November 27, 2018

Raymond Rinker
Ashton Woods – Raleigh Division
5711 Six Forks Road, Ste 300
Raleigh, NC 27609

Subject: Report of Subsurface Exploration and Preliminary Geotechnical Engineering Evaluation
Rolesville PUD
Wake Forest, NC
Project No.: 180776E

Mr. Rinker:

The purpose of this report is to present the results of the subsurface exploration and preliminary geotechnical engineering analyses undertaken by TM Engineering, Inc. in connection with the above referenced project. The attached report presents our understanding of the project, reviews our exploration procedures, describes existing site and general subsurface conditions, and presents our evaluations and recommendations.

We have enjoyed working with you on this project, and we are prepared to assist you with the recommended quality assurance monitoring and testing services during construction. Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely,

TM Engineering, Inc. C3201

NORTH CAROLINA PROFESSIONAL SEAL 026472 ENGINEER KINGSUK MALLIK 12/12/18

Toby Mallik, P.E.
NC Registration No. 026472

Bryant Mueller
Project Engineer

INTRODUCTION

Project Information

Our understanding of the project is based on information provided by Ashton Woods. The proposed site is located along US-401 just south of the intersection at E Young Street in Wake Forest, North Carolina. The site totals approximately 316 acres. It is our understanding that the property is being evaluated for single-family and multi-family residential development with typical associated infrastructure including roadways, utilities, and storm-water management facilities. We also anticipate applicable site clearing and grading associated with the preparation of lots for residential construction and that the streets will be paved with asphalt.

Scope of Services

The purposes of our involvement on this project were as follows: 1) provide general descriptions of the subsurface soil conditions at the site, 2) provide foundation design recommendations, and 3) comment on geotechnical aspects of the proposed development. In order to accomplish the above objectives, we undertook the following scope of services:

1) Visited the site to observe existing surface conditions and features; and to mark boring locations.
2) Reviewed readily available geologic and subsurface information relative to the project site.
3) Executed a subsurface exploration consisting of sixty-nine (69) soil borings to a depth of fifteen (15) feet below the existing ground surface.
4) Evaluated the findings of the subsurface exploration and data relative to proposed construction.
5) Prepared this written report summarizing our geotechnical engineering work on the project, providing descriptions of the subsurface conditions encountered, providing foundation design criteria, and discussing geotechnical related aspects of the proposed construction.

Our geotechnical scope of services did not include a survey of boring locations and elevations, quantity estimates, preparation of plans or specifications, detention pond considerations, environmental analysis or the identification and evaluation of environmental aspects of the project site.

SUBSURFACE EXPLORATION PROCEDURES

The subsurface exploration program was comprised of sixty-nine (69) subsurface soil test borings designated B-01 through B-69 advanced to a predetermined depth of fifteen (15) below the existing ground surface. The boring locations shown were located by estimating distances from known points within the area studied and the locations should be considered approximate. A boring location map is attached.

The soil test borings were performed in accordance with generally accepted practice using an ATV mounted rotary drill rig. Hollow-stem augers were advanced to pre-selected depths, and representative soil samples were recovered with a standard split-spoon sampler in general accordance with ASTM Standards. The number of blows required to drive the split-spoon sampler three consecutive 6-inch increments is recorded, and the blows of the last two increments are summed to obtain the Standard Penetration Test (SPT) Resistance (N-value). The N-value provides a general indication of in-situ soil conditions and has been correlated with certain engineering properties of soils.

Subsurface water level readings were taken in each of the borings immediately upon completion of the soil drilling process. Periodic observation of the boreholes should be performed to monitor subsidence at the ground surface, as the borehole backfill could settle over time.

Representative portions of the split-spoon soil samples obtained throughout the exploration program were evaluated by a member of our professional staff. The soil descriptions and classifications discussed in this report and shown on the attached boring logs and subsurface diagram are based on visual observation and should be considered approximate. Copies of the boring logs are provided. Split-spoon soil samples recovered on this project will be stored for a period of sixty days. After sixty days, the samples will be discarded unless prior notification is provided to us.

SITE AND SUBSURFACE CONDITIONS

Site Description

The subject site is approximately 316 acres in size. The site is bordered by E Young Street along eastern edge. Residential subdivisions Cedar Lakes and Villages of Rolesville borders the site along the northern and western edge. The majority of the site is plowed agricultural fields with the rest being mainly heavily wooded. There are three ponds along the eastern border surrounding the residential structure/barn/shop. Additionally, another residential structure/barn/ shop is around the middle of the subject site just south of US-401. There is a large stockpile in the south west corner of the site adjacent to US-401. There are small dirt/gravel roadways that

run in between the plowed agricultural fields all throughout the site. There are multiple small creeks and natural draws out-letting south/southwest from the ponds along eastern border. Additionally, Harris Creek runs along the western border flowing north to south. The majority of the site is land that is gently to moderately sloped from the north/west of the site with approximate elevations from 390 to 400 down to south/east with approximate elevations 300 to 340. In the area north/west of US-401 there is a high point/hill in the middle with elevations of 380 to 390. The land directly west is sharply sloped down to Harris Creek with elevations of 320 to 310. See attached soil boring location map for reference.

Subsurface Conditions

The subsurface conditions discussed in the following paragraphs and those shown on the attached boring logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. Subsurface conditions intermediate of the soil borings may vary from the conditions found at the specific boring locations. Should soil conditions adverse to those described in this report be encountered during site development, those conditions should be reported to the geotechnical engineer for additional review and comment.

The majority of the test borings encountered 2 to 12 inches of topsoil throughout the site. Due to a significant amount of the site being plowed agricultural fields and some of the site being heavily wooded, the depths of topsoil will vary. Underlying the topsoil, the test borings typically encountered a layer of firm to stiff fine silty clay (CL) and/or medium dense clayey fine sand (SC) material with SPT N-values ranging from 5 to 20 blows per foot (bpf) to depths ranging to 2.5 to 9 feet below existing surface. In this near surface layer, several of the test borings including B-06, B-15, B-17, B-19, B-23, B-24, B-28, B-29, B-31, B-32, B-34, B-37, B-38, B-39, B-41, B-44, B-45, B-48 through B-52, B-55, B-57 through B-62, and B-64, encountered very loose to loose and/or soft surface soils from depths varying from the existing ground surface to up to 3.5 feet below ground surface with SPT N-values ranging from 2 to 5 bpf before transitioning into the more stiff/dense clays and sands. The borings then typically transitioned into medium dense to dense silty fine sand (SM) and/or firm to very stiff fine sandy silt (ML) material with SPT N-values ranging from 6 to 60 bpf from 6 feet below existing surface to boring termination or to partially weathered rock. Several of the test borings however, including; B-01, B-03, B-08, B-11, B-19, B-20, B-28 through B-35, B-39, B-44, and B-48, instead encountered very loose to loose silty fine sand (SM) and/or soft fine sandy silt (ML) material with SPT N-values ranging from 0 to 8 bpf at depths ranging from 6 feet below existing surface to boring termination. Partially weathered rock (PWR), defined as material in excess of 100 blows per foot was encounterd in the majority of the test borings at initial depths of 0.5 to 14 feet below existing surface. The sampled PWR consisted of fine sandy silts with penetration resistances typically varying from 1 to 6 inches for 50 blows. Auger refusal due to hard rock was encountered in the majority of the soil test borings at depths from 0.5 to 13 feet below existing

surface. Initial rock depth and auger refusal depth for soil test borings that encountered PWR are shown on the attached *Rock Table*. Data from the specific borings are shown on the attached subsurface diagrams and boring logs.

Measurable subsurface water was encountered the majority of the soil test borings at depths ranging from 2 to 13 feet below existing ground surface. Specific borings numbers and more information is shown in the *Dewatering* section below. In general, all of the soil samples taken during this investigation were characterized as slightly moist to moist or wet of optimum moisture content, and soils at and below where subsurface water levels were initially encountered were characterized as wet or saturated. It should be noted that groundwater elevations will fluctuate at different times of the year through seasonal changes. See attached subsurface diagram and boring logs for water table depths in the individual borings.

RECOMMENDATIONS

General

The following evaluations and recommendations are based on information provided, our observations at the site, interpretation of the field data obtained during this exploration, and our experience with similar subsurface conditions and construction projects. Subsurface conditions in unexplored locations may vary from those encountered. Should subsurface conditions adverse to those indicated in this report be encountered during construction, those differences should be reported to us so that these recommendations may be confirmed, extended, or modified as necessary. The following recommendations are to provide general guidance through the design and construction process.

Site Preparation

Site grading should begin with the removal of trees, shrubs, and any other deleterious non-soil materials from the proposed construction area. This includes organic debris, organic laden soil, and any other materials that may be deleterious to the intended construction. There are multiple structures on site that will need to be demolished and removed. Additionally, based on the preliminary sketch plan provided one out of the three existing ponds will be removed and replaced with roadway and residential lots. Removal of the dam materials and undercut/repair of soft/wet near surface soils within the pond and the draws that inlet and outlet from the pond area should be anticipated and budgeted accordingly. In addition, it should be noted that although the test borings indicated general topsoil thickness of 2 to 12 inches, a significant amount of the site is wooded and plowed agricultural fields, and deeper stripping may be required to remove organics and tree root bulbs in some isolated areas. During the stripping operations, positive surface drainage should be maintained to prevent the accumulation of water.

After stripping and/or undercutting and prior to fill placement or after achieving final grade in proposed construction areas, areas intended to support roadways, floor slabs, new fill, and foundations should be carefully evaluated by a geotechnical engineer. At that time, proofrolling of the subgrade with a 20- to 30-ton loaded truck or other pneumatic-tired vehicle of similar size and weight should be performed to identify any soft or unstable areas. Proofrolling should be performed during good weather and not while the site is wet, frozen, or severely desiccated. Proofrolling helps locate soft, weak, or excessively wet soils present at the time of construction.

Any unsuitable materials observed during the evaluation and proofrolling operations should be undercut and replaced with compacted fill or as directed by the project engineer. Once the site has been properly prepared, fill placement and other at-grade construction may proceed. If a significant amount of fill will be placed on the site in any location, additional analysis may be needed to determine the extent of fill induced settlements on the site.

As indicated above, test borings B-06, B-15, B-17, B-19, B-23, B-24, B-28, B-29, B-31, B-32, B-34, B-37, B-38, B-39, B-41, B-44, B-45, B-48 through B-52, B-55, B-57 through B-62, and B-64 encountered very loose to loose/soft surface soils from depths varying from the existing ground surface to 3.5 feet below ground surface. Initial recommendations will likely be to compact native soils in place prior to fill placement to attempt to limit undercut quantities. Any soft or weak areas that remain unimproved after a reevaluation would then be recommended for undercut and replacement of compacted fill for areas intended to support roadways, floor slabs, new fill, and foundations, especially in building pads and areas where existing grade is near final grade. Soils that are removed from these areas can be reused as structural fill if properly dried.

Difficult Excavation Considerations

As indicated by the attached test boring data, partially weathered rock (PWR) was encountered in test borings B-04 through B-07, B-09, B-10, B-12, B-13, B-15, B-18, B-21, B-22, B-23, B-25, B-26, B-27, B-36, B-37, B-38, B-40, B-41, B-43, B-45, B-47, B-49 through B-54, B-56 through B-63, B-66, and B-68 beginning at depths as shallow as 6 inches below the existing grade. Test boring B-09 also encountered very shallow PWR just below the topsoil layer to depths of 6 feet below existing grade. It should be noted that shallow PWR or rock may exist intermittently between the test boring locations and that the thickness and the continuity of partially weathered rock should be expected to vary widely even over a short distance. Additionally, it would not be unusual to find lenses of partially weathered rock within more weathered residual soils. Our experience has been that partially weathered rock materials exhibiting resistances of 50 blows per 3 inches of penetration and softer can be pre-loosened with a D-8 dozer drawing a single tooth ripper during general site grading. Material harder than 50 blows per 3 inches of penetration generally requires blasting to remove with conventional equipment. The use of a ram-hoe can also be considered if only isolated areas of PWR or rock are encountered and/or intended for removal. In areas where blasting will be required, caution should be exercised by the blasting contractor not to overblast in either a horizontal or vertical direction. Overblasting

in or near structural areas can create fracture zones which may not be identifiable during a foundation inspection or during proofrolling. Overblasted areas not repaired can be detrimental to any construction elements on the site.

Partially weathered rock which can be ripped will generally break down under the action of heavy compactors to form sand and silt sized particles intermixed with small rocks (3 inch max.), and will typically be suitable for reuse as structural fill, however this should be verified in the field by the geotechnical engineer for the project. Alternately, spoils resulting from blasting activities (blast rock) should not be used as fill below future structural areas due to the potential for long term settlement

The equipment utilized for installation of utilities and foundation elements is less powerful than that which is used during the general grading operation. Our experience has been that excavation of partially weathered rock harder than 50 blows per 4 inches of penetration is typically not possible for backhoes equivalent to a CAT 225. Large mounted tracked excavators can sometimes remove materials with penetration resistances ranging from 50 blows per 4 inches to 50 blows per 6 inches; however, the rate of excavation is slow and most contractors will request a trench rock price for any removal of partially weathered rock. It is recommended that trench depths be kept at a minimum in order to reduce the amount of difficult excavation material which may be encountered. Additionally, consideration can be given to using a common utility trench corridor if possible and pre-ripping the corridor with a D-8 dozer during site grading. Contractors have also been successful utilizing a Vermeer rock saw to install small diameter utilities extending into rock.

Dewatering Considerations

As noted in the subsurface conditions section of this report the test borings encountered groundwater levels in soil test borings B-05, B-08, B-10, B-11, B-13 through B-17, B-19, B-20, B-28 through B-32, B-34, B-35, B-37, B-39, and B-50 at depths ranging from 2 to 13 feet below existing grade. Soft and loose soils often coincided with groundwater elevations. The contractor should be prepared address groundwater if any excavations (i.e. utility trenches or storm-water ponds) of these depths are expected as it is likely the excavated area will collapse immediately following removal of material. If desired, consideration can be given to dewatering prior to excavation, to control the stability of the excavated area, and the moisture content of the excavated material. The means and methods of dewatering if desired should be determined by the contractor prior to excavation activities.

Lightweight Soils

Mica was observed in several of the underlying sandy silts and silty sands in the boring samples. Our experience with the micaceous soils in this area has been that they may exhibit a relatively low standard Proctor maximum dry density (ASTM D 698). Lightweight soils (generally having

standard Proctor maximum dry densities of less than 90 pounds per cubic foot) are more susceptible to surface disturbance such as rutting and pumping when exposed near subgrade elevation and generally have lower shear strength. During site grading, we recommend that care be taken to protect light weight soils exposed near subgrade elevation. This would include not allowing channelized heavy traffic to operate on the soils. The use of wide tracked equipment is recommended during the stripping and grading operation. In addition, lightweight micaceous soils are moisture sensitive and can be difficult to compact during wetter winter months of December through April or May. To avoid delays during site grading operations, we recommend that site earthwork activities be scheduled after May and prior to December if possible, in order to better facilitate site grading work. Lighter weight soils should be used in deeper fill sections.

Controlled Structural Fill

With the exception of topsoil, the native onsite soils are suitable for reuse as structural fill assuming the moisture content of the soils can be controlled to be at or near optimum moisture content. Off-site fill materials, if required, should have a classification of ML, CL, SC or SM as defined by the Unified Soil Classification System. Other materials may be suitable for use as controlled structural fill material and should be individually evaluated by the geotechnical engineer. Controlled structural fill should be free of boulders, organic matter, debris, or other deleterious materials and should have a maximum particle size no greater than 3 inches. Fill soils in structural areas should ***not*** contain more than five percent (by weight) organic material, have a plasticity index (PI) greater than 15, or have a maximum dry density less than 90 pounds per cubic foot.

Fill materials should be placed in horizontal lifts with a maximum thickness of eight (8) inches loose measure. New fill should be adequately keyed into stripped and scarified subgrade soils and should, where applicable, be benched into the existing slopes. During fill operations, positive surface drainage should be maintained to prevent the accumulation of water. We recommend that structural fill be compacted to at least 95 percent of the Standard Proctor (ASTM Procedure D 698) maximum dry density for fill beneath buildings and beneath pavements, except at the final foot which should also be compacted to at least 98% of the recommended index. We recommend that all compacted fill be placed at moisture contents in the range of ±3% of the materials optimum moisture content as determined from the Standard Proctor density test. In confined areas such as utility trenches, portable compaction equipment and thin lifts of four to six inches may be required to achieve specified degrees of compaction. Each lift of fill should be tested in order to confirm that the recommended degree of compaction is attained. We recommend that the contractor have equipment on site during earthwork for both drying and wetting of fill soils to meet the above compaction/moisture requirements. Moisture control may be difficult during winter months or extended periods of rain. Attempts to work the soils when wet can be expected to result in deterioration of otherwise suitable soil conditions.

Where construction traffic or weather has disturbed the subgrade, the upper eight (8) inches of

soils intended for structural support should be scarified and re-compacted. Each lift of fill should be tested in order to confirm that the recommended degree of compaction is attained.

Foundation Design and Construction

The proposed structures may be supported on a shallow foundation system bearing on soils that have been suitably prepared and approved per the Site Preparation and Controlled Structural Fill recommendations in this report. We recommend that foundations be designed for a maximum allowable bearing pressure of 2,000 pounds per square foot (psf). Wall footings should be a minimum of 18 inches wide and isolated column footings should be at least 24 inches wide. A minimum embedment depth of 18 inches is recommended for exterior footings in order to bear below normal frost depth.

Excavations for footings should be made in such a way as to provide bearing surfaces that are firm and free of loose, soft, wet, or otherwise disturbed soils. Foundation concrete should not be placed on frozen or saturated subgrades. If such materials are allowed to remain below foundations, settlements will increase. Foundation excavations should be concreted as soon as practical, after they are excavated. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom to minimize damage to the bearing surface from weather or construction activities. Water should not be allowed to pond in any excavation. We recommend that all bearing surfaces be evaluated a geotechnical engineer using hand auger/ dynamic cone penetrometer testing equipment or other suitable methods prior to fill or concrete placement. Any unsuitable material detected during this evaluation should be undercut as directed by our geotechnical engineer. The actual extent of undercutting, if necessary, should be based on field observations made by the geotechnical engineer at the time of construction. Typical repairs for soft soils involve over excavating to firm bearing and then backfilling with washed stone to design bearing elevation with uniformly graded #57 or #67 washed stone while the typical repair for highly plastic clays involves excavation to a depth of at least 3 feet below design grade regardless of soil firmness.

Ground Floor Slabs

Ground floor slabs may be designed as a slab-on-grade supported by approved residual soils or newly placed controlled structural fill. Slab-on-grade support is contingent upon successful completion of the subgrade evaluation process as described in the Site Preparation recommendations in this report. The floor slab should be supported on at least 4 inches of ABC stone to provide a uniform well-compacted material immediately beneath the slab.

Floor slab construction should incorporate isolation joints along bearing walls and around column locations to allow minor movements to occur without damage. Utility or other construction excavations in the prepared floor subgrade should be backfilled to a controlled fill criterion to provide uniform floor support.

We estimate that an assumed subgrade design modulus of 100 pci is appropriate for floor slab design calculations.

Pavement Design Considerations

Traffic information has not been provided at this time and standard Proctor and CBR testing was not performed for this investigation. TME can provide final pavement designs once traffic information is provided and results of lab testing (which is typically performed after site grading) are completed. A typical pavement structure for this type of development would consist of 3 inches of asphalt over 8 inches of CABC stone provided all necessary repairs are conducted during the earthwork process to stabilize subgrades.

Performance of pavements will be extremely dependent on the condition of the subgrade and drainage considerations implemented in the design. All subgrades should be properly compacted to 98% of the standard Proctor maximum dry density immediately prior to base course stone placement. We recommend all pavement areas be proofrolled to identify any areas displaying movement. Unstable areas should be repaired as directed by the onsite engineer or qualified technician. Stabilization techniques such as placing bridge lifts, chemical stabilization, or using geosynthetics could reduce the amount of undercut or other repair needed. Proposed grades and the availability of dry fill will likely dictate the most suitable type of repair in pavement areas. All pavements should be graded to promote runoff of water. Any landscape areas involving irrigation or perched water conditions encountered uphill of pavement sections may require installation of some type of drainage system to reduce the potential for seepage of groundwater into the base course.

Some repair should be anticipated following construction related traffic use. If consideration will be given to placing an initial lift of asphalt with the understanding a final lift will be placed after traffic associated with construction subsides, some repair work will likely be necessary prior to placement of the final lift of asphalt.

Segmental Retaining Walls

Although detailed information has not been provided regarding retaining walls, if any MSE (mechanically stabilized earth) segmental type retaining walls are proposed, TME suggests importing a select granular low plasticity backfill for any walls in excess of 5 feet in height or within possible influence of structural loading as the clays and silts that were encountered on site during this investigation are generally not recommended for use as backfill within the retaining wall reinforced zone. Although, some sands that were encountered on site during this investigation typically meet design specifications for material to be used in the reinforced zone of retaining walls. Further testing, including Grain Size Analysis and Atterberg Limits, would be needed in order to ensure material meets wall design specifications. TME recommends the site

grading, typically in the form of a drainage swale parallel to the top of the wall, should prevent surface water from flowing over the face of the wall or ponding in the reinforced zone, and drainage measures should be included by the designer to intercept water between the fill interface and the residual soils to prevent the saturation of backfill materials.

Once wall locations have been established we recommend that the plans be reviewed by a geotechnical engineer to determine if additional subsurface investigation may be recommended in those locations to provide important information to assist in the wall design and construction, such as bearing conditions for the wall foundation and reinforced zone and data to perform global stability analysis. TME recommends that adequate laboratory testing be performed to define soil strength parameters and characteristics for any proposed wall backfill material for the wall designer to use in determining the correct grid lengths and spacing for walls.

We recommend designing and generating drawings for any MSE walls during the planning stages of development to allow for informed decisions to be made regarding available backfill material, batter influences, grid length restrictions, grid conflicts with utilities, and various site grading challenges commonly creating negative issues during construction. TM Engineering can provide a design for segmental retaining walls upon request.

Slopes

Fill slopes for embankments should be maintained at no steeper than 2.5H:1V (Horizontal to Vertical) in order to maintain long term stability of the embankment sections. Slopes steeper than aforementioned may need reinforcing grid to prevent slope failure. If provided with geometry specific to onsite slopes, TM Engineering, Inc. can assist with a design for slope reinforcement.

Temporary Excavation Stability

If excavations greater than 4 feet in height are anticipated for utilities, shoring and bracing or flattening (laying back) of the slopes may be required to obtain a safe working environment. Excavations should be sloped or shored in accordance with local, state and federal regulations, including OSHA (CFR Part 1926) excavation trench safety standards. We recommend that all excavated soils be placed away from the edges of the excavation at a distance equaling or exceeding the depth of the excavation. In addition, surface runoff water should be diverted away from the crest of the excavated slopes to prevent erosion and sloughing.

Localized areas of soft or unsuitable soils not detected by our borings or in unexplored areas may be encountered once construction begins. Vertical cuts in these soils may be unstable and may present a significant hazard because they can fail without warning. Therefore, temporary construction slopes greater than 5 feet high should not be steeper than one horizontal to one vertical (1H: 1V) and excavated material should not be placed within 10 feet of the crest of any excavated slope.

CONTINUATION OF SERVICES

We recommend that TM Engineering, Inc. be given the opportunity to review the construction plans, and project specifications when construction documents approach completion. This review evaluates whether the recommendations and comments provided herein have been understood and properly implemented. Our continued involvement on the project helps provide continuity for proper implementation of the recommendations discussed herein.

LIMITATIONS

This report has been prepared for the use of Ashton Woods for specific application to the Rolesville PUD site in Wake Forest, NC, in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. Our recommendations are based on information furnished to us; the data obtained from the previously described subsurface exploration program, and generally accepted geotechnical engineering practice. The recommendations do not reflect variations in subsurface conditions which could be present intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our recommendations based upon on-site observations of the conditions. Should the location of the proposed building construction significantly be changed, TM Engineering should be notified so that we can determine if the recommendations within this report remain applicable.

Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should evaluate earthwork, pavement, and foundation construction to verify that the conditions anticipated in design actually exist.

DB 5695, PG 745

E YOUNG STREET (PUBLIC R/W)

US HIGHWAY 401 BYPASS
(VARIABLE WIDTH PUBLIC R/W)

EXISTING ROCK PILE

LEGEND:

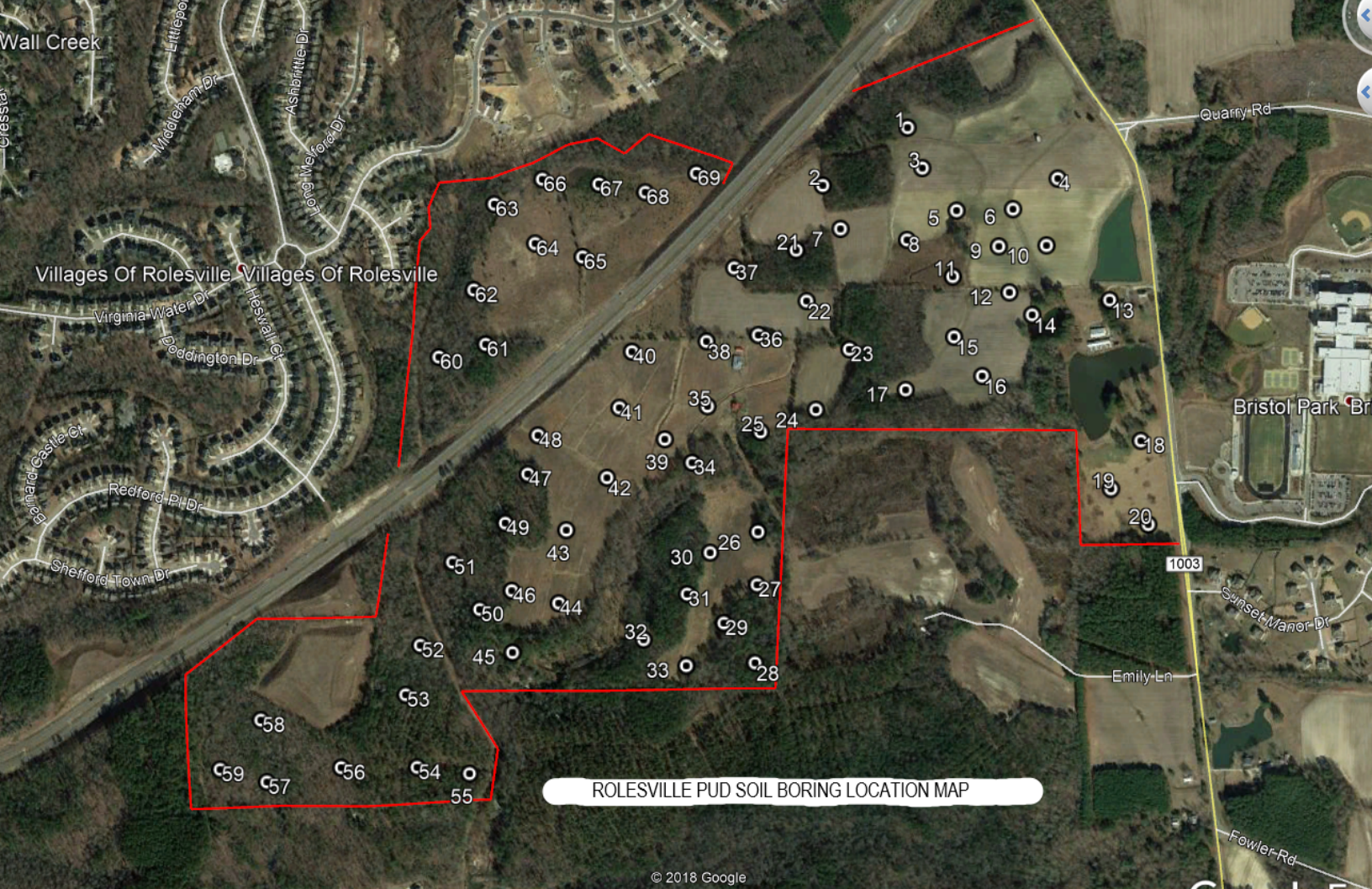
20'

22'

30'

50'

60'


Wall Creek
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Ashbrittle Dr
Long Mefford Dr
Villages Of Rolesville
Villages Of Rolesville
Virginia Water Dr
Heswall Ct
Boddington Dr
Redford Pl Dr
Shefford Town Dr
Quarry Rd
Bristol Park
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Sunset Manor Dr
Emily Ln
Fowler Rd
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ROLESVILLE PUD SOIL BORING LOCATION MAP
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Rolesville PUD Rock Table

TME Project # 180776E

Boring Number	Initial Rock Depth (feet)	Auger Refusal Depth (feet)
4	5	5
5	2	5
6	3.5	5
7	5.5	5.5
9	3.5	5
10	9	12
12	3.5	4.5
13	9	12
15	10.5	10.5
18	13.5	
21	3	3
22	3	3
23	6	7
25	3.5	5.5
26	0.5	0.5
27	13	13
36	1.5	2
37	13.5	
38	3.5	5
40	1.5	2.5
41	8	8
43	6	6
45	5.8	5.8
47	1.5	3
49	3	3
50	14	
51	13.5	
52	2.5	2.5
53	9	12
54	1	3
56	5.5	5.5
57	9.5	10.5
58	13.5	
59	13.5	
60	8.5	8.6
61	5.5	5.5
62	3	3
63	0.7	0.7
66	13.5	
68	3	3

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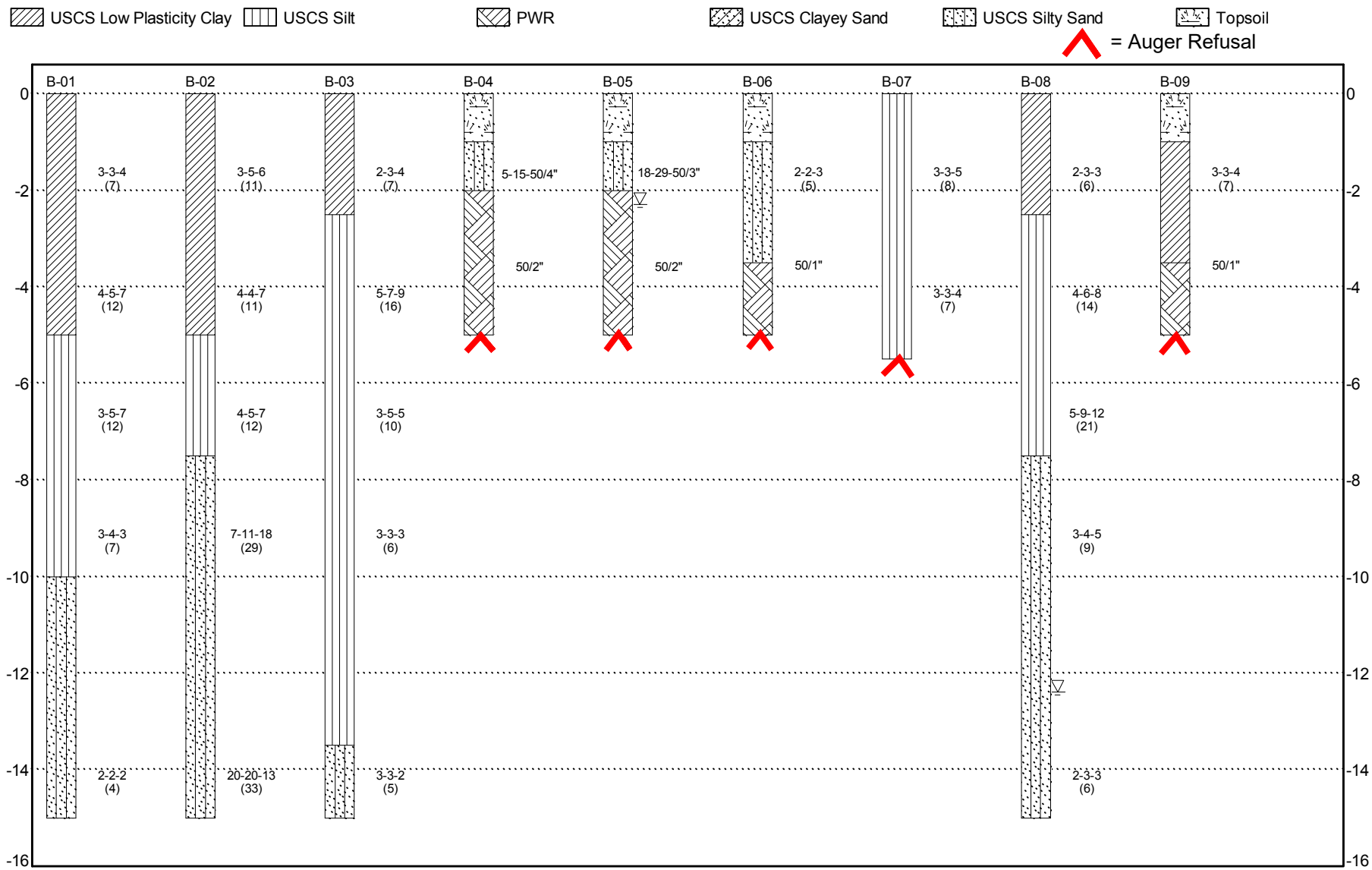
CLIENT Ashton Woods

SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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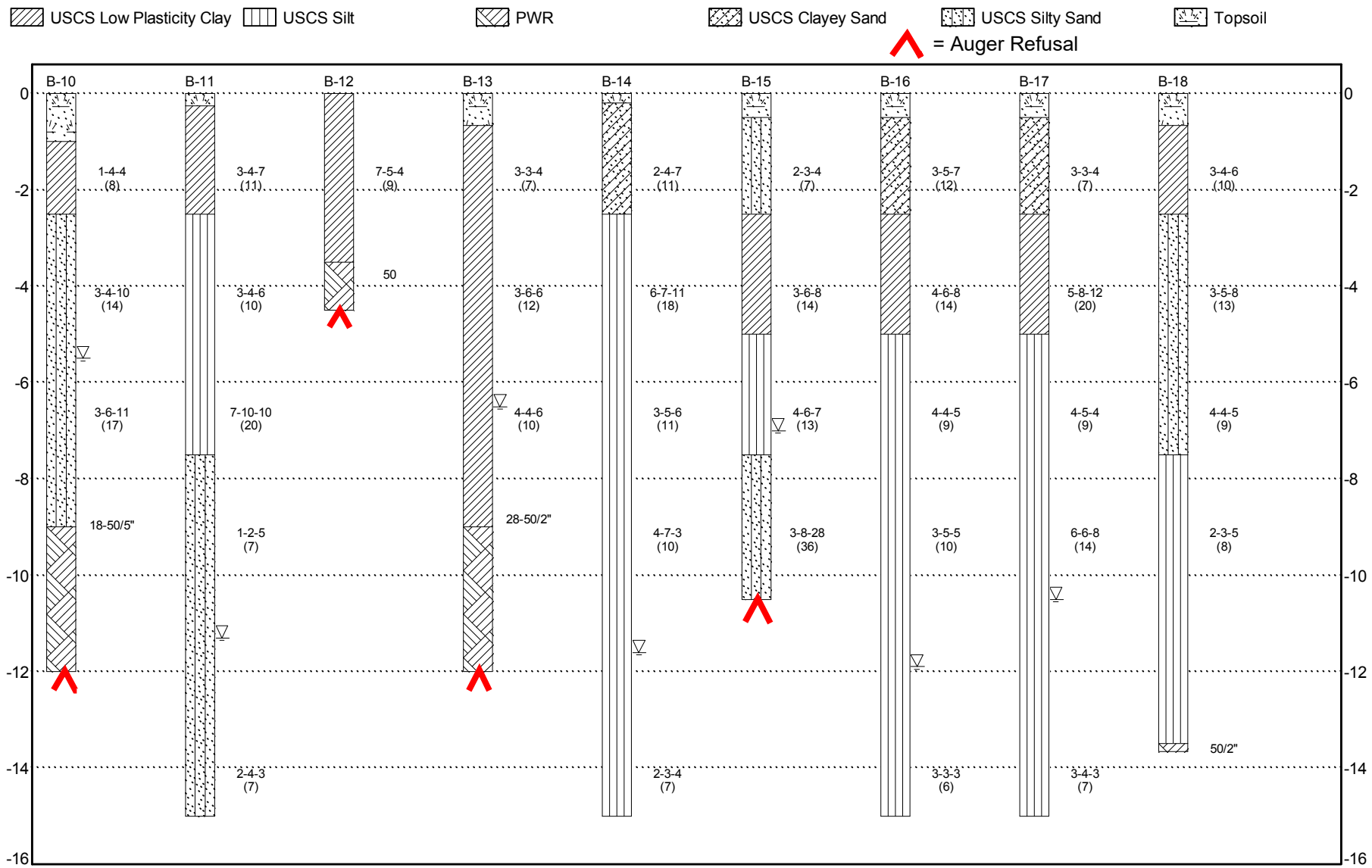
CLIENT Ashton Woods

SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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103 Hiawatha Court
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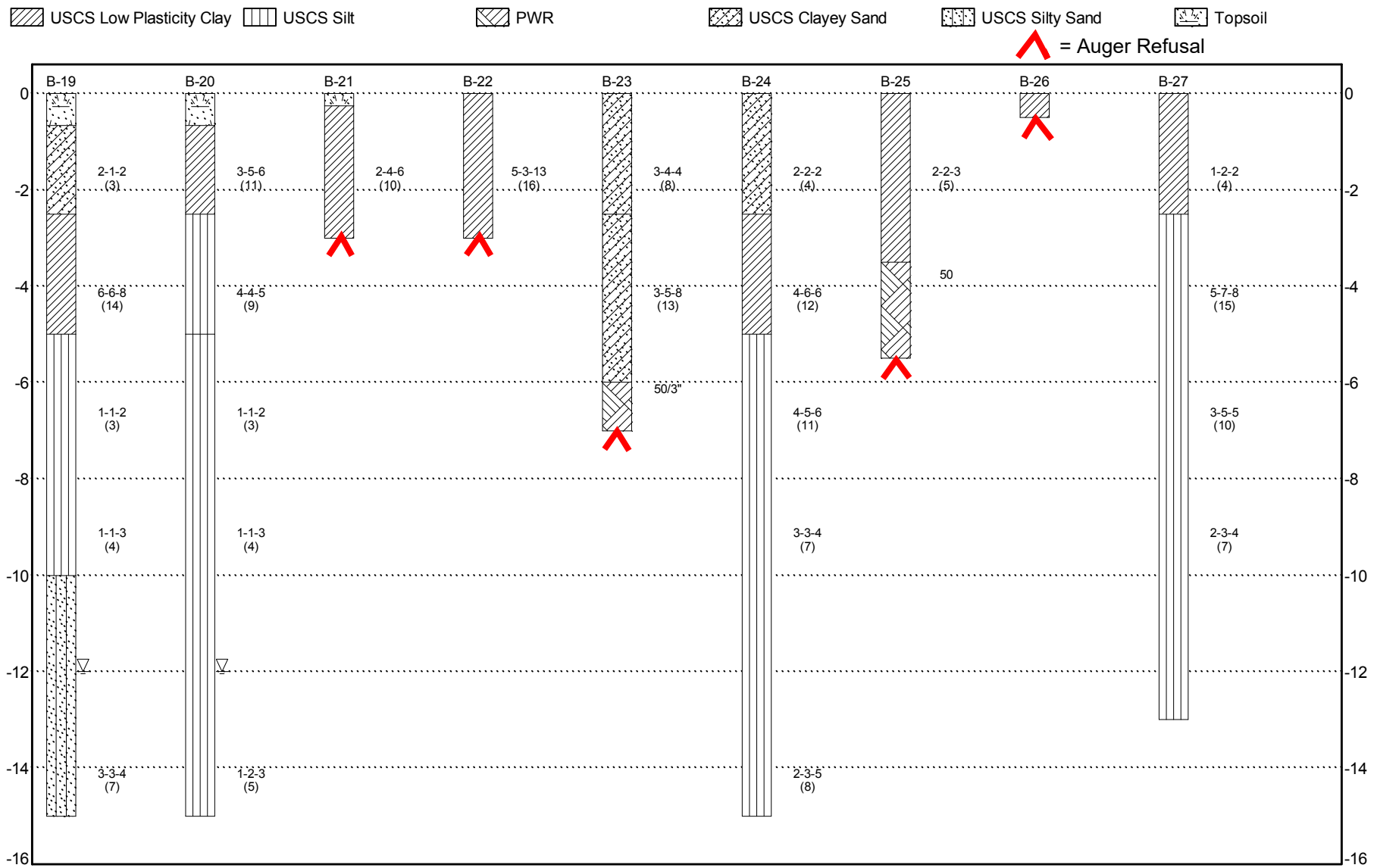
CLIENT Ashton Woods

SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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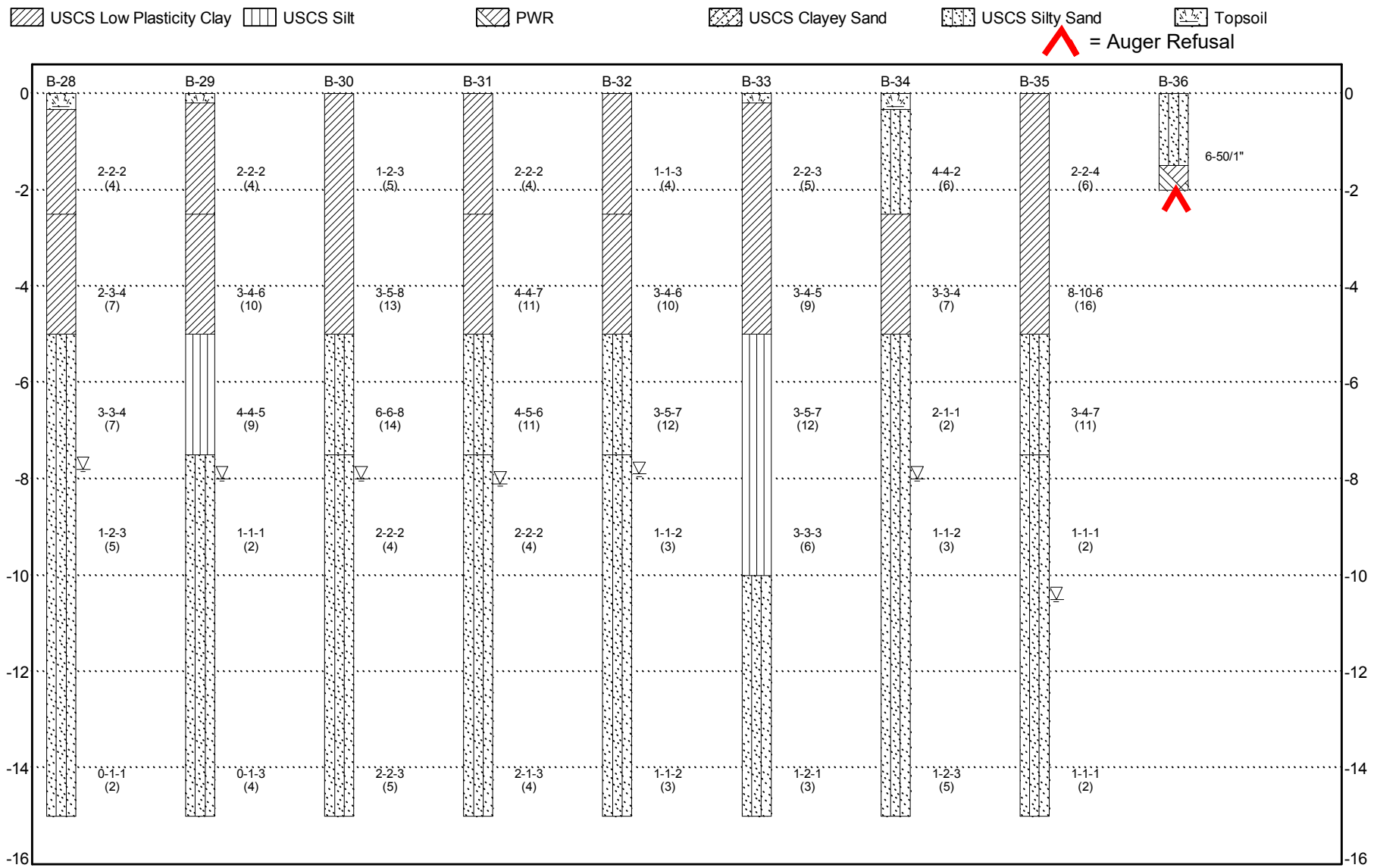
CLIENT Ashton Woods

SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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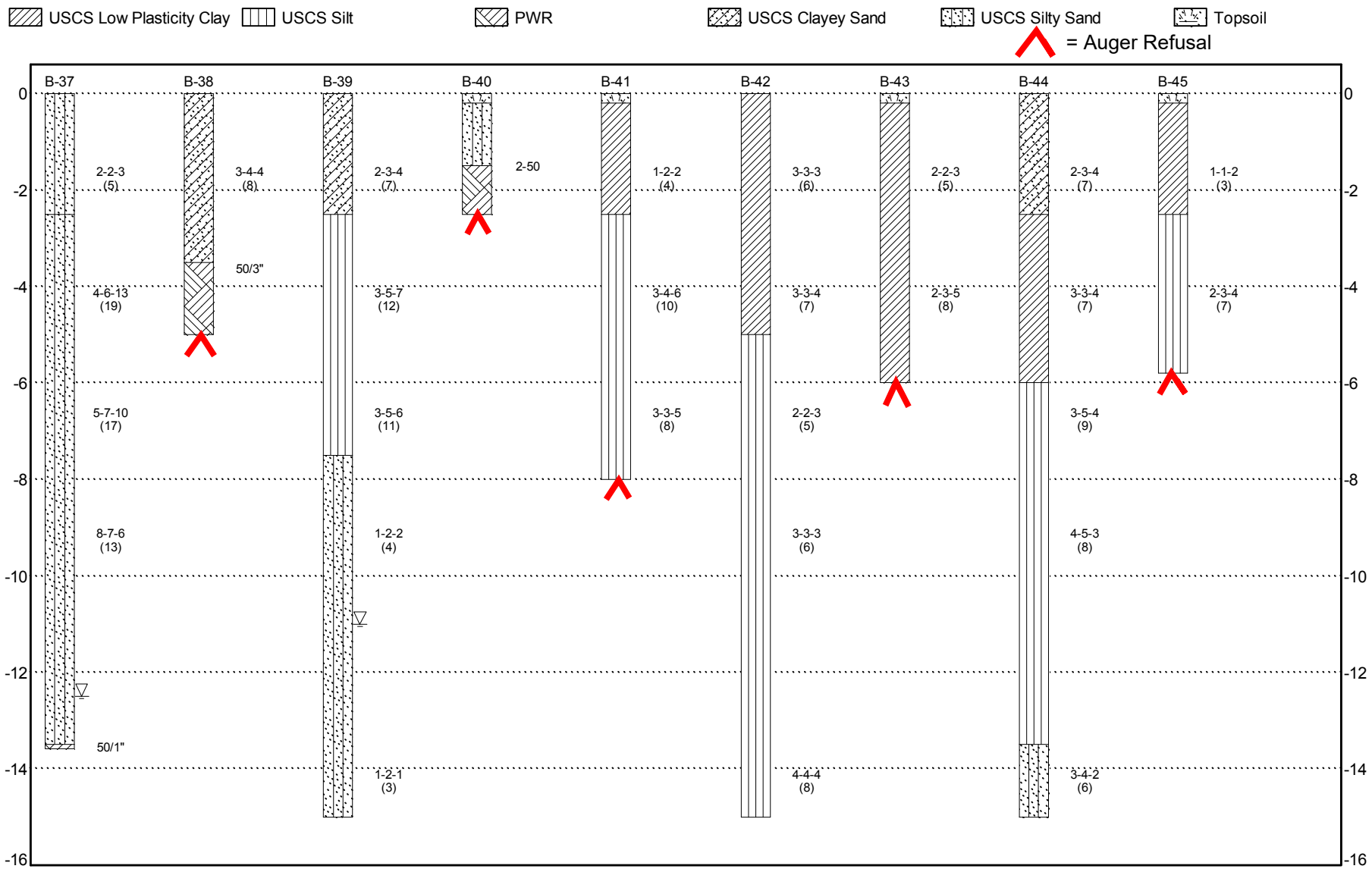
CLIENT Ashton Woods

SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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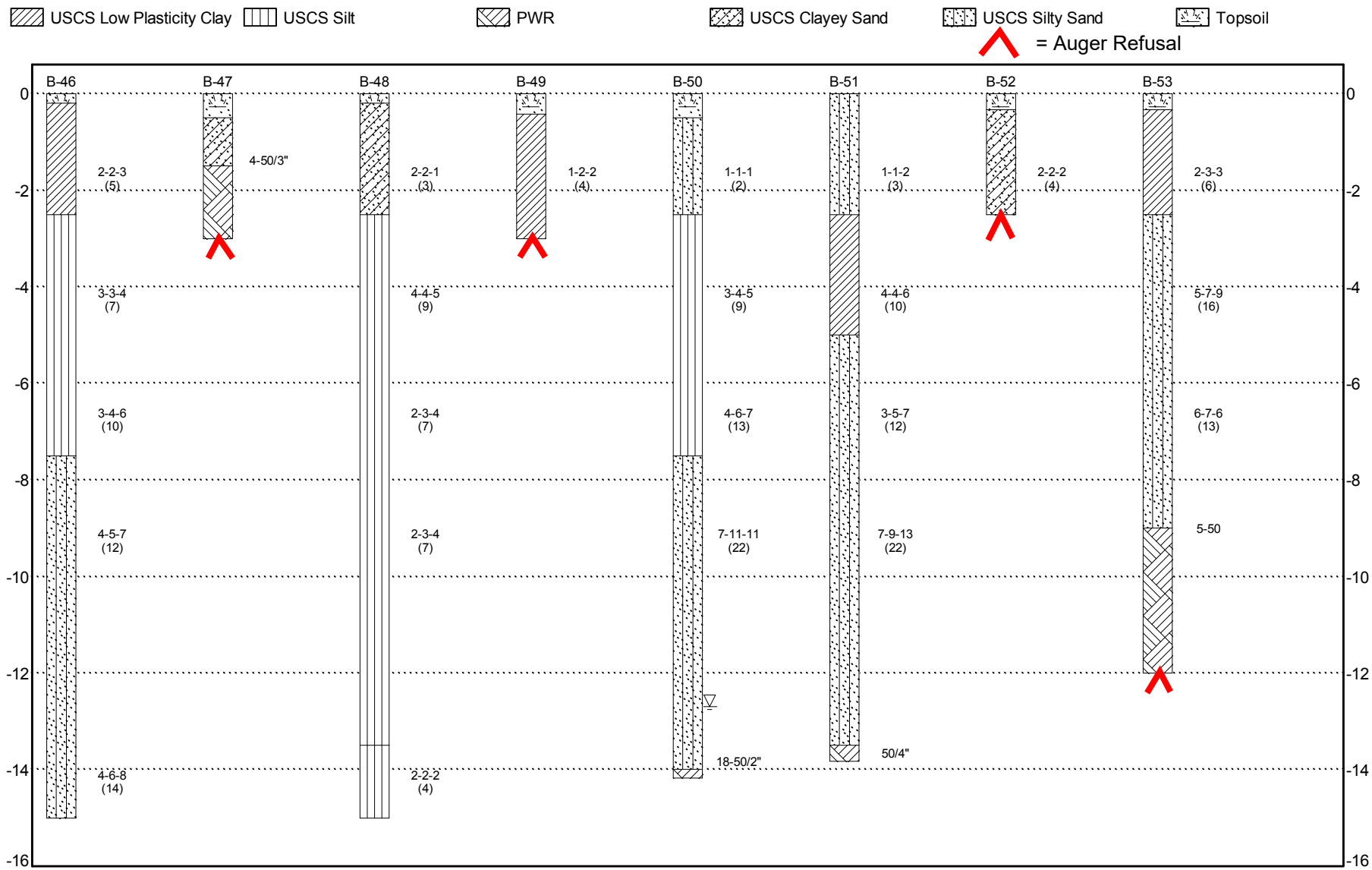
SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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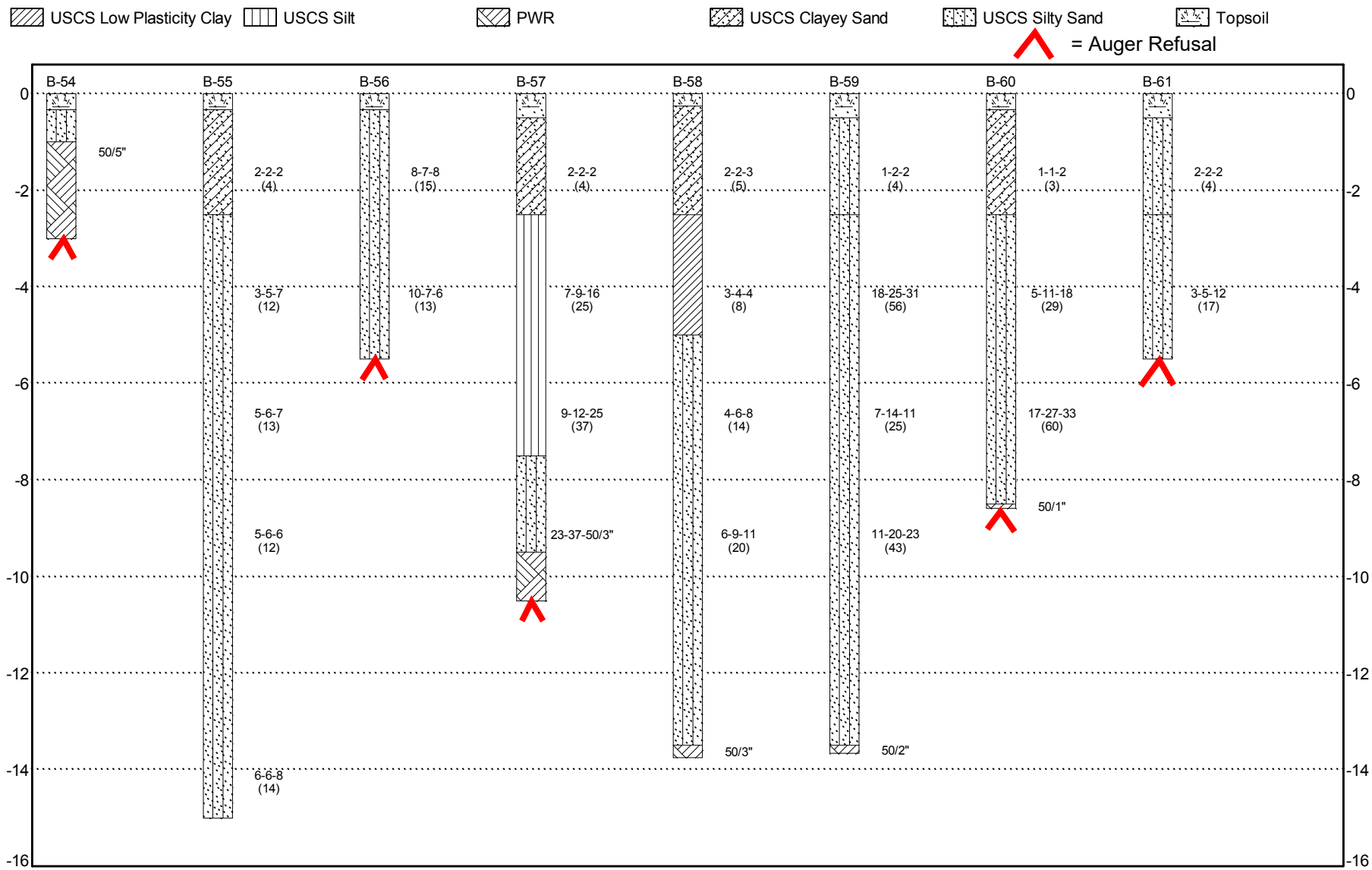
SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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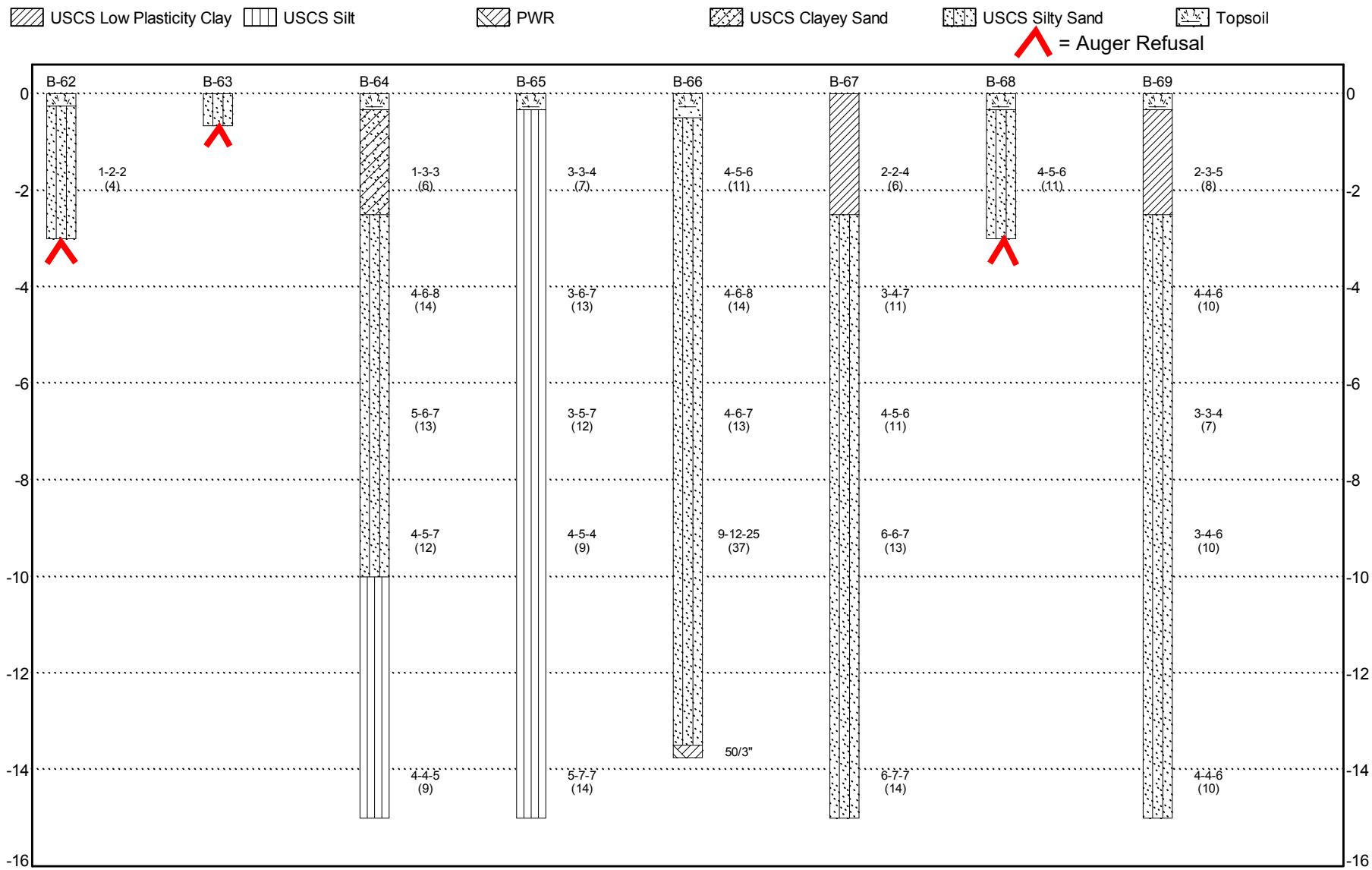
SUBSURFACE DIAGRAM

PROJECT NAME Rolesville PUD

PROJECT NUMBER 180776E

PROJECT LOCATION Rolesville, North Carolina



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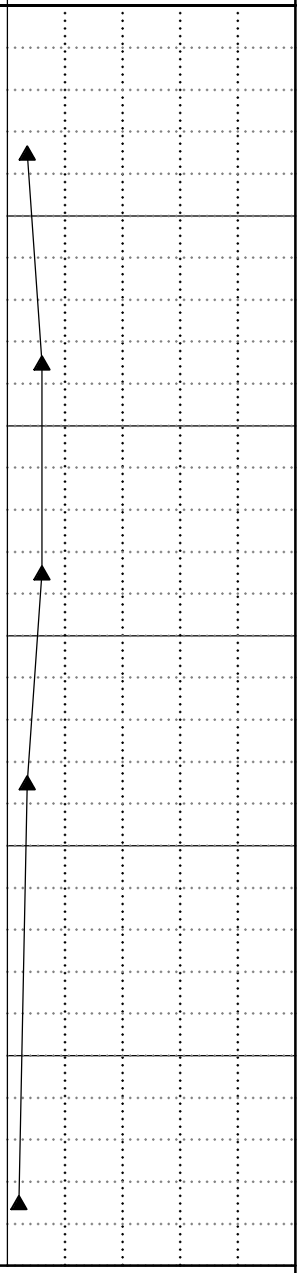
TM Engineering, Inc.

BORING NUMBER B-01

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		(CL) Firm to Stiff Brown/Orange Fine Sandy CLAY					
			SPT 1		3-3-4 (7)		
2.5							
			SPT 2		4-5-7 (12)		
5.0		(ML) Firm to Stiff Gray/White Fine Sandy SILT					
			SPT 3		3-5-7 (12)		
7.5							
			SPT 4		3-4-3 (7)		
10.0		(SM) Very Loose Gray/Orange Silty Medium to Coarse SAND (wet)					
12.5							
			SPT 5		2-2-2 (4)		
15.0		Bottom of borehole at 15.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80



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TM Engineering, Inc.

BORING NUMBER B-02

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		(CL) Stiff Orange/Brown Fine Sandy CLAY	SPT 1		3-5-6 (11)		
2.5			SPT 2		4-4-7 (11)		
5.0		(ML) Stiff Orange/Brown Fine Sandy SILT	SPT 3		4-5-7 (12)		
7.5		(SM) Medium Dense to Dense Brown Silty Medium to Coarse SAND	SPT 4		7-11-18 (29)		
10.0							
12.5			SPT 5		20-20-13 (33)		
15.0		Bottom of borehole at 15.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80

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TM Engineering, Inc.

BORING NUMBER B-03

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		(CL) Firm Brown/Gray Fine Sandy CLAY	SPT 1		2-3-4 (7)		
2.5		(ML) Firm to Stiff Brown Fine Sandy SILT	SPT 2		5-7-9 (16)		
5.0			SPT 3		3-5-5 (10)		
7.5			SPT 4		3-3-3 (6)		
10.0							
12.5							
15.0		(SM) Loose Gray/Black Silty Fine to Medium SAND (wet)	SPT 5		3-3-2 (5)		

▲ SPT N VALUE ▲
20 40 60 80

Bottom of borehole at 15.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-04

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0								
1		TOPSOIL						
2		(SM) Medium Dense Gray Silty Fine SAND	SPT 1		5-15-50/4"			>>▲
3		Partially Weathered Rock sampled as SM						
4			SPT 2		50/2"			>>▲
5								

Refusal at 5.0 feet.
Bottom of borehole at 5.0 feet.

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BORING NUMBER B-05

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 2.30 ft / Elev -2.30 ft
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0								
1		TOPSOIL						
2		(SM) Dense Tan Silty Fine SAND	SPT 1		18-29-50/3"			>>▲
3		Partially Weathered Rock sampled as SM ▽						
4			SPT 2		50/2"			>>▲
5								

Refusal at 5.0 feet.
Bottom of borehole at 5.0 feet.

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BORING NUMBER B-06

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0								
1		TOPSOIL						
2		(SM) Loose Gray Silty Fine SAND	SPT 1		2-2-3 (5)			
3								
4		Partially Weathered Rock sampled as SM	SPT 2		50/1"			>>
5								

Refusal at 5.0 feet.
Bottom of borehole at 5.0 feet.

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BORING NUMBER B-07

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(ML) Firm Orange/Brown Fine Sandy SILT						
1								
2			SPT 1		3-3-5 (8)			
3								
4			SPT 2		3-3-4 (7)			
5								

Refusal at 5.5 feet.
Bottom of borehole at 5.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-08

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 12.40 ft / Elev -12.40 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0								
		(CL) Firm Orange/Brown Fine Sandy CLAY	SPT 1		2-3-3 (6)			
2.5		(ML) Stiff to Very Stiff Orange/Brown Fine Sandy SILT	SPT 2		4-6-8 (14)			
5.0			SPT 3		5-9-12 (21)			
7.5		(SM) Loose Gray/Tan Silty Fine to Medium SAND (wet)	SPT 4		3-4-5 (9)			
10.0								
12.5		▽	SPT 5		2-3-3 (6)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-09

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0								
1		TOPSOIL						
2		(CL) Firm Gray/Brown Fine Sandy CLAY	SPT 1		3-3-4 (7)			
3								
4		Partially Weathered Rock sampled as SM	SPT 2		50/1"			>>
5								

Refusal at 5.0 feet.
Bottom of borehole at 5.0 feet.

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BORING NUMBER B-10

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 5.50 ft / Elev -5.50 ft
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm Brown/Orange Fine Sandy CLAY	SPT 1		1-4-4 (8)			
2.5		(SM) Medium Dense Orange/Gray Silty Fine to Medium SAND						
			SPT 2		3-4-10 (14)			
5.0		▽						
			SPT 3		3-6-11 (17)			
7.5								
			SPT 4		18-50/5"			>>
		Partially Weathered Rock sampled as SM						
10.0								

Refusal at 12.0 feet.
Bottom of borehole at 12.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-11

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 11.30 ft / Elev -11.30 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Stiff Orange/Brown Fine Sandy Silty CLAY	SPT 1		3-4-7 (11)			
2.5		(ML) Stiff to Very Stiff Orange/Black Fine Sandy SILT	SPT 2		3-4-6 (10)			
5.0			SPT 3		7-10-10 (20)			
7.5		(SM) Loose Orange/Gray Silty Fine to Medium SAND	SPT 4		1-2-5 (7)			
10.0		▽						
12.5			SPT 5		2-4-3 (7)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-12

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(CL) Firm Orange/Brown Medium Sandy CLAY						
1								
2			SPT 1		7-5-4 (9)			▲
3								
4		Partially Weathered Rock Sampled as SM	SPT 2		50			

Refusal at 4.5 feet.
Bottom of borehole at 4.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-13

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 6.50 ft / Elev -6.50 ft
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm to Stiff Brown/Tan Fine Sandy Silty CLAY	SPT 1		3-3-4 (7)			
2.5								
			SPT 2		3-6-6 (12)			
5.0								
	▽		SPT 3		4-4-6 (10)			
7.5								
			SPT 4		28-50/2"			>>
		Partially Weathered Rock sampled as SM						
10.0								

Refusal at 12.0 feet.
Bottom of borehole at 12.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-14

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 11.60 ft / Elev -11.60 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SC) Medium Dense Gray/Brown Clayey Fine SAND	SPT 1		2-4-7 (11)			
2.5		(ML) Firm to Very Stiff Gray/Brown Fine Sandy SILT	SPT 2		6-7-11 (18)			
5.0			SPT 3		3-5-6 (11)			
7.5			SPT 4		4-7-3 (10)			
10.0		▽						
12.5			SPT 5		2-3-4 (7)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-15

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 7.00 ft / Elev -7.00 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL (plowed)						
		(SM) Loose Gray Silty Medium SAND	SPT 1		2-3-4 (7)			
2.5		(CL) Stiff Orange/Brown Fine Sandy CLAY	SPT 2		3-6-8 (14)			
5.0		(ML) Stiff Orange/Brown Fine Sandy SILT ▽	SPT 3		4-6-7 (13)			
7.5		(SM) Dense Gray/Black Silty Fine to Medium SAND	SPT 4		3-8-28 (36)			
10.0								

Refusal at 10.5 feet.
Bottom of borehole at 10.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-16

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 11.90 ft / Elev -11.90 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL (plowed)						
		(SC) Medium Dense Gray Clayey Fine to Medium SAND	SPT 1		3-5-7 (12)			
2.5		(CL) Stiff Orange/Brown Fine Sandy CLAY	SPT 2		4-6-8 (14)			
5.0		(ML) Firm Tan/Gray Fine to Medium Sandy SILT	SPT 3		4-4-5 (9)			
7.5			SPT 4		3-5-5 (10)			
10.0		▽						
12.5			SPT 5		3-3-3 (6)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-17

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 10.50 ft / Elev -10.50 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL (plowed)						
		(SC) Loose Gray Clayey Fine SAND	SPT 1		3-3-4 (7)			
2.5		(CL) Very Stiff Brown/Tan Fine Sandy CLAY	SPT 2		5-8-12 (20)			
5.0		(ML) Firm to Stiff Gray/Black Fine to Medium Sandy SILT	SPT 3		4-5-4 (9)			
7.5			SPT 4		6-6-8 (14)			
10.0		▽						
12.5			SPT 5		3-4-3 (7)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-18

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Stiff Tan/Brown Fine Sandy CLAY	SPT 1		3-4-6 (10)			
2.5		(SM) Loose to Medium Dense White/Tan Silty Fine to Medium SAND	SPT 2		3-5-8 (13)			
5.0			SPT 3		4-4-5 (9)			
7.5		(ML) Firm Tan/Brown Micaceous Fine Sandy SILT	SPT 4		2-3-5 (8)			
10.0								
12.5								
		Partially Weathered Rock sampled as SM	SPT 5		50/2"			>>
		Bottom of borehole at 13.7 feet.						

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TM Engineering, Inc.

BORING NUMBER B-19

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 12.00 ft / Elev -12.00 ft
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SC) Very Loose Gray Clayey Fine SAND	SPT 1		2-1-2 (3)			
2.5		(CL) Stiff Brown/Orange Fine Sandy CLAY	SPT 2		6-6-8 (14)			
5.0		(ML) Soft Black/White Micaceous Fine Sandy SILT (wet)	SPT 3		1-1-2 (3)			
7.5			SPT 4		1-1-3 (4)			
10.0		(SM) Loose White/Tan Silty Medium to Coarse SAND ▽	SPT 5		3-3-4 (7)			
12.5								
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-20

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 12.00 ft / Elev -12.00 ft
LOGGED BY Joey **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Stiff Brown/Tan Fine Sandy CLAY	SPT 1		3-5-6 (11)			
2.5		(ML) Firm Tan Fine Sandy Silty Clayey SILT	SPT 2		4-4-5 (9)			
5.0		(ML) Soft to Firm Black/Brown Micaceous Fine Sandy SILT (wet)	SPT 3		1-1-2 (3)			
7.5			SPT 4		1-1-3 (4)			
10.0		▽						
12.5			SPT 5		1-2-3 (5)			
15.0		Bottom of borehole at 15.0 feet.						

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BORING NUMBER B-21

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(CL) Stiff Brown Fine Sandy CLAY						
1								
			SPT 1		2-4-6 (10)			▲
2								
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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BORING NUMBER B-22

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(CL) Very Stiff Brown Fine Sandy CLAY						
1								
2			SPT 1		5-3-13 (16)			▲
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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BORING NUMBER B-23

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(SC) Loose Gray Clayey Medium SAND	SPT 1		3-4-4 (8)			
2.5		(SC) Medium Dense Orange Clayey Silty Fine SAND	SPT 2		3-5-8 (13)			
5.0		Partially Weathered Rock sampled as SM	SPT 3		50/3"			>>

Refusal at 7.0 feet.
Bottom of borehole at 7.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-24

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		(SC) Very Loose Gray Clayey Fine SAND	SPT 1		2-2-2 (4)		
2.5		(CL) Stiff Orange/Brown Fine Sandy CLAY	SPT 2		4-6-6 (12)		
5.0		(ML) Firm to Stiff Brown/Gray Fine to Medium Sandy SILT	SPT 3		4-5-6 (11)		
7.5			SPT 4		3-3-4 (7)		
10.0							
12.5			SPT 5		2-3-5 (8)		
15.0		Bottom of borehole at 15.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80

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BORING NUMBER B-25

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(CL) Firm Orange/Brown Fine Sandy CLAY						
1								
2			SPT 1		2-2-3 (5)			▲
3								
4		Partially Weathered Rock sampled as SM	SPT 2		50			
5								

Refusal at 5.5 feet.
Bottom of borehole at 5.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-26

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(CL) Firm Brown Fine Sandy CLAY						

Refusal at 0.5 feet.
Bottom of borehole at 0.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-27

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		(CL) Soft Brown Fine Sandy CLAY (moist)	SPT 1		1-2-2 (4)		
2.5		(ML) Firm to Stiff Brown/Tan Fine Sandy SILT	SPT 2		5-7-8 (15)		
5.0			SPT 3		3-5-5 (10)		
7.5			SPT 4		2-3-4 (7)		
10.0							
12.5							

▲ SPT N VALUE ▲
20 40 60 80

Refusal at 13.0 feet.
Bottom of borehole at 13.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-28

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 7.80 ft / Elev -7.80 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Soft Brown Fine Sandy CLAY (moist)	SPT 1		2-2-2 (4)			
2.5		(CL) Firm Brown/Orange Fine Sandy CLAY	SPT 2		2-3-4 (7)			
5.0		(SM) Very Loose to Loose Gray/White Micaceous Silty Fine to Medium SAND (wet)	SPT 3		3-3-4 (7)			
7.5	▽		SPT 4		1-2-3 (5)			
10.0								
12.5			SPT 5		0-1-1 (2)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-29

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 8.00 ft / Elev -8.00 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Soft Brown Fine Sandy CLAY (moist)	SPT 1		2-2-2 (4)			
2.5		(CL) Stiff Brown/Orange Fine Sandy CLAY	SPT 2		3-4-6 (10)			
5.0		(ML) Firm Brown Fine Sandy SILT	SPT 3		4-4-5 (9)			
7.5		(SM) Very Loose Gray/White Silty Fine to Medium SAND (wet) ▽	SPT 4		1-1-1 (2)			
10.0								
12.5			SPT 5		0-1-3 (4)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-30

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 8.00 ft / Elev -8.00 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Firm to Stiff Brown/Gray Fine Sandy CLAY						
			SPT 1		1-2-3 (5)			
2.5								
			SPT 2		3-5-8 (13)			
5.0		(SM) Medium Dense Gray Silty Medium to Coarse SAND						
			SPT 3		6-6-8 (14)			
7.5		(SM) Very Loose to Loose Gray/White Silty Fine SAND (wet) ▽						
			SPT 4		2-2-2 (4)			
10.0								
12.5								
			SPT 5		2-2-3 (5)			
15.0								

Bottom of borehole at 15.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-31

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 8.10 ft / Elev -8.10 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Soft Brown Fine Sandy CLAY (moist)						
			SPT 1		2-2-2 (4)			
2.5		(CL) Stiff Gray Fine Sandy CLAY						
			SPT 2		4-4-7 (11)			
5.0		(SM) Medium Dense Gray Silty Fine SAND						
			SPT 3		4-5-6 (11)			
7.5		(SM) Very Loose Gray/White Silty Fine SAND (wet) ▽						
			SPT 4		2-2-2 (4)			
10.0								
12.5								
			SPT 5		2-1-3 (4)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-32

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/2/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 7.90 ft / Elev -7.90 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Soft Brown Fine Sandy CLAY (moist)						
			SPT 1		1-1-3 (4)			
2.5		(CL) Stiff Brown/Gray Fine Sandy CLAY						
			SPT 2		3-4-6 (10)			
5.0		(SM) Medium Dense Gray Silty Fine SAND						
			SPT 3		3-5-7 (12)			
7.5		▽ (SM) Very Loose Gray/White Silty Fine SAND (wet)						
			SPT 4		1-1-2 (3)			
10.0								
12.5								
			SPT 5		1-1-2 (3)			
15.0		Bottom of borehole at 15.0 feet.						

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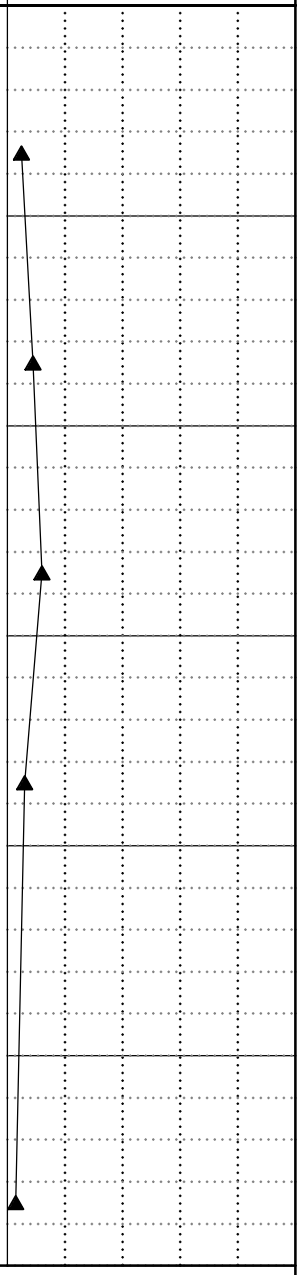
TM Engineering, Inc.

BORING NUMBER B-33

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL					
		(CL) Firm Brown/Orange Fine Sandy CLAY	SPT 1		2-2-3 (5)		
2.5							
			SPT 2		3-4-5 (9)		
5.0		(ML) Firm to Stiff Tan/Brown Micaceous Fine Sandy SILT					
			SPT 3		3-5-7 (12)		
7.5							
			SPT 4		3-3-3 (6)		
10.0		(SM) Very Loose Gray Micaceous Silty Fine SAND (wet)					
12.5							
			SPT 5		1-2-1 (3)		
15.0		Bottom of borehole at 15.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80



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TM Engineering, Inc.

BORING NUMBER B-34

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 8.00 ft / Elev -8.00 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SM) Loose Brown/Tan Silty Medium SAND	SPT 1		4-4-2 (6)			
2.5		(CL) Firm Brown/Tan Medium Sandy CLAY	SPT 2		3-3-4 (7)			
5.0		(SM) Very Loose to Loose Brown/Tan Micaceous Silty Fine SAND (wet)	SPT 3		2-1-1 (2)			
7.5		▽	SPT 4		1-1-2 (3)			
10.0								
12.5			SPT 5		1-2-3 (5)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-35

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 10.50 ft / Elev -10.50 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Firm to Very Stiff Orange/Gray Fine Sandy CLAY						
			SPT 1		2-2-4 (6)			
2.5								
			SPT 2		8-10-6 (16)			
5.0		(SM) Medium Dense Gray/Tan Silty Medium to Coarse SAND						
			SPT 3		3-4-7 (11)			
7.5		(SM) Very Loose Brown Silty Fine SAND (saturated)						
			SPT 4		1-1-1 (2)			
10.0		▽						
12.5								
			SPT 5		1-1-1 (2)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-36

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(SM) Medium Dense Gray Silty Fine SAND						
1			SPT 1		6-50/1"			>>▲
		Partially Weathered Rock sampled as SM						
2								

Refusal at 2.0 feet.
Bottom of borehole at 2.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-37

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 12.50 ft / Elev -12.50 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(SM) Loose Gray Silty Fine SAND	SPT 1		2-2-3 (5)			
2.5		(SM) Medium Dense Gray/Tan Silty Fine to Medium SAND	SPT 2		4-6-13 (19)			
5.0			SPT 3		5-7-10 (17)			
7.5			SPT 4		8-7-6 (13)			
10.0								
12.5		▽						
		Partially Weathered Rock sampled as SM	SPT 5		50/1"			>>
		Bottom of borehole at 13.6 feet.						

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TM Engineering, Inc.

BORING NUMBER B-38

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(SC) Loose Tan/Orange Clayey Fine SAND						
1								
2			SPT 1		3-4-4 (8)			
3								
4		Partially Weathered Rock sampled as SM	SPT 2		50/3"			>>
5								

Refusal at 5.0 feet.
Bottom of borehole at 5.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-39

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 11.00 ft / Elev -11.00 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(SC) Loose Gray/Brown Clayey Medium SAND (wet)						
			SPT 1		2-3-4 (7)			
2.5		(ML) Stiff Gray/Tan Fine Sandy SILT						
			SPT 2		3-5-7 (12)			
5.0								
			SPT 3		3-5-6 (11)			
7.5		(SM) Very Loose Brown Silty Fine SAND (saturated)						
			SPT 4		1-2-2 (4)			
10.0		▽						
12.5								
			SPT 5		1-2-1 (3)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-40

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SM) Medium Dense Gray/Brown Silty Fine SAND						
1			SPT 1		2-50			
		Partially Weathered Rock sampled as SM						
2								

Refusal at 2.5 feet.
Bottom of borehole at 2.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-41

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Soft Orange/Brown Fine Sandy CLAY	SPT 1		1-2-2 (4)			
2.5		(ML) Firm to Stiff Brown/Orange Fine Sandy SILT	SPT 2		3-4-6 (10)			
5.0			SPT 3		3-3-5 (8)			
7.5								

Refusal at 8.0 feet.
Bottom of borehole at 8.0 feet.

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BORING NUMBER B-42

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Firm Orange/Brown Fine Sandy CLAY						
			SPT 1		3-3-3 (6)			
2.5								
			SPT 2		3-3-4 (7)			
5.0		(ML) Firm Orange/Tan Fine Sandy SILT						
			SPT 3		2-2-3 (5)			
7.5								
			SPT 4		3-3-3 (6)			
10.0								
12.5								
			SPT 5		4-4-4 (8)			
15.0		Bottom of borehole at 15.0 feet.						

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BORING NUMBER B-43

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm Orange/Brown Fine Sandy CLAY	SPT 1		2-2-3 (5)			
2.5			SPT 2		2-3-5 (8)			
5.0								

Refusal at 6.0 feet.
Bottom of borehole at 6.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-44

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(SC) Loose Gray Clayey Fine SAND	SPT 1		2-3-4 (7)			
2.5		(CL) Firm Orange/Brown Medium Sandy CLAY	SPT 2		3-3-4 (7)			
5.0		(ML) Firm Orange/Brown Micaceous Fine Sandy SILT	SPT 3		3-5-4 (9)			
7.5			SPT 4		4-5-3 (8)			
10.0								
12.5		(SM) Loose Tan Silty Medium to Coarse SAND	SPT 5		3-4-2 (6)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-45

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Soft Orange/Brown Fine Sandy CLAY	SPT 1		1-1-2 (3)			
2.5		(ML) Firm Gray/Black Micaceous Medium Sandy SILT	SPT 2		2-3-4 (7)			
5.0								

Refusal at 5.8 feet.
Bottom of borehole at 5.8 feet.

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TM Engineering, Inc.

BORING NUMBER B-46

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/25/18 **COMPLETED** 10/25/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm Brown/Orange Fine Sandy CLAY	SPT 1		2-2-3 (5)			
2.5		(ML) Firm to Stiff Brown/Orange Fine Sandy SILT	SPT 2		3-3-4 (7)			
5.0			SPT 3		3-4-6 (10)			
7.5		(SM) Medium Dense Tan/Gray Silty Fine SAND	SPT 4		4-5-7 (12)			
10.0								
12.5			SPT 5		4-6-8 (14)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-47

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SC) Medium Dense Brown/Tan Clayey Fine SAND						
1			SPT 1		4-50/3"			>>▲
		Partially Weathered Rock sampled as SM						
2								
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-48

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 10/24/18 **COMPLETED** 10/24/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SC) Very Loose Gray Clayey Fine SAND	SPT 1		2-2-1 (3)			
2.5		(ML) Firm Orange/Brown Fine Sandy SILT	SPT 2		4-4-5 (9)			
5.0			SPT 3		2-3-4 (7)			
7.5			SPT 4		2-3-4 (7)			
10.0								
12.5								
		(ML) Soft Orange/Brown Fine Sandy SILT	SPT 5		2-2-2 (4)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-49

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(CL) Soft Brown/Tan Fine Sandy CLAY						
1								
			SPT 1		1-2-2 (4)			▲
2								
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-50

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
▽ **AT TIME OF DRILLING** 12.70 ft / Elev -12.70 ft
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SM) Very Loose Brown Silty Fine to Medium SAND	SPT 1		1-1-1 (2)			
2.5		(ML) Firm to Stiff Tan Micaceous Fine Sand SILT	SPT 2		3-4-5 (9)			
5.0			SPT 3		4-6-7 (13)			
7.5		(SM) Medium Dense Tan/Brown Silty Fine SAND	SPT 4		7-11-11 (22)			
10.0								
12.5	▽		SPT 5		18-50/2"			>>
		Partially Weathered Rock sampled as SM						

Bottom of borehole at 14.2 feet.

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TM Engineering, Inc.

BORING NUMBER B-51

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/2/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(SM) Very Loose Brown Silty Fine SAND	SPT 1		1-1-2 (3)			
2.5		(CL) Stiff Brown/Tan Fine Sandy CLAY	SPT 2		4-4-6 (10)			
5.0		(SM) Medium Dense Brown/Tan Silty Fine SAND	SPT 3		3-5-7 (12)			
7.5			SPT 4		7-9-13 (22)			
10.0								
12.5		Partially Weathered Rock sampled as SM	SPT 5		50/4"			>>

Bottom of borehole at 13.8 feet.

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TM Engineering, Inc.

BORING NUMBER B-52

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/8/18 **COMPLETED** 11/8/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SC) Very Loose Brown/Gray Clayey Fine SAND						
1			SPT 1		2-2-2 (4)			▲
2								

Refusal at 2.5 feet.
Bottom of borehole at 2.5 feet.

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Telephone: 919-468-2545

TM Engineering, Inc.

BORING NUMBER B-53

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm Brown/Tan Fine Sandy CLAY	SPT 1		2-3-3 (6)			
2.5		(SM) Medium Dense Brown/Tan Silty Fine SAND	SPT 2		5-7-9 (16)			
5.0			SPT 3		6-7-6 (13)			
7.5			SPT 4		5-50			
		Partially Weathered Rock sampled as SM						
10.0								

Refusal at 12.0 feet.
Bottom of borehole at 12.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-54

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
1		(SM) Very Dense Brown Silty Fine SAND						
2		Partially Weathered Rock sampled as SM	SPT 1		50/5"			>>▲
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-55

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SC) Very Loose Brown/Tan Clayey Fine SAND	SPT 1		2-2-2 (4)			
2.5		(SM) Medium Dense Brown/Tan Silty Fine SAND	SPT 2		3-5-7 (12)			
5.0			SPT 3		5-6-7 (13)			
7.5			SPT 4		5-6-6 (12)			
10.0								
12.5			SPT 5		6-6-8 (14)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-56

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/5/18 **COMPLETED** 11/5/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SM) Medium Dense Brown/Tan Silty Fine SAND						
1								
			SPT 1		8-7-8 (15)			
2								
3								
4			SPT 2		10-7-6 (13)			
5								

Refusal at 5.5 feet.
Bottom of borehole at 5.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-57

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/8/18 **COMPLETED** 11/8/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL					
		(SC) Very Loose Gray/Tan Clayey Fine SAND	SPT 1		2-2-2 (4)		
2.5		(ML) Very Stiff to Hard Brown/Tan Micaceous Fine Sandy SILT	SPT 2		7-9-16 (25)		
5.0			SPT 3		9-12-25 (37)		
7.5		(SM) Dense Brown/Tan Silty Fine to Medium SAND	SPT 4		23-37-50/3"		
10.0		Partially Weathered Rock sampled as SM					

▲ SPT N VALUE ▲
20 40 60 80
>>

Refusal at 10.5 feet.
Bottom of borehole at 10.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-58

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/8/18 **COMPLETED** 11/8/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0		TOPSOIL					
		(SC) Loose Brown/Tan Clayey Fine SAND	SPT 1		2-2-3 (5)		
2.5		(CL) Firm Brown/Tan Fine Sandy CLAY	SPT 2		3-4-4 (8)		
5.0		(SM) Medium Dense Brown/Tan Silty Fine SAND	SPT 3		4-6-8 (14)		
7.5			SPT 4		6-9-11 (20)		
10.0							
12.5		Partially Weathered Rock sampled as SM	SPT 5		50/3"		
		Bottom of borehole at 13.8 feet.					

▲ SPT N VALUE ▲
20 40 60 80

>>

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TM Engineering, Inc.

BORING NUMBER B-59

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/8/18 **COMPLETED** 11/8/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SM) Very Loose Brown/Tan Silty Fine SAND	SPT 1		1-2-2 (4)			
2.5		(SM) Medium Dense to Dense Brown/Tan Micaceous Silty Fine SAND	SPT 2		18-25-31 (56)			
5.0			SPT 3		7-14-11 (25)			
7.5			SPT 4		11-20-23 (43)			
10.0								
12.5		Partially Weathered Rock sampled as SM	SPT 5		50/2"			>>
		Bottom of borehole at 13.7 feet.						

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TM Engineering, Inc.

BORING NUMBER B-60

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/8/18 **COMPLETED** 11/8/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0.0	TOPSOIL					
	(SC) Very Loose Brown/Tan Clayey Fine SAND	SPT 1		1-1-2 (3)		
2.5	(SM) Medium Dense to Very Dense Brown/Tan Silty Fine SAND	SPT 2		5-11-18 (29)		
5.0		SPT 3		17-27-33 (60)		
7.5	Partially Weathered Rock sampled as SM	SPT 4		50/1"		

SPT N VALUE
20 40 60 80

Refusal at 8.6 feet.
Bottom of borehole at 8.6 feet.

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TM Engineering, Inc.

BORING NUMBER B-61

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SM) Very Loose Brown Silty Fine SAND						
1								
			SPT 1		2-2-2 (4)			
2								
		(SM) Medium Dense Gray/Brown Silty Fine SAND						
3								
4			SPT 2		3-5-12 (17)			
5								

Refusal at 5.5 feet.
Bottom of borehole at 5.5 feet.

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TM Engineering, Inc.

BORING NUMBER B-62

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SM) Very Loose Brown/Gray Silty Fine SAND						
1								
			SPT 1		1-2-2 (4)			▲
2								
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-63

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		(SM) Very Dense Brown/Gray Silty Fine SAND						

Refusal at 0.7 feet.
Bottom of borehole at 0.7 feet.

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TM Engineering, Inc.

BORING NUMBER B-64

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SC) Loose Brown Clayey Fine SAND	SPT 1		1-3-3 (6)			
2.5		(SM) Medium Dense Tan/Gray Silty Fine SAND	SPT 2		4-6-8 (14)			
5.0			SPT 3		5-6-7 (13)			
7.5			SPT 4		4-5-7 (12)			
10.0		(ML) Firm Tan/Gray Fine Sandy SILT						
12.5			SPT 5		4-4-5 (9)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-65

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(ML) Firm to Stiff Gray/Tan Fine Sandy SILT	SPT 1		3-3-4 (7)			
2.5								
			SPT 2		3-6-7 (13)			
5.0								
			SPT 3		3-5-7 (12)			
7.5								
			SPT 4		4-5-4 (9)			
10.0								
12.5								
			SPT 5		5-7-7 (14)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-66

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(SM) Medium Dense to Dense Gray/Tan Silty Fine SAND	SPT 1		4-5-6 (11)			
2.5								
			SPT 2		4-6-8 (14)			
5.0								
			SPT 3		4-6-7 (13)			
7.5								
			SPT 4		9-12-25 (37)			
10.0								
12.5								
		Partially Weathered Rock sampled as SM	SPT 5		50/3"			>>
		Bottom of borehole at 13.8 feet.						

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TM Engineering, Inc.

BORING NUMBER B-67

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		(CL) Firm Brown/Tan Fine Sandy CLAY						
			SPT 1		2-2-4 (6)			
2.5		(SM) Medium Dense Brown/Gray Silty Fine SAND						
			SPT 2		3-4-7 (11)			
5.0								
			SPT 3		4-5-6 (11)			
7.5								
			SPT 4		6-6-7 (13)			
10.0								
12.5								
			SPT 5		6-7-7 (14)			
15.0		Bottom of borehole at 15.0 feet.						

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TM Engineering, Inc.

BORING NUMBER B-68

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0		TOPSOIL						
		(SM) Medium Dense Orange/White Silty Fine SAND						
1								
			SPT 1		4-5-6 (11)			▲
2								
3								

Refusal at 3.0 feet.
Bottom of borehole at 3.0 feet.

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TM Engineering, Inc.

BORING NUMBER B-69

CLIENT Ashton Woods
PROJECT NAME Rolesville PUD
PROJECT NUMBER 180776E
PROJECT LOCATION Rolesville, North Carolina
DATE STARTED 11/9/18 **COMPLETED** 11/9/18
GROUND ELEVATION 0 ft **HOLE SIZE** 4
DRILLING CONTRACTOR Carolina Drilling
GROUND WATER LEVELS:
DRILLING METHOD SS
AT TIME OF DRILLING ---
LOGGED BY Doug **CHECKED BY** BNM
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80
0.0		TOPSOIL						
		(CL) Firm Brown Fine Sandy CLAY	SPT 1		2-3-5 (8)			
2.5		(SM) Loose to Medium Dense Silty Fine SAND						
			SPT 2		4-4-6 (10)			
5.0								
			SPT 3		3-3-4 (7)			
7.5								
			SPT 4		3-4-6 (10)			
10.0								
12.5								
			SPT 5		4-4-6 (10)			
15.0		Bottom of borehole at 15.0 feet.						

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