300 Buttermilk Pike, Suite 332
Fort Mitchell, Kentucky 41017

ADDENDUM #2

Job #:	**39973**	**Project Title**	**Fort Wright Salt Storage Building, Phase 1 – Site Prep**
Client:	**City of Fort Wright**		
Issue Date:	**May 26, 2026**		
Bid Date:	**May 28, 2026**		

THIS IS TO CERTIFY THAT YOU ARE IN RECEIPT OF ADDENDUM #2 FOR THE ABOVE-MENTIONED PROJECT.

PLEASE SIGN AND RETURN VIA EMAIL TO: tpelfrey@verdantas.com.

Name / Title: ______________ Company: ______________ Date: ______________

ISSUANCE OF ADDITIONAL BID DOCUMENT:

1. The attached site geotechnical report is being issued, entitled “Ft. Wright Salt Dome Geotech Report_20260507.pdf”. This document shall be considered an official part of the bid documents.

Geotechnical Subsurface Investigation

Fort Wright Salt Dome
Fort Wright, Kentucky

Prepared for:

City of Fort Wright, Kentucky
Fort Wright, Kentucky

Prepared by:

Verdantas, LLC
300 Buttermilk Pike, Ste. 322
Ft. Mitchell, Kentucky 41018
1 859-525-0544

Verdantas Project No.: 39973

May 7, 2026

verdantas

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May 7, 2026

Ms. Jill Cain Bailey, City Administrator
City of Fort Wright, Kentucky
409 Kyles Lane
Fort Wright, Kentucky 41011
(859) 331-1700
jcbailey@fortwrightky.gov

Geotechnical Subsurface Investigation
Fort Wright Salt Dome
Fort Wright, Kentucky
Project No. 39973

Dear Ms. Miller:

Following is the report of the geotechnical subsurface investigation performed by Verdantas, LLC. (Verdantas) for the referenced project. The study was performed in accordance with proposal No. 39973, dated December 19, 2025, and authorized March 20, 2026

Should you have any questions regarding this report or require additional information, please contact our office.

Sincerely,
Verdantas LLC

STATE OF KENTUCKY
CURTIS E. ROUPE
26964
LICENSED
PROFESSIONAL ENGINEER

Andrew S. Dingler, EI
Project Manager

Curtis Roupe, PE
Associate Vice-President

Z:\Project Files\IA-JZ\Independence\36727 - Independence Memorial Park Splash Pad CD\GEOTECH\Report\36727 - Memorial Park Splash Pad and Retaining Wall_09212025.docx

TABLE OF CONTENTS

APPENDIX A - Plates

APPENDIX B – Boring Information

APPENDIX C – Laboratory Test Data

List of Figures

1. PROJECT SUMMARY

1.1 Introduction

This report summarizes Verdantas LLC's (Verdantas) Geotechnical Engineering Services for the proposed salt dome project located in Fort Wright, Kentucky. This report includes information regarding the document review, field and laboratory testing programs, and conclusions and recommendations related to the salt dome project. This work has been performed according to our proposal dated December 19, 2025 and authorized on March 20, 2026.

1.2 Project Description

We understand that a new salt dome has been proposed to be constructed adjacent to the existing Fort Wright City Building. The salt dome will be approximately 42 feet in diameter with 10 foot high concrete perimeter walls with a wood framed roof structure and asphalt shingles; having a rated capacity of 800 tons of salt. The project will be public bid, with the "basis of design" building package from Bulk Storage, Inc. Based on conversations with Bulk Storage, we understand that footings will not be provided beneath the walls and that the dome walls are generally constructed directly on an asphalt pad due to the degradation of concrete due to the continuous exposure to salt. Grades are expected to be near Elev. 868 to match the adjacent parking lot. Portions of the surrounding building are planned to have soil slopes surrounding the building to better obscure the structure; however, no grades were available for this at the time of this report. Based on discussions with Bulk Storage, Inc., we understand that the required allowable bearing pressures for the structure and salt to be stored in the dome is 2,500 pound per square foot.

1.3 Project Research

The following list of readily available historic information was reviewed for this project:

- USGS Geologic Map of Covington Quadrangle, Northern Kentucky, Luft, Stanley J., 1971), retrieved from National Geologic Map Database's (NGMDB) website, April 2026.
- Kentucky Geological Survey Surficial Geologic map of Part of the Covington 7.5-Minute Quadrangle, Northern Kentucky (Massey, M.A., Bottoms, A.E., Hammond, M., 2018) retrieved from National Geologic Map Database's (NGMDB) website, April 2026.
- USGS Topographic Map of the Covington 7.5-Minute Quadrangle, Kentucky-Ohio, (1950), retrieved from National Geologic Map Database's (NGMDB) website, April 2026.
- USGS Topographic Map of the Covington 7.5-Minute Quadrangle, Kentucky-Ohio, (1950), retrieved from National Geologic Map Database's (NGMDB) website, April 2026.
- USGS Topographic Map of the Covington 7.5-Minute Quadrangle, Kentucky-Ohio, (2022), retrieved from National Geologic Map Database's (NGMDB) website, April 2026.

2. SITE CONDITIONS

2.1 Desktop Study of Historic Information

During our preliminary review of the historic topographic and geologic data a lake was identified within the footprint of the now demolished playground area where the salt dome has been proposed to be constructed. The site overlay with the historic topographic map is shown in Figure 1.

Figure 1. Fort Wright City Building site overlayed with the USGS Topographic Map of the Covington 7.5-Minute Quadrangle, Kentucky-Ohio

Based on the location of the lake and a review of older topographic data from 1914, 1950 and the current USGS topographic map of 2022, grades at the site appear to be between 10 and 15 feet higher from 1914 to 1950 and are similar now to those shown on the 1950 maps.

2.2 Regional Geology and Hydrogeology

The project is located within the Outer Bluegrass physiographic region of north-central Kentucky. This region is part of the broader Bluegrass Region, which is underlain predominantly by Ordovician-age limestone and shale that have been gently uplifted along the Cincinnati Arch. Long-term weathering and erosion of these interbedded carbonate and shale units have produced a rolling to moderately dissected landscape characterized by narrow ridges, incised stream valleys, and variable local relief.

The Outer Bluegrass is distinguished from the Inner Bluegrass by its greater degree of dissection and steeper valley side slopes, reflecting the more erosion-prone nature of the interbedded limestone and shale bedrock. In the Alexandria area, surface drainage is well developed and flows toward the Ohio River system, primarily through tributaries of the Licking River. Valley bottoms commonly contain alluvial deposits, while hillslopes are mantled by residual soils derived from weathered limestone and shale, with localized colluvial deposits along steeper slopes.

Karst development within the Outer Bluegrass is generally less pronounced than in areas underlain by thick-bedded limestone of the Inner Bluegrass; however, localized solution features, joints, and bedding plane partings may influence subsurface drainage and groundwater movement where limestone units are dominant. Groundwater flow in the region is typically controlled by secondary permeability within bedrock fractures and bedding planes, as well as by stratigraphic contrasts between limestone and shale units.

2.3 Site Reconnaissance

The site location and regional topography of the area are shown on the Site Location Plan included as Plate 1.0 in Appendix A.

The subject property is located in Fort Wright, Kentucky along Highland Pike[1]. The site is situated within a residential area on the west side of the roadway. The site consists of the existing Fort Mitchell City Building with an apparatus bay and heavy duty pavement located on the south side of the building. The southern property line uses a soil berm to block sight lines from the adjacent residences into the property. The southwestern corner of the property where the proposed salt dome is to be located was previously used for a children's playset which has been recently demolished. The play area is surrounded by soil berms on the order of 3 feet high. Grades at the site generally range from Elev. 882 ft in the southeast corner, to Elev. 858 ft[2]. in the northeast corner. Within the proposed development area, grades range from Elev. 872 ft. to Elev. 868 ft.

[1] For the purposes of this report, Highland Pike is assumed to be oriented in a north-south direction.
[2] The elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD 88) in units of feet, unless noted otherwise.

3. SUBSURFACE EXPLORATION

3.1 Project Exploration Program

The subsurface exploration consisted of three borings (numbered B-1 through B-3). The boring locations were selected by Verdantas and were staked in the field by our survey crew relative to the Kentucky State Plane coordinate system. The locations of the borings are shown on our Exploration Plan, which is included as Plate 2.0 in Appendix A.

Experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of test borings made at specific locations. Therefore, it is essential that a geotechnical engineer be retained to provide soil engineering services during the site preparation and pavement construction phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

3.2 Boring Methods

The borings were drilled on March 20, 2026 with a CME-55 ATV mounted drill rig advancing 3¼ inch hollow-stem augers, as indicated on the boring logs presented in Appendix B.

Sampling of the overburden soils and bedrock was accomplished ahead of the augers at the depths indicated on the boring logs, with either a 2-inch-outside-diameter (O.D.) split-barrel sampler or 3-inch-O.D., thin-walled Shelby tube sampler in general accordance with the procedures outlined by ASTM D1586 and ASTM D1587, respectively. Split-spoon soil samples were obtained by the Standard Penetration Test Method (ASTM D 1586). The Standard Penetration Test (SPT) consists of driving a 2-inch outside diameter split-spoon sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler was driven in three successive 6-inch increments, with the number of blows per increment being recorded. The number of blows per increment was recorded at each depth interval, and these data are presented under the “SPT” column on the Logs of Test Borings attached to this report. The sum of the number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance, or N-value, and is typically reported in blows per foot (bpf). The N-values were corrected to an equivalent rod energy ratio of 60 percent, N_{60}.

Soil conditions encountered in the test borings are presented in the Logs of Test Borings, along with information related to sample data, SPT results, water conditions observed in the borings, and laboratory test data. In conjunction with published data and typical correlations, the N_{60}-values can be evaluated as a measure of soil compactness/consistency as well as shear strength.

Field and laboratory data were incorporated into gINT™ software for presentation purposes. It should be noted that these logs have been prepared on the basis of laboratory classification and testing as well as field logs of the encountered soils.

Observations for groundwater were made in the borings during drilling, and at the completion of drilling before backfilling the boring holes.

A geologist from Verdantas provided technical direction during field exploration, observed drilling and sampling, assisted in obtaining samples, and prepared field logs of the material encountered.

Representative portions of the split-barrel samples were placed in glass jars with lids to preserve the in-situ moisture contents of the samples. The Shelby tubes were capped and taped at their ends to preserve the in-situ moisture contents and densities of the samples, and the tubes were transported and stored in an upright position. The glass jars, and Shelby tubes were marked and labeled in the field for identification when returned to our laboratory.

3.3 Laboratory Review and Testing Program

Upon completion of the fieldwork, the samples recovered from the borings were transported to our Soil Mechanics Laboratory, where they were visually reviewed and classified.

Laboratory testing was performed on selected soil and rock samples to estimate engineering and index properties. Laboratory testing of the selected soil samples included various combinations of the following tests: moisture content, Atterberg limits, gradation (particle-size) analyses, and unconfined compression in accordance with ASTM testing procedures. The results of these tests are summarized in the Tabulation of Laboratory Tests in Appendix C, along with the corresponding laboratory test forms. Additionally, the results of laboratory index tests are presented on the boring logs.

The boring logs, which are included in Appendix B, were prepared by the Project Geotechnical Engineer on the basis of the field logs, the visual classification of the soil samples in the laboratory, and the laboratory test results. A Boring Log Legend is also included in Appendix B, which describe the terms and symbols used on the boring logs. The dashed lines on the boring logs indicate an approximate change in strata as estimated between samples, whereas a solid line indicates that the change in strata occurred within a sample where a more precise measurement could be made. Furthermore, the transition between strata can be abrupt or gradual.

4. SUBSURFACE CONDITIONS

4.1 Stratification

Generally, the ground surface consisted of fill soils over native lean clay with varying amounts of sand and gravel. Native soils were encountered immediately above the limestone and shale bedrock. While not encountered in the borings, topsoil was noted to be present at the ground surface at the site surrounding the borings. More specific descriptions of the subsurface strata are provided below, and the boring logs containing detailed material descriptions are located in Appendix B.

4.1.1 Fill

Surficial soils across the site consist of fill materials extending from ground surface to depths generally ranging from approximately 5 to 10 feet below ground surface. The fill is variable in composition and consistency, which may indicate uncontrolled fill. Materials consist predominantly of lean clay (CL) with varying amounts of sand and occasional trace gravel, with localized zones of poorly graded sand. The fill is typically moist, with consistencies ranging from soft to medium stiff.

Colors are generally brown to gray, frequently mottled, and include localized iron oxide and manganese oxide staining. Trace organics and construction-related debris, including brick fragments, were encountered in some of the borings.

Table 4-1: Summary of laboratory test results of the fill.

<table>
<tr><th colspan="2"></th><th>Samples Tested</th><th>Minimum</th><th>Maximum</th></tr>
<tr><td colspan="2">Moisture Content (%)</td><td>11</td><td>14.3</td><td>25.9</td></tr>
<tr><td colspan="2">Dry Unit Weight (pcf)</td><td>1</td><td colspan="2">106.3</td></tr>
<tr><td colspan="2">Unconfined Compressive Strength (psf)</td><td>1</td><td colspan="2">1,730</td></tr>
<tr><td rowspan="3">Atterberg Limits</td><td>Liquid Limit (%)</td><td rowspan="3">1</td><td colspan="2">30</td></tr>
<tr><td>Plastic Limit (%)</td><td colspan="2">19</td></tr>
<tr><td>Plasticity Index (%)</td><td colspan="2">11</td></tr>
<tr><td rowspan="6">Particle-Size Analysis</td><td>Gravel-Sized (%)</td><td rowspan="6">1</td><td colspan="2">0.0</td></tr>
<tr><td>Coarse Sand Sized (%)</td><td colspan="2">1.0</td></tr>
<tr><td>Medium Sand Sized (%)</td><td colspan="2">4.0</td></tr>
<tr><td>Fine Sand-Sized (%)</td><td colspan="2">10.0</td></tr>
<tr><td>Silt-Sized (%)</td><td colspan="2">24.0</td></tr>
<tr><td>Clay-Sized (%)</td><td colspan="2">61.0</td></tr>
</table>

4.1.2 Glacial Soils

Glacial soils (or glacial till) are soils that have been deposited, transported, or reworked in place by the advancement or retreat of a glacier across the area.

Underlying the fill, the subsurface profile includes glacial till, extending to depths between approximately 8 and 20 feet below the ground surface. These materials consist predominantly of lean clay (CL) with sand and occasional trace gravel. The soils are typically moist, with consistencies ranging from soft to medium stiff.

Colors are generally brown to gray and commonly mottled, with local iron oxide staining. The glacial soils are relatively uniform compared to the overlying fill but retain natural variability typical of till deposits. No laterally continuous granular seams or lenses were identified within the glacial unit in the borings explored. Laboratory test data from selected samples of the residual soils are provided in Table 4-2.

Table 4-2: Summary of laboratory test results of the glacial soils.

<table>
<tr><th colspan="2"></th><th>Samples Tested</th><th>Minimum</th><th>Maximum</th></tr>
<tr><td colspan="2">Moisture Content (%)</td><td>5</td><td>19.2</td><td>31.7</td></tr>
<tr><td colspan="2">Dry Unit Weight (pcf)</td><td>2</td><td>98.2</td><td>102.8</td></tr>
<tr><td colspan="2">Unconfined Compressive Strength (psf)</td><td>2</td><td>1,666</td><td>2,945</td></tr>
<tr><td rowspan="3">Atterberg Limits</td><td>Liquid Limit (%)</td><td rowspan="3">2</td><td>35</td><td>36</td></tr>
<tr><td>Plastic Limit (%)</td><td>21</td><td>23</td></tr>
<tr><td>Plasticity Index (%)</td><td>12</td><td>15</td></tr>
<tr><td rowspan="6">Particle-Size Analysis</td><td>Gravel-Sized (%)</td><td rowspan="6">2</td><td>0.0</td><td>0.0</td></tr>
<tr><td>Coarse Sand Sized (%)</td><td>0.0</td><td>0.0</td></tr>
<tr><td>Medium Sand Sized (%)</td><td>2.0</td><td>2.0</td></tr>
<tr><td>Fine Sand-Sized (%)</td><td>6.0</td><td>7.0</td></tr>
<tr><td>Silt-Sized (%)</td><td>26.0</td><td>26.0</td></tr>
<tr><td>Clay-Sized (%)</td><td>65.0</td><td>65.0</td></tr>
</table>

4.1.3 Residual Soils

Residual soils (or residuum) are soils that have formed by the in-situ weathering of the underlying bedrock into a soil. Occasionally, layers of the bedrock (i.e., shale or limestone layers) may be encountered within the residual soils.

Residual soils were encountered beneath the glacial soils or directly below the fill in Boring B-3, extending to depths of approximately 15 to 25 feet below ground surface, immediately overlying bedrock. The residual materials consist primarily of lean clay (CL) with sand and trace limestone fragments derived from the in-place weathering of underlying shale and limestone.

These soils are typically moist and exhibit very stiff consistency. Colors are generally brown to gray, with localized iron oxide and calcite staining. The residual soils commonly show increasing stiffness and rock fragment content with depth, grading into the underlying highly weathered shale and limestone bedrock. Laboratory test data from selected samples of the residual soils are provided in Table 4-3 and Table 4-4.

Table 4-3: Summary of laboratory test results of the residual soils.

<table>
<tr><th colspan="2"></th><th>Samples Tested</th><th>Minimum</th><th>Maximum</th></tr>
<tr><td colspan="2">Moisture Content (%)</td><td>3</td><td>16.7</td><td>23.0</td></tr>
<tr><td colspan="2">Dry Unit Weight (pcf)</td><td>1</td><td colspan="2">99.4</td></tr>
<tr><td rowspan="3">Atterberg Limits</td><td>Liquid Limit (%)</td><td rowspan="3">4</td><td>38</td><td>42</td></tr>
<tr><td>Plastic Limit (%)</td><td>20</td><td>22</td></tr>
<tr><td>Plasticity Index (%)</td><td>17</td><td>22</td></tr>
<tr><td rowspan="6">Particle-Size Analysis</td><td>Gravel-Sized (%)</td><td rowspan="6">4</td><td>11</td><td>25</td></tr>
<tr><td>Coarse Sand Sized (%)</td><td>3</td><td>12</td></tr>
<tr><td>Medium Sand Sized (%)</td><td>2</td><td>7</td></tr>
<tr><td>Fine Sand-Sized (%)</td><td>4</td><td>11</td></tr>
<tr><td>Silt-Sized (%)</td><td>17</td><td>26</td></tr>
<tr><td>Clay-Sized (%)</td><td>34</td><td>50</td></tr>
</table>

Table 4-4: Summary of Consolidation test data.

Boring No.	Sample No.	Depth (ft.)	Dry Unit Weight (pcf)	Pc (tsf)	Cc	Cr	cv (ft.2/day)
B-1	ST-7	20.0 - 22.0	99.4	3.2	0.161	0.03	0.07

4.1.4 Bedrock

The overburden soils at the site are underlain by bedrock consisting of interbedded shale and limestone layers. Bedrock was encountered at depths of 15 to 25 feet below the ground surface in each of the borings.

According to the 1971 United States Geological Survey (USGS) Geologic Map of the Covington Quadrangle, Northern Kentucky, the bedrock underlying the overburden soils belongs to the Bull Fork Formation.

> *The Bull Fork Formation consists of interbedded limestone and shale, with the limestone comprising more than 50 percent of the formation. The limestone is irregularly to evenly bedded, with beds generally varying between 1 and 4 inches thick, but locally as thick as 12 inches. The shale is generally calcareous, thinly bedded to laminated, with interbeds typically less than 1 to nearly 4 inches thick.*

Bedrock in the Northern Kentucky Area is typically categorized as highly weathered, weathered, or unweathered, based on the degree of weathering of the shale component. The highly weathered zone is typically the uppermost zone, wherein the shale is brown to olive brown in color and has almost weathered to a clay. In the intermediate weathered zone, the shale is typically olive brown with occasional gray and is stronger than the shale in the highly weathered zone. In the unweathered parent zone, the shale is gray and is stronger than the shale in the weathered zones. Each zone is interbedded with limestone. It is not uncommon for one or both of the weathered bedrock zones to be absent due to differential weathering, erosion, or prior excavation.

Regarding the limestone, these layers are predominantly unweathered, and their strengths are estimated to range from medium strong to very strong (i.e., uniaxial compressive strengths ranging from 4,000 psi to upwards of 30,000 psi). Occasionally, layers are encountered within the bedrock profile where groundwater seepage is concentrated, and weathering of the limestone layers is more advanced.

Interbedded olive brown highly weathered shale and gray limestone bedrock was encountered in each of the borings. The top of the highly weathered bedrock was encountered at a depth of 15 to 25 feet below grade. The strength of the limestone was described as medium strong, with the highly weathered shale described as extremely weak. Moisture contents of three samples of the highly weathered shale yielded results ranging from 8.3 to 15.4 percent.

4.2 Groundwater Conditions

Groundwater was not encountered during drilling in the three borings. It should be noted that the boreholes were drilled and backfilled within the same day, and stabilized water levels may not have occurred over this limited time period.

Based on the soil characteristics and moisture conditions encountered in the borings, it is our opinion that the “normal” long-term groundwater table can generally be expected at depths beyond the termination depth of the borings performed for this exploration. This exploration did not include research of possible hydrological influences at the project site. It should be noted that groundwater elevations can fluctuate with seasonal and climatic influences. In particular, “perched” water may be encountered in granular soils that are underlain by relatively impermeable cohesive soils, and near the boundary between clayey overburden and bedrock. Therefore, the groundwater conditions may vary at different times of the year from those encountered during this exploration.

5. ANALYSES AND RECOMMENDATIONS

The following conclusions and recommendations are based on our understanding of the proposed construction and on the data obtained during the field investigation, as subsurface conditions appear to be generally consistent across the site. If the project information or location as outlined is incorrect or should change significantly, a review of these recommendations should be made by Verdantas. These recommendations are subject to the satisfactory completion of the recommended site and subgrade preparation and fill placement operations described in Section 6 “Construction Recommendations”.

5.1 Considerations of Existing Fill

Existing undocumented fill soils were encountered to a significant depth that would be costly and somewhat impractical to remove and replace in a controlled manner. Based on the conditions of the existing fill material encountered in the borings, the fill material appears to be suitable for foundation support with tolerable settlement; however, the presence of the existing undocumented fills increases the risk for variability between boring locations. If less favorable conditions are present between boring locations, there is risk of more total and differential settlement to occur. The following recommendations are made with the assumption that that risk is acceptable and provides recommendations to mitigate some of that risk. If that risk is unacceptable then consideration should be given to ground improvement utilizing rammed aggregate piers, that penetrate the existing fills, or removal and replacement of the existing undocumented fill soils. The ground improvements are typically designed by specialty contractors. If removal and replacement are considered, Verdantas can provide additional recommendations.

5.2 Temporary Excavations and Slopes

The sides of temporary excavations for utility installations, and other construction should be adequately sloped to provide stable sides and safe working conditions. Otherwise, the excavation must be properly braced against lateral movements. In any case, applicable Occupational Safety and Health Administration (OSHA) safety standards must be followed.

It should be noted that OSHA requires that excavations with open-cut slopes higher than 20 feet, or braced excavation support systems such as sheet-piling, be reviewed and designed by a registered professional engineer.

For permanent excavations and slopes, we recommend that grades be no steeper than 3H:1V without a more extensive geotechnical evaluation of the proposed construction plans and site conditions.

The final determination of the OHSA Soil Type is the responsibility of the contractor at the time of construction as soil conditions may differ from those encountered in the borings performed for this exploration.

5.3 Lateral Earth Pressures

Where foundation and retaining walls for this project will be subjected to unbalanced lateral earth pressures, we recommend that the lateral earth pressures be computed on the basis of equivalent fluid weights of the backfill, plus surcharges for foundation loads, pavement loads, sloping backfill, etc. Table 5-1 provides the recommended equivalent fluid weights for soil for both drained and undrained conditions, and also the recommended earth pressure coefficients for proposed surcharges. Unless a site-specific analysis is performed, we recommend that surcharges be modeled as a uniform horizontal pressure equal to the vertical intensity of the surcharge multiplied by the recommended lateral earth pressure coefficient.

Table 5-1: Lateral earth pressures for level (horizontal) ground surfaces.

	Active[a]	At-Rest[a]	Passive[a,b]
Lateral earth pressure coefficient, K	0.39	0.56	2.56
Drained equivalent fluid weight, EFW (pcf)	49	70	320
Undrained equivalent fluid weight, EFW_u (pcf)[c]	87	98	222

Notes:

[a] Parameters are based on level ground surfaces, a soil unit weight (γ) of 125 pcf, and a soil internal angle of friction (ϕ) of 26 degrees.

[b] Passive resistance may be considered where concrete is cast against free-standing vertical faces of soil; however, passive resistance should be ignored in the upper 30 inches below proposed grade due to seasonal variations in moisture and frost penetration. If the ground is sloping down and away from the foundation in the area of passive resistance, we should be contacted to provide site-specific recommendations.

[c] Includes hydrostatic pressure of 62.4 pcf.

The values provided in Table 5-1 assume that the ground surface adjacent to the wall is level and not sloping toward the wall. For ground sloping toward the wall on its active or at-rest side, we recommend that it be accounted for as a surcharge on the wall, as discussed above, unless site-specific equivalent fluid weights are computed on the basis of the backfill slope.

The decision to use active or at-rest earth pressures should be based upon the ability of the wall or structure to deflect as a result of the lateral earth pressures. In cohesionless granular backfill, active earth pressures are assumed to be applicable if the top of the wall is able to deflect a minimum of 0.002 times the height of the wall. In cohesive clayey backfill, the minimum deflection at the top of the wall for active earth pressures to develop is 0.02 times the height of the wall. If these minimum horizontal deflections at the top of the wall are restrained from occurring or unacceptable to the structure, at-rest earth pressures are applicable.

Undrained equivalent fluid weights should be used in computing the lateral loads on the wall wherever the backfill is unable to be drained by a drainage system (discussed below). For the drained equivalent fluid weights to be applicable, a drainage system should be incorporated along the backfilled face of the wall (i.e., the high side of the wall) consisting of either a prefabricated drainage board or an approximately 18-inch width of free-draining gravel with less than 5 percent fines wrapped with a non-woven drainage geotextile. At the base of the drainage board or free-draining gravel should be a minimum 12-inch-thick by 12-inch-wide, free-draining gravel zone wrapped with a non-woven drainage geotextile. Within the wrapped gravel at its base should be a 4-inch-diameter rigid perforated plastic pipe. The plastic pipe should be connected to a suitable gravity outlet (e.g., the proposed storm sewer system). The granular backfill should be compacted to at least 75 percent relative density per ASTM D4253 and D4254. We recommend that the drainage system extend to subgrade elevation beneath pavements or floor slabs; otherwise, the drainage system should extend to within 2 feet of finished grade and be capped with at least 2 feet of compacted clayey soils to reduce the infiltration of surface water behind the wall. Clayey backfill should be compacted per the requirements presented in Section 6.2. The drainage system should not connect to interior drainage systems below floor slabs. These interior drainage systems should have separate, independent outlets.

If a pre-fabricated drainage board is used in the drainage system and the wall will be subjected to freezing temperatures, rigid, polystyrene foam board insulation at least 1 inch thick should be placed between the wall face and the drainage board to protect the moist, cohesive wall backfill from freezing, which could otherwise exert frost-induced lateral pressures against the wall.

5.4 Seismic Site Class

Based on the borings and our interpretation of the 2018 Edition of the Kentucky Building Code (2018 KBC), it is our opinion that Site Class D is applicable for this project site based on correlations to shear wave velocities for the cohesive soils encountered at the site.

5.5 Asphalt Pavement Design and Construction

Based on discussions with Bulk Storage, it is our understanding that an asphalt mat “foundation” is anticipated for the salt dome structure, and we understand that proposed new heavy duty asphalt pavement will be provided as the apron in front of the structure extending to the existing asphalt pavements. For this reason, the pavement recommendations will be based on both the expected axle loads, frequency of loading, and the properties of the subgrade for support of the 2,500psf loading of the salt dome. We estimate settlements to be on the order of 1.5 to 2 inches based on this loading and understand the tolerable settlement of the salt dome to be up to 2 inches based on discussions with Bulk Storage.

Heavy duty pavements at the site should consist of a minimum 10 inch thick pavement section, having a 2 inch surface course, 4 inch thick intermediate asphalt course, and 4 inch thick asphalt base course. The prepared subgrade soils should be covered with a layer of non-woven filter fabric (Mirafi 160N or Equivalent). A layer of 24 inches of KYTC Item 805.06 Crush Stone Base should be provided with a layer of Tensar HX-5.5 hexagonal grid at the base of the stone and at a depth of 12 inches. Aggregate should be compacted to 100 percent of the Standard

Proctor Maximum Dry Density (SPMDD). Perimeter drains consisting of #57 stone wrapped in a non-woven geotextile fabric should be provided at the edge of the proposed pavement section, and at the interface between the existing pavement and the new asphalt pavements. As no foundations will be provided for the structure and the aggregate section and asphalt are intended to act as a mat foundation for the salt dome, we are estimating settlements to be on the order of 1.5 to 2 inches and as such recommend that the perimeter drains be sloped to allow for this settlement to occur, such that drainage from the rear of the structure is not obstructed when settlement is complete. We do not recommend the use of perforated pipe within the underdrains due to this settlement and the location of the drains directly beneath the walls of the proposed salt dome. An example pavement section with underdrains is shown in Figure 2 below for clarity.

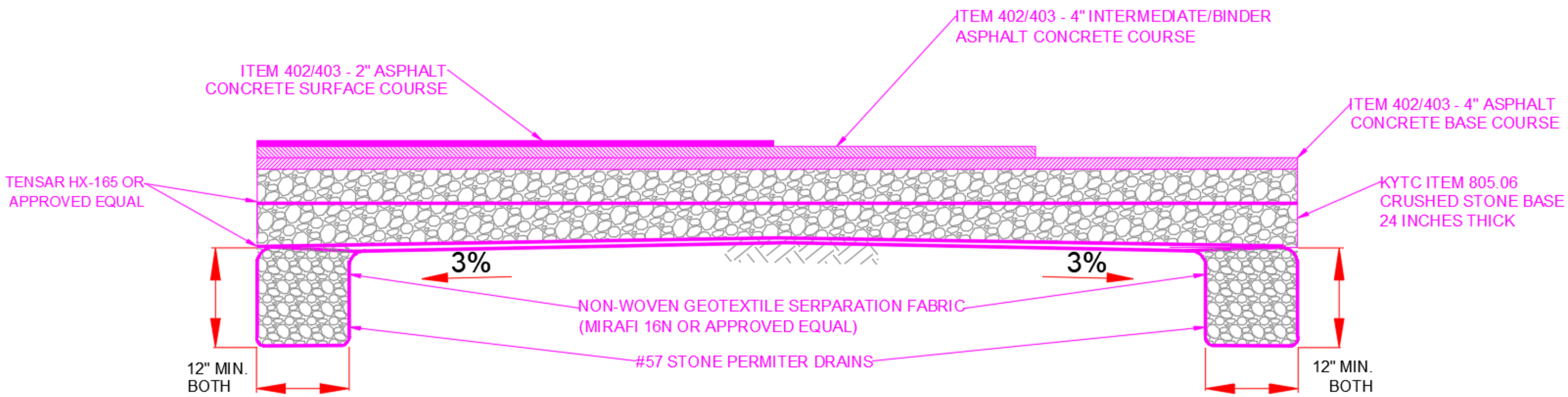


Figure 2. Pavement Section Detail

6. CONSTRUCTION RECOMMENDATIONS

Based on our engineering reconnaissance of the site, the borings, the visual examination of the recovered samples, the laboratory test results, our understanding of the proposed project, our engineering analyses, and our experience as Geotechnical Engineers in the Northern Kentucky Area, the following conclusions are presented.

6.1 Site Preparation

The initial preparation of the site for grading should include the removal of vegetation, heavy root systems, and topsoil from the proposed cut, fill, pavement, and structure areas. The topsoil may be stockpiled for future use on the completed cut and fill slopes or in landscaped areas, if permitted by specification, whereas the vegetation, including the heavy root systems, should be disposed of off-site in accordance with applicable regulations.

6.2 Fill Placement and Recommendations

Fill materials should consist of approved on-site, non-organic, clayey soils, bedrock, or approved borrow material that are relatively free of topsoil, vegetation, trash, construction or demolition debris, frozen materials, particles over 6 inches in maximum dimension, or other deleterious materials.

The fill should be placed in shallow level lifts (or layers), 6 to 8 inches in loose thickness. Each lift should be moisture-conditioned to within the acceptable moisture content range provided in **Error! Reference source not found.**, and compacted with a sheepsfoot roller or self-propelled c ompactor to at least the minimum percent compaction indicated in the same table. Moisture-conditioning may include: aeration and drying of wetter soils; wetting of drier soils; and/or thoroughly mixing wetter and drier soils into a uniform mixture.

Where fill is placed on sloping terrain that is steeper than 6H:1V, the fill should be placed on continuous horizontal benches up the sloping terrain with the initial bench having a minimum width of 15 feet and each subsequent bench being at least 5 feet wide. The initial 15-foot-wide bench should be located at the toe of the proposed fill, unless noted otherwise. The benching operations should remove surficial medium stiff or softer soils and expose stiff native soils or undisturbed, intact bedrock on the surfaces of the benches. The benches should not be made until the fill is ready to be placed. If groundwater seepage is noted on the benches, the Project Geotechnical Engineer should be contacted for underdrainage recommendations before the soils are replaced and compacted.

Table 6-1: Percent compaction and moisture-conditioning recommendations for fill and backfill.

Area	Minimum Percent Compaction[a,b]	Acceptable Moisture Content Range[c]
Structural and Pavement subgrade: ≤ 12 inches below subgrade	98% of SPMDD	0% to +2% of OMC

Notes:

[a] SPMDD = standard Proctor maximum dry density determined from ASTM D698.
[b] OMC = optimum moisture content determined from ASTM D698.
[c] Structural fill and backfill for foundations are defined as fill and backfill located within the zones of influence of structures. The zone of influence of a structure is defined as the area below the footprint of the structure and 2H:1V outward and downward projections from the bearing elevation of the structure.

6.3 Pavement Construction Recommendations

Proposed pavement subgrades should be proofrolled with a loaded tandem-axle dump truck weighing at least 40,000 pounds under the review of the Project Geotechnical Engineer, or representative thereof. Soft or yielding soils observed during the proofroll should be undercut to stiff, non-yielding soils; however, the depth of undercut below subgrade may be limited to 3 feet in light-duty traffic areas and 4 feet in heavy-duty traffic areas. The undercut should be backfilled with new compacted fill satisfying the material and compaction requirements presented in Section 6.2. We recommend that the Contract Documents include an item for undercutting unsuitable soils and replacing them with new compacted and tested fill on a “per cubic yard of compacted replacement fill” basis.

Prior to the placement of pavement or aggregate base, where provided, we recommend that the top 12 inches of clayey subgrade be scarified and recompacted per the requirements presented in Section 6.2.

We recommend that caution be exercised so that the proposed aggregate base does not become saturated during or after construction. Water trapped in the aggregate base is capable of freezing, causing it to expand within the voids it occupies. Consequently, ice lenses may form and potentially heave the pavement. Furthermore, the thawing process can soften underlying cohesive subgrades, which reduces the pavement support provided by the subgrade, giving rise to “pumping” of the pavements under loads. Preferably, the aggregate base should be a free-draining material with provisions for draining the base through a system of underdrains. Regardless, we recommend that transverse underdrains at subgrade elevations be installed at the transitions from existing pavement to new pavement.

Surface drainage should be directed away from the edges of proposed or existing pavements so that water does not pond next to pavements or flow onto pavements from unpaved areas. Such ponding or flow can cause deterioration of pavement subgrades and premature failure of pavements. If drainage ditches are used to intercept surface water before it reaches the pavements, the ditches should have an invert at least 6 inches below the pavement subgrade, and have a sufficient longitudinal gradient to rapidly drain the ditches and prevent ponding of water. In those areas where exterior grades do not fully slope away from the edges of the proposed pavement, we recommend that edge drains be installed along the perimeter of the pavement.

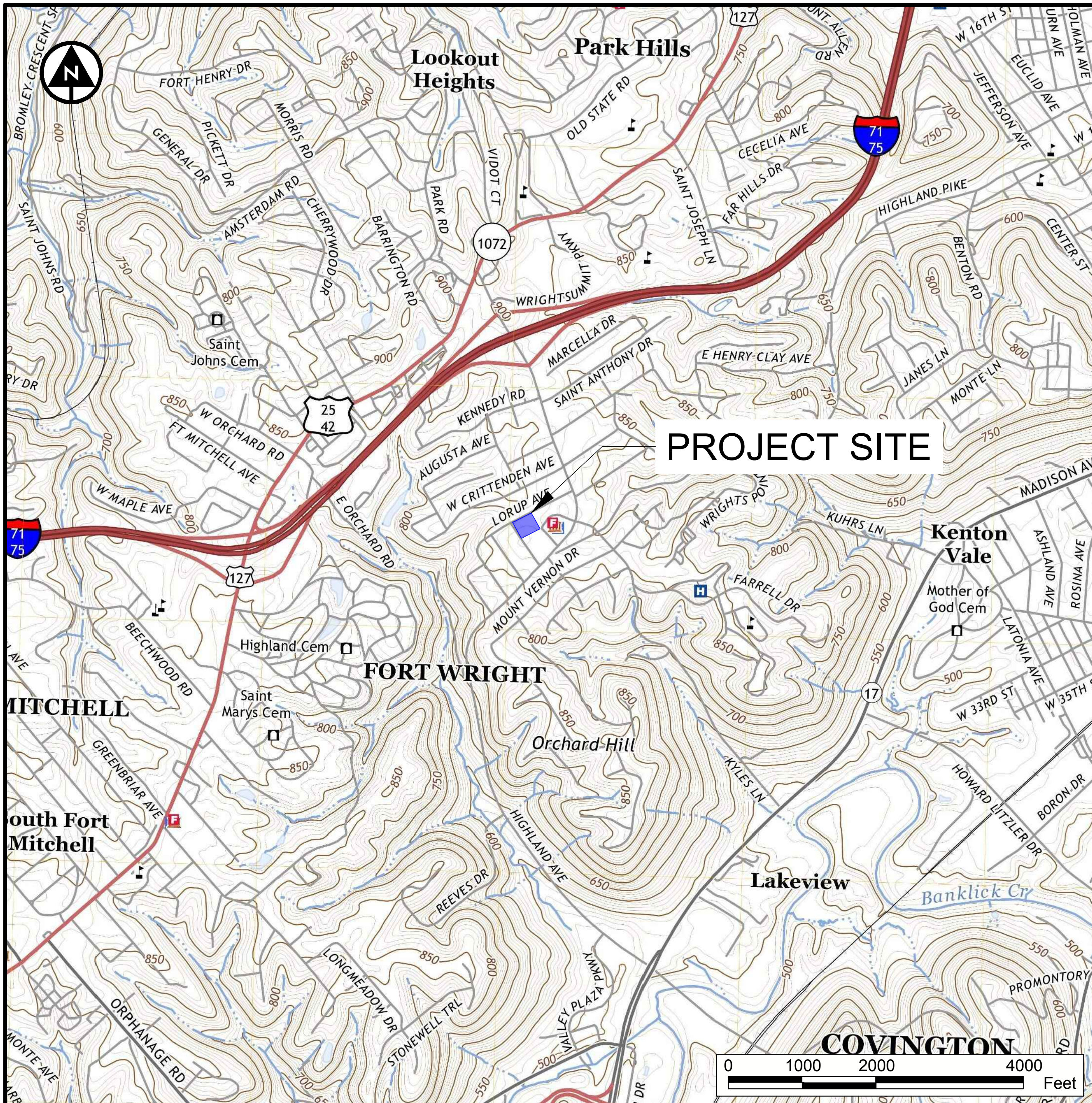
7. QUALIFICATIONS AND LIMITATIONS

The recommendations of this report have been prepared according to generally accepted soil and foundation engineering practice and are based on the conditions encountered explorations performed as part of this investigation at the site. Although soil quality has been inferred from the interpolation of the sampling data, you should explicitly note that subsurface conditions beyond the explorations, in fact, unknown. Should any conditions encountered during construction differ from those described in this report, this office should be notified immediately to review, and possibly modify these recommendations. This report applies solely to the size, type, and location of the structures described herein. If changes are proposed, this report will not be considered valid unless the changes have been reviewed and the recommendations of this report modified and re-approved in writing by Verdantas LLC.

APPENDIX A - Plates

Site Location Plan, Plate 1.0

Boring Location Plan, Plate 2.0



DISCLAIMER: Verdantas LLC has furnished this map to the Client for its sole and exclusive use as a preliminary planning and screening tool. This map is reproduced from geospatial information compiled from third-party sources which may change over time and are not accurate as to mapping, surveying or engineering standards. Verdantas LLC makes no representation or warranty as to the content, accuracy, timeliness or completeness of any information. In no event will Verdantas LLC, its owners, officers, employees or agents, be liable for damages of any kind arising out of the use of this map by Client or any other party.

verdantas

FORT WRIGHT KENTUCKY
409 KYLES LANE

SITE LOCATION PLAN

FORT WRIGHT SALT DOME

Project Number	39973
Date	5/4/2026
Author	ASD
Scale	1:2000
Plate	1.0

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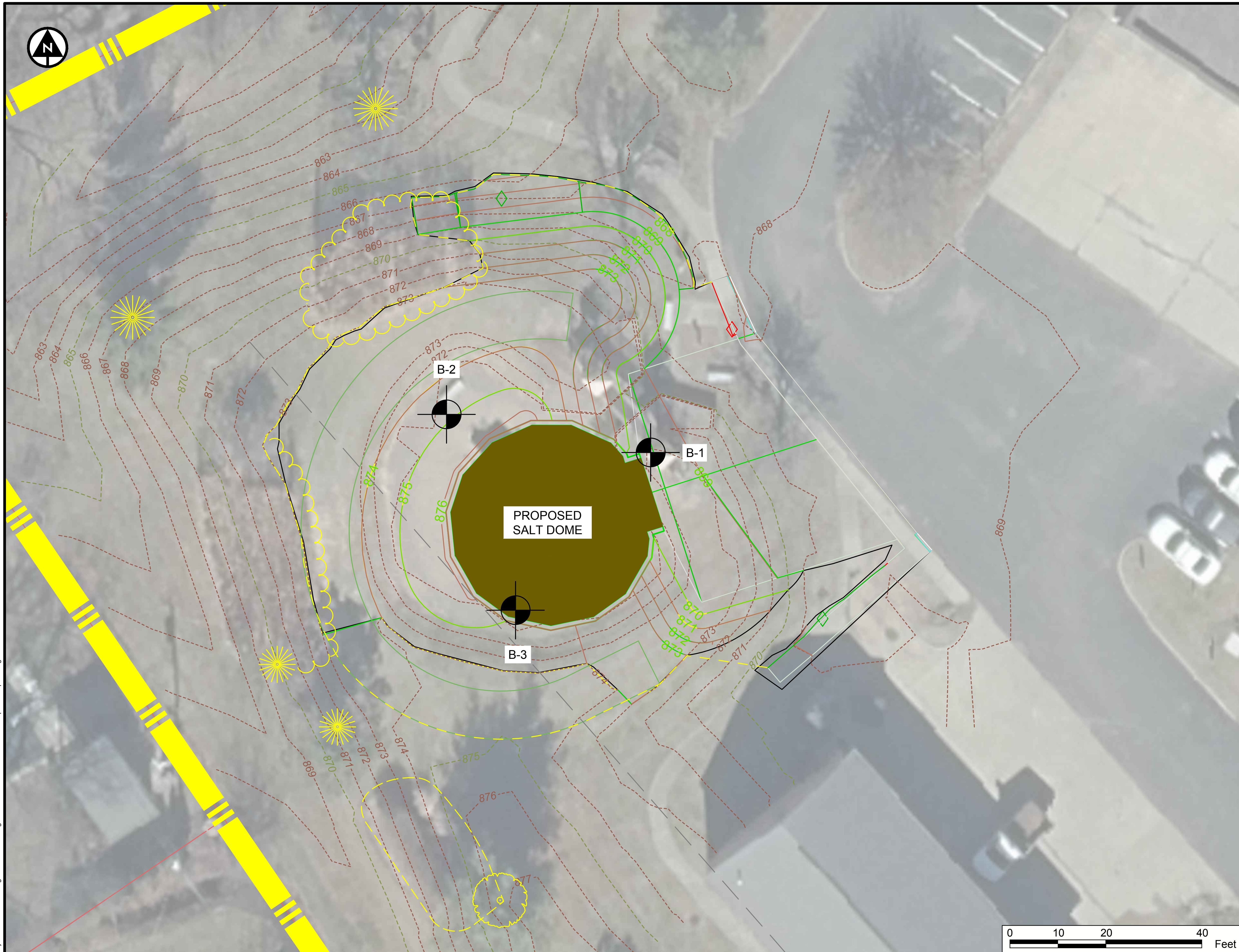
Produced Using Autodesk's Civil 3D Software



BORING LOCATIONS

verdantas

FORT WRIGHT, KENTON COUNTY KENTUCKY
409 KYLES LANE

EXPLORATION PLAN

FORT WRIGHT SALT DOME

Project Number	39773
Date	05/04/2026
Author	ASD
Scale	1:20
Plate	2.0

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Produced Using Autodesk's Civil 3D Software

APPENDIX B – Boring Information

Log of Borings

Legend key

BORING NUMBER B-1

verdantas
Verdantas LLC
4420 Cooper Road
Cincinnati, Ohio 45242

CLIENT City of Fort Wright
PROJECT NAME Fort Wright Salt Dome
PROJECT NUMBER 39973
PROJECT LOCATION Fort Wright, KY
DRILLING CONTRACTOR UES JB
RIG NO. TD-2
GROUND ELEVATION 873.1 ft
DRILLING METHOD 3-1/4 in. HSA
GROUND WATER LEVELS:
DATE STARTED 3/20/26 **COMPLETED** 3/20/26
AT TIME OF DRILLING None
LOGGED BY AD **CHECKED BY** AD
AT END OF DRILLING None
NOTES Split spoon refusal encountered at 25.7 feet.
0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	MC (PL–LL)	SPT N VALUE
	0		FILL - Moist Soft Brown Sandy LEAN CLAY with Trace Organics and Occasional Construction Debris	SS 1	67	2-2-2 (4)	1.25		22	
870			@2.5': w/Trace Iron Oxide Stain Seam	SS 2	89	2-2-2 (4)	2.00		19	
	5		5.0'							
			FILL - Moist Medium Stiff Brown LEAN CLAY w/Sand, Trace Gravel, and Iron Oxide Stain Seam @5.5': Gray/Brown, w/Trace Manganese Oxide and Brick Fragments	SS 3	78	4-4-4 (8)	3.00 1.75		21 19	
			7.5'							
865			GLACIAL - Moist Medium Stiff Mottled Brown and Gray LEAN CLAY w/Sand and Trace Organics (CL)	SS 4	67	2-2-3 (5)	1.00		29	
	10			SS 5	89	2-2-4 (6)	1.00		24	
860			@12.5': w/Trace Sand	ST 6	67		1.47	103	19	
	15									
855										
	20		20.0'							
			RESIDUUM - Moist Very Stiff Brown LEAN CLAY w/Sand and Trace Limestone Fragments (CL)	ST 7	58		3.00	99	23	
850										
	25		25.0'							
			Moist Extremely Weak Olive Brown HIGHLY WEATHERED SHALE and Gray Medium Strong to Storng LIMESTONE (bedrock)	SS 8	100	38-50/2"			10	>>
			25.7'							

Bottom of hole at 25.7 feet.

BORING NUMBER B-2

verdantas
Verdantas LLC
4420 Cooper Road
Cincinnati, Ohio 45242

CLIENT City of Fort Wright
PROJECT NAME Fort Wright Salt Dome
PROJECT NUMBER 39973
PROJECT LOCATION Fort Wright, KY
DRILLING CONTRACTOR UES JB
RIG NO. TD-2
GROUND ELEVATION 870.9 ft
DRILLING METHOD 3-1/4 in. HSA
GROUND WATER LEVELS:
DATE STARTED 3/20/26 **COMPLETED** 3/20/26
AT TIME OF DRILLING None
LOGGED BY AD **CHECKED BY** AD
AT END OF DRILLING None
NOTES Split spoon refusal encountered at 20.8 feet.
0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL / MC / LL (20 40 60 80); ▲ SPT N VALUE ▲ (20 40 60 80)
870	0	FILL - Moist Very Loose Brown POORLY GRADED SAND w/Trace Gravel and Silt 0.5'	SS 1	83	2-1-2 (3)	NP 0.75		23
		FILL - Moist Soft Gray/Brown LEAN CLAY w/Sand, Trace Gravel, and Calcite Stain Seam @2.5': Brown/Gray, w/Trace Iron Oxide Stain Seam 5.0'	SS 2	100	2-1-3 (4)	0.25		26
865	5	FILL - Moist Medium Stiff Brown/Gray LEAN CLAY w/Sand	SS 3	17	3-6-7 (13)	NI		14
		10.0'	SS 4	89	2-5-8 (13)	0.75		25
860	10	GLACIAL - Moist Medium Stiff Brown/Gray LEAN CLAY w/Trace Sand (CL) 12.5'	ST 5	50		0.83	98	24
		GLACIAL - Moist Soft Brown LEAN CLAY w/Sand (CL) 15.0'	SS 6	100	2-2-2 (4)	0.50		32
855	15	RESIDUUM - Moist Very Stiff Gray LEAN CLAY w/Sand and Limestone Fragments (CL) 20.0'	SS 7	22	7-7-11 (18)	NI		17
	20	Moist Extremely Weak Olive Brown HIGHLY WEATHERED SHALE and Gray Medium Strong to Storng LIMESTONE (bedrock) 20.8'	SS 8	33	22-50/3"			8 >>

Bottom of hole at 20.8 feet.

BORING NUMBER B-3

verdantas
Verdantas LLC
4420 Cooper Road
Cincinnati, Ohio 45242

CLIENT City of Fort Wright
PROJECT NAME Fort Wright Salt Dome
PROJECT NUMBER 39973
PROJECT LOCATION Fort Wright, KY
DRILLING CONTRACTOR UES JB
RIG NO. TD-2
GROUND ELEVATION 870.9 ft
DRILLING METHOD 3-1/4 in. HSA
GROUND WATER LEVELS:
DATE STARTED 3/20/26 **COMPLETED** 3/20/26
AT TIME OF DRILLING None
LOGGED BY AD **CHECKED BY** AD
AT END OF DRILLING None
NOTES
0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL / MC / LL (20 40 60 80); ▲ SPT N VALUE ▲ (20 40 60 80)
870	0		FILL - Moist Soft Gray/Brown LEAN CLAY w/Sand	SS 1	78	1-2-2 (4)	2.25		22
			@2.5': Brown/Gray, w/Trace Gravel, and Organics	SS 2	67	2-2-2 (4)	0.50		24
865	5		5.0' FILL - Moist Medium Stiff Brown/Gray LEAN CLAY w/Trace Sand	SS 3	89	2-2-4 (6)	1.00		26
			@7.5': Gray/Brown	ST 4	63		1.44	106	18
860	10								
			12.5' RESIDUUM - Moist Very Stiff Brown LEAN CLAY w/Sand, Trace Limestone Fragments, Iron Oxide Stain Seam, and Calcite Stain Seam (CL)	SS 5	89	7-7-9 (16)	>4.5		17
855	15		15.0' Moist Extremely Weak Olive Brown HIGHLY WEATHERED SHALE and Gray Medium Strong to Storng LIMESTONE (bedrock)	SS 6	67	25-27-12 (39)			15
			16.5' Bottom of hole at 16.5 feet.						

LEGEND KEY

Unified Soil Classification System Soil Symbols

GW - WELL GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.	GP - POORLY GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.	GM - SILTY GRAVEL Includes Gravel-Sand-Silt mixtures.	GC - CLAYEY GRAVEL Includes Gravel-Sand-Clay mixtures.
SW - WELL GRADED SAND Includes Gravelly Sands, little or no fines.	SP - POORLY GRADED SAND Includes Gravelly Sands, little or no fines.	SM - SILTY SAND Includes Sand-Silt mixtures.	SC - CLAYEY SAND Includes Sand-Clay mixtures.
ML - SILT Includes Silt with Sand and Sandy Silt.	CL - LEAN CLAY Includes Sandy Lean Clay and Lean Clay with Sand and Gravel.	MH - ELASTIC SILT Includes Sandy Elastic Silt and Elastic Silt with Sand.	CH - FAT CLAY Includes Sandy Fat Clay and Fat Clay with Sand.
CL-ML - SILTY CLAY Includes Clayey Silt of low plasticity.	OL - ORGANIC SILT and ORGANIC CLAY of low plasticity.	OH - ORGANIC SILT and ORGANIC CLAY of medium to high plasticity.	Pt - PEAT Includes humus, swamp and other soils with high organic content.
FILL MATERIAL - Includes controlled and non-controlled soil and non-soil materials.	TOPSOIL	ASPHALT - Bituminous Asphalt	CONCRETE - Includes broken concrete rubble.

Sample Symbols

SS - Split Spoon	ST - Shelby Tube	RC - Rock Core	GS - Geoprobe Sleeve
	AU - Auger Cuttings	GB - Grab	

Notes:

1. These logs are subject to the limitations, conclusions, and preliminary recommendations in the report and should not be interpreted separate from the report.

2. The borings were located in the field by Verdantas in accordance with the proposed boring plan by a Verdantas survey crew.

3. Unconfined Compressive Strength:
   NP = Non-Plastic
   NR = No Recovery
   NI = Not Intact

APPENDIX C – Laboratory Test Data

Tabulation of Laboratory Tests

Particle-Size Analysis Test Forms

Soil Unconfined Compressive Strength Test Forms

Project: Fort Wright Salt Dome **Project No. : 39973** verdantas

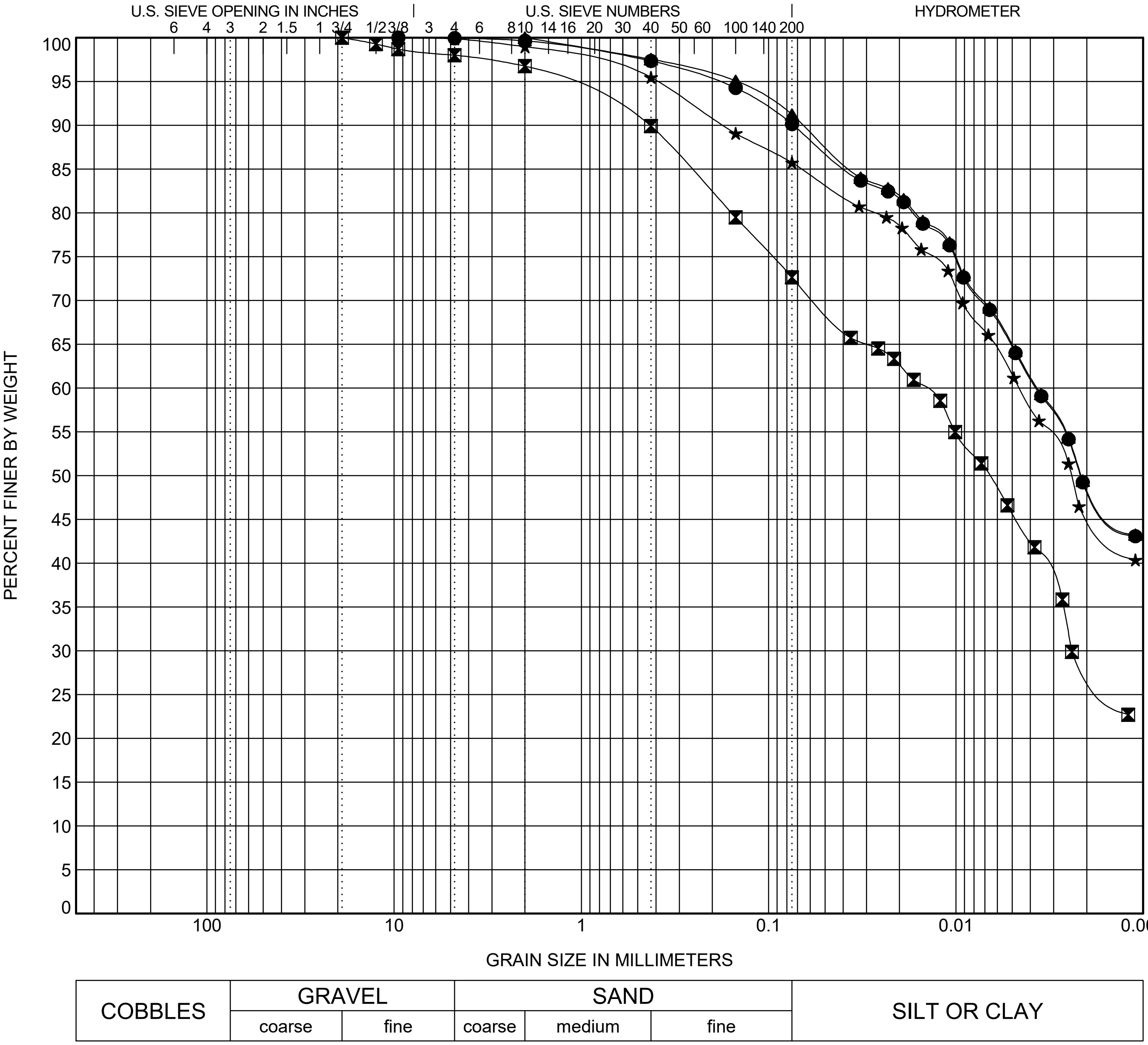
Boring No.	Sample No.	Sample Interval	Moisture Content (%)	Dry Unit Weight (pcf)	Atterberg Limits (%)			Gradation Analysis (%)						USCS Classification	Unconfined Compressive Strength (psf)	Consolidation			
					LL	PL	PI	Gravel	C. Sand	M. Sand	F. Sand	Silt	Clay			p_c (tsf)	C_c	C_r	c_v ($ft.^2$/day)
B-1	SS-1	0.0 - 1.5	21.7																
	SS-2	2.5 - 4.0	18.5																
	SS-3A	5.0 - 6.0	21.5																
	SS-3B	6.0 - 6.5	19.5																
	SS-4	7.5 - 9.0	29.2																
	SS-5	10.0 - 11.5	23.9																
	ST-6	12.5 - 14.5	19.2	102.8	36	21	15	0.0	0.0	2.0	7.0	26.0	65.0	CL	2,945				
	ST-7	20.0 - 22.0	23.0	99.4	41	23	18	2.0	1.0	7.0	17.0	27.0	46.0	CL		3.2	0.161	0.03	0.07
	SS-8	25.0 - 25.7	9.7																
B-2	SS-1B	1.0 - 1.5	22.6																
	SS-2	2.5 - 4.0	25.9																
	SS-3	5.0 - 6.5	14.3																
	SS-4	7.5 - 9.0	25.3																
	ST-5	10.0 - 12.0	24.3	98.2	35	23	12	0.0	0.0	2.0	6.0	26.0	65.0	CL	1,666				
	SS-6	12.5 - 14.0	31.7																
	SS-7	15.0 - 16.5	16.7																
	SS-8	20.0 - 20.8	8.3																
B-3	SS-1	0.0 - 1.5	22.4																
	SS-2	2.5 - 4.0	24.4																
	SS-3	5.0 - 6.5	25.6																
	ST-4	7.5 - 9.5	17.9	106.3	30	19	11	0.0	1.0	4.0	10.0	24.0	61.0	CL	2,888				
	SS-5	12.5 - 14.0	17.4																
	SS-6	15.0 - 16.5	15.4																

GRAIN SIZE DISTRIBUTION

Verdantas LLC
4420 Cooper Road
Cincinnati, Ohio 45242

CLIENT City of Fort Wright **PROJECT NAME** Fort Wright Salt Dome

PROJECT NUMBER 39973 **PROJECT LOCATION** Fort Wright, KY



Specimen Identification		USCS Classification	LL	PL	PI	Cc	Cu
● B-1	12.5	**LEAN CLAY (CL)**	36	21	15		
⧗ B-1	20.0	**LEAN CLAY with SAND (CL)**	41	23	18		
▲ B-2	10.0	**LEAN CLAY (CL)**	35	23	12		
★ B-3	7.5	**LEAN CLAY (CL)**	30	19	11		

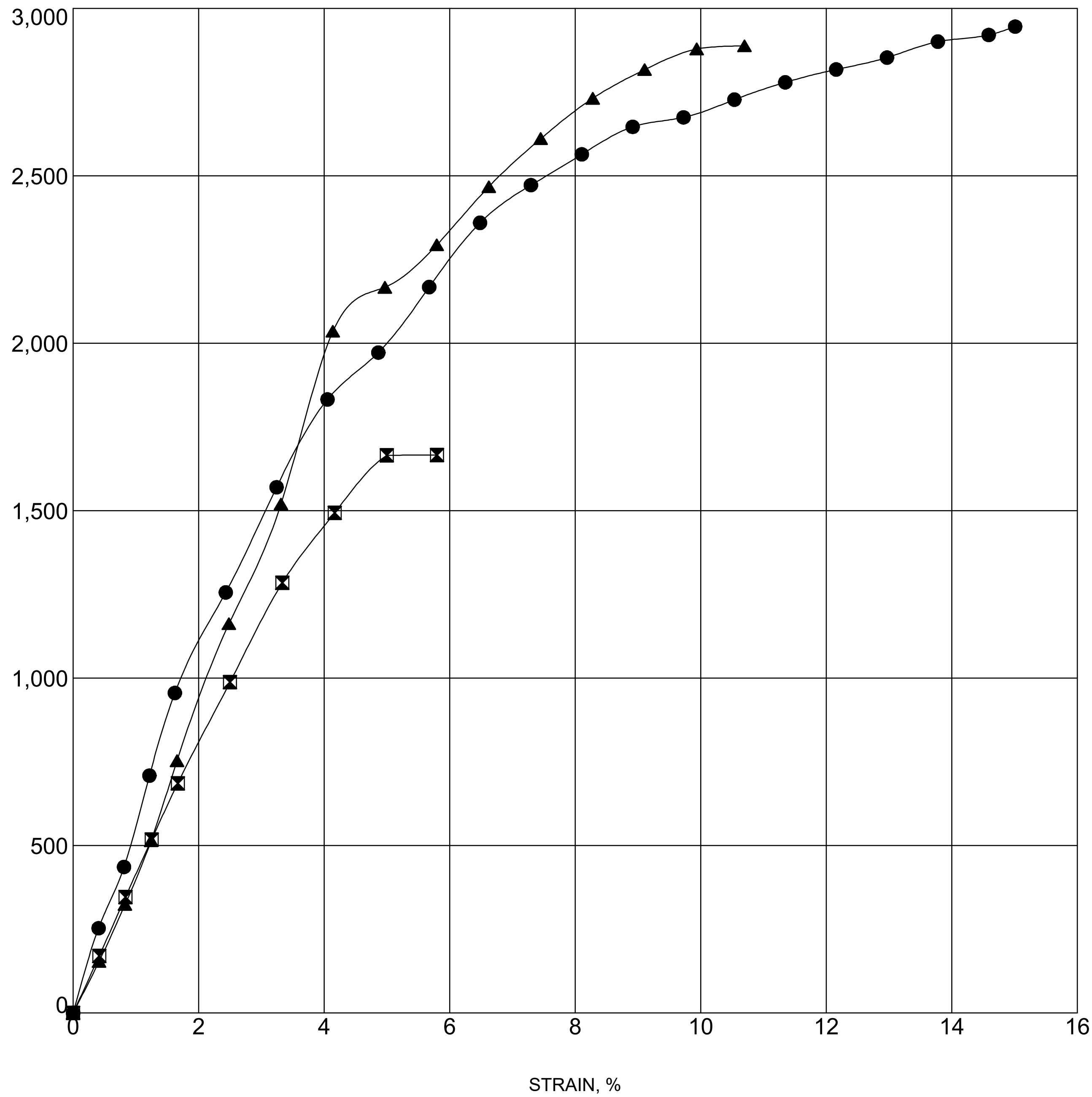
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-1	12.5	9.5	0.004			0.1	9.8	25.5	64.6
⧗ B-1	20.0	19	0.015	0.002		2.0	25.4	26.9	45.8
▲ B-2	10.0	2	0.004			0.0	8.8	26.3	64.9
★ B-3	7.5	9.5	0.005			0.1	14.2	24.2	61.5

Verdantas LLC
4420 Cooper Road
Cincinnati, Ohio 45242

UNCONFINED COMPRESSION TEST

CLIENT City of Fort Wright **PROJECT NAME** Fort Wright Salt Dome

PROJECT NUMBER 39973 **PROJECT LOCATION** Fort Wright, KY



	Specimen Identification		Classification	γ_d	MC%
●	**B-1**	**12.5**	**LEAN CLAY (CL)**	**103**	**19**
⊠	**B-2**	**10.0**	**LEAN CLAY (CL)**	**98**	**24**
▲	**B-3**	**7.5**	**LEAN CLAY (CL)**	**106**	**18**

Project No.: 1733601
Date: 3/29/2026
Client: City of Fort Wright
Project: Fort Wright Salt Dome
Fort Wright, KY
Boring No.: B-1
Sample No.: ST-7
Depth: 20.0 - 22.0'

Initial H= 1 inches

Pressure tsf	Final Height (in)	Initial Height (in)	DH	Average H (in)	e	t50 (min)	Ave P (tsf)	Cv (in2/s)	Cv (ft2/d)
0.25	0.99720	1.00000	0.00280	0.9986	0.673	1.5	0.125	0.000541	0.324
0.5	0.99240	0.99720	0.00760	0.9948	0.665	1.2	0.375	0.000659	0.396
1	0.98155	0.99240	0.01845	0.9870	0.647	1.6	0.75	0.000502	0.301
2	0.96610	0.98155	0.03390	0.9738	0.621	3.6	1.5	0.000215	0.129
4	0.95270	0.96610	0.04730	0.9594	0.598	5.9	3	0.000128	0.077
8	0.93240	0.95270	0.06760	0.9426	0.564	6.0	6	0.000122	0.073
16	0.90350	0.93240	0.09650	0.9180	0.516	6.4	12	0.000108	0.065
4	0.91190	0.90350	0.08810	0.9077	0.530		10		
1	0.92525	0.91190	0.07475	0.9186	0.552		2.5		
0.25	0.93540	0.92525	0.06460	0.9303	0.569		0.625		

Estimated Cc: 0.161
Estimated Cr: 0.030

Soil Description: Brown LEAN CLAY w/Sand and Trace Gravel (CL)
Specific Gravity: 2.672
Liquid Limit: 41
Plastic Limit: 23
Plasticity Index: 18

Initial Water Content:	23.7 %	Final Water Content:	23.7 %
Inital Dry Density:	99.4 pcf	Final Dry Density:	106.3 pcf
Initial Void Ratio:	0.678	Final Void Ratio:	0.569
Initial Degree of Saturation:	93.5 %	Final Degree of Saturation	111.3 %

Estimated Preconsolidation Pressure: 3.2 tsf

The sample for the test was trimmed from a Shelby tube sample using a cutting shoe. Test Method B was used with the specimen inundated during testing. Coefficients of consolidation were computed by log of time method.

Project No.: 1733601
Date: 3/29/2026
Client: City of Fort Wright
Project: Fort Wright Salt Dome
Fort Wright, KY
Boring No.: B-1
Sample No.: ST-7
Depth: 20.0 - 22.0'