SHANNON & WILSON

March 17, 2026

Ms. Lisa Fennewald, P.E.
Horner & Shifrin, Inc.
401 S. 18th Street, Suite 400
Saint Louis, Missouri 63103
lefennewald@hornershifrin.com

RE: PROPOSAL FOR GEOTECHNICAL SERVICES_REVISION 1
JACKSON WATER TOWER
JACKSON, MISSOURI

Dear Ms. Fennewald:

Shannon & Wilson is pleased to submit this revised geotechnical services proposal for the proposed water tower located between Ridge Road and Interstate 55 in Jackson, Missouri in response to your email request on March 11, 2026. We understand the City of Jackson desires only one geophysical method to evaluate the site for karst and anticipates three borings for the water tower, omitting the shallow borings originally proposed for the access road.

The purpose of our services for the project will be to provide geotechnical design and construction recommendations. Our services will include a geophysical survey, an exploration of the subsurface conditions at the site, laboratory testing of recovered soil and rock samples, engineering analysis of the subsurface conditions as they relate to the proposed construction, and preparation of a Geotechnical Report for the project. Our understanding of the project, scope of services, and associated fees are discussed in greater detail below.

PROJECT AND SITE DESCRIPTION

The project is located on the east side of Jackson, Missouri between Ridge Road and Interstate 55 as shown in Exhibit 1. Our understanding of the project and site development is based on the drawing titled "Site Plan, Ridge Road Water Tower", dated August 22, 2024, and our email and phone correspondence on February 19, 2026. We understand that the project consists of a new elevated spheroid water tank, 196 feet tall, with a 300,000-gallon capacity for the City of Jackson. Structural loads were not provided, but we assume they will be provided by the tank manufacturer at a later date. Site grading details were not available at the time of this proposal, but based on the topography of the general area, we anticipate shallow cuts/fills.

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Based on a review of the project area on GoogleEarth™, the proposed area of the water tower consists of a generally level, grass covered area devoid of structures. The northern portion of the parcel is approximately 15 feet higher in elevation than the possible tank location identified in Exhibit 1. The site slopes downward several feet in elevation moving east toward Interstate 55 and is grass covered. We understand the "setback requirement" from adjacent roads and structures is equivalent to the tower height.

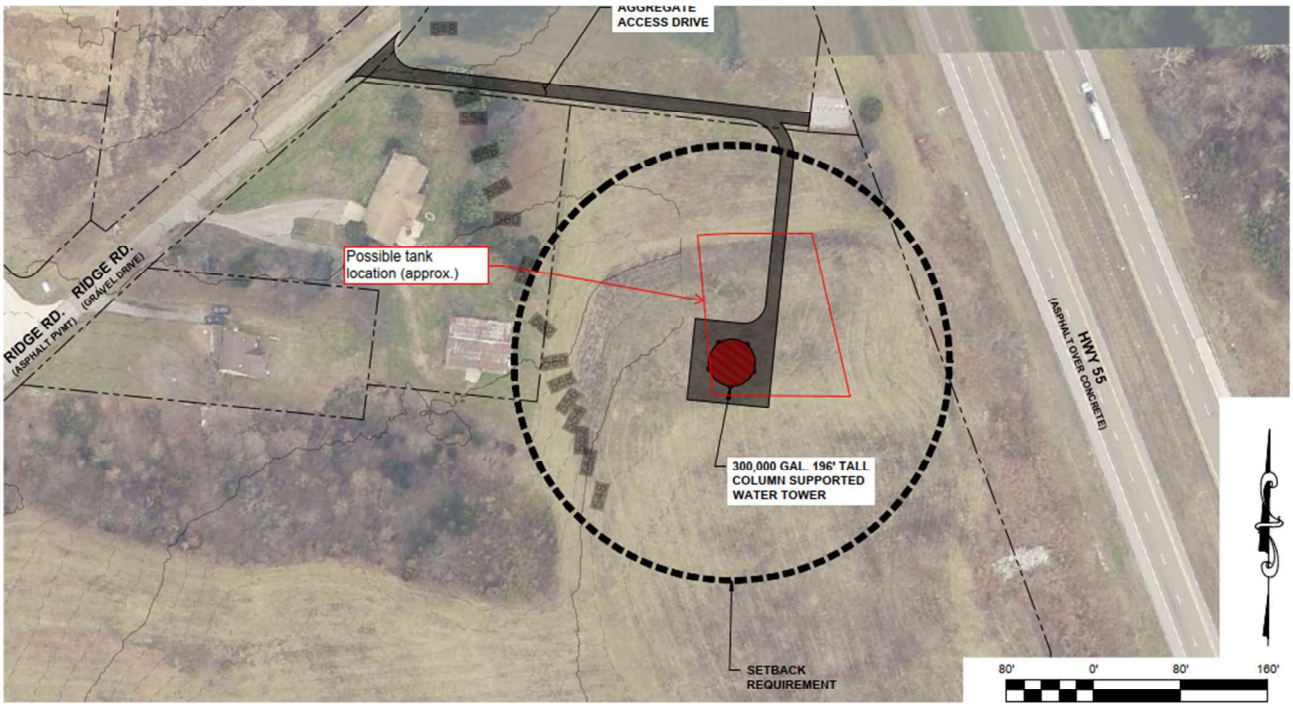

Exhibit 1: Approximate Tank Location

SCOPE OF WORK

Our scope of work will include a subsurface investigation of the site as described in the following sections.

Geophysical Survey

We understand Horner & Shifrin has encountered karst at another project located about 1.5 miles to the east of the site and wishes to include a geophysical survey to evaluate the potential for karst in the geotechnical investigation. The Electrical Resistivity Tomography (ERT) geophysical method will be used to investigate for the presence of karst and is described in the following section. We understand there is some flexibility in where the tank can be positioned at the site, as shown in

Exhibit 1. This area will be evaluated using ERT prior to the drilling of exploratory borings. The advantage of geophysics is that it can provide subsurface information over a large area rather than at a just a specific point, such as in an exploratory boring. The survey lines may need to cross into adjacent properties to reach the target depth within the proposed area of the water tank. End coordinates of geophysical survey lines will be collected with a sub-meter GPS unit and mapped on a site plan. Exploratory borings, as described later in this proposal, will also be required in order to ground truth the geophysical data and to perform in-situ testing and sampling.

The geophysical survey will be conducted by a geophysical subcontractor. You should be aware that investigating potential karst features is extremely difficult and no method can definitively identify existing karst or rule out the potential for future karst development.

Electrical Resistivity Tomography (ERT)

The evaluation will include the performance of a high-resolution multi-electrode electrical resistivity tomography (Sting-ERT) traverses crossing portions of the study area in two opposite directions. The Sting-ERT data will be collected with an AGI Super Sting R8 resistivity meter and 56 electrodes, and processed using EarthImager™, V2.1.7, a two-dimensional resistivity inversion software program. Each Sting-ERT traverse will be approximately 440 feet in length and will be designed to resolve subsurface Sting-ERT resistivity data up to approximately 88 to 146 feet below the ground surface, using an electrode spacing of about 4 feet in a dipole-dipole strong gradient survey mode.

Subsurface Exploration

We will discuss the results of the geophysical survey with you to evalaute the suitability of the site, preferred tank location, and exploratory boring program. For budgeting purposes, we assumed 3 days of drilling in this proposal that would cover tank foundation exploratory borings and karst exploration as applicable. We may recommend additional subsurface exploration following the results of the ERT survey and findings in the 3 planned borings at the selected tank location. We agree to not exceed three days of drilling effort without your approval. The actual boring locations and sampling will be taylored to the subsurface conditions interpretted from the geophysical survey. The specifics of the exploratory boring program (total number of borings, depth, sampling, etc.) will be provided following our discussion of the geophysical survey results.

We will engage a drilling subcontractor with local experience to complete the borings. Drilling will be accomplished using a rotary drill mounted on a rough-terrain or track mounted rig. Drilling and sampling will be performed in general conformance to current American Society for Testing and

Materials (ASTM) standards. As required by law, our drilling subcontractor will make the utility locate request from the Missouri one-call system for clearance of underground utilities.

Groundwater measurements will be performed during drilling. As site conditions permit, borings will be left open allowing time for a subsequent groundwater measurement prior to backfilling with auger cuttings at the end of the working day. Excess cuttings will be mounded over borings to accommodate future backfill settlement that may occur.

An experienced Shannon & Wilson geologist or engineer will provide full-time quality control during the subsurface exploration. Our field representative will also reconnoiter the site; locate explorations based on site features; select sample location and frequency; inspect recovered samples; preserve portions of collected samples for laboratory testing; and prepare descriptive logs of the observed conditions.

We emphasize the importance of providing a full-time geologist or engineer during exploration. Variable subsurface conditions that warrant modification to the planned exploration program are frequently encountered. These conditions cannot be identified and addressed during exploration without the full-time observation of a qualified geologist or engineer.

Laboratory Testing

The laboratory testing program will be determined as part of the subsurface exploration plan development (following the geophysical survey). Our estimated fee is provided in Table 3 for budgeting purposes and can better define the laboratory test fee once the subsurface exploration plan has been developed.

Engineering Analysis, Design Recommendations, and Report

Data generated during the subsurface exploration and laboratory testing will be analyzed by a geotechnical engineer to develop geotechnical design and construction recommendations based upon our understanding of the proposed project. Our conclusions and recommendations along with a summary of our observations including exploration logs, laboratory test results and associated figures will be assembled into a formal report.

The Geotechnical Report along with associated calculations and analysis will be reviewed for technical soundness by a senior level, registered professional engineer specializing in geotechnical engineering and by an Associate or higher member of the firm for quality control. The completed report will be signed and sealed by a professional engineer registered in Missouri. The

Geotechnical Report will address the items listed below in Table 1. We may also discuss other geotechnical design or construction concerns that we identify during our work.

Table 1: Geotechnical Report Items

Item
A description of the proposed project and site.
Geophysical survey results.
A discussion of karst risk at the site.
Exploration logs profiling soil type, test results and other subsurface observations.
Laboratory test results not reported on exploration logs.
A summary of soil, rock and groundwater conditions observed in the explorations.
Either shallow or deep foundation design parameters depending on the encountered subsurface conditions.
Recommendations for water tower foundation system including bearing pressure, adhesion, friction, and/or uplift design values (as applicable).
Recommended LPILE parameters for deep foundations (as applicable).
Potential for building settlement including estimated magnitude of total and differential settlements.
Potential for excessive shrink or swell of foundation soils, along with recommendations for remediation of the potential.
Seismic site classification in accordance with IBC criteria including Ss and S1 parameters.
Potential for liquefaction of site soils.
Design and/or construction recommendations for pavements (pavement design not included unless noted elsewhere).
Sub-drainage recommendations for pavements.
Suitability of on-site soils for use as fill and backfill for embankments, structures, and pavements.
Recommendations for soil compaction and handling including compaction requirements for embankments, structures, and pavements.
A discussion of temporary excavation and protection requirements such as sheeting, shoring, slopes, and underpinning.
General recommendations for construction of permanent cut and fill slopes (global stability analysis of slopes is not included unless noted elsewhere).
Potential frost penetration depth and mitigation.
Potential for rock excavation in excavations within the exploration limits.

MEETINGS AND CONSULTATION

We have included time for meetings during the design of the project. We have assumed two virtual meetings, one to discuss the results of the geophysical survey and proposed subsurface exploration program, and another to discuss the final geotechnical report, with a total of 3 hours budgeted.

CONSTRUCTION MONITORING SERVICES

As noted in the attached "Important Information About Your Geotechnical/Environmental Proposal", retaining the geotechnical consultant during the construction phase of the project is important to quickly evaluate unanticipated conditions and to recommend alternative solutions to problems.

Construction monitoring services are not included in this proposal although we are available to provide these services pertaining to geotechnical aspects of the project. This typically includes the observation and testing of earthwork; foundation excavation and installation; subgrade and base for slabs-on-grade; pavement subgrade, base course, and surface courses; concrete; steel; and engineering consultation to resolve geotechnical construction issues.

SCHEDULE

In general, we are prepared to begin fieldwork within 1 to 2 weeks after notice to proceed, weather and site conditions permitting and dependent upon the schedule of our geophysical subcontractor. The geophysical report will be completed within about 2 to 3 weeks after completion of the field work. We will meet to discuss the results of the geophysical survey within about 1 week after we've received the report. We anticipate drilling could occur within 1 to 3 weeks after the meeting, depending on the weather and availability of our drilling subcontractor. Drilling is scheduled to take 3 days in this proposal. Our Geotechnical Report will be submitted within about 2 to 3 weeks after completion of the subsurface exploration. Upon request, we will provide preliminary design information as it becomes available during our analysis. The schedule and dates can be better defined once notice to proceed has been provided.

ASSUMPTIONS

We have prepared this scope of work, schedule, and cost estimate based on the assumptions listed below in Table 2. If any of these assumptions are in error or change, then changes to our scope, schedule and/or fee may be required.

Table 2: Assumptions

Assumption
The survey lines may need to cross into adjacent properties to reach the target depth within the proposed area of the water tank. If required, we assume you will acquire permission from adjacent property owners as applicable for our geophysical survey.
We anticipate that the boring locations are accessible with an ATV-mounted drill rig based on our Google Earth™ review, unless otherwise noted in the proposal.
You will procure authorization to access the site.
We assume that you will provide GPS coordinates, provide general staking, or provide drawings which will facilitate geophysical survey and boring layout and provide an elevation reference for explorations.
This proposal does not include the identification of privately-owned site utilities such as electrical feeds to streetlights, irrigation lines, water and sewer service lines, etc. that may be present within the area of the borings. We suggest that you verify the existing site drawings to confirm if there are any privately-owned site utilities with the owner.
Depending on the subsurface conditions encountered in the borings, mud rotary drilling techniques may be required to complete the exploration. We expect that the City of Jackson, MO will provide water if needed for mud rotary drilling and/or for rock coring.
The proposal includes 3 days for drilling. The actual drilling scope will be discussed with you and determined following completion of the geophysical survey.
Excess cuttings will be mounded over boreholes to accommodate future backfill settlement that may occur.
Environmental contamination will not be encountered in any boring. You would be notified immediately of any boring that encounters apparent contamination and all drilling will stop pending further instruction. Costs associated with additional field labor, storage and handling of suspect auger cuttings, and disposal costs, if requested, are not included in this proposal.

CONTRACT AGREEMENT

Due to the current uncertainty with karst at the site, the subsurface exploration (drilling and lab scope) will be refined and require your approval following our meeting to discuss the results of the geophysical survey.

We will provide the services as described above, and as authorized by you, on a unit price basis in accordance with the attached Standard Rate Schedule. We have estimated the total fee for our services to be Sixty-Three Thousand Nine Hundred and Fifty-Four Dollars ($63,954) as shown in Table 3. We anticipate the estimated fee shown below is representative of generally ideal subsurface conditions. The actual fee may differ but should not exceed an upper-bound value of about $79,000, should additional drilling beyond three days and additional analysis be required.

Our approach, scope of work, schedule, and price contained in this proposal will be provided in accordance with the terms and conditions contained within the Master Services Agreement (MSA) between Shannon & Wilson and Horner & Shifrin dated April 29, 2021.

Table 3: Estimated Fee for Budgeting Purposes[1]

Description	Fee
Geophysical Survey and Report[2]	$25,341
Drilling[3]	$19,168
Lab Testing	$7,190
Geotechnical Report	$12,255
Total	$63,954

NOTES
1 Estimated fee assuming 3 days of drilling and ERT geophysical survey.
2 Geophysics to be completed prior to subsurface exploration.
3 Drilling and lab scope will be refined following geophysical survey.

We have attached to this proposal a document titled, "Important Information About Your Geotechnical/Environmental Proposal." Please read it carefully so that you understand what our services can and cannot do for you.

OUR SERVICE PROMISE TO YOU

Shannon & Wilson is dedicated to helping your project succeed and to making your experience with us a positive one. Our hope is that, if you enjoy working with us on this project, you will use our services on your next project! To that end, we want you to be completely satisfied with our performance, our personnel, and our project documentation.

We encourage you to discuss any discrepancies between our service and your expectations with me. If you feel that we are not delivering on our promise of quality service, we encourage you to take your concerns straight to our Saint Louis Office Manager, Pat Kinsella. Pat's direct number is (314) 564-8113. Your project is important to us and we want to deliver our services to your full satisfaction.

CLOSURE

If you have questions regarding this proposal or desire to modify the scope of work, please contact me at 314-502-6353 or dale.miller@shanwil.com. If this proposal meets with your approval, please sign in the space provided below and return one signed copy of this letter, which will serve as your authorization to proceed with the stated work.

Please note that we are available to discuss other services offered by our Saint Louis office including environmental engineering and construction monitoring services for further support of

this project. We appreciate your consideration of Shannon & Wilson for your project and your continued confidence in our firm.

Sincerely,

SHANNON & WILSON

Dale P. Miller
Senior Geotechnical Engineer

DPM:TJA/tad

Enc. Important Information About Your Geotechnical/Environmental Proposal

SHANNON & WILSON

I accept the above proposal and authorize the stated work to proceed.

_____	_____
Signature	Date
_____	_____
Name (Printed or Typed)	Organization
_____	_____
Title	E-mail Address

Direct Correspondence to	**Please Direct Billings to**
_____	_____
Attention	Attention
_____	_____
Organization	Organization
_____	_____
Address	Address
_____	_____
City, State, & Zip	City, State, & Zip
_____	_____
E-mail Address	Billing Reference (Project Name, PO, or other identification)

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/Environmental Proposal

More construction problems are caused by site subsurface conditions than any other factor. The following suggestions and observations are offered to help you manage your risks.

HAVE REALISTIC EXPECTATIONS.

If you have never before dealt with geotechnical or environmental issues, you should recognize that site exploration identifies actual subsurface conditions at those points where samples are taken, at the time they are taken. The data derived are extrapolated by the consultant, who then applies judgment to render an opinion about overall subsurface conditions; their reaction to construction activity; appropriate design of foundations, slopes, impoundments, and recovery wells; and other construction and/or remediation elements. Even under optimal circumstances, actual conditions may differ from those inferred to exist, because no consultant, no matter how qualified, and no subsurface program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time.

DEVELOP THE SUBSURFACE EXPLORATION PLAN WITH CARE.

The nature of subsurface explorations—the types, quantities, and locations of procedures used—in large measure determines the effectiveness of the geotechnical/environmental report and the design based upon it. The more comprehensive a subsurface exploration and testing program, the more information it provides to the consultant, helping to reduce the risk of unanticipated conditions and the attendant risk of costly delays and disputes. Even the cost of subsurface construction may be lowered.

Developing a proper subsurface exploration plan is a basic element of geotechnical/environmental design that should be accomplished jointly by the consultant and the client (or designated professional representatives). This helps the parties involved recognize mutual concerns and makes the client aware of the technical options available. Clients who develop a subsurface exploration plan without the involvement and concurrence of a consultant may be required to assume responsibility and liability for the plan's adequacy.

READ GENERAL CONDITIONS CAREFULLY.

Most consultants include standard general contract conditions in their proposals. One of the general conditions most commonly employed is to limit the consulting firm's liability. Known as a "risk allocation" or "limitation of liability," this approach helps prevent problems at the beginning and establishes a fair and reasonable framework for handling them should they arise.

Various other elements of general conditions delineate your consultant's responsibilities. These are used to help eliminate confusion and misunderstandings, thereby helping all parties recognize who is responsible for different tasks. In all cases, read your consultant's general conditions carefully and ask any questions you may have.

HAVE YOUR CONSULTANT WORK WITH OTHER DESIGN PROFESSIONALS.

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a consultant's report. To help avoid misinterpretations, retain your consultant

IMPORTANT INFORMATION

to work with other project design professionals who are affected by the geotechnical/environmental report. This allows a consultant to explain report implications to design professionals affected by them, and to review their plans and specifications so that issues can be dealt with adequately. Although some other design professionals may be familiar with geotechnical/environmental concerns, none knows as much about them as a competent consultant.

OBTAIN CONSTRUCTION MONITORING SERVICES.

Most experienced clients also retain their consultant to serve during the construction phase of their projects. Involvement during the construction phase is particularly important because this permits the consultant to be on hand quickly to evaluate unanticipated conditions, conduct additional tests if required, and when necessary, recommend alternative solutions to problems. The consultant can also monitor the geotechnical/environmental work performed by contractors. It is essential to recognize that the construction recommendations included in a report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork and/or drilling, design consultants need to observe those conditions in order to provide their recommendations. Only the consultant who prepares the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid. The consultant submitting the report cannot assume responsibility or liability for the adequacy of preliminary recommendations if another party is retained to observe construction.

REALIZE THAT ENVIRONMENTAL ISSUES MAY NOT HAVE BEEN ADDRESSED.

If you have requested only a geotechnical engineering proposal, it will not include services needed to evaluate the likelihood of contamination by hazardous materials or other pollutants. Given the liabilities involved, it is prudent practice to always have a site reviewed from an environmental viewpoint. A consultant cannot be responsible for failing to detect contaminants when the services needed to perform that function are not being provided.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

A geotechnical/environmental investigation will sometimes disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consultant may be obligated under rules of professional conduct, or statutory or common law, to notify you and others of these conditions.

RELY ON YOUR CONSULTANT FOR ADDITIONAL ASSISTANCE.

Your consulting firm is familiar with several techniques and approaches that can be used to help reduce risk exposure for all parties to a construction project, from design through construction. Ask your consultant, not only about geotechnical and environmental issues, but others as well, to learn about approaches that may be of genuine benefit.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland