GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF A SUPPLEMENTAL GEOTECHNICAL SITE EXPLORATION – REVISION 1

LULLWATER AT FORT CLARKE
GAINESVILLE, ALACHUA COUNTY, FLORIDA

GSE PROJECT No. 14185A

Prepared For:

FICKLING AND COMPANY, INC.

NOVEMBER 2022

GSE Engineering & Consulting, Inc.

November 7, 2022

Ross Rabun
c/o Kyle Willems
Director of Multi-Family Development
Fickling and Company, Inc.
577 Mulberry Street, Suite 1100
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Subject: Summary Report of a Supplemental Geotechnical Site Exploration – Revision 1
Lullwater at Fort Clarke
Gainesville, Alachua County, Florida
GSE Project No. 14185A

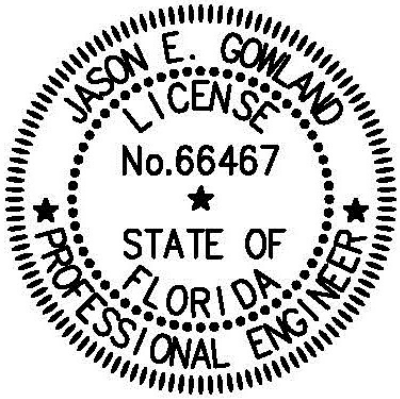
GSE Engineering & Consulting, Inc. (GSE) is pleased to submit this revised geotechnical site exploration report for the above referenced project.

Presented herein are the findings and conclusions of our exploration, including the geotechnical parameters and recommendations to assist with building foundation and stormwater management designs. This revision includes reviewing the new site plan with provided building loads.

GSE appreciates this opportunity to have assisted you on this project. If you have any questions or comments concerning this report, please contact us.

Sincerely,

GSE Engineering & Consulting, Inc.



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1.0 INTRODUCTION

1.1 General

GSE Engineering & Consulting, Inc. (GSE) has completed this geotechnical exploration for the proposed Lullwater at Fort Clarke located in Gainesville, Alachua County, Florida. This exploration was performed in accordance with GSE Proposal No. 2019-734A-1 dated January 23, 2020. Mr. Ross Rabun, Director of Multi-Family Development, of Fickling and Company, Inc. authorized our services on January 24, 2020. This revision incorporates the new site layout and provided loading conditions along with soil parameters for retaining walls as requested.

1.2 Project Description

We understand that you are planning to develop this property for multi-family residential use. You previously provided a Concept Plan dated July 2, 2019 with the locations of buildings, parking, and stormwater management facilities. You previously requested we provide a proposal for a preliminary site evaluation which included one boring per building along with a few borings for preliminary stormwater management. GSE previously completed a field exploration and issued a *Summary Report of a Preliminary Geotechnical Site Exploration* (GSE Project No. 14185) dated August 29, 2019 and a *Summary Report of a Supplemental Geotechnical Site Exploration* (GSE Project No. 14185A) dated February 24, 2020. Please refer to these reports for additional background information.

This report revision incorporates the latest site plan dated September 23, 2022. Structural loads for the 4- and 5-story buildings were provided via email on October 20, 2022. We understand loads for the 4-story conditions range from 2.2 kips per linear foot (klf) to 4.5 klf, and the exterior turndowns range from 1.5 klf to 3.3 klf. Loads for the 5-story conditions range from 2.9 klf to 6.0 klf, and the exterior turndowns range from 1.9 klf to 4.4 klf. Additional borings have not been performed based on the new layout. The recommendations are provided based on the revised building loads and the borings performed to date. Some of the new building locations do not have the minimum number of SPT borings performed within the building footprint that was originally requested. GSE can provide a proposal for a subsurface exploration at these locations at your request.

1.3 Purpose

The purpose of this geotechnical exploration was to determine the general subsurface conditions, evaluate these conditions with respect to the proposed construction, and prepare geotechnical parameters and recommendations to assist with building foundation and stormwater management designs.

2.0 FIELD AND LABORATORY TESTS

2.1 General Description

The procedures used for field sampling and testing are in general accordance with industry standards of care and established geotechnical engineering practices for this geographic region. The preliminary investigation consisted of performing twenty-eight (28) Standard Penetration Test (SPT) borings to depths of 20 feet below land surface (bls) within the proposed building areas and eight (8) auger borings to depths of 15 feet bls within the proposed stormwater management facilities. The supplemental exploration consisted of performing twenty-one (21) SPT borings to depths of 20 feet below land surface (bls) within the proposed building locations and twenty-nine (29) auger borings to depths of 15 feet bls within the proposed stormwater management facilities.

The soil borings were performed at the approximate locations as shown on Figure 2. The borings were located at the site using the provided site plan at the time of the exploration and obvious site features as reference. The boring locations should be considered approximate. The preliminary soil borings were performed from August 9 through 14, 2019. The supplemental soil borings were performed from February 3 through 11, 2020.

2.2 Auger Borings

The auger borings were performed in accordance with ASTM D1452. The borings were performed with flight auger equipment that was rotated into the ground in a manner that reduces soil disturbance. After penetrating to the required depth, the auger was retracted and the soils collected on the auger flights were field classified and placed in sealed containers. Representative samples of each stratum were retained from the auger boring. Results from the auger borings are provided in Section 5.1.

2.3 Standard Penetration Test Borings

The soil borings were performed with a drill rig employing mud rotary drilling techniques and Standard Penetration Testing (SPT) in accordance with ASTM D1586. The SPTs were performed continuously to 10 feet and at 5-foot intervals thereafter. Soil samples were obtained at the depths where the SPTs were performed. The soil samples were classified in the field, placed in sealed containers, and returned to our laboratory for further evaluation.

After drilling to the sampling depth and flushing the borehole, the standard two-inch O.D. split-barrel sampler was seated by driving it 6 inches into the undisturbed soil. Then the sampler was driven an additional 12 inches by blows of a 140-pound hammer falling 30 inches. The number of blows required to produce the next 12 inches of penetration were recorded as the penetration resistance (N-value). These values and the complete SPT boring logs are provided in Section 5.2.

Upon completion of the sampling, the boreholes were abandoned in accordance with Water Management District guidelines.

2.4 Soil Laboratory Tests

The soil samples recovered from the soil borings were returned to our laboratory, and examined to confirm the field descriptions. Representative samples were then selected for laboratory testing. The laboratory tests consisted of thirty-seven (37) percent soil fines passing the No. 200 sieve determinations, thirty-seven (37) natural moisture content determinations, fifteen (15) Atterberg Limits tests, twelve (12) constant head hydraulic conductivity tests, and two (2) organic content determinations. These tests were performed in order to aid in classifying the soils and to further evaluate their engineering properties. The laboratory tests are provided in Section 5.3.

3.0 FINDINGS

3.1 Surface Conditions

Mr. Kevin P. Fisher, E.I. with GSE visited the site on January 30, 2020 to observe the site conditions and mark the boring locations. Mr. Jason Kite with Jason Kite, LLC was retained by GSE to clear lanes to allow access to the boring locations for drilling equipment.

The perimeter of the site is heavily wooded with large trees and thick underbrush. The center of the site has several lanes cleared throughout it. The site is bordered by Fort Clarke Boulevard to the east. Residential homes are present west and south of the site while a wooded area is located north of the site.

The topography at the site is gently to moderately sloping down toward the east from the west. Regional topography is gently rolling hills. The provided Conceptual Layout #2 indicates the ground surface elevations at the site are near elevations 106 to 133 feet.

3.2 Subsurface Conditions

The locations of the auger and SPT borings are provided on Figure 2. Complete logs for the borings are provided in Sections 5.1 and 5.2. Descriptions for the soils encountered are accompanied by the Unified Soil Classification System symbol (SM, SP-SM, etc.) and are based on visual examination of the recovered soil samples and the laboratory tests performed. Stratification boundaries between the soil types should be considered approximate, as the actual transition between soil types may be gradual.

The supplemental auger borings located in Basin 1 (P-13 through P-27) indicate the soils across these areas are somewhat consistent. The auger borings initially penetrated 1.5 to 15 feet of a near-surface sandy stratum consisting of poorly graded sand, sand with silt, sand with clay, and silty sand (SP, SP-SM, SP-SC, SM). This was underlain by clayey to very clayey sand (SC, SC/CL) to depths of 6.5 to 15 feet bls overlying clay-rich soils consisting of sandy clay, clay with sand, and clay (CL/CH) to the explored depths of 15 feet bls.

The supplemental auger borings located in Basin 2 (P-9 through P-12) indicate the soils across these areas are somewhat consistent. The auger borings initially penetrated 2.5 to 15 feet of a near-surface stratum consisting of clayey to very clayey sand (SC, SC/CL). This was underlain by clay-rich soils consisting of sandy clay and clay with sand (CL/CH) to the explored depths of 15 feet bls. Auger boring P-11 encountered silty sand (SM) to a depth of 1.5 feet bls.

The supplemental auger borings located in Basin 3 (P-28 through P-37) indicate the soils across these areas are somewhat consistent. The auger borings initially penetrated 1.5 to 10 feet of a near-surface sandy stratum consisting of poorly graded sand and sand with clay (SP, SP-SC) when encountered. This was underlain by clayey to very clayey sand (SC, SC/CL) to depths of 5 to 15 feet bls overlying clay-rich soils consisting of sandy clay, clay with sand, and clay (CL/CH) to the explored depths of 15 feet bls.

The preliminary auger borings located in the proposed northern stormwater management facility (P-1 through P-4) indicate the soils across these areas are somewhat consistent. The auger borings generally encountered 1 to 15 feet of a near-surface sandy stratum consisting of sand with silt and sand with clay (SP-SM, SP-SC). This was underlain by clay-rich confining soils consisting of very clayey sand, clay with sand, and clay (SC/CL, CL/CH) to the explored depth of 15 feet bls.

The preliminary auger borings located in the proposed southern stormwater management facility (P-5 through P-8) indicate the soils across these areas are somewhat consistent. The auger borings generally encountered clay-rich confining soils consisting of very clayey sand, sandy clay, and clay with sand (SC/CL, CL/CH) with interbedded clayey sand (SC) to depths of 11.5 to 15 feet bls. Soil borings P-6 and P-7 encountered sand with clay with trace limestone (SP-SC) underlying the confining soils to the explored depth of 15 feet bls.

The supplemental SPT borings within the area of the proposed buildings (B-29 through B-49) initially penetrated a 1 to 7 feet thick stratum of poorly graded sand, sand with silt, and sand with clay (SP, SP-SM, SP-SC). This was underlain by interbedded strata of clayey to very clayey sand (SC, SC/CL) to depths of 2.5 to 17 feet bls overlying clay-rich soils consisting of sandy clay, clay with sand, and clay (CL/CH) to depths of 12 to 20 feet bls. Several borings encountered sand with clay (SP-SC) or clayey to very clayey sand (SC, SC/CL) underlying the clay-rich soils. SPT boring B-39 encountered elastic silt (MH) from 1 to 2.5 feet bls. SPT boring B-42 encountered limestone at 19.5 feet bls.

The preliminary SPT borings within the area of the proposed buildings (B-1 through B-28) initially penetrated 0.5 to 12 feet of a sandy stratum consisting of poorly graded sand, sand with silt, sand with clay, and silty sand (SP, SP-SM, SP-SC, SM). This was underlain by interbedded strata of clayey sand (SC) to depths of 4 to 17 feet bls overlying clay-rich soils consisting of very clayey sand, sandy clay, clay with sand, and clay (SC/CL, CL/CH) to the explored depth of 20 feet bls. Several borings encountered sand with clay or clayey sand (SP-SC, SC) underlying the clay-rich soils.

The poorly graded sand, sand with clay, sand with silt, silty sand, and clayey to very clayey sand is generally in a very loose to very dense condition with N-values ranging from 0 to 50 blows per foot. The clay-rich soils (CH) are generally in a soft to very hard condition with N-values ranging from 4 to 54 blows per foot. The limestone encountered in SPT boring B-42 is generally in a very hard condition with an N-value of 50 blows per foot.

Weight-of-hammer strength materials were encountered in SPT boring B-16 within the surficial sandy soils in the upper 3 feet bls. These isolated events are consistent with native, very loose near-surface sand deposits common in this area of Alachua County.

The groundwater table was encountered in SPT borings B-1 and B-2 at depths of 7 and 9 feet bls, respectively, at the time of our preliminary investigation.

3.3 Review of Published Data

The majority of the site is mapped as four soil series by the Soil Conservation Service (SCS) Soil Survey for Alachua County[1]. The northwestern portion of the site is mapped as Lochloosa fine sand, 5 to 8 percent slopes, the northeastern portion of the site is mapped as Millhopper sand, 0 to 5 percent slopes, the southwestern portion of the site is mapped as Arredondo fine sand, 0 to 5 percent slopes, and the remainder of the site is mapped as Lochloosa fine sand, 2 to 5 percent slopes. The following soil descriptions are from the Soil Survey.

Arredondo fine sand, 0 to 5 percent slopes – This nearly level to gently sloping, well-drained soil is in both small and large areas of uplands. Slopes are smooth to convex. The areas are irregular in shape and range from about 10 to 160 acres in size.

Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches or more. The upper 5 inches is yellowish brown loamy sand; the next 10 inches is yellowish brown sandy clay loam, and the lower 22 inches is dark yellowish brown sandy clay and sandy clay loam.

Included with this soil in mapping are small depressional areas of soils that have a very dark gray or black surface layer 8 to 24 inches thick. This layer overlies gray sandy material. These areas are shown by wet spot symbols. Also included are small areas of Fort Meade, Gainesville, Kendrick, and Millhopper soils. A few areas of this soil include Arredondo soils that have 5 to 8 percent slopes. Some areas of this soil in the western part of the county have small spots of strongly acid to medium acid soil material 40 to 70 inches deep to calcareous limestone. Limestone boulders, fragments of limestone, and sinkholes are in some areas of this soil, mainly in the limestone plain sections of the western part of the county. Most of these boulders are siliceous. The sinkholes and the boulders are shown by appropriate map symbols. Total included areas are about 15 percent.

In this Arredondo soil, the available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow to moderate in the loamy subsoil. Natural fertility is low in the sandy surface and subsurface layers and medium in the finer textured subsoil. Organic matter content is low. The water table in this soil is at a depth of more than 72 inches. Surface runoff is slow.

Millhopper sand, 0 to 5 percent slopes – This nearly level to gently sloping, moderately well drained soil is in small and large irregularly shaped areas on uplands and on slightly rolling knolls in the broad flatwoods. Slopes are mostly nearly smooth or convex. The areas are variable in size. They range from about 10 to 250 acres.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand or fine sand about 49 inches thick. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand that has grayish and brownish mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is light gray, mottled sandy loam.

[1] Soil Survey of Alachua County, Florida. Soil Conservation Service, U.S. Department of Agriculture.

Included with this soil in mapping are small areas of Arredondo, Bonneau, Fort Meade, Gainesville, Kanapaha, Lochloosa, and Sparr soils. Siliceous limestone boulders and small sinks are within some delineations. Small areas of Millhopper soils that have 5 to 8 percent slopes are also included. About 25 acres mapped as this Millhopper soil along the Santa Fe River is occasionally flooded. Total included areas are about 20 percent or less.

This Millhopper soil has a water table that is at a depth of 40 to 60 inches for 1 to 4 months and at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper 6 inches of the subsoil, and slow to moderately slow below this depth. Natural fertility is low. Organic matter content is low to moderately low.

Lochloosa fine sand, 2 to 5 percent slopes - This gently sloping, somewhat poorly drained soil is in small and large areas on the rolling uplands. Slopes are slightly convex.

Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand or sand to a depth of 31 inches. It has light gray and yellowish brown mottles below a depth of 21 inches. The subsoil extends to 76 inches. The upper 4 inches is dark gray, mottled fine sandy loam; the next 19 inches is gray sandy loam; and the lower 22 inches is gray sandy clay loam. Between depths of 76 and 83 inches, the underlying material is mixed light gray and greenish gray sandy clay loam.

This Lochloosa soil has a water table that is about 30 to 40 inches below the surface for 1 to 4 months during most years. The water table rises to a depth of 20 to 30 inches for 1 to 3 weeks. Surface runoff is slow. The available water capacity is low to medium in the sandy surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part.

Lochloosa fine sand, 5 to 8 percent slopes. - This sloping, somewhat poorly drained soil is in relatively small areas on sharp breaking slopes and along long, narrow slopes of the upland. The areas are mostly irregular or elongated in shape and range from about 10 to 50 acres.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is light yellowish brown, mottled fine sand to a depth of 25 inches. The subsoil extends to a depth of 67 inches. The upper 5 inches is yellowish brown, mottled sandy loam; the next 5 inches is mottled light yellowish brown and gray sandy clay loam; and the lower 32 inches is gray mottled sandy clay loam. Between depths of 67 to 80 inches, the underlying material is gray, mottled sandy clay and fine pockets of sandy loam and sandy clay loam.

Included with this soil are small areas of Blichton, Kendrick, Micanopy, and Norfolk soils. Also included are small areas of soils that are similar to Lochloosa soils in drainage and texture but have a subsoil less than 20 inches below the surface. Small areas of Lochloosa soils that have 2 to 5 percent slopes are included. Small moderately eroded spots are in some areas. Rock outcrops and sinkholes are in some areas and are shown by appropriate symbols. Total included areas are about 20 percent.

This Lochloosa soil has a water table that is about 30 to 50 inches below the surface for 1 to 3 months during most years. The water table may be at a depth of 20 to 30 inches for 1 to 3 weeks. Wetness is caused by hillside seepage. Surface runoff is medium on this soil. The available water capacity is low in the sandy surface layer and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Organic matter content is low in the surface layer.

3.4 Laboratory Soil Analysis

Selected soil samples recovered from the soil borings were analyzed for the percent soil fines passing the No. 200 sieve, natural moisture content, Atterberg Limits, hydraulic conductivity, and organic content. Samples selected for laboratory testing were collected at depths ranging from 1 to 15 feet bls. These tests were performed to confirm visual soil classification and evaluate their engineering properties. The complete laboratory report is provided in Section 5.3.

The laboratory tests indicate the tested soils consist of sand with silt, sand with clay, silty sand, clayey sand, very clayey sand, sandy clay, clay with sand, clay, and elastic silt. The tested sand with silt (SP-SM) contains approximately 5.9 to 10 percent soil fines passing the No. 200 sieve with natural moisture contents of about 8.2 to 12 percent. The tested sand with clay (SP-SC) contains approximately 10 percent soil fines passing the No. 200 sieve with a natural moisture content of about 7.4 percent. The tested silty sand (SM) contains approximately 14 percent soil fines passing the No. 200 sieve with a natural moisture content of about 8.1 percent. The tested clayey sand (SC) contains approximately 13 to 27 percent soil fines passing the No. 200 sieve with natural moisture contents of about 6.9 to 16 percent. The tested very clayey sand (SC/CL) contains approximately 35 to 43 percent soil fines passing the No. 200 sieve with natural moisture contents of about 22 to 33 percent. The tested sandy clay (CH) contains approximately 51 to 68 percent soil fines passing the No. 200 sieve with natural moisture contents of about 32 to 43 percent. The tested clay with sand (CH) contains approximately 71 to 84 percent soil fines passing the No. 200 sieve with natural moisture contents of about 28 to 61 percent. The tested clay (CH) contains approximately 87 to 95 percent soil fines passing the No. 200 sieve with natural moisture contents of about 28 to 55 percent. The tested elastic silt (MH) contains approximately 70 percent soil fines passing the No. 200 sieve with a natural moisture content of about 50 percent.

Atterberg Limits tests indicate the tested clayey sand (SC) has a Liquid Limit (LL) value of 30, Plastic Limit (PL) value of 20, and Plasticity Index (PI) value of 10. This corresponds to a material with low potential (LL < 50 and PI < 25) for expansive behavior[2]. The tested very clayey sand (SC/CL) has LL values of 55 to 57, PL values of 22 to 24, and PI values of 31 to 35. This corresponds to a material with marginal potential (50 ≤ LL ≤ 60 and 25 ≤ PI ≤ 35) for expansive behavior. The tested sandy clay (CH) has LL values of 53 to 125, PL values of 24 to 31, and PI values of 29 to 94. This corresponds to a material with marginal to high potential (50 ≤ LL ≤ 60 and 25 ≤ PI ≤ 35; LL > 60 and PI > 35) for expansive behavior. The tested clay with sand (CH) has LL values of 54 to 134, PL values of 23 to 52, and PI values of 20 to 90. This corresponds to a material with marginal to high potential (50 ≤ LL ≤ 60 and 25 ≤ PI ≤ 35; LL > 60 and PI > 35) for expansive behavior. The tested clay (CH) has LL values of 150 to 151, PL values of 39 to 49, and PI values of 101 to 112. This corresponds to a material with high potential (LL > 60 and PI > 35) for expansive behavior. The tested elastic silt (MH) has a LL value of 62, PL value of 43, and PI value of 19. This corresponds to a material with high potential (LL > 60) for expansive behavior.

The constant head hydraulic conductivity test results indicate the near-surface sand with clay (SP-SC) has a hydraulic conductivity value of 1.8 to 11 feet per day. The tested sand with silt (SP-SM) has hydraulic conductivity values of 4.6 to 5 feet per day. The tested silty sand (SM) has a hydraulic conductivity value of 16 feet per day. The tested clayey sand (SC) has hydraulic conductivity values of 1.3 to 9.3 feet per day.

The organic content determinations from the preliminary investigation indicate the tested very clayey sand (SC/CL) from SPT boring B-20 contains approximately 12 percent organic matter. The tested clay with sand (CL/CH) from SPT boring B-14 contains approximately 9 percent organic matter. Typically, soils with greater than 5 percent organic content are considered unsuitable for conventional shallow foundation support.

[2] U.S. Department of the Army USA, 1983, Foundations in Expansive Soils, TM 5-818-7, p. 4-1.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General

The following recommendations are made based upon our understanding of the proposed construction, a review of the attached soil borings and laboratory test data, and experience with similar projects and subsurface conditions. If plans or the location of proposed construction changes from those discussed previously, GSE requests the opportunity to review and possibly amend our recommendations with respect to those changes.

The final design of a foundation system is dependent upon adequate integration of geotechnical and structural engineering considerations. Consequently, GSE must review the final foundation design in order to evaluate the effectiveness and applicability of our initial analyses, and to determine if additional recommendations may be warranted. Without such a review, the recommendations presented herein could be misinterpreted or misapplied resulting in potentially unacceptable performance of the foundation system.

The performance of site improvements may be sensitive to their post-construction relationship to site groundwater levels, seepage zones, or soil/rock characteristics exposed at final site grades. GSE recommends that use of boring information for final design of all site improvements be predicated on proper horizontal and vertical control of borings.

In this section of the report, we present our geotechnical parameters and recommendations to assist with building foundation and stormwater management designs as well as our general site preparation guidelines.

4.2 Groundwater

The groundwater table was encountered in SPT borings B-1 and B-2 at depths of 7 and 9 feet bls, respectively, at the time of our preliminary investigation. You should expect water to perch on top of the very clayey sand and clay-rich soils after periods of heavy and seasonal rainfall. The perched seasonal high groundwater levels are indicated on the boring logs.

4.3 Building Foundations

The soil borings within the proposed building footprints indicate the soils at the site are somewhat consistent. The borings initially penetrated a 1 to 7 feet thick stratum of poorly graded sand, sand with silt, and sand with clay (SP, SP-SM, SP-SC). This was underlain by interbedded strata of clayey to very clayey sand (SC, SC/CL) to depths of 2.5 to 17 feet bls overlying clay-rich soils consisting of sandy clay, clay with sand, and clay (CL/CH) to depths of 12 to 20 feet bls. Several borings encountered sand with clay (SP-SC) or clayey to very clayey sand (SC, SC/CL) underlying the clay-rich soils. SPT boring B-39 encountered elastic silt (MH) from 1 to 2.5 feet bls. Laboratory tests conducted on the very clayey sand, sandy clay, clay with sand, clay indicate they are marginally to highly expansive.

Expansive Soil Risks

The majority of the soil borings encountered clay-rich soils within 10 feet bls. The laboratory testing indicates the clay-rich material has a marginal to high potential for expansive behavior. Expansive soils are moisture sensitive and can expand as moisture contents increase causing structures to heave. Similarly, these soils can shrink when moisture contents decrease causing structures to settle.

There are several foundation and subgrade preparation options for reducing the risk for differential foundation movement related to volume changes of the expansive clay soils. We wish to point out that these options will not eliminate this risk, but are intended to provide economical foundation and site preparation alternatives that should significantly reduce the risk, when compared to using conventional foundations and subgrade preparation methods. **We understand you intend to use a post-tensioned slab/foundation for the buildings.** Our recommendations for the building foundations are presented below.

Post-Tensioned Slab/Foundation

For buildings with potentially expansive clay-rich soils within 10 feet bls beneath the buildings, we recommend post-tensioned slabs in conjunction with limited undercutting and replacement. The current Florida Building code states that post-tensioned slab-on-ground, mat or raft foundations on expansive soils shall be designed in accordance with *PTI DC 10.5*.

The post-tensioned slab/foundation should be designed to resist bending moments resulting from foundation movement. It is our experience that the post-tensioned slab/foundation will consist of thickened sections approximately 20 to 24 inches thick around the perimeter and in a grid throughout the interior of the structure spaced no more than about 15 feet apart each direction. A post-tensioned cable is typically placed near the top and bottom of the thickened sections, and post-tensioned cables are also typically placed in the center of the slab spaced 4 to 6 feet apart in each direction. However, the post-tensioned foundation should be designed by an engineer or architect familiar with post-tensioned foundation design specifically intended to resist differential movements resulting from expansive soils.

The post-tensioned foundation design should consider edge moisture variation distances of 4 and 5 feet for center and edge lift, respectively. Maximum anticipated center and edge lift is 1 and 1.5 inches, respectively. A slab/subgrade friction coefficient of 0.4 can be assumed.

The foundations will likely bear directly on top of marginally expansive soils in a few isolated locations. Therefore, in areas where expansive soils are present at the foundation bearing surface, we recommend undercutting the expansive soils and replacing them with impermeable fill. The undercuts should extend a minimum of 12 inches beneath the foundation bottoms and a minimum of 1 foot beyond the foundation edges. The backfill must consist of a low permeability material to reduce the potential for irrigation or stormwater to wet the backfill soils and native soils below the bottom of the undercut. Low permeability backfill typically consists of clayey sand having between 15 and 25 percent soil fines passing the No. 200 sieve, or crushed limerock. The clayey sand fill must be compacted to a minimum of 98 percent of the Standard Proctor. Limerock must be compacted to 98 percent of the Modified Proctor. We recommend 6 inch lifts for the backfill.

The intent of undercutting and replacement is to create an impermeable "buffer" beneath the foundations that limits moisture intrusion/removal from the native soils beneath the undercut and beneath the interior of the building, which reduces the risk for expansion/contraction movements and subsequent foundation movements. We caution using this option in the summer months during the rainy season. Both the clayey sand and limerock base fill materials are moisture sensitive, and may not be compactable when wetted from daily rain showers, making this impractical to perform. If needed, flowable fill could be used in lieu of compacted backfill in the undercuts.

Based upon the soil conditions encountered and our limited understanding of the structural loads and site grading, we recommend the stiffened foundations be designed for a maximum allowable gross bearing pressure of 2,000 psf. The gross bearing pressure is defined as the soil contact pressure that can be imposed from the maximum structural loads, weight of the concrete foundations, and weight of the soil above the foundations. The foundations should be designed based upon the maximum load that could be imposed by all loading conditions.

All appropriate requirements of the latest edition of the IBC and the Post-Tensioning Institute should be followed in the design and construction of the post-tensioned slab foundations.

The foundations should be embedded a minimum of 18 inches below the lowest adjacent grade. Interior foundations or thickened sections should be embedded a minimum of 12 inches. The foundations should have minimum widths of 18 inches for strip footings, and 24 inches for columns, even though the maximum soil bearing pressure may not be fully developed.

The above recommendations have been presented in an effort to reduce the risk for foundation movement associated with expansive clay-rich soils. As with any construction project, the risk for foundation movement cannot be completely eliminated. Some cosmetic cracking could occur even after implementing recommendations above. GSE should be retained to inspect the undercut excavation prior to backfilling to ensure the undercut has been performed in accordance with our recommendations. Compaction testing should be performed for each backfill lift.

Organic Soil Recommendations

Borings B-14 and B-20 encountered organic material with 9 and 12 percent organic content at depths of 8.5 to 10 and 1 to 2.5 feet bls; respectively. The near surface organic rich material will likely be removed from standard clearing and grubbing. GSE recommends additional borings be performed to delineate the deeper organic matter encountered in boring B-20 to determine if it may affect the foundation performance. A post-tension slab at this location may be able to span over the area and not be affected by the decay and compression of organic material if it is an isolated occurrence.

4.4 Retaining Walls

Retaining walls are proposed to be constructed for the basement walls. The locations and elevations for the proposed retaining walls have not been provided at the time of this report. The recommendations for retaining walls are to be used for preliminary design purposes only and should be reviewed by GSE prior to construction to determine if additional recommendations are warranted. The retaining walls must be designed to resist the lateral stress of the existing and fill soils. The earth pressures will be influenced by the structural design of the walls, conditions of wall restraint, methods of construction, and/or compaction and material types being retained. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible unbalanced hydrostatic pressure on the walls.

We recommend the retaining walls be designed assuming the retained soil will exert an active lateral stress equivalent to a fluid having a unit weight of 40 pcf, an at-rest lateral stress equivalent to a fluid having a unit weight of 60 psf, and a passive lateral stress equivalent to a fluid having a unit weight of 360 pcf. This assumes a clean sand backfill will be used behind the walls with a soil unit weight of 120 pcf, a coefficient of lateral earth pressure for the active condition, K_a, of 0.33, a coefficient of passive pressure K_p, of 3.00, and coefficient of friction of 0.4.

Backfill placed against the retaining structures should consist of clean sand fill with less than 10 percent soil fines passing the No. 200 sieve. The clean sand fill must extend out from the base of the wall at an angle of at least 45 degrees and 60 degrees from the vertical for the active and passive cases, respectively.

Foundation drains should be installed along the foundation edges along the proposed retaining walls. The purpose of foundation drains is to evacuate groundwater that may collect behind the walls and to promote groundwater drainage away from the retaining wall foundations. Failure to promote proper drainage may result in a perched water table behind the walls that impose an unanticipated lateral stress. If adequate drainage cannot be provided, GSE recommends the walls be designed for the hydrostatic pressures that may develop. GSE recommends the below grade basements be waterproofed. It should be noted that groundwater that may be perched on top of clay-rich soils should be evacuated from the site so that water does not become trapped behind the wall and become a water source for the underlying clay-rich soils. Failure to provide proper drainage could have adverse impacts to the performance of the foundations and below grade structures. GSE recommends we review the final grading plan to determine if additional recommendations are warranted to protect clay-rich soils or to provide positive drainage.

4.5 Site Preparation

The soils at this site should be suitable for supporting the proposed construction using normal, good practice site preparation procedures. The following recommendations are our general guidelines for site preparation.

4.5.1 Stripping

Strip the construction limits and 10 feet beyond the perimeter of all grass, roots, topsoil, and other deleterious materials. You should expect to strip to depths of 12 or more inches. Deeper stripping will likely be necessary due to major root systems present at the site.

Organic-rich soils (containing greater than 5 percent organic content) should be removed from beneath the building footprint or from within the zone of influence of the proposed foundation system.

4.5.2 Dewatering

Temporary dewatering is not expected to be necessary for this project. However, if needed, we anticipate dewatering can be accomplished with sumps placed near the construction area, or with underdrains connected to a vacuum pump.

In any case, the site should always be graded to promote runoff and limit the amount of ponding. Localized ponding of stormwater is expected without proper grading during construction, and could render previously acceptable surfaces unacceptable.

4.5.3 Proof-Rolling

Proof-roll the subgrade with heavy rubber-tired equipment, such as a loaded front-end loader or dump truck, to identify any loose or soft zones not found by the soil borings. The proof-rolling should be monitored by a geotechnical engineer or qualified technician. Undercut or otherwise treat these zones as recommended by the geotechnical engineer in this report.

4.5.4 Proof Compaction

In areas where undercutting and backfilling are not performed, compact the subgrade to a density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). The specified compaction should be obtained to a depth of 1 foot below the foundation bottoms and the existing grade prior to placing fill. Vibratory roller equipment should not be used within approximately 100 feet of existing structures. Lighter "walk-behind" compaction equipment may be used to achieve the degree of compaction.

Should clayey sand be encountered at the bearing surface, this material should be probed and visually confirmed to be unyielding in the upper 12 inches in lieu of density testing. If the foundation excavations penetrate the clayey sand, the excavation should be performed in a manner that reduces soil disturbance. Clayey sand soils (with fines content in excess of 15 percent) that are removed and replaced or appreciably disturbed need to be re-compacted to 98 percent of the Standard Proctor maximum dry density (ASTM D698).

4.5.5 Fill Placement

Imported fill placed to raise the site above existing grades should consist of clean sand having less than 10 percent passing the No. 200 sieve. On-site soils meeting the requirements of Section 4.10 may also be used as structural fill. The fill should be placed in maximum 12-inch loose lifts that are compacted to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557). If lighter "walk-behind" compaction equipment is used, this may require lifts of 4 inches or less to achieve the required degree of compaction.

4.6 Site Grading Considerations

The soil borings indicate a surficial layer of sandy soil overlies clayey sand and clay-rich soils. Generally, the soils become "heavier" (more clay-rich) with depth. The heavier soils are more moisture sensitive and less workable, and have more potential for expansive behavior. For these reasons, we recommend site grading consider filling to raise grades rather than cutting into grade. Cutting into grade can result in exposing soils that are more difficult to work, are potentially expansive requiring remediation and have low infiltration characteristics that results in high (unworkable) moisture contents and localized ponded stormwater. Cuts of more than a few feet can result in creating conditions that are less workable.

4.7 Quality Control and Construction Materials Testing

It should be noted that the geotechnical engineering design does not end with the advertisement of the construction documents. As the geotechnical engineer of record, GSE is the most qualified to perform the construction materials testing that will be required for this project. The benefits of having the geotechnical engineer of record also perform the construction materials testing are numerous. If GSE continues to be involved with the project through construction, we will be able to constantly re-evaluate and possibly alter our geotechnical recommendations in a timely and cost-effective manner once final design and construction techniques are developed. This often results in cost savings for the project.

We recommend performing compaction testing beneath the concrete floor slab and the building foundations. We recommend one test be performed every 50 linear feet of continuous footing and every other column footing, per foot depth of fill or native material. We recommend a compaction test be performed for each 2,500 square feet of floor area per foot of fill or native material, or a minimum of three tests each, whichever is greater. Test all footing excavations to a depth of 12 inches per foot of backfill at the frequencies stated above.

4.8 Undercutting Requirements

Perform selective undercutting and backfilling as discussed in Section 4.3.

4.9 Stormwater Management

The soil conditions at the stormwater management facilities are somewhat consistent; initially penetrating poorly graded sand, sand with silt, sand with clay, and silty sand overlying clayey to very clayey sand. This was underlain by clay-rich soils in several borings.

The water table was not encountered in the borings at the time of our exploration. We anticipate the seasonal high groundwater table to be perched on the very clayey sands and clay-rich soils.

The laboratory permeability tests indicate the surficial layer of sand with clay and silty sand has hydraulic conductivity values of 11 to 16 feet per day. The clayey sand has hydraulic conductivity values of 1.3 to 9.3 feet per day. The underlying very clayey sand, sandy clay, clay with sand, and clay are expected to be confining soils.

Based upon our findings and test results, our recommended soil parameters for the stormwater management design in the explored areas are presented below. The recommended parameters consider the results of the permeability tests, wash 200 determinations, and our experience with these types of soils. The parameters below do not consider a factor of safety.

Proposed Basin 1 (P-12 thru P-27)

1. Base elevation of effective or mobilized aquifer (average depth of confining layer) equal to 10.5 feet bls.
2. Unsaturated vertical infiltration rate of 5 feet per day.
3. Horizontal hydraulic conductivity equal to 7.5 feet per day.
4. Specific yield (fillable porosity) of 25 percent.
5. Average seasonal high groundwater table depth equal to 10 feet bls.

Proposed Basin 2 (P-28 thru P-37)

1. Base elevation of effective or mobilized aquifer (average depth of confining layer) equal to 9 feet bls.
2. Unsaturated vertical infiltration rate of 4 feet per day.
3. Horizontal hydraulic conductivity equal to 6 feet per day.
4. Specific yield (fillable porosity) of 20 percent.
5. Average seasonal high groundwater table depth equal to 8.5 feet bls.

In areas where clay-rich soils are present at the basin bottom, we recommend these soils be undercut a minimum of 2 feet and backfilled with the on-site sands, sands with silt, and sands with clay (SP, SP-SM, SP-SC) having a maximum of 12 percent soil fines passing the No. 200 sieve. The intent of this undercutting and replacement is to provide a more uniform sand "blanket" at the basin bottom that allows the migration of water to the deeper deposits of sand. This sand blanket will also reduce the potential for clay-fines leaching out of the soils when water is present in the basin that can result in a thin layer of confining type material on the basin bottom that can reduce the effectiveness of the basin.

4.10 Fill Suitability

The soils encountered at this site within the explored depths range from sands (SP) to clays (CL/CH). A discussion of the suitability for reuse as structural fill for each soil classification according to the Unified Soil Classification System (USCS) designation is provided below.

SP, SP-SM – Sands (SP) and sand with silt (SP-SM) have less than 5 percent and 12 percent soil fines passing the No. 200 sieve, respectively, and are typically well draining soils that are suitable for reuse as structural fill. The sands with silt may require moisture conditioning (drying) to make the material more workable. These soils will require stockpiling and drying before they are reused if they are excavated from below the water table.

SM – Silty sands (SM) can have between 12 percent and 50 percent soil fines passing the No. 200 sieve. Silty sands are typically non-plastic or have low plasticity, and can be reused as structural fill with precautions. Silty sands can be moisture sensitive and difficult to work and compact and can rut if the moisture content is near or above the optimum moisture content. We recommend these soils be moisture conditioned (dried) so that the moisture content during use is at or below the optimum moisture content. Aerating and exposure to the sun is typically the most effective methods of drying these soils. It may not be practical to reuse these materials during the wet season, as frequent rain showers may not allow these soils to dry to a workable moisture content. Suitable silty sands are limited to soil having less than 30 percent soil fines passing the No. 200 sieve. Silty sands with more than 30 percent soil fines are especially moisture sensitive, and are not recommended for reuse as structural fill. These soils will behave more as sandy silt, and for this reason, very silty sands having more than 30 percent soil fines passing the No. 200 sieve have been assigned a dual classification of SM/ML. Silty sand soils that are excavated from below the water table are not recommended for reuse as structural fill due to the amount of time that will be required to dry these soils to a workable condition.

SC – Clayey sand (SC) soils can have between 12 percent and 50 percent soil fines passing the No. 200 sieve. Clayey sands can have a high range of plasticity, varying from a PI of 7 or greater and plotting above the A-line to highly plastic. Friable clayey sands are typically suitable for use as structural fill with precautions. Clayey sands will be moisture sensitive and difficult to work and compact and can rut during placement if the moisture content is near or above the natural moisture content. We recommend these soils be moisture conditioned (dried) so that the moisture content during use is at or below the optimum moisture content. Aerating and exposure to the sun is typically the most effective methods of drying these soils. It may not be practical to reuse these materials during the wet season, as frequent rain showers may not allow these soils to dry to a workable moisture content. Suitable clayey sands are limited to soil having less than 30 percent soil fines passing the No. 200 sieve. Clayey sands with more than 30 percent soil fines passing the No. 200 sieve are especially moisture sensitive and are typically highly plastic, and are not recommended for reuse as structural fill. These soils will behave more as sandy clay, and for this reason, very clayey sands having more than 30 percent soil fines passing the No. 200 sieve have been assigned a dual classification of SC/CH or SC/CL. Clayey sand soils that are excavated from below the water table are not recommended for reuse as structural fill due to the amount of time that will be required to dry these soils to a workable condition.

ML, MH, CL, CH – Silts and clays are not suitable materials for reuse as structural fill.

When using on-site soils as fill materials, we recommend the silty and clayey sand soils (SM, SC) be used in the lower depths of the fill. Sand and sand with silt (SP, SP-SM) should be used in the upper portions of the fill. We recommend a minimum of 2 feet of sand (SP, SP-SM) cover the silty and clayey sand fill materials to reduce the potential for soggy surface conditions due to the low permeability characteristics of the silty and clayey sand materials.

4.11 Surface Water Control and Landscaping

Roof gutters should be considered to divert runoff away from the buildings. The gutter downspouts should discharge a minimum of 10 feet from the structures to reduce the amount of water collecting around the foundations. Where possible, the gutter downspouts should discharge directly into the storm sewer system or onto the asphalt paved areas in order to reduce the amount of water collecting around the foundations. Grading of the site should be such that water is diverted away from the buildings on all sides to reduce the potential for erosion and water infiltration along the foundation.

With respect to landscaping, it is recommended that existing and planted trees and large “tree-like” shrubbery with potential for developing large root systems be planted a minimum distance of half their mature height, and preferably their expected final height, away from the structures. The purpose of this is to reduce the potential for foundation or slab movements from the growth of root systems as the landscaping matures. Consideration should also be given to using landscaping that has a low water demand, so that excessive irrigation is not conducted around the structures.

If excavations for underground utilities encounter the clay-rich soils, the excavations should be made such that they do not trap water (i.e., "swimming pool" or "bowl" effect). Sloping the excavations, installing underdrains, or extending the excavation to a more pervious area can achieve this. Allowing surface water to become trapped within utility trenches or other excavations (including footings) serves as a potential water source for the clay, which can result in shrink swell of these soils. Furthermore, during construction, surface water within the building areas must be controlled such that the water does not become trapped and represent a source of water for the underlying clay-rich soils. Mismanagement of the surface water during construction within the building footprint could result in subsequent post-construction slab movement.

The above recommendations are intended to maintain relatively consistent moisture contents within the clay-rich expansive soils encountered by the borings. The importance of proper surface water control and landscaping placement cannot be overemphasized in accomplishing this objective.

5.0 FIELD DATA

5.1 Auger Boring Logs

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Fax: (352) 377-0335

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-1

DATE PERFORMED 8/9/2019
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
AT TIME OF DRILLING NE
ESTIMATED SEASONAL HIGH 6.0 ft, perched
LOGGED BY AXL
CHECKED BY KPF
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	(SP-SC) Brown SAND with clay
1.0		(SC) Brown and gray clayey SAND
2.5	AU 2	
3.5		(SC) Brown, tan, and gray clayey SAND with sandstone
5.0	AU 3	
6.0		(CL/CH) Pale green and orange CLAY with sand
7.5	AU 4	
9.0		(CL/CH) Green and orange CLAY
10.0		
12.5	AU 5	
15.0		Bottom of borehole at 15.0 feet.

BORING NUMBER P-2

DATE PERFORMED 8/9/2019
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
AT TIME OF DRILLING NE
ESTIMATED SEASONAL HIGH >15 ft
LOGGED BY AXL
CHECKED BY KPF
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SM) Brown SAND with silt
2.5	AU 1 PS	*%PASS-200 = 5.9* *MC = 12* *k_h = 4.6 ft/day*
7.0		(SP-SM) Dark brown SAND with silt
7.5	AU 2	
10.0		(SP-SM) Brown SAND with silt
12.5	AU 3	
15.0		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 8/9/2019 **BORING NUMBER P-3**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 12.5 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	(SP-SM) Brown SAND with silt
1.0		(SP-SM) Brownish orange SAND with silt
2.5	AU 2	
5.0		
7.5	AU 3 PS	*%PASS-200 = 10* *MC = 8.2* *k_h = 5.0 ft/day*
10.0		
12.5		▽ 12.5 (SC/CL) Gray very clayey SAND
	AU 4	
15.0		Bottom of borehole at 15.0 feet.

DATE PERFORMED 8/9/2019 **BORING NUMBER P-4**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 8.0 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SC) Brown and orange SAND with clay
2.5	AU 1	*%PASS-200 = 10* *MC = 7.4* *k_h = 1.8 ft/day*
5.0		
7.5		▽ 8.0
	AU 2	(CL/CH) Brown, gray, and orange CLAY with sand
10.0	AU 3	
12.5		
	AU 4	
15.0		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 8/9/2019 **BORING NUMBER P-5**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 0.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(CL/CH) Green and orange sandy CLAY
		AU 1	
2.5			
5.0			5.0
			(CL/CH) Green, gray, and orange CLAY with sand
		AU 2	
7.5			
10.0			
12.5		AU 3	
15.0			15.0
			Bottom of borehole at 15.0 feet.

DATE PERFORMED 8/9/2019 **BORING NUMBER P-6**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 0.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(CL/CH) Gray CLAY with sand
			1.0
			(CL/CH) Pale green and orange CLAY with sand
2.5		AU 2	
5.0			
			6.5
			(CL/CH) Gray and green sandy CLAY
7.5		AU 3	
10.0			
			11.5
			(SP-SC) Pale tan SAND with clay and trace limestone
12.5		AU 4	
15.0			15.0
			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 8/9/2019 **BORING NUMBER P-7**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 0.5 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	▽ (CL/CH) Dark gray and orange sandy CLAY
2.0		
2.5	AU 2	(SC/CL) Gray, green, and orange very clayey SAND *%PASS-200 = 42* *MC = 28*
7.0		
7.5	AU 3	(SC) Grayish green clayey SAND
10.0		
10.0	AU 4	(SC) Brown and gray clayey SAND
12.0		
12.5	AU 5	(SP-SC) Pale tan SAND with clay and trace limestone
15.0		
15.0		Bottom of borehole at 15.0 feet.

DATE PERFORMED 8/9/2019 **BORING NUMBER P-8**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY AXL

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 0.5 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0	AU 1	▽ (SC/CL) Gray and brown very clayey SAND
2.5		
2.5	AU 2	(SC) Brown, gray, and orange clayey SAND
6.0		
7.5	AU 3	(CL/CH) Green and orange sandy CLAY *%PASS-200 = 58* *MC = 39*
14.0		
15.0	AU 4	(SC) Pale green and gray clayey SAND
15.0		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-9**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 1.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SC) Brown clayey SAND
		AU 1	▽
1.5			(SC/CL) Brown, orange, and gray very clayey SAND with sandstone
2.5			
		AU 2	
5.0			
7.0			(CL/CH) Green and orange CLAY with sand
7.5			
		AU 3	
10.0			
12.5			
		AU 4	
15.0			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-10**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 2.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SC) Brown and gray clayey SAND
		AU 1	▽
2.5			(CL/CH) Brown, gray, and orange sandy CLAY with sandstone
		AU 2	
5.0			
7.0			(CL/CH) Green and orange CLAY with sand
7.5			
		AU 3	
10.0			
12.5			
		AU 4	
15.0			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-11**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 10.0 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SM) Gray silty SAND
	AU 1	
1.5		(SC) Brown and orange clayey SAND
2.5	AU 2 PS	*%PASS-200 = 23* *MC = 15* *k_h = 1.3 ft/day*
5.0		
6.0		(SC) Pale brown and orange clayey SAND
7.5	AU 3	
10.0		▽
11.0		(SC/CL) Brown and orange very clayey SAND
12.5	AU 4	
15.0		Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-12**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 8.0 ft, perched

NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SC) Brown and gray clayey SAND
	AU 1	
7.5		
	AU 2	▽ (SP-SC) Pale brown, gray, and orange SAND with clay
8.5		(CL/CH) Green and orange CLAY with sand
10.0	AU 3	
12.5	AU 4	
15.0		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-13**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 10.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown SAND with clay
		AU 1	
2.5			
5.0			
			7.0
7.5		AU 2	(SC) Brown and orange clayey SAND
10.0			▽
			10.5
		AU 3	(SC/CL) Brown and gray very clayey SAND
12.5			
15.0			15.0
			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-14**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 7.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown SAND with clay
		AU 1	
			1.5
2.5			(SC) Brown and orange clayey SAND with sandstone
		AU 2 PS	*%PASS-200 = 21*
			MC = 16
5.0			*k_h = No Flow*
			▽
7.5			7.5
		AU 3	(CL/CH) Gray and orange sandy CLAY with sandstone
10.0			10.0
			(CL/CH) Green and orange CLAY
12.5		AU 4	
15.0			15.0
			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-15**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 9.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown SAND with clay
2.5		AU 1	
5.0			5.0
			(SC) Gray and orange clayey SAND
7.5		AU 2	
10.0		AU 3	▽ 10.0
			(CL/CH) Green and orange CLAY
12.5		AU 4	
15.0			15.0
			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-16**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 9.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown and gray SAND with clay and sandstone
2.5		AU 1	
5.0			6.0
			(SC) Gray and orange clayey SAND
7.5		AU 2	
10.0			▽ 10.0
			(CL/CH) Green and orange CLAY
12.5		AU 3	
15.0			15.0
			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-17**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH > 15 ft

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown SAND with clay
		AU 1	
2.5			
5.0			
			6.0
			(SP-SC) Gray SAND with clay
7.5		AU 2	
10.0			10.0
			(SC) Gray and orange clayey SAND
12.5		AU 3	
15.0			15.0
			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-18**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH > 15 ft

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SM) Brown and gray SAND with silt
		AU 1	
2.5			
5.0			
			6.0
			(SM) Dark brown silty SAND
7.5		AU 2 PS	*%PASS-200 = 14*
			MC = 8.1
			k_h = 16 ft/day
10.0			10.0
			(SP-SM) Brown and orange SAND with silt
12.5		AU 3	
15.0			15.0
			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-19**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

AT TIME OF DRILLING NE CHECKED BY KPF

ESTIMATED SEASONAL HIGH 1.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(SP-SC) Gray SAND with clay
2.0			(SC/CL) Gray and orange very clayey SAND
2.5		AU 2	
5.0			
7.5			
8.0		AU 3	(CL/CH) Green and orange sandy CLAY
10.0			
11.0			(CL/CH) Green and orange CLAY with sand
12.5		AU 4	
15.0			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/10/2020 **BORING NUMBER P-20**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

AT TIME OF DRILLING NE CHECKED BY KPF

ESTIMATED SEASONAL HIGH 7.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(SP-SM) Brown and gray SAND with silt
2.0			(SP-SC) Brown and orange SAND with clay
2.5		AU 2	
5.0			
7.5			
8.0		AU 3	(CL/CH) Gray and orange sandy CLAY
10.0			
10.5			(CL/CH) Green and orange CLAY with sand
12.5		AU 4	
15.0			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-21**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 6.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SM) Gray and brown SAND with silt
		AU 1	
2.5			
5.0			▽
			6.5
			(SC/CL) Gray and orange very clayey SAND
7.5		AU 2	
10.0			10.0
			(SC) Pale brown and orange clayey SAND
12.5		AU 3	
			14.0
			(CL/CH) Green and orange sandy CLAY
15.0		AU 4	15.0
			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/7/2020 **BORING NUMBER P-22**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH > 15 ft

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown and orange SAND with clay
		AU 1	
2.5			
5.0			
7.5		AU 2 PS	*%PASS-200 = 10* *MC = 7.4* *k_h = 11 ft/day*
10.0			10.0
			(SC) Gray and orange clayey SAND
12.5		AU 3	
15.0			15.0
			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/7/2020 **BORING NUMBER P-23**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

AT TIME OF DRILLING NE CHECKED BY KPF

ESTIMATED SEASONAL HIGH 9.0 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(SP-SM) Gray SAND with silt
1.5			(SP-SM) Brown and orange SAND with silt
2.5		AU 2	
4.5			(SC) Gray, brown, and orange clayey SAND with sandstone
5.0		AU 3	
7.5			
9.5			(CL/CH) Green and orange CLAY with sand
10.0		AU 4	
12.5			
15.0			Bottom of borehole at 15.0 feet.

DATE PERFORMED 2/7/2020 **BORING NUMBER P-24**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

AT TIME OF DRILLING NE CHECKED BY KPF

ESTIMATED SEASONAL HIGH > 15 ft

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP) Gray SAND
1.0			(SP-SM) Brown and orange SAND with silt
2.5		AU 1	
4.5			(SP) Brown SAND
5.0			
7.0			(SP) Brown and orange SAND with trace sandstone
7.5		AU 2	
10.0			(SC) Gray and orange clayey SAND with sandstone
12.5		AU 3	
15.0			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-25

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
AT TIME OF DRILLING NE
ESTIMATED SEASONAL HIGH 6.0 ft, perched
NOTES
LOGGED BY WDI
CHECKED BY KPF

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
	AU 1	(SP-SC) Brown and orange SAND with clay
2.5		
		3.0
	AU 2	(SC) Gray and orange clayey SAND with sandstone
5.0		
		6.5
7.5	AU 3	(CL/CH) Green and orange CLAY
10.0		
12.5		
	AU 4	
15.0		15.0
		Bottom of borehole at 15.0 feet.

BORING NUMBER P-26

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
AT TIME OF DRILLING NE
ESTIMATED SEASONAL HIGH > 15 ft
NOTES
LOGGED BY WDI
CHECKED BY KPF

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
		(SP) Brown and orange SAND
2.5		
	AU 1	
5.0		
	AU 2	
7.5		
10.0		10.0
		(SC) Brown and orange clayey SAND
12.5		
	AU 3	*%PASS-200 = 20* *MC = 8.2* *k_h = 2.3 ft/day*
15.0		15.0
		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-27

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH > 15 ft
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(SP-SM) Gray SAND with silt
1.5			(SP) Brown and orange SAND
2.5		AU 2	
5.0			
7.5		AU 3	(SC) Brown, gray, and orange clayey SAND with sandstone
10.0			(SC) Gray and orange clayey SAND with sandstone
12.5		AU 4	
15.0			Bottom of borehole at 15.0 feet.

BORING NUMBER P-28

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 6.5 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0			(SP-SC) Brown and orange SAND with clay
2.5		AU 1	
5.0			
7.0			▽
7.5		AU 2	(SC/CL) Gray and orange very clayey SAND
10.0			
12.5		AU 3	
15.0			Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-29

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH > 15 ft
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP-SC) Brown SAND with clay
	AU 1	
1.5		(SC) Brown and orange clayey SAND
2.5	AU 2 PS	*%PASS-200 = 17* *MC = 9.5* *k_h = 9.2 ft/day*
5.0		
7.5	AU 3	
10.0		(SC) Gray and orange clayey SAND
12.5	AU 4	
15.0		Bottom of borehole at 15.0 feet.

BORING NUMBER P-30

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 4.5 ft, perched
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		(SP) Brown and orange SAND
2.5	AU 1	
		▽
5.0		
		(SC/CL) Gray and orange very clayey SAND
7.5	AU 2	
10.0		
12.5	AU 3	
15.0		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-31

DATE PERFORMED 2/11/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 4.5 ft, perched
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
	AU 1	(SP-SC) Brown, orange, and gray SAND with clay
1.5		
		(SC) Brown, orange, and gray clayey SAND
2.5	AU 2	
		▽
5.0		
		(CL/CH) Brown, gray, green, and orange CLAY with sand
7.5	AU 3	
10.0		
11.0		
		(CL/CH) Gray and brown CLAY with sand
12.5	AU 4	
15.0		
		Bottom of borehole at 15.0 feet.

BORING NUMBER P-32

DATE PERFORMED 2/10/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 13.0 ft, perched
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
		(SP-SC) Brown and orange SAND with clay
2.5	AU 1	
5.0		
7.5		
	AU 2	
10.0		
		(SC) Brown, orange, and gray clayey SAND with sandstone
	AU 3	
12.5		▽
13.5		
		(SC/CL) Gray and orange very clayey SAND
	AU 4	
15.0		
		Bottom of borehole at 15.0 feet.

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/10/2020 **BORING NUMBER P-33**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH > 15 ft

NOTES

DATE PERFORMED 2/11/2020 **BORING NUMBER P-34**

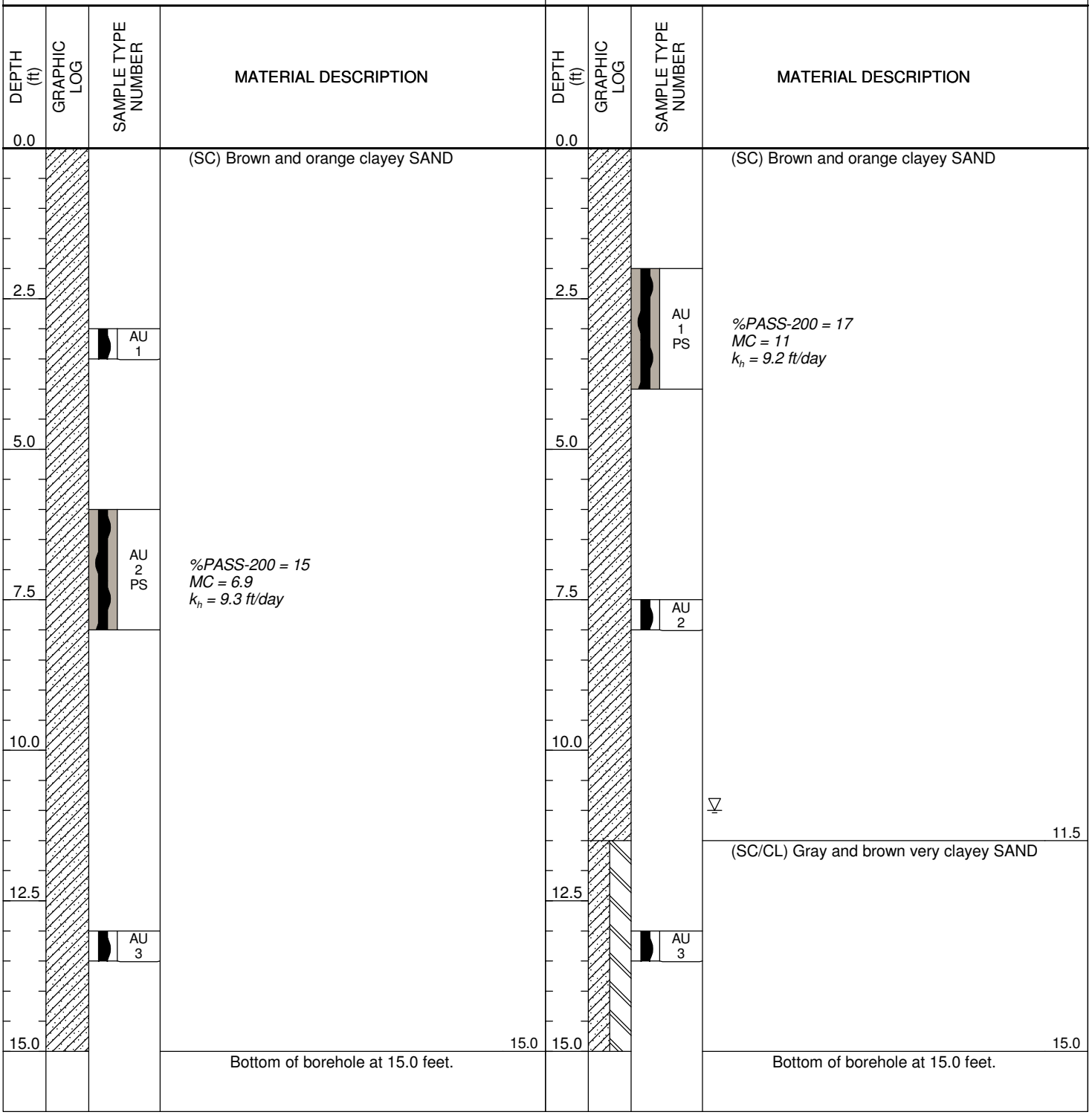
DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

▼ AT TIME OF DRILLING NE CHECKED BY KPF

▽ ESTIMATED SEASONAL HIGH 11.0 ft, perched

NOTES



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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

BORING NUMBER P-35

DATE PERFORMED 2/11/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 5.5 ft, perched
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
	AU 1	(SP-SC) Brown and orange SAND with clay
2.5		2.5
	AU 2	(SC) Brown, gray, and orange clayey SAND with sandstone
5.0		▽ 6.0
7.5	AU 3	(CL/CH) Green and orange CLAY with sand
10.0		10.5
12.5	AU 4	(CL/CH) Brown and orange CLAY with sand
15.0		15.0
		Bottom of borehole at 15.0 feet.

BORING NUMBER P-36

DATE PERFORMED 2/11/2020
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS: LOGGED BY WDI
▼ AT TIME OF DRILLING NE CHECKED BY KPF
▽ ESTIMATED SEASONAL HIGH 4.5 ft, perched
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		
		(SC) Brown and orange clayey SAND
2.5	AU 1 PS	*%PASS-200 = 18* *MC = 11* *k_h = 3.6 ft/day*
5.0		▽ 5.0
	AU 2	(CL/CH) Brown and gray sandy CLAY
7.5		
10.0	AU 3	10.5
12.5		(CL/CH) Orange and brown CLAY
15.0	AU 4	15.0
		Bottom of borehole at 15.0 feet.

(Continued Next Page)

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CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE PERFORMED 2/11/2020 **BORING NUMBER P-37**

DRILLING CONTRACTOR Whitaker Drilling, Inc.

GROUND WATER LEVELS: LOGGED BY WDI

AT TIME OF DRILLING NE CHECKED BY KPF

ESTIMATED SEASONAL HIGH 6.5 ft, perched

NOTES

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION
0.0		AU 1	(SP-SC) Brown and orange SAND with clay
2.0			
2.5		AU 2	(SC) Brown, gray, and orange clayey SAND
5.0			
7.0			
7.5		AU 3	(CL/CH) Green and orange CLAY with sand
10.0			
10.0		AU 4	(CL/CH) Green and orange CLAY
12.5			
15.0			
15.0			Bottom of borehole at 15.0 feet.

5.2 Standard Penetration Test Soil Boring Logs

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BORING NUMBER B-1

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/13/19 **COMPLETED** 8/13/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** 7.0 ft

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 7.0 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)
0	(SP-SC) Loose brown, gray, and orange SAND with clay	2.5	SPT 1	1-2-4 (6)
	(SC) Medium dense brown, tan, and orange clayey SAND with sandstone	4	SPT 2	4-5-6 (11)
5	(SC) Medium dense orange and green clayey SAND with sandstone	6	SPT 3	6-6-9 (15)
	(SC) Medium dense pale green, gray, and orange clayey SAND ▼		SPT 4	7-10-12 (22)
			SPT 5	13-13-14 (27)
10			SPT 6	14-15-15 (30)
		12.5		
	(SC) Medium dense gray clayey SAND with trace limerock		SPT 7	8-7-6 (13)
15		16		
	(CL/CH) Stiff orange and green CLAY with sand		SPT 8	6-7-8 (15)
20		20		
	Bottom of borehole at 20.0 feet.			

LIQUID LIMIT, % | PLASTIC LIMIT, % | PLASTICITY INDEX, % | PERCENT PASS NO. 200 SIEVE | MOISTURE CONTENT, % | ORGANIC CONTENT, %

▲ SPT N VALUE ▲

20 40 60 80

SPT BORINGS W/ ORGANICS - GINT STD US.GDT - 8/28/19 10:13 - Q:\PROJECTS\14185 LULLWATER AT FORT CLARKE\14185 BORINGS\14185 BORINGS (B).GPJ

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BORING NUMBER B-2

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 8/13/19 **COMPLETED** 8/13/19
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Flight Auger
▼ **AT TIME OF DRILLING** 9.0 ft
LOGGED BY AXL **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 9.0 ft, perched
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose brown and orange SAND with clay	2	SPT 1	2-2-2 (4)							20 40 60 80
		(SC) Loose brown, gray, and orange clayey SAND with sandstone	4	SPT 2	3-5-5 (10)							
5		(SC) Medium dense pale brown, gray, green, and orange clayey SAND with sandstone	6	SPT 3	5-6-8 (14)							
		(SC) Medium dense pale gray and orange clayey SAND		SPT 4	8-9-9 (18)							
				SPT 5	10-13-11 (24)							
10				SPT 6	10-13-12 (25)							
			12									
		(CL/CH) Very stiff orange and green sandy CLAY		SPT 7	5-7-9 (16)							
15			17									
		(CL/CH) Stiff orange and green CLAY with sand		SPT 8	5-6-8 (14)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-3

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/13/19 **COMPLETED** 8/13/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 4.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	1									20 40 60 80
		(SP-SC) Loose pale brown, gray, and orange cemented SAND with clay and sandstone	2.5	SPT 1	2-3-2 (5)							
		(SC) Loose brown and orange clayey SAND with sandstone	4	SPT 2	2-2-3 (5)							
5		(CL/CH) Stiff to very stiff green CLAY with sand	7	SPT 3	4-4-7 (11)	80	52	28	76	51		
				SPT 4	8-9-10 (19)							
		(CL/CH) Very stiff orange and green CLAY with sand		SPT 5	8-9-11 (20)							
10				SPT 6	9-9-10 (19)							
			12									
		(CL/CH) Stiff green CLAY with sand		SPT 7	5-6-6 (12)							
15												
			17									
		(CL/CH) Stiff pale green sandy CLAY		SPT 8	6-7-8 (15)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-4

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/13/19 **COMPLETED** 8/13/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 9.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	1									20 40 60 80
		(SP-SC) Very loose to medium dense brown and orange SAND with clay		SPT 1	2-1-2 (3)							
				SPT 2	1-1-11 (12)							
			4.5	SPT 3	1-2-2 (4)							
5		(SM) Very loose dark gray silty SAND	6	SPT 4	3-2-3 (5)							
		(SM) Loose brown and orange silty SAND		SPT 5	3-4-4 (8)							
			8.5									
		▽ (SP-SC) Medium dense gray and orange cemented SAND with clay and sandstone		SPT 6	4-5-7 (12)							
10			11.5									
		(CL/CH) Very stiff green and orange sandy CLAY		SPT 7	8-9-8 (17)							
15			17									
		(CL/CH) Stiff green and orange CLAY with sand		SPT 8	8-7-7 (14)							
20			20									
		Bottom of borehole at 20.0 feet.										

SPT BORINGS W/ ORGANICS - GINT STD US.GDT - 8/28/19 10:13 - Q:\PROJECTS\14185 LULLWATER AT FORT CLARKE\14185 BORINGS\14185 BORINGS (B).GPJ

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BORING NUMBER B-5

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 8/13/19 **COMPLETED** 8/13/19
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Flight Auger
▼ **AT TIME OF DRILLING** NE
LOGGED BY AXL **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 4.0 ft, perched
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Loose to medium dense pale brown and orange clayey SAND with sandstone		SPT 1	4-4-4 (8)							20 40 60 80
				SPT 2	4-6-7 (13)							
			4.5	SPT 3	9-10-15 (25)							
5		(CL/CH) Very stiff green and orange sandy CLAY	6	SPT 4	9-9-9 (18)							
		(CL/CH) Stiff to very stiff green and orange CLAY with sand		SPT 5	8-7-7 (14)							
10				SPT 6	7-7-6 (13)							
			12									
		(CL/CH) Stiff pale green sandy CLAY		SPT 7	6-7-7 (14)							
15												
			17									
		(SC) Medium dense pale green clayey SAND		SPT 8	7-7-8 (15)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-6

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/13/19 **COMPLETED** 8/13/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray and brown SAND	1									20 40 60 80
		(SP-SC) Loose brown, gray, and orange cemented SAND with clay and sandstone	3	SPT 1	1-2-4 (6)							
		(SP-SC) Loose to medium dense brown, gray, and orange SAND with clay and sandstone	4.5	SPT 2	3-4-6 (10)							
5		▽ (SC) Medium dense brown, gray, and orange clayey SAND with sandstone	6	SPT 3	5-6-7 (13)							
		(CL/CH) Stiff to very stiff gray and orange CLAY with sand	8.5	SPT 4	4-6-8 (14)							
				SPT 5	7-9-10 (19)	81	33	48	78	43		
10		(CL/CH) Green, brown, and orange sandy CLAY	12	SPT 6								
		(CL/CH) Stiff green and orange sandy CLAY		SPT 7	6-6-7 (13)							
15			17									
		(SP-SC) Very stiff pale brown and pale gray SAND with clay		SPT 8	8-8-9 (17)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-7

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/13/19 **COMPLETED** 8/13/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 9.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose brown and gray SAND with clay										20 40 60 80
			2	SPT 1	2-3-3 (6)							
		(SP-SC) Loose brown, gray, and orange SAND with clay and sandstone										
			4	SPT 2	2-3-4 (7)							
5		(SC) Medium dense gray and orange clayey SAND		SPT 3	10-7-7 (14)							
			6	SPT 4	6-10-10 (20)							
		(SC) Medium dense green and orange clayey SAND		SPT 5	9-13-14 (27)							
	▽			SPT 6	10-11-9 (20)							
10			12									
		(CL/CH) Very stiff green sandy CLAY		SPT 7	7-8-8 (16)	125	31	94	68	42		
15			17									
		(SC) Medium dense pale brown, gray, and orange clayey SAND		SPT 8	7-8-9 (17)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-8

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/9/19 **COMPLETED** 8/9/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 13.0 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)
0	(SP-SC) Very loose to loose brown and orange SAND with clay		SPT 1	2-2-2 (4)
			SPT 2	2-2-3 (5)
		4		
5	(SP-SC) Loose brown and gray SAND with clay		SPT 3	2-2-5 (7)
		5.5		
	(SC) Loose to medium dense brown and gray clayey SAND with sandstone		SPT 4	3-3-2 (5)
			SPT 5	3-5-5 (10)
10			SPT 6	4-4-4 (8)
	▽			
15			SPT 7	5-6-6 (12)
		17		
	(SC/CL) Loose green and orange very clayey SAND		SPT 8	4-4-6 (10)
20		20		
	Bottom of borehole at 20.0 feet.			

LIQUID LIMIT, % | PLASTIC LIMIT, % | PLASTICITY INDEX, % | PERCENT PASS NO. 200 SIEVE | MOISTURE CONTENT, % | ORGANIC CONTENT, %

▲ SPT N VALUE ▲ (20, 40, 60, 80)

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BORING NUMBER B-9

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/9/19 **COMPLETED** 8/9/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 13.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	1									20 40 60 80
		(SP-SC) Loose brown and orange SAND with clay	2.5	SPT 1	3-5-4 (9)							
		(SP-SC) Medium dense brown and orange SAND with clay and sandstone		SPT 2	5-6-7 (13)							
5				SPT 3	6-6-7 (13)							
			7	SPT 4	8-9-14 (23)							
		(SP-SC) Dense brown, gray, and orange SAND with clay and sandstone		SPT 5	15-15-19 (34)							
10				SPT 6								
			12									
		(SC) Medium dense gray and orange clayey SAND ▽		SPT 7	11-9-11 (20)							
15												
			17									
		(CL/CH) Stiff green and orange CLAY		SPT 8	6-6-6 (12)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-10

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/9/19 **COMPLETED** 8/9/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 3.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	0.5									20 40 60 80
		(SC) Loose brown and orange clayey SAND with sandstone	2.5	SPT 1	3-3-4 (7)							
		▽ (SC) Medium dense pale brown, gray, and orange clayey SAND	4.5	SPT 2	4-5-6 (11)							
5		(CL/CH) Very stiff green and orange CLAY with sand		SPT 3	6-8-10 (18)							
				SPT 4	7-8-8 (16)	63	30	33	82	51		
			8.5	SPT 5	6-7-9 (16)							
		(CL/CH) Stiff green and orange CLAY		SPT 6	7-6-7 (13)							
10			12									
		(CL/CH) Stiff to very stiff green CLAY with sand		SPT 7	5-6-7 (13)							
15												
				SPT 8	6-9-9 (18)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-11

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 9.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	1									20 40 60 80
		(SP-SC) Very loose to loose brown and orange SAND with clay		SPT 1	1-1-2 (3)							
				SPT 2	2-2-3 (5)							
5		(SP-SC) Loose brown and gray SAND with clay	4	SPT 3	2-2-4 (6)							
		(SC) Loose gray and orange clayey SAND with sandstone	6	SPT 4	3-3-5 (8)							
		(SC) Loose to medium dense gray and orange cemented clayey SAND with sandstone	7	SPT 5	4-4-5 (9)							
10		▽		SPT 6	5-6-5 (11)							
		(CL/CH) Stiff green and orange CLAY with sand	11.5									
				SPT 7	5-5-7 (12)							
15			17									
		(CL/CH) Stiff green CLAY		SPT 8	5-6-7 (13)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-12

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 4.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose brown and gray SAND with clay										20 40 60 80
				SPT 1	2-2-4 (6)							
			2.5									
		(SP-SC) Loose to medium dense brown and orange SAND with clay and sandstone		SPT 2	3-4-5 (9)							
		▽		SPT 3	5-6-5 (11)							
5			6									
		(CL/CH) Stiff to very stiff orange and green sandy CLAY		SPT 4	6-7-8 (15)							
				SPT 5	7-7-10 (17)	77	29	48	57	34		
			8.5									
		(CL/CH) Very stiff green sandy CLAY		SPT 6	7-8-8 (16)							
10												
				SPT 7	5-7-9 (16)							
15			16									
		(CL/CH) Stiff orange and green CLAY with sand										
				SPT 8	6-6-7 (13)							
20			20									
		Bottom of borehole at 20.0 feet.										

SPT BORINGS W/ ORGANICS - GINT STD US.GDT - 8/28/19 10:13 - Q:\PROJECTS\14185 LULLWATER AT FORT CLARKE\14185 BORINGS\14185 BORINGS (B).GPJ

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BORING NUMBER B-13

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)
0	(SP-SC) Loose dark gray and orange SAND with clay		SPT 1	3-3-3 (6)
		3	SPT 2	3-5-7 (12)
5	(SP-SC) Medium dense brown and orange SAND with clay and sandstone ▽		SPT 3	9-7-5 (12)
		6	SPT 4	5-6-9 (15)
	(CL/CH) Stiff gray and orange CLAY with sand	7		
	(SC) Medium dense pale brown and orange clayey SAND with sandstone		SPT 5	7-7-8 (15)
		8.5	SPT 6	7-8-7 (15)
10	(SC/CL) Medium dense pale brown and orange very clayey SAND			
		11		
	(CL/CH) Stiff green CLAY with sand		SPT 7	5-5-6 (11)
15				
		17		
	(SC/CL) Medium dense pale green very clayey SAND		SPT 8	4-8-9 (17)
20		20		
	Bottom of borehole at 20.0 feet.			

LIQUID LIMIT, % | PLASTIC LIMIT, % | PLASTICITY INDEX, % | PERCENT PASS NO. 200 SIEVE | MOISTURE CONTENT, % | ORGANIC CONTENT, %

▲ SPT N VALUE ▲ (20 40 60 80)

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BORING NUMBER B-14

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 3.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose to loose brown and gray SAND with clay		SPT 1	1-1-2 (3)							20 40 60 80
				SPT 2	2-2-3 (5)							
			4									
5		(CL/CH) Stiff pale brown, gray, and orange sandy CLAY with sandstone	5	SPT 3	4-5-6 (11)							
		(CL/CH) Stiff green and orange CLAY with sand		SPT 4	5-6-8 (14)							
				SPT 5	6-7-7 (14)							
			8.5									
10		(CL/CH) Stiff pale green and orange CLAY with sand and trace organics		SPT 6	7-7-8 (15)				81	52	9.0	
			13									
		(SC/CL) Medium dense gray and orange very clayey SAND		SPT 7	6-6-6 (12)							
15												
			17									
		(SP-SC) Medium dense pale gray SAND with clay		SPT 8	8-10-12 (22)							
20			20									
		Bottom of borehole at 20.0 feet.										

SPT BORINGS W/ ORGANICS - GINT STD US.GDT - 8/28/19 10:13 - Q:\PROJECTS\14185 LULLWATER AT FORT CLARKE\14185 BORINGS\14185 BORINGS (B).GPJ

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BORING NUMBER B-15

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 7.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose to loose orange and brown SAND with clay		SPT 1	2-2-2 (4)							20 40 60 80
				SPT 2	2-2-4 (6)							
			4									
5		(SC) Loose pale brown, gray, and orange cemented clayey SAND		SPT 3	4-5-5 (10)							
			6									
		(SP-SC) Loose to medium dense gray and orange SAND with clay and sandstone ▽		SPT 4	4-4-5 (9)							
				SPT 5	5-8-8 (16)							
			9									
10		(CL/CH) Stiff to very stiff green and orange CLAY		SPT 6	9-9-11 (20)							
				SPT 7	3-6-8 (14)	150	49	101	87	57		
15												
				SPT 8	4-5-7 (12)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-16

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 8/12/19 **COMPLETED** 8/12/19
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Flight Auger
▼ **AT TIME OF DRILLING** NE
LOGGED BY AXL **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 6.0 ft, perched
NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)
0	(SM) Very loose gray and brown silty SAND			
	Weight-of-hammer from 1.5 to 2 ft bls.		SPT 1	1-0-1 (1)
	Weight-of-hammer from 2.5 to 3 ft bls.	3	SPT 2	0-3-4 (7)
	(SP-SC) Loose to medium dense brown and orange SAND with clay and sandstone		SPT 3	5-5-6 (11)
5		6	SPT 4	6-8-8 (16)
	(SC) Medium dense brown, gray, and orange clayey SAND with sandstone	7.5	SPT 5	5-6-10 (16)
	(CL/CH) Very stiff green and orange sandy CLAY	9	SPT 6	8-10-11 (21)
10	(SC) Medium dense green and orange clayey SAND			
		12		
	(SP-SC) Medium dense pale green SAND with clay		SPT 7	6-6-7 (13)
15		17		
	(CL/CH) Very stiff pale green CLAY with sand		SPT 8	6-8-9 (17)
20		20		
	Bottom of borehole at 20.0 feet.			

LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %

▲ SPT N VALUE ▲
20 40 60 80

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BORING NUMBER B-17

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 9.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose orange and brown SAND with clay										20 40 60 80
				SPT 1	3-3-3 (6)							
				SPT 2	2-2-3 (5)							
			4									
5		(SC) Loose to medium dense brown, orange, and gray clayey SAND		SPT 3	3-3-5 (8)							
				SPT 4	9-11-10 (21)							
			7									
		(SC) Medium dense gray and orange clayey SAND		SPT 5	10-13-13 (26)							
	▽			SPT 6	11-13-15 (28)							
10												
			11									
		(CL/CH) Very stiff orange and green sandy CLAY										
				SPT 7	8-10-12 (22)							
15												
			17									
		(CL/CH) Very stiff pale greenish brown CLAY										
				SPT 8	6-8-9 (17)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-18

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 6.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose brown and orange SAND with clay										20 40 60 80
				SPT 1	3-2-2 (4)							
			2.5									
		(SP-SC) Loose brown SAND with clay and sandstone		SPT 2	3-3-4 (7)							
5				SPT 3	3-3-4 (7)							
		▽		SPT 4	3-4-4 (8)							
			6.5									
		(SC) Loose gray and orange clayey SAND with sandstone	7.5	SPT 5	4-5-8 (13)							
		(CL/CH) Stiff green and orange sandy CLAY	8.5									
		(CL/CH) Stiff to very stiff orange and green CLAY with sand		SPT 6	6-6-7 (13)							
10												
				SPT 7	7-10-13 (23)							
15			16									
		(SP-SC) Medium dense pale gray SAND with clay		SPT 8	10-11-14 (25)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-19

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/14/19 **COMPLETED** 8/14/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Medium dense dark brown clayey SAND										20 40 60 80
			2.5	SPT 1	8-9-11 (20)							
		(SM) Medium dense dark brown silty SAND		SPT 2	10-9-13 (22)							
			4.5	SPT 3	6-8-8 (16)							
5		▽ (SC) Medium dense gray and orange clayey SAND with sandstone		SPT 4	8-9-8 (17)							
			6.5									
		(CL/CH) Very stiff gray, green, and orange sandy CLAY with trace limerock	7.5	SPT 5	6-6-6 (12)							
		(CL/CH) Stiff green and orange CLAY with sand		SPT 6	6-7-7 (14)	134	44	90	84	54		
10												
				SPT 7	7-5-6 (11)							
15												
				SPT 8	5-6-5 (11)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-20

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SC/CL) Medium dense brownish orange very clayey SAND with trace organics	2	SPT 1	4-6-7 (13)				43	33	12	20 40 60 80
		(SP-SC) Medium dense brown and orange SAND with clay and trace wood	4	SPT 2	5-6-7 (13)							
5		(SC) Loose to medium dense orange and green clayey SAND ▽	6	SPT 3	5-5-5 (10)							
		(CL/CH) Stiff green CLAY with sand	7.5	SPT 4	5-6-7 (13)							
10		(CL/CH) Stiff green and orange CLAY with sand		SPT 5	6-5-7 (12)							
				SPT 6	6-6-7 (13)							
15				SPT 7	4-6-8 (14)							
		(CL/CH) Very stiff pale gray sandy CLAY	17									
20			20	SPT 8	6-9-8 (17)							
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-21

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SM) Gray and brown SAND with silt	1									20 40 60 80
		(SC) Medium dense brown and orange cemented clayey SAND		SPT 1	8-8-9 (17)							
			4	SPT 2	8-9-11 (20)							
5		(SC) Medium dense pale brown clayey SAND ▽		SPT 3	9-11-11 (22)							
			6	SPT 4	10-12-17 (29)							
		(CL/CH) Very stiff green and orange sandy CLAY		SPT 5	11-13-14 (27)							
			8.5	SPT 6	12-15-16 (31)							
10		(CL/CH) Hard pale green CLAY										
			12									
		(SC/CL) Loose to medium dense pale greenish gray very clayey SAND		SPT 7	8-7-7 (14)	55	24	31	35	23		
15												
				SPT 8	4-5-5 (10)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-22

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/9/19 **COMPLETED** 8/9/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 9.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose to loose brownish orange SAND with clay and gravel		SPT 1	4-3-2 (5)							20 40 60 80
				SPT 2	2-2-2 (4)							
5				SPT 3	2-3-4 (7)							
			6	SPT 4	5-5-6 (11)							
		(SC) Medium dense brown, gray, and orange clayey SAND with traces sandstone	7									
		(SC) Medium dense brown, gray, and orange clayey SAND		SPT 5	6-7-7 (14)							
		▽	9	SPT 6	7-9-10 (19)							
10		(SC) Medium dense pale brown and orange clayey SAND with sandstone and traces limerock										
			12									
		(CL/CH) Stiff green and orange CLAY		SPT 7	4-4-5 (9)							
15												
				SPT 8	4-5-5 (10)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-23

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 8/9/19 **COMPLETED** 8/9/19
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Flight Auger
▼ **AT TIME OF DRILLING** NE
LOGGED BY AXL **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched
NOTES

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %
0	(SP-SM) Gray SAND with silt	1								
	(SP-SM) Loose brown and orange SAND with silt	2.5	SPT 1	3-3-2 (5)						
	(SP-SC) Loose to medium dense brownish orange SAND with clay	4.5	SPT 2	3-3-3 (6)						
5	▽ (SC) Medium dense brown and orange clayey SAND with sandstone	7	SPT 3	2-5-6 (11)						
			SPT 4	5-7-9 (16)						
	(CL/CH) Very stiff pale green and orange CLAY with sand	9	SPT 5	6-8-11 (19)	54	23	31	71	28	
10	(CL/CH) Very stiff green and orange CLAY	11.5	SPT 6	8-10-12 (22)						
	(SC) Medium dense pale green and orange clayey SAND with traces limerock		SPT 7	6-10-11 (21)						
15		17								
	(SC) Medium dense pale green and orange clayey SAND with traces limerock		SPT 8	5-7-9 (16)						
20		20								
	Bottom of borehole at 20.0 feet.									

▲ SPT N VALUE ▲
20 40 60 80

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BORING NUMBER B-24

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 15.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Very loose to medium dense orangish brown clayey SAND										20 40 60 80
				SPT 1	2-2-3 (5)				15	8.2		
				SPT 2	2-2-2 (4)							
5				SPT 3	2-2-3 (5)							
				SPT 4	3-3-4 (7)							
				SPT 5	3-4-6 (10)							
10				SPT 6	6-7-8 (15)							
				SPT 7	6-6-7 (13)							
15	▽											
		(SP-SC) Medium dense pale brown, gray, and orange SAND with clay	17									
				SPT 8	8-7-6 (13)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-25

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/9/19 **COMPLETED** 8/9/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SM) Gray and brown SAND with silt	1									20 40 60 80
		(SP-SC) Loose brown and orange SAND with clay	2.5	SPT 1	6-4-4 (8)							
		(SC) Loose to medium dense pale brown and orange clayey SAND with traces limerock		SPT 2	3-4-4 (8)							
5		▽		SPT 3	3-4-6 (10)							
			7	SPT 4	5-6-6 (12)							
		(CL/CH) Stiff green and orange CLAY with sand	8	SPT 5	4-5-6 (11)							
		(CL/CH) Very stiff pale brown CLAY	9.5	SPT 6	7-8-8 (16)							
10		(SC) Medium dense green and orange clayey SAND										
				SPT 7	5-7-8 (15)							
15			17									
		(SC) Medium dense pale brown and gray clayey SAND		SPT 8	6-8-10 (18)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-26

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.0 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %
0	(CL/CH) Stiff brown and orange CLAY with sand	2	SPT 1	4-5-7 (12)	71	51	20	79	55	
	(SC) Medium dense gray and orange clayey SAND	4	SPT 2	11-14-13 (27)						
5	(CL/CH) Very stiff to hard orange and green CLAY with sand		SPT 3	11-13-14 (27)						
			SPT 4	11-14-18 (32)						
			SPT 5	12-14-19 (33)						
10			SPT 6	14-16-17 (33)						
		12.5								
	(SP-SC) Medium dense pale gray and brown SAND with clay		SPT 7	6-6-7 (13)						
15										
			SPT 8	8-8-7 (15)						
20		20								
	Bottom of borehole at 20.0 feet.									

▲ SPT N VALUE ▲

20 40 60 80

SPT BORINGS W/ ORGANICS - GINT STD US.GDT - 8/28/19 10:13 - Q:\PROJECTS\14185 LULLWATER AT FORT CLARKE\14185 BORINGS\14185 BORINGS (B).GPJ

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BORING NUMBER B-27

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185 **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 8/12/19 **COMPLETED** 8/12/19 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Flight Auger ▼ **AT TIME OF DRILLING** NE

LOGGED BY AXL **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 5.0 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %
0	(SC) Very loose to medium dense brown and orange clayey SAND with sandstone		SPT 1	1-1-3 (4)	53	24	29	51	32	
			SPT 2	6-6-7 (13)						
		4								
5	(SC) Medium dense pale gray and orange clayey SAND with sandstone ▽		SPT 3	7-8-10 (18)						
			SPT 4	10-10-11 (21)						
		7								
	(CL/CH) Very stiff orange and gray sandy CLAY		SPT 5	12-12-14 (26)						
		8.5								
10	(CL/CH) Very stiff green and orange CLAY with sand		SPT 6	10-10-11 (21)						
		12								
	(CL/CH) Stiff gray and green sandy CLAY		SPT 7	4-5-7 (12)						
15										
		17								
	(SP-SC) Medium dense pale gray and green SAND with clay		SPT 8	9-10-12 (22)						
20		20								
	Bottom of borehole at 20.0 feet.									

▲ SPT N VALUE ▲ (20, 40, 60, 80)

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BORING NUMBER B-28

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 8/12/19 **COMPLETED** 8/12/19
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Flight Auger
AT TIME OF DRILLING NE
LOGGED BY AXL **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 9.0 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	ORGANIC CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose brownish orange SAND with clay										20 40 60 80
				SPT 1	2-3-3 (6)							
				SPT 2	2-2-3 (5)							
5				SPT 3	2-2-3 (5)							
			6	SPT 4	4-6-7 (13)							
		(SC) Medium dense brown, gray, and orange clayey SAND with sandstone		SPT 5	9-13-15 (28)							
10				SPT 6	10-13-14 (27)							
			12									
		(SC/CL) Medium dense gray, green, and orange very clayey SAND		SPT 7	12-13-15 (28)	57	22	35	39	22		
15												
			17									
		(CL/CH) Stiff green and orange CLAY with sand		SPT 8	9-8-7 (15)							
20			20									
		Bottom of borehole at 20.0 feet.										

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BORING NUMBER B-29

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/7/20 **COMPLETED** 2/7/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
▼ **AT TIME OF DRILLING** NE
LOGGED BY WDI **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 3.5 ft, perched
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Loose brown and gray cemented clayey SAND with sandstone		SPT 1	3-3-4 (7)						
			2.5								
		(SC) Medium dense orange and gray clayey SAND with sandstone ▽		SPT 2	5-6-7 (13)						
			4								
5		(CH) Stiff pale green sandy CLAY		SPT 3	4-5-6 (11)	63	26	37	57	33	
				SPT 4	6-6-6 (12)						
			7								
		(CL/CH) Stiff green and orange CLAY		SPT 5	5-5-5 (10)						
				SPT 6	7-6-6 (12)						
10											
				SPT 7	4-5-6 (11)						
15											
			17								
		(CL/CH) Stiff green and pale gray cemented sandy CLAY									
				SPT 8	4-5-6 (11)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-30

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/7/20 **COMPLETED** 2/7/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
▼ **AT TIME OF DRILLING** NE
LOGGED BY WDI **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 11.5 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose brown and orange SAND with clay		SPT 1	2-2-3 (5)						20 40 60 80
			3.5	SPT 2	2-3-4 (7)						
5		(SC) Loose to medium dense pale gray cemented clayey SAND with sandstone	5	SPT 3	3-5-6 (11)						
		(SC) Loose to medium dense gray and orange clayey SAND with sandstone		SPT 4	9-7-8 (15)						
				SPT 5	5-5-5 (10)						
10		▽		SPT 6	6-4-5 (9)						
			12								
		(CL/CH) Stiff orange and green CLAY		SPT 7	5-6-7 (13)						
15											
			17								
		(CL/CH) Firm green cemented CLAY with sand									
				SPT 8	4-4-4 (8)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-31

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary ▼ **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 6.5 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Brown SAND	1								20 40 60 80
		(SP-SC) Medium dense brown, orange, and gray cemented SAND with clay and sandstone	2.5	SPT 1	3-4-7 (11)						
		(SP) Medium dense gray and orange cemented SAND with sandstone		SPT 2	5-7-5 (12)						
5				SPT 3	4-6-5 (11)						
			6	SPT 4	7-8-9 (17)						
		▽ (SC) Medium dense gray and orange clayey SAND with sandstone	7								
		(CL/CH) Very stiff orange and green sandy CLAY with sandstone		SPT 5	7-8-11 (19)						
10				SPT 6	10-9-9 (18)						
			11								
		(CL/CH) Firm green and orange CLAY									
15				SPT 7	2-3-4 (7)						
20			20	SPT 8	2-3-5 (8)						
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-32

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary ▼ **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF ▽ **ESTIMATED SEASONAL HIGH** 2.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Loose pale brown and orange clayey SAND with sandstone									20 40 60 80
		▽	2.5	SPT 1	4-5-5 (10)						
		(CL/CH) Stiff brown, gray, and orange sandy CLAY with sandstone	4	SPT 2	4-5-6 (11)						
5		(CL/CH) Stiff green, gray, and orange CLAY with sand	6	SPT 3	4-7-7 (14)						
		(CL/CH) Stiff green and orange CLAY with trace limerock	7	SPT 4	5-6-9 (15)						
		(CL/CH) Very stiff gray and orange sandy CLAY	9.5	SPT 5	10-10-10 (20)						
10		(CL/CH) Stiff to very stiff very stiff green and orange CLAY		SPT 6	8-9-11 (20)						
				SPT 7	4-5-6 (11)						
15											
			19.5	SPT 8	4-11-12 (23)						
20		(SP-SC) Medium dense pale grayish green SAND with clay	20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-33

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/7/20 **COMPLETED** 2/7/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING NE
LOGGED BY WDI **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 3.5 ft, perched
NOTES

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	SPT N VALUE
0	(SP-SC) Loose brown, gray, and orange SAND with clay and sandstone		SPT 1	2-2-4 (6)						
			SPT 2	2-2-3 (5)						
		4								
5	(CL/CH) Stiff green and orange sandy CLAY		SPT 3	3-4-6 (10)				61	44	
			SPT 4	5-7-8 (15)						
			SPT 5	6-6-7 (13)						
10			SPT 6	6-6-7 (13)						
		12.5								
	(SP-SC) Medium dense pale gray and pale brown cemented SAND with clay		SPT 7	6-9-11 (20)						
15										
			SPT 8	5-6-7 (13)						
20		20								
	Bottom of borehole at 20.0 feet.									

SPT N VALUE: 20 40 60 80

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BORING NUMBER B-34

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/3/20 **COMPLETED** 2/3/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲ (20 40 60 80)
0		(SP-SC) Loose to medium dense brown and orange cemented SAND with clay		SPT 1	5-6-5 (11)						
				SPT 2	5-6-4 (10)						
			3.5								
5		(CL/CH) Stiff green, gray, and orange sandy CLAY		SPT 3	4-5-7 (12)						
			5.5								
		(CH) Firm to stiff green and orange CLAY		SPT 4	8-8-7 (15)	151	39	112	95	54	
				SPT 5	3-3-4 (7)						
			8.5								
10		(CL/CH) Stiff to very stiff pale green and brown CLAY with sand		SPT 6	5-8-8 (16)						
15				SPT 7	4-6-6 (12)						
			17								
		(SP-SC) Medium dense pale gray and pale brown cemented SAND with clay									
20				SPT 8	7-8-11 (19)						
			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-35

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/3/20 **COMPLETED** 2/3/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING NE
LOGGED BY WDI **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 3.5 ft, perched
NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲ (20 40 60 80)
0	(SP-SC) Loose brown and orange SAND with clay and sandstone	2.5	SPT 1	2-3-3 (6)						
	(SC) Very loose gray and orange clayey SAND with sandstone ▽	4	SPT 2	2-2-2 (4)						
5	(SC/CL) Very loose to loose gray very clayey SAND with sandstone	6	SPT 3	2-2-2 (4)						
	(CL/CH) Firm to stiff green and orange CLAY		SPT 4	3-4-4 (8)						
			SPT 5	5-5-7 (12)						
10			SPT 6	5-6-6 (12)						
		12								
	(CL/CH) Stiff green, orange, and gray CLAY with trace limerock		SPT 7	5-5-5 (10)						
15		17								
	(CL/CH) Stiff green and gray CLAY with sand		SPT 8	6-6-8 (14)						
20		20								
	Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-36

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/3/20 **COMPLETED** 2/3/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING NE
LOGGED BY WDI **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 11.5 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Very loose to medium dense brown and orange SAND									20 40 60 80
				SPT 1	3-2-2 (4)						
				SPT 2	3-2-3 (5)						
5				SPT 3	1-2-2 (4)						
				SPT 4	3-5-10 (15)						
		(SC) Medium dense gray and orange cemented clayey SAND with sandstone	6.5	SPT 5	8-8-8 (16)						
10				SPT 6	10-12-13 (25)						
			12								
		(CL/CH) Stiff gray and orange sandy CLAY with trace limerock		SPT 7	5-7-7 (14)						
15			16								
		(SC/CL) Loose green and orange very clayey SAND									
				SPT 8	3-4-4 (8)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-37

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.5 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Medium dense brown and gray clayey SAND with sandstone		SPT 1	2-5-6 (11)						20 40 60 80
				SPT 2	6-8-11 (19)						
			4								
5		(CL/CH) Stiff to very stiff green CLAY		SPT 3	8-7-5 (12)						
			6								
		(CL/CH) Very stiff gray cemented CLAY with sand		SPT 4	8-10-17 (27)						
			7								
		(CL/CH) Very stiff green and grey cemented sandy CLAY		SPT 5	22-14-15 (29)						
				SPT 6	15-12-14 (26)						
10											
			12								
		(SP-SC) Medium dense to dense pale gray and pale brown cemented SAND with clay		SPT 7	6-11-11 (22)						
15											
				SPT 8	20-20-25 (45)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-38

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/3/20 **COMPLETED** 2/3/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING NE
LOGGED BY WDI **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 6.5 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Brown SAND	1								
		(SP-SC) Loose to medium dense pale gray and orange cemented SAND with clay and sandstone		SPT 1	2-2-4 (6)						
				SPT 2	3-5-5 (10)						
5				SPT 3	5-7-10 (17)						
		▽	7	SPT 4	8-9-9 (18)						
		(CL/CH) Stiff to very stiff green and orange CLAY		SPT 5	4-5-6 (11)						
10				SPT 6	6-8-8 (16)						
			12								
		(CL/CH) Firm green and orange CLAY with trace limerock		SPT 7	3-3-4 (7)						
15											
			17								
		(CL/CH) Stiff pale green and pale gray sandy CLAY		SPT 8	3-4-5 (9)						
20			20								
		Bottom of borehole at 20.0 feet.									

20 40 60 80

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BORING NUMBER B-39

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/5/20 **COMPLETED** 2/5/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 0.5 ft, perched

NOTES _____

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0	(SP-SM) Brown SAND with silt	1								
	(MH) Stiff dark gray elastic SILT and sandstone	2.5	SPT 1	3-4-6 (10)	62	43	19	70	50	
	(CL/CH) Stiff gray and orange CLAY with sandstone	4	SPT 2	5-5-5 (10)						
5	(CL/CH) Very stiff green, gray, and orange CLAY with sand	6	SPT 3	3-3-14 (17)						
	(CL/CH) Stiff to very stiff green cemented CLAY		SPT 4	5-7-6 (13)						
			SPT 5	7-8-9 (17)						
10			SPT 6	7-7-8 (15)						
		14	SPT 7	6-20-34 (54)						
15	(CL/CH) Very hard pale gray cemented CLAY with limerock									
		18								
	(SP) Very dense gray cemented SAND	18.83	SPT 8	50/4"						>>
	Bottom of borehole at 18.8 feet.									

20 40 60 80

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Fax: (352)377-0335

BORING NUMBER B-40

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/5/20 **COMPLETED** 2/5/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲ 20 40 60 80
0		(SP) Loose brown and gray SAND	1.5	SPT 1	4-4-4 (8)						
		(SP-SC) Loose to medium dense brown, orange, and gray cemented SAND with clay and sandstone	3.5	SPT 2	6-6-6 (12)						
5		(CL/CH) Stiff gray and orange sandy CLAY with sand stone	5	SPT 3	5-5-6 (11)						
		(CL/CH) Stiff green and orange CLAY		SPT 4	4-4-5 (9)						
				SPT 5	3-5-5 (10)						
10				SPT 6	5-5-6 (11)						
15				SPT 7	4-4-5 (9)						
			17								
		(CL/CH) Very stiff pale brown, pale gray, and orange CLAY with sandstone									
20			20	SPT 8	6-8-8 (16)						
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-41

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/5/20 **COMPLETED** 2/5/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** > 20 ft

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Very loose to medium dense brown and orange SAND with clay		SPT 1	2-1-1 (2)						20 40 60 80
				SPT 2	1-1-13 (14)						
		Trace wood at 3.5 to 4 feet bls.	4								
5		(SP) Very loose to loose gray and brown cemented SAND		SPT 3	2-2-2 (4)						
				SPT 4	4-4-5 (9)						
			6.5								
		(SC) Loose to medium dense brown and orange clayey SAND		SPT 5	5-5-8 (13)				13	8.3	
				SPT 6	10-10-8 (18)						
10											
				SPT 7	5-5-4 (9)						
15											
			17								
		(SP-SC) Medium dense gray and orange SAND with clay									
				SPT 8	4-5-7 (12)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-42

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
▼ **AT TIME OF DRILLING** NE
LOGGED BY WDI **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 0.5 ft, perched
NOTES

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %
0	(CH) Stiff gray and orange sandy CLAY		SPT 1	3-4-5 (9)	64	29	35	66	43
		2.5							
	(SC) Medium dense gray and orange clayey SAND		SPT 2	6-8-8 (16)					
		4							
5	(CL/CH) Stiff to very stiff green and orange CLAY		SPT 3	7-7-7 (14)					
			SPT 4	6-7-9 (16)					
		7							
	(CL/CH) Stiff gray and green CLAY		SPT 5	6-7-8 (15)					
		9							
10	(CL/CH) Stiff gray and green CLAY with sand		SPT 6	7-7-8 (15)					
		12							
	(SP-SC) Medium dense gray, brown, and orange SAND with clay		SPT 7	4-6-8 (14)					
15									
			SPT 8	2-2-50/1" 52/7"					
		19.5							
	Very hard LIMESTONE	19.58							
	Bottom of borehole at 19.6 feet.								

▲ SPT N VALUE ▲
20 40 60 80
>>

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BORING NUMBER B-43

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING NE
LOGGED BY WDI **CHECKED BY** KPF
ESTIMATED SEASONAL HIGH 3.5 ft, perched
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Medium dense dark gray and brown clayey SAND									20 40 60 80
			2.5	SPT 1	4-6-9 (15)						
		(SC) Medium dense brown and orange clayey SAND ▽									
			4	SPT 2	9-11-14 (25)						
5		(SC/CL) Medium dense gray and brown very clayey SAND with sandstone		SPT 3	12-12-13 (25)				40	33	
			7	SPT 4	9-11-10 (21)						
		(CL/CH) Stiff gray and orange CLAY		SPT 5	6-7-7 (14)						
10				SPT 6	4-6-8 (14)						
			12								
		(SC/CL) Medium dense brown and orange very clayey SAND									
15				SPT 7	4-5-6 (11)						
20			20	SPT 8	5-6-7 (13)						
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-44

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/5/20 **COMPLETED** 2/5/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 1.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Loose gray cemented SAND									20 40 60 80
			1.5	SPT 1	2-4-5 (9)						
		(CL/CH) Stiff to very stiff gray and orange sandy CLAY with sandstone		SPT 2	5-7-9 (16)						
5				SPT 3	9-10-9 (19)						
			6	SPT 4	6-6-5 (11)						
		(CL/CH) Stiff green and orange CLAY		SPT 5	5-5-5 (10)						
10				SPT 6	5-5-6 (11)						
15				SPT 7	5-5-7 (12)						
			17								
		(CL/CH) Very stiff green, gray, and orange cemented CLAY with sand									
20			20	SPT 8	10-10-14 (24)						
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-45

CLIENT Fickling and Company, Inc.
PROJECT NAME Lullwater at Fort Clarke
PROJECT NUMBER 14185A
PROJECT LOCATION Gainesville, Alachua County, FL
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Whitaker Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
▼ **AT TIME OF DRILLING** NE
LOGGED BY WDI **CHECKED BY** KPF
▽ **ESTIMATED SEASONAL HIGH** 2.0 ft, perched
NOTES

DEPTH (ft)	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %
0	(SP-SC) Medium dense brown and orange cemented SAND with clay		SPT 1	5-7-7 (14)					
		2.5	SPT 2	6-5-5 (10)					
5	(CL/CH) Stiff to very stiff green and orange CLAY with sand		SPT 3	5-7-10 (17)					
			SPT 4	9-10-12 (22)					
		7	SPT 5	10-9-11 (20)					
10	(CL/CH) Very stiff green, gray, and orange CLAY with sand		SPT 6	10-10-12 (22)					
		12							
	(SC) Medium dense to very dense pale gray and pale brown cemented clayey SAND		SPT 7	6-7-9 (16)				16	14
15									
		18.5							
	Bottom of borehole at 18.5 feet.		SPT 8	50/0"					

▲ SPT N VALUE ▲
20 40 60 80
>>

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BORING NUMBER B-46

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/5/20 **COMPLETED** 2/5/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 11.0 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Very loose to medium dense brown and gray cemented clayey SAND with sandstone		SPT 1	2-2-2 (4)						20 40 60 80
				SPT 2	1-1-2 (3)				25	16	
5				SPT 3	1-2-4 (6)						
				SPT 4	3-5-6 (11)						
			7								
		(SP-SC) Loose to medium dense pale gray and brown cemented SAND with clay and sandstone		SPT 5	5-5-6 (11)						
				SPT 6	5-5-5 (10)						
10											
		▽	11.5								
		(CL/CH) Stiff green and orange CLAY									
				SPT 7	6-6-8 (14)						
15											
				SPT 8	6-6-6 (12)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-47

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.5 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SC) Very loose to loose brown and gray clayey SAND with sandstone		SPT 1	2-2-2 (4)	30	20	10	27	24	20 40 60 80
		▽		SPT 2	2-3-3 (6)						
		(CL/CH) Stiff pale gray and orange sandy CLAY with sandstone	4	SPT 3	2-3-6 (9)						
5				SPT 4	4-5-8 (13)						
		(CL/CH) Stiff to very stiff green and orange CLAY with sand	6.5	SPT 5	8-8-9 (17)						
		(CL/CH) Stiff green and orange CLAY	8.5	SPT 6	8-7-7 (14)						
10											
				SPT 7	3-4-7 (11)						
15											
			18								
		(CL/CH) Stiff gray and green CLAY with sand		SPT 8	4-5-6 (11)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-48

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.5 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP) Gray SAND	0.5								
		(SP) Medium dense orange and pale brown cemented SAND with sandstone		SPT 1	3-5-6 (11)						
		(SC) Medium dense pale gray and orange clayey SAND with sandstone	3	SPT 2	5-6-5 (11)						
5		(CL/CH) Stiff to very stiff pale gray, green, and orange sandy CLAY with sandstone	4	SPT 3	7-11-10 (21)						
		(CH) Stiff to very stiff green and orange CLAY with sand	6	SPT 4	6-6-8 (14)						
				SPT 5	6-7-8 (15)	134	44	90	82	61	
10				SPT 6	7-7-9 (16)						
15				SPT 7	6-5-6 (11)						
			17.5								
		(SP-SC) Medium dense pale gray cemented SAND with clay		SPT 8	6-11-14 (25)						
20			20								
		Bottom of borehole at 20.0 feet.									

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BORING NUMBER B-49

CLIENT Fickling and Company, Inc. **PROJECT NAME** Lullwater at Fort Clarke

PROJECT NUMBER 14185A **PROJECT LOCATION** Gainesville, Alachua County, FL

DATE STARTED 2/7/20 **COMPLETED** 2/7/20 **GROUND ELEVATION** _____ **HOLE SIZE** _____

DRILLING CONTRACTOR Whitaker Drilling, Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Mud Rotary **AT TIME OF DRILLING** NE

LOGGED BY WDI **CHECKED BY** KPF **ESTIMATED SEASONAL HIGH** 3.5 ft, perched

NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONTACT DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX	PERCENT PASS NO. 200 SIEVE	MOISTURE CONTENT, %	▲ SPT N VALUE ▲
0		(SP-SC) Loose brown, gray, and orange SAND with clay and sandstone									20 40 60 80
				SPT 1	3-4-5 (9)						
				SPT 2	4-4-4 (8)						
			4								
5		(CL/CH) Soft to stiff green and orange CLAY with sand		SPT 3	3-2-2 (4)						
				SPT 4	3-6-6 (12)						
			7								
		(SC/CL) Medium dense green and orange very clayey SAND		SPT 5	7-8-8 (16)						
			8.5								
10		(CL/CH) Very stiff green CLAY		SPT 6	8-8-9 (17)						
			12.5								
		(SP-SC) Medium dense pale grayish green SAND with clay		SPT 7	11-13-15 (28)						
15											
				SPT 8	6-6-5 (11)						
20			20								
		Bottom of borehole at 20.0 feet.									

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5.3 Laboratory Results

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 14185

Project Name: Lullwater @ Fort Clarke

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Hydraulic Conductivity (ft/day)	Unified Soil Classification
P-2	1-4	Brown SAND with silt	12				5.9		4.6	SP-SM
P-3	7-9	Brownish orange SAND with silt	8.2				10		5.0	SP-SM
P-4	1-4	Brown and orange SAND with clay	7.4				10		1.8	SP-SC
P-7	3-3.5	Gray, green, and orange very clayey SAND	28				42			SC/CL
P-8	7.5-8	Green and orange sandy CLAY	39				58			CL/CH

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 14185

Project Name: Lullwater @ Fort Clarke

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Hydraulic Conductivity (ft/day)	Unified Soil Classification
B-3	4-5.5	Stiff to very stiff green CLAY with sand	51	80	52	28	76			CL/CH
B-6	7-8.5	Stiff to very stiff gray and orange CLAY with sand	43	81	33	48	78			CL/CH
B-7	13.5-15	Very stiff green sandy CLAY	42	125	31	94	68			CL/CH
B-10	5.5-7	Very stiff green and and orange CLAY with sand	51	63	30	33	82			CL/CH
B-12	7-8.5	Stiff to very stiff orange and green sandy CLAY	34	77	29	48	57			CL/CH
B-14	8.5-10	Stiff pale green and orange CLAY with sand and trace organics	52				81	9		CL/CH
B-15	13.5-15	Stiff to very stiff green and orange CLAY	57	150	49	101	87			CL/CH
B-19	8.5-10	Stiff green and orange CLAY with sand	54	134	44	90	84			CL/CH
B-20	1-2.5	Medium dense brownish orange very clayey SAND with trace orgaincs	33				43	12		SC/CL
B-21	13.5-15	Loose to medium dense pale greenish gray very clayey SAND	23	55	24	31	35			SC/CL
B-23	7-8.5	Very stiff pale green and orange CLAY with sand	28	54	23	31	71			CL/CH
B-24	1-2.5	Very loose to medium dense orangish brown clayey SAND	8.2				15			SC

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 14185A

Project Name: Lullwater at Fort Clarke

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Hydraulic Conductivity (ft/day)	Unified Soil Classification
P-11	2-4	Brown and orange clayey SAND	15				23		1.3	SC
P-14	2-4	Brown and orange clayey SAND with sandstone	16				21		NF	SC
P-18	7-9	Dark brown silty SAND	8.1				14		16	SM
P-22	7-9	Brown and orange SAND with clay	7.4				10		11	SP-SC
P-26	13-15	Brown and orange clayey SAND	8.2				20		2.3	SC
P-29	2-4	Brown and orange clayey SAND	9.5				17		9.2	SC
P-33	6-8	Brown and orange clayey SAND	6.9				15		9.3	SC
P-34	2-4	Brown and orange clayey SAND	11				17		9.2	SC
P-36	2-4	Brown and orange clayey SAND	11				18		3.6	SC
B-29	4-5.5	Stiff pale green sandy CLAY	33	63	26	37	57			CH
B-33	4-5.5	Stiff green and orange sandy CLAY	44				61			CL/CH
B-34	5.5-7	Firm to stiff green and orange CLAY	54	151	39	112	95			CH

GSE Engineering & Consulting, Inc.

SUMMARY REPORT OF LABORATORY TEST RESULTS

Project Number: 14185A

Project Name: Lullwater at Fort Clarke

Boring Number	Depth (ft)	Soil Description	Natural Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Percent Passing No. 200 Sieve	Organic Content (%)	Hydraulic Conductivity (ft/day)	Unified Soil Classification
B-39	1-2.5	Stiff dark gray elastic SILT	50	62	43	19	70			MH
B-41	7-8.5	Loose to medium dense brown and orange clayey SAND	8.3				13			SC
B-42	1-2.5	Stiff gray and orange sandy CLAY	43	64	29	35	66			CH
B-43	4-5.5	Medium dense gray and brown very clayey SAND with sandstone	33				40			SC/CL
B-45	13.5-15	Medium dense to very dense pale gray and pale brown cemented clayey SAND	14				16			SC
B-46	2.5-4	Very loose to medium dense brown & gray cemented clayey SAND w/ sandstone	16				25			SC
B-47	2.5-4	Very loose to loose brown and gray clayey SAND with sandstone	24	30	20	10	27			SC
B-48	7-8.5	Stiff to very stiff green and orange CLAY with sand	61	134	44	90	82			CH

5.4 Key to Soil Classification

KEY TO SOIL CLASSIFICATION CHART

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests				SYMBOLS		GROUP NAME
				GRAPHIC	LETTER	
COARSE-GRAINED SOILS	Gravels	Clean Gravels	Cu ≥ 4 and 1 ≤ Cc ≤ 3		**GW**	Well graded GRAVEL
More than 50% retained on No. 200 sieve	More than 50% of coarse fraction retained on No. 4 sieve	Less than 5% fines	Cu < 4 and/or 1 > Cc > 3		**GP**	Poorly graded GRAVEL
		Gravels with fines	Fines classify as ML or MH		**GM**	Silty GRAVEL
		More than 12% fines	Fines classify as CL or CH		**GC**	Clayey GRAVEL
	Sands	Clean Sands	Cu ≥ 6 and 1 ≤ Cc ≤ 3		**SW**	Well graded SAND
	50% or more of coarse fraction passes No. 4 sieve	Less than 5% fines	Cu < 6 and/or 1 > Cc > 3		**SP**	Poorly graded SAND
		Sand with fines	Fines classify as ML or MH		**SP-SM**	SAND with silt
		5% ≤ fines < 12%	Fines classify as CL or CH		**SP-SC**	SAND with clay
		Sand with fines	Fines classify as ML or MH		**SM**	Silty SAND
		12% ≤ fines < 30%	Fines classify as CL or CH		**SC**	Clayey SAND
		Sand with fines	Fines classify as ML or MH		**SM**	Very silty SAND
		30% fines or more	Fines classify as CL or CH		**SC**	Very clayey SAND
FINE-GRAINED SOILS	Clays	inorganic	50% ≤ fines < 70%		**CL/CH**	Sandy CLAY
50% or more passes the No. 200 sieve			70% ≤ fines < 85%		**CL/CH**	CLAY with sand
			fines ≥ 85%		**CL/CH**	CLAY
	Silts and Clays	inorganic	PI > 7 and plots on/above "A" line		**CL**	Lean CLAY
	Liquid Limit less than 50		PI < 4 or plots below "A" line		**ML**	SILT
		organic	Liquid Limit - oven dried / Liquid Limit - not dried < 0.75		**OL**	Organic clay / Organic silt
	Silts and Clays	inorganic	PI plots on or above "A" line		**CH**	Fat CLAY
	Liquid Limit 50 or more		PI plots below "A" line		**MH**	Elastic SILT
		organic	Liquid Limit - oven dried / Liquid Limit - not dried < 0.75		**OH**	Organic clay / Organic silt
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor				**PT**	PEAT

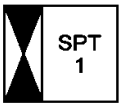
CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	No. OF BLOWS, N	RELATIVE DENSITY
	0 - 4	Very Loose
	5 - 10	Loose
SANDS:	11 - 30	Medium dense
	31 - 50	Dense
	OVER 50	Very Dense

	No. OF BLOWS, N	CONSISTENCY
	0 - 2	Very Soft
SILTS	3 - 4	Soft
&	5 - 8	Firm
CLAYS:	9 - 15	Stiff
	16 - 30	Very Stiff
	31 - 50	Hard
	OVER 50	Very Hard

	No. OF BLOWS, N	RELATIVE DENSITY
	0 - 8	Very Soft
	9 - 18	Soft
LIMESTONE:	19 - 32	Moderately Hard
	33 - 50	Hard
	OVER 50	Very Hard

SAMPLE GRAPHIC TYPE LEGEND



Location of SPT Sample

Location of Auger Sample

PARTICLE SIZE IDENTIFICATION

BOULDERS:		Greater than 300 mm
COBBLES:		75 mm to 300 mm
GRAVEL:	Coarse -	19.0 mm to 75 mm
	Fine -	4.75 mm to 19.0 mm
SANDS:	Coarse -	2.00 mm to 4.75 mm
	Medium -	0.425 mm to 2.00 mm
	Fine -	0.075 mm to 0.425 mm
SILTS & CLAYS:		Less than 0.075 mm

LABORATORY TEST LEGEND

LL	=	Liquid Limit, %
PL	=	Plastic Limit, %
PI	=	Plasticity Index, %
% PASS - 200	=	Percent Passing the No. 200 Sieve
MC	=	Moisture Content, %
ORG	=	Organic Content, %
k_h	=	Horizontal Hydraulic Conductivity, ft/day

6.0 LIMITATIONS

6.1 Warranty

This report has been prepared for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

6.2 Auger and SPT Borings

The determination of soil type and conditions was performed from the ground surface to the maximum depth of the borings, only. Any changes in subsurface conditions that occur between or below the borings would not have been detected or reflected in this report.

Soil classifications that were made in the field are based upon identifiable textural changes, color changes, changes in composition or changes in resistance to penetration in the intervals from which the samples were collected. Abrupt changes in soil type, as reflected in boring logs and/or cross sections may not actually occur, but instead, be transitional.

Depth to the water table is based upon observations made during the performance of the auger and SPT borings. This depth is an estimate and does not reflect the annual variations that would be expected in this area due to fluctuations in rainfall and rates of evapotranspiration.

6.3 Site Figures

The measurements used for the preparation of the figures in this report were made using the provided site plan and by estimating distances from existing structures and site features. Figures in this report were not prepared by a licensed land surveyor and should not be interpreted as such.

6.4 Unanticipated Soil Conditions

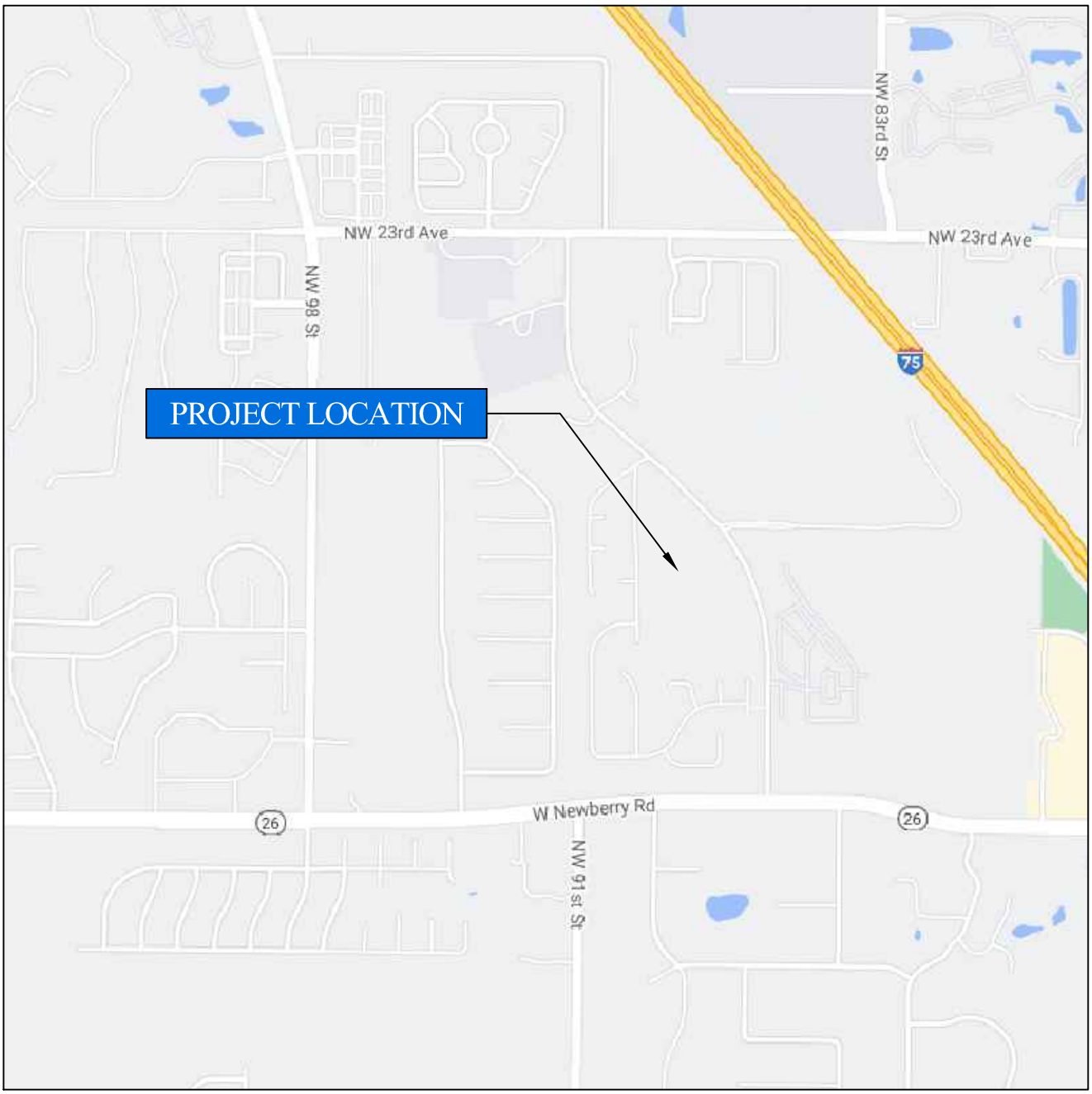
The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on Figure 2. This report does not reflect any variations that may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

6.5 Misinterpretation of Soil Engineering Report

GSE Engineering & Consulting, Inc. is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If others make the conclusions or recommendations based upon the data presented, those conclusions or recommendations are not the responsibility of GSE.

FIGURES



NORTH

NOT TO SCALE

LULLWATER AT FORT CLARKE GAINESVILLE, ALACHUA COUNTY, FLORIDA GSE PROJECT NO. 14185A	PROJECT SITE LOCATION MAP		
	DESIGNED BY: JEG CHECKED BY : KLH DRAWN BY : EEW	GSE Engineering & Consulting, Inc.	FIGURE 1

LEGEND:

- SPT BORING
- AUGER BORING
- SPT BORING (PREVIOUSLY PERFORMED)
- AUGER BORING (PREVIOUSLY PERFORMED)

NORTH

0 180'

SCALE: 1" = 180' APPROX.

LULLWATER AT FORT CLARKE
GAINESVILLE, ALACHUA COUNTY, FLORIDA
GSE PROJECT NO. 14185A

SITE PLAN SHOWING APPROXIMATE LOCATIONS OF FIELD TESTS

DESIGNED BY: JEG
CHECKED BY : KLH
DRAWN BY : EEW

GSE Engineering & Consulting, Inc.

FIGURE 2