



FUSS & O'NEILL

February 12, 2021

Mr. Kevin Proft
City of Woonsocket
169 Main Street
Woonsocket, RI 02895

RE: Geophysical Survey
Hospital Trust Bank
162 Main Street, Woonsocket, RI

Dear Mr. Proft:

Fuss & O'Neill has prepared this letter to summarize the findings of a recent Ground-Penetrating Radar (GPR) survey at the above-referenced site. The GPR survey was performed on behalf of the City of Woonsocket.

Project Background

On June 24, 2020, Fuss & O'Neill submitted a *Phase I Environmental Site Assessment* (ESA) of the property located at 162 Main Street in Woonsocket, Rhode Island. The *Phase I ESA* was prepared on behalf of the City of Woonsocket.

During the local file review performed as part of the *Phase I ESA*, an application for a 500-gallon diesel oil tank was discovered. The application was submitted to the Woonsocket Fire Department on July 23, 1974. The application did not specify whether the tank was an above ground or underground storage tank (UST). There were no further records documenting the installation, removal, or location of the tank.

The *Phase I ESA* identified the unknown existence of the diesel tank as a Recognized Environmental Condition (REC), i.e.--the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property, constituting a release or material threat of release to the environment.

Fuss & O'Neill contracted Ground Penetrating Radar Systems (GPRS) to perform a GPR survey to search for evidence of an UST adjacent to the building's footprint.

On January 5, 2021, GPRS performed the GPR survey to evaluate the site for the presence of an UST. The GPR survey was conducted within the northern paved courtyard area. The scan was performed on three-foot to five-foot spacing. The maximum penetration with the radar averaged

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Kevin Proft, City of Woonsocket

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approximately two to three feet deep in most areas. The approximate survey location area is depicted on *Figure 1*.

The GPR survey was limited to the northern portion of the courtyard area. GPRS attempted to scan the eastern portion of the courtyard area but were unable due to obstructions including walls, construction debris, and trash.

Findings and Recommendations

GPRS prepared a *GPR Investigation Report* summarizing the findings of the investigation activity. A copy of the report is attached in *Attachment A*. GPRS identified no signatures indicative of USTs or associated appurtenances (i.e. service lines, fill ports, recent excavation lines or metallic anomalies) during the survey activities. GPRS did identify and mark-out several possible electrical utility lines extending from the adjacent retaining wall to the building's footprint.

Based on the findings of this investigation, the potential presence of a tank referenced in the *Phase I ESA* was not confirmed. Therefore, no specific UST closure activities are warranted at this time. We note that although these features were not detected, UST systems may have been previously closed without documentation, and affected soil may be encountered during if subsurface disturbances are conducted. If during redevelopment activities, soil containing petroleum is identified, additional soil management activities may be required. However, no further actions are warranted at this time.

Please contact us if you have any questions regarding the information presented herein.

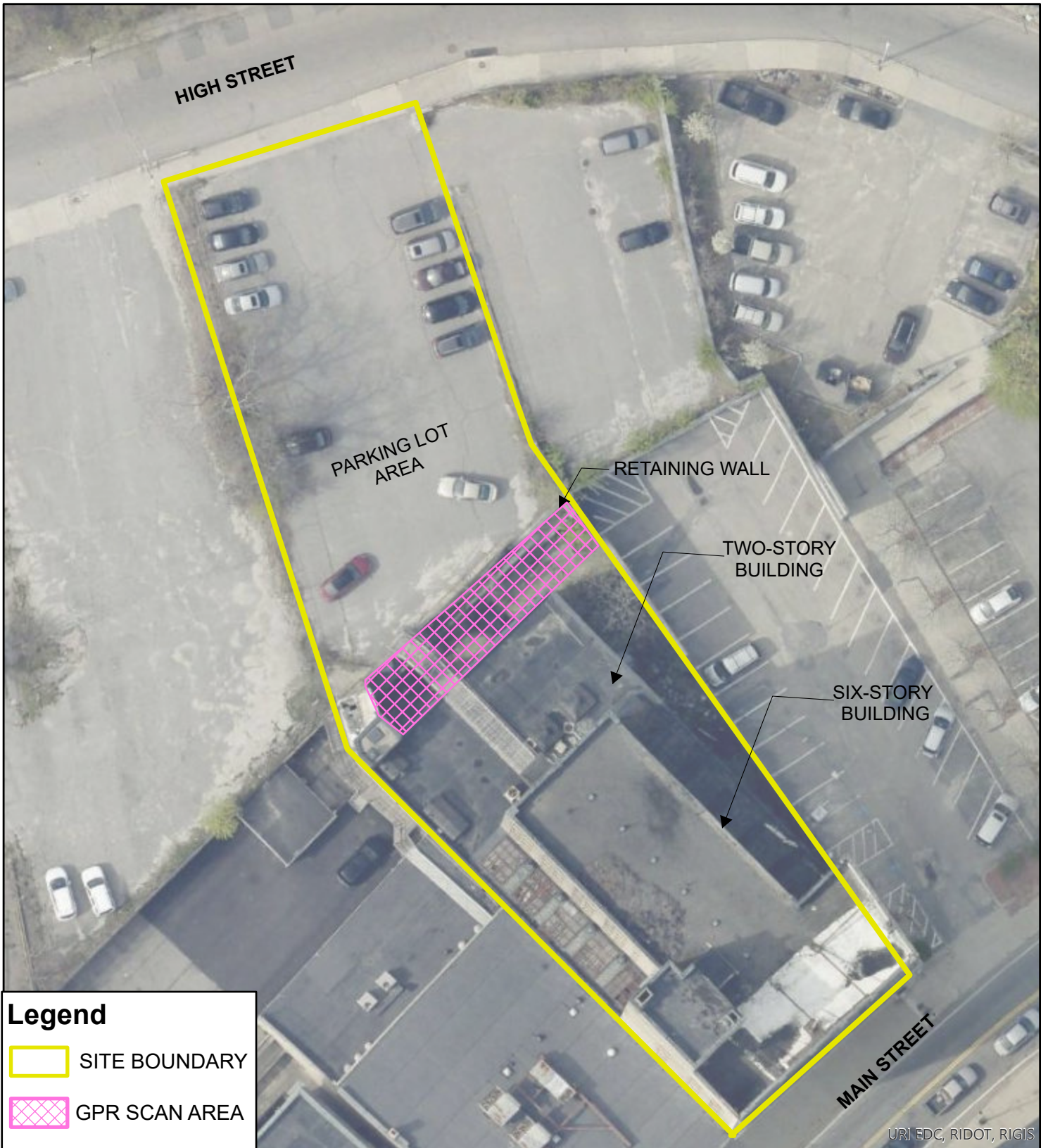
Sincerely,

Patrick J. Dowling, CPG
Associate | Department Manager

/rlz

Attachments: Figure 1: Site Location Map
Attachment A - GPRS GPR Investigation Report

Figure



FEBRUARY 2021

20181545.B10

FIGURE 1

SITE PLAN



Attachment A

GPRS GPR Investigation Report



Summary of Underground Utility Locating Summary of Scanning for Underground Storage Tanks (UST's)

Prepared For: Fuss & O'Neill

Prepared By:
Jaime Gamache
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Senior Project Manager-Boston
508-272-9384
January 6, 2021

January 6, 2021

Fuss & O'Neill

Attn: Allen Tevyaw

Site: Woonsocket, RI

We appreciate the opportunity to provide this report for our work completed on January 5, 2021.

PURPOSE

The purpose of the project was to search for underground utilities and/or for any suspected underground storage tanks (USTs) or suspected UST-related piping or other anomalies remaining on the property within the project boundaries provided by the client. The scope of work consisted of one location measuring approximately 1,000 square feet. The interiors of buildings were excluded from the scope of this project. The client marked the desired locations prior to our scanning and our markings were then placed onto the surface using pink spray paint.

EQUIPMENT

- **Underground Scanning GPR Antenna.** The antenna with frequencies ranging from 250 MHz-450 MHz is mounted in a stroller frame which rolls over the surface. The surface needs to be reasonably smooth and unobstructed in order to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the feasibility of GPR. The data is displayed on a screen and marked in the field in real time. The total depth achieved can be as much as 8' or more with this antenna but can vary widely depending on the types of materials being scanned through. Some soil types such as clay may limit maximum depths to 3' or less. As depth increases, targets must be larger in order to be detected and non-metallic targets can be especially difficult to locate. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **Electromagnetic Pipe Locator.** The EM locator can passively detect the electromagnetic fields from live AC power or from radio signals travelling along some conductive utilities. It can also be used in conjunction with a transmitter to connect directly to accessible, metallic pipes or tracer wires. A current is sent through the pipe or tracer wire at a specific frequency and the resulting EM field can then be detected by the receiver. A utility's ability to be located depends on a variety of factors including access to the utility, conductivity, grounding, interference from other fields, and many others. Depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **Magnetometer.** The magnetometer detects the magnetic field of a ferromagnetic object. It responds to the difference in the magnetic field between two sensors. It is interpreted in the field by listening to changes in frequency as emitted by a speaker on the device. Larger metallic objects can be located at depths of up to 10' or more but total depths will depend on the size, type, shape, and orientation of objects along with the amount of interference from other objects. For more information, please visit: [Link](#)

PROCESS

The process typically begins with using the EM pipe locator to locate pipes or utilities throughout the scan area. First, the transmitter is used to connect to and trace any visible risers, tracer wires, or accessible, conductive utilities provided that there is an exposed, metallic surface. The areas are then swept with the receiver to detect live power or radio frequency signals. Locations and depths are painted or flagged on the surface. Depths cannot always be provided depending on the location method and can be prone to error.

Initial GPR scans were then collected in order to evaluate the data and calibrate the equipment. Based on these findings, a scanning strategy is formed, typically consisting of scanning the entire area in a grid with 5' scan spacing in order to locate any potential utilities that were not found with the pipe locator. The GPR data is viewed in real time and anomalies in the data are located and marked on the surface along with their depths using spray paint, pin flags, etc.

The magnetometer was used to sweep the site every 3'-5' to search for readings that may represent buried, ferrous objects. Upon detection, the readings will be marked on the surface and then investigated from multiple directions and with other methods such as GPR.

LIMITATIONS

Please keep in mind that there are limitations to any subsurface investigation. The equipment may not achieve maximum effectiveness due to soil conditions, above ground obstructions, reinforced concrete, and a variety of other factors. No subsurface investigation or equipment can provide a complete image of what lies below. Our results should always be used in conjunction with as many methods as possible including consulting existing plans and drawings, exploratory excavation or potholing, visual inspection of above-ground features, and utilization of services such as One Call/811. Depths are dependent on the dielectric of the materials being scanned so depth accuracy can vary throughout a site. Relevant scan examples were saved and will be provided in this report.

FINDINGS


The subsurface conditions at the time of the scanning allowed for maximum GPR depth penetration of 2-3' in most areas. All located anomalies were not able to be positively identified as specific utilities. No other anomalies were detected within the investigation parameters.

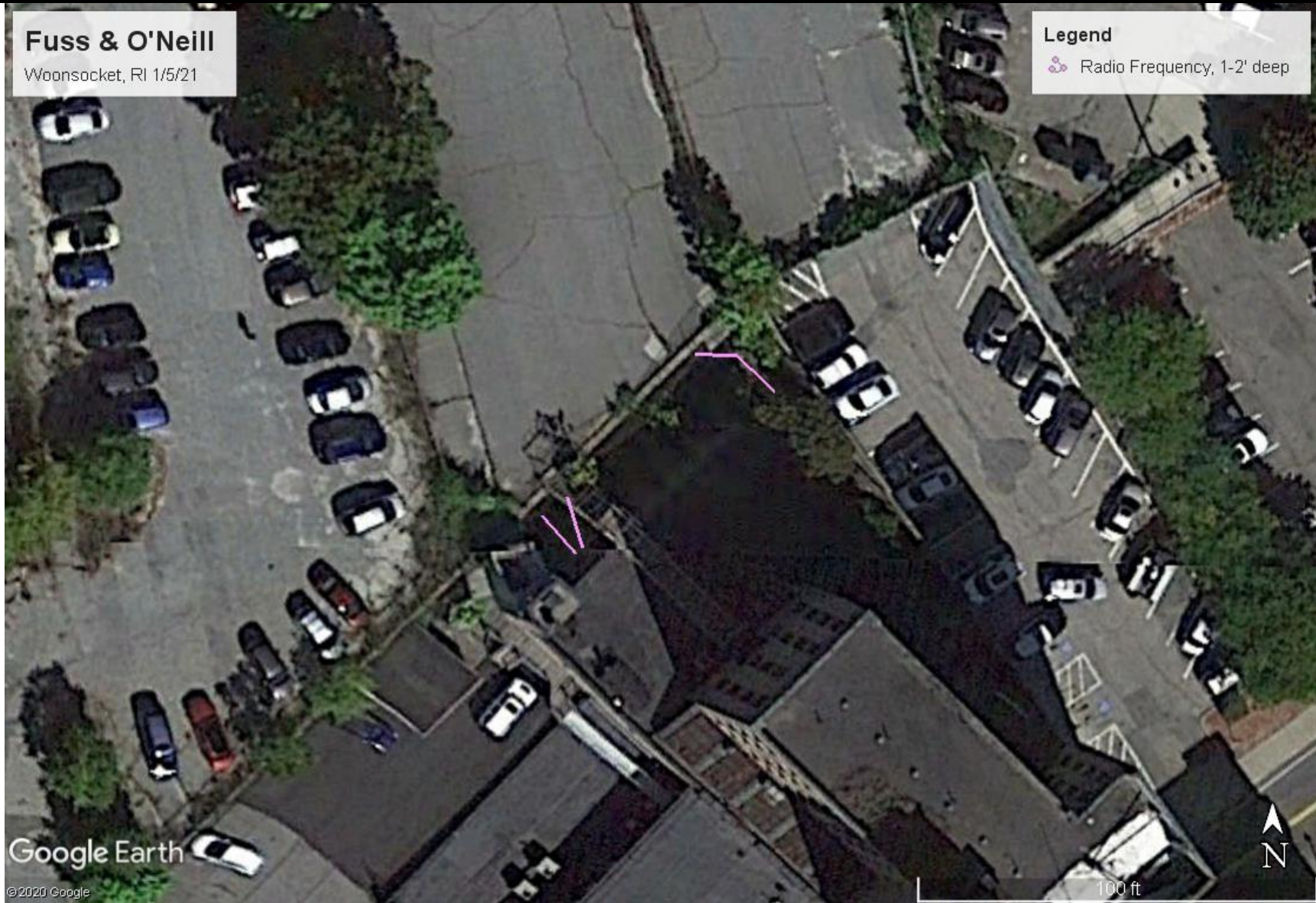
The equipment and methods used did not detect reactions from potential UST's or related piping. The following pages will provide further explanation of the findings.

Fuss & O'Neill

Woonsocket, RI 1/5/21

Legend

 Radio Frequency, 1-2' deep



Google Earth

©2020 Google

100 ft










Prepared for: Fuss & O'Neill
 Prepared By: Jaime Gamache
 Date of Scanning: 1/5/21

Terms and Conditions

GPRS does not provide land survey or civil engineering data collection or documentation. This is provided as a reference map of the field markings and is not survey-grade.

LEGEND

	ELECTRIC		SANITARY
	WATER		STORM
	COMM		UNKNOWN
	GAS		

Woonsocket, RI

Prepared by:





Picture 1: Radio Frequency located 1-2' deep.



Picture 2: Length of Alley



Picture 3: Continuation of Picture 1.



Picture 4: End of Alley. Both anomalies were found to have Radio Frequencies. The near one was seen at 1-2' deep, the farther was too close to the wall to be detected with GPR.

GPR Data Screenshots and Photos

Woonsocket, RI



CLOSING

GPRS, Inc. has been in business since 2001, specializing in underground storage tank location, concrete scanning, utility locating, and shallow void detection for projects throughout the United States. I encourage you to visit our website (www.gprsinc.com) and contact any of the numerous references listed.

GPRS appreciates the opportunity to offer our services, and we look forward to continuing to work with you on future projects. Please feel free to contact us for additional information or with any questions you may have regarding this report.

Signed,

Jaime Gamache
Senior Project Manager—Boston



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Reviewed,

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