



**REPORT OF
GEOTECHNICAL EXPLORATION
RaceTrac Meriwether
Milledgeville, Baldwin County, Georgia
UES Project No: A23104.01808.000**

February 9, 2024

Prepared For:

RaceTrac, Inc.
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Suite 900
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February 9, 2024

RaceTrac, Inc.

200 Galleria Parkway SE
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Atlanta, Georgia 30339

Attention: Rowshi Craven
Lead Engineering Project Manager

Reference: Report of Geotechnical Exploration
RaceTrac Meriwether
Milledgeville, Baldwin County, Georgia
UES Project No: A23104.01808.000

Dear Rowshi,

UES Professional Solutions 18, LLC (UES) has completed the geotechnical exploration for the project referenced above in general accordance with the scope of services outlined in UES/Contour's Proposal Number: A23104.01808.000, dated November 11, 2023. The following report includes a summary of the project information and the findings from our subsurface investigation and evaluation.

We appreciate the opportunity to work with you on this project and look forward to assisting you with any future projects. Should you have any questions regarding this report or if we may be of further service, please contact our office.

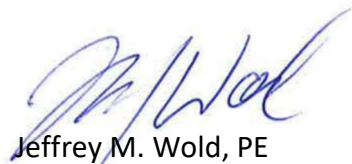
Sincerely,
UES Professional Solutions 18, LLC (UES)

A handwritten signature in blue ink, appearing to read "James Sparks".

James Sparks
Staff Engineer



2/9/2024

A handwritten signature in blue ink, appearing to read "Jeffrey M. Wold".

Jeffrey M. Wold, PE
Principal Engineer

Copies Submitted Via Email: Addressee

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Soil Classification Chart

Important Information about This Geotechnical-Engineering Report



1.0 INTRODUCTION

1.1 Site and Project Description

The subject site is located on the northwest corner of US Highway 441 and Meriwether Road NW. The site is currently an unoccupied tract of land that has been partially cleared. The site slopes gently from the northwest to the southeast. A surface water runoff area in the southeast portion of the project that was holding water when the site reconnaissance was conducted. There is also a high ridge starting in the northwest portion of the site and it runs east to west on the northern portion of the site. A Site Vicinity Map (Figure 1) and Aerial View of the Site (Figure 2) are included in the Appendix.

We understand that the proposed project will include the construction of a new RaceTrac Market and Truck stop. The proposed project will include the construction of a new 3,500 square foot market, 8-island car and light truck pump station with canopy, a 3-island over the road tractor – trailer pump station with canopy, new underground storage tanks, stormwater management pond, dumpster area and associated drive isles with parking and two entrance/exits.

Grading information provided at the time of this study shows that the finished floor elevation of the market will be 423 feet with the canopy for the light car and truck pumps ranging from approximately 421 feet to 422 feet, and the finished elevations for the over the road truck canopy at approximately 425 feet. Therefore, we anticipate maximum cut and fill across the site will be around 5 feet with the exception of the ridge in the northern and northwestern portion of the site. This area may be cut up to 10 feet. We were not provided with structural loading information at the time of this study, therefore; we have assumed that wall and column loads will not exceed 3 kips per linear foot and 200 kips, respectively.

1.2 Scope of Work

This report presents the results of our geotechnical exploration and evaluation performed for the RaceTrac Meriwether in Milledgeville, Baldwin County, Georgia. The purpose of this study was to perform a geotechnical exploration within the proposed area of development and provide recommendations for site development and construction.

Our services were provided in general accordance with the scope of services outlined in UES/Contour's Proposal Number: A23104.01808.000, dated November 11, 2023. Moreover, the services rendered by this firm included a site reconnaissance, drilling and sampling of twenty (20) soil test borings, engineering analyses of obtained information, and preparation of this report. Specifically, our geotechnical report addresses the following:

- Description of existing conditions including Site Maps, Boring Location Plan, Boring Logs, and Subsurface Profiles.
- A description of the area and site geologic conditions.
- Recommendations for site preparation, excavation and grading, backfilling and compaction and suitability of on-site soils for use as structural fill.



- Groundwater conditions and recommendations for control of groundwater during construction.
- Excavation conditions and the presence of very dense materials, partially weathered rock, or rock and the degree of difficulty of excavation.
- Recommendations for foundation design and construction including allowable bearing pressure and settlements.
- Recommendations for slab-on-grade construction
- Lateral earth pressures for retaining walls.
- Recommendations for subgrade preparation.
- Temporary and permanent slope recommendations.
- Seismic information based on the International Building Code 2018.

Note: The scope of our geotechnical services did not include any environmental assessment or exploration for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site.



2.0 FIELD EXPLORATION AND LABORATORY PROGRAM

2.1 Field Exploration

The field exploration consisted of a site reconnaissance and performing twenty (20) soil test borings within the proposed development area. The borings (designated as B-1 through B-20) were performed throughout the proposed development and extended to termination depths of approximately 10 to 20 feet below the existing ground surface.

The boring locations were plotted on the provided site plan that was overlain onto Google Earth. The coordinate of each soil test boring location was then estimated from Google Earth and located at the subject site utilizing a handheld Global Positioning System (GPS). While the GPS device can locate points with a reasonable degree of accuracy, the precision can be affected by weather conditions, interference by external electromagnetic signals, available view of the horizon and other factors. The soil test boring locations should be considered accurate only to the degree implied by the method of location. If more exact locations are desired, we recommend that a professional surveyor be engaged to locate the borings. The location of each soil test boring is depicted on the Boring Location Plan included in the Appendix of this report as Figure 3.

The sampling and penetration procedures of the soil test borings were performed in general accordance with ASTM D-1586, using a power rotary drill. The standard penetration tests were accomplished by driving a standard 1-3/8" I.D. and 2" O.D. split spoon sampler with an automatic 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler a total of 18 inches, in 6-inch increments, was recorded. The Standard Penetration Test (SPT) value or "N" value is the summation of the last two 6-inch increments and is illustrated on the Boring Log Records adjacent to their corresponding depths, included in the Appendix. In very dense materials, the sample is driven a few inches rather than the 6-inch increment and the number of blows required versus the penetration depth is recorded. The penetration resistance or SPT value is used as an index to derive soil parameters from various empirical correlations. Automatic hammers have higher efficiency than manual hammers, thus yielding lower standard penetration resistance values. We recognize this and account for it in our evaluation. However, the field-recorded penetration resistances and consistency terms based on the field values are presented on our test boring logs.

Upon completion of the fieldwork, each of the boreholes was backfilled with soil cuttings prior to demobilization from the site. All recovered soil samples will be held in storage for up to three (3) months at the UES facility in Norcross, Georgia.



2.2 Laboratory Program

Representative portions of each recovered split-spoon sample were transported to our laboratory for further visual classification and testing. Using the Unified Soil Classification System (ASTM D-2487), the subsoil conditions are stratified and described in an illustrated form of soil profiles on the Boring Log Records included in the Appendix. In addition, the following tests were performed on representative samples:

- Atterberg Limits (ASTM D-4318)
- Natural Moisture Content (ASTM D-2216)
- California Bearing Ratio (ASTM 1883)
- Sieve Analysis (ASTM D-422)
- Standard Proctor (ASTD D698)



3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Area Geology

The Site is located in the Piedmont Physiographic Province of Georgia. The Piedmont is bounded on the northwest by the Blue Ridge Range of the Appalachian Mountains, and on the southeast by the leading edge of Coastal Plain sediments, commonly referred to as the "Fall Line". Numerous episodes of crystal deformation have produced varying degrees of metamorphism, folding and shearing in the underlying rock. The resulting metamorphic rock types in this area of the Piedmont are predominantly a series of Precambrian age schists and gneisses, with scattered granitic or quartzite intrusions.

The Piedmont consists of surficial soils that are the residual products of the in-place weathering of the parent rock. The residual soils are sometimes overlain by alluvial soils, which were transported and deposited by flowing water, or by man placed filled materials. The underlying rocks are primarily metamorphic gneiss, schist, and granite. The residual soils are generally clayey silts near the ground surface underlain by sandy silts and silty sands, which often consist of saprolites (native soils which maintain the original fabric of the parent rock). Generally, the soil becomes harder with depth to the top of parent crystalline rock or "massive bedrock" which occurs at depth.

The boundaries between zones of soil and bedrock can be erratic and poorly defined. A transitional zone termed "partially weathered rock" is normally found overlying bedrock. Partially weathered rock (PWR) is defined for engineering purposes as residual material with a standard penetration resistance exceeding 100 blows per foot (bpf). Boulders and rock lenses are sometimes encountered within the overlying PWR or soil matrix. Consequently, significant fluctuations in depths to materials requiring difficult excavation techniques may occur over short horizontal distances.

3.2 Subsurface Conditions

Individual soil boring profiles are depicted on the Boring Log Records included in the Appendix. A Subsurface Profile Plate illustrating the subsurface soil is also included Appendix. Baseline elevations shown on the subsurface profiles and boring log records were interpolated from the provided topographic information and should be considered approximate. Additionally, stratification lines represent the approximate boundaries between soil types. The actual transitions may be more gradual than depicted.

Underlying the surficial topsoil layer, the soil test borings encountered residual soils or partially weathered rock (PWR) to their respective termination depths ranging from about 10 to 20 feet below existing grades. A surficial topsoil layer was typically encountered in our soil test borings and ranged from up to approximately 3 inches in thickness.



Residual (virgin) soils, formed by in-place weathering of the parent rock, were encountered beneath the surficial layer in all the borings, and extended to partially weathered rock or termination depth. The residual soils were described as clayey/silty sands (SC/SM) and sandy silts (ML) with Standard Penetration Test (SPT) values ranging from 5 to 50 blows per foot (bpf).

Partially weathered rock (PWR), locally defined as very dense soil/highly weathered rock with SPT values in excess of 100 bpf, was encountered in borings B-03, B-04, and B-08 at initial depths of approximately 13 to 18 feet below the ground surface.

3.3 Groundwater Conditions

During our field activities, the measurement to the depth below the existing ground surface to the groundwater table was attempted immediately after the completion of each boring. Groundwater was not encountered in the borings explored. However, there is an area in the southeastern corner of the site that has an approximate elevation range between 416 feet and 420 feet that collects water. This may be due to the clayey nature of the soil in the area. This is generally in the area of the car and light truck fuel canopy.

Groundwater in this area will fluctuate in response to local variations of precipitation and temperature and may be different at other times and areas. In addition, perched water can develop over low permeability soil or rock strata. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.



4.0 EARTHWORK RECOMMENDATIONS

4.1 Site Preparation

Prior to the commencement of construction, all vegetation, topsoil, and any other non-soil deleterious materials that fall within the limits of the proposed construction should be removed from the site. After the necessary clearing and stripping, areas intended to support floor slabs, new fill, and foundations should be evaluated by a Geotechnical Engineer and proofrolled with a 20 to 30-ton loaded tandem-axle dump truck or other pneumatic-tired vehicle of similar size and weight. The purpose of the evaluation is to locate soft, weak, or excessively wet soils present at the time of construction.

UES recommends careful evaluation of all subgrades prior to fill placement or building/slab construction. Proofrolling should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce the amount of undercutting / remedial work required. Unstable materials identified should be stabilized as directed by the Geotechnical Engineer based on conditions observed during construction. Undercut and replacement and densification in-place are typical remediation methods.

Low Area in the Southeast Portion of the Site

There is a low area in the southeastern corner of the site (approximate elevation range between 416 feet and 420 feet) that collects water. This may be due to the clayey nature of the soil in the area. This is in/around the proposed car and light truck fuel canopy.

This area may require dewatering before proofroll activities. Excessive moisture may cause the area to be unstable while proofrolling. Unstable materials should be evaluated and remediated as previously discussed.

4.2 Excavation Conditions

During our field activities, partially weathered rock (PWR) was encountered in borings B-03, B-04, and B-08 at initial contact depths of approximately 13 feet below the existing grade. Borings B-03 and B-04 are located in the proposed underground storage tank area. Depending on design grades (particularly in confined excavations) and the weathering/fracturing of the PWR, areas requiring difficult excavation techniques may be necessary.

At this site, partially weathered and rock profiles are irregular, and the depth of the partially weathered rock and rock can vary dramatically over a short distance. Within the partially weathered rock, rock lenses may be encountered and require difficult excavation techniques for removal. Rock may also be encountered closer to the surface than indicated by the soil test borings or intermediate of the boring locations.



4.3 Structural Fill

All structural fill should be free of organic materials debris, and particles larger than about 4 inches and moisture conditioned to maintain a moisture content within three percentage points above and below the optimum moisture contents as determined by the Standard Proctor tests (ASTM D-698).

All structural fill to be used on site should be evaluated and approved by the Geotechnical Engineer. The following guidelines are recommended:

- Maximum dry density (MDD) of at least 95 pounds per cubic foot (pcf) (ASTM D-698)
- Liquid limit (LL) not exceeding 40 percent
- Plastic index (PI) not exceeding 20 percent

Placement and Compaction Requirements

Structural fill should be placed in thin loose lifts not exceeding 8 inches in thickness and tested by a soil technician to evaluate the compaction percentage. We recommend that the following minimum level of compaction be achieved:

- Building Areas - Compact the fill to a minimum of 98 % of the soil's MDD. In cut areas, the subgrade should be proofrolled and if found unstable, it should be scarified and re-compacted to the same criteria.
- Pavement Areas - Compact the upper 18 inches of subgrade in fill areas and the upper 12 inches in cut areas to a minimum of 98 % of the soil's MDD and a minimum of 95 % of the soil's MDD value below this level.
- Utility Trenches - Compact the upper 18 inches of the subgrade to a minimum of 98 % of the soil's MDD and a minimum of 95 % of the soil's MDD below this level.

Suitability of On-Site Soils

Much of the on-site residual soil appears suitable for re-use as structural fill provided that the soil is placed in accordance with the recommendations outlined in this report. Fine-grained soils (including clays and silts) are moisture sensitive and can prove difficult to place/compact during wet weather. The grading contractor should be prepared to moisture condition (including scarifying/drying) these soils as conditions warrant.

As previously noted, the following laboratory tests were performed on select split spoon samples and bulk samples collected at the site.

- Standard Proctor Tests (ASTM D-698)
 - 93.6* to 108.8 pcf
- Dry Sieve Analysis (ASTM D-6913)
 - -#200 ranged from 23.7% to 45.6%



- Atterberg Limits Test (ASTM D-4318)*
 - PI ranged from Non-Plastic to 22.1
 - LL ranged from Non-Viscous to 47.2
- California Bearing Ratio (ASTM D-1883)
 - CBR ranged from 3.3 to 3.7

*Some blending may be necessary for lower weight or higher plasticity material.

Additional laboratory tests including Standard Proctors (ASTM D-698), sieve analysis (ASTM D-6913) and Atterberg Limits Tests (ASTM D-4318) will be required during construction on the proposed fill soils to compare their characteristics to the specified criteria.

4.4 Groundwater and Drainage Considerations

During our field activities, the measurement to the depth below the existing ground surface to the groundwater table was attempted immediately after the completion of each boring. Groundwater was not encountered in the borings explored.

As previously mentioned, there is an area in the southeastern corner of the site that collects water. Remedial measures may be necessary in/around this area.

Groundwater levels in this area will fluctuate in response to local variations of precipitation and temperature and may be different at other times and areas. Should groundwater be encountered during site development, the contractor should implement dewatering techniques to maintain groundwater levels a minimum of 2 feet below working subgrades.

Site drainage should be planned and maintained to promote drainage away from all improvements during and after construction. Moreover, permanent site drainage should be established to prevent subgrade soils beneath pavements and slabs from becoming saturated and to minimize potential distress. Surface drainage should be directed away from proposed building structures. All roof drains should be tied directly to a storm sewer by closed pipes. Landscape irrigation should also be minimized to reduce future maintenance problems. Additionally, maximum practical grades should be utilized to reduce the likelihood of ponding water on or adjacent to flatworks. Care should be taken to properly seal and maintain all flatwork that abuts building structures to minimize the intrusion of water.



5.0 DESIGN RECOMMENDATIONS

5.1 Foundation Support

Based on boring data, assumed loading conditions, and after the completion of recommended site preparation, the proposed buildings may be supported on a conventional shallow foundation system. A maximum allowable net bearing pressure of 2,500 pounds per square is anticipated to be available for the design of the shallow foundation systems bearing on residual soils and/or structural fill.

To reduce the possibility of shear failure, wall bearing and column foundations should be designed with a minimum width of 18 and 24 inches, respectively. For frost protection, exterior wall bearing and column foundations should be designed with a minimum embedment depth of 18 inches, while interior foundations should be designed with a minimum embedment depth of 12 inches. The embedment depth should be measured from the base of the foundation to lowest adjacent outside grade.

Bottoms of foundation excavations should be evaluated by a Geotechnical Engineer prior to placement of reinforcing steel and concrete to evaluate if adequate bearing materials are present and that all debris, mud, and loose, frozen or water-softened soils are removed. Any soft areas or organic laden materials encountered should be remediated under the direction of the Geotechnical Engineer (often undercut and replaced with structural fill or crushed stone).

Foundation excavations should be concreted as soon as practical after they are excavated. Water should not be allowed to pond in any excavation. If an excavation is left open for an extended period, a thin mat of lean concrete should be placed over the bottom to minimize damage to the bearing surface from weather or construction activities. Foundation concrete should not be placed on frozen or saturated subgrades.

Upon completion of the recommendations and using the assumed structural loading, we anticipate total settlement of 1-inch or less and differential settlement of approximately half of the total settlement. Careful field control will contribute substantially to minimizing potential settlements.

5.2 Floor Support

Upon completion of the recommended site preparation, the building floor slabs may be directly supported on approved subgrade, residual soils and/or structural fill. Provided the slab subgrade is prepared in accordance with our recommendations and slab loads do not exceed 200 pounds per square foot, a subgrade modulus reaction (K) of 100 pounds per cubic inch (pci, pounds per square inch per inch of deflection) may be used for slab design.

If a higher modulus of subgrade reaction is required, then we recommend that a 6-inch layer of compacted crushed stone be placed underneath the concrete building slab. The 6 inches of



crushed stone will provide a protective cover as well as a uniform working surface. The crushed stone should consist of crushed aggregate base meeting the requirements of GDOT Section 815. Slabs underlain by 6 inches of stone are expected to have moduli of subgrade reactions (K) of 150 pci, respectively.

Expansion and contraction joints should be used to isolate all floor slabs from the load bearing walls and/or isolated columns. This will allow for possible differential movement and diminish the potential of cracking the floor slabs.

5.3 Pavement Recommendations

We have based this design on the specifications given by RaceTrac Petroleum, Inc., and have based this design on a CBR value of 5 percent. If the traffic loading information given is changed then Contour Engineering will need to be notified in order to modify our recommendations on the pavement sections. Design procedures are based on the ACI 330.2R – 17. The materials recommended for the pavement design are referenced to the Georgia Department of Transportation (GDOT) Standard Specifications for Testing Manual. Based on the subsurface conditions, and assuming our grading recommendations will be implemented as specified, the following presents our recommendations regarding typical pavement sections and materials.

We recommend that a proofroll be performed with a fully loaded tandem axle dump truck to evaluate if there is any unsuitable material located throughout the proposed site. Any areas that deflect excessively under proofrolling should be undercut and/or otherwise remediated as recommended by the Geotechnical Engineer. Remediation may include undercutting and replacement with compacted structural fill, or installation of geogrid with the use of additional well compacted GAB.

RIGID PAVEMENT DESIGN	(Minimum Thickness)	
	Standard Duty (Inches)	Heavy Duty (Inches)
Portland Cement Concrete	6	8
Graded Aggregate Base	6	6

The compaction, quality and gradation of the GAB crushed stone base will directly affect the quality and life of the pavement section. Consequently, we recommend a minimum compaction of 98 percent of the maximum dry density for the GAB crushed stone material as determined by either the modified Proctor compaction test (ASTM D 1557, Method D) or the Modified AASHTO (T-180).



A soil engineering technician working under the direction of a Geotechnical Engineer should observe placement and compaction of the base course material and perform density tests to evaluate if the material has been placed in accordance with our recommendations.

The concrete pavement should have the minimum thickness listed above. The pavement should be designed with proper air-entrainment and have maximum joint spacing as recommended by ACI 330. The concrete pavement should have a minimum 28-day compressive strength of 4,000 pounds per inch (psi) with a modulus rupture of 630 psi. Placing the 4-inch crushed stone base course beneath the concrete pavement will prevent the pumping of the soil fines through the construction joints.

In addition, the quality and life of the pavement is also contingent upon periodic inspection and maintenance. Over time, cracks may form within the pavement. The cracks should be filled or patched in order to prevent water infiltration into the underlying base material and soil subgrade.

Contour recommends that positive drainage should be maintained to prevent the ponding of water. We also recommend that measures be taken to contain water from irrigation system to within landscape islands. Water infiltration into the underlying soil subgrade will reduce the soil's bearing capacity and result in pavement failure.

5.4 Concrete Retaining/Below Grade Wall Design

Any below grade or on-site concrete below grade walls will be subjected to lateral earth pressures. Walls that are relatively rigid or fixed at the top and bottom may be subjected to "at-rest" earth pressures. Walls that are allowed to have sufficient movement and not fixed at the top will be subjected to "active" pressures.

The following lateral earth pressure parameters can be considered for design in residual soils or structural fill for walls such as one-level basement walls, retaining/loading dock walls or cast-in-place site retaining walls less than 15 feet in height:

Earth Pressure Coefficient	Earth Pressure Value	Equivalent Fluid Density (pcf)
At-Rest (K_0)	0.53	63.6
Active (K_A)	0.36	43.2
Passive (K_P)	2.77	-

These values assume that the wall has horizontal backfill and no surcharge loads such as from adjacent structures. A moist unit weight of 120 pounds cubic foot and a sliding coefficient of 0.53 (no factor of safety) may be used in the *ultimate design value* of retaining walls. Typically, a factor of safety of 1.5 is used for active earth pressure and 2.0 for passive earth pressure.

The recommended equivalent fluid pressures assume that constantly functioning drainage systems are installed between walls and soil backfill to prevent the accidental buildup of hydrostatic



pressures and lateral stresses in excess of those stated. If a functioning drainage system is not installed, then lateral earth pressures should be estimated using the buoyant weight of the soil (approximately 58 pcf). Hydrostatic pressures calculated with the unit weight of water (62.4 pcf) should be added to these earth pressures to obtain the total stresses for design.

The surcharge and lateral loads from tractors and other heavy equipment operating within 10 feet of below grade walls should be added to the lateral loads cited in this section of the report. If foundations or other surcharge loadings are located a short distance outside below grade walls, they may also exert appreciable additional lateral pressures that must be considered.

MSE Walls: The retaining wall/below grade wall recommendations listed above should not be correlated with soil parameters for use in Segmental Retaining Wall/MSE Wall design. We recommend that soil parameters for any Segmental Retaining Wall design be established through appropriate laboratory testing by the wall designer and review of the laboratory testing completed during this exploration.

5.5 Slope Recommendations

Temporary Slope Recommendations

Temporary slopes not exceeding 10 feet in height for confined areas and constructed in the virgin soils or structural fill, should be configured no steeper than 1.5(H):1.0(V) provided no water is observed seeping from the sides of the excavation. These temporary slopes should be regularly monitored for signs of movement or unsafe conditions. Temporary slopes below the groundwater table will require shoring / bracing. Additionally, construction excavation should comply with OSHA Guidelines outlined in the Code of Federal Regulations Federal Register Volume 54, Number 209 (October 1989) "Construction Standards for Excavation, 29CFR Part 1926, Subpart P." Also, the contractor should have a designated "qualified engineer" as defined by OSHA on-site during the excavation to observe the slopes for signs of possible failure.

Proper management of groundwater seepage and surface water runoff around the excavations will also contribute to the stability of temporary slopes. Material removed from excavations should *not* be stockpiled within a distance of twenty (20) feet from the crest of temporary excavations. Furthermore, positive drainage should also be maintained with ditches or channels at the top and bottom of the slope. It is also very important to always keep these drainage channels free of dirt, debris and vegetation.

Permanent Slope Recommendation

Permanent slopes less than 20 feet in height and constructed in residual soils or structural fill that are placed in accordance with the recommendations outlined in this report should be constructed no steeper than 2(H):1(V). For slopes greater than 20 feet, the slopes may require to be constructed at a 3(H):1(V) configuration and/or include a 10-foot bench at mid-height of the slope. Therefore, slopes greater than 20 feet in height will require a slope stability analysis.

To prevent erosion and saturation of the slopes, we recommend that a trench drain/diversion ditch be constructed adjacent to and along the top of the embankment (sloping toward the



trench drain) to ensure that water drains away from the slope. Depending on site conditions, a toe drain or French drain may also be constructed at the toe of cut slopes to collect water seepage. A protective cover of grass or other vegetation should be established on the slopes as soon as possible for erosion protection.

Buildings should have a minimum setback of 10 feet from the slope shoulders. A minimum setback of 5 feet is recommended for the pavement curbs.

5.6 Underground Storage Tanks

It is assumed the tanks will have a maximum embedment depth of 20 feet below the finished elevation of the pavement section. As previously mentioned, PWR was encountered in borings in the tank hold borings at initial contact depths of approximately 13 feet below the existing grade. Depending on design grades (particularly in confined excavations) and the hardness of the PWR, areas requiring difficult excavation techniques may be necessary.

Based on the borings, we do not anticipate that temporary dewatering systems will be required at this depth. However, with the high fines content of the soil on site the stabilized groundwater table might not be evident until after the excavation has taken place. If the groundwater migrates into the tank pit during construction dewatering measures will be required to lower water levels to two feet below construction grade.

When the fluid level within the fuel tank structure is maintained at or above the surrounding groundwater level, no net buoyancy will occur. However, when these structures are drained for maintenance or as fluid levels fluctuate within the tanks, a positive means of uplift protection may be necessary, depending on the future groundwater levels. Hydrostatic uplift forces can be resisted in several ways including:

- Addition of dead weight to the structure.
- Mobilizing the dead weight of the soil surrounding the structure through extension of footings outside the perimeter of the structure.
- Use of a permanent gravity or mechanical dewatering system that is operated only when the structure is to be drained.

5.7 Seismic Recommendations

Part of the International Building Code (IBC) procedure to evaluate seismic forces requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface. To define the Seismic Site Class for this project, we have interpreted the results of our soil test borings drilled within



the project site and estimated appropriate soil properties below the base of the test borings to a depth of 100 feet, as permitted by the IBC.

Based on the 2018 International Building Code (IBC), boring data, and the geological features of the Piedmont Physiographic Province of Georgia, it is our opinion that the subsurface conditions within the site are generally consistent with the characteristics of Seismic Site Classification “D”. The soil profile designated “Stiff Soil Profile” was selected from Chapter 20 of ASCE-7.



6.0 QUALIFICATION OF RECOMMENDATIONS

This report has been prepared based on currently accepted geotechnical engineering principles and practices in the local area for the specific application of this project.

The analyses and recommendations presented in this report are based upon preliminary information and our understanding of the Site and the data obtained from our field exploration. If there are any revisions to the plans for this project, we should be permitted to evaluate if the recommendations must be modified. The nature and extent of variations between borings will not be evident until the course of construction. If such variations become evident, it may be necessary to submit supplementary recommendations.

Regardless of the thoroughness of a geotechnical study, there is always a possibility that subsurface conditions will be different from those at the boring locations; those conditions will not be as anticipated by the designers or contractors; or that the construction process will alter soil conditions. Therefore, the Geotechnical Engineer's representative should observe and confirm that the conditions indicated by the geotechnical exploration actually exist.

Once final design plans and specifications are complete, and loading criterion for each building has been determined, we recommend that UES be provided the opportunity to review the final design and specifications in order that earthwork and foundation recommendations are properly interpreted and implemented.

This report and all of the contents herein are issued exclusively for use by RaceTrac, INC. No other person or entity may rely on this report without written authorization from UES. Any use, reliance on, or decisions to be made based on this report by a third party are the responsibilities of such third parties.



APPENDIX

Figure 1 – Site Vicinity Map

Figure 2 – Aerial View of Site

Figure 3 – Boring Location Plan

Subsurface Profile Plate (1)

Boring Log Records (9)

Soil Classification Chart

Important Information about This Geotechnical-Engineering Report



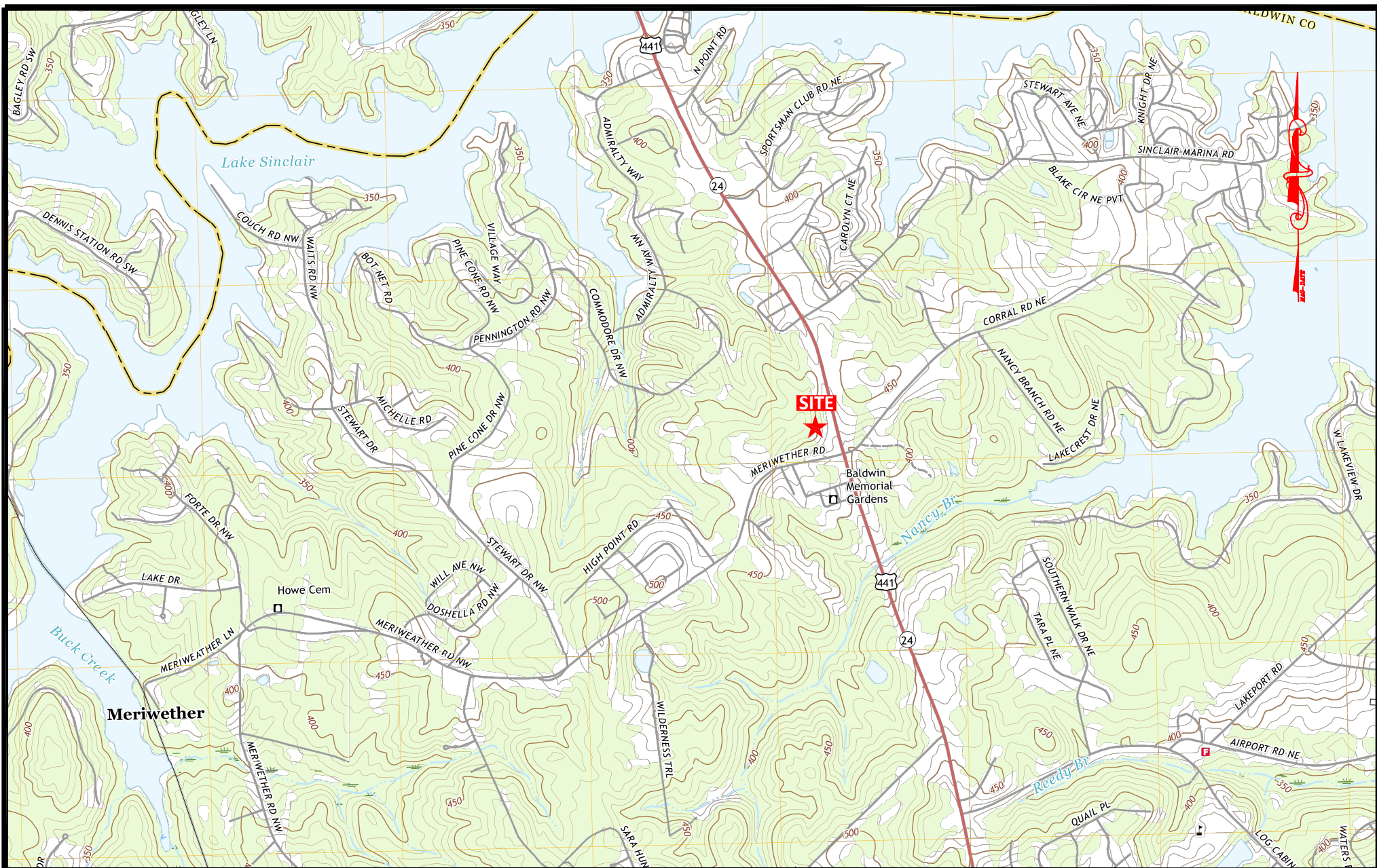


FIGURE 1: SITE VICINITY MAP



LEGEND

Source: USGS Topographic Map -
Lake Sinclair West, GA
Quadrangle
Scale: Not to Scale

PROJECT

Geotechnical Exploration
US 441 at Meriwether Rd NW
Milledgeville, Baldwin County, Georgia
Project No.: A23104.01808.000



FIGURE 2: AERIAL VIEW OF SITE



LEGEND

Source: Google Earth

Scale: Not to Scale

PROJECT

Geotechnical Exploration

RaceTrac Meriwether

Milledgeville, Baldwin County, Georgia

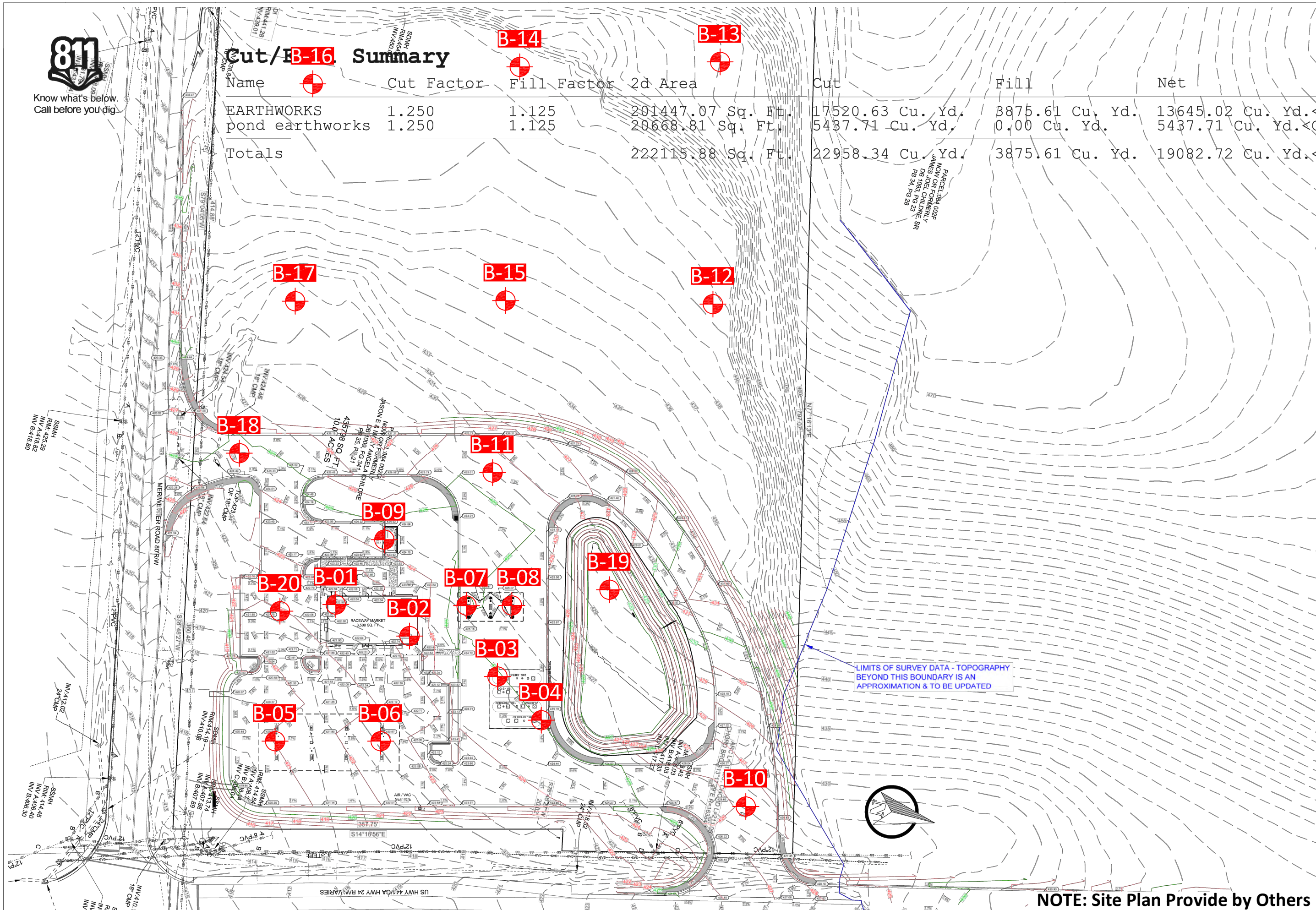
Project No.: A23104.01808.000



Know what's below.
Call before you dig.

Cut/B-16 Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
EARTHWORKS	1.250	1.125	201447.07 Sq. Ft.	17520.63 Cu. Yd.	3875.61 Cu. Yd.	13645.02 Cu. Yd.<
pond earthworks	1.250	1.125	20668.81 Sq. Ft.	5437.71 Cu. Yd.	0.00 Cu. Yd.	5437.71 Cu. Yd.<C
Totals			222115.88 Sq. Ft.	22958.34 Cu. Yd.	3875.61 Cu. Yd.	19082.72 Cu. Yd.<



NOTE: Site Plan Provide by Others

FIGURE 3: BORING LOCATION PLAN

LEGEND

- Approximate SPT Boring Locations

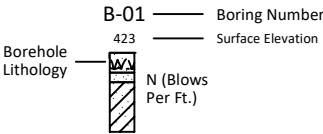
PROJECT

Geotechnical Exploration
RaceTrac Meriwether
Milledgeville, Baldwin County, Georgia
Project No.: A23104.01808.000



GENERALIZED
SUB-SURFACE
PROFILE

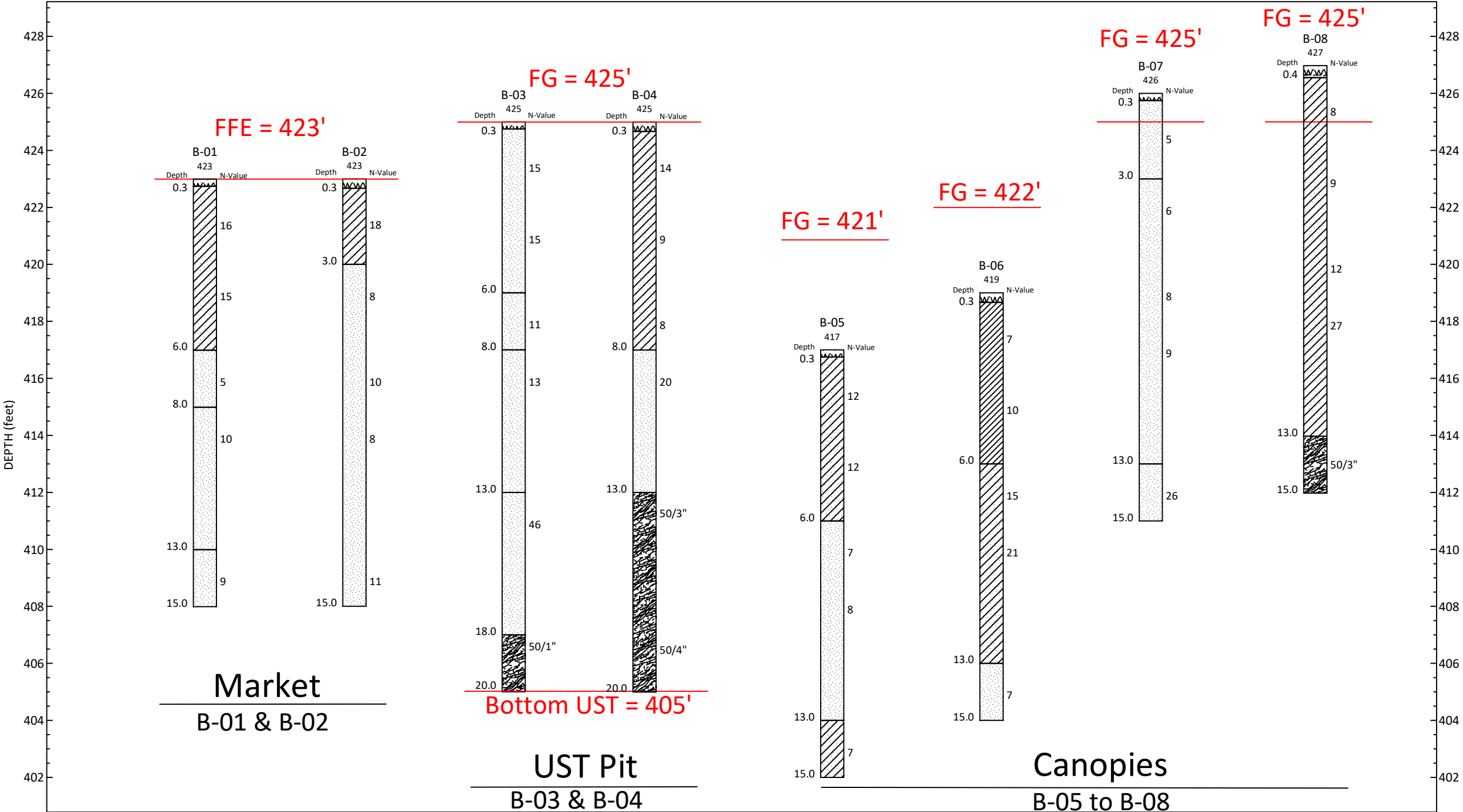
Explanation:



NOTE:
This subsurface profile is provided for graphical representation of
the boring logs only. Actual horizontal and vertical stratigraphy may
be more gradual than indicated on this subsurface profile.

Vertical Scale: AS SHOWN
Horizontal Scale: NOT TO SCALE

RaceTrac Meriwether
Milledgeville, Georgia

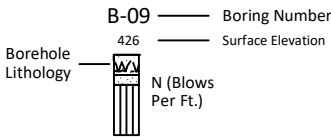


Lithology Graphics



GENERALIZED
SUB-SURFACE
PROFILE

Explanation:

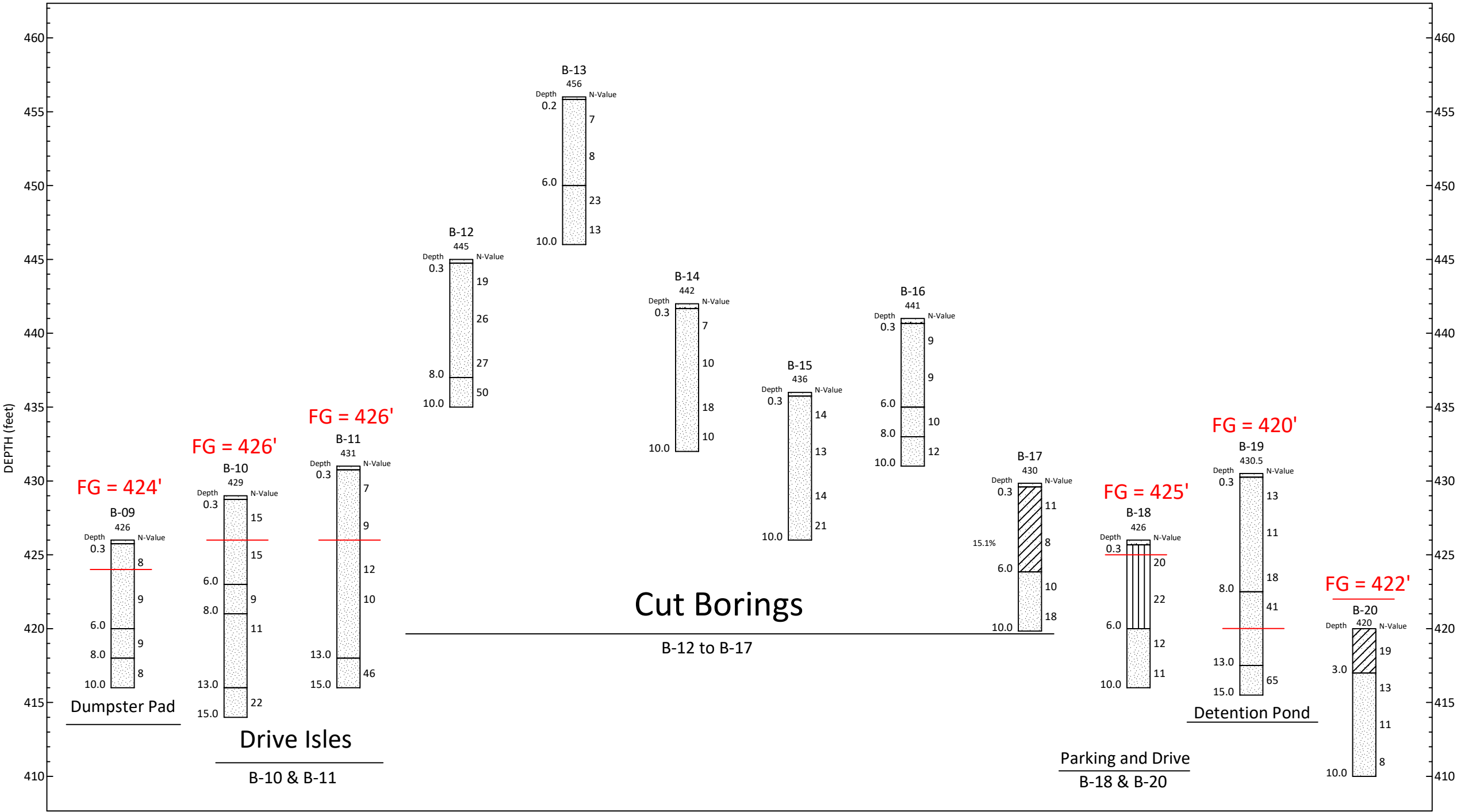


NOTE:
This subsurface profile is provided for graphical representation of the boring logs only. Actual horizontal and vertical stratigraphy may be more gradual than indicated on this subsurface profile.

Vertical Scale: AS SHOWN
Horizontal Scale: NOT TO SCALE

RaceTrac Meriwether

Milledgeville, GA



Lithology Graphics



Topsoil



USCS Silty Sand



USCS Sandy Silt/Clayey Silt



USCS Clayey Sand



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-01**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 423.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
							RESIDUUM: Medium dense, red brown, clayey SAND (SC) with mica						
420			4-7-9	16									
5			5-6-9	15				45.6	23	44	21.1		
							Loose, yellowish brown, silty SAND (SM) with mica						
415			3-3-2	5			Loose, brown, silty SAND (SM) with mica						
10			5-4-6	10									
							Loose, micaceous gray, silty SAND (SM)						
410													
15			4-4-5	9			Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-02**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 423.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 4 inches						
							RESIDUUM: Medium dense, gray with red brown, clayey SAND (SC)						
420			4-8-10	18									
							Loose to medium dense, red brown, silty SAND (SM) with mica						
5			3-3-5	8									
415			5-4-6	10									
10			4-4-4	8									
410													
15			6-6-5	11			Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-03**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 425.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
			8-7-8	15			RESIDUUM: Medium dense, red brown, silty SAND (SM) with mica						
5	420		6-6-9	15									
			6-6-5	11			Medium dense, yellowish brown, silty SAND (SM) with mica						
			6-6-7	13			Medium dense, red brown, silty SAND (SM) with mica						
10	415												
			19-22-24	46			Dense, black, silty SAND (SM)						
15	410												
			50/1"				PARTIALLY WEATHERED ROCK: No recovery						
20	405						Boring terminated at 20.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-04**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 425.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 4 inches						
			4-6-8	14			RESIDUUM: Medium dense, red brown, clayey SAND (SC) with mica						
5	420		5-5-4	9				31.8	12.7	47.2	22.1		
			4-4-4	8			Medium dense, yellowish brown, silty SAND (SM) with mica						
10	415		5-9-11	20									
			30-50/3"				PARTIALLY WEATHERED ROCK: Sampled as very dense, yellowish brown, silty SAND (SM) with mica						
15	410												
			50/4"										
20	405						Boring terminated at 20.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-05**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 417.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
	415	X	3-5-7	12			RESIDUUM: Medium dense, gray with red brown, clayey SAND (SC)						
5		X	3-4-8	12									
	410	X	4-3-4	7			Loose, yellowish red, silty SAND (SM) with mica						
10		X	4-4-4	8									
	405	X											
		X	3-4-3	7			Loose, gray with red brown, clayey SAND (SC)						
15							Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-06**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 419.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 4 inches						
			3-3-4	7			RESIDUUM: Firm to stiff, red brown, sandy CLAY (CL)						
415													
5			4-4-6	10									
							Medium dense, gray with red brown, clayey SAND (SC)						
			4-7-8	15									
410													
10			6-8-13	21									
							Loose, white, silty SAND (SM)						
405													
15			3-3-4	7			Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-07**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 426.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
425			3-2-3	5			RESIDUUM: Loose, red brown, silty SAND (SM) with mica						
							Loose, yellowish brown, silty SAND (SM) with mica						
5			3-2-4	6									
420													
			4-4-4	8									
			4-4-5	9									
10													
415							Medium dense, yellowish brown, silty SAND (SM) with mica						
15			10-11-15	26			Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-08**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 427.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 5 inches						
	425	X	3-4-4	8			RESIDUUM: Loose to medium dense, yellowish brown, clayey SAND (SC) with mica						
5		X	3-4-5	9				26	14.9	44.7	20.5		
	420	X	4-5-7	12									
10		X	10-12-15	27									
	415	X											
		X	19-30-50/3"				PARTIALLY WEATHERED ROCK: Sampled as very dense, yellowish brown, silty SAND (SM) with mica						
15							Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-09**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 426.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
425			5-4-4	8			RESIDUUM: Loose, yellowish brown, silty SAND (SM) with mica						
5			4-5-4	9									
420							Loose, red brown, silty SAND (SM) with mica						
			3-3-6	9			Loose, yellowish brown, silty SAND (SM) with mica						
10			4-4-4	8			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-10**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 429.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
							RESIDUUM: Medium dense, red brown, silty SAND (SM) with mica						
			4-6-9	15									
425													
			5-8-7	15									
5													
							Loose, yellowish brown, silty SAND (SM) with mica						
			5-5-4	9									
420							Medium dense, red brown, silty SAND (SM) with mica						
			5-5-6	11									
10													
							Medium dense, yellowish brown, silty SAND (SM) with mica						
415													
			10-9-13	22									
15							Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-11**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 431.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
430			4-3-4	7			RESIDUUM: Loose and medium dense, yellowish brown, silty SAND (SM) with mica						
5			3-4-5	9									
425			10-6-6	12									
10			4-4-6	10									
420													
							Dense, yellowish brown, silty SAND (SM) with mica						
15			9-22-24	46			Boring terminated at 15.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-12**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 445.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
			7-9-10	19			RESIDUUM: Medium dense, yellowish brown, silty SAND (SM) with mica						
5	440		11-12-14	26									
			7-10-17	27									
							Very dense, yellowish brown, silty SAND (SM) with mica						
10	435		7-18-32	50			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-13**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 456.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 2 inches						
	455	X	3-3-4	7			RESIDUUM: Medium dense, red brown, silty SAND (SM) with mica						
		X											
		X											
5		X	6-4-4	8				25.4	12.5	NV	NP		
	450	X											
		X	23-11-12	23			Medium dense, yellowish brown, silty SAND (SM) with mica						
		X											
10		X	5-6-7	13			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-14**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 442.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 4 inches						
							RESIDUUM: Loose and medium dense, yellowish brown, silty SAND (SM) with mica						
440			4-4-3	7									
5			4-4-6	10									
435			6-8-10	18									
10			5-4-6	10			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-15**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 436.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
435			6-6-8	14			RESIDUUM: Medium dense, yellowish brown, silty SAND (SM) with mica						
5			6-6-7	13									
430			6-6-8	14									
10			7-9-12	21			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-16**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 441.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 4 inches						
440			5-4-5	9			RESIDUUM: Loose, yellowish red, silty SAND (SM) with mica						
5			5-4-5	9									
435							Loose, yellowish brown, silty SAND (SM) with mica						
			4-4-6	10			Medium dense, brown, silty SAND (SM) with mica						
10			4-6-6	12			Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-17**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 430.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							TOPSOIL: Approximately 3 inches						
			5-6-5	11			RESIDUUM: Loose to medium dense, yellowish red, clayey SAND (SC) with mica						
5	425		5-4-4	8				31.4	15.1	42.6	19.5		
			4-5-5	10			Loose to medium dense, yellowish brown, silty SAND (SM) with mica						
10	420		6-7-11	18			Boring terminated at 10.0 ft.						

BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-18**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 426.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0													
	425		4-9-11	20			TOPSOIL: Approximately 4 inches RESIDUUM: Very stiff, red brown, sandy SILT (ML)						
													
			6-9-13	22									
5													
	420						Medium dense, yellowish red, silty SAND (SM) with mica						
			5-5-7	12									
													
			4-5-6	11									
10							Boring terminated at 10.0 ft.						



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-19**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 430.5

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0	430						TOPSOIL: Approximately 3 inches						
			4-6-7	13			RESIDUUM: Medium dense, yellowish brown, silty SAND (SM) with mica						
5	425		5-5-6	11									
			7-8-10	18			Dense, yellowish brown, silty SAND (SM) with mica						
10	420		10-19-22	41									
							Very dense, black, silty SAND (SM)						
15			20-33-32	65			Boring terminated at 15.0 ft.	23.7	8.6	NV	NP		



BORING LOG

PROJECT NO.: A23104.01808.000

REPORT NO.:

PROJECT: RaceTrac Meriwether
Meriwether Road NW
Milledgeville, Georgia

BORING DESIGNATION: **B-20**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: RaceTrac, Inc.

G.S. ELEVATION (ft): 420.0

DATE STARTED: 1/23/23

LOCATION: See BLP

WATER TABLE (ft): NE

DATE FINISHED: 1/23/23

REMARKS: Deidrich D50 Turbo Automatic Hammer Rig, NE = Not Encountered

DATE OF READING: 1/23/2023

DRILLED BY: Dodd

TYPE OF SAMPLING: HSA, SPT

DEPTH (FT.)	ELEV (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	POCKET PEN. (tsf)
										LL	PI		
0							RESIDUUM: Medium dense, gray brown, clayey SAND (SC)						
			4-9-10	19									
							Medium dense to loose, yellowish red, silty SAND (SM)						
5	415		4-4-9	13									
			5-5-6	11									
10	410		3-4-4	8			Boring terminated at 10.0 ft.						

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES	
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES	
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES	
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		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	
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY	
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

COMPACTION TEST REPORT

Curve No.: B-1

Project No.: A23104.01808.000

Date: 2-1-24

Project: RaceTrac Meriwether

Client: RaceTrac Petroleum, Inc.

Location: Boring B-1

Sample Number: B-1

Remarks:

MATERIAL DESCRIPTION

Description: Orange red brown clayey SAND (SC)

Classifications -

USCS: SC

AASHTO: A-7-6(6)

Nat. Moist. = 23.0 %

Sp.G. =

Liquid Limit = 44.0

Plasticity Index = 21.1

%<No.10 = 99.0 %

%<No.40 = 75.6 %

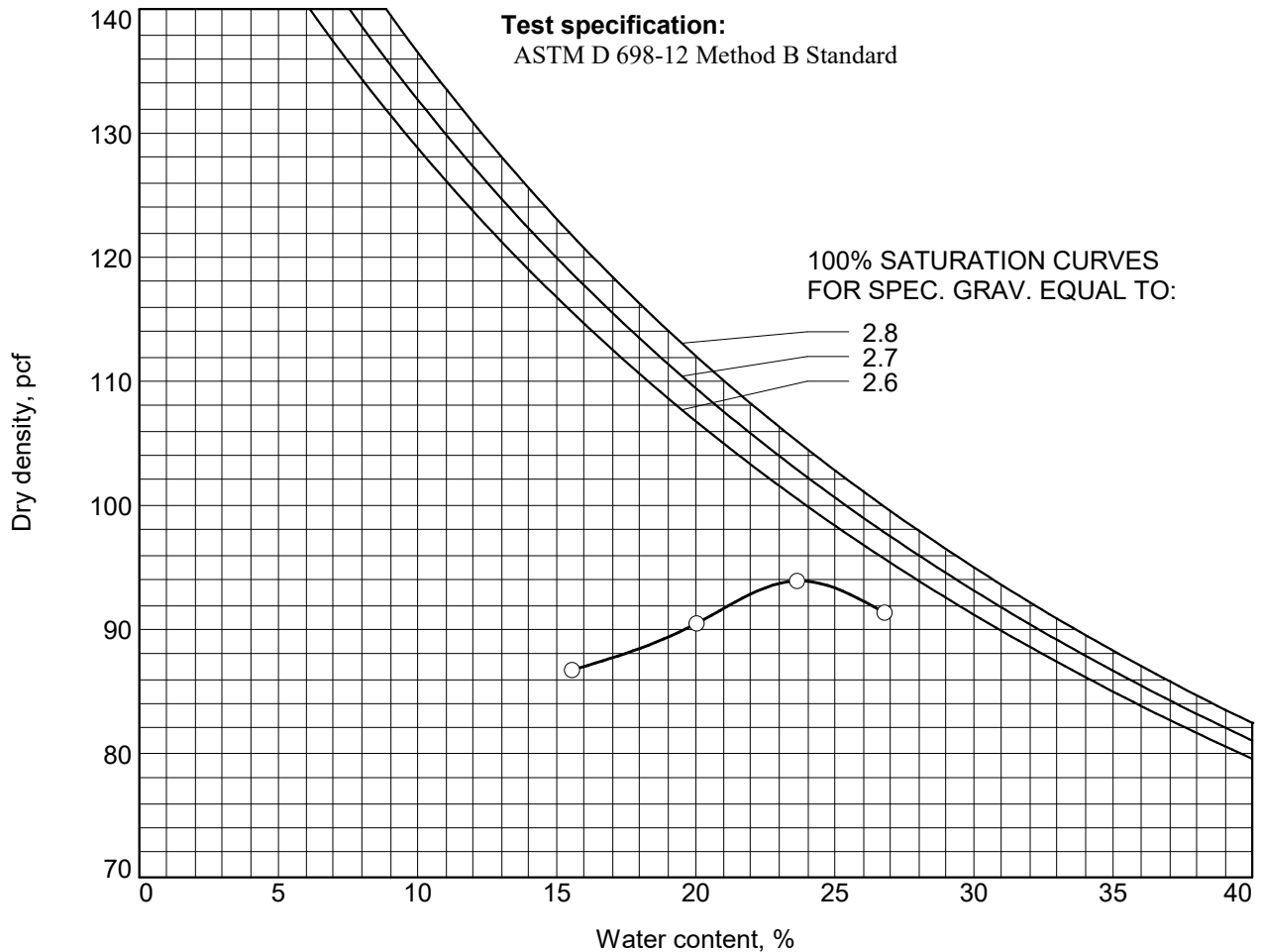
%<No.60 = 63.9 %

%<No.200 = 45.6 %

TEST RESULTS

Maximum dry density = 93.9 pcf

Optimum moisture = 23.7 %



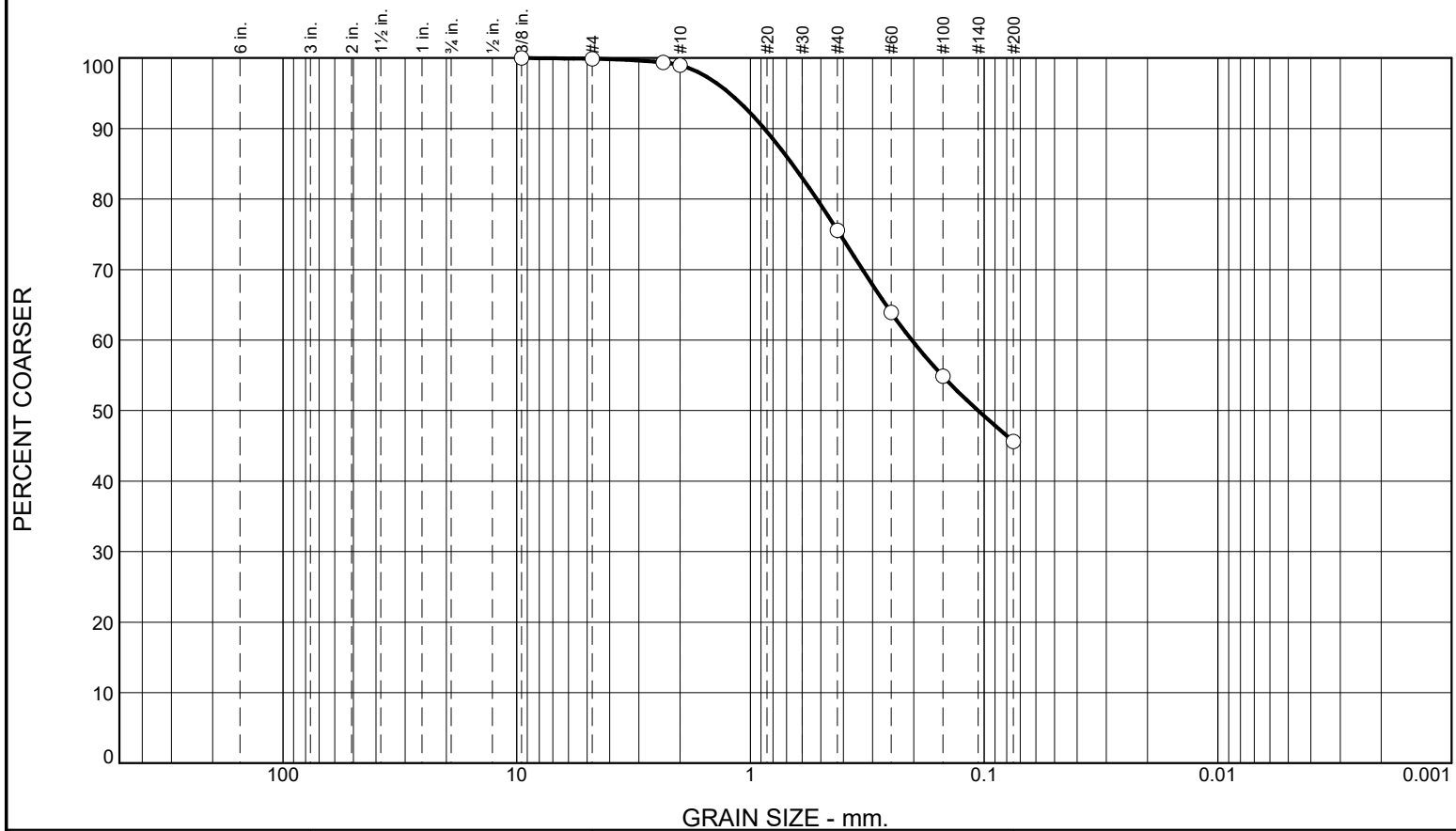
Figure

Contour Engineering, LLC

Tested By: Ray Boyd

Checked By: Chris LeBeau

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.9	23.4	30.0	45.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	99.9		
#8	99.4		
#10	99.0		
#40	75.6		
#60	63.9		
#100	54.9		
#200	45.6		

* (no specification provided)

Material Description

Orange red brown clayey SAND (SC)

Atterberg Limits

PL= 22.9

LL= 44.0

PI= 21.1

Classification

USCS= SC

AASHTO= A-7-6(6)

Remarks

Location: Boring B-1
Sample Number: B-1

Date: 2-1-24



Client: RaceTrac Petroleum, Inc.

Project: RaceTrac Meriwether

Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

COMPACTION TEST REPORT

Curve No.: B-4

Project No.: A23104.01808.000

Date: 2-1-24

Project: RaceTrac Meriwether

Client: RaceTrac Petroleum, Inc.

Location: Boring B-4

Sample Number: B-4

Remarks:

MATERIAL DESCRIPTION

Description: Brown red clayey SAND (SC)

Classifications -

USCS: SC

AASHTO: A-2-7(2)

Nat. Moist. = 12.7 %

Sp.G. =

Liquid Limit = 47.2

Plasticity Index = 22.1

%<No.10 = 97.8 %

%<No.40 = 61.4 %

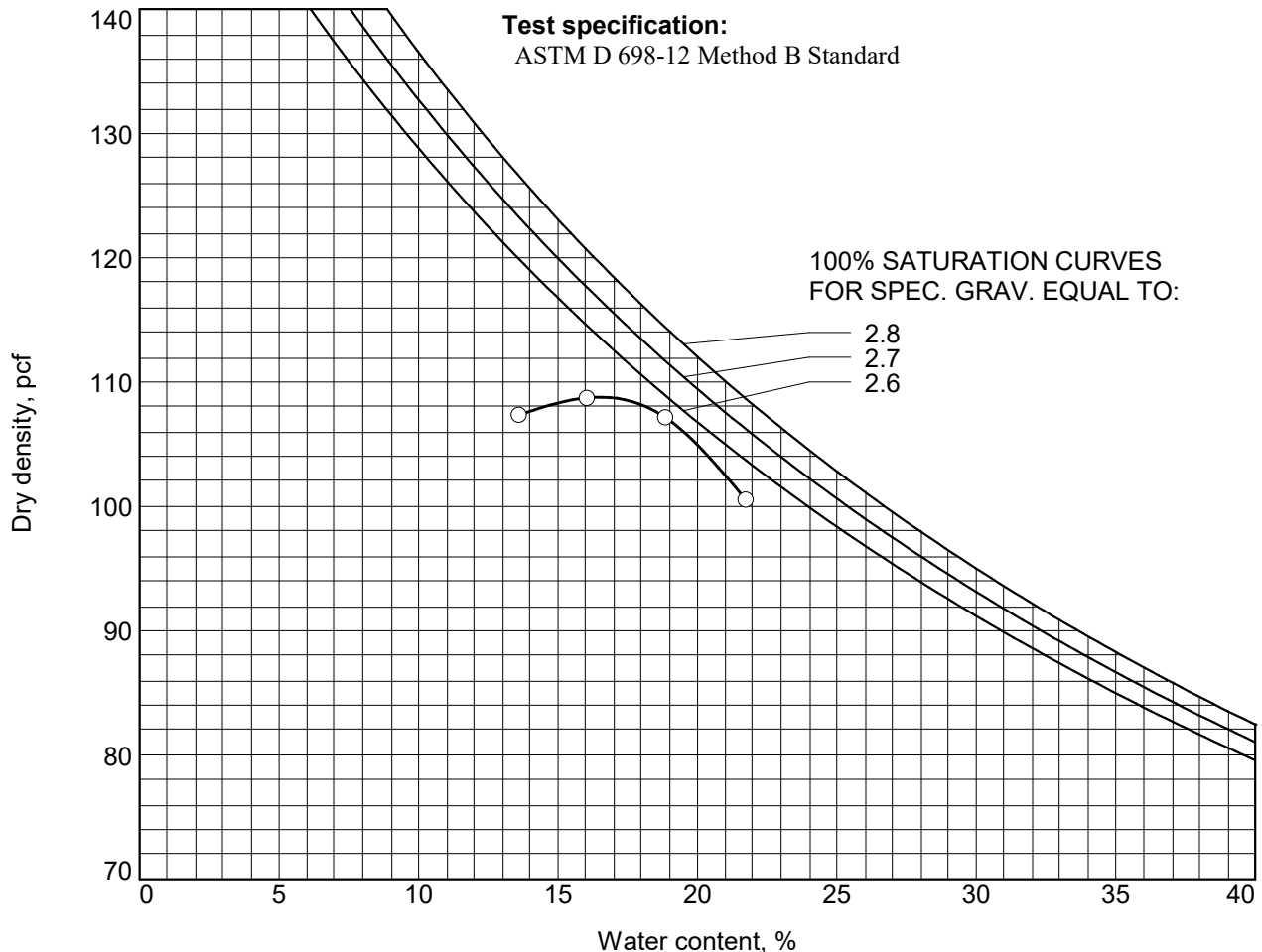
%<No.60 = 50.2 %

%<No.200 = 31.8 %

TEST RESULTS

Maximum dry density = 108.8 pcf

Optimum moisture = 16.5 %



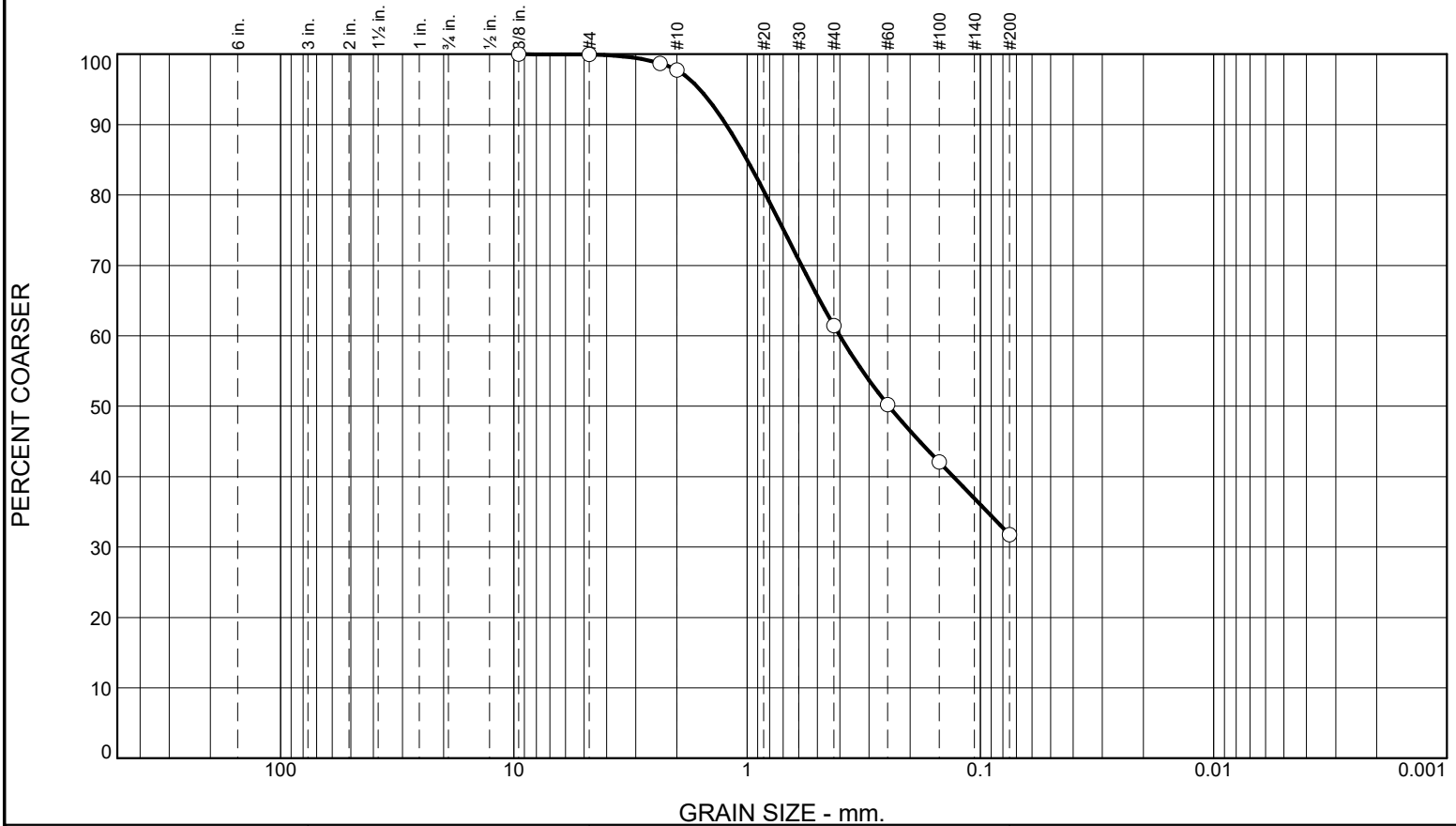
Figure

Contour Engineering, LLC

Tested By: Ray Boyd

Checked By: Chris LeBeau

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.2	36.4	29.6	31.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	100.0		
#8	98.7		
#10	97.8		
#40	61.4		
#60	50.2		
#100	42.1		
#200	31.8		

* (no specification provided)

Material Description
 Brown red clayey SAND (SC)

PL= 25.1 **Atterberg Limits** LL= 47.2 PI= 22.1

USCS= SC **Classification** AASHTO= A-2-7(2)

Remarks

Location: Boring B-4
Sample Number: B-4

Date:



Client: RaceTrac Petroleum, Inc.
Project: RaceTrac Meriwether

Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

CALIFORNIA BEARING RATIO

ASTM D-1883

RaceTrac Meriwether

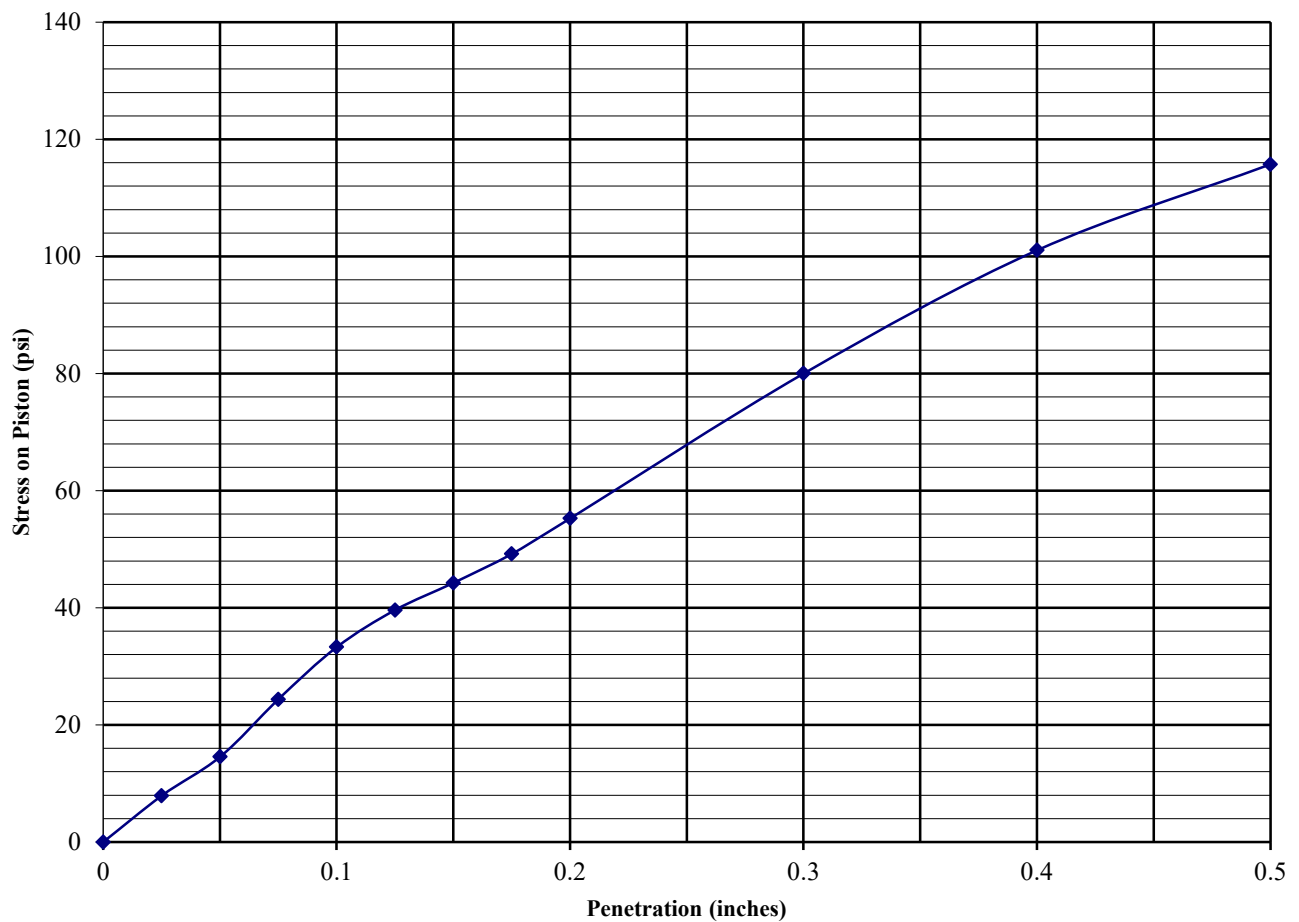
A23104.01808.000

Sampled No.: B-4

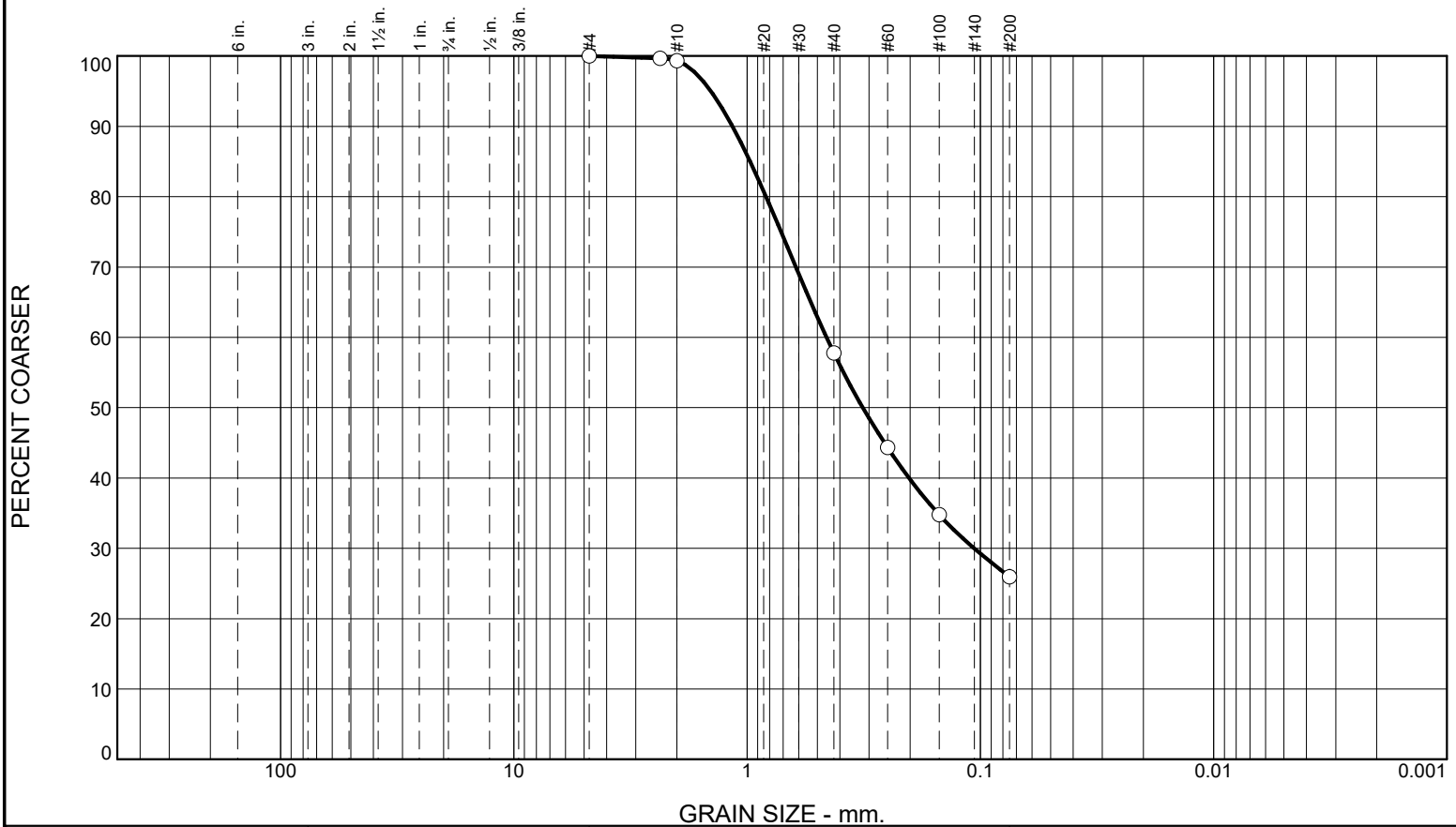
Sample Description: Brown red clayey SAND (SC)

Date: 2/9/2024

Surcharge Load	10
Condition of Sample	Soaked
Dry Density Before Soaking (pcf)	106.8
Moisture Content Before Soaking (%)	17.0
Dry Density After Soaking (pcf)	101.6
Moisture Content After Soaking (%)	26.8
Swell (%)	1.24%
Bearing Ratio as tested at 0.100	3.3
Bearing Ratio as tested at 0.200	3.7



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	41.5	31.8	26.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#8	99.7		
#10	99.3		
#40	57.8		
#60	44.3		
#100	34.8		
#200	26.0		

* (no specification provided)

Material Description		
Red tan clayey SAND (SC)		
PL= 24.2	<u>Atterberg Limits</u> LL= 44.7	PI= 20.5
USCS= SC	<u>Classification</u> AASHTO=	A-2-7(1)
<u>Remarks</u>		

Location: Boring B-8
Sample Number: B-8

Date:



Client: RaceTrac Petroleum, Inc.
Project: RaceTrac Meriwether

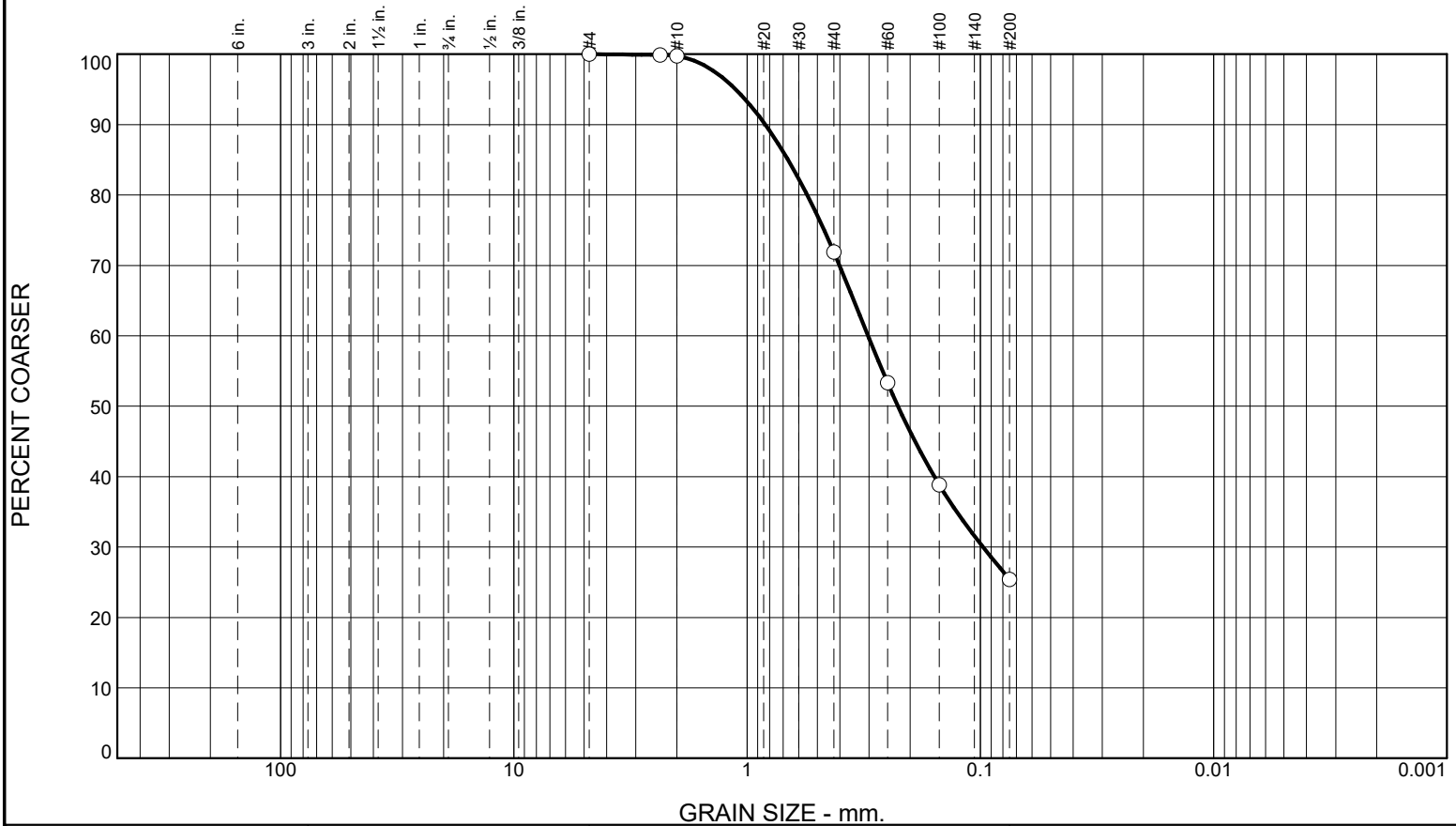
Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	27.9	46.5	25.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#8	99.9		
#10	99.8		
#40	71.9		
#60	53.3		
#100	38.8		
#200	25.4		

* (no specification provided)

Material Description
 Light brown silty SAND (SM), trace mica

Atterberg Limits
 PL= NP LL= NV PI= NP

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks

Location: Boring B-13
Sample Number: B-13

Date: 2-1-24



Client: RaceTrac Petroleum, Inc.
Project: RaceTrac Meriwether

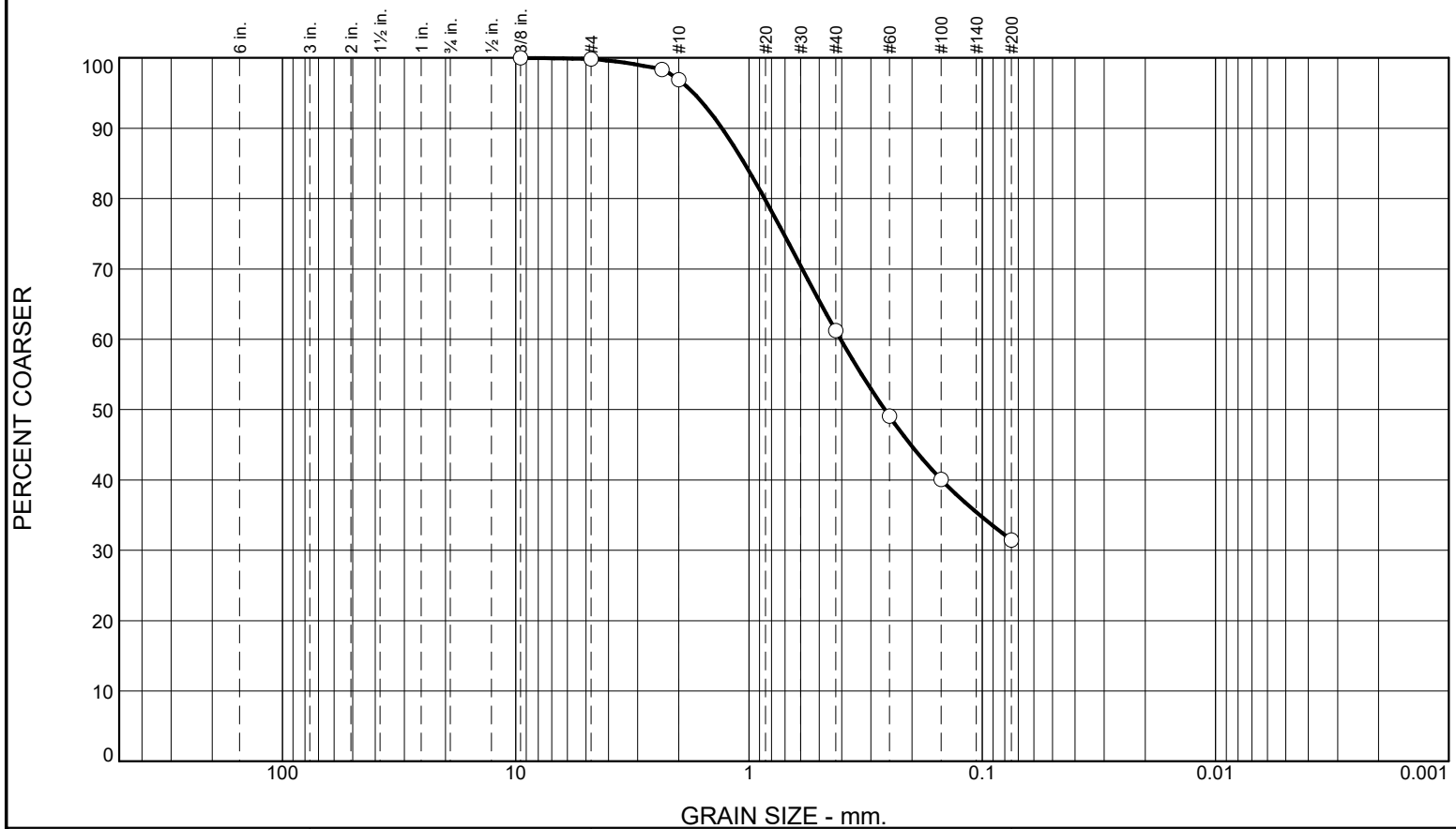
Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	2.9	35.7	29.8	31.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	99.8		
#8	98.4		
#10	96.9		
#40	61.2		
#60	49.1		
#100	40.1		
#200	31.4		

* (no specification provided)

Material Description		
Tan brown red clayey SAND (SC)		
PL= 23.1	<u>Atterberg Limits</u> LL= 42.6	PI= 19.5
USCS= SC	<u>Classification</u> AASHTO=	A-2-7(2)
<u>Remarks</u>		

Location: Boring B-17
Sample Number: B-17

Date: 2-1-24



Client: RaceTrac Petroleum, Inc.
Project: RaceTrac Meriwether

Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

COMPACTION TEST REPORT

Curve No.: B-19

Project No.: A23104.01808.000

Date: 2-1-24

Project: RaceTrac Meriwether

Client: RaceTrac Petroleum, Inc.

Location: Boring B-19

Sample Number: B-19

Remarks:

MATERIAL DESCRIPTION

Description: Gray brown orange silty SAND (SM)

Classifications -

USCS: SM

AASHTO: A-2-4(0)

Nat. Moist. = 8.6 %

Sp.G. =

Liquid Limit = NV

Plasticity Index = NP

%<No.10 = 98.0 %

%<No.40 = 64.1 %

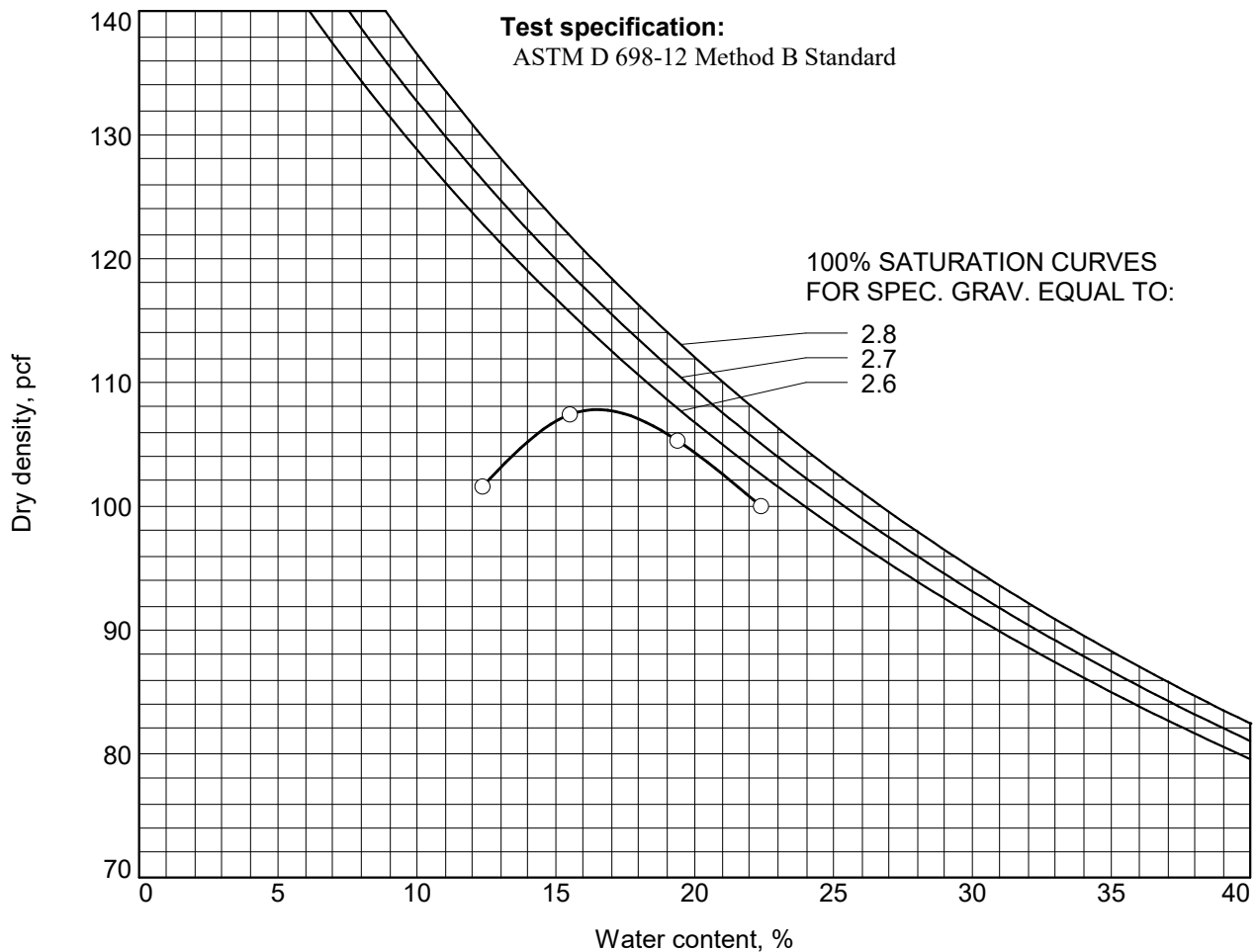
%<No.60 = 50.5 %

%<No.200 = 23.7 %

TEST RESULTS

Maximum dry density = 107.8 pcf

Optimum moisture = 16.5 %



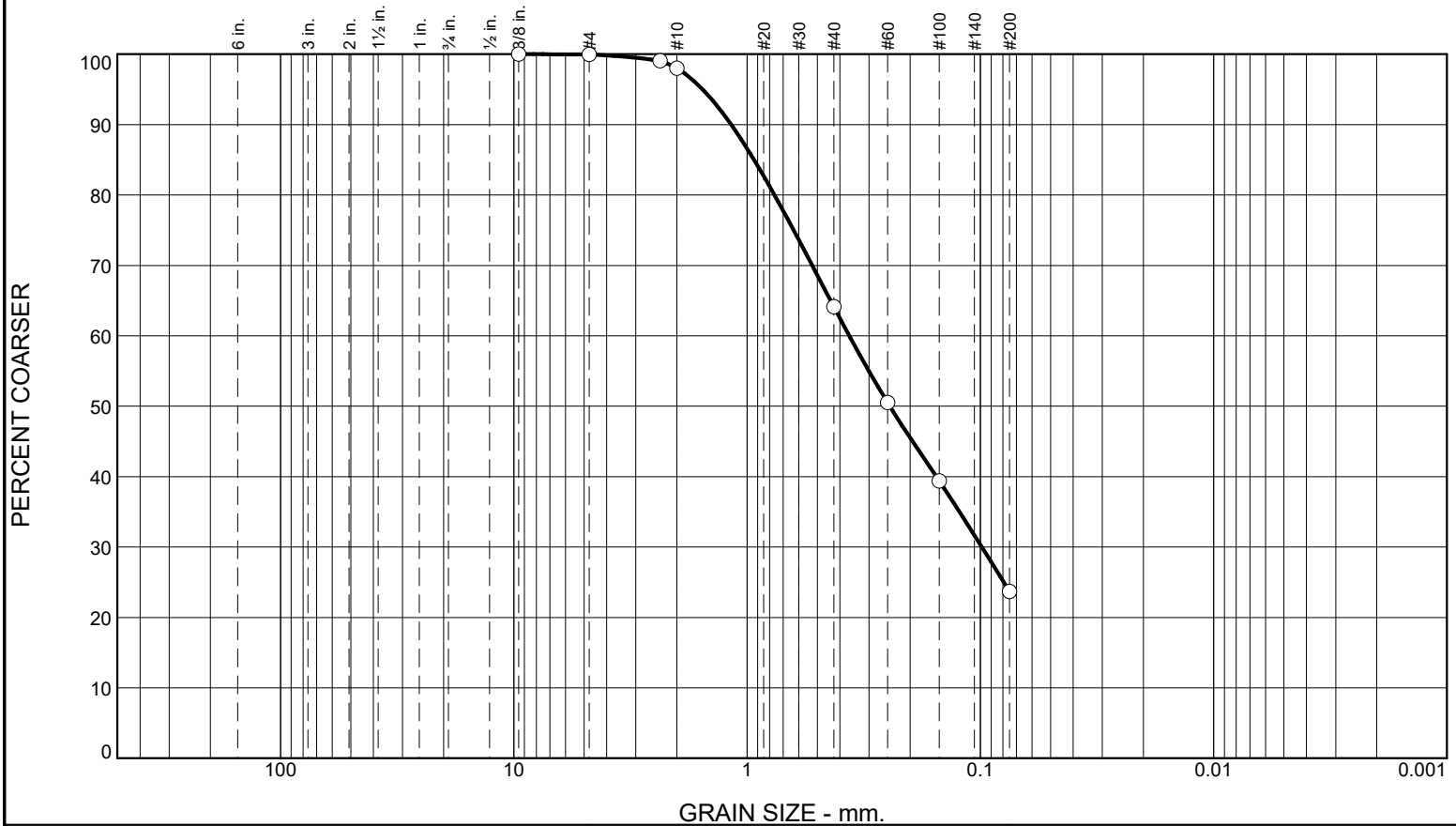
Figure

Contour Engineering, LLC

Tested By: Ray Boyd

Checked By: Chris LeBeau

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.0	33.9	40.4	23.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	100.0		
#8	99.1		
#10	98.0		
#40	64.1		
#60	50.5		
#100	39.4		
#200	23.7		

* (no specification provided)

Material Description		
Gray brown orange silty SAND (SM)		
Atterberg Limits		
PL= NP	LL= NV	PI= NP
Classification		
USCS= SM	AASHTO=	A-2-4(0)
Remarks		

Location: Boring B-19
Sample Number: B-19

Date: 2-1-24



Client: RaceTrac Petroleum, Inc.
Project: RaceTrac Meriwether

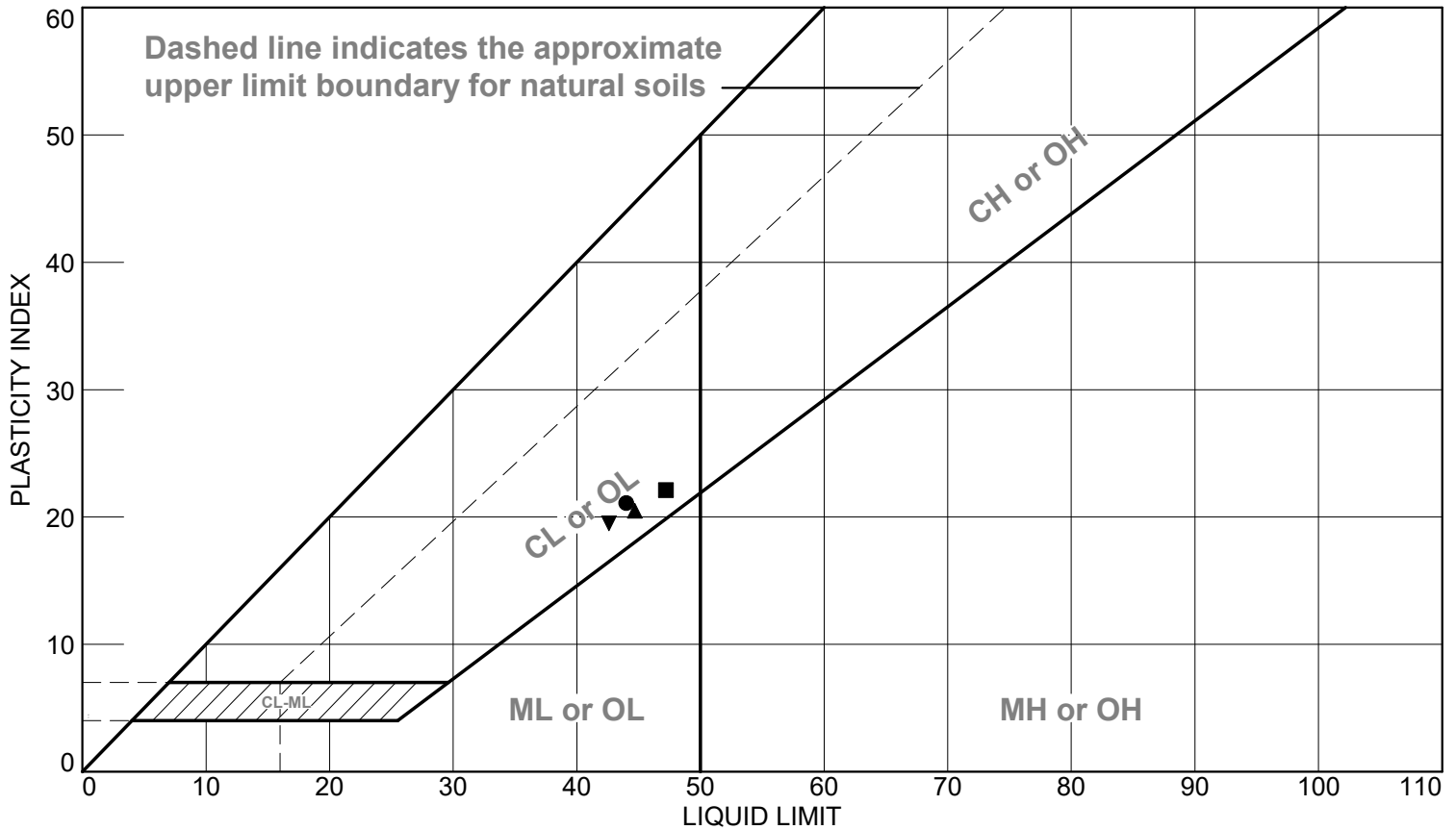
Project No: A23104.01808.000

Figure

Tested By: Ray Boyd

Checked By: Chris LeBeau

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●		B-1		23.0	22.9	44.0	21.1	SC
■		B-4		12.7	25.1	47.2	22.1	SC
▲		B-8		14.9	24.2	44.7	20.5	SC
◆		B-13		12.5	NP	NV	NP	SM
▼		B-17		15.1	23.1	42.6	19.5	SC
*		B-19		8.6	NP	NV	NP	SM



Client: RaceTrac Petroleum, Inc.

Project: RaceTrac Meriwether

Project No.: A23104.01808.000

Figure

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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