

APPENDIX Q

SITE VISIT PHOTO LOG AND GEOPHYSICAL SURVEY RESULTS

**Nike BU-34/35:
Launch Area and Control Area Site Visit
April 25, 2017**

Weather:

- High: 64°F, Rain with 8 mph winds

Site Personnel:

- Penny Reddy (USACE)
- Ben Headington and Keith Fields (TI2E)
- Jay Graf (Geo-Graf)
- John Wokasien (Roswell Park)

Summary of Activities and Pictures (4/25/2017):

- Contacted Mary Butler and John Wokasien on Monday to confirm arrival times.
- Arrived at the Launch Area at 7:50AM. Ben met John Wokasien at the Control Area at 9:30AM.
- Completed work at both areas at approximately 12:15PM.
- Investigated the six areas identified in the Site Visit Plan submitted to USACE on April 12. Each Area is discussed below.

Former Location of Building 111 – Paint and Oil Storage Shed (Control Area)

- Visual inspection of the former shed location confirmed the building and associated structures have been removed.



Former Location of Potential USTs Associated with Former Building 7 - East Engine Generator and Frequency Changer Building (Control Area)

- Conducted a geophysical survey (electromagnetic, radiofrequency, and ground penetrating radar) of the area (approximately 100-ft by 100-ft surrounding the former Generator Building) to determine if the USTs are still present beneath the surface.
- Geophysical survey did not reveal any indication of a UST in the area.
- No mounding was observed in the area as depicted on the historical photograph.



Former Location of Potential USTs Associated with Former Building 13 - West Engine Generator and Frequency Changer Building (Control Area)

- Conducted a geophysical survey (electromagnetic, radiofrequency, and ground penetrating radar) of the area (approximately 100-ft by 100-ft surrounding the former Generator Building) to determine if the USTs are still present beneath the surface.
- Geophysical survey did not reveal any indication of a UST in the area.
- No mounding was observed in the area as depicted on the historical photograph.



Former Location of the “Oil Storage Shed” Along the Western Property Boundary (Launch Area)

- Conducted a visual inspection of the former location to confirm the building and associated structures. Tubular metal framing and a concrete foundation were located.



Former Government Easement Area Located South of the Property Boundary (Launch Area)

- Conducted a visual inspection of this area, looking for evidence of Army activity in this area.
- No evidence of Army activity was observed in this area. Some Army debris was observed within the channel along the southern border of the property.
- GPS coordinates will be obtained from existing maps and used to help locate the area.



Former Location of Potential USTs Associated with the Generator Building (Launch Area)

- Conducted a geophysical survey (electromagnetic, radiofrequency, and ground penetrating radar) of the area (approximately 100-ft by 100-ft surrounding the former Generator Building) to determine if the USTs are still present beneath the surface.
- Geophysical survey revealed that a UST was in fact still located in the area adjacent to the former Generator Building (see attached Figure)
- Note: sampling near the UST has not revealed any indication of a release.



Project Summary:

This report contains the findings of a nonintrusive geophysical subsurface investigation performed by Geo-Graf, Inc. (GGI) on April 25, 2017, at the Nike BU-34/35 Launch Area (601 Willardshire Road) in the Village of East Aurora and the Control Area (Transit Road) in the town of Orchard Park, Erie County, New York. The Investigation was conducted in accordance with the GGI Nonintrusive Geophysical Subsurface Investigation Proposal Number 3780, dated April 6, 2017.

The accessible sections of three specified search areas were investigated by GGI in an attempt to delineate the location, size, orientation, and depth of metallic underground storage tanks (USTs).

Detected USTs

UST-like data signatures indicative of a possible 4,000-gallon tank were delineated at the Launch Area.

No UST features were detected within the investigated sections at the Control Area.

Subsurface Anomalies

No additional significant subsurface metallic anomalies were detected within the investigated areas.

Findings are presented on a color plan-view Subsurface Anomaly Map (***SAM***) that accompanies this report.

Scope of Work

Perform a nonintrusive geophysical subsurface investigation within the accessible sections of the specified search areas in an attempt to delineate the location, size, orientation, and depth of metallic underground storage tanks (USTs).

The nonintrusive geophysical delineation techniques utilized will include collection and interpretation of data from Ground Penetrating Radar (GPR), Electromagnetic (EM), Radio Frequency (RF) and Magnetic (MAG) instrumentation (where/when applicable). The collected site data will be analyzed and correlated with the findings presented on a color plan-view GGI Subsurface Anomaly Map (***SAM***).

Specified Search Areas

Three areas were specified for investigation and are described below.

Control Area (Transit Rd Site)

- Area 2 – Former East Engine Generator and Frequency Changer Bldg – An approximately 100' x 100' area encompassing the former building location was specified for investigation.
- Area – 3 – Former West Engine Generator and Frequency Changer Bldg - An approximately 100' x 100' area encompassing the former building location was specified for investigation.

Launch Area (Willardshire Rd Site)

- Area 6 – Former Generator Building - An approximately 100' x 100' area encompassing the former building location was specified for investigation.

Geophysical Investigation

On April 25, 2017, GGI performed a nonintrusive geophysical subsurface investigation as directed by Ben Headington, Project Manager – Tidewater, Inc.

Investigative Procedure

GGI initially investigated the accessible sections of the specified search area using EM and MAG in an attempt to locate UST-like subsurface metallic anomalies. Detected anomalies were field-marked in white paint and their locations documented by GGI.

GPR profiles were subsequently completed over the detected EM and/or MAG anomalies in an attempt to delineate UST-like GPR data signatures typically associated with USTs. In addition sample GPR profiles were completed throughout the accessible search area. The GPR data was collected utilizing a 400 MHz antenna system. The GPR data profiles were recorded for subsequent review and post-processing at the GGI office. Possible tank locations observed from the field data were marked in white paint/flags and their locations documented by GGI.

Geophysical Instrumentation

The following is a list and brief description of the geophysical instrumentation utilized for this investigation.

GPR

A Geophysical Survey Systems, Inc. Subsurface Interface Radar System 3000 GPR unit was used for this investigation. Profiles collected on site are digitally recorded for subsequent data analysis and post-processing at the GGI office.

Antenna Systems

Each GPR antenna operates at a different center band frequency that's measured in megahertz (MHz). The use of the different antenna systems is based on the fact that the higher the antenna frequency, the greater the GPR image resolution (ability to detect smaller-sized targets), but at the cost of signal penetration depth. Thus the converse is true, the lower the antenna frequency, the deeper the signal penetration, but at the cost of image resolution. For most projects the GGI field crew will carry five GPR antenna systems which range from 1500 MHz to 120 MHz. Additional antennas and configurations can be used for unique applications.

Data Interpretation

The GPR data profiles recorded at this site are downloaded from the collection unit for storage and analysis. Various computerized post-processing techniques are used in an attempt to improve the data resolution. Each profile is individually reviewed and the findings correlated with data from the other geophysical instruments used in this investigation. Profiles best representing the targets-of-concern are selected and annotated for inclusion in this report.

Applications

GPR data can be collected and used to delineate underground metallic and nonmetallic tanks, drums and utilities. The data can also be interpreted to delineate utility leaks, sinkholes and voids, geologic features such as near-surface consolidated rock and contamination plumes. GPR is the only nonintrusive technique capable of mapping burials within a cemetery. Other applications include the delineation of buried artifacts and historical structures, as well as, use in the structural engineering fields (concrete floor/wall analysis, post-tensioned cable locating).

EM

An Aqua-tronics Tracer model A-6 was used for this investigation. EM techniques operate by inducing and measuring the returning electric field on subsurface metallic objects. Data is obtained in the field and can be recorded via a separate data collection unit.

Applications

EM techniques are utilized to delineate the location subsurface utilities as well as the location and boundaries of large buried metallic objects including tanks, drum piles and foundations among other things. EM is also capable of defining areas that contain conductive subsoil.

MAG

A Dunham and Morrow model MAG PRO II Magnetic was used for this investigation. The instrument, also defined as a vertical-field gradiometer, operates by measuring the remnant vertical

magnetic fields that naturally emanate from iron objects. Data is obtained in the field and can be recorded via a separate data collection unit.

Applications

MAG techniques are used to detect buried valve and manhole covers, individual drums or drum piles and assist in the detection of utilities, tanks and other anomalous features.

Findings

Refer to the color plan-view **SAM** for the plotted findings.

Detected UST – Area 6

UST-like GPR data signatures indicative of a possible 4,000-gallon (64" x 21') tank, oriented east-west, were delineated within the accessible sections of the investigated area within Area 6 (Launch Area). The location of the tank was field-marked by GGI in white paint/flags and was documented by Tidewater personnel. Estimated depth to the top of the tank based on GPR data approximations is 5' below grade.

Subsurface Anomalies

No additional significant subsurface metallic anomalies were detected within the accessible sections of the investigated areas.

GPR Anomalies

Typically, subsurface anomalies delineated by GPR could be associated with utilities, isolated debris, foundational remnants, buried concrete, or certain identifiable features such as USTs, septic tanks, drums, buried reinforced concrete, etc.

EM Anomalies

Typically, EM-detected subsurface anomalies can represent buried metallic features such as tanks, drums, foundations (containing rebar), utilities, and/or metallic debris. EM anomalies can represent areas containing conductive subsoil.

MAG Anomalies

Typically, MAG-detected subsurface anomalies are representative of buried iron-containing features such as tanks, drums, foundations (containing rebar), metallic debris, certain utilities, buried valve, manhole, and/or well covers, etc.

The estimated maximum GPR signal penetration achieved at this site is approximately 8' below grade. Thus, features existing at or below this depth will go undetected.

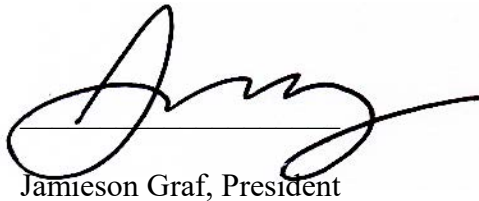
Recommendations

GGI did not perform a utility investigation at this site. Utilities may exist within the UST search areas and surrounding the detected anomalies. GGI strongly recommends that a utility investigation be performed in order to locate and field-mark underground utilities prior to any intrusive efforts.

GGI always recommends careful ground-truthing to verify all investigative findings. GGI recommended ground-truthing methods are hand-digging or *Soft-Dig* air/vacuum excavating.

All services provided by GGI are performed under the disclaimer found on the cover page of this report. Also note, just because features or anomalies were not detected by the geophysical techniques within the investigated area, does not preclude the possibility that they could exist and go undetected.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jamieson Graf', written over a horizontal line.

Jamieson Graf, President

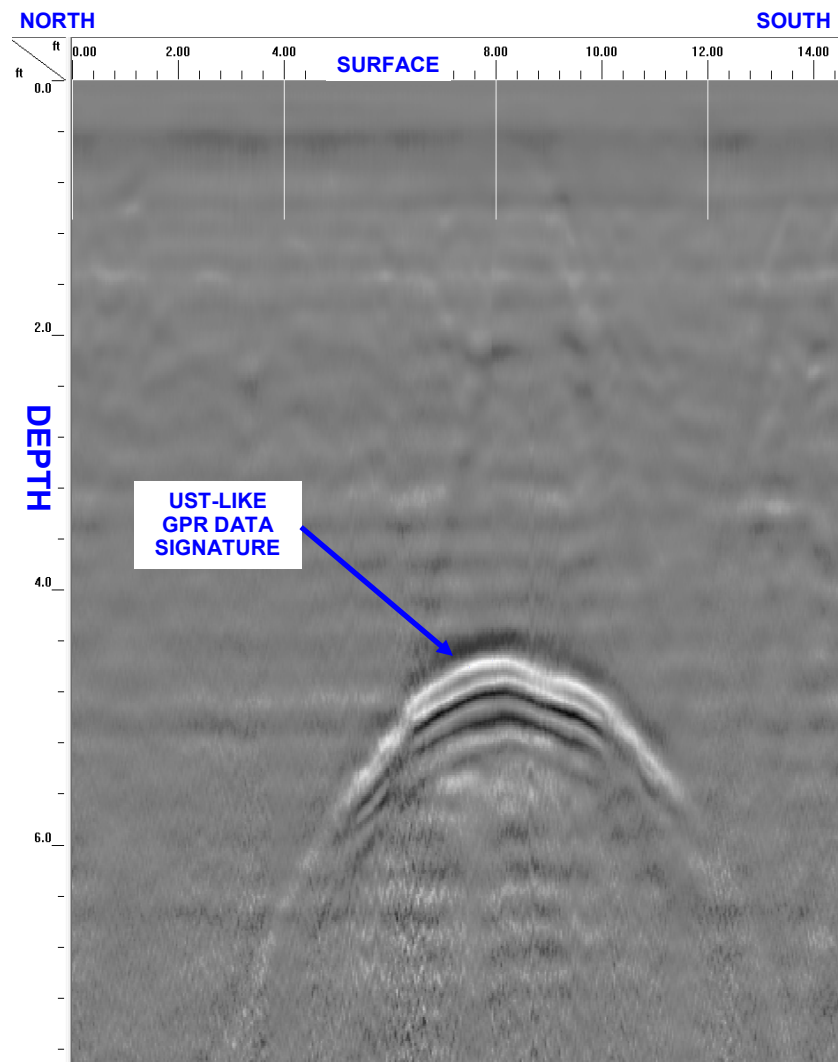


Figure 1-GPR Data Profile

Representative GPR data profile excerpt-*Area 6*. The profile extends from north to south over the detected tank (refer to the *SAM*). Shown in this profile are the UST-like GPR data signatures indicative of a 64"-diameter tank oriented east-west. Estimated depth to the top of the tank based on GPR data approximations is 5' below grade. 400 MHz GPR antenna system, edited from 50 ns.



Figure 2 – Site Photograph – Detected UST Area 6



Figure 3 – Site Photograph – Area 2



GOOGLE EARTH IMAGE

DETECTED USTS

No UST-like GPR data signatures were detected within the accessible sections of the investigated areas.

SUBSURFACE ANOMALIES

No significant subsurface anomalies were detected within the accessible sections of the investigated areas.

GPR Anomalies

Typically, subsurface anomalies delineated by GPR could be associated with utilities, isolated debris, foundational remnants, buried concrete, or certain identifiable features such as USTs, septic tanks, drums, buried reinforced concrete, etc.

EM Anomalies

Typically, EM-detected subsurface anomalies can represent buried metallic features such as tanks, drums, foundations (containing rebar), utilities, and/or metallic debris. EM anomalies can represent areas containing conductive subsoil.



MAG Anomalies

Typically, MAG-detected subsurface anomalies are representative of buried iron-containing features such as tanks, drums, foundations (containing rebar), metallic debris, certain utilities, buried valve, manhole, and/or well covers, etc.

The estimated maximum GPR signal penetration achieved at this site is approximately 8' below grade. Thus, features existing at or below this depth will go undetected.

NOT A UTILITY MAP

GGI did not perform a utility investigation at this site. A utility investigation to locate and field-mark underground utilities prior to any intrusive efforts is strongly recommended.

-  = GPR-DETECTED SUBSURFACE ANOMALY
-  = GGI INVESTIGATED AREA

GGI recommends careful ground-truthing to verify and correlate all investigation findings. Recommended ground-truthing methods are hand digging or *Soft-Dig* (pot-holing) excavating.

Services, data interpretation, and investigation findings provided by Geo-Graf, Inc., shall be performed with our best professional effort. The detectability and location accuracy of underground features; as well as, the geophysical instruments' signal penetration depths are dependent upon the electrical properties and site-specific characteristics of the ground, soils, and/or materials scanned. Thus, the resulting data interpretations and investigation findings provided by Geo-Graf, Inc. are opinions based on inference from the acquired geophysical data and should be considered for "Informational Purposes Only" unless said data is properly verified via ground-truthing or other intrusive efforts, and is reviewed and sealed by a licensed professional engineer (PE). Geo-Graf, Inc., cannot and does not guarantee the desired signal penetration depth or accuracy/correctness of our interpretations and investigation findings. The lack of detected subsurface features or targets-of-concern within an investigated area does not preclude the possibility that these features exist and have gone undetected. Geo-Graf, Inc., will not accept liability or responsibility for any losses, damages or expenses that may be incurred or sustained by any services, data interpretations or investigation findings provided by Geo-Graf, Inc.

The accessible sections of the search area, as shown, were investigated by Geo-Graf, Inc. (GGI) using Ground Penetrating Radar (GPR), Radio Frequency (RF), Electromagnetic (EM), and Magnetic (MAG) (where/when applicable) nonintrusive geophysical subsurface techniques in an attempt to delineate the location, size, orientation, and depth of metallic underground storage tank(s) (USTs).

**AREAS 2 & 3
FORMER DIESEL
GENERATOR
LOCATIONS**

TRANSIT ROAD
ORCHARD PARK, NEW YORK



1138 Pottstown Pike, West Chester, PA 19380

Specializing in
Ground Penetrating Radar Applications

800-690-3745 www.geo-graf.com

PREPARED FOR:
UNDERGROUND SERVICES

DATE:
MAY 2, 2017

SUBSURFACE ANOMALY MAP

GEOPHYSICAL INVESTIGATION FINDINGS
UST SEARCH
FORMER NIKE BU 34/35 CONTROL AREA, ORCHARD PARK, NEW YORK

SIZE B	BASE MAPPING FILE:	GEO-GRAF, INC. PROJECT NUMBER: 042517	REV A
SCALE NONE	FILE NAME: 042517-SOFT-DIG.DWG	DRAWN BY JG	SHEET 1/1

