



PUBLIC WORKS MEMORANDUM

City of Jackson

TO: Mayor and Board of Aldermen

CC: Jim Roach, City Administrator

FROM: Anna Bergmark, City Engineer

DATE: October 31, 2022

RE: Task Order Request – Ground Penetrating Radar Services

Attached to this memo is a proposal from Bacon Farmer Workman Engineering & Testing, Inc. (BFW) to investigate the sources of two groundwater issues utilizing ground penetrating radar. The two locations are 1424 Rolling Fields and 1505 Mulberry Street. The proposal includes a lump sum fee of \$9,800 and the work is tentatively scheduled to begin on November 21st.



BACON | FARMER | WORKMAN

ENGINEERING & TESTING, INC.

521 WEST MAIN STREET | SUITE 200 | BELLEVILLE, IL 62220

October 25, 2022

Ms. Anna Bergmark
City Engineer
Jackson, Missouri

Re: Revised Proposal for Ground Penetrating Radar Services
Rolling Fields Drive and Mulberry Street
Jackson, Missouri
BFW Proposal Number P22022

Dear Ms. Bergmark,

Bacon Farmer Workman Engineering & Testing, Inc. (BFW) is pleased to provide The City of Jackson (Jackson) with this revised proposal for geophysical services as described below. The purpose of our geophysical services is to attempt to figure out the source of the water that is seeping onto the subject streets.

PROJECT DESCRIPTION

Near 1424 Rolling Fields Drive water is seeping from below grade through cracks in the pavement onto the street surface. The water has been tested for the presence of chlorine and has been negative. Within the grassy front lawn of 1505 Mulberry Street water has been seeping to the surface. The water has tested positive for fluoride, indicating that the source of the water may be a domestic water line. Jackson has asked that BFW provide consulting services to attempt to define the source of the water.

SCOPE OF SERVICES

BFW proposes to perform GPR exploration over areas described above (approximate survey limits shown on the attached) using a GSSI 350 MHz Hyperstacking GPR Antenna. GPR is a surface geophysical technique that uses electromagnetic waves to map subsurface features. The radar consists of a transmitter and receiver. Electromagnetic waves are transmitted into the subsurface and the waves are reflected where contrasts in electrical properties exist, such as the transition from soil to air or where soil density changes. The reflected waves are shown in real time and recorded for future processing.

The GPR reflections from saturated soils, air-filled voids, or water-filled voids are expected to be subtle. To attempt to provide adequate resolution and detect the subtle reflections, BFW proposes to explore the area using a 3-dimensional (3D) GPR technique. For this project the pseudo-3D GPR data will be collected using multiple, parallel 2D profiles spaced approximately one-foot apart. The 2D profiles will be combined into a 3D data block using processing software called Radan. Horizontal depth slices at varying depths will be reviewed in map-view for high-amplitude reflections indicative of buried artifacts. The survey areas will be approximately 600-feet in length with the seep located in the approximate center and will extend to curb-edge of the pavement.

Data will be reviewed by our geophysicist and the findings will be presented in a report that will include an aerial with the approximate locations of GPR reflections expected to be associated with saturated soils, air-filled, and/or water-filled voids. Various example depth slices will also be provided in the report along with a description of the data collection, processing, and overall interpretation of results.

LIMITATIONS

Surface geophysical methods are indirect and as such the possibility exists that existing subsurface features may not be observed and likewise features may be identified as subsurface features that do not actually exist. BFW strives to perform GPR explorations using industry standard techniques and equipment.

GPR signal penetration depth dependent on soil type and other conditions such as moisture content, air content, and man-made structures. Certain soil types, such as clay or high moisture content, can attenuate the GPR signal causing little to no coherent reflection. Depth of GPR penetration for the proposed antenna may vary from six inches to eight feet depending on site conditions.

GPR data will be collected within accessible areas of the proposed boundaries (approximate survey limits shown on the attached). Tall grass, trees, steep slopes, parked cars, and other obstructions may inhibit or obstruct GPR data collection resulting in areas where data could not be collected.

Access to the street and private yards are assumed to be provided by the City of Jackson.

SCHEDULE AND FEE

BFW proposes to perform GPR exploration services within the project area as described herein for a lump sum fee of Nine Thousand Eight Hundred Dollars (\$9,800.00). Normal scheduling requires approximately two weeks from the receipt of signed notice to proceed. The data collection is expected to require approximately one and a half days to collect. The data processing and report will be completed within two weeks of data collection.

We appreciate the opportunity to work with you on this project. Please contact me at 618-771-5774 or bfodor@bfwengineers.com if you have any questions.

Sincerely,
Bacon Farmer Workman Engineering & Testing, Inc.




Boston Fodor, RG, PMP
Senior Geophysicist

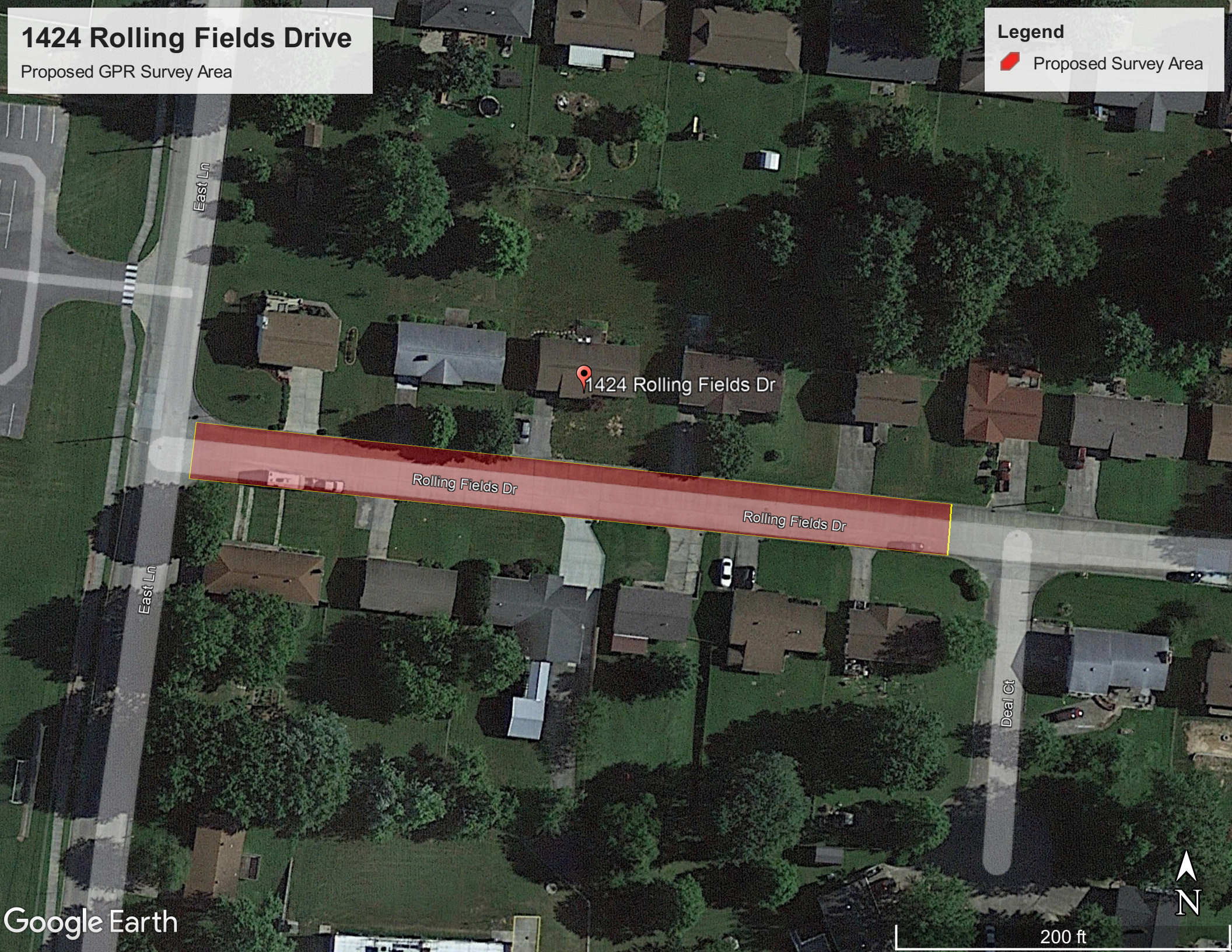
Enclosures: Professional Services Agreement
Standard Conditions

1424 Rolling Fields Drive

Proposed GPR Survey Area


Legend

 Proposed Survey Area



1505 Mulberry
Proposed GPR Survey Area

Legend

 Proposed Survey Area

