Geophysical and Hydrology Investigation

Moody Air Force Base Privatized Housing Val Del Road Parcel

Prepared for:

ACC Group Housing LLC

Prepared by:

Woolpert, Inc. TTL, Inc. Geohazards, Inc.



HYDROLOGY AND CIVIL ENGINEERING (GEOLOGIST AND GEOTECHNICAL WORK SEAL/SIGNATURES INCLUDED SEPARATELY)

November 15, 2013

Executive Summary:

This report addresses suitability of the proposed housing site on Val Del Road for development as a residential neighborhood. The scope of the investigation, analysis, and research performed for this report are based on addressing (1) the hydrology, underlying karst topography, and potential impact on the underlying aquifer; and (2) the geological stability of the site and geophysical investigation to identify any voids or anomalies in the subsurface strata.

Hydrology - Development of this site will not have a negative impact on stormwater runoff and the groundwater recharge zone. Existing drainage patterns within the site will be maintained after construction of the homes and roadways. Stormwater detention will be provided to limit the release rate of proposed conditions runoff to not exceed that of existing conditions.

In existing conditions stormwater runoff flows to wetlands within the site and then leaves the site via overland flow and culverts under Val Del Road. Stormwater discharge in proposed conditions will continue to flow to the same wetlands and leave the site in the same manner. By maintaining existing drainage patterns and providing stormwater detention, there will be no hydrological impact from development of the site.

Geophysical – Geophysical investigation of the site supports the conclusion that the site is suitable for residential development. No voids or areas of raveling soil were found beyond those identified with initial ERI surveys. As proposed in the scope for the additional geophysical testing, both GPR and ERI surveys were performed along the west property line and dense ERI studies were performed within the previously identified areas of geologic concern. As identified in the attached detailed geophysical reports, the anomalies previously identified with a relatively broad ERI survey have now been clarified with a more precise and detailed level of analysis. This allows placing the proposed homes comfortably away from anomalies and also enables placement of homes in areas previously avoided based on the more generalized identification of geological areas of concern.

Attached is a site plan of the property showing placement of the proposed homes relative to the detailed outlines of the identified anomalies. Each anomaly has been delineated and also surrounded with a buffer to provide an even more conservative approach to placement of buildings on the site. The buffer provided is at a 1V:1H inclination from the depth of the anomaly up to the ground surface. To continue a conservative approach, this is a larger buffer than if the traditional 2V:1H inclination used for determining structural bearing vertical stress influence was applied.

As anticipated, the GPR survey was limited to relatively shallow penetration due to relatively high surface moisture and heavy clays. Typical GPR readings

achieved a depth of six-eight feet. Three isolated and relatively small shallow anomalies were identified with the GPR survey. These anomalies are not likely a result of karst topography or sinkhole activity. These anomalies are shallow enough (seven to nine feet deep) that they could be removed and backfilled or avoided with siting of the proposed buildings. Given their small size, the easiest and least expensive course of action will be place buildings outside the anomalies and their 1:1 buffer.

The dense ERI survey identified four anomalies, all of which were within the previously identified broad area of concern. The ERI identified anomalies are also relatively isolated and limited in size. These anomalies are areas with differing soil conditions at 20 to 30 feet below the surface. Additional deep soil borings could be performed in these areas to help identify whether they are raveling soil zones or in-filled material from a relic paleo era sinkhole or channel. Or similar to the preferred method for avoiding the GPR identified anomalies – simply avoid the areas with placement of proposed homes. Because these areas are relatively small and isolated, avoiding these areas with placement of proposed homes can be accomplished and should be incorporated with development of the construction documents.

See the attached site plan showing location of the anomalies, 1:1 buffers, and proposed buildings.



Hydrology Study Val Del Road Site

The scope for the hydrology study addresses the following items:

- a. Review and analysis of existing State of Georgia Aquifer Recharge Maps.
- b. Assessment of impact of Karst topography on groundwater recharge areas.
- c. Hydrology study to evaluate potential impact of proposed residential construction on existing drainage and stormwater runoff paths and the aquifer recharge zone, including contamination in relation to ground water and subsurface water changes associated with the development (analysis to be consistent with the Lowndes County Unified Land Development Code, September 11, 2012, ground water recharge requirements for water resources runoff/recharge effects with limestone Karst formations).
 - *i.* Intent of the hydrology study is to gather data for the purpose of enabling an analysis of whether the planned residential construction activities would have a significant impact on the Floridan aquifer and/or sinkhole/ravine adjacent to the Site.
 - *ii. Karst formation, Site features, and nearby sinkhole/ravine should be considered in the analysis to the extent that surface drainage from the proposed development will reach the sinkhole/ravine.*

(a) Review and analysis of the existing State of Georgia Aquifer Recharge Maps showed that the maps do include Karst topography as one of the factors in identifying groundwater recharge zones. The State of Georgia prepared an <u>Aquifer Recharge Map</u> (1996) for the entire State of Georgia. Based on this map, the Val Del Road site is within the Groundwater Recharge Area for the Floridian and Jacksonian Aquifers.

The existing state maps were prepared as a supplement to the Georgia Environmental Protection District (EPD) Hydrologic Atlas 18. The Atlas 18 database identifies approximately 13,000 square miles (23 percent) of Georgia's land surface through which the most significant natural ground-water recharge occurs.

The original Georgia Geologic Survey Hydologic Atlas 18: "<u>Most Significant</u> <u>Ground-Water Recharge Areas of Georgia</u>," was published in 1989 and included mapping of the groundwater recharge areas based on rock outcrop area, lithology, soil type/thickness, slope, density of lithologic contacts, geologic structure, presence of karst, and potentiometric surfaces. (b) As identified in the Georgia Aquifer Recharge Maps and stated above; Karst topography is a factor in groundwater recharge areas.

(c) A hydrology study was performed for the proposed project relative "to the potential impact of proposed residential construction on existing drainage and stormwater runoff paths and the aquifer recharge zone".

The hydrology study for this project focused on changes to surface drainage patterns between existing and proposed conditions. Under existing conditions stormwater runoff from this site drains to wetland within the site. The wetlands will continue to receive drainage from the same adjacent land areas under proposed conditions. With the exception of a minor roadway crossing impact, the existing wetlands within the site will not be disturbed from development of the proposed homes and infrastructure.

Stormwater runoff rates from the site will be limited to rates experienced during existing conditions. Discharge rates will be controlled with detention basins and discharge control structures (specifically sized pipes, weirs, orifice plates, etc). By not changing the runoff patterns and limiting discharge rates to those in existing conditions, function of the wetlands and drainage runoff to land adjacent to the project site will not be impacted by the development.

Since existing drainage patterns are being maintained, groundwater/aquifer recharge from wetlands within the site will continue under proposed conditions. By maintaining stormwater flow to the wetlands and eventually out of the wetlands to the adjacent properties; groundwater/aquifer recharge from land adjacent to the site will also continue to occur as it does in existing conditions.

Maintaining drainage patterns to the wetlands within the site under proposed conditions will also ensure long term viability of both the wetlands and any contribution they provide to the groundwater/aquifer recharge zone.

Further supporting that this project will not impact "*existing drainage and stormwater runoff paths and the aquifer recharge zone*" is the requirement for review, approval, and permitting of this project through Lowndes County. A Stormwater Management Plan will be prepared to support permitting of this site through the Lowndes County Engineering Department. One of the items required to be addressed with the Stormwater Management Plan is drainage patterns and maintaining existing drainage patterns in proposed conditions.

Outlined in the scope for the hydrology study was confirmation that the proposed development is "consistent with the Lowndes County Unified Land Development Code (ULDC), September 11, 2012, ground water recharge requirements for water resources runoff/recharge effects with limestone Karst formations".

To address that the proposed development is consistent with the ULDC, below is an excerpt from the Lowndes County ULDC Groundwater Recharge Area Protection District Code and the corresponding applicability of the code to the proposed development:

Lowndes County Unified Land Development Code 3.03.00 Groundwater Recharge Area Protection District

Groundwater is susceptible to contamination when unrestricted development occurs within significant groundwater recharge areas.

- a. Excessive impervious surface can alter or impair their recharge characteristics thereby decreasing groundwater supplies. (The Val Del Road project will not create excessive impervious surface).
- b. Pesticides, herbicides sprayed on crops, animal waste and septic tanks effluents contribute to deterioration in the groundwater quality and can threaten the health of residents relying on well water. (*The Val Del Road project will not include crops, animal waste, or septic tanks*).
- c. Unregulated hazardous wastes. (The Val Del Road project will not generate unregulated hazardous waste).

The following land uses have specific development criteria required by the ULDC. The proposed Val Del Road housing consists of single family residential connected to a public sanitary sewer and is NOT subject to any of the specific proposed land uses listed in the ULDC. The land uses with development criteria listed in the ULDC are summarized below:

- a. New agricultural waste impoundment sites not applicable.
- b. Homes served by septic tank/drain field systems not applicable
- *c.* New mobile home parks served by septic tank/drain fields *not applicable.*
- d. New above ground chemical or petroleum storage tanks having a minimum volume of 500 gallons. *not applicable*.
- e. New facilities which handle hazardous materials, of types and in amounts regulated by Georgia DNR *not applicable.*
- f. Permanent storm water infiltration basins All basins within the proposed development will be classified as stormwater retention or detention ponds.
- g. New wastewater Treatment Basins Not Applicable.

The final scope item to be addressed relative to hydrology is any impact of surface drainage from the proposed development on the sinkhole/ravine located approximately 300 feet west of the proposed site. This is best demonstrated on the attached Sinkhole/Ravine Drainage Map. As shown on this map, the area contributing drainage to the sinkhole/ravine will be effectively unchanged with development of the proposed residential neighborhood.

A small increase in impervious area from roofs adjacent to the west property lines will be balanced by the reduced runoff from turf grass lawns relative to existing conditions ground cover. Based on these factors, the development of this site as a residential neighborhood will have no impact on the adjacent sinkhole/ravine.



ERI/GPR Geophysical Study and Analysis By TTL Inc. and Geohazards, Inc.



November 12, 2013

Woolpert, Inc. Attn.: Mr. Dave Dillow, PE, LEED AP Vice President 343 Fountains Parkway Fairview Heights, Illinois 62208

RE: Final Report of Geophysical Findings MOODY AFB - PRIVATIZED HOUSING VAL DEL ROAD SITE Valdosta, Georgia TTL Project Number 100712192

Dear Dave:

The purpose of this report is to summarize the findings and results of the geophysical investigations performed by Geohazards, Inc. and the soil test borings performed by TTL at the above referenced project site. Previous reports submitted for the project include (in chronological order):

- 1. Geohazards Investigation No. 2012705 dated November 14, 2012.
- 2. Geohazards letter regarding review of SPT borings dated February 4, 2013.
- 3. TTL Summary Report of Geophysical Findings dated February 12, 2013.
- 4. TTL Report of Subsurface Exploration and Geotechnical Evaluation dated February 21, 2013 (Revised June 28, 2013).

Initially, Geohazards Investigation No. 2012705 was performed to determine if known karst conditions would significantly impact site development. After completing the initial geophysical investigation, Geohazards recommended seven (7) standard penetration test (SPT) borings in areas of representative anomalies to further investigate the possible existence of subsurface cavities and raveled zones. The seven borings were completed by TTL in January 2013 and subsequently submitted to Geohazards for their evaluation and review. As discussed in the Geohazards February 4, 2013 letter, five of the seven borings revealed no significant loose zones or cavities in limestone. Borings B-04 and B-06, however, contained zones of soft and loose materials, the most significant of which was boring B-04. According to Geohazards, these soft and loose zones may be interpreted as being indicative of raveling into deeper cavities within the underlying limestone. These "Areas of Geotechnical Concern" identified were isolated in the northwest and north central areas of the site. Consequently, the project design team chose not to construct housing units in these areas.

Subsequent to the work described above, additional electrical resistivity imaging (ERI) and ground penetrating radar (GPR) were performed by Geohazards to further characterize the site. The results of the additional work are presented in Geohazards Investigation No. 2013356 dated November 12, 2013 (attached as Appendix A). The scope of Geohazards investigation may be summarized as follows (reference pages 1 and 2 of Geohazards report):

- A review of available geologic maps, other published data, and previous boring logs provided by TTL to establish the general probable lithology for the site of investigation.
- A reconnaissance of the site of investigation to recognize and identify surface conditions pertinent to the purpose of the investigation.
- A Ground Penetrating Radar (GPR) investigation of the site to determine evidence for the presence of anomalous subsurface features or conditions.
- An Electrical Resistivity Imaging (ERI) investigation of the site to assist in the recognition of site-specific geological conditions at the subject property and to determine evidence for the presence of anomalous subsurface features or conditions.
- A final report summarizing results and conveying professional opinions.

As anticipated, based on heavy clay soils and shallow groundwater, the GPR survey yielded limited results. With regard to the GPR signals, Geohazards indicated the depth capability at this site was variable, but was approximately 6 to 8 feet below ground based on the near surface materials (see page 4 paragraph 1).

To supplement the geophysical investigation, TTL prepared a comprehensive Geophysical Base Map showing the location of the GPR traverses, the ERI traverses (original and most recent) and soil test borings drilled at the site. Additionally, subsurface cross sections (A-A' and B-B') were prepared using the results of the seven (7) deep borings performed at the site. The base map and profiles are included in Appendix B. Detailed logs for all the borings drilled at the site by TTL have been included Appendix C for reference.

Based on the conclusions given on pages 7 and 8 of the Geohazards report, the results of the geophysical investigations may be summarized as follows:

- A large sinkhole feature and associated ravines was observed approximately one hundred yards to the west of the area surveyed. No additional geologically significant surface features were noted during our investigation.
- TTL, Inc. conducted seven SPT borings in the anomalous areas indicated by Geohazards. In the opinion of Geohazards, the materials and N-values recorded in the SPT borings were found to be in agreement with the resistivity values indicated for the associated ERI traverses. Two of the seven SPT borings were found to indicate conditions that are indicative of raveling. These two areas were further investigated with 3-D electrical resistivity imaging surveys as part of the investigation reported herein.
- Three anomalous GPR features were detected in our survey. As a group, these anomalies are relatively subtle, small in extent and isolated in

nature. GPR anomaly 1 consists of minor stacked reflectors at approximately 7 to 9 feet depth. This anomaly may possibly represent limestone rubble. GPR anomaly 1 did not correlate with any ERI anomalies.

- GPR anomaly 2 consists of disturbed sediments and dipping reflectors at approximately 0 to 9 feet depth. GPR anomaly 3 consists of stacked reflectors approximately 6 to 11 to feet depth. These two anomalies did not correlate with any ERI anomalies detected in this survey, likely due to the differences in depth and scale between the two methods, but are within the location of the eastern "area of geotechnical concern" (Area #2) based on prior investigation.
- The 2-D ERI traverses (ERI traverses 13 and 14) both indicate a somewhat variable limestone surface with a total approximate range of 55 to 90 feet depth. A vertical zone of higher resistivity materials was detected along ERI traverse 14, above an area of apparent deeper limestone. This anomaly is interpreted as possibly indicative of a raveled zone. This anomaly did not align with any anomalous GPR signals, but did align with an ERI anomaly detected in the 2012 survey. The area of this anomaly was further investigated during the 3-D ERI survey. No other significant zones of raveling or possible voids/cavities in limestone were detected along ERI traverses 13 or 14.
- The 3-D ERI data collection was oriented to further investigate portions of the western and eastern "areas of geotechnical concern" (referred to, respectively, as Areas #1 and Areas #2 in this report). The data were interpreted as generally indicative of near surface, more resistive sandy soils, overlying less resistive clayey soils. Higher resistivity values at depth in both Area #1 and Area #2 indicate a deeper upper limestone surface typically from at approximately 75 to 85 feet depth. Three anomalous areas were detected in or adjacent to the 3-D ERI Area #1, and one anomalous area was detected in or adjacent to the 3-D ERI Area #2. The three anomalies located in Area #1 consist of pockets of high resistivity materials to depths of 20 to 40 feet. These anomalies are also interpreted as zones of in-filled materials that may be indicative of a paleosink enviroment. The ERI anomaly associated with Area #2 consists of a linear N-S higher resistivity feature. This anomaly may be interpreted to be indicative of a paleosink feature but could also be interpreted as a possible in-filled paleo-channel. No other significant zones of raveling or possible voids/cavities in limestone were detected for the 3-D ERI blocks.
- Based on the results of this investigation, Geohazards, Inc. recommends that if any building construction is planned for the areas of the detected anomalies (indicated on the Site Plans) SPT borings are warranted to further investigate the possible existence of subsurface cavities and raveled zones. The borings should be completed to competent limestone. The results of the SPT borings may warrant consideration of remediation programs for any areas where limestone cavities or raveled zones are

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identified. In the areas outside of the detected anomalies the Val Del Road site appears suitable for normal residential development.

In conclusion, ERI traverse 13 was conducted along the western boundary of the proposed development, between the proposed development and the existing sinkhole to the west. Per Geohazard's findings, no significant zones of raveling or possible voids/cavities in limestone were detected along ERI traverse 13. The two areas of geotechnical concern identified in the 2012 survey were further investigated with 3-D electrical resistivity imaging surveys. The Geophysical Base Map shows the anomalies as defined by the 3-D ERI blocks. Per Geohazard's report *"No other significant zones of raveling or possible voids/cavities in limestone were detected for the 3-D ERI blocks."*.

Since correlation of the ERI data and deep SPT borings (B-01 through B-07) has been established, a significant number of ERI traverses have been completed across the site (reference Geophysical Base Map), 3-D ERI surveys have defined the anomalies in the areas of concern and structure siting is outside the identified anomalies, additional soil test borings and/or geophysical investigation are not warranted.

The construction proposed at the site is typical one and two story residential housing units. It is our understanding that construction of housing units at the site will be limited to areas outside the anomalies identified in the dense 3D ERI study noted above. An adequate buffer should be provided for building construction adjacent to the identified ERI anomalies. Based on our experience, establishing the buffer based on a 45 degree angle projected from the depth of the anomaly should be adequate. We recommend foundation design, general site preparation and site grading be performed in accordance with the recommendations presented in the geotechnical report previously submitted by TTL.

We appreciate the opportunity to work with you on this project. If you have any questions concerning this report, please do not hesitate to call.

Sincerely,

TTL, Inc.

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Michael E. McNeal, P.E. Principal Engineer Georgia Reg. No. PE013133



Matthew L. Gaston, P.E. Geotechnical Group Leader GA Reg. No. PE034150

Attachments: Appendix A - Geohazards Investigation No. 2013356 Report Appendix B - Geophysical Base Map Subsurface Profiles A-A' and B-B' Appendix C - Field Testing Procedures Legend of Symbols Subsurface Cross-Sections Boring Logs (44) November 12, 2013

Geohazards, Inc., Investigation No. 2013356

GEOPHYSICAL INVESTIGATION OF THE GEOLOGIC SUBSURFACE OF THE MOODY AIR FORCE BASE PRIVATIZED HOUSING VAL DEL ROAD, VALDOSTA, GEORGIA

INTRODUCTION

Purpose

Geohazards, Inc. was tasked by TTL, Inc. to conduct a geophysical investigation at the above referenced locality. This investigation was conducted to provide a geophysical characterization of the geological subsurface. In particular, efforts were designed to determine the presence of subsurface cavities and subsurface zones of disruption that might contribute to subsidence. Any of these conditions could be responsible for existing or potential subsidence at the site.

<u>Scope</u>

The investigation conducted and reported herein included the following:

- A review of available geologic maps, other published data, and previous boring logs provided by TTL to establish the general probable lithology for the site of investigation.
- A reconnaissance of the site of investigation to recognize and identify surface conditions pertinent to the purpose of the investigation.
- A Ground Penetrating Radar (GPR) investigation of the site to determine evidence for the presence of anomalous subsurface features or conditions.

- An Electrical Resistivity Imaging (ERI) investigation of the site to assist in the recognition of site-specific geological conditions at the subject property and to determine evidence for the presence of anomalous subsurface features or conditions.
- A final report summarizing results and conveying professional opinions.

Site Information

The geophysical field investigation was conducted on October 17-18, 21, and 23-24, 2013. The site of investigation is located west of Val Del Road, north of North Valdosta Road, Valdosta, Georgia. The area surveyed is the proposed site of a privatized housing development for Moody Air Force Base. The site is generally level and is covered in pine trees and other natural vegetation. A large sinkhole feature and associated ravines were observed approximately one hundred yards to the west of the area surveyed. No additional geologically significant surface features were noted during our investigation.

Geohazards, Inc. previously conducted a geophysical investigation at the Val Del Road property (Geohazards report #2012705, November 14, 2012) consisting of 19 electrical resistivity imaging (ERI) traverses. The ERI traverses generally indicated a level to somewhat variable layer of limestone underlying most of the surveyed areas of the site but some of the ERI traverses were indicative of a deeper or sloping limestone surface. Some of the areas interpreted as indicative of deeper limestone also involved shallower features with relatively higher resistivity materials that may be indicative of infilling. Geohazards recommended further investigation of these anomalous areas with standard penetration test (SPT) borings.

TTL, Inc. conducted seven SPT borings in anomalous areas indicated by Geohazards and then tasked Geohazards to review the results of the SPT borings. As related in a letter dated February 4, 2013, Geohazards opined that materials and N-values recorded in the SPT borings were found to be in agreement with the resistivity values indicated for the associated ERI traverses (see attached 2-D ERI profile/boring overlays). Two of the seven SPT borings were found to indicate conditions that are indicative of raveling.

TTL, Inc. further tasked Geohazards to conduct additional geophysical testing at the Val Del Road site. This further testing, detailed in this report, was designed to conduct both ground penetrating radar (GPR) and ERI along two transects on the western and northern areas of the property. In addition, two areas designated at "areas of geotechnical concern" were further investigated with quasi-3-dimensional ERI surveys in which dense parallel ERI traverses are combined into a single data block that may be processed as a 3-dimensional set of data points.

Geology

Based on map consultations and personal inspection, the surficial geologic material at the study site is the Pliocene Miccosukee Formation overlain by a thin layer of undifferentiated

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Quaternary sediments. The Miccosukee Formation is composed of grayish orange to grayish red, mottled, poorly to moderately consolidated, interbedded clay, sand and gravel of varying coarseness and admixtures.

The Miccosukee Formation unconformably overlies the Miocene Hawthorn group of geological formations. The Hawthorn group in this area includes the Coosawatchie, Marks Head, Parachucla, and Chattahoochee Formations. These generally consist of fine to medium grained, unconsolidated quartz sand, silt, and clay in varying proportions and thickness.

The Suwannee Limestone underlies the Hawthorn Group. The Oligocene Suwannee Limestone consists of a white to cream, poorly to well indurated, fossiliferous, vuggy to moldic limestone (grainstone and packstone). The dolomitized parts of the Suwannee Limestone are gray, tan, light brown to moderate brown, moderately to well indurated, finely to coarsely crystalline, dolostone with limited occurrences of fossiliferous (molds and casts) beds. Silicified limestone is common in the Suwannee Limestone. Fossils present in the Suwannee Limestone included mollusks, foraminifers, corals and echinoids. The Suwannee Limestone has experienced significant dissolution and the creation of an intricate cavernous system. Problems in the development of sinkholes are related to the size and proximity to the surface of cavities located within these two limestone formations. The upper surface of Suwannee Limestone is highly irregular.

FIELD TEST METHODS: GEOPHYSICAL SURVEY

Ground Penetrating Radar

Ground penetrating radar (GPR) is a geophysical procedure employed to detect and identify subsurface features and conditions characterized by a contrast in dielectric properties. This technique involves the transmission, from a receiver-transmitter antenna system that is pulled along the ground surface, of microwave radiation into the ground. Subsurface contrasts in the dielectric properties of varying materials present a surface from which reflections are generated. Accordingly, contacts between rock types, physical features such as cavities or disrupted sedimentary layers, and/or man-made objects such as metallic barrels or pipes cause reflections that are recorded at the surface.

The intensity of the reflected signal is affected by the contrast in dielectric properties of materials, the electromagnetic conductivity of the medium through which the waves traverse, and the frequency of the signal. Digital signals are recorded and stored in a recorder for on-site visual color display or subsequent transferal to a computer for analysis and printing. The radar survey was conducted in general accordance with ASTM Standard D6432.

A Geophysical Survey Systems, Inc., (GSSI) SIR-3000 radar system was used. This is a portable, digital radar signal recorder. A 200-megahertz transceiver antenna was used with a two-way travel time range of 200 nanoseconds. Data collection was continuous. Penetration

depths for GPR signals are a function of lithology type (greater signal attenuation in clayey materials or water saturated conditions) and frequency (greater signal attenuation in higher frequency antenna systems). Actual depths of penetration vary from site to site. Based on the near-surface materials, the depth capability at this site was approximately 6-8 feet, but actual penetration is variable.

Two GPR traverses were conducted at the Val Del Road property (see Survey Maps for locations, Table 1 for GPS coordinates). As shown on the GPR location map, these two GPR traverses followed transects cleared near the west and north boundaries of the site of investigation. GPR traverse 1 followed the western transect in a generally S-N pathway. This traverse was 1180 feet long. GPR traverse 2 followed the northern transect in a W-E pathway, across portions of the two geophysical areas of concern. This traverse was 900 feet long.

Electrical Resistivity Imaging

An electrical resistivity imaging (ERI) survey was completed for the purpose of identifying possible subsurface anomalies which may be related to karst or sinkhole activity. Electrical resistivity measurements involve the passing of an electric current underground and measuring its resistance to flow. Different earth materials (e.g. clay, sand, limestone) and subsurface cavities resist the flow of electrical current differently. Substantially greater contrasts in the degree of resistance (anomalies) are used to identify and locate boundaries among different materials as well as the presence of cavities. The ERI survey was conducted in general accordance with ASTM D6431 "Standard Guide for Using Direct Current Resistivity Method for Subsurface Investigation," as applied to a multi-electrode resistivity system.

Measurements for ERI were made with Advanced Geosciences, Inc. SuperSting R8 8channel Resistivity Meter with an incorporated switchbox and a passive electrode cable system. The resulting data were processed utilizing EarthImager 2D (a computer program that produces two-dimensional vertical cross section models of the subsurface) and EarthImager 3D (a computer program that produces a volume image displaying three-dimensional subsurface resistivity distribution). The quality of these models was assessed by root mean square (RMS) and L2 values. Color prints of the modeled ERI cross sections are included. The ERI data were collected using Dipole-Gradient and Dipole-Dipole array type sequencing. The depth limits of the modeled ERI data are primarily dependent on the type of array (Dipole-Dipole, Schlumberger, Wenner, etc.) and the total spread of the electrode array. In this case, the maximum depth is estimated at approximately 115 feet below ground surface for each of the individual traverses.

Fourteen ERI traverses were measured during this investigation at the Val Del Road site. (see Survey Maps for locations, Table 1 for GPS coordinates). Traverses 1-6 and 7-12 were arranged 20 feet apart in parallel blocks in the two areas of geotechnical concern. These traverses were each 550 feet in length. Traverses 13 and 14 generally followed the cleared transects utilized by the GPR survey; however they did deviate from the cleared path to maintain the straightness requirements of the array type. Traverse 13 and 14 were 1110 and 830 feet in

length, respectively. The endpoints of each traverse were located and field checked using a Trimble Geo-XT GPS device.

RESULTS

Ground Penetrating Radar

- 1. Ground penetrating radar (GPR) signals were interpreted as generally horizontal to irregularly-layered reflectors extending to 6-11 feet depth. Variable attenuation of the radar signal occurred throughout the Val Del Road site. This attenuation is likely attributable to the presence of near surface clayey soils or near surface water saturated conditions.
- 2. Three anomalous GPR features were detected in our survey. As a group, these anomalies are relatively minor and isolated in nature. The locations of the anomalous features are marked on the site plan map.
- 3. GPR anomaly 1 was detected from the 730 to 740 feet marks along the GPR traverse 1. GPR anomaly 1 consists of minor stacked reflectors at approximately 7 to 9 feet depth.
- 4. GPR anomaly 2 was detected from the 570 to 590 feet marks along the GPR traverse 2. GPR anomaly 2 consists of disturbed sediments and dipping reflectors at approximately 0 to 9 feet depth.
- 5. GPR anomaly 3 was detected from the 730 to 740 feet marks along the GPR traverse 2. GPR anomaly 3 consists of stacked reflectors approximately 6 to 11 to feet depth.

Electrical Resistivity

2-Dimensional Surveys

- 1. Colored prints of the modeled 2-D ERI cross sections are included. The quality of the modeled ERI cross sections is evaluated using two statistical values, root mean squares (RMS) and L2. L2 values of traverses 13 and 14 are in the range considered to be excellent and the RMS values are also considered to be satisfactory.
- 2. Due to the number of data points collected, ERI traverse 13 was subdivided into two overlapping data subsets (0-830 feet and 280-1110 feet) to facilitate processing (see attached figures).
- 3. The data collected along ERI traverse 13 were interpreted as generally indicative of near surface, more resistive sandy soils, overlying less resistive clayey soils. Higher resistivity values at depth indicate a somewhat variable upper limestone surface typically ranging from

approximately 55 to 65 feet depth. A deeper limestone zone was detected from approximately 600 to 680 feet along traverse 13. No ERI values interpreted as indicative of raveling was associated with the deeper limestone zone detected on ERI traverse 13.

- 4. The data collected along ERI traverse 14 were also interpreted as generally indicative of near surface, more resistive sandy soils, overlying less resistive clayey soils. Higher resistivity values at depth indicate a variable but deeper upper limestone surface typically ranging from approximately 60 to 90 feet depth. Deeper limestone zones were detected from approximately 60 to 240 feet and east of 440 feet along traverse 14.
- 5. A vertical zone of higher resistivity materials was detected from approximately 710 to 730 feet along ERI traverse 14, above an area of apparent deeper limestone. This anomaly is interpreted as possibly indicative of a raveled zone. No other significant zones of raveling or possible voids/cavities in limestone were detected along ERI traverses 13 or 14.

3-Dimensional Surveys

- 6. The parallel ERI traverses 1 though 6 and 7 through 12 were combined into two blocks of data for 3-D processing. Colored prints of the 3-D ERI models (contour plots and horizontal sections) are included. The RMS and L2 values of the 3-D blocks are in the range considered to be very good to excellent.
- Traverses 1 through 6 were conducted in the western "area of geotechnical concern" (Area #1) and traverses 7 through 12 were conducted in the eastern "area of geotechnical concern" (Area #2).
- 8. The data were interpreted as generally indicative of near surface, more resistive sandy soils, overlying less resistive clayey soils. Higher resistivity values at depth at both Area #1 and Area #2 indicate a deeper upper limestone surface typically from at approximately 75 to 85 feet depth.
- 9. Three anomalous areas were detected in the 3-D ERI Area #1, and one anomalous area was detected in the 3-D ERI Area #2 (see Site Plan).
- 10. ERI 3-D anomaly 1A is located in the northwest portion of Area #1. Anomaly 1A consists of a pocket of high resistivity materials to a depth of approximately 40 feet. This is interpreted as a zone of in-filled materials that may be indicative of a paleosink environment.
- 11. ERI 3-D anomalies 1B and 1C are located adjacent to the southeast and southwest portions of Area #1, respectively. Anomalies 1B and 1C consists of pockets of high resistivity materials to depths of 20 to 30 feet. These anomalies are also interpreted as zones of in-filled materials that may also be indicative of a paleosink environment.
- 12. ERI 3-D anomaly 2A is located adjacent to the eastern portion of Area #2. Anomaly 2A consists of a linear N-S higher resistivity feature. This anomaly may be interpreted to be

indicative of a paleosink feature but could also be interpreted as a possible in-filled paleochannel.

13. No other significant zones of raveling or possible voids/cavities in limestone were detected for the 3-D ERI blocks.

CONCLUSIONS

The site of investigation is located west of Val Del Road, north of North Valdosta Road, Valdosta, Georgia. The area surveyed is the proposed site of a privatized housing development for Moody Air Force Base. A large sinkhole feature and associated ravines was observed approximately one hundred yards to the west of the area surveyed. No additional geologically significant surface features were noted during our investigation.

Geohazards, Inc. conducted a previous geophysical investigation at the Val Del Road property (Geohazards report #2012705, November 14, 2012) consisting of 19 electrical resistivity imaging (ERI) traverses. Geohazards recommended further investigation of several anomalous areas with standard penetration test (SPT) borings. TTL, Inc. conducted seven SPT borings in the anomalous areas indicated by Geohazards. In the opinion of Geohazards, the materials and N-values recorded in the SPT borings were found to be in agreement with the resistivity values indicated for the associated ERI traverses. Two of the seven SPT borings were found to indicate conditions that are indicative of raveling. These two areas were further investigated with 3-D electrical resistivity imaging surveys as part of the investigation reported herein.

TTL, Inc. further tasked Geohazards to conduct additional geophysical testing at the Val Del Road site. This further testing, detailed in this report, was designed to conduct both ground penetrating radar (GPR) and 2-D and 3-D electrical resistivity imaging (ERI) surveys. This geophysical field investigation was conducted on October 17-18, 21, and 23-24, 2013.

Ground penetrating radar (GPR) signals were interpreted as generally horizontal to irregularly-layered reflectors extending to 6-11 feet depth. Variable attenuation of the radar signal occurred throughout the Val Del Road site. This attenuation is likely attributable to the presence of near surface clayey soils or near surface water saturated conditions. Three anomalous GPR features were detected in our survey. As a group, these anomalies are relatively subtle, small in extent and isolated in nature. GPR anomaly 1 consists of minor stacked reflectors at approximately 7 to 9 feet depth. This anomaly may possibly represent limestone rubble. GPR anomaly 1 did not correlate with any ERI anomalies.

GPR anomaly 2 consists of disturbed sediments and dipping reflectors at approximately 0 to 9 feet depth. GPR anomaly 3 consists of stacked reflectors approximately 6 to 11 to feet depth. These two anomalies did not correlate with any ERI anomalies detected in this survey,

likely due to the differences in depth and scale between the two methods, but are within the location of the eastern "area of geotechnical concern" (Area #2) based on prior investigation.

The 2-D ERI traverses (ERI traverses 13 and 14) both indicate a somewhat variable limestone surface with a total approximate range of 55 to 90 feet depth. A vertical zone of higher resistivity materials was detected along ERI traverse 14, above an area of apparent deeper limestone. This anomaly is interpreted as possibly indicative of a raveled zone. This anomaly did not align with any anomalous GPR signals, but did align with an ERI anomaly detected in the 2012 survey. The area of this anomaly was further investigated during the 3-D ERI survey. No other significant zones of raveling or possible voids/cavities in limestone were detected along ERI traverses 13 or 14.

The 3-D ERI data collection was oriented to further investigate portions of the western and eastern "areas of geotechnical concern" (referred to, respectively, as Areas #1 and Areas #2 in this report). The data were interpreted as generally indicative of near surface, more resistive sandy soils, overlying less resistive clayey soils. Higher resistivity values at depth in both Area #1 and Area #2 indicate a deeper upper limestone surface typically from at approximately 75 to 85 feet depth. Three anomalous areas were detected in or adjacent to the 3-D ERI Area #1, and one anomalous area was detected in or adjacent to the 3-D ERI Area #2. The three anomalies located in Area #1 consist of pockets of high resistivity materials to depths of 20 to 40 feet. These anomalies are also interpreted as zones of in-filled materials that may be indicative of a paleosink enviroment. The ERI anomaly associated with Area #2 consists of a linear N-S higher resistivity feature. This anomaly may be interpreted to be indicative of a paleosink feature but could also be interpreted as a possible in-filled paleo-channel. No other significant zones of raveling or possible voids/cavities in limestone were detected for the 3-D ERI blocks.

Based on the results of this investigation, Geohazards, Inc. recommends that if any building construction is planned for the areas of the detected anomalies (indicated on the Site Plans) SPT borings are warranted to further investigate the possible existence of subsurface cavities and raveled zones. The borings should be completed to competent limestone. The results of the SPT borings may warrant consideration of remediation programs for any areas where limestone cavities or raveled zones are identified. In the areas outside of the detected anomalies the Val Del Road site appears suitable for normal residential development.

LIMITATIONS

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While due care has been exercised in the performance of these measurements and their interpretation, Geohazards, Inc. can make no representations, warranties, or guarantees with respect to latent or concealed conditions which may exist that may be beyond the limits of detection with the methodologies used.

and the second se Douglas L. Smith, Ph.D., P.G.

Geophysicist Georgia PG # 1140

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C. Brickman Way

Geologist

GPR POINTS			ERI POINTS		
GPR 1 START (0')	30.906694719	-83.325898646	ER 1 START	30.909221987	-83.325348872
GPR 1 SECOND	30.907221603	-83.325719001	ER 1 END	30.910650414	-83.325879817
GPR 1 THIRD (345')	30.907492235	-83.326053090	ER 2 START	30.909243002	-83.325287938
GPR 1 END (1180')	30.909744615	-83.326456833	ER 2 END	30.910672464	-83.325806505
GPR 2 START (0')	30.910022639	-83.326256437	ER 3 START	30.909266503	-83.325219797
GPR 2 SECOND	30 910560755	-83 325263196	FR 3 FND	30 910693653	-83 325749492
	20.010628086	03.323203190		20.000271592	02.225745452
GPR 2 THIRD (500)	30.910038080	-83.324789780	ER 4 START	30.909271582	-83.325108033
(655')	30.910828734	-83.324423526	ER 4 END	30.910708164	-83.325693159
GPR 2 END (900')	30.910838816	-83.323654815	ER 5 START	30.909298671	-83.325104474
			ER 5 END	30.910723049	-83.325629147
			ER 6 START	30.909316870	-83.325051217
			ER 6 END	30.910734378	-83.325570645
			ER 7 START	30.910554232	-83.325037527
			ER 7 END	30.910523209	-83.323293912
			ER 8 START	30.910605879	-83.325042314
			ER 8 END	30.910570161	-83.323296250
			ER 9 START	30.910658259	-83.325044030
			ER 9 END	30.910618818	-83.323295711
			ER 10 START	30.910703727	-83.325057186
			ER 10 END	30.910675720	-83.323304704
			ER 11 START	30.910771699	-83.325050676
			ER 11 END	30.910731838	-83.323303627
			ER 12 START	30.910822066	-83.325047862
			ER 12 END	30.910786028	-83.323282270
			ER 13 START	30.906586721	-83.325894258
			ER 13 END	30.909728445	-83.326453393
			ER 14 START	30.910043613	-83.326256822
			ER 14 END	30.910856313	-83.323819113

Table 1: GPS coordinates (decimal degree format)

























P.O. Box 14566 Gainesville, FL 32604 (352) 371-7243 1-800-770-9990 Fax: (352) 371-4410

DRAWN: T.G.								
FILENAN	1E:	Val	Del	ERI-GPR	Maps.DWG			
SHEET	1	O	-	1				

VAL DEL ROAD

VALDOSTA, GEORGIA






































B.T. = BORING TERMINATED A.R. = AUGER REFUSAL

1,2								
200 1,4								A
00	20 0	40	60	80	100	120	140	160
scale: 1" = 200'	TTL PROJECT NO: 100712192		WOOLPERT, INC.					
DRAWING TITLE: Cross Se	ection A-A'							
DATE CREATED: DATE REV 11/06/2013 N	ISED: REVISION NUMBER:		EB - PRIVATIZED HO	OUSING				
DRAWN BY: mjc	СНЕСКЕД ВҮ: МЕМ				geotechnica	🔹 analytical	• materials •	environmental
APPROVED: Michael E. McNeal, P.E.					4589 Val North Valdosta, GA 3	n Drive 31602		Ph 229.244.8619 Fax 229.245.8170
SHEET NUMBER: 1 (of 2							www.ttlinc.com



FIELD TESTING PROCEDURES

Soil Test Borings (ASTM D 1586)

The borings were advanced by hollow stem auger drilling methods. At the desired depths drilling was stopped and the kelly-drive was disconnected from the auger stems, leaving the stems in the borehole. The sampling tools were then inserted to the bottom of the hole through the hollow stem augers. Soil samples were obtained with a standard 1.4 inch I.D., 2.0 inch 0.D., split-tube sampler.

Split-tube sampling operations and standard penetration tests were typically performed at $2\frac{1}{2}$ foot intervals in the upper 10 feet and at 5 foot intervals thereafter. The sampler was first seated 6 inches to penetrate any loose cuttings and then driven an additional 12 inches with blows from a 140 pound hammer falling 30 inches. The number of blows required to drive the sampler the final 12 inches is designated as the standard penetration resistance (N-value). When properly evaluated it may be used as an index to the soil strength, density and ability to support foundations.

LEGEND OF SYMBOLS

Soil (USCS Classification)

1		
8	GW	W ELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
0000	GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
90.00	GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
00000	GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	sw	W ELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	SM	SILTY SANDS, SAND - SILT MIXTURES
	sc	CLAYEY SANDS, SAND - CLAY MIXTURES
	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	мн	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
	сн	INORGANIC CLAYS OF HIGH PLASTICITY
	он	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
50 10 10 10 10 10 10 10 10 10 10 10 10 10 1	РТ	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
		a construction of the second









NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS





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expressed or imp plied) and copies of such informat tion All intormation (written or electronic) from TTL concerning TTL's work is for the s received by any third parties are NOT for reliance unless TTL first receives a ed 5 ndary Client. TL's client. TTL extends no thin Agreement from the third party



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				Valdos	sta, GA						Pa	ge 1 o	vf 1	
	Drilling Co.:	TTL, I	Inc.	TTL Project No.:	100712	192		Remarks: Water not enco	ountere	d at time	e of dri	lling.		
	Driller:	R. Be	ll	Date Drilled:	1/14/20	13								
	Logged by:	J. Cro	osby	Boring Depth:	85 feet									
	Equipment:	CME	550X	Boring Elevation:	155 fee	t								
	Hammer Type	: Auton	natic	Coordinates: Not Ava	ilable									
	Drilling Method	d: Rotary	y Wash w/Mud											
	DEPTH (ft) ELEVATION (ft)	GRAPHIC LOG USCS LASSIFICATION	MATERIA	LS DESCRIPTION	AOISTURE (%)	PPV (tsf)	ТҮРЕ	SAMPLE N-COUNT 9 pt 0: 9 pt 0: RQD	STANE	A DARD PI (t	ENETF blows p	RATION per foot	N TEST	DATA
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Ŋ	15 140	SM	Firm gray clayey	medium to fine SAND				13 - 15 - 17 N = 32 11 - 12 - 13			-			
CH LC	- 20	SC	Very firm gray sil	ty medium to fine SAND	<u>''</u> 			N = 25 3 - 9 - 6		\prec				
EOTE	25 - 130 -	СН	Firm gray clayey	medium to fine SAND with Limestone pieces				N = 15 10 - 13 - 15			>			
003_G	- 30	///	Very stiff gray tar	n fine sandy FAT CLAY				7 - 8 - 11 N = 19		•				
sport:2	- 35	СН	Very hard green	gray sandy silty FAT CLAY				18 - 30 - 31 N = 61						61
3 R	- 40	<u> </u>						N = 97/11" 50/5"						97/11" (50/5" (
11/7/1	- 45	SC	SAND	n clayey medium to fine				N = 50/5" 29 - 50/5"						50/5"
			Very stiff green o					N = 50/5" 35 - 14 - 29						50/5
SS.GP					/3			N = 43 28 - 46 - 50/4"						06/10"
IG LOC			CLAY with	Weathered Limestone				N = 96/10" 36 - 42 - 50/4"						90/10 92/10"/
BORIN								15 - 17 - 23						
12192			WEATHERED L	IMESTONE	_			50/4" N = 50/4"						50/4"
-1007-								50/1" N = 50/1"						50/1"
AL DEL	- 85 70							50 - 50/1" N = 50/7"					 	50/7"
	90 - 65 -		Boring ter	rminated at 85.0 feet.									<u> </u>	
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This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

	gentechnics	7	TL Batterials - savin	omcotal	MOODY	WOOLPER Y AFB - PRIVATIZED HO	rt, INC. Using	VAL DI	EL R	OAD SITE	L	_OG (DF B(B-02	ORIN	١G
-						Valdosta	a, GA					Pa	age 1 o	f 1	
	Drillir	ig Co.:		TTL, li	nc.	TTL Project No.:	100712	192		Water not encoun	tered at	time of d	rilling.		
	Drille	r:		R. Bel	1	Date Drilled:	1/15/20	13							
	Logg	ed by:		J. Cro	sby	Boring Depth:	100 fee	t							
	Equip	oment:		CME 5	550X	Boring Elevation:	154 fee	et							
	Ham	ner Ty	pe:	Autom	atic	Coordinates: Not Availa	able								
	Drillin	g Meth	nod:	Rotary	Wash w/Mud		1								
	DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS CLASSIFICATION	MATERIA	LS DESCRIPTION	MOISTURE (%)	PPV (tsf)	ТҮРЕ	SAMPLE DA	ATA ANDARI	D PENET (blows	RATION per foot	1 TEST	DATA
	_	150-		SM	TOPSOIL: 6 Inch	es /	-			4 - 5 - 6 N = 11	- IŬ				Ĩ
	- 5 -	1/10		SC		fine SAND /	-			3 - 5 - 7 N = 12	-	•			
	- 10 -	145		SM	Firm orange gray	r clayey medium to fine / 	-			4 - 9 - 10 N = 19 12 - 18 - 17			▶		
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1 HO	- 20	-130-			Very loose gray of with Weath	layey medium to fine SAND / ered Limestone pieces				N = 4 29 - 30 - 39					69
GEOTI	- 25	-125-			Very dense greer	n gray clayey medium to fine	-			2 - 4 - 2 N = 6					
2003	- 30	-120-			IIpieces		-			3 - 10 - 12 N = 22					
eport	- 35 -	-115-		Сн	SAND					N = 47 22 - 50/5"					50/5"
13 R	- 40	-110-			SAND					N = 50/5" 23 - 39 - 50/5"					00/14
11/7/	- 45 -	-105-			Hard to very hard	I green gray silty FAT CLAY	-			N = 89/11" 24 - 50/3"					50/3"
	- 50	-100-		СП	very hard green					N = 50/3 50/4"					50/4"
SS.GP	- 55	95 -	00 05 00 00 00 00 00 00 00 00				-			7 - 10 - 17					
	65	90 -	5 - CH Very stiff gre 0 - CH Very hard gr 5 - CH Very hard gr 0 - WEATHERE 0 - CH WEATHERE				-			N = 27 8 - 27 - 50/3"					77/0"
BORIN	- 00	- 85 -	0 - CH Very hard gre							N = 77/9" 50/0" N =					1115
2192	75	80 -			WEATHERED LI	MESTONE	-			50/5" N = 50/5"					50/5"
10071	- 80 -	- 75 -								24 - 50/1" N = 50/1"					50/1" •
	00	- 70 -								50/5" N = 50/5"					50/5"
AV YC	- 90 -	65 -								12 - 42 - 50/2"					92/8"
IOOM	- 95 -	60 -								50/4"					50/4"
12192	_100_	55 -								50/0" N =					
/1007	-105-	- 50 -			Boring terr	ninated at 100.0 feet.									
NICAL		45 -													
TECH	-115-	40 -													
SGEC	-120-	35 -													
	-125-	- 30 -													
OUECT	-130-	25 -													
12/PR	-135-	_ 20 _													
TS/20	-140-	15 -													
COLEC	-145-	- 10 -													
R:\PF		5 -													

This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

	TTL	MOODY	WOOLPER AFB - PRIVATIZED HO	RT, INC. USING V	VAL DI	EL RO	DAD SITE		LO	G O E	F B(3-03	ORIN	IG
	generality - conjunt - metallity - contrained		Valdosta	i, GA						Pag	je 1 o	f 1	
	Drilling Co.: T	TL, Inc.	TTL Project No.:	100712	192		Remarks: Water not enco	ountered	l at time	e of dril	ling.		
	Driller: R	R. Bell	Date Drilled:	1/16/20	13								
	Logged by: J.	. Crosby	Boring Depth:	90 feet			Lost drilling mu	d tempo	orarily a	t 20'.			
	Equipment: C	CME 550X	Boring Elevation:	154 fee	t								
	Hammer Type: A	utomatic	Coordinates: Not Availa	ble									
	Drilling Method: R	otary Wash w/Mud											
	DEPTH (ft) ELEVATION (ft) GRAPHIC LOG	MATERIA MATERIA	LS DESCRIPTION	OISTURE (%)	PPV (tsf)	ТҮРЕ	SAMPLE N-COUNT	DATA STAND	ARD PE	ENETR blows p	ATION er foot)	I TEST	DATA
E		조제 \TOPSOIL: 6 Inch	es /	Σ			% REC 2 - 3 - 4	10	<u>20</u>	30) 4(0 50	0
2 BORING LOGS.GPJ 11/7/13 Report:2003_GEOTECH_LOG	$\begin{array}{c} 5 \\ -150 \\ -10 \\ -145 \\ -15 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -10 \\ -16 \\ -10 \\$	SM TOPSOIL: 6 Inch. SC COASTAL PLAIN to fine SANI Tofine SANI SM Dense tan gray clay Dense tan gray silty Dense gray silty SC Very loose gray clayey CH Very stiff gray silty CH Hard gray green s CH Very stiff gray silty CH Very stiff gray silty CH Hard gray green s CH Very hard gray green s CH Very dense green s SC Very dense green gray s	es / / / / / / / / / / / / / / / / / / /	33			$\begin{array}{c} 2 - 3 - 4 \\ N = 7 \\ 5 - 6 - 9 \\ N = 15 \\ 17 - 20 - 22 \\ N = 42 \\ 14 - 19 - 25 \\ N = 44 \\ 18 - 20 - 26 \\ N = 44 \\ 18 - 20 - 26 \\ N = 44 \\ 18 - 20 - 26 \\ N = 44 \\ 18 - 20 - 26 \\ N = 44 \\ 18 - 20 - 26 \\ N = 49 \\ 50 - 20 \\ N = 10 \\ 7 - 9 - 10 \\ N = 10 \\ 7 - 9 - 10 \\ N = 10 \\ 7 - 9 - 10 \\ N = 10 \\ 7 - 9 - 10 \\ N = 10 \\ 7 - 9 - 10 \\ N = 50 \\ $						50/3" • 50/4" • 68 • 50/5" • 50/1" •
AL DEL/10071219:	80 - 75 - 80 - 75 - 75 - 75 - 75 - 75 - 70 - 70 - 7	CH Very hard green of Very hard green of Very hard gray sil	yray silty FAT CLAY ty FAT CLAY				12 - 32 - 50/5" N = 82/11" 16 - 47 - 50/0" N = 27 - 50/3" N = 50/3"						3 2/11" •
R:/PROJECTS/2012/PROJECT FILES GEOTECHNICAL/100712192 MOODY V	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Boring ten	minated at 90.0 feet.				50/4" N = 50/4" - - - - - - - - - - - - - - - - - - -						50/4" •

	perfectulari - analytical	7/		MOODY	WOOLPE AFB - PRIVATIZED H	ERT, INC. OUSING	VAL D	EL F	ROAD SITE		L	DG C)F B(B-04	ORIN	IG
					Valdos	sta, GA			Dementer			Pa	ge 1 c	of 1	
	Drilling Co.	: 77	L, In	С.	TTL Project No.:	100712	192		Water not end	countere	ed at tin	ne of dri	lling.		
	Driller:	R.	Bell		Date Drilled:	1/22/20	13								
L	ogged by:	J.	Cros	by	Boring Depth:	115 fee	t								
E	Equipment:	CN	ΛE 5	50X	Boring Elevation:	148 fee	t								
+	lammer Ty	ype: Au	itoma	atic	Coordinates: Not Avai	ilable									
C	Drilling Met	hod: <i>Ro</i>	tary N	Nash w/Mud											
	DEPTH (ft) ELEVATION (ft)	GRAPHIC LOG	ASSIFICATION	MATERIA	LS DESCRIPTION	IOISTURE (%)	PPV (tsf)	ТҮРЕ	SAMPLI N-COUNT	STAN	A DARD I	PENETF (blows p	RATION per foot	N TEST)	DATA
E				TOPSOIL: 6 Inch	es	≥			% REC 2 - 2 - 3	1	10 2	20 3	04	0 5	0
	5 + 145-		SC	COASTAL PLAIN	I: Loose tan gray silty				N = 5 2 - 4 - 4	\vdash					
E	10 - 140-		SM	Loose tan gray cl	ayey medium to fine SAND	.',]			N = 8 7 - 7 - 9 N = 16						63
	15 - 135-		SM	Very dense tan g	ray silty medium to fine	, T			18 - 28 - 35 N = 63						
	20 - 130-		SM	Very dense purple	e silty medium to fine SAND	27			18 - 26 - 34 N = 60		-	\sim			
	25 <u>+</u> 125-		SM	Dense purple silt	y coarse to fine SAND	-			N = 19 21 - 18 - 13				•		
	30 + 120-		SM	Very loose purple	gray tan silty medium to	-			N = 31 WOH - WOH - WOH	-	\square				
DU11200	35 - 115-		sc	Very loose green	gray clayey medium to fine	78			N = WOH WOH - WOH - WOH						
Repo	40		CH	Firm green gray s	andy silty FAT CLAY	~			WOH - 2 - 3 N = 5	\rightarrow					
1113	45		сн	Very soft green g	ray sandy silty FAT CLAY	-			WOH - WOH - WOH N = WOH	\leftarrow					
÷ [50		CH	Stiff green gray s	andy silty FAT CLAY	-			4 - 5 - 10 N = 15		┝				
GPJ	55 - 95 -		SC	Loose green gray SAND	clayey medium to fine	-			3 - 3 - 2 N = 5	$\left \leftarrow \right $					
0712192 BORING LOGS	60		CH	Firm to stiff greer	n gray silty FAT CLAY				2-4-5 N = 9 4-5-6 N = 11 6-7-8 N = 15 WOH-3-3 N = 6						
ELVIO	80 + 70 -		СН	Firm green gray s	andy silty FAT CLAY				2-3-3 N=6	┝┥					
VALE	85								3-4-4 N=8	┝┥					
	90 - 60 -		CH	Firm to stiff greer	n silty FAT CLAY				5-4-5 N=9	\vdash	-				
192 M(95								N = 8	⊢•	-				
0712 [.]			СН	Very hard green g with Weather	gray sandy silty FAT CLAY ered Limestone pieces				N = 56						>
			СН	Very stiff green g	ray sandy silty FAT CLAY]			o - o - o N = 16 50/1						
NHU (110 - 40 -			WEATHERED LI	MESTONE	1			N = 50/7"						50/7" (
EOTE	15	┋╧╼╧┥		Boring terr	ninated at 115.0 feet.	_			N = 50/7"						50/7" (
LESG															
	125														
PROJE	130														
2012/F	135														
ECTS/	140 - 10 -														
PROJE	45														
" E	<u> </u>														

	gentechnia	al - anatyrital -	TL.	omental	MOOD	WOOLPE Y AFB - PRIVATIZED HC	RT, INC. DUSING	VAL D	EL RO	DAD SITE		LO	g oi E	F B(3-05	ORIN	١G
						Valdost	a, GA						Pag	je 1 o	f 1	
	Drilli	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	192		Remarks: Water not end	countere	d at time	of drilli	ing.		
	Drille	r:		R. Bel	1	Date Drilled:	1/17/20	13		_						
	Logg	ed by:		J. Cro	sby	Boring Depth:	140 fee	t		Lost 100% of	drilling r	nud at 11	5'.			
	Equi	oment:		CME	550X	Boring Elevation:	149 fee	t		Borehole wou Driller attemp	Id not stated to ex	ay open a ttend bori	after dri ng to c	illing n	nud lost tent	t.
	Ham	mer Ty	pe:	Autom	natic	Coordinates: Not Availa	able			Limestone wir extended to a	thout SP a depth o	T samplin f 140' wit	ng. The h interr	e borin mittent	g was harder	r
	Drillir	ng Meth	nod:	Rotary	Wash w/Mud	1				layers being e Limestone lay	encounte /er was r	ered. A de not appar	finitive ent to t	comp his de	etant pth.	
		z		NO						SAMPL	E DAT	A				
	TH (ft	ATIOI ft)	OB	SCS	MATERIA	I S DESCRIPTION	JRE		ш	N-COUNT	STAN			ΔΤΙΩΝ	ITEST	
	DEP	ELEV	GRA	USSIF			OIST((%)	PPV (tsf)	Ľ∠⊢	34 6 7 7 1 8 6 34 7 7 7 1 8 6 008	_	(bl	ows pe	er foot))	Dittit
E		Ē	- The state of the	5		es /	Σ			% REC	1	0 20	30	4	05	50
E	- 5 -	-145	/////			V: Very loose gray silty	-			N = 4 6 - 9 - 10		_				
	- 10 -	-140		<u>`_ѕм</u>	Firm tan gray cla	yey medium to fine SAND	-			N = 19 10 - 8 - 6			\rightarrow	>		
E	- 15 -	-135-	訪訪	SM SM	, Firm gray silty me	edium to fine SAND	-			N = 14 14 - 18 - 17 N = 25			\triangleleft			
	- 20 -	-130-		 	Very firm purple	silty medium to fine SAND				N = 35 10 - 13 - 9 N = 22						79
HE H	- 25 -	-125-			Very dense purpl	e silty medium to fine SAND	-			20 - 37 - 42 N = 79			_			
	- 30 -				Firm gray sitty FA		-			7 - 6 - 2 N = 8						
2003	25	± 					-			2 - 2 - 3 N = 5						
eport:	- 35 -	E 					-			N = 19 12 - 26 - 29				/	/	
13 R	- 40 -	-105-					-			N = 55 6 - 7 - 7						
11/7/1	- 45 -						_			N = 14 6 - 18 - 21			\triangleleft			
Ē	- 50 -			СН — — — —			_			N = 39 3 - 5 - 6			7	>		
S.GPJ	- 55 -	95 -		СН	Firm to stiff greer	n gray silty FAT CLAY				N = 11 2 - 3 - 3		•				
	- 60 -	90 -								N = 6						
RING	- 65 -	=- 85 - E		СН	Stiff green gray s	ilty FAT CLAY 				N = 15		•	-			
92 BC	- 70 -	- 80 -		СН	Very hard green	gray silty FAT CLAY				N = 95						95 •
07121	- 75 -	- 75 -								N = 59			-			-
EL/10	- 80 -	- 70 –		СН	Very stiff green g	ray silty FAT CLAY				9-9-9 N = 18			\neg	_		
VALE	- 85 -	<u>-</u> 65 -		СН	Very stiff green g	ray silty FAT CLAY with				8-9-9 N = 18		┝──∳┼╴	\rightarrow			
	- 90 -	<u>-</u> 60 –		СН	Very hard green	gray silty FAT CLAY with				23 - 29 - 50/3" N = 79/9"						79/9" (
92 MC	- 95 -	<u>-</u> 55 –		СН	Hard green gray	sandy silty FAT CLAY	1			6 - 17 - 18 N = 35			-+	-		
7121	-100-	- 50 -		СН	Stiff to very stiff g	reen gray sandy silty FAT	-			6 - 10 - 19 N = 29				′		
	-105-	- 45 -	////		pieces					4 - 6 - 9 N = 15		+				
HNIC	-110-	<u>-</u> 40 –		СН	Very stiff green g	ray sandy silty FAT CLAY	-			3 - 7 - 11 N = 18						
OTEC	-115-	- 35 -		 СН	Stiff green gray s	ilty FAT CLAY with balck				4 - 7 - 5 N = 12						
S GE(-120-	- 30 -		<u> </u>	and tan Sar	nd /				·						
	-125-	25 -														
DJEC	-130-	20 -														
2\PR(-125-	 15 -														
S/201	140	- - - 10 -														
DIECT	- 140-	5 -			Boring terr	minated at 140.0 feet.										
R:/PR(- 145-	Ē -														

	mestechni	71	7 L		MOODY	WOOLPE AFB - PRIVATIZED H	ERT, INC OUSING	Val di	ELI	ROAD SITE		LC	DG C)F B(B-06	DRIN	١G
						Valdos	sta, GA						Ра	ge 1 c	if 1	
	Drilli	ng Co.:		TTL, li	п с .	TTL Project No.:	100712	2192		Remarks: Water not end	ountere	d at tin	ne of dri	lling.		
	Drille	er:		R. Bel	1	Date Drilled:	1/21/20	013								
	Logg	ed by:		J. Cro	sby	Boring Depth:	123.5 f	eet		Lost 100% of	drilling r	nud at	120'.			
	Equi	pment:		CME 5	550X	Boring Elevation:	148 fee	et		Borehole woul Boring termina	ld not sta ated at 1	ay opei 123.5'.	n after o Compet	Irilling n ant Lim	nud los iestone	t. e not
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Avai	ilable			encountered to	o this de	epth.				
	Drillir	ng Meth	nod:	Rotary	Wash w/Mud											
	(jj	Z	U	NOIL				1	_	SAMPLE	DAT	Α				
	PTH (CVATIO	RAPHI LOG	JSCS	MATERIA	LS DESCRIPTION	TURE ()	עסס	ЫП	N-COUNT	STAN	DARD I	PENETI	RATION	√ TEST	DATA
	DE		9	CLASS			SIOM	(tsf)	Ł	৺ ন জ 	1	0 2	(DIOWS)	50
Ē	-			SM	TOPSOIL: 6 Inch	es	7			2 - 3 - 5 N = 8	Í					<u>~</u>
E	5 -	E_140-		<u>sc</u>	COASTAL PLAIN /□\ medium to f	I: Loose brown gray silty ïne SAND	/			3 - 6 - 6 N = 12		•		•		
Ē	10 -			<u> SM</u> 	Firm tan gray clay	yey medium to fine SAND	1			13 - 19 - 14 N = 33				\rightarrow		
	15 -	135-			Dense to very de	nse purple silty medium to	J			12 - 13 - 23 N = 36			\leftarrow			
<u>S</u> E	20 -	130-]	fine SAND					10 - 11 - 10 N = 21				•		
	25 -	125-		sc	Very loose tan gr	ay clayey medium to fine	32			12 - 15 - 17 N = 32	-		[
	- 30 -	-120-		 СН	Firm gray sandy s		_			N = 3	\square			<u> </u>	<u> </u>	
2003	- 35 -	-115-								N = 6 WOH - WOH - 5						
titt	40	-110-					_			N = 5 9 - 12 - 15					ĺ	
13 R	40 -			CIT	Very still to hard					N = 27 10 - 14 - 20				K		
11/7/1	45 -	-100-			+		_			N = 34 8 - 10 - 12				\mathbf{r}		
Ē	50 -	- 95 -		СН	Very stiff to hard	green gray silty FAT CLAY				N = 22 10 - 14 - 23						
GPJ	55 -									N = 37				\triangleright		
LOGS	60 -	= ⁹⁰								N = 24						
SING	65 -	- 85 -		СН	Very stiff green g	ray silty FAT CLAY with				8 - 10 - 11 N = 21			-			
2 80	70 -	<u></u> 80 −		sc	Firm green gray of	clayey medium to fine	-			5 - 8 - 9 N = 17		\vdash				
71219	- 75 -	<u> </u>		СН		Weathered Limestone	1			9 - 12 - 17 N = 29				<u> </u>		
	- 80 -	- 70			Stiff to very stiff g	reen gray silty FAT CLAY				6 - 11 - 10 N = 21				L	<u> </u>	<u> </u>
	85 -	65 -								3 - 5 - 8 N = 13						
	. 00	_ 60 -								7 - 11 - 15 N = 26						
IOOM	05	- 55 -			Stiff green grav s		_			WOH - WOH - 15					ĺ	
2192	95 -	_ 50 -			Weathered		_			N = 15 8 - 8 - 26						
10071	100-	- 45 -		СН — — —	Hard green grays		_			N = 34 7 - 9 - 9				\geq		
CALM	105-	<u> </u>		СН	Very stiff green g Weathered	ray tan silty FAT CLAY with Limestone pieces				N = 18 18 - 28 - 45		•	-			
	110-	25		СН	Very hard green g	gray tan silty FAT CLAY				N = 73						73
EOTE	115			СН	Very stiff to hard	green gray tan silty FAT	7			N = 49						
ES G	120-	30 -					$ \rightarrow $			48 - 18 - 4 N = 22			•	\vdash		$\left - \right $
CTFIL	125	25 - E			Boring terr	ninated at 123.5 feet.										$\left - \right $
SOLE	130-	20 -	-													
112\PF	135-	15 -													ļ	\parallel
TTS/20	-140-	- 10	-												<u> </u>	
OJEC	145-	- 5 -														
R:\PR		<u> </u>	-													

	gentectuic	T.	7	neincomental	MOOD	WOOLPE Y AFB - PRIVATIZED HO	RT, INC. DUSING	VAL D	EL	ROAD SITE		LC	DG C)F B(B-07	ORIN	NG
-						Valdos	ta, GA			Domorko			Pa	ge 1 o	/f 1	
-	Drillin	ng Co.		11L, 1	Inc.	TTL Project No.:	100712	2192		Water not er	ncountere	ed at tim	ne of dri	lling.		
+	Drille	er:		R. Be		Date Drilled:	1/19/20	013								
-	Logg	ed by:		J. Cro	osby	Boring Depth:	140 fee	et		Competant li	mestone	e not enc	countere	ed to 14	10'	
	Equi	oment	:	CME	550X	Boring Elevation:	148 fee	et								
	Ham	mer T	ype:	Auton	natic	Coordinates: Not Avail	able									
	Drillir	ng Met	thod:	Rotary	/ Wash w/Mud											
	DEPTH (ft)	elevation (ft)	GRAPHIC LOG	USCS	MATERIA	LS DESCRIPTION	DISTURE (%)	PPV (tef)	ЧРЕ	N-COUNT	E DAT	TA IDARD F	PENETI (blows p	RATION per foot	N TEST	DATA
		± "		5		00	₩ Z		-	RQD % REC	1	10 2	03	04	05	50
Ē	- 5 -	145 [.]		SM		I: Firm brown tan silty	-			N = 13 6 - 6 - 7						
	- 10 - 15	140 ⁻		<u>. SM</u> SM	Very firm purples	ty SAND				N = 13 13 - 17 - 15 N = 32 10 - 15 - 15						
FOG	- 20	-130-		SM	Very firm purple t	an silty coarse to fine	-			N = 30 12 - 13 - 12 N = 25						
TECH	- 25 -	-125 	111	СН	<u>SAND</u> Stiff to very stiff g	ray sandy silty FAT CLAY	-			13 - 13 - 13 N = 26		-				
GEO	- 30	120 ·								N = 19 5 - 6 - 9						
rt:2003	- 35 -	<u></u> 115∙								N = 15 5 - 6 - 7						
Repo	- 40	110·								N = 13 4 - 6 - 10 N = 16		\downarrow				
7/13	- 45 -	-105 		SC	Firm gray clayey	medium to fine SAND	-			5 - 7 - 10 N = 17						
÷	- 50 -	<u></u> _100∙	1	СН	Very stiff green s	andy silty FAT CLAY	-			8 - 10 - 13 N = 23			-	<u> </u>		
GPJ	- 55 -	95 ·		СН	Stiff green sandy	silty CLAY	_			3 - 5 - 6 N = 11						
OGS.	- 60 -	90 ·		SC	Firm green claye	y medium to fine SAND	29			4 - 6 - 8 N = 14						
RING	- 65 -	=_ 85 ·		СН	Stiff to firm green	sandy silty CLAY				2 - 5 - 5 N = 10		¥				
92 BOI	- 70 -	- 80 ·								3 - 3 - 5 N = 8	+					
07121	- 75 -	- 75 ·								3-3-3 N=6						
EL/10	- 80 -	/0 ·		SM	Firm to very firm	gray silty SAND with Clay	_			5 - 10 - 13 N = 23			-			
VALD	- 85 -	65 ·								7 - 8 - 10 N = 18			r 			
¥ a c c a c c a c a c a c a c a c a c a c a c a c a c	- 90 -	00 ·		SC	Very loose to loos medium to f	se gray green clayey fine SAND				4 - 4 - 5 N = 9		\leftarrow				
192 M(- 95 -	50								N = WOH	\sim					
00712	-100-									4-5-5 N = 10	$ \models $	•				
CALVI	-105-	± 40		<u>//</u>						N = 7	-					
CHN	-110-	40 		СН	Firm to stiff greer	n gray sandy silty FAT CLAY				N = 11						
3EOTE	-115-	= 30 ·								N = 14						
ILLES (-120-	25								N = 29 7 - 10 - 14			\rightarrow			
ECT F	-125-	20 ·								N = 24 9 - 10 - 16			$\left \left(\right) \right $			
VPROJ	-130-	= -° - 15 -								N = 26 7 - 5 - 7						
\$\2012	-135-	10 ·								N = 12 5 - 8 - 12						
UECT	-140-	5			Boring terr	minated at 140.0 feet.				N = 20						
R:/PRC	-145-	<u> </u>														

	gentecknic	71		onmental	MOODY	WOOLPE Y AFB - PRIVATIZED H	ERT, INC OUSING	Val de	EL F	ROAD SITE		L	DG C)F B(B-08	ORII	NG
						Valdos	ta, GA			Demodes			Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, In	IC.	TTL Project No.:	100712	2192		Water record	countere	ed at tin	ne of dr	illing.	n	
	Drille	r:		R. Bell		Date Drilled:	1/25/20	013		1/28/2013.		cicvati			511	
	Logg	ed by:		J. Cros	sby	Boring Depth:	20 feet									
	Equip	oment:		CME 5	50X	Boring Elevation:	149 fee	et								
	Ham	mer Ty	pe:	Automa	atic	Coordinates: Not Avail	lable						▼	Delaved	water le	evel.
	Drillin	ig Meth	iod:	Hollow	Stem Auger								-			
	(ft)	NO	2	ATION				1		SAMPL	E DAT	Α				
	HTH	EVATI (ft)	RAPH LOG	USCS SIFIC/	MATERIA	LS DESCRIPTION	sture (%)	PPV	Ч	N-COUNI	STAN	DARD	PENET	RATION	N TEST	DATA
	D		Ū	CLAS			NOIS	(tsf)	È	RQD % REC	1	0 2	20 3	6 4	, 0 ;	50
			• • • • • • •		TOPSOIL: 8 Inch											
-				SM	medium to f	fine SAND				3 - 4 - 5 N = 9						
g				sc	Loose tan gray cl	ayey medium to fine SAND	-									
TECH_LO	 5	- 145-					Ţ			3 - 3 - 5 N = 8						
GEO							_					\mathbb{N}				
rt:2003				SM	SAND	e gray slity mealum to fine				5 - 12 - 11 N = 23						
Repo																
7/13		-140-]						11 - 19 - 23				\square		
ŧ	— 10 —									N = 42					•	
GPJ				1												
OGS.																
RING																
92 BOI		-135-								9 - 19 - 25 N = 44						
071219	— 15 —									N - ++					-	
EL/10]											/	
VALD																
Лаос				SM	Firm gray silty me	edium to fine SAND, Wet	-									
192 M(-130-								5 - 7 - 6 N = 13						
00712	— 20 —		<u>r 1 1 1 1</u>	1	Boring ter	minated at 20.0 feet.	-					•				
ICAL/1																
ECHN																
GEOT			-													
=ILES		-125-	-													
JECT	— 25 —		1													
2\PRO			1													
S\201;		- -	1													
DIECT		400	1													
R:\PR(- 120-	1													

ſ						WOOLPEI	RT, INC.					L	DG C)F B	ORII	NG
		71			MOOD	Y AFB - PRIVATIZED HO	USING	VAL D	EL R	OAD SITE				B-09)	
	gentechnici	el + analyfical +	materiala - anvit	onmental		Valdost	a, GA						Ра	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	192		Remarks: Water not en	countere	ed at tin	ne of dri	illing.		
	Drille	r:		R. Be	11	Date Drilled:	1/25/20	013		Water record 1/28/2013.	ed at an	elevati	on of 14	13.3 fee	t on	
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	147.5 fe	eet								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Availa	able						T	Dolovod	wator	avel.
	Drillin	ig Meth	nod:	Hollow	v Stem Auger								<u> </u>	Delayeu	water it	evel.
	(f t)	NO	Q	NOIT				1		SAMPL	E DAT	Α				
	EPTH (EVATI (ft)	RAPH	USCS	MATERIA	ALS DESCRIPTION	TURE %)	PPV	ЪЕ	N-COUNT	STAN	DARD I			I TEST	DATA
	DE	ELE	Ū	CLAS			SIOM	(tsf)	È	RQD % REC	1	0 2	100ws 100ws	6 4) .0 !	50
			<u></u>		TOPSOIL: 8 Inch	ies										
				SIVI	medium to	fine SAND				2 - 4 - 4 N = 8						
		-145-		1							•					
LOG				SC- CH	Loose gray purpl SAND, We	e tan clayey medium to fine t	•			1 - 2 - 3						
TECH	- 5 -									N = 5					ļ	
GEO																
rt:2003					Eirm to very firm	grav silty medium to fine	-			6 - 9 - 12 N = 21						
Repo				SIVI	SAND, We	t							T			
/7/13										6 - 10 - 9						
÷	— 10 —									N - 13		-				
GPJ																
LOGS																
RING																
192 BC										7 - 8 - 5 N = 13						
00712	— 15 —											•				
DELVI																
Y VAL		-130-														
MOOD				SP	Firm gray silty m	edium to fine SAND										
12192										5 - 7 - 6 N = 13						
1007			_		Boring ter	rminated at 20.0 feet.										
INICAL			-													
DIECH		-125-	_													
S GEO			-													
	— 25 —		_												<u> </u>	
SOJEC		 	1													
012\PF			1													
ECTS/2			1													
PROJE		[]													
2		· · ·	1												1	1

	gentechnics	7 1	TL.	amental	MOOD	WOOLP Y AFB - PRIVATIZED F	ERT, INC. IOUSING	VAL D	EL	ROAD SITE		L	OG C)F B(B-10	ORIN	IG
	Drillin			ττι			sta, GA			Remarks:			Ра	ge 1 o	1	
	Drille	r.		R Ba	//c. //	Data Drillad:	1/05/00	192		Water not end Water record	countere ed at an	ed at tin elevati	ne of dri ion of 14	illing. 14.9 fee	t on	
		ed by:		.I. Cro	" oshv	Boring Depth:	20 feet	13		1/28/2013.						
	Fauir	oment [.]		CMF	550X	Boring Elevation:	147 5 6	aat								
	Ham	ner Tv	ne.	Auton	natic	Coordinates: Not Ava	ailahle	561								
	Drillin	a Meth	od:	Hollov	v Stem Auger								Ţ	Delayed	water le	vel.
	~	z		NO						SAMPLI	E DAT	Ά				
	DEPTH (ft	ELEVATIO (ft)	GRAPHIC LOG	USCS ASSIFICAT	MATERIA	ALS DESCRIPTION	DISTURE (%)	PPV (tsf)	ТҮРЕ	N-COUNT ^{19 ts} ^{34 0} ^{29 d}	STAN	DARD	PENETI (blows p	RATION per foot	I TEST	DATA
-			<u> <u> 1</u>/2 <u>1</u>/2 <u>1</u>/2 <u>1</u>/2</u>	5	TOPSOIL: 8 Incl	nes	Ŭ			% REC	1	0 2	20 3	04	0 5	0
ŋ		 		SM	COASTAL PLAI medium to	N: Very firm gray silty fine SAND	Ţ			8 - 11 - 17 N = 28			•			
DTECH_LO	 - 5			•						8 - 11 - 16 N = 27						
Report:2003_GE(140		SM	Very dense gray	silty medium to fine SAND				6 - 20 - 30 N = 50						
11/7/13		 		•						11 - 22 - 31 N = 53						
12192 BORING LOGS.GPJ	 	 - 135 		SM	Firm to very firm SAND, We	gray silty medium to fine				10 - 16 - 13 N = 29						
12192 MOODY VAL DEL/1007		 		•						4 - 10 - 8 N = 18						
LES GEOTECHNICAL/1007		 - 125			Boring te	rminated at 20.0 feet.										
JECT FIL	— 25 —		-													
ROJECTS/2012/PRO	 	120 <i></i>	-													
R:\P			1													

	gentechnics	77		comental	MOOD	WOOLPERT, INC. Y AFB - PRIVATIZED HOUSING VAL DEL ROAD SITE								LOG OF BORING B-11					
+	-					Page 1 of 1													
╞	Drillin	Drilling Co.: I I L, Inc.			TTL Project No.:	100712	2192			Water not enc	ed at time of drilling.								
+	Driller: R. Bell					Date Drilled: 1/25/2013					1/28/2013.								
+	Logged by: J. Crosby				osby	Boring Depth:													
+	Equipment: CME S			CME	550X	Boring Elevation:	n: 149 feet												
+	Hammer I ype: Automatic					Coordinates: Not Availa					Ţ	Delayed	water le	vel.					
+	Drillin	g Meth	iod:	Hollow	v Stem Auger														
	DEPTH (ft)	MATERIATION ELEVATION (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			MATERIA	ALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	ТҮРЕ		SAMPLE N-COUNT	STANDARD PENETRATION TEST DA (blows per foot)				DATA			
F			<u> <u> </u></u>		TOPSOIL: 6 Inch	es			+		% REC		02	20 3	04	05	0		
OTECH_LOG	 	- - 		SM	COASTAL PLAI medium to	ASTAL PLAIN: Loose tan gray silty medium to fine SAND					3 - 3 - 4 N = 7	•							
					Loose to firm tan SAND	gray clayey medium to fine	Ţ				3 - 3 - 5 N = 8								
eport:2003_GEC			(/, , , , , , /, /, /, /, /, /, /, /, /,								3 - 7 - 12 N = 19								
11/7/13 R	 - 10			SM	Very firm gray sil	ty medium to fine SAND					9 - 12 - 15 N = 27								
2192 BORING LOGS.GPJ	 	 		SM	Very firm purple	silty medium to fine SAND	_				9 - 13 - 12 N = 25								
OODY VAL DEL/10071	 			SM	Loose purple silt	y medium to fine SAND,	_												
2192 M		-130-			vvet						2 - 4 - 6 N = 10		/						
/10071	— 20 —				Boring te	rminated at 20.0 feet.	1						•						
FILES GEOTECHNICAL	 	 	-																
ECT F	— 25 —		-																
:\PROJECTS\2012\PROJ	 		-																
	gentectule	77 al - analytical -	ZZ nateriala - navine	inmentàl	MOOD	WOOLF Y AFB - PRIVATIZED F	PERT, INC HOUSING	VAL D	EL	ROAD SITE		L	og c)F B(B-12	ORIN	IG			
-------------------------	------------------------------------	-------------------------	--------------------------	----------------------	---	------------------------------------	----------------------	--------------	------	------------------------	------------------------	-------------------------	------------------------	---------------------	------------	------			
$\left \right $	D.:					Valdo	osta, GA			Domortico			Pa	ige 1 o	f 1				
$\left \right $	Drillin	ng Co.:		1 TL, 1	nc.	TTL Project No.:	100712	2192		Water not Water rec	encounte orded at a	ered at ti an elevat	me of dr tion of 14	illing. 47.4 fee	t on				
$\left \right $	Drille	r:		R. Be		Date Drilled:	1/23/20)13		1/28/2013									
╞	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet												
╞	Equip	oment:		CME	550X	Boring Elevation:	150.5 f	eet											
$\left \right $	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Ava	ailable						Ţ	Delayed	water le	vel.			
	Drillin	ig Meth	od:	Hollow z	/ Stem Auger					CAM		ТЛ							
	DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS LASSIFICATIO	MATERIA	ALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	N-COUNT		NDARD	PENET (blows)	RATION per foot	I TEST	DATA			
ł			<u></u>		TOPSOIL: 8 Inc	hes			+	% REC		10	20 3	<u>04</u>	<u>U 5</u>	υ			
		 		SM	COASTAL PLAI medium to	N: Very loose gray silty fine SAND	_			3 - 3 - 1 N = 4									
DTECH LOG	 - 5			SM	Firm to very firm Firm to very firm medium to	tan gray orange silty fine SAND	<u>¥</u>			3 - 6 - 10 N = 16									
Report:2003_GEC										4 - 11 - 17 N = 28									
11/7/13 F	 10			SM	Very firm gray si	ilty medium to fine SAND				11 - 13 - 14 N = 27									
2192 BORING LOGS.GPJ				 	Very firm to den fine SAND	se purple silty medium to				17 - 19 - 22 N = 41									
192 MOODY VAL DEL/10071				•						9 - 13 - 14 N = 27					7				
LES GEOTECHNICAL/100712	- 20 		<u></u>		Boring te	erminated at 20.0 feet.							-						
OJECTS/2012/PROJECT FI	— 25 — - - - -		-																
R:/PR	_		-																

_																
	aastackeir	71	Z		MOODY	WOOLPE Y AFB - PRIVATIZED HC	RT, INC. DUSING	VAL D	EL F	ROAD SITE		L	og (DF B B-13	ORII }	NG
						Valdost	a, GA						Pa	age 1 c	of 1	
	Drillin	ng Co.:		TTL, li	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tir	me of di	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/23/20	013		Water record 1/28/2013.	led at an	elevat	ion of 1	46 feet	on	
	Logg	ed by:		J. Cro	sby	Boring Depth:	20 feet									
	Equip	oment:		CME \$	550X	Boring Elevation:	150 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Availa	able						_			
	Drillin	ig Meth	nod:	Hollow	Stem Auger	1							<u> </u>	Delayed	water le	evel.
		z	0	NOL						SAMPL	E DAT	Ά				
	TH (f	/ATIO (ft)	APHIC	SCS	MATERIA	LS DESCRIPTION	URE		Ц	N-COUNT ಹ	STAN	DARD	PENET	RATIO	N TES	Γ DATA
	DEF	ELEY	GR	U ILASSI			AOIST (%)	PPV (tsf)	TYF	gg pg 24	-		(blows	per foot)	
-		-150-	NIZ NIZ		TOPSOIL: 4 Inch	es /	-			% REC	1		<u>20 (</u>	30 4	<u>;0 </u> ;	50
-				Sivi	COASTAL PLAIN medium to f	I: Loose brown tan gray silty fine SAND				3 - 2 - 4						
				1						N = 6	•					
g				SM	Firm gray silty me	edium to fine SAND										
CH_LC							<u> </u>			6 - 7 - 8 N = 15		$\left \right $				
EOTE	- 5 -	-145-														
003_G				SM	Very firm tan gray	y silty medium to fine SAND	-			11 - 11 - 12						
sport:2										N = 23						
3 8				SM	Very firm purple s	silty medium to fine SAND,	-									
11/7/1					WCl					9 - 12 - 12 N = 24						
	— 10 —	-140-											1			
SS.GP.																
0 FOG													l			
SORIN				SC	Firm tan silty clay	ey medium to fine SAND	-						/			
2192 E		405								5 - 7 - 8 N = 15						
10071	- 15	- 135-														
LDEL																
AV VC																
MOOM										3 - 5 - 6						
12192	- 20									N = 11						
1007					Boring ter	minated at 20.0 feet.						-				
INICAL			_													
DIECH			_													
S GEO			_													
	- 25		_													
OTEC			_													
112\PR			_													
CTS/20			_													
ROJEC			_													
R:\Pi																1

	geolectule	at - anatyriteat -	TL.	toomeeta	MOOD	WOOLPE Y AFB - PRIVATIZED HC	rt, Inc. Using	VAL DI	EL F	COAD SITE		L	og c)F B(B-14	ORII	١G
						Valdost	a, GA			Demoder			Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	192		Water record	countere	ed at tin	ne of dr	illing. 17 8 foc	at on	
	Drille	r:		R. Be	//	Date Drilled:	1/23/20	13		1/28/2013.		cicvati		1.0100		
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	152 fee	et								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Availa	able						▼	Delaved	water le	evel.
	Drillin	ig Meth	nod:	Hollow	/ Stem Auger											-
	(#)	N	<u>0</u>	ATION				1		SAMPL	E DAT	Ά				
	HTH	EVATI (ft)	RAPH LOG	USCS SIFIC/	MATERIA	ALS DESCRIPTION	sTURE %)	PPV	ЪП	N-COUNI	STAN	DARD I	PENET	RATION	N TEST	DATA
	D		Ū	CLAS			SIOM	(tsf)		RQD % REC	1	0 2	20 3	io 4	, 0 (50
			<u></u>	×	TOPSOIL: 8 Inch											
				SM	to fine SAN	ID				1 - 3 - 4 N = 7						
CH_LOG		- ·		sc sc	Loose gray red o	range clayey medium to fine	22 ¥			1 - 2 - 3 N = 5						
03_GEOTE	— 5 — - -			 SM	Dense gray red o	prange silty medium to fine	_			11 - 13 - 17						
Report:20		—145- -		·		silty medium to fine SAND	_			N = 30						
11/7/13	 - 10	- ·		Sivi						13 - 18 - 18 N = 36						
NG LOGS.GPJ		140 <i>_</i> _		· · ·			_									
712192 BORI	 15	- ·		SM	Firm purple gray Wet	slity medium to fine SAND,				6 - 10 - 5 N = 15						
DV VAL DEL/100		_ 135		· · · ·												
12192 MOO				SC- CH	Firm tan gray cla	yey medium to fine SAND				4 - 5 - 7 N = 12						
-/1007	20				Boring te	rminated at 20.0 feet.						-				
FILES GEOTECHNICAL	 		-													
PROJECT	- 20		-													
R:/PROJECTS/2012/		— 125 – –	-													

_																
		71	74		MOOD	WOOLPE Y AFB - PRIVATIZED HO	rt, Inc. Dusing	VAL DI	EL R	OAD SITE		L	og c)F B(B-15	ORII	NG
						Valdos	ta, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	192		Remarks: Water not en	countere	ed at tir	me of dri	illing.		
	Drille	r:		R. Be	11	Date Drilled:	1/23/20	013		Water record 1/28/2013.	led at an	elevat	ion of 14	15.6 fee	et on	
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	150 fee	et								
	Ham	mer Ty	pe:	Autom	natic	Coordinates: Not Avail	able						•	Dalamad		
	Drillin	ig Meth	iod:	Hollow	/ Stem Auger								<u> </u>	Delayed	water	evel.
	ft)	NO	U	TION				1		SAMPL	E DAT	Α				
	PTH (EVATIO (ft)	RAPHI	USCS	MATERIA	ALS DESCRIPTION	TURE ()		Ы	N-COUNT	STAN	DARD	PENETI	RATIO		DATA
	DE	Ë	5	CLASS			SIOM	(tsf)	≽⊢	ਦ ਨੇ ਲੋ <u>RQD</u> % REC	1	0 3	(biows p) .0 !	50
				SM		nes	~									
					medium to	fine SAND				2 - 2 - 5 N = 7						
										N - 7	•					
LOG				SC	Loose tan gray c	layey medium to fine SAND	_			5 - 4 - 4						
HOE	5						⊻			N = 8						
GEO												\setminus				
t:2003				SM	Very firm red gra	y orange clayey silty fine SAND				7 - 15 - 15 N = 30						
Repor							_									
7/13				SM	SAND	gray sitty medium to line				8 - 12 - 13						
Ę	— 10 —	-140-								N = 25			┝			
GPJ																
-OGS.													\langle			
RING				SC-	Firm gray tan cla	yey medium to fine SAND	-						1			
92 BO				СН						6 - 7 - 8 N = 15						
07121	- 15	-135-										+				
DEL/10																
LVAL																
1000																
2192 N										4 - 5 - 6 N = 11						
10071	— 20 —	-130-			Boring ter	rminated at 20.0 feet.						•				
VICAL/																
TECHN																
GEO																
	- 25															
OJECT																
12\PR			-													
STS/20		Ļ -	_													
ROJEC			-													
R:\Pi													1			

	gentectule	T - anatylical -	TL naterials - envire	mental	MOODY	WOOLPE Y AFB - PRIVATIZED HO	RT, INC. DUSING	Val de	EL F	ROAD SITE		LC	DG C)F B(B-16	ORI	١G
	· · · ·					Valdos	ta, GA			Domorko:			Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, Ir	1C.	TTL Project No.:	100712	2192		Water not en	countere	ed at tin	ne of dri	illing. 17 feet (n	
	Drille	r:		R. Bell		Date Drilled:	1/25/20)13		1/28/2013.		oloruu				
	Logg	ed by:		J. Cros	sby	Boring Depth:	20 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	152 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Avail	able						▼	Delayed	water le	evel.
	Drillin	ng Meth	nod:	Hollow	Stem Auger								-			
	ОЕРТН (ft)	LEVATION (ft)	GRAPHIC LOG	USCS ASSIFICATION	MATERIA	LS DESCRIPTION	NISTURE (%)	PPV (tof)	γpe	SAMPLI N-COUNT	STAN	DARD I	PENETI (blows p	RATION per foot	N TEST	DATA
		ш.	N4 N4 N	CLA	TODCOIL + 0 Inch		M M	(151)		RQD % REC	1	0 2	0 3	<u>04</u>	<u>0 5</u>	50
-		- 150-		SM	COASTAL PLAIN to fine SAN	N: Loose gray silty medium D				6 - 3 - 5 N = 8	•					
OTECH_LOG	 - 5	- ·		SM	Very firm gray sill	ty medium to fine SAND	Ţ			9 - 10 - 12 N = 22			•			
Report:2003_GE		- 145-		 sc	Dense tan gray c	layey medium to fine SAND				11 - 19 - 17 N = 36						
11/7/13 F	 - 10			SM	Very firm gray sil	ty medium to fine SAND				11 - 11 - 13 N = 24			-			
92 BORING LOGS.GPJ	 			SC- CH	Loose to firm gra	y tan clayey medium to fine	_			3 - 5 - 7 N = 12						
00DY VAL DEL/1007121	— 15 — 	 135								2						
2192 M										4 - 5 - 5 N = 10						
10071	- 20	+ .			Boring ter	minated at 20.0 feet.	-					•				
FILES GEOTECHNICALVI	 		-													
DJECT		Ļ.														
:\PROJECTS\2012\PRC			-													

	geolectulca	71	nateriala - savine	encetal	MOODY	WOOLPEI (AFB - PRIVATIZED HO	rt, INC. Using	VAL DI	ELI	ROAD	SITE		LC	DG O)F B(B-17	ORIN	IG
+	D					Valdost	a, GA				market			Pa	ge 1 o	f 1	
+	Drillin	ig Co.:		TTL, I	nc.	TTL Project No.:	100712	192			ater not enci ater recorde	ountere d at an	d at tim	ne of dri on of 14	lling. 6 feet c	on	
+	Drille	r:		R. Be		Date Drilled:	1/25/20	13		1/	28/2013.						
+	Logge	ed by:		J. Cro	osby	Boring Depth:	20 feet										
	Equip	oment:		CME	550X	Boring Elevation:	150 fee	t									
	Hamr	ner Ty	pe:	Auton	natic	Coordinates: Not Availa	able								Delayed	water le	vel.
	Drillin	g Meth	iod:	Hollow	/ Stem Auger		1										
	DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS	MATERIA	LS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	2	SAMPLE COUNT	STANE		PENETF (blows p	RATION per foot)	I TEST	DATA
ŀ		—150—	<u>vu</u> <u>vu</u> v	0	TOPSOIL: 8 Inch	es				70	0 REC	1	0 2	0 3	0 4	05	0
-				SM	COASTAL PLAIN to fine SAN	I: Loose gray silty medium D				2 - N	- 4 - 6 = 10	•	,				
TECH_LOG	 	 		SM	Very firm tan gray	silty medium to fine SAND	⊥			4 - N	10 - 15 = 25			•			
Report:2003_GEC										10 - N	12 - 17 = 29						
11/7/13				SM	SAND, Wet	y slity medium to fine				10 - N	11 - 10 = 21						
RING LOGS.GPJ	 	 		SW-	Very firm purple (gray well graded SAND with	_										
00712192 BO	 - 15			SM	Silt, Wet		18			9 - N	13 - 14 = 27						
DY VAL DELVI	 	 			+								/				
712192 MOC				SC	Loose purple tan	sity clayey fine SAND				2 - N	- 4 - 6 = 10						
FILES GEOTECHNICAL/1007			-		Boring ter	minated at 20.0 feet.											
R:\PROJECTS\2012\PROJECT	— 25 — - -	- 125 	-														

	acolectoir.	71		amental	MOOD	WOOLPE Y AFB - PRIVATIZED HO	ERT, INC. OUSING	VAL D	ELI	ROAD SITE		L	og ()F B B-18	ORIN }	NG
						Valdos	ta, GA						Pa	ige 1 d	of 1	
	Drillin	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	2192		Remarks: Water not er	countere	ed at tii	me of dr	illing.		
	Drille	r:		R. Be	11	Date Drilled:	1/23/20	013		Water record 1/28/2013.	led at an	elevat	tion of 1	50.5 fee	∍t on	
	Logge	ed by:		J. Cro	osby	Boring Depth:	25 feet									
	Equip	oment:		CME	550X	Boring Elevation:	155 fee	et								
Ī	Hamr	ner Ty	pe:	Auton	natic	Coordinates: Not Avai	lable						_			
	Drillin	g Meth	nod:	Hollow	v Stem Auger								<u> </u>	Delayed	water le	evel.
	t	z	0	NOL						SAMPL	E DAT	Ά				
	EPTH (f	EVATIC (ft)	ZAPHIC LOG	USCS	MATERIA	ALS DESCRIPTION	TURE %)	PP\/	ΡE	N-COUNT	STAN	DARD	PENET	RATIO	N TEST	DATA
	DE		5	CLAS			NOIS	(tsf)	Ł			0	(DIOWS)		.) 10 !	50
Ī			<u> </u>		TOPSOIL: 8 Inch	hes						ľ			Ĭ	
-				SM	COASTAL PLAII medium to	N: Very loose gray silty fine SAND				3 - 1 - 1 N = 2						
TECH_LOG	 	 		SC	Firm gray orange	e clayey medium to fine	 Ţ			3 - 7 - 6 N = 13						
port:2003_GEO										3 - 6 - 9 N = 15						
11/7/13 Re	 - 10	 		SM	Dense purple gra	ay silty medium to fine	_			11 - 16 - 23 N = 39						
RING LOGS.GPJ		 		 	Firm purple gray	silty coarse to fine SAND,	_									
100712192 BO	 — 15 —				Wet					7 - 10 - 9 N = 19						
DODY VAL DELY				SC-	Very loose gray of	clayey medium to fine SAND	_									
0712192 M	 - 20			СН						2 - 2 - 2 N = 4						
FILES GEOTECHNICAL/10	 	 								2 - 2 - 2 N = 4						
R:/PROJECTS/2012/PROJECT	— 25 — - - -				Boring te	rminated at 25.0 feet.					•					

	geolectule	7 1	TL Batterials - savin	amental	MOOD	WOOLPE Y AFB - PRIVATIZED HO	RT, INC. DUSING	VAL D	EL	ROA	D SITE		L	OG (DF B B-19	ORII)	١G
	· · · ·					Valdos	ta, GA				Domorko			Pa	age 1 d	of 1	
	Drillin	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192			Water not enco Water recorde	ountere	ed at tir	me of di	rilling. 50 4 fee	et on	
	Drille	r:		R. Be	11	Date Drilled:	1/23/20	013			1/28/2013.	a at a	olova		00.110		
	Logg	ed by:		J. Cro	osby	Boring Depth:	25 feet										
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	et									
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Avail	able							▼	Delaver	l water le	امريد
	Drillin	g Meth	iod:	Hollow	/ Stem Auger									<u> </u>	Doidyot		
	(H)	N	Q	NOIL						-	SAMPLE	DAT	Ά				
	PTH (EVATI (ft)	RAPH	USCS	MATERIA	ALS DESCRIPTION	TURE ()		Щ		N-COUNT	STAN	DARD	PENET	RATIO	N TEST	DATA
	DE	ELE	9	CLASE			MOIS	(tsf)	≥		デーズ あ <u>RQD</u> % REC		10	(DIOWS		.) 10 I	50
ľ			<u> </u>		TOPSOIL: 8 Inch	nes											
				SM	COASTAL PLAIN medium to	N: Very loose brown silty fine SAND					2 - 1 - 2 N = 3						
ECH_LOG		 150		sc	Very loose gray of fine SAND,	orange clayey medium to Wet	<u>¥</u> 26			WOH	H - WOH - WOH N = WOH						
ort:2003_GEOTE	— 5 — - - - -	 	(), , , , , , , , , , , , , , , , , , ,	sc	Firm tan gray cla	yey medium to fine SAND					5 - 9 - 11 N = 20						
11/7/13 Rep	 — 10 —	 145		 	Very dense gray Wet	silty medium to fine SAND,					19 - 30 - 32 N = 62						62
DRING LOGS.GPJ				SC-	Very loose gray o	clayey medium to fine	_										
- DEL/100712192 BC	 - 15			СН	SAND, we	t					6 - 1 - 3 N = 4						
0712192 MOODY VAI	 - 20	 		 SC- СН	Very loose gray of with Limest	Clayey medium to fine SAND one pieces	_			wo	DH - WOH - 2 N = 2	•					
GEOTECHNICAL/10		 		 	Loose gray silty of	clayey medium to fine SAND	_										
FILES		-130-	//////////////////////////////////////								2 - 4 - 6 N = 10						
ROJECTS/2012/PROJECT	— 25 — - - - - - -	 	<u>+ </u>		Boring ter	rminated at 25.0 feet.							•				
R:\PI																	

	genterbuler	7 2	L Batterialt - savin	onmentäl	MOOD	WOOLP Y AFB - PRIVATIZED H	ERT, INC.	VAL D	EL RO	DAD SITE		LC	DG O)F B(B-20		NG
	Drillir	na Co.:			nc		100712	102		Remarks:			Tu	gere	, ,	
	Drille	r:		R. Bel	//	Date Drilled	1/23/20	132		Water not en Cave-in reco	countere rded at a	d at tim n eleva	e of dri tion of <i>'</i>	lling. 153.7 fe	eet on	
	Logg	ed by:		J. Cro	sby	Boring Depth:	25 feet			1/20/2013.						
ŀ	Equip	oment:		CME	550X	Boring Elevation:	154 fee	t								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Ava	ailable	-								
	Drillin	ig Meth	nod:	Hollow	Stem Auger								题	Cave-in	depth.	
		z	0	NOL						SAMPL	E DAT	A	_			
	DEPTH (fl	ELEVATIO (ft)	GRAPHIC LOG	USCS	MATERIA	ALS DESCRIPTION	DISTURE (%)	PPV (tef)	гуре	1st 6" 3rd 6" 3rd 6"	STAN	DARD F (PENETF blows p	RATION per foot	N TES ⁻)	T DATA
			<u> </u>	C		265	N N			RQD % REC	1	0 2	03	04	0	50
-				SM	COASTAL PLAI fine SAND	N: Firm gray silty medium to				10 - 9 - 3 N = 12		•				
OTECH LOG	 - 5			SC	Firm gray orange SAND	e clayey medium to fine				3 - 5 - 6 N = 11						
Report:2003_GE	 			SM	Very firm to dens to fine SAN	se purple gray silty medium ID, Wet				11 - 14 - 15 N = 29						
11/7/13	 — 10 —									10 - 15 - 17 N = 32				•		
AL DEL/100712192 BORING LOGS.GPJ	 - 15 	 - 140 		SC- CH	Very loose to loo medium to	ise green gray clayey fine SAND				2 - 3 - 3 N = 6	-					
NICAL\100712192 MOODY V	 - 20	 								WOH - 2 - 2 N = 4						
ROJECT FILES GEOTECH	 - 25	 		SC- CH	Firm green gray SAND Boring te	clayey medium to fine				4 - 6 - 8 N = 14						
R:/PROJECTS/2012/F		 	-													

	gentechnic	T - saatylitest -	TL.	onmeetal	MOOE	WOOLPI DY AFB - PRIVATIZED H	ERT, INC OUSING	VAL D	EL	ROAD SITE		LC	DG C)F B(B-21	ORIN	١G
+						Valdos	sta, GA						Pa	ge 1 o	f 1	
-	Drillir	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	2192		Water not en	countere	ed at tim	ne of dri	lling.	ot on	
	Drille	r:		R. Be	11	Date Drilled:	1/24/20	013		1/28/2013.	ueu al a			143.3 16		
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	et								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Avai	ilable									
	Drillin	g Meth	nod:	Hollov	v Stem Auger								驖	Cave-in	depth.	
	(ŧ)	NO	<u>ں</u>	NOIT				1		SAMPL	E DAT	Α				
	DEPTH (ELEVATI (ft)	GRAPH LOG		MATERI	ALS DESCRIPTION	MOISTURE (%)	PPV (tsf)	TYPE	N-COUNT	STAN		PENETF (blows p	RATION per foot	N TEST)	DATA
ŀ			<u> \\ /</u>	1	TOPSOIL: 8 Inc	hes				/inco			0 3	0 4	0 6	
		·	 	SM	COASTAL PLA fine SANE	IN: Firm gray silty medium to				3 - 4 - 7 N = 11		÷				
DTECH_LOG	 — 5 —	150		SM	Loose gray orar SAND	nge silty medium to fine	14			3 - 4 - 5 N = 9						
eport:2003_GE		- ·		SM	Firm gray tan si	Ity medium to fine SAND	_			6 - 7 - 12 N = 19						
11/7/13 F	 - 10	— 145 –		SM	Very firm gray t SAND, W	an silty medium to fine et				9 - 14 - 15 N = 29						
2192 BORING LOGS.GPJ		_ _ 140 <i>_</i> _		SM	Firm purple gra Wet	y silty coarse to fine SAND,	_			7 - 10 - 5 N = 15						
MOODY VAL DEL/100712	— 15 — - - - -			SC	Loose gray clay	ey medium to fine SAND	_									
12192		135-					33			3 - 5 - 5 N = 10						
11007	20				Boring to	erminated at 20.0 feet.										
FILES GEOTECHNICAL		- 	-													
LECT	- 25	-	1													
ECTS/2012/PRO			_													
R:\PROJE		—125-	-													

	geolocitale	7 2	TL.	nmental	MOODY	WOOLF Y AFB - PRIVATIZED H	PERT, INC HOUSING	VAL D	EL F	COAD SITE		L	og c)F B(B-22	DRIN	NG
						Valdo	osta, GA						Pa	ge 1 c	if 1	
	Drillir	ng Co.:		TTL, Ir	1C.	TTL Project No.:	100712	2192		Remarks: Water not er	countere	ed at tir	ne of dr	illing.		
	Drille	r:		R. Bell		Date Drilled:	1/24/20	013		1/28/2013.	ied at an	elevat	ION OF 14	18.5 166	ton	
	Logg	ed by:		J. Cros	sby	Boring Depth:	20 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	153.5 f	eet								
	Ham	mer Tyj	pe:	Autom	atic	Coordinates: Not Ava	ailable						•	Deleved		
	Drillin	ig Meth	iod:	Hollow	Stem Auger								<u> </u>	Delayed	water is	evei.
	ft)	NO	U	NOIT						SAMPL	E DAT	Ά				
	PTH (VATIO (ft)	LOG	ISCS	MATERIA	LS DESCRIPTION			ш	N-COUNT	STAN	DARD	PENET	RATIO	N TEST	T DATA
	DEI	Ш	98–	CLASS			LSIOM	(tsf)	Σ	₩ k k	-		(blows j	per foot)	-0
F			<u> </u>		TOPSOIL: 8 Inch	es				70 NEC			20 3			
				SM	COASTAL PLAIN medium to f	I: Very loose gray silty fine SAND				2 - 2 - 2 N = 4						
TECH_LOG	 	150 		sc	Firm orange tan o SAND	clayey medium to fine	 			6 - 7 - 8 N = 15						
ort:2003_GEO				sc	Firm orange gray	clayey medium to fine				3 - 5 - 6 N = 11						
11/7/13 Rep		145 		 	Very firm to dens	e purple gray silty medium D Wet				9 - 14 - 16 N = 30						
12192 BORING LOGS.GPJ	- 10 	 				2,				12 - 14 - 17 N = 31						
OODY VAL DEL/1007	 	 		SC-	Firm gray clayey	medium to fine SAND								~		
192 M				СН						2 - 6 - 5 N = 11						
100712	- 20	 			Boring ter	minated at 20.0 feet.						é	1			
T FILES GEOTECHNICAL/I	 - 25	 	-													
DJECTS/2012/PROJEC	 	 	-													
R:\PR(-													

_																
	asalastala	71	74		МОО	WOOLPE DY AFB - PRIVATIZED H	ERT, INC. OUSING	VAL DI	EL R	OAD SITE		LC	DG C)F B(B-23	ORIN	١G
						Valdos	sta, GA						Pa	ge 1 o	of 1	
	Drillir	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	192		Remarks: Water not er	ncountere	ed at tin	ne of dri	lling.		
	Drille	r:		R. Be	11	Date Drilled:	1/24/20	13		Water record 1/28/2013.	ded at an	i elevati	on of 15	51.7 fee	t on	
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	t								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Avai	lable						•	Deleved		
	Drillin	ng Meth	nod:	Hollow	v Stem Auger								<u> </u>	Delayed	water le	evel.
	ft)	NO	U	NOIL						SAMPL	E DAT	Ά				
	PTH (EVATIO (ft)	(APHI LOG	USCS	MATER	RIALS DESCRIPTION	TURE ()		ЫП	N-COUNT	STAN	DARD F	PENETI	RATION	TEST	DATA
	DE	ELE	5	CLASS			NOIS N	(tsf)	≽⊢	৺ ম জ 		10 2	(DIOWS P) 0 F	50
Ī			<u><u><u></u> <u></u> <u></u></u></u>	<u>×</u>	TOPSOIL: 9 In	iches								<u> </u>	<u> </u>	
Ī				SM	fine SAN	AIN: Firm gray silty medium to D	_			5 - 6 - 10 N = 16						
							⊥ Ţ			N - 10		•				
LOG		150		SC	Firm gray clay	ey medium to fine SAND				2 4 9						
ECH	_ 5 _	_ 150-					15			N = 12						
GEOT	- 5 -			· 								$\left[\right]$				
:2003		L .		SC	Very firm gray	clayey medium to fine SAND				6 - 12 - 16 N = 28						
Report		L .		× •	+		_									
7/13				SM	Very firm purp SAND	le gray silty medium to fine				10 - 14 - 12						
11/7	- 10									N = 26						
LL I				-												
DGS.G													/			
ING LO							_									
2 BOR		-140-		CH	SAND	sen clayey medium to fine				3 - 3 - 6						
71219:	- 15									N = 9	-					
EL/100												Ν				
/AL DI												$ \rangle$				
, YOO				 	Very firm gray	green clayey medium to fine	-									
92 MC		-135-		СН	SAND					4 - 9 - 12 N = 21		$ \rangle$				
07121	- 20				Boring	terminated at 20.0 feet.	-			11 21			•			
CALVIC			-													
CHNI			-													
GEOTE			-													
ILES (-130-	-													
IECT F	- 25	+ -	1													
PRO			1													
S\2012		+ -	1													
DUECT			1													
R:\PR(- 125-]													

	geolechulci	7 2		onmental	MOOD	WOOLPE Y AFB - PRIVATIZED HO	RT, INC DUSING	VAL DI	EL F	ROAD SITE		LC	DG C)F B(B-24	ORII	NG
						Valdos	ta, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	2192		Remarks: Water not er	countere	ed at tin	ne of dri	lling.		
	Drille	r:		R. Be	11	Date Drilled:	1/24/20	013		Water record 1/28/2013.	led at an	elevati	on of 14	16.7 fee	et on	
	Logg	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	et								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Avail	lable						-			
	Drillin	ig Meth	iod:	Hollow	v Stem Auger								<u> </u>	Delayed	water I	evel.
F	t)	z	0	NOI						SAMPL	E DAT	Ά				
	отн (f	/ATIC (ft)	APHIC	SCS	MATERI	ALS DESCRIPTION	URE		щ	N-COUNT	STAN	DARD I	PENETI	RATIO	N TEST	T DATA
	DEF	ELE	GR	U SSA1			NOIST (%)	PPV (tsf)	μ	₩ 2 8 8	-		(blows p	per foot	:)	
F			<u></u>	2	TOPSOIL: 8 Inc	hes				% REC	1		<u>20 3</u>	0 4		50
-	 			SM	COASTAL PLAI medium to	N: Very loose tan silty fine SAND				2 - 1 - 3 N = 4						
TECH_LOG	 	 150		sc	Loose red orang	je gray clayey medium to fine	_			2 - 4 - 6 N = 10						
ort:2003_GEO	 			sc	Very firm red ora	ange gray clayey medium to	_ 			4 - 7 - 15 N = 22						
11/7/13 Rep				SM	Dense orange ta	an silty medium to fine SAND	_			11 - 18 - 18 N = 36						
G LOGS.GPJ	- 10 			SM	Very firm purple SAND	gray silty medium to fine	_									
0712192 BORIN	 - 15									6 - 11 - 13 N = 24						
AOODY VAL DEL/10	 			SC-	Loose gray claye	ey medium to fine SAND	_									
21921										3 - 4 - 6 N = 10						
IICAL\10071	- 20				Boring te	erminated at 20.0 feet.						•				
GEOTECHN			-													
FILES	 05		1													
012\PROJECT	- 25 		-													
:\PROJECTS\2	· _		-													

	genlectuici	7 2		comcetal	MOOE	WOOLPE OY AFB - PRIVATIZED H	ERT, INC OUSING	VAL DI	EL R	COAD SITE		LC	DG C)F B(B-25	ORIN	١G
						Valdos	sta, GA			Pomarka:			Pa	ge 1 o	/f 1	
	Drillin	ng Co.:		11L, 1	nc.	TTL Project No.:	100712	2192		Water not en Water record	countere ed at an	ed at tim	ne of dri on of 14	lling. 17.4 fee	t on	
-	Drille	r:		R. Be		Date Drilled:	1/24/20	013		1/28/2013.						
	Logge	ed by:		J. Cro	osby	Boring Depth:	20 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154.5 f	eet								
	Hamr	mer Ty	oe:	Auton	natic	Coordinates: Not Avai	ilable						Ţ	Delayed	water le	evel.
	Drillin	ig Meth	od:	Hollow	v Stem Auger					CAMDI		· A				
	DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS ASSIFICATIO	MATERI	ALS DESCRIPTION	OISTURE (%)	PPV (tsf)	ТҮРЕ	N-COUNT		A DARD F (PENETI (blows p	RATION ber foot	I TEST	DATA
+		-	<u> 11/ 11/</u>	<u>v</u>	TOPSOIL: 8 Inc	hes	Σ			% REC	1	02	03	04	05	50
-		 		SM	COASTAL PLA fine SAND	IN: Loose tan silty medium to				1 - 2 - 3 N = 5	•					
DTECH LOG	 - 5	 150 <i></i> _		SC	Firm to very firm medium to	n red gray orange clayey fine SAND				4 - 6 - 6 N = 12		•				
eport:2003_GE0		 					Ţ			7 - 9 - 16 N = 25			•			
11/7/13 R	 - 10	 145		SM	Very firm gray ta SAND, We	an silty medium to fine				9 - 11 - 13 N = 24			-			
12192 BORING LOGS.GPJ	 	 								13 - 14 - 7 N = 21						
2 MOODY VAL DEL/10071		 		SC- CH	Loose gray clay	ey medium to fine SAND	_			2 - 4 - 5			r			
071215	— 20 —				Boring te	erminated at 20.0 feet	_			N = 9						
T FILES GEOTECHNICAL/100	 	 	-													
RIVEROJECTS/2012/PROJEC	 	 	-													

	genlechelc	71		toomental	MOOI	WOOLPI DY AFB - PRIVATIZED H	ert, inc Ousing	VAL D	EL I	ROAD SITE		L	og c)F B(B-26	ORII ;	NG
						Valdos	sta, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	Inc.	TTL Project No.:	100712	2192		Remarks: Water not end	countere	ed at tir	ne of dr	illing.		
	Drille	r:		R. Be	11	Date Drilled:	1/24/20	013		Water recorden 1/28/2013.	ed at an	elevat	ion of 14	19.8 fee	t on	
	Logg	ed by:		J. Cro	osby	Boring Depth:	25 feet									
	Equip	oment:		CME	550X	Boring Elevation:	153.5 f	eet								
	Ham	mer Ty	pe:	Auton	natic	Coordinates: Not Ava	ilable						-			
	Drillin	ig Meth	od:	Hollow	v Stem Auger	·							<u> </u>	Delayed	water le	evel.
	ft)	N	U	NOIT						SAMPLI	E DAT	Ά				
	PTH (I	VATIO (ft)	RAPHI LOG	JSCS	MATER	ALS DESCRIPTION	() ()		ЫП	N-COUNT	STAN	DARD	PENET	RATIO	N TEST	T DATA
	DE	ELE	5	CLASS			NOIS	(tsf)	ΤY	~ స స 		0	(blows)	50
			<u></u>	2	TOPSOIL: 8 Inc	ches				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			20 3			
		- 		SM	COASTAL PLA medium to	IN: Very loose brown silty o fine SAND				2 - 1 - 1						
		 								N = 2	e					
90		-150-		SC	Loose gray oral SAND	nge clayey medium to fine										
ECH_I										3 - 3 - 4 N = 7						
GEOT	- 5			· ·												
2003				SM	Firm gray tan s	ilty medium to fine SAND				7 - 9 - 11 N = 20		$\left \right\rangle$				
Report				·												
/13		-145-		SM	Dense purple g SAND	ray silty medium to fine				8 - 16 - 15			$\left \right\rangle$			
11/1	- 10									N = 31						
2				-										ĺ		
DGS.G																
ING LO				· 			_						X			
2 BOR				SM	Wet	y silly coarse to line SAND,				5 - 7 - 5		/				
712192	- 15			:						N = 12		 			<u> </u>	
EL/100]								V				
AL DE												1				
1 A D D		405		·		clavev medium to fine SAND	5-									
92 MO				СН	,					WOH - 2 - 2						
07121	- 20									N - 4	+					
CAL/10																
CHNIC																
EOTE																
ILES (WOH - WOH - 3 N = 3						
ECTF	- 25	 			Boring t	erminated at 25.0 feet.	-				←					
PROJ																
S\2012		 														
DECT		-125-														
R:\PRC			-													

_																
	genlecknics	72	A terials - savinos	nental	MOOD	WOOLPE Y AFB - PRIVATIZED HC	RT, INC. DUSING	VAL D	EL	ROAD SITE		LC	DG C)F B(B-27	ORIN	IG
						Valdost	a, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:	-	TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not end	ountere	ed at tim	ne of dri	lling.		
	Drille	r:		R. Bel	I	Date Drilled:	1/24/20	013		Water recorde 1/28/2013.	ed at an	elevati	on of 15	50.5 fee	t on	
	Logg	ed by:	·	J. Cro	sby	Boring Depth:	20 feet									
	Equip	oment:	(CME	550X	Boring Elevation:	155 fee	et								
	Ham	mer Tyj	pe: /	Autom	natic	Coordinates: Not Availa	able						-			
	Drillin	ig Meth	iod: I	Hollow	Stem Auger								<u> </u>	Delayed	water ie	vei.
	ť)	z	0	NOIT						SAMPLE	DAT	Α				
	PTH (I	VATIC (ft)	LOG	JSCS IFICA	MATERIA	LS DESCRIPTION	rure ()		Щ	N-COUNT	STAN	DARD F	PENETI	RATION	TEST	DATA
	DE	E	В	CLASS			SIOM (%)	(tsf)	Σ	_	1	0 3	(blows p	oer foot)	'n
ŀ		-155-	<u> 11/ 11/ 1</u>		TOPSOIL: 8 Inch	nes				70 NEG			0 3	0 4	0 5	
-				SM	COASTAL PLAIN to fine SAN	√: Loose gray silty medium D				4 - 5 - 2 N = 7						
CH_LOG				SM	Firm gray tan silt	y medium to fine SAND	_ 			4 - 6 - 6 N = 12						
33_GEOTEC	- 5	—150— — -								7 10 11						
Report:200						grav silty medium to fine	_			N = 21						
11/7/13	 10			SIVI	SAND, We	t				9 - 13 - 13 N = 26						
NG LOGS.GPJ																
12192 BORIN				SC- CH	Very loose gray o	clayey medium to fine SAND				WOH - WOH - 3 N = 3		/				
N VAL DEL/1007																
2192 MOOI				SC- CH	Very firm gray cla	ayey medium to fine SAND				8 - 12 - 16 N = 28						
/10071	- 20	135-			Boring ter	rminated at 20.0 feet.	1									
TECHNICAL			-													
FILES GEO																
DJECT	- 20															
12\PR(
TS/201		L -														
COLEC		Ļ _														
R:\PR																

	seslerbolr	71	72	mental	MOOD	WOOLP Y AFB - PRIVATIZED H	ert, inc Iousing	VAL D	EL R	OAD SITE		L	OG C)F B(B-28	ORII }	NG
						Valdos	sta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not e	ncountere	ed at ti	me of dr	illing.		
	Drille	r:		R. Bel	1	Date Drilled:	1/24/20	013		Water recor 1/28/2013.	ded at an	eleva	tion of 1	17.9 fee	et on	
	Logg	ed by:		J. Cro	sby	Boring Depth:	25 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154.5 fe	eet								
	Ham	mer Ty	pe:	Autom	natic	Coordinates: Not Ava	ilable						-	Dalawa		1
	Drillir	ig Meth	nod:	Hollow	Stem Auger								<u> </u>	Delayed	i water i	evei.
	ft)	NO	U	NOIL				1		SAMPI	_E DAT	Ά				
	РТН (EVATIO (ft)	RAPHI	USCS	MATERIA	LS DESCRIPTION	TURE ()		ЫП	N-COUNT	STAN	DARD	PENET	RATIO	N TES	Γ DATA
	DE	ELE	5	CLAS			SIOM (5)	(tsf)	È	≝্ষ্ 	-	10	(blows)		.) 10	50
			<u></u>		TOPSOIL: 8 Inch		_									
				SM	medium to	fine SAND				2 - 3 - 4 N = 7						
										N - 7	•					
POG				SM	Firm tan silty me	dium to fine SAND				5 - 8 - 8						
HUE	- 5	-150-								N = 16						
GE			-		+,											
t:2003				SM	to fine SAN	nge tan clayey silty medium D	Ţ			4 - 11 - 17 N = 28						
Repor						an city modium to fing										
1/13				SM	SAND, We	t				7 - 15 - 16						
÷	- 10	-145-								N = 31				 	<u> </u>	
GPJ																
LOGS.													X			
RING																
192 BC				SC-	Very loose to loo	se gray tan clayey medium				4 - 2 - 2 N = 4		1				
00712	- 15			СН	to fine SAN	D					I					
DEL/1(
Y VAL																
1000		 														
2192		-135-								2 - 1 - 2 N = 3						
N10071	- 20															
INICAL																
DIEC-																
ES GEO										2 - 4 - 4						
	- 25	-130-			Poring to	rminated at 25.0 feat	_			N = 8				<u> </u>	<u> </u>	
ROJEC			1			ininialeu al 20.0 ieel.										
2012/Pl			1													
ECTSV		[]													
PROJ																
2		120			1							1		1	1	1

	genlectule	77 at - anatyrical -	ZZ exterials - extine	mental	MOOD	Woolpe Y AFB - Privatized Ho	RT, INC. DUSING	VAL DI	ELI	ROAD SITE		LC	DG C)F B(B-29	ORIN)	IG
-						Valdos	a, GA						Pa	ige 1 o	of 1	
	Drillir	ng Co.:		TTL, Ir	1C.	TTL Project No.:	100712	2192		Water not end	ountere	ed at tim	ne of dr	illing.		
	Drille	r:		R. Bell		Date Drilled:	1/25/20	013								
	Logg	ed by:		J. Cros	sby	Boring Depth:	5 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	148 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Avail	able									
	Drillin	ng Meth	nod:	Hollow	Stem Auger											
	(H)	NO	Q	VOIT						SAMPLE	DAT	Ά				
	EPTH	EVATI (ft)	ZAPH LOG	USCS SIFIC/	MATERIA	LS DESCRIPTION	TURE %)	PPV	Ц	o n-couri	STAN	DARD		RATION	N TEST	DATA
	DE	ELE	Ū	CLAS			NON	(tsf)	È	RQD % REC	1	0 2	20 3	30 4) 105	0
				SM	TOPSOIL: 6 Inch	ies N: Loose brown tan grav silty	-									
				0	medium to	fine SAND				2 - 2 - 3 N = 5						
		145								N - 5	•					
ГОG		145								2 4 5						
ЫЩ	- 5									N = 9						
GEOT					Boring te	rminated at 5.0 feet.										
2003		L -														
Report																
/13																
11/7	10															
2																
GS.G			_													
NGLO																
BORI			_													
12192	— 15 —		_											<u> </u>		
L/1007			_													
AL DE			_													
7			-													
2 MOC			-													
71219	- 20		-													
AL/100			-													
HNIC/			-													
OTEC			-													
ES GE			-													
	- 25		-											<u> </u>		
ROJEC		+ -	-													
012/P		+ -	-													
CTS/2		-120-	-													
ROJE		+ -	-													
₩.																

	geolectul	71		mental	MOODY	WOOLF Y AFB - PRIVATIZED F	PERT, INC HOUSING	VAL D	EL	ROAD SITE		L	og c)F B(B-30	ORIN	NG
						Valdo	osta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, li	าC.	TTL Project No.:	100712	2192		Water not end	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	1	Date Drilled:	1/25/20	013								
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	148 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Ava	ailable									
	Drillin	ng Meth	iod:	Hollow	Stem Auger											
	ОЕРТН (ft)	LEVATION (ft)	GRAPHIC LOG	USCS \SSIFICATION	MATERIA	LS DESCRIPTION	IISTURE (%)	PPV (tef)	YPE	SAMPLI N-COUNT	STAN	A DARD I	PENET (blows	RATION per foot	N TEST	DATA
			NU NU N	CLA	TODOOIL.7.Inch		- W	(151)		RQD % REC	1	0 2	20 3	0 4	<u>0 t</u>	50
-				SM	COASTAL PLAIN medium to t	es 4: Loose tan gray silty fine SAND				2 - 3 - 4 N = 7	•					
CH_LOG				SC	Loose gray claye	y medium to fine SAND				5 - 4 - 6 N = 10						
nt:2003_GEOTE	- 5 	 	-		Boring te	rminated at 5.0 feet.										
11/7/13 Repo	 	- 140-														
G LOGS.GPJ			-													
2192 BORIN																
2Y VAL DEL/100712	- 15 		-													
12192 MOOI																
ES GEOTECHNICAL/1007	20 — 		-													
DUECT FIL	- 25	-														
RIVEROJECTS/2012/PRC	 		-													

This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

		77	T/L		MOOD	WOOLPE Y AFB - PRIVATIZED H	ERT, INC OUSING	VAL D	EL	ROAD SITE		L	DG C)F B B-31	ORIN	١G
	genlechnic	al + analylical +	materials - envite	omenta		Valdos	sta, GA						Pa	ige 1 d	of 1	
	Drillir	ng Co.:		TTL, li	nc.	TTL Project No.:	100712	2192		Remarks: Water not end	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/25/20	013						Ū		
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equip	oment:		CME \$	550X	Boring Elevation:	147 fee	et								
	Hamı	mer Ty	pe:	Autom	natic	Coordinates: Not Avai	lable									
	Drillin	ng Meth	nod:	Hollow	Stem Auger											
	ft)	NC	U	NOIT						SAMPL	E DAT	Ά				
	PTH (EVATIO (ft)	RAPHI	USCS	MATERIA	ALS DESCRIPTION	TURE ()		Щ	N-COUNT	STAN	DARD I	PENET	RATIO	N TEST	DATA
	DE	ELE	5	CLAS			siom (%)	(tsf)	∣≿	₩ ম জ RQD % REC		10 2	swold)) 10 F	50
				SM		nes	/									
		145			fine SAND					6 - 7 - 4 N = 11						
		145			L							•				
POG		L .	, , , , , , , , , , , , , , , , , , ,	SC	Firm gray tan cla	ayey medium to fine SAND				5 - 7 - 9		$ \rangle$				
EGH	- 5									N = 16						
GE			_		Boring te	erminated at 5.0 feet.										
t:2003			_													
Repor			_													
7/13																
÷	— 10 —														<u> </u>	
GPJ			_													
OGS.(-135-	-													
SINGL			_													
32 BOF			-													
071219	— 15 —		_												<u> </u>	
EL/100			_													
VALD		-130-	_													
¥ a oo			-													
192 M			-													
00712	- 20		-													
ICAL/1			-													
ECHN		-125-	-													
GEOT			-													
FILES		+ -	1													
LECT	- 25		1													
2\PRO			1													
S\201.		- 120-]													
OUECI		[-														
R:\PR	-	-														

This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

		77	72		MOOD	WOOLP Y AFB - PRIVATIZED F	PERT, INC HOUSING	VAL D	EL	ROAD SITE		L	DG C)F B(B-32	ORIN	١G
	geslectul	al + analytical +	natorinis - onvito	nmental		Valdo	sta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	11	Date Drilled:	1/23/20	013						•		
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equi	oment:		CME	550X	Boring Elevation:	149.5 f	eet								
	Ham	mer Ty	oe:	Autor	natic	Coordinates: Not Ava	ailable									
	Drillir	ng Meth	od:	Hollow	Stem Auger											
	ft)	NC	U	TION						SAMPL	E DAT	Ά				
	PTH (EVATIO (ft)	RAPHI LOG	USCS	MATERIA	ALS DESCRIPTION	TURE ()		Ц	N-COUNT	STAN	DARD I	PENET	RATIO	N TEST	DATA
	DE	ELE	5	CLAS			SIOM SIOM	(tsf)	≿	<u>₹ ম জ</u> <u>RQD</u> % REC		10 2	swold)) .0 5	50
Ī			<u></u>		TOPSOIL: 8 Inch	nes										
				SM	medium to	n: Firm brown gray silty fine SAND				3 - 5 - 8 N = 13						
LOG			-1.1.1. 	sc	Loose orange gra	ay clayey medium to fine				8 10 10						
EGH	_ 5 _	-145-								N = 20						
GEO			-		Boring te	erminated at 5.0 feet.							Ī			
2003			-													
Report			_													
7/13			-													
5	— 10 —	-140-	-													
2			-													
DGS.G			-													
NGLO			-													
2 BOR			-													
712192	— 15 —	-135-	-													
EL/100			-													
'AL DE																
2 Z			-													
92 MO																
07121	— 20 —															
SAL/10			-													
CHNIC		[]														
EOTE																
LES G			_													
ECT FI	— 25 —															
PROJE			-													
\2012\			-													
IECTS			-													
PRO			-													
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This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

	geolectuic	72		mental	MOOD	WOOLPE Y AFB - PRIVATIZED HO	RT, INC DUSING	VAL DI	ELI	ROAD SITE		LC	DG C)F B(B-33	ORIN	NG
						Valdos	ta, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, li	пс.	TTL Project No.:	100712	2192		Remarks: Water not end	ountere	ed at tim	ne of dri	illing.		
	Drille	r:		R. Bell	1	Date Drilled:	1/23/20	013								
	Logg	ed by:		J. Cros	sby	Boring Depth:	5 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	151 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Avail	able									
	Drillin	ng Meth	iod:	Hollow	Stem Auger											
	ft)	NO	U	NOIT				1		SAMPLE	DAT	Α				
	РТН (WATIO (ft)	RAPHI LOG	JSCS	MATERIA	ALS DESCRIPTION	TURE ()		Щ	N-COUNT	STAN	DARD F	PENETI	RATIO	N TEST	DATA
	DE	ELE	9	CLASE			WOIS (%)	(tsf)	≥	₽ ਲ਼ ਲ਼ % REC	1	0 2	(DIOWS) 0 5	50
ľ				SM		ies	~									
-					medium to	fine SAND				3 - 4 - 8 N = 12		•				
H_LOG				SC	Loose orange tar SAND	n gray clayey medium to fine	_			4 - 5 - 5 N = 10						
OTEC	— 5 —				Boring te	erminated at 5.0 feet.	-									
03_GE		-145	-													
port:20			-													
3 Re			1													
11/7/1			-													
	— 10 —		-													
S.GPJ																
g Log																
30RIN																
2192 E																
10071	_ 15 _															
LDEL																
DY VA		L -														
MOOM																
712192	— 20 —															
L/1007																
HNICA			_													
OTEC			_													
ES GE			-													
CI FIL	— 25 —	+ -	-													
ROJE		-125-	$\frac{1}{2}$													
2012/P		+ -	-													
ECTSV		+ -														
PROJE		+ -	-													
١																

_																
		77	72		MOOD	WOOLPE Y AFB - PRIVATIZED He	ERT, INC. OUSING	VAL DI	ELI	ROAD SITE		L	DG C)F B(B-34	ORIN	NG
	genternutzi	ar - analynical -	64167)811 + 687)16	n m e a ca		Valdos	sta, GA						Pa	ge 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/23/20	013								
	Logg	ed by:		J. Cro	sby	Boring Depth:	7.5 feet	t								
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	et								
	Ham	mer Ty	pe:	Autorr	natic	Coordinates: Not Avai	lable									
	Drillin	ig Meth	iod:	Hollow	Stem Auger											
	ft)	NO	U	NOIT				1		SAMPL	E DAT	Ά				
	EPTH (EVATI((ft)	2APHI LOG	USCS	MATERI	ALS DESCRIPTION	TURE %)		Щ	N-COUNT	STAN	DARD I	PENET	RATION	N TEST	DATA
	DE	E	5	CLAS			siom	(tsf)	≿	₩ ₩ ₩ RQD % REC	- 1	10 2	(swoid)) .0 <u>F</u>	50
Ī			<u></u>		TOPSOIL: 8 Inc	hes										
Ī				SM	medium to	fine SAND, Wet				1 - 3 - 4 N = 7						
										N - 7	•					
log		150		SC	Very loose orang	ge tan gray clayey medium to				0 1 0						
ECH	_ 5 _	_ 150 _								N = 3						
GEOT					NO RECOVERY	Y										
:2003										3 - 4 - 9 N = 13						
Report						erminated at 7.5 feet.	-					•				
/13																
11/7	— 10 —															
2			_													
DGS.G																
NGLO																
BORI																
712192	— 15 —		-													
L/1007			-													
ALDE			_													
740			-													
92 MO		-135-	-													
071219	— 20 —		-													
AL/100																
OINHO			-													
EOTE			-													
LES G		-130-														
ECT FIL	— 25 —		-													
PROJE			-													
2012/			-													
ECTS			1													
PROJ		-125-	1													
۲Ì		1	1	1	1			1	1		1	1	1	1	I	1

This boring log shall not be separated from the corresponding Instrument of Service; no third party may rely upon this well logor the corresponding Instrument of Service absent a written TTL Secondary Client Agreement.

	gentechnics	7 2	L exterials - savin	omental	MOOD	WOOLP Y AFB - PRIVATIZED H	ert, Inc. Iousing	VAL DI	EL F	ROAD SITE		LC	DG C)F B(B-35	DRIN	NG
						Valdo	sta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	192		Remarks: Water not enc	ountere	ed at tin	ne of dri	illing.		
	Drille	r:		R. Bel	11	Date Drilled:	1/23/20	13								
	Logg	ed by:		J. Cro	sby	Boring Depth:	7.5 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	t								
	Ham	mer Ty	pe:	Autor	natic	Coordinates: Not Ava	ailable									
	Drillin	g Meth	iod:	Hollow	Stem Auger											
	ЭЕРТН (ft)	LEVATION (ft)	GRAPHIC LOG	USCS	MATERIA	ALS DESCRIPTION	IISTURE (%)	PPV (tof)	YPE	SAMPLE N-COUNT	STAN	A DARD I	PENETI (blows p	RATION per foot	↓ TEST	DATA
		— –	NU NU N	CLA	TODCOILLG		- W	((SI)		RQD % REC	1	02	20 3	<u>0 4</u>	<u>0 5</u>	50
-				SM	COASTAL PLAI silty mediu	N: Very loose brown gray m to fine SAND, Wet	_			1 - 1 - 3 N = 4	•					
TECH_LOG	 	150		SC	Very loose orang fine SAND	ge gray clayey medium to , Wet				WOH - WOH - WOH N = WOH						
ort:2003_GEO				SC	Firm gray clayey	medium to fine SAND				6 - 9 - 10 N = 19						
11/7/13 Rep			-		Boring te	erminated at 7.5 feet.										
LOGS.GPJ	10 		-													
12192 BORING	 	140 <i></i>	-													
DY VAL DEL/1007			-													
0712192 MOC		—135— 	-													
SEOTECHNICAL/10	 		-													
FILES (-130-	1													
ROJECTS/2012/PROJECT	25 	 	-													
R:\P															ĺ	

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_																
		77	7 2		MOODY	WOOLPE Y AFB - PRIVATIZED H	RT, INC DUSING	VAL D	EL	ROAD SITE		L	DG C)F B(B-36	ORIN ;	١G
	geolectuici	it + analytical +	materials - anvitor	nental		Valdos	ta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, li	nc.	TTL Project No.:	100712	2192		Remarks: Water not end	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/25/20	013						•		
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equip	oment:		CME :	550X	Boring Elevation:	148 fee	et								
	Ham	ner Ty	pe:	Autom	atic	Coordinates: Not Avai	lable									
	Drillin	g Meth	nod:	Hollow	Stem Auger											
	ft)	N	o	NOIT						SAMPL	E DAT	Ά				
	PTH (VATIO (ft)	(APHI) LOG	JSCS	MATERIA	LS DESCRIPTION	()		Щ	N-COUNT	STAN	DARD I	PENET	RATIO	N TEST	DATA
	DE	ELE	6	CLASS			SIOM	(tsf)	Ł			10 2	(blows) IO 4	50
			<u><u><u></u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	SM	TOPSOIL: 6 Inch	ies	-									
				SIVI	fine SAND	N: Firm gray slity medium to				5 - 6 - 5						
										N = 11		•				
l		-145-		SC	Dense gray claye	ey medium to fine SAND				0 10 01						
ECH	_ 5 _									N = 37						
GEOT					Boring te	rminated at 5.0 feet.										
2003																
Report																
7/13			_													
1	- 10														<u> </u>	
2			-													
DGS.G			-													
NG L			-													
2 BOR			-													
71219	- 15		-												<u> </u>	
EL/100			-													
AL DI			-													
λdog		—130—	-													
92 MC			-													
07121	- 20		-													
CALVIC			-													
CHNIC			-													
EOTE		—125—	-													
ILES			-													
ECTF	- 25		-								-					
VPROJ																
\$\2012			1													
VECTS																
R:\PRC			1													

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	qestectul	72		mentàl	MOOD	WOOLP Y AFB - PRIVATIZED F	ert, Inc Iousing	VAL D	EL	ROAD SITE		LC	DG C)F B(B-37	ORIN '	NG
						Valdo	sta, GA			1			Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, li	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tin	ne of dr	illing.		
	Drille	er:		R. Bell	I	Date Drilled:	1/25/20	013								
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equi	oment:		CME 5	550X	Boring Elevation:	148.5 f	eet								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Ava	ailable									
	Drillir	ng Meth	iod:	Hollow	Stem Auger											
	ť)	Z	0	NOIT						SAMPL	E DAT	Α				
	PTH (I	VATIC (ft)	LOG	JSCS IFICA	MATERIA	LS DESCRIPTION			Щ	N-COUNT	STAN	DARD I	PENET	RATIO	N TEST	DATA
	DE	ELE	ц	CLASS			MOIS	(tsf)	Σ	_		0 0	(blows	per foot)	50
ľ			<u> \\ /</u> \\ \\ /		TOPSOIL: 8 Inch	nes				/inco			0 3		0 3	
-		 		SM	COASTAL PLAIN medium to	N: Firm brown gray silty fine SAND, Wet				4 - 5 - 7 N = 12		•				
CH_LOG				SC	Loose orange gra	ay clayey medium to fine				3 - 6 - 4 N = 10						
EOTE C	- 5 -		<u> //////</u> /		Boring te	rminated at 5.0 feet.	_									
03_GI			_													
port:20		_ 														
3 Re		_ 140														
11/7/1			-													
	— 10 —															
SS.GP.		-	-													
GLOG			-													
BORIN		-135-														
2192	_ 15 _		-													
10071	- 15 -		-													
LDEL																
DY VA																
MOOM		-130-	-													
71219:	— 20 —															
VL/100																
HNIC																
OTEC			-													
ES GE		—125— -														
님님	— 25 —														<u> </u>	
ROJE			1													
2012/F																
ECTS/																
PROJI																
١		1						1			1		1			1

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	geolecholc	72		mental	MOODY	WOOLPE Y AFB - PRIVATIZED HO	RT, INC. DUSING	VAL DI	EL	ROAD SITE		LC	og c)F B(B-38	ORIN ;	IG
						Valdos	ta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, In	C.	TTL Project No.:	100712	192		Remarks: Water not end	ountere	ed at tim	ne of dr	illing.		
	Drille	r:		R. Bell		Date Drilled:	1/25/20	013								
	Logg	ed by:		J. Cros	sby	Boring Depth:	5 feet									
	Equip	oment:		CME 5	50X	Boring Elevation:	148 fee	et								
	Ham	mer Ty	pe: .	Automa	atic	Coordinates: Not Avail	able									
	Drillin	ng Meth	iod:	Hollow	Stem Auger											
	ť)	z	0	TION						SAMPLE	DAT	Α				
	PTH (I	VATIC (ft)	LOG	JSCS IFICA	MATERIA	LS DESCRIPTION			Ш	N-COUNT	STAN	DARD F	PENET	RATION	N TEST	DATA
	DE	ELE	ц	CLASS			NOIS (%)	(tsf)	Σ	୍ କ୍ ର୍ ନ୍ 	1	0 3	(blows)	'n
			<u></u>		TOPSOIL: 8 Inch	es				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				<u>0 4</u>		
-				SM	COASTAL PLAIN silty mediun	N: Firm to very firm tan gray n to fine SAND				4 - 8 - 12						
F										N = 20			•			
90													$\left \right\rangle$			
핈	 -									8 - 11 - 13 N = 24						
GEOT	- 5				Boring te	rminated at 5.0 feet.										
2003																
Report																
/13 F																
11/	- 10															
2-																
DGS.G	· _		_													
NG LO																
BOR			-													
712192	- 15		-											<u> </u>		
			-													
ALDE	· _		-													
	· _	-130-	-													
92 MO			-													
07121	- 20		-											<u> </u>		
CALVIO			-													
UHN HNIC			-													
EOTE		-125-	-													
LES G	· _		-													
ECTF	- 25		-													
PROJ																
\$\2012	· _	+ -														
LECTS																
R:/PRO		+ -														

ſ																
		71	74		MOOD	WOOLF Y AFB - PRIVATIZED I	PERT, INC HOUSING	VAL DI	EL	ROAD SITE			DG C)F B(B-39))	IG
		an s anna s				Valdo	osta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, Ir	ıc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tim	ne of dr	illing.		
	Drille	er:		R. Bell	1	Date Drilled:	1/25/20	013						0		
	Logg	ed by:		J. Cros	sby	Boring Depth:	5 feet									
	Equi	oment:		CME 5	550X	Boring Elevation:	152 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Ava	ailable									
	Drillir	ng Meth	nod:	Hollow	Stem Auger											
	ft)	NO	U	TION				1		SAMPL	E DAT	Ά				
	EPTH (EVATI (ft)	RAPH	USCS SIFICA	MATERIA	ALS DESCRIPTION	TURE (%)	PP\/	Ц	N-COUNT	STAN	DARD F			N TEST	DATA
	DE	ELE	5	CLAS				(tsf)	≿		-	0 2	i swoid) 20 3	30 4) 405	0
Ī				SM	TOPSOIL: 6 Inch	nes	_									
		150		Civi	silty mediur	n to fine SAND				2 - 3 - 3 N = 6						
		-150-								N - 0	•					
FOG										2 5 6						
н	5									N = 11						
GEO					Boring te	erminated at 5.0 feet.										
t:2003																
Report																
7/13																
1	— 10 —															
Г			_													
OGS.0		-140-	-													
ING L																
2 BOR			-													
71219	- 15		-													
EL/100			-													
/AL DI		-135-	-													
λdo																
92 MC			-													
07121	— 20 —		-													
CAL/10			-													
CHNIC		-130-	-													
EOTE			-													
ILES																
ECTF	- 25 -	+ -	-													
PROJ		+ -														
\$\2012		125-														
UECTS	• + -															
R:\PRO		+ -	1													
									1	1						

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						WOOLF	ERT, INC.					LC	DG C	F B	ORIN	IG
	gentechnics	al + analytical +	nateriala - anvitant	tental	MOOD	Y AFB - PRIVATIZED I	HOUSING	VAL DI	╧┖┡	ROAD SITE				D-40		
+						Valdo	sta, GA			Domorka			Pa	ge 1 c	of 1	
+	Drillin	ng Co.:		IIL, In	IC.	TTL Project No.:	100712	192		Water not end	ountere	d at tim	ne of dri	illing.		
+	Drille	r:		R. Bell		Date Drilled:	1/24/20	13								
+	Logg	ed by:		I. Cros		Boring Depth:	5 feet									
+	Equip	oment:	(CME 5	50X	Boring Elevation:	153 fee	t								
+	Ham	mer Ty	pe: /	Automa	atic	Coordinates: Not Ava	ailable									
+	Drillin	ig Meth		Hollow -	Stem Auger					SAMDIE		^				
	JEPTH (ft)	LEVATION (ft)	SRAPHIC LOG	USCS SSIFICATIO	MATERIA	LS DESCRIPTION	ISTURE (%)	PPV	ΥPE	34191912 34 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		A DARD F	PENETI (blows p	RATION per foot	N TEST	DATA
			NU NU N	CLA	TODOOILOL		OW	(tst)	F	RQD % REC	1	02	0 3	0 4	0 5	0
FOG		 		SM	COASTAL PLAIN silty mediun	es I: Loose to firm tan gray n to fine SAND				2 - 4 - 3 N = 7	•					
ont:2003_GEOTECH_	5 	 			Boring te	rminated at 5.0 feet.				N = 18						
J 11/7/13 Rep	 10		-													
12192 BORING LOGS.GP	 		-													
2192 MOODY VAL DEL/1007		 	-													
FILES GEOTECHNICAL/10071	- 20 	 - 130														
\PROJECTS\2012\PROJECT {	25 	25 —														

		7	74		MOOD	WOOLP Y AFB - PRIVATIZED F	ERT, INC IOUSING	VAL D	EL	ROAD SITE		L	DG C)F B B-41	ORIN	NG
	Junitaria	a s angina s				Valdo	sta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, Ir	пС.	TTL Project No.:	100712	2192		Remarks: Water not end	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bell	1	Date Drilled:	1/24/20	013								
	Logg	ed by:		J. Cros	sby	Boring Depth:	5 feet									
	Equip	oment:		CME 5	550X	Boring Elevation:	153 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Ava	ailable									
	Drillir	ng Meth	nod:	Hollow	Stem Auger											
	ft)	N	U	NOIT				1		SAMPL	E DAT	Ά				
	PTH (EVATIO (ft)	APHI LOG	JSCS	MATERIA	ALS DESCRIPTION	TURE ()		Ц	N-COUNT	STAN	DARD	PENET	RATIO	N TEST	DATA
	DE	ELE	6	CLASE			NOIS	(tsf)	Ł	€ స్ 		0 3	(blows) IO 4	50
			<u></u>	-	TOPSOIL: 8 Inch	nes										
				SM	COASTAL PLAIN medium to t	N: Loose brown gray silty fine SAND, Wet				2 - 2 - 3 N = 5	•					
CH_LOG		- 150-		sc	Firm orange gray	/ clayey medium to fine				2 - 3 - 8 N = 11						
EOTEC	- 5				Boring te	erminated at 5.0 feet.						•				
003_GI			-													
port:2(-													
3 Re																
11/7/1																
_	— 10 —															
S.GP.			1													
DOL D			1													
SORIN			1													
2192 E																
10071	- 15]													
L DEL																
AV YC																
MOOM																
12192	- 20	L .														
L\1007																
INICA		Ļ .														
OTEC																
S GE																
	— 25 —		-												<u> </u>	
SOUEC																
012/PF		Ļ .														
CTS/2(-125-														
ROJE			-													
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	geolectula	71 cat - anatyricat -	ZL.	oomestal	MOOD	WOOLF Y AFB - PRIVATIZED F	ERT, INC.	VAL D	EL	ROAD SITE		LC	DG C)F B(B-42		IG
-	Drillin				20		sta, GA	400		Remarks:			Ра	geio	T 1	
	Drille	iy co		R Ral	II.	TTL Project No.:	1/07/12	192		Water not en	countere	ed at tin	ne of dri	lling.		
		ed by:		I Cro	shv	Date Diffied.	7.5 foot	4								
	Equi	oment:		CME	550Y	Boring Deptil.										
	Ham	mor Ty	ne [.]		natic	Coordinates: Not Av	154.5 K	eet								
-	Drillir	na Meth	pc.	Hollow	Stem Auger	Coordinates. Not Ave										
	Dillin			Z						SAMPL	E DAT	Ά				
	DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS	MATERIA	ALS DESCRIPTION	MOISTURE	PPV (tsf)	ТҮРЕ	N-COUNT	STAN	DARD F	PENETI (blows p	RATION per foot	I TEST	DATA
ŀ		- 			TOPSOIL: 4 Inch	nes				% REC	1	02	03	0 4	<u>05</u> 	50
				SM	COASTAL PLAIN medium to	N: Loose tan gray silty fine SAND				3 - 4 - 4 N = 8	•					
ECH_LOG	 	- 150		SC	Very soft tan gray SAND	y clayey medium to fine				1 - 2 - 2 N = 4						
:2003_GEOT	- 5			SC	Very firm tan gra SAND	y clayey medium to fine				7 - 10 - 12 N = 22						
Report					Boring te	rminated at 7.5 feet.							•			
/13 F			-													
111	- 10 -	-145-	-													
2			-													
GS.G			-													
NGLO																
BORI																
712192	— 15 —	-140-	-													
IL/1007																
ALDE																
Z																
92 MO																
07121	— 20 —															
SAL/10		-														
GHNIC																
EOTE																
LESG																
ICT FI	- 25 -															
PROJE																
12012																
JECTS			1													
R:/PRO			4													

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		77	72		MOOD	WOOLPE Y AFB - PRIVATIZED HO	RT, INC DUSING	VAL D	EL	ROAD SITE		L	DG C)F B B-43	ORIN }	١G
	genlechnic	al + analylical +	materials - envito	nmenta		Valdos	ta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/24/20	013						Ū		
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equip	oment:		CME	550X	Boring Elevation:	155 fee	et								
	Ham	mer Ty	pe:	Autor	natic	Coordinates: Not Avail	able									
	Drillir	ng Meth	iod:	Hollow	Stem Auger	1										
		z	0	NOL						SAMPL	E DAT	Ά				
	TH (f	/ATIO (ft)	APHIC	SCS	MATERIA	LS DESCRIPTION	URE		щ	N-COUNT ಹ	STAN	DARD	PENET	RATIO	N TEST	DATA
	DEF	ELEY	B. J.	U NLASS			NOIST (%)	PPV (tsf)	ľ	₩ 5 8 RQD	-		(blows	per foot)	
ł		-155-	<u></u> <u></u> _		TOPSOIL: 7 Inch	ies				% REC	1	10 2	20 3	<u>30 4</u>	05	50
-				SM	COASTAL PLAIN to fine SAN	N: Loose brown silty medium D				1 - 4 - 3 N = 7						
H_LOG				sc	Loose orange gra	ay clayey medium to fine				2 - 5 - 5 N = 10						
OTEC	- 5 -	-150-			Boring te	rminated at 5.0 feet.	_			N = 10		\			<u> </u>	
03_GE			-													
ort:20			-													
Rep			-													
1/7/13			-													
	— 10 —	-145-	-													
S.GPJ			-													
5 LOG			-													
ORINO																
2192 B																
100712	- 15	-140-														
DEL																
N VAL																
MOOL																
12192	20															
/1007																
INICAL																
OTECH		Ļ -														
S GEC																
	- 25														<u> </u>	
ONEC																
112/PR		Ļ -														
TS/20		Ļ -	4													
SOLEC			-													
R:\PF																

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		77	72		MOOD	WOOLPI Y AFB - PRIVATIZED H	ERT, INC OUSING	VAL D	EL	ROAD SITE		L	DG C)F B B-44	ORIN	١G
	gentechnic	al + analylical +	materials - envito	omenta		Valdos	sta, GA						Pa	ige 1 c	of 1	
	Drillir	ng Co.:		TTL, I	nc.	TTL Project No.:	100712	2192		Remarks: Water not en	countere	ed at tin	ne of dr	illing.		
	Drille	r:		R. Bel	I	Date Drilled:	1/24/20	013						0		
	Logg	ed by:		J. Cro	sby	Boring Depth:	5 feet									
	Equip	oment:		CME	550X	Boring Elevation:	154 fee	et								
	Ham	mer Ty	pe:	Autom	atic	Coordinates: Not Ava	ilable									
	Drillin	ng Meth	nod:	Hollow	Stem Auger											
	ft)	Z	O	NOIT						SAMPL	E DAT	Ά				
	PTH (VATIO (ft)	LOG	JSCS	MATERI	ALS DESCRIPTION	TURE ()		Щ	N-COUNT په ^{په} په	STAN	DARD I	PENET	RATIO	N TEST	DATA
	DE	ELE	6	CLASE			MOIS	(tsf)	≿	⊄ র্জ 	-	10 2	(blows) IO F	50
			<u></u>		TOPSOIL: 8 Inc	hes	_			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
				SM	COASTAL PLAI to fine SAN	N: Loose gray silty medium ND				2 - 4 - 4						
										N - 0						
90		150		SM	Very firm gray si	ilty medium to fine SAND				C 11 11		$\left \right\rangle$				
ECH	_ 5 _	_ 150_								N = 22						
GEO		L .			Boring te	erminated at 5.0 feet.										
2003		L -														
Report		L -	_													
7/13			_													
1	— 10 —		_													
Г			_													
OGS.0			_													
SING L			_													
2 BOF		-140-	_													
71219	— 15 —		_												<u> </u>	
EL/100			-													
VAL D			_													
¥ aoc			-													
192 M(-135-	_													
00712	— 20 —		-													
CALV			_													
ECHN			_													
GEOT			-													
FILES		-130-	-													
LECT	- 25	- 25														
2\PRO		+ -	1													
S\201.		-	1													
OUECI		125														
R:\PR	-	- 125-														

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