

GEOTECHNICAL STUDY-WAGNER PROPERTY
SNEED ROAD AT HILLSBORO ROAD
FRANKLIN, TN
GTA/TNE PROJECT: 21089

PREPARED FOR:
MR. JOSH DANIEL



170D E Main St #124 Hendersonville, Tennessee 37075

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June 15, 2021

Mr. Josh Daniel
10701 Vivaldi Ct., Unit 701
Ft. Myers, FL 33913

Re: Geotechnical Study-Wagner Property
Sneed Road at Hillsboro Road
Franklin, TN
GTA/TNE Project: 21089

Mr. Daniel:

We have completed a subsurface study for the above referenced project site and herewith present the data along with our comments and recommendations. The purposes of this study were to obtain information regarding subsurface conditions within the planned residential development which may encroach on mapped Dellrose (colluvial) soils.

The planned development is in its preliminary stages; however, we anticipate that the planned development will include a residential development and its associate infrastructure. Available soil mapping was reviewed that identified potential Delrose soils within the northern limits of the site. Consequently, our field exploration was concentrated within the northern area of the site in order to assess the presence/absence of colluvial soils.

EXPLORATION & TESTING

In order to assess the existing subsurface conditions, a total of 36 test pits were excavated at the locations and depths shown on the appended Test Pit Plan and Logs. The exploratory locations were located in the field using on-site landmarks and a hand-held GPS unit. Consequently, the locations shown on the plan should be considered approximate and accurate to the limits of the equipment used. Upon completion of the exploration, the test pits were checked for the presence of groundwater and subsequently backfilled.

Members of our professional staff logged and visually classified the soil samples collected; the respective soil data are depicted graphically on the attached individual logs. Laboratory testing was assigned to select samples in order to obtain fundamental engineering characteristics. The samples not destroyed during laboratory testing will remain stored at our office for 30 days and may then be discarded, unless we are directed otherwise.

170-D East Main Street, #124, Hendersonville, TN 37075 (615) 509-6012

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SITE CONDITIONS AND SUBSURFACE CONDITIONS

The project site exists as an undeveloped 200-acre parcel located along the east side of Hillsboro Road at its intersection with Sneed Road in Franklin, Tennessee. The subject site is undeveloped and maintains pastures and heavily wooded areas. Portions of the site have been previously disturbed and have experienced some grading activities. Access roads and buried utilities course through the site. An 820 +/- feet long retaining wall is located within the eastern portion of the site and detention ponds are located within the central portion of the site. The overall site demonstrates over 200 feet of topographic relief as the site generally slopes downward from the north toward the south; an isolated knoll is situated within the southeastern limits of the site with the ground surface sloping downward in all directions in this area.

As stated, our field exploration was concentrated along with the central portion of the site. At the locations explored, the surficial layer of overburden consists of about 12- to 18-inches of topsoil underlain by, and extending to the depths explored, residual, brown to reddish-brown, occasionally sandy, silty clay with varying amounts of chert fragments. The upper soil material (just beneath the topsoil interval) is generally loose to a depth of about 24 inches; beneath that depth the soil's consistency generally increases to medium and stiff to the bedrock surface, or to the depths explored. Bedrock was encountered at depths ranging from 0.3 feet at test pit TP-28 to 12.5 feet at test pit TP-10. Test pits that did not encounter bedrock were terminated within soil overburden at sufficient depths to determine the presence/absence of colluvial soils.

Figure 1: Aerial photo of project site from 2011



At the locations explored, the surficial layer of overburden consists of topsoil ranging in thickness from 6 inches or less at test pits TP-3, TP-15, TP-16, TP-17, TP-18, TP-24, TP-26 and TP-28 to 18

inches or more at test pits TP-1, TP-6, TP-7, TP-9, TP-11, TP-13, TP-19, TP-29 and TP-30. The topsoil is underlain by variably silty, occasionally sandy clay with varying amounts of rock fragments.

Alluvial soil, (river/water deposited soil), was encountered within a lower elevated portion of the site to a depth of 4 feet at test pit TP-33. According to our study and the USDA Natural Resources Conservation Service (NRCS) online soil survey, Dellrose soils, (or colluvial soils, exist within the higher elevated portions of the site. Colluvium, (or gravity deposited, landslide soils), were encountered within the upper soil overburden at test pits TP-3, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, TP-12, TP-13, TP-22, TP-23, TP-24, TP-25 and TP-36. The colluvium consists of brown, very silty, variably sandy clay with abundant quantities of rounded chert gravels and extends to depths ranging from about 3.5 to 5 feet at test pits TP-6, TP-9, TP-22, TP-23 and TP-25 to about 10 feet at test pits TP-11 and TP-14. The upper intervals of colluvium demonstrate a soft consistency and the lower intervals demonstrate a soft to medium consistency. Underlying the colluvium is a yellowish brown, variably silty clay extending to the bedrock surface or to the depths explored and demonstrating a stiff consistency.

Bedrock was encountered at depths ranging from about 3 feet or less at test pits TP-1, TP-2, TP-4, TP-5, TP-21, TP-27, TP-28, TP-29, TP-30, TP-31, TP-32 and TP-35 to about 12 feet at test pits TP-9 and TP-10. Test pits TP-11, TP-12, TP-14, TP-15, TP-16, TP-17, TP-20, TP-22, TP-24, TP-25 and TP-26 were terminated within soil overburden at depths of 12 feet or more.

Figure 1: NRCS Soil Survey

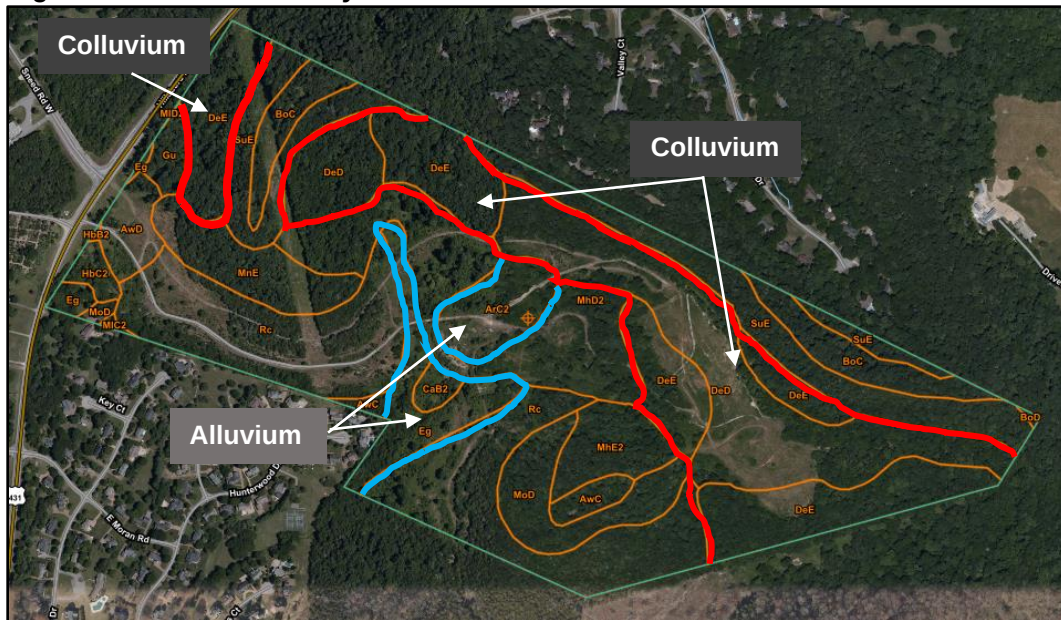


Table 1: Subsurface Summary

Location	Elev. (ft)	Surface Material Thickness	Depth to Bedrock (ft)	Bedrock Elev. (ft)	Soil Strata
TP-1	682	18" - Topsoil	2.2	679.8	1.5'-2.2': (CL) Silty Clay
TP-2	718	13" - Topsoil	3.1	714.9	1.1'-3.1': (CL/WR) Silty Clay/Weathered Rock
TP-3	840	2" - Topsoil	8.5	831.5	0.2'-7.0': Colluvium (CL) 7.0'-8.5': (CL) Silty Clay
TP-4	870	12" - Topsoil	2.2	867.8	1.0'-2.2': (CL) Silty clay
TP-5	830	12" - Topsoil	2.0	828.0	1.0'-2.0': (CL/WR) Silty Clay/Weathered Rock
TP-6	850	18" - Topsoil	5.3	844.7	1.5'-4.5': Colluvium (CL) 4.5'-5.3': (CL) Silty Clay
TP-7	805	34" - Topsoil	8.0	797.0	2.8'-8.0': Colluvium (CL)
TP-8	726	15" - Topsoil	10.5	715.5	1.25'-7.0': Colluvium (CL) 7.0'-10.5': (CL) Silty Clay
TP-9	755	18" - Topsoil	12.0	743.0	1.5'-4.0': Colluvium (CL) 4.0'-9.5': (CL) Silty Clay 9.5'-12.0': (CH) Sl. Silty Clay
TP-10	690	15" - Topsoil	12.5	677.5	1.25'-8.0': Colluvium (CL) 8.0'-12.5': (CL) Silty Clay
TP-11	752	18" - Asphalt	-	-	1.5'-9.5': Colluvium (CL) 9.5'-12.5': (CH) Sl. Silty Clay
TP-12	784	12" - Topsoil	-	-	1.0'-7.5': Colluvium (CL) 7.5'-12.0': (CL) Silty Clay
TP-13	785	28" - Topsoil	9.0	776.0	2.3'-7.5': Colluvium (CL) 7.5'-9.0': (CL) Silty Clay
TP-14	804	12" - Topsoil	-	-	1.0'-10.5': Colluvium (CL) 10.5'-14.0': (CL) Silty Clay
TP-15	770	2" - Topsoil	-	-	0.2'-15.0': Soil Fill (CL)
TP-16	785	2" - Topsoil	-	-	0.2'-4.5': (CL) Silty Clay 4.5'-12.0': (CH) Sl. Silty Clay
TP-17	748	2" - Topsoil	-	-	0.2'-9.0': (CL) Silty Clay 9.0'-13.0': (CH) Sl. Silty Clay
TP-18	782	2" - Topsoil	-	-	0.2'-14.0': (CL) Silty Clay
TP-19	775	23" - Topsoil	8.5	766.5	1.9'-8.5': (CL) Silty Clay
TP-20	710	13" - Topsoil	-	-	1.1'-9.0': (CL) Silty Clay 9.0'-12.0': (CH) Sl. Silty Clay
TP-21	810	12" - Topsoil	3.4	806.6	1.0'-3.4': (CL) Silty Clay
TP-22	696	10" - Topsoil	-	-	0.8'-5.0': Colluvium (CL) 5.0'-7.0': (CL) Silty Clay 7.0'-12.0': (CH) Sl. Silty Clay
TP-23	720	12" - Topsoil	5.5	714.5	1.0'-3.5': Colluvium (CL) 3.5'-5.5': (CH) Sl. Silty Clay
TP-24	738	5" - Topsoil	-	-	0.4'-2.0': Fill (CL) 2.0'-7.4': Colluvium (CL) 7.4'-12.0': (CH) Sl. Silty Clay

Table 1: Subsurface Summary (continued)

Location	Elev. (ft)	Surface Material Thickness	Depth to Bedrock (ft)	Bedrock Elev. (ft)	Soil Strata
TP-25	705	16" - Topsoil	-	-	1.3'-4.5': Colluvium (CL) 4.5'-8.0': (CL) Silty Clay 8.0'-12.0': (CH) Sl. Silty Clay
TP-26	674	4" - Topsoil	-	-	0.3'-3.0': Fill (CL) 3.0'-12.0': (CL) Silty Clay
TP-27	682	15" - Topsoil	1.9	680.1	1.25'-1.9': (CL/WR) Silty Clay/Weathered Rock
TP-28	675	4" - Topsoil	0.3	674.7	-
TP-29	720	18" - Topsoil	1.5	718.5	-
TP-30	760	18" - Topsoil	1.5	758.5	-
TP-31	780	12" - Topsoil	1.7	778.3	1.0'-1.7': (CL/WR) Silty Clay/Weathered Rock
TP-32	652	12" - Topsoil	2.5	649.5	1.0'-2.0': (CL) Silty Clay 2.0'-2.5': (WR) Weathered Rock
TP-33	648	10" - Topsoil	8.5	639.5	0.8'-8.5': (CL) Silty Clay
TP-34	670	8" - Topsoil	7.9	662.1	0.7'-3.8': (CL) Silty Clay 3.8'-7.9': (CH) Sl. Silty Clay
TP-35	675	9" - Topsoil	1.8	673.2	0.75'-1.8': (WR) Weathered Rock
TP-36	722	10" - Topsoil	6.4	715.6	0.8'-6.4': Colluvium (CL)

GEOLOGIC SETTING

The general vicinity is characterized by a series of steeply-sloped hills and gently-sloped valleys that developed through a process of surface erosion and/or creep. Elevation differences can be as much as 200 feet.

Colluvium is a mixture of clay, silt and sand size particles mixed with rock fragments. This material is derived from the weathering of bedrock formations occurring at higher elevations on a hillside. Over periods of geologic time, this material is transported downhill by gravity and surface erosion and deposited as a mantle of loose and permeable soils covering the lower slopes. Colluvium by nature has low strength and can be susceptible to down-slope movements, particularly when saturated or disturbed by excavations.

Review of the Bellevue and Oak Hill Quadrangle, Tennessee 7.5 Minute Geologic Map (Tennessee Department of Geology) indicates the site area is in an area underlain by three geologic formations. These formations, along with a brief description of each, are listed below in order of increasing age and decreasing elevation:

- Fort Payne Formation - a brownish-gray to grayish-black calcareous and dolomitic siltstone, with some shale, interbedded with light gray, fine- to coarse-grained limestone containing numerous chert nodules.
- Chattanooga Shale - grayish-black carbonaceous, thinly-laminated and fissile shale. This formation is typically mapped as part of the Fort Payne Formation.

- Leipers-Catheys Formation - a dark gray, fine-grained, thin- to medium-bedded, fossiliferous and shaley limestone.

Based on interpolation between contours from the geologic quadrangle map, contact elevations between these formations within the boundaries of the project site are estimated as shown below:

- Fort Payne Formation/Chattanooga Shale – about elevation 840 MSL.
- Chattanooga Shale//Leipers-Catheys Formation – about elevation 820

COMMENTS AND RECOMMENDATIONS

General

The project site contains colluvial soils, particularly at test pits TP-3, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, TP-12, TP-12, TP-13, TP-14, TP-22, TP-23, TP-24, TP-25 and TP-36. The colluvium consists of gravelly soils deposited by gravity on foot slopes and steep hillsides. Where encountered, the colluvial soils vary in thickness, extending to depths of 3.5 feet to 7 feet below the surface. Construction within areas containing colluvium is unavoidably associated with a degree of risk of slope movement. Such risk cannot be completely eliminated short of wholesale removal and reconstruction of the earth slopes. Construction within colluvial areas will require precautions and corrective measures to reduce the risks associated with the presence of colluvial soils. The owner should understand and accept the risk associated with the colluvial soils, if development is planned for these areas, such as extreme rainfall, faulty water lines, undetected subsurface anomalies and minor slope failures occurring within untreated portions of the property.

In order to develop the site for residential construction, additional subgrade preparation and/or a deep foundation systems will be required within proposed building areas in order to limit the potential for excessive, future settlement. If colluvial soils are not removed in attaining the desired grades, the colluvial soils should be completely removed or over-excavated within the building footprints. The over-excavated soils can be replaced as engineered fill. Otherwise, building foundations will require deep foundation systems, such as micro-piles, in order to extend through the colluvial soils. In any event, if construction is allowed within areas underlain by colluvial soils, these areas should be addressed on a case-by-case, the remedial treatment will be based upon the type of construction and the amount of colluvial soils present.

Construction beyond those areas noted as maintaining colluvial soils area is expected to be relatively straight forward. Isolated areas of soft soils will require remedial treatment, particularly where the lower lying alluvial deposits are present.

Geologic Hazards

Our site reconnaissance and review of available geologic literature did not reveal any recorded karst features. However, the site maintains areas of thick ground cover and has experienced previous construction activities. Accordingly, areas may exist that were not visible at accessible areas. Further, the bedrock underlying the project site is composed of limestone bedrock, which is susceptible to solutioning and weathering processes responsible for the development of caves and sinkholes. Any construction project within this geologic setting must recognize that undetected cavities could exist within the subsurface. Karst related activities are capable of causing ground subsidence and settlement of earth-supported structures. It has been our experience that undetected sinkholes are more likely to appear during construction activities once site drainage has

been altered. If such indications are observed or suspected, the geotechnical engineer should be notified and a subsurface exploration may be recommended for the suspect area. Any incipient sinkhole identified within the construction area will require remedial treatment in accordance with criteria established by the geotechnical engineer based on an inspection of the conditions encountered. In recognition of the inherent karst related risks and the risk of exposure to weathering processes, we offer the following comments to reduce the level of sinkhole related risk with respect to design and construction.

- Control storm water drainage by properly grading the site to promote complete and rapid runoff of surface water away from construction areas and to avoid the ponding of water in open excavations.
- Construct underground and underslab plumbing systems in a leak proof manner.
- To the extent practicable, provide for overland or piped discharge of storm water.
- Thoroughly investigate any area of suspected sinkhole development, such as areas of abnormally thick topsoil deposits, depressed areas, locations of soil collapse or voids within the overburden.
- Where incipient sinkholes are detected, perform a remedial treatment under the direction of the geotechnical engineer who must provide recommendations based on an inspection of the actual conditions encountered.

Roadways

Initially, construction areas should be stripped of vegetation and topsoil. Subsequent to stripping operations, prior to fill placement and upon achieving desired grades along proposed roadways, the exposed subgrade should initially be proof-rolled using a loaded, tandem axle dump truck in order to delineate the soft or unstable zones. Isolated surficial soils are not expected to demonstrate stability under the loads of the construction equipment during the proof-roll testing. Depending on the proposed final grades, excavations necessary to achieve the planned grades may remove the intervals of unstable soils. If not removed, remediation of the subgrade soils will be required prior to the placement of any fill material, or upon reaching desired grades after the stripping of topsoil has occurred.

Unstable areas identified should initially be stabilized by scarifying, moisture conditioning and re-compacted to the requirements stated later in this text for engineered fill. Unstable soils that cannot be remediated through stabilization should be undercut to stable ground and replaced with engineered fill. The materials generated from undercutting can be re-used elsewhere onsite provided that the requirements for engineered fill are met and the materials do not contain any organics or deleterious material. After the subgrade is properly prepared and stabilized, engineered fill can then be placed and compacted, as required. Cut areas should be proof rolled and repaired in a similar fashion upon achieving desired grades.

Seasonal changes in the soil moisture content can cause a degradation of the soil consistency and prevailing weather conditions will affect the amount of subgrade repair. For instance, if grading activities are conducted during the wetter months of the year, repair quantities are expected to increase, especially within areas containing thin intervals of soil (less than 3 feet thick) due to possible perched water upon the bedrock surface. Further, excavations that encroach the bedrock surface may expose soft soils at or near the bedrock surface, consequently, it may be necessary to over-excavate these areas to the bedrock surface to provide a stable subgrade. In any event, actual repair quantities can only be determined based on technical observations in the field at the time of

construction, and we recommend that the geotechnical engineer or his representative be allowed to observe the conditions exposed in the field during mass grading in order to provide additional recommendations and assistance to the grading contractor.

The site should be maintained in a positively drained condition during and after construction in order to prevent the ponding of water and destabilization of subgrade soils. Heavy traffic on prepared soil subgrade areas should be avoided, particularly following periods of wet weather conditions.

Site Preparation – Residential Construction

In order to prepare the site for construction, all topsoil, vegetation, or any otherwise unsuitable materials should be stripped from the areas of proposed building footprint including areas extending at least five (5) feet beyond the footprint, where possible. We estimate that stripping depths will approach 12 inches in order to remove the surficial topsoil, vegetation and root matter. Actual stripping depths will vary according to the type of material encountered during stripping. Thicker deposits of topsoil will be encountered near trees and the removal of trees should include the root bulb.

Subsequent to stripping activities and mass excavations in cut areas, the exposed soil subgrade will consist of 1 to 2 feet of medium consistency soil, as was noted within the upper intervals of the overburden. For at-grade construction (slabs on grade, drive areas, etc.) the exposed soil subgrade should undergo proof-roll testing in order to delineate soft or unstable areas. The proof-roll test should be conducted using a loaded, tandem axle dump truck and should be observed by the geotechnical engineer or his representative. Depending upon proposed grades, the upper 1 to 2 feet of soil subgrade could demonstrate instability. Where unstable soils are encountered, the overburden should initially be scarified, moisture conditioned and subsequently re-compacted. Areas that cannot be repaired by scarification and re-compaction should be over-excavated to expose a firm stratum. The resulting excavation should be backfilled with engineered soil fill. The materials generated from undercutting can be re-used elsewhere on-site provided that the requirements for engineered fill are met and the materials do not contain any organics or deleterious material.

Seasonal changes in the soil moisture content can cause a degradation of the soil consistency and prevailing weather conditions will affect the amount of subgrade repair. For instance, if grading activities are conducted during the wetter months of the year, repair quantities are expected to increase. In any event, actual repair quantities can only be determined based on technical observations in the field at the time of construction, and we recommend that the geotechnical engineer or his representative be allowed to observe the conditions exposed in the field during mass grading in order to provide additional recommendations and assistance to the grading contractor.

The site should be maintained in a positively drained condition during and after construction in order to prevent the ponding of water and destabilization of subgrade soils. Heavy traffic on prepared soil subgrade areas should be avoided, particularly following periods of wet weather conditions.

Engineered Fill

The on-site soils can be use as engineered fill, however, moisture conditioning of the soils may be required. Soil fill material should consist of a low to medium plasticity clay ($PI < 30$) and must be free of vegetation, roots, debris, rocks greater than 8 inches and other objectionable material. Engineered soil fill should be placed in maximum 8 inch thick, loose lifts and compacted to at least 95% of the maximum dry density as determined by ASTM D 698 (standard Proctor).

Site Drainage

The final slope configuration and all aspects of the site work must be designed to provide for uninterrupted and complete runoff of surface water. Any below grade walls should incorporate free-draining aggregate backfill and foundation drains must be incorporated into the wall design. Foundation drains for all retaining walls and basement area walls should be connected to an outlet that, like the other subsurface drains, discharges water to the surface sufficiently downhill from the residence. We further recommend that all roof drains and area drains be similarly piped to carry water off the slope as completely as is practical. Final routing of the drains can be best determined in the field, and the design intent allows considerable latitude in the locations of the drains.

LIMITATIONS

The foregoing recommendations were developed based on observations of a limited number of exploratory locations and with the assumption that the materials exposed fairly represent conditions existing across the site. It is possible that different conditions could exist between the explored locations, and such unknown conditions could have an impact on design and construction. Additionally, subsurface conditions can change with the passage of time. Because it is not possible to know every detail of the conditions hidden beneath the surface, our comments and recommendations are presented as opinions and judgments, as opposed to statements of fact. Should any conditions at variance with this report be encountered during construction, this office should be notified immediately so that further studies can be made and supplemental recommendations can be provided. The purpose of this report is to provide information and recommendations for use by the owner and the building designers. While the subsurface information may be helpful to contractors, the study is not intended to provide all information that a contractor may need to evaluate construction costs and material quantities. The data and recommendations are specific to the site and project described herein.

CLOSURE

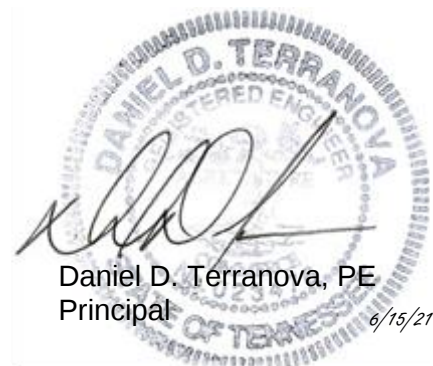
We are available at your convenience to discuss with you the details of this project and our recommendations. We appreciate this opportunity to be of service to you.

Sincerely,

Geo-Technology Associates, Inc.



George A. Waller, EI
Staff Professional



Daniel D. Terranova, PE
Principal

6/15/21

APPENDIX A: TEST PIT LOCATION PLAN

GEOTECHNICAL STUDY-WAGNER PROPERTY

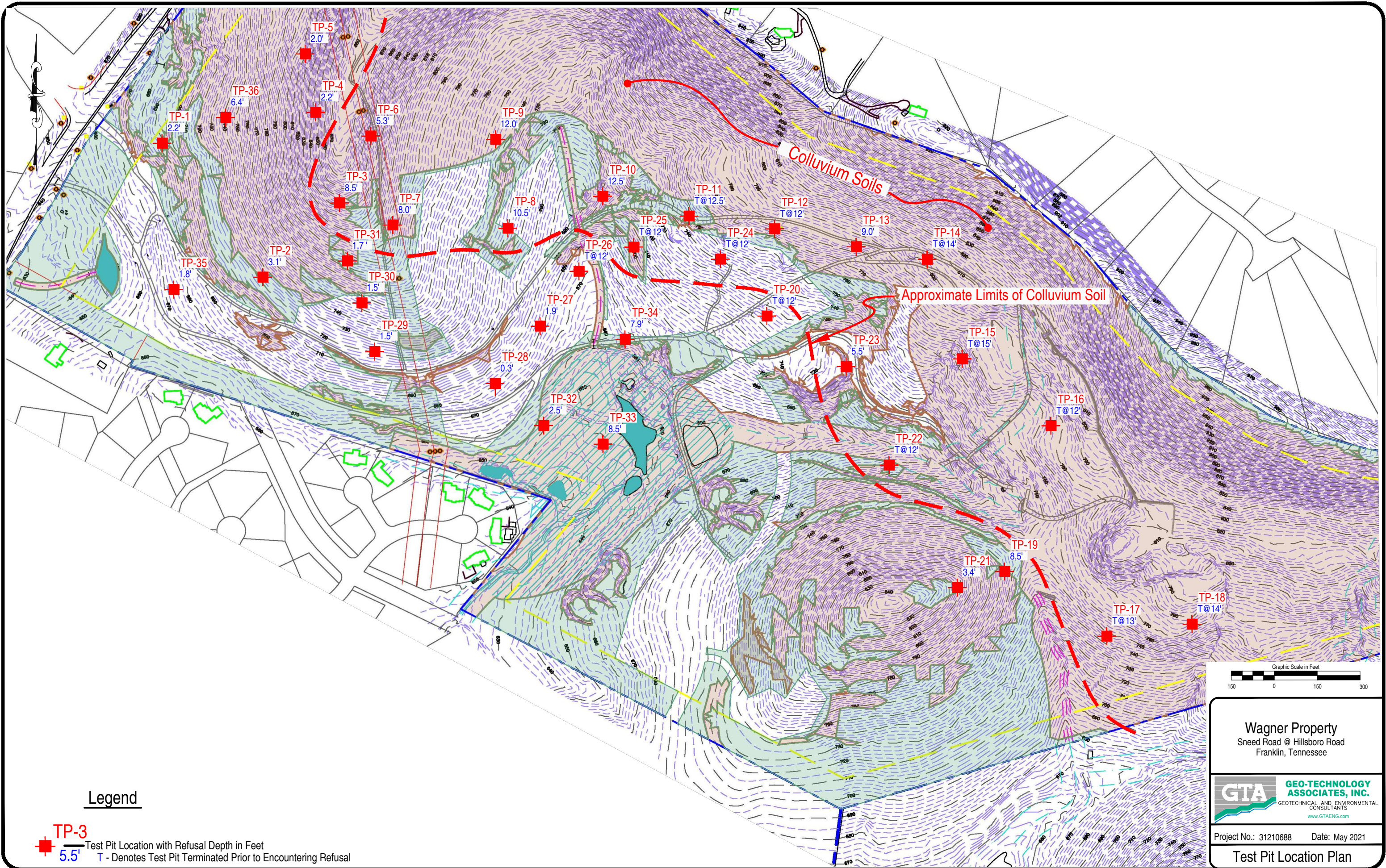
SNEED ROAD AT HILLSBORO ROAD

FRANKLIN, TN

GTA/TNE PROJECT: 21089



170-D East Main Street #124 Hendersonville, TN 37075



APPENDIX B: TEST PIT LOGS

GEOTECHNICAL STUDY-WAGNER PROPERTY
SNEED ROAD AT HILLSBORO ROAD
FRANKLIN, TN
GTA/TNE PROJECT: 21089



170-D East Main Street #124 Hendersonville, TN 37075

Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 2.2

Surface Elevation: 682.0 ft.

Test Pit No. TP-1

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.5') Topsoil: 18 inches thick
2	(1.5'-2.2') CL: Clay, slightly silty, moist, stiff consistency, yellowish-brown, with some weathered rock
Refusal at 2.2'	
Dry upon completion	



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 3.1

Surface Elevation: 718.0 ft.

Test Pit No. TP-2

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.1') Topsoil: 13 inches thick
2	(1.1'-3.1') CL/WR: Clay and weathered rock with boulders
3	

Refusal at 3.1'
Dry upon completion



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 8.5

Surface Elevation: 840.0 ft.

Test Pit No. TP-3

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-0.2') Topsoil: 2 inches thick
2	
3	(0.2'-7.0') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some chert cobbles
4	
5	
6	
7	
8	(7.0'-8.5') CL: Clay, slightly silty, moist, stiff consistency, yellowish-brown, with some weathered rock
Refusal at 8.5'	
Dry upon completion	



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 2.2

Surface Elevation: 870.0 ft.

Test Pit No. TP-4

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
2	(1.0'-2.2') CL: Clay, slightly silty, moist, soft consistency, yellowish-brown, with some weathered rock

Refusal at 2.2'
Dry upon completion



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 2.0

Surface Elevation: 830.0 ft.

Test Pit No. TP-5

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
2	(1.0'-2.0') CL/WR: Clay and weathered rock, shaley, medium consistency, brown
Refusal at 2.0'	
Dry upon completion	



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 5.3

Surface Elevation: 850.0 ft.

Test Pit No. TP-6

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.5') Topsoil: 18 inches thick
2	
3	(1.5'-4.5') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some chert cobbles
4	
5	(4.5'-5.3') CL: Clay, slightly silty, moist, soft consistency, yellowish-brown, with some weathered rock

Refusal at 5.3'
Dry upon completion



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 8.0

Surface Elevation: 805.0 ft.

Test Pit No. TP-7

Remarks:

Depth (ft.)

Lithologic Description

1

2

3

4

5

6

7

8

(0.0'-2.8') Topsoil: 34 inches thick

(2.8'-8.0') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some chert cobbles

Refusal at 8.0'

Dry upon completion



Test Pit Log

Page 1 of 1



Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 10.5

Surface Elevation: 726.0 ft.

Test Pit No. TP-8

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.25') Topsoil: 15 inches thick

2

3

4

(1.25'-7.0') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some chert cobbles

5

6

7

8

9

(7.0'-10.5') CL: Clay, silty, moist, medium consistency, brown

10

Refusal at 10.5'

Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.0

Surface Elevation: 755.0 ft.

Test Pit No. TP-9

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.5') Topsoil: 18 inches thick

2

(1.5'-4.0') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some chert cobbles

3

4

5

6

7

(4.0'-9.5') CL: Clay, silty, moist, medium consistency, brown

8

9

10

(9.5'-12.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

11

12

Refusal at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.5

Surface Elevation: 690.0 ft.

Test Pit No. TP-10

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.25') Topsoil: 15 inches thick

2

3

(1.25'-5.0') Colluvium: Clay, silty, moist, soft consistency, brown, with some chert cobbles

4

5

6

(5.0'-8.0') Colluvium: Clay, silty, moist, medium consistency, brown, with some chert cobbles

7

8

9

10

(8.0'-12.5') CL: Clay, silty, moist, stiff consistency, brown to yellowish-brown, with some rock fragments

11

12

Refusal at 12.5'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.5

Surface Elevation: 752.0 ft.

Test Pit No. TP-11

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.5') Topsoil: 18 inches thick

2

3

(1.5'-5.0') Colluvium: Clay, silty, moist, soft consistency, brown to reddish-brown, with some chert fragments

4

5

6

7

(5.0'-9.5') Colluvium: Clay, silty, moist, medium consistency, brown to reddish-brown, with some chert fragments

8

9

10

11

(9.5'-12.5') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

12

Terminated at 12.5'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.0

Surface Elevation: 784.0 ft.

Test Pit No. TP-12

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.0') Topsoil: 12 inches thick

2

(1.0'-4.0') Colluvium: Clay, silty, moist, soft consistency, light reddish-brown, with some chert fragments

3

4

5

(4.0'-7.5') Colluvium: Clay, silty, moist, medium consistency, light reddish-brown, with some chert fragments

6

7

8

9

(7.5'-12.0') CL: Clay, silty, moist, stiff consistency, reddish-brown, with some chert gravels and cobbles

10

11

12

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 9.0

Surface Elevation: 785.0 ft.

Test Pit No. TP-13

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-2.3') Topsoil: 28 inches thick
2	
3	(2.3'-5.5') Colluvium: Clay, silty, moist, soft consistency, light reddish-brown, with some chert fragments
4	
5	
6	(5.5'-7.5') Colluvium: Clay, silty, moist, medium consistency, light reddish-brown, with some chert fragments
7	
8	
9	(7.5'-9.0') CL: Clay, silty, moist, stiff consistency, yellowish-brown
Refusal at 9.0'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 14.0

Surface Elevation: 804.0 ft.

Test Pit No. TP-14

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.0') Topsoil: 12 inches thick

2

(1.0'-4.0') Colluvium: Clay, very silty, moist, soft consistency, brown, with some rock fragments

3

4

5

6

7

(4.0'-10.5') Colluvium: Clay, very silty, moist, medium consistency, brown, with some rock fragments

8

9

10

11

12

(10.5'-14.0') CL: Clay, silty, moist, stiff consistency, brown

13

14

Terminated at 14.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 15.0

Surface Elevation: 770.0 ft.

Test Pit No. TP-15

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-0.2') Topsoil: 2 inches thick

2

(0.2'-1.5') Fill: Clay, very silty, medium consistency, yellowish-brown

3

4

5

6

7

8

(1.5'-15.0') Fill: Clay, very silty, stiff consistency, yellowish-brown, with occasional cobbles and boulders

9

10

11

12

13

14

15

Terminated at 15.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.0

Surface Elevation: 785.0 ft.

Test Pit No. TP-16

Remarks:

Depth (ft.)

Lithologic Description

1

2

3

4

5

6

7

8

9

10

11

12

(0.0'-0.2') Topsoil: 2 inches thick

(0.2'-1.0') CL: Clay, silty, moist, medium consistency, yellowish-brown

(1.0'-4.5') CL: Clay, silty, moist, stiff consistency, yellowish-brown

(4.5'-12.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 13.0

Surface Elevation: 748.0 ft.
Remarks: No Photo

Test Pit No. TP-17

Depth (ft.)

Lithologic Description

1

2

3

4

5

6

7

8

9

10

11

12

13

(0.0'-0.2') Topsoil: 2 inches thick

(0.2'-1.5') CL: Clay, silty, moist, medium consistency, reddish-brown

(1.5'-9.0') CL: Clay, silty, moist, stiff consistency, reddish-brown, with occasional chert fragments

(9.0'-13.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

Terminated at 13.0'
Dry upon completion

Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 14.0

Surface Elevation: 782.0 ft.

Test Pit No. TP-18

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-0.2') Topsoil: 2 inches thick

2

(0.2'-2.0') CL: Clay, silty, moist, medium consistency, yellowish-brown

3

4

5

6

7

8

(2.0'-14.0') CL: Clay, silty, moist, stiff consistency, yellowish-brown,
with occasional rock fragments

9

10

11

12

13

14

Terminated at 14.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 8.5

Surface Elevation: 775.0 ft.

Test Pit No. TP-19

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.9') Topsoil: 23 inches thick
2	
3	(1.9'-4.0') CL: Clay, silty, moist, medium to stiff consistency, yellowish-brown, with abundant boulders and cobbles
4	
5	
6	(4.0'-8.5') CL: Clay, silty, moist, stiff consistency, yellowish-brown, with abundant boulders and cobbles
7	
8	
Refusal at 8.5'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/28/2021
Total Depth (ft.) 12.0

Surface Elevation: 710.0 ft.

Test Pit No. TP-20

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.1') Topsoil: 13 inches thick

2

(1.1'-2.5') CL: Clay, very silty, moist, medium consistency, brown

3

4

5

6

(2.5'-9.0') CL: Clay, silty, moist, stiff consistency, brown

7

8

9

10

(9.0'-12.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

11

12

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 3.4

Surface Elevation: 810.0 ft.

Test Pit No. TP-21

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
2	(1.0'-3.4') CL: Clay, silty, moist, medium consistency, brown , with cobbles and boulders
3	

Refusal at 3.4'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 12.0

Surface Elevation: 696.0 ft.

Test Pit No. TP-22

Remarks:

Depth (ft.)

Lithologic Description

1

2

3

4

5

6

7

8

9

10

11

12

(0.0'-0.8') **Topsoil:** 10 inches thick

(0.8'-5.0') **Colluvium:** Clay, very silty, moist, soft to medium consistency, brown, with abundant rock fragments

(5.0'-7.0') **CL:** Clay, silty, moist, stiff consistency, yellowish-brown

(7.0'-12.0') **CH:** Clay, slightly silty, moist, stiff consistency, yellowish-brown

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 5.5

Surface Elevation: 720.0 ft.

Test Pit No. TP-23

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
2	(1.0'-3.5') Colluvium: Clay, silty, moist, soft to medium consistency, brown, with some rock fragments
3	
4	(3.5'-5.5') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown
5	
Refusal at 5.5'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 12.0

Surface Elevation: 738.0 ft.

Test Pit No. TP-24

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-0.4') Topsoil: 5 inches thick

2

(0.5'-2.0') Fill: Clay, silty, moist, medium consistency, brown

3

4

(2.0'-7.4') Colluvium: Clay, very silty, moist, soft to medium consistency, brown, with some rock fragments

5

6

7

8

9

10

11

12

(7.4'-12.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 12.0

Surface Elevation: 705.0 ft.

Test Pit No. TP-25

Remarks: No photo available

Depth (ft.)

Lithologic Description

1

(0.0'-1.3') Topsoil: 16 inches thick

2

(1.3'-4.5') Colluvium: Clay, very silty, moist, soft to medium consistency, brown, with some rock fragments

3

4

5

6

(4.5'-8.0') CL: Clay, silty, moist, stiff consistency, brown to reddish-brown

7

8

9

10

(8.0'-12.0') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown

11

12

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 12.0

Surface Elevation: 674.0 ft.

Test Pit No. TP-26

Remarks:

Depth (ft.)

Lithologic Description

1

2

3

4

5

6

7

8

9

10

11

12

(0.0'-0.3') Topsoil: 4 inches thick

(0.3'-3.0') Fill: Clay, silty, moist, medium consistency, brown

(3.0'-12.0') CL: Clay, silty, moist, stiff consistency, brown

Terminated at 12.0'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 1.9

Surface Elevation: 682.0 ft.

Test Pit No. TP-27

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.25') Topsoil: 15 inches thick
	(1.25'-1.9') CL/WR: Clay and weathered rock
Refusal at 1.9'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 0.3

Surface Elevation: 675.0 ft.

Test Pit No. TP-28

Remarks:

Depth (ft.)

Lithologic Description

1

Refusal at 0.3'
Dry upon completion

(0.0'-0.3') Topsoil and WeathRK: 4 inches thick with weathered rock



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 1.5

Surface Elevation: 720.0 ft.

Test Pit No. TP-29

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.5') Topsoil: 18 inches thick
Refusal at 1.5'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 1.5

Surface Elevation: 760.0 ft.

Test Pit No. TP-30

Remarks:

Depth (ft.)

Lithologic Description

1

(0.0'-1.5') Topsoil: 18 inches thick

Refusal at 1.5'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 1.7

Surface Elevation: 780.0 ft.

Test Pit No. TP-31

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
	(1.0'-1.7') CL/WR: Clay and weathered rock

Refusal at 1.7'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 2.5

Surface Elevation: 652.0 ft.

Test Pit No. TP-32

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-1.0') Topsoil: 12 inches thick
2	(1.0'-2.0') CL: Clay, silty, moist, medium consistency, brown
	(2.0'-2.5') WeathRK: Weathered rock

Refusal at 2.5'

Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 8.5

Surface Elevation: 648.0 ft.

Test Pit No. TP-33

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-0.8') Topsoil: 10 inches thick
2	(0.8'-4.0') CL: Clay, very silty, very moist, soft consistency, dark brown, with abundant chert fragments (alluvium)
3	
4	(4.0'-6.0') CL: Clay, silty, slightly sandy, moist, medium consistency, brown
5	
6	
7	(6.0'-8.5') CL: Clay, silty, slightly sandy, moist, stiff consistency, brown
8	
Refusal at 8.5'	
Dry upon completion	



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 7.9

Surface Elevation: 670.0 ft.

Test Pit No. TP-34

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-0.7') Topsoil: 8 inches thick
2	(0.7'-2.0') CL: Clay, silty, moist, medium consistency, yellowish-brown
3	(2.0'-3.8') CL: Clay, silty, moist, stiff consistency, yellowish-brown
4	
5	
6	(3.8'-7.9') CH: Clay, slightly silty, moist, stiff consistency, yellowish-brown
7	

Refusal at 7.9'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 1.8

Surface Elevation: 675.0 ft.

Test Pit No. TP-35

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-0.75') Topsoil: 9 inches thick
	(0.75'-1.8') CL/WR: Clay and weathered rock

Refusal at 1.8'
Dry upon completion



Test Pit Log

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Project Name Wagner Property
Location Franklin, TN
Project Number 21089
Equipment Used Trackhoe
Date Excavated 4/29/2021
Total Depth (ft.) 6.4

Surface Elevation: 722.0 ft.

Test Pit No. TP-36

Remarks:

Depth (ft.)	Lithologic Description
1	(0.0'-0.8') Topsoil: 10 inches thick
2	
3	(0.8'-4.5') Colluvium: Clay, silty, moist, medium consistency, yellowish-brown, with abundant rock fragments
4	
5	
6	(4.5'-6.4') Colluvium: Clay, silty, moist, stiff consistency, yellowish-brown, with abundant rock fragments

Refusal at 6.4'
Dry upon completion

