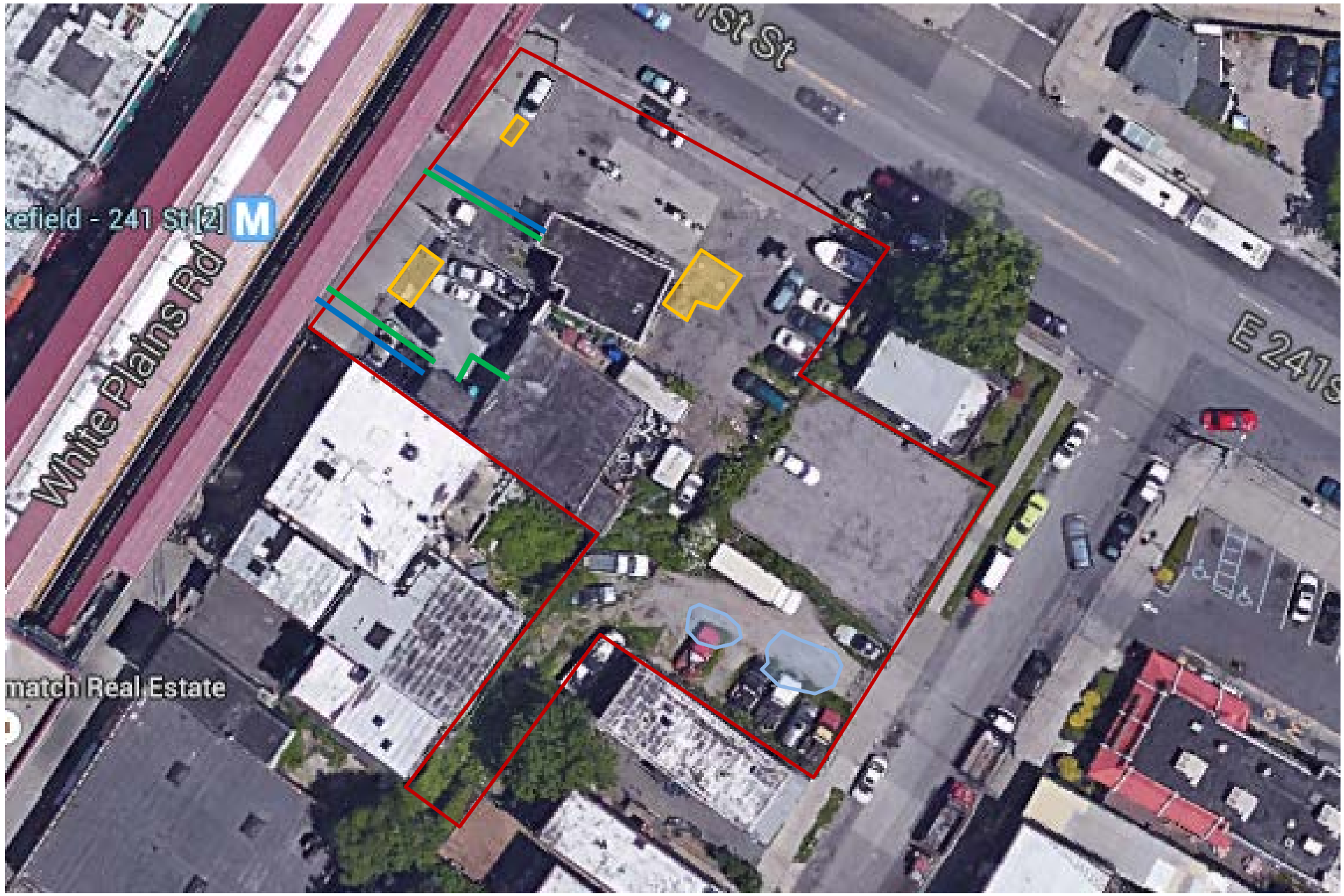
SITE: **Commercial Property**
700 E 241st Street
Bronx, New York 10470

SCALE: See Map



1- All anomalies were marked in the field.

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GEOPHYSICAL SURVEY PLAN

SITE : **Commercial Property**
700 E 241st Street
Bronx, New York 10470

CLIENT: **LANGAN**
DATE: January 23, 2015
Scale See Map

INFORMATION

- Survey Area
- Ice
- Potential UST
- Sewer Line
- Water Line

N

50 ft.

GEOPHYSICAL IMAGES

Commercial Property
700 E 241st Street
Bronx, New York 10470
January 23rd, 2015

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