ADDENDUM 1
DATE: July 13, 2026

Contract: 26-C-00042; Forest Hills Park Pump Station Replacement

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

Item 1: Attached for reference is the Subsurface and Geotechnical Evaluation Report.

The report for the project referenced comes from uncontrolled sources and does not conform to WCAG 2.1 at level AA. Individuals with disabilities seeking assistance with the individual project plans or specifications should e-mail Contractadministration@tampagov.net.

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to ContractAdministration@tampagov.net.

Jim Greiner, P.E., Contract Management Supervisor

Hampton Oaks Business Park, 5904 Hampton Oaks Parkway, Suite F
Tampa, Florida 33610
United States
www.ghd.com

Our ref: 12656938

January 16, 2025

MPH Civil Consultants, Inc.
P.O. Box 1121
Odessa, Florida 33556

Attn: Mr. H. Duane Milford, P.E.

Re: Report of Subsurface Exploration and Geotechnical Evaluation Services Forest Hills Park Stormwater Pump Station West Bougainvillea Avenue Tampa, Florida

1. Introduction

GHD has completed our subsurface exploration and geotechnical engineering evaluation for the Forest Hills Park stormwater pump station. Based on our interpretation of the subsurface conditions from the boring data and our understanding of the proposed construction, geotechnical engineering conclusions and recommendations pertaining to lift station subgrade preparation and pavement recommendations are presented herein. Estimates for groundwater table fluctuations within the subject area of the project are also included, as well as borrow soil types and suitability for re-use as structure and pipe backfill material.

2. Summary

The geotechnical study revealed suitable subgrade conditions for the planned pump station and driveway, provided that the site is prepared in accordance with the earthwork recommendations that are contained in this report. Sandy soils with variable silt content were encountered within the upper 8 feet, followed by clayey sands/sandy clay to about 17 feet. Below 17 feet, we encounterd silty clayey sands to the top of the limestone formation which was penetrated at about 27 feet. With site preparation as recommended, the pump station foundation can be designed based on a net allowable soil bearing pressure of 2,500 pounds per square foot (psf).

The soils encountered generally within the upper 8 feet are also considered acceptable for re-use as structure and pipe backfill material. The clayey soils between 8 and 17 feet have increased clay fines content and are generally unacceptable (high) plasticity characteristics for use as structure and pipe backfill.

The pump station foundation excavation should be visually reviewed for stability prior to placement of concrete. Any soft or yielding soils due to saturation should be over-excavated and replaced with compacted structural fill.

The following report sections provide a more detailed description of the explorations that were made and tests performed. Also included below are more detailed conclusions, earthwork recommendations and other important details that are not included in this summary. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made, or actions taken, based on this information.

3. Project and Site Description

Project information was provided in your electronic mailing on June 18, 2024, including a copy of a Site Plan with requested scope, and a few photographs of the site. We understand that specific geotechnical engineering services were requested for a new stormwater pump station planned for the project site. The pump station wet well will be about 16 feet deep and a new driveway, approximately 125 feet in length, is planned.

4. Purpose and Scope of Services

The purpose of our study was to evaluate generalized subsurface soil and groundwater conditions near the proposed pump station and driveway. The subsurface materials encountered were evaluated for re-use as structure and pipe backfill. The scope of services provided is listed below:

- Coordinated utility notification through Sunshine State One Call of Florida, Inc.
- Reviewed the Hillsborough County Soil Survey pertaining to the site surficial soils and published shallow, historical groundwater information.
- Coordinated scheduling and site access with City of Tampa personnel.
- Mobilized drilling equipment and materials to the project site.
- Conducted one Standard Penetration Test (SPT) boring at the proposed pump station location per ASTM D 1586 (Standard Test Method for Penetration Test and Split Barrel Sampling of Soils) to a nominal depth of 35 feet.
- Advanced two hand auger borings to depths of 7 feet within the proposed driveway area in general accordance with ASTM D 1452 (Standard Practice for Soil Investigation and Sampling by Auger Borings).
- Measured groundwater levels at the boring locations.
- Collected soil samples from the boring locations for laboratory review.
- Provided soil classifications per the Unified Soil Classification System and AASHTO M145 terminology utilizing ASTM D2487 (Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)) and ASTM D2488 (Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)).
- Presented the results of our exploration and evaluations in an engineering report including:
  - The data developed during the study, including soil profiles and groundwater levels.

- An interpretation of the soil stratigraphy based on our testing and review of the Hillsborough County Soil Survey.
- On-site soil types and suitability for re-use as structure and pipe backfill.
- Estimates of groundwater fluctuations, including an estimate of the seasonal high groundwater level.
- Pump station construction considerations.
- General pavement recommendations.

5. Subsurface Exploration

5.1 Soil Boring Methods

The Standard Penetration Test (SPT) boring procedure was conducted in general accordance with ASTM D-1586 using the rotary wash method, where clay slurry ("drill mud" or "drill fluid") was used to flush and stabilize the borehole. After hand augering to 4 feet to check for unidentified underground utilities, Standard Penetration sampling was performed at closely spaced intervals in the upper 10 feet and at 5-foot intervals thereafter. After seating the sampler 6 inches into the bottom of the borehole, the number of blows required to drive the sampler one foot further with a standard hammer is known as the "N" value or blowcount. The blowcount has been empirically correlated to soil properties. The recovered samples were placed into containers and returned to our office for visual classification.

The hand auger borings were performed by manually rotating a bucket auger into the ground in approximately 4-to-6-inch increments. As each soil type was encountered, its depth interval was recorded, and representative samples taken for review in the laboratory. The hand auger borings were performed in general accordance with ASTM D 1452 (Standard Practice for Soil Investigation and Sampling by Auger Borings). The recovered samples were placed into containers and returned to our office for visual review.

5.2 Test Locations

The approximate locations of the soil borings are illustrated on the site plan in **Figure 1**. The borings were positioned by referencing from existing site features. The precision of the illustrated locations is not comparable to that provided in a land survey of the property. Therefore, it should be understood that the illustration is included as a general sketch to illustrate relative test positions and other features.

6. Subsurface Conditions

6.1 Soil Conservation Service Data

The U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS), has mapped the shallow soils in this area of Hillsborough County, Florida. This information is archived in an electronic database (Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov). The Web Soil Survey was reviewed for information on the general shallow soil types in the project area. The soil survey indicates the site is covered by Archbold fine sand (mapping unit 3). Small areas of other similar and dissimilar soils may be present within the mapping unit.

Archbold fine sand is nearly level and moderately well drained. It is found on low ridges on the flatwoods. The slope is 0 to 2 percent. Typically, this soil has a surface layer of light gray fine sand about 2 inches thick. The underlying material to a depth of about 80 inches is white fine sand. In places, similar soils included in mapping have a black or very dark brown subsoil in the lower part of the horizon. Other similar soils, in some of the higher parts of the landscape, are well drained. Dissimilar soils included in mapping are some unnamed, excessively drained soils in small areas. Also included are some small areas of unnamed, moderately well drained soils that have a black or very dark brown subsoil within 30 inches of the surface. In most years, a seasonal high water table is at a depth of 42 to 60 inches for about 6 months, and it recedes to a depth of 60 to 80 inches during prolonged dry periods. Permeability is very rapid. The available water capacity is very low.

The USDA Soil Survey is not necessarily an exact representation of the soils on the site. The mapping is based on interpretation of aerial maps with scattered shallow borings for confirmation. The transition between different soil types may be gradual and the indicated boundary approximate. Differences may also occur from the typical stratigraphy and small areas of other similar and dissimilar soils may occur within the mapping unit. As such, there may be differences in the mapped description and the boring descriptions obtained for this report.

6.2 Soil Boring Results

6.2.1 General Soil Stratigraphy

Soil profiles of the borings are presented as **Boring Logs** attached to this submittal. The profile information was developed from the field boring logs and visual review/manual classification of the recovered soil samples by an engineer in our laboratory in general accordance with ASTM D-2488 (Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)). The transition between strata may be gradual and the indicated boundary approximate. Soil strata boundaries were estimated when they occurred between sample intervals. Small variations not considered important to engineering evaluation may have been omitted or abbreviated for clarity. Subsurface conditions at other locations may differ. The SPT boring profile includes the SPT "N" values, and all boring profiles include the measured groundwater levels at the time of drilling (when encountered).

The upper 1 to 2 feet of soil encountered consisted of grayish brown to dark grayish brown fine sand to slightly silty fine sand. Next the borings entered a layer of light-colored fine sand continuing to the termination depth of 7 feet in the hand auger borings and to 8 feet in the SPT boring. Clayey fine sand to sandy clay was penetrated below 8 feet, continuing to about 17 feet, followed by silty clayey fine sand with occasional limestone fragments. At approximately 27 feet, the SPT boring entered, and was terminated in the limestone formation.

6.2.2 Soil Penetration Resistance

Based on the recorded SPT “N” values, the sands, clayey and silty sands were typically very loose to medium dense. The sandy clay was firm to stiff and the underlying limestone was initially soft and very hard below.

6.3 Groundwater Information

The groundwater levels in the boreholes were permitted to stabilize, and the shallow groundwater table was measured generally around 6.8 feet below current grades. Considering the time of year (December 2024) and

regional rainfall quantities, these water table levels are considered below estimated wet season water levels. We estimate that the seasonal high could occur around 4-1/2 feet below existing grades.

It should be understood that the position of the surface of the water table will fluctuate in response to variation in rainfall, to surface drainage features, and other factors. A seasonal effect will occur such that groundwater level fluctuations can be expected between the drier winter and spring months as compared to the summer months or the wet season.

7. Conclusions and Recommendations

The following conclusions and recommendations are based on the project characteristics previously described, the data obtained in our field exploration and our experience with similar subsurface conditions within the project vicinity. If final site planning is significantly different from previously described and as indicated in the report, or if subsurface conditions different from those disclosed by the borings are encountered during construction, we should be notified so that we might review the following recommendations in light of such changes. A general review of the project plans and specifications by our firm is suggested prior to bidding in order to check that these recommendations have been interpreted in accordance with our intent.

7.1 Borrow Soil Characteristics

The on-site soils identified as SP to SP-SM and SC-SM, or relatively clean to slightly silty fine sands and silty, clayey fine sands based on the Unified Soil Classification System (USCS). Comparable AASHTO soil types would be categorized as A-3 to A-2-4. The relatively clean, sandy soil types (SP to SP-SM or A-3) are certainly considered acceptable for more select structure and pipe backfill and will possess improved permeability or drainage characteristics. These fine sands should require minimal processing in order to properly place and compact. Moisture contents will probably require adjustment in order to effect maximum densification, depending upon specification requirements. It is anticipated that a portion of these soil types will be excavated below the water table and may occur in a relatively saturated state, but should effectively drain within stockpiles. The deeper SC-SM or A-2-4 soils are considered suitable for structure fill and support. These soils can also be readily blended with cleaner sands to reduce fines contents, if needed.

The high plasticity clayey soils (SC/CH or A-7) are not considered suitable as structural or pipe backfill. These high plasticity soils will generally exhibit undesirable shrinkage or swelling characteristics and tend to soften when saturated. Consideration could be given to utilizing the highly plastic soils in passive park/green areas (where structures or utilities are not planned), within the lower levels of bulk fill placement in utility trenches or to re-establish design grades within pond areas over-excavated to utilize the more select soils. The selection of areas where these clayey soils are used should be carefully considered in order to place in areas where future development is not anticipated. Further, these areas will need to be properly graded to minimize the potential for ponding and facilitate surface drainage.

7.2 Pump Station Subgrade Preparation

It is our understanding that the base of the proposed pump station wet well could be embedded about 16 feet below finished grade. Based on the boring data a reinforced concrete slab foundation will be a satisfactory foundation type for the proposed structure. With site preparation as recommended, the lift station foundation can be designed based on a net allowable soil bearing pressure of 2,500 pounds per square foot (psf).

Based on the completed borings, the base of the wet well is expected to extend into loose/firm, clayey fine sand to sandy clay. These subgrade soils, if properly prepared, should be suitable for support of the structures. The highest loads will be imposed on the soil during construction, when the excavation is dewatered and the structure partially completed. However, it is unlikely these loads will exceed the weight of the soil removed, so that the base soils will experience minimal net increase in overburden pressure. In operation, the weight of the wet well will be less than the soil it replaces, so hydrostatic uplift requires design compensation.

The initial step in routine site preparation should be the complete removal of any remaining topsoil, vegetation, major root systems and other deleterious materials from beneath and to 5 feet beyond the proposed work area. Following implementation of a dewatering program, a sloped open cut can be made, or trench bracing may be placed and the soil excavated. After excavation, the foundation subgrade should be observed by a representative of our firm to verify expected conditions. We caution that disturbance of the clayey soils in saturated conditions may induce significant softening, which could result in unacceptable settlement of the structure as the soft, disturbed clayey soils yield under the weight of the structure and consolidate over time. Any disturbed (wet and softened) clayey soils should be over-excavated to ensure a level and unyielding base. Soft clayey soils should not be re-used as backfill material. Backfill with gravel (e.g., #89 or #57 gravel) could be placed as a collection sump to remove seepage that accumulates in the excavation and to provide a stable working platform. The gravel should be leveled and compacted to a firm and unyielding condition to form the working platform.

The construction for the pump station should take place inside a dewatered and properly designed excavation, in conformance with the Florida Trench Safety Act. The dewatering system should remain in place until structure loads and backfill are sufficient to counter-balance uplift hydrostatic pressures. Off-site discharge of groundwater should comply with NPDES permitting requirements (*e.g.,* Chapter 62-621, F.A.C.). We recommend that the Contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on the construction procedures.

For purposes of assessing earth pressures on the pump station walls, assuming fine sand backfill, we recommend a Rankine earth pressure coefficient of at least 0.5. The recommended earth pressure coefficient is somewhat higher than usually recommended for undisturbed conditions because fill will be compacted against the walls and the walls are not free to move or yield to earth pressures, as with regular retaining walls. A soil to concrete friction angle of 20° or friction coefficient of 0.35 is recommended for uplift resistance calculations. A buoyant soil unit weight of 50 pcf, considering the water table, may be utilized for calculations. The walls should also be designed for hydrostatic loads with the water table near the estimated seasonal high.

Fine sands with minimal silt/clay fines content (up to 15%) are recommended for backfill. Backfill should be compacted to at least 95% of the modified Proctor maximum dry density. Excessive compaction should be avoided to minimize the possibility of damaging the pump station. The excavated near surface sandy soils are anticipated to be suitable for reuse as backfill, but the underlying clayey sands should not be reused unless they are blended with clean sands and processed to reduce moisture content.

7.3 Other Utility and Sewer Construction

Dewatering should be accomplished, where necessary, to about 2 to 3 feet below the bottom of the excavation. Dewatering at this site can probably be accomplished with well points or sumps, depending upon the excavation material. Backfill of utility/excavations under structures and utilities should be performed in accordance with the fill placement recommendations described herein. Offsite discharge of groundwater

should comply with NPDES permitting requirements (e.g., Chapter 62 621, F.A.C.). All excavations should be braced in accordance with the Florida Trench Safety Act.

7.4 Pavement Recommendations

In general, the existing sands and recommended fill soils should be acceptable for construction and support of a flexible (limerock, crushed concrete, or shell base) or semi-flexible (soil cement base) and rigid (Portland cement concrete) type pavement sections after nominal subgrade preparation.

The pavement subgrade should meet a minimum LBR of 40 (stabilized subgrade). The existing sandy soils and recommended imported sandy fill will likely possess a Limerock Bearing Ratio (LBR) value of 20 to 30. To increase the bearing value, shell, limerock, crushed concrete, low plasticity clayey sands or another acceptable product would need to be blended with these relatively clean sands. The stabilized subgrade should be placed/produced to a minimum depth of 12 inches and compacted to a minimum density of 98% of the modified Proctor maximum dry density. The subgrade should also be firm and true to line and grade prior to paving. Traffic should not be allowed on the subgrade as the base is placed to avoid rutting. Before paving, the base should be checked for soundness.

The choice of pavement base type will depend on final pavement grades, as well as economic conditions. Due to the local availability of shell and limerock, it is anticipated that shell or limerock will be utilized as the base course material at this site. Based on our understanding of minimal grade changes, these materials should be suitable. A minimum separation of 24 inches for water sensitive bases (e.g., limerock or shell) and 18 inches for less water sensitive bases (e.g., soil cement or crushed concrete) should be provided between the bottom of the pavement base and seasonal high groundwater levels, unless underdrains are utilized to lower groundwater tables.

At a minimum, the base thickness should be no less than 6 inches in automobile traffic areas (light duty) and 8 inches in truck traffic areas (heavy duty). The base should be compacted to a density of no less than 98% of the modified Proctor value. Limerock and shell base material should meet Florida Department of Transportation (FDOT) requirements and a minimum LBR of 100. Processed concrete aggregate base could also be considered depending upon quantity needed, price and availability. Crushed concrete should also have a minimum LBR value of 150 and be graded in accordance with FDOT Standard Specification Section 911. The base course should be firm and true to line and grade prior to paving. Traffic should not be allowed on the subgrade as the base is placed to avoid rutting. Before paving, the base should be checked for soundness.

The flexible pavement surface course should consist of at least 1-1/2 inches of FDOT Type S or SP asphaltic concrete material for the automobile parking areas (light duty) and 2 inches for truck traffic areas (heavy duty). The asphaltic concrete should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction, except that the asphaltic concrete should be compacted to a minimum of 96% of the Marshall maximum laboratory unit weight of samples secured daily during placement.

Rigid (Portland cement concrete) pavement design should follow County or City specifications for minimum compressive strength. Based on our experience, a minimum thickness of 6 inches can be used for standard duty applications and a minimum thickness of 7 inches should be utilized for heavy duty applications. Any steel reinforcement within the concrete pavement should be designed by the project civil or pavement engineer. The

subgrade should be prepared to achieve a minimum LBR of 30 to a depth of 12 inches below the concrete base elevation. The subgrade soils should be compacted to a minimum density of 98% of the modified Proctor maximum dry density. To aid in the design of the anticipated concrete pavement sections, a modulus of subgrade reaction of 100 pci (LBR 20 sands) should be utilized for the low bearing sands unless stabilization is added to increase the bearing value. If the sands are stabilized, a modulus value of 150 pci can be utilized.

The pavement section thicknesses outlined above are recommended values for typical commercial applications. An actual pavement design should be performed by the project pavement designer, based on the anticipated traffic loading conditions, and desired life expectancy for the pavement.

8. Limitations

GHD's professional services have been performed, our findings obtained, and our opinions prepared in accordance with generally accepted geotechnical engineering principles and practices. GHD is not responsible for the conclusions, opinions or recommendations made by others based on these data.

The scope of this study was intended to obtain general geotechnical information and provide geotechnical design parameters for general assessment of the pump station and pavement subgrade preparation. The analysis and opinions submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated and the provided development information. If any subsurface variations become evident, a re-evaluation of the opinions contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. Similarly, changes in development plans may require additional subsurface exploration and/or geotechnical engineering evaluation.

The scope of our services in this study does not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

9. Closure

GHD is pleased to have the opportunity to submit this geotechnical report for the proposed improvements. We look forward to continuing our participation in the design and construction process as the project proceeds. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,

GHD

Florida Engineering Certificate of Authorization No. 9931
Local Address | 5904 Hampton Oaks Parkway Suite F Tampa Florida 33610 USA

John C. Phillips, P.E.
Senior Geotechnical Engineer
Florida License No. 47586

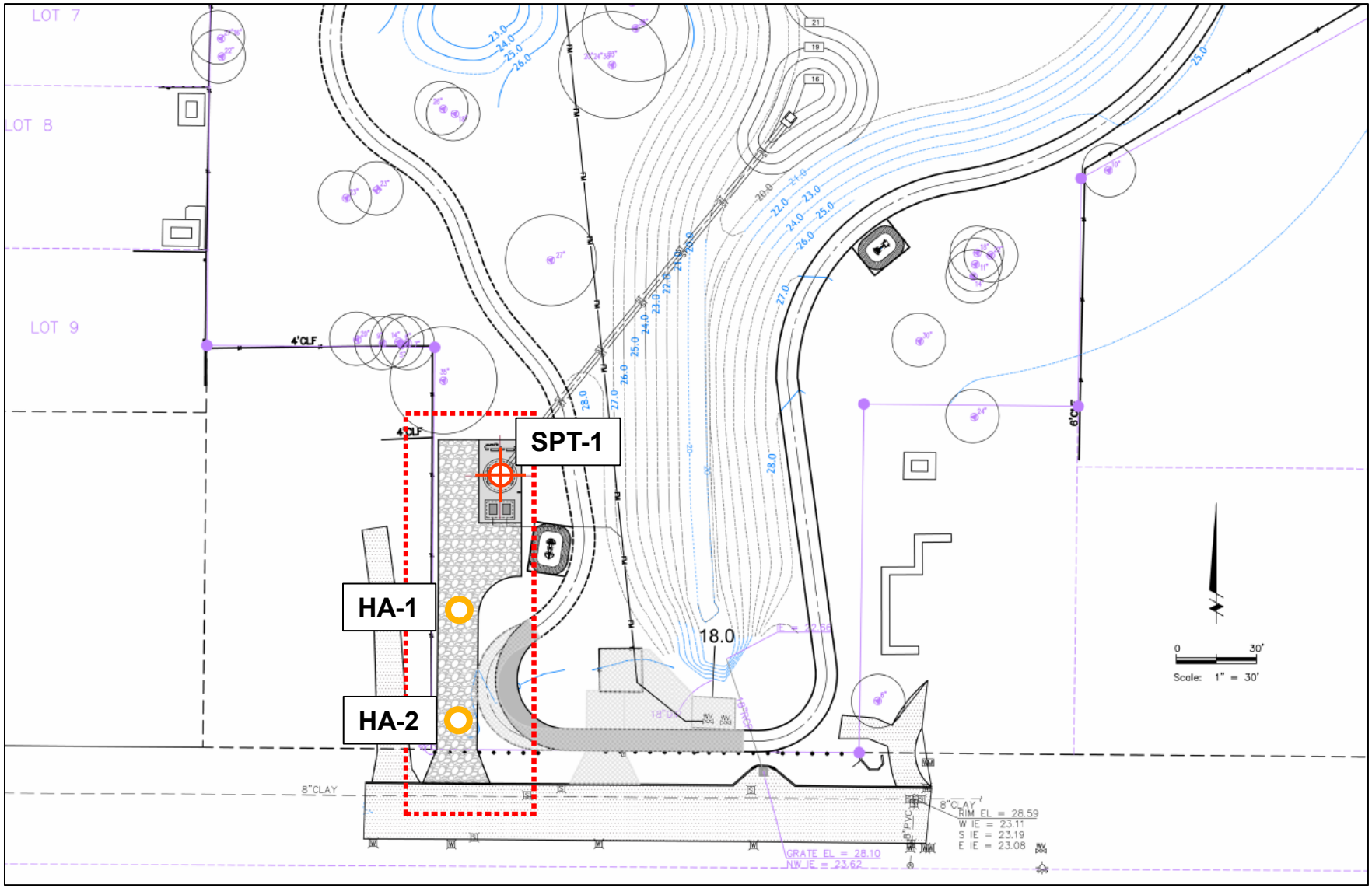
JP/1

Attachments: Figure 1 – Field Test Location Map
Boring Logs

Attachment 1

Field Test Location Map

Boring Logs



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12656938

FOREST HILLS PUMP STATION

TAMPA, FLORIDA

FIGURE 1 – FIELD TEST LOCATION MAP

12/16/2024

PROJECT: *Forest Hills Pump Station, Tampa, Florida*

BORING NO.: *SPT-1*

JOB NUMBER: *12656938*

DATE DRILLED: *12/10/2024*

ELEVATION: *NA*

Notes: *Location: See Figure 1*

DRILLER: *Adam Nelson*

BORING DEPTH: *35.0 Feet*

DRILLING METHOD: *Mud Rotary*

WATER LEVEL: *6.8 Feet*

ANALYSIS										
Moisture Content	% Passing 200 Sieve	Liquid Limit	Organic Content	Plasticity Index	Depth feet	N-Values	GROUND WATER	GRAPHIC LOG	USCS	STRATUM DESCRIPTION
					0–1	HA			SP SP-SM	Grayish brown to dark grayish brown fine sand to slightly silty fine sand
					2–4	HA			SP	Very pale brown to pale brown to yellowish brown fine sand
					5–7	5	▼			
					8–9	5				
					10–16	10 8			SC CH	Light gray to white clayey fine sand to sandy clay
					17–23	WH/18" 5			SM-SC	Greenish gray to gray silty clayey fine sand with occasional limestone fragments -Loss of circulation at 18.5 Feet
					24–34	4 50/6"			LS	Pale brown to white limestone
					35–36					End of Boring 35.0 Feet

AUGER BORING LOG

HA-1

PROJECT: Forest Hills Pump Station, Tampa, Florida	PROJECT NO.: 12656938
CLIENT: MPH Civil Consultants, Inc.	DATE: 12/10/2024
LOCATION: See Figure 1	ELEV.: NA
EXCAVATION METHOD: Hand Auger	LOGGER: Adam Nelson
DEPTH TO - Water: 6.8 Feet When checked: At Completion	Caving:

ELEVATION/ DEPTH	SYMBOL	USCS	DESCRIPTION	PENETROMETER READINGS
0		SP SP-SM	Grayish brown to dark grayish brown fine sand to slightly silty fine sand	
		SP	Very pale brown to pale brown to yellowish brown fine sand	
2				
4				
6				
			End of Boring 7.0 Feet	
8				
10				
12				

Notes:

AUGER BORING LOG

HA-2

PROJECT: Forest Hills Pump Station, Tampa, Florida	PROJECT NO.: 12656938
CLIENT: MPH Civil Consultants, Inc.	DATE: 12/10/2024
LOCATION: See Figure 1	ELEV.: NA
EXCAVATION METHOD: Hand Auger	LOGGER: Adam Nelson
DEPTH TO - Water: 6.8 Feet When checked: At Completion	Caving:

ELEVATION/ DEPTH	SYMBOL	USCS	DESCRIPTION	PENETROMETER READINGS
0		SP SP-SM	Grayish brown to dark grayish brown fine sand to slightly silty fine sand	
		SP	Very pale brown to pale brown to yellowish brown fine sand	
2				
4				
6				
			End of Boring 7.0 Feet	
8				
10				
12				

Notes: