CITY OF TAMPA

Bob Buckhorn, Mayor **CONTRACT ADMINISTRATION DEPARTMENT**

David L. Vaughn, AIA, Director

ADDENDUM NO. 1

DATE: July 7, 2014

Contract: 14-C-00038; 26th Street Pump Station Rehabilitation

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 is the Geotechnical Engineering Services Report dated November 26, 2013 (Reissued December 6, 2013).

Item 2: Table of Contents: Specifications: Workmanship and Materials; revise Section 35 to read: 'Submersible Pumping Station Structure with Concrete Pipe Wet Well'.

Item 3: Attached for reference is the pre-bid meeting sign-in sheet.

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 Contract Administration@tampagov.net.

Jim Greiner

Jim Greiner, P.E., Contract Management Supervisor

GEOTECHNICAL ENGINEERING SERVICES REPORT

For the

PROPOSED LIFT STATION REHAB
9602 NORTH 26TH STREET
TAMPA, FLORIDA

Prepared for

City of Tampa - Wastewater Department
306 East Jackson Street, 6E
Tampa, Florida 33602

Prepared by

Professional Service Industries, Inc.
5801 Benjamin Center Drive
Suite 112
Tampa, Florida 33634
Telephone (813) 886-1075
Fax (813) 888-6514

PSI Project No. 0775-1951 Supplemental #1

November 26, 2013 (Reissued December 6, 2013)

Information To Build On
Engineering • Consulting • Testing

November 26, 2013 (Reissued December 6, 2013)

City of Tampa - Wastewater Department
306 East Jackson Street, 6E
Tampa, Florida 33602

Attn: Viet Tram
Project Engineer

Re: Geotechnical Engineering Services Report
Proposed Lift Station Rehab
9602 North 26th Street
Tampa, FL
PSI Project No.: 0775-1951 Supplemental #1

Dear Mr. Tram:

Professional Service Industries, Inc. (PSI) is pleased to present our geotechnical engineering services report for the referenced lift station project. The results of the study are discussed in the accompanying report. As directed, we have included geotechnical engineering recommendations in our report.

Should there be any questions, please do not hesitate to contact our office at (813) 886-1075. PSI would be pleased to continue providing construction materials testing (CMT) services throughout the implementation of the project. We look forward to working with you and your organization on this and future projects.

Respectfully submitted,

Professional Service Industries, Inc.

Martin E. Millburg, P.E.
Senior Geotechnical Engineer
Florida License No. 36584

Miles Caldwell
Staff Specialist

Ching Kuo, P.E., Ph.D.
Chief Engineer
Florida License No. 36115

Enclosures

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Boring Location Plan and Soil Profile ..... Sheet 1
May 2010 Floridan Aquifer Potentiometric Map Excerpt
Geotechnical Engineering Design Parameters

1.0 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a geotechnical exploration for the proposed lift station to be located at 9602 North 26th Street in Tampa, Florida. Our services were authorized by Mr. Viet Tram of the City of Tampa Wastewater Department. This study has been performed in accordance with our proposal dated November 6, 2013. PSI was directed to expand the Scope of Work of our study to include geotechnical engineering recommendations for trenching, backfilling, and dewatering methods in a November 27, 2013 email from Mr. Tram.

1.2 PROJECT DESCRIPTION

Based on communication with and the plan provided by the City of Tampa Wastewater Department, the project will include the demolishing the existing wet/dry pits pumping station (only remove superstructure down to 4ft below final grade) and installing a duplex submersible pumping station with an 8 feet diameter wet well to a depth ranging from 20 to 25 feet.

The geotechnical recommendations presented in this report are based on the available project information, station location, and the subsurface materials described in this report. If any of this project description information is incorrect or has changed, please inform PSI so that we may amend, if appropriate, the recommendations presented in this report.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this study is to explore the subsurface conditions at the proposed site. The subsurface materials encountered were then evaluated with respect to the available project characteristics. In this regard, engineering assessments of the following items have been formulated:

1. A presentation of subsurface conditions encountered including sampling procedures and pertinent soil properties.

2. Geotechnical engineering considerations including trenching, backfilling and dewatering recommendations.

The following services have been provided in order to achieve the preceding objectives:

1. Contacted the State of Florida Sunshine buried utility locate service to identify boring locations to avoid buried utilities.

2. Executed a requested program of subsurface exploration consisting of subsurface sampling and field testing. We performed one (1) Standard Penetration Test (SPT) boring to a depth of 30 feet below grade in the

proposed lift station site. In the boring, samples were collected and Standard Penetration Test resistances were measured virtually continuously for the top 10 feet and on intervals of 5 feet thereafter.

3. Visually classified representative soil samples in the laboratory using the Unified Soil Classification System (USCS). Identified soil conditions and formed an opinion of the soil stratigraphy at each boring location.

4. Transported representative soil samples to the laboratory for classification and limited number of engineering properties tests, including grain size.

5. Carefully measured groundwater levels in the boring and estimated the Seasonal High Groundwater Table (SHGT).

6. Prepared geotechnical engineering recommendations as described above.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 SITE LOCATION AND DESCRIPTION

The proposed lift station rehab is located at 9602 North 26th Street in Tampa, Florida. The site is currently located in a residential area and is surrounded by short grass. The project site is located within Section 20, of Township 28 South, Range 19 East, according to the Google Earth map of the site address. Site elevation is approximately +29 feet.

2.2 FIELD INVESTIGATION

Subsurface conditions at the site were explored by drilling one (1) soil boring at the approximate location shown on the Boring Location Plan included on **Sheet 1** of the **Appendix**.

One (1) Standard Penetration Test (SPT) boring was performed to a depth of 30 feet within the area of the proposed lift station. After hand auguring the upper four feet, samples were collected in the boring and SPT resistances measured virtually continuously for the top 10 feet and on intervals of 5 feet thereafter.

The number of borings, boring location and boring depth was selected by the City of Tampa Wastewater Department in collaboration with PSI. The borings were located in the field by measuring distances from known site reference points based on the site plan provided to PSI.

Elevation of the ground surface at the boring location was not provided to PSI and should be determined by others prior to construction. Therefore, all references to depth of the various materials encountered are from the existing grade at the time of drilling.

The SPT boring was advanced utilizing rotary mud drilling methods and soil samples were routinely obtained at selected intervals during the drilling process. Drilling and sampling techniques were accomplished in general accordance with ASTM standards. Select soil samples were returned to our laboratory for visual classification. Classifications were performed in general accordance with the Unified Soil Classification System (USCS).

2.3 SUBSURFACE CONDITIONS

The boring performed encountered fine sands to slightly silty fine sands (Unified Classification SP/SP-SM) from surface to 9 feet. The SPT resistances (N-values) in these sandy soils ranged from 4 to 14 blows per foot, indicating soils of loose to medium density. Clay (CL) was encountered below the sandy stratum to a depth of around 27 feet in the boring. The SPT resistances in the clay stratum ranged from 0 to 7 blows per foot, indicating soils of very soft to medium consistency. Limestone was encountered below the clay stratum to the 30 foot boring termination.

The soil profiles presented on **Sheet 1** of the **Appendix** include soil descriptions, stratifications and penetration resistances. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on these soil profiles.

2.4 GROUNDWATER INFORMATION

Groundwater was found at a depth of 7½ feet in the boring. It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons. In this regard the seasonal high groundwater table (SHGT) is estimated to be around 1 foot higher than the observed groundwater levels at the soil boring locations. Therefore, the SHGT in the boring is at an estimated depth of 6½ feet.

PSI recommends that the contractor determine the actual groundwater levels at the site at the time of the construction activities.

The potentiometric elevation in the Floridan Aquifer in the area of this site is about +30', which is about the same as the ground surface in the area of this site. Recent higher precipitation may result in potentiometric elevations in the aquifer that are higher than indicated on the May 2010 map. An excerpt from this map is included in the Appendix of this report.

2.5 LABORATORY TEST RESULTS

Select soil samples were transferred to the laboratory for soil classification and engineering properties testing. Laboratory test results are provided on the soil profiles found on **Sheet 1** of the **Appendix**.

3.0 RECOMMENDATIONS

3.1 DESIGN CONSIDERATIONS

Groundwater Pressure from Limestone Formation - The presence of the top of the limestone formation at about 27 feet deep poses significant potential groundwater problems as the excavation nears that depth. In order to reduce potential groundwater problems, we recommend the depth of the structure be reduced from 25 to 20 feet. Assuming the potentiometric elevation in the underlying rock to be +30', the resulting groundwater pressure acting soil on top of the rock is nearly 1,700 psf. The soil between the bottom of the excavation and the top of the rock is about 7 feet thick and can provide about 800 psf of resisting pressure, so there is a possibility of a "blowout" of water flow into the excavation, even if the excavation is limited to 20 feet deep.

Drilled Shaft Installation - One method that could be utilized to install the lift station would be to utilize a large diameter drilled shaft, utilizing drilling mud in order to counterbalance hydrostatic pressure. The drilled shaft would need to be larger than the proposed wet well diameter of 8 feet, which is an unusually large diameter shaft and may not be available. Temporary casing, again larger than the wet well diameter, may also be required to maintain a stable excavation. The other challenge to this installation method is that we recommend 12 inches of gravel be placed in the bottom of the excavation to provide uniform support for the wet well. Effectively placement of this material within an existing drilled shaft through drilling mud would be extremely difficult.

Temporary Sheet Piles - A more conventional excavation could be utilized to install the wet well. We anticipate this excavation will extend at least 21 feet deep (20 feet deep plus an additional foot for the placement of gravel under the wet well base). Typically, the contractor is fully responsible for the selection, design, and implementation of the excavation shoring. For previous similar projects, the use of temporary sheet piles has provided significant benefits, and should be considered for this project. Benefits provided by temporary sheet piles include reducing the area required for the excavation, relatively simple installation, reducing the need for excavation dewatering, and providing a platform for vehicular access to the bottom of the excavation, if required. The advantage sheet piling can provide for dewatering the excavation alone may justify its use on this project. With the sheet piling providing impermeable wall, and extended down into the relatively impermeable clay layer, groundwater inflow from the surficial aquifer into the excavation could be minimal, possibly only requiring a sump pump within the excavation. We anticipate the temporary sheet piling system would need to

be internally braced. The contractor would need to submit a detailed design of their proposed sheet piles and internal bracing prior to implementation of their excavation shoring.

Geotechnical Engineering Design Parameters for the on site soils are provided in a table in the Appendix of this report.

Limestone Dewatering Well - In order to reduce water pressure in the bottom of the excavation, we recommend a dewatering well be extended into the underlying limestone formation, within a few feet outside the lift station excavation. The well may need to be pumped at a rate of 150 gallons per minute or higher to effectively relieve pressure within the limestone formation. The well should be screened only within the aquifer, with well screen starting about 30 feet deep. The annular space of the well should be sealed to prevent leakage up the annular spaced from the underlying limestone formation.

Backfill – We recommend 12 inches of FDOT No. 57 or 67 stone be placed to support the bottom of the wetwell. We recommend sand backfill containing no more than 12% fines content be utilized around the proposed wet well. We anticipate the sand backfill will not be able to be compacted with conventional compaction equipment. Care should be taken to prevent arching or bridging of the sand as the backfill is placed. Sand backfill should be placed in lifts not exceeding 12 inches thick.

3.2 SITE PREPARATION

We anticipate there may also be some minor ancillary structures constructed along with this project. The following are our preliminary recommendations for overall site preparation.

1. Organics, vegetation or any other deleterious materials (if present) within proposed building and pavement areas should be removed. All encountered deleterious materials should be removed and disposed of properly. At a minimum, it is recommended that the clearing operations extend at least 5 feet beyond the development perimeters. Existing pavement and/or concrete may remain in place provided it is at least 12 inches below the proposed foundations and pavement base.

2. The exposed subgrade of proposed building or concrete slab areas should be compacted to a minimum depth of 1 foot below stripped grade to a dry density of at least 95% of the modified Proctor maximum dry density within the proposed structure areas. Any area where the recommended density has not been achieved should be undercut to firm soils and backfilled with structural fill.

3. Following satisfactory completion of the initial compaction, the structure areas may be brought up to finished subgrade levels, if needed, using structural fill. The on-site sandy soils encountered (Unified Classification SP/SP-SM,) in the

borings are generally suitable for use as fill, if available. Off-site fill soils should be tested and approved by PSI prior to hauling to the site. Imported fill should be free of significant rubble, organics, clay, debris and other unsuitable material. We recommend fill soils have a maximum of 12% passing a No. 200 sieve. Approved sand fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum density of 95% of the modified Proctor maximum dry density. Density tests to confirm compaction should be performed in each fill lift before the next lift is placed.

4. Prior to beginning compaction, soil moisture contents may need to be controlled in order to facilitate proper compaction. If additional moisture is necessary to achieve compaction objectives, then water should be applied in such a way that it will not cause erosion or removal of the subgrade soils. A moisture content within the percentage range needed to achieve compaction (typically +/- 3%) is recommended prior to compaction of the natural ground and fill.

3.3 FLOOR SLAB RECOMMENDATIONS

Slab-on-grade construction should be supported on soils compacted to a minimum dry density of at least 95% of their modified Proctor value. We have assumed no extraordinary floor slab performance requirements such as very low allowable deflections or smoothness requirements are necessary. Any cuts that are made in the building pad for utility installation should be backfilled with clean granular materials that are compacted to at least 95 percent of their ASTM D-1557 maximum dry density. Material to be placed within 12 inches of the bottom of the slab should have no single particle greater than 3 inches in size, and should meet the requirements of approved structural fill.

The floor slab should be reinforced to reduce the risk of cracking due to settlement. An impervious membrane should be installed between the soil subgrade and bottom of floor slabs to be overlain with moisture sensitive coverings to avoid slab moisture problems. Floor slab design should conform to American Concrete Institute (ACI) design standards and practices.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 GENERAL

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundation, earthwork and related activities of this project. This will promote project continuity and will reduce the potential for misinterpretation of our recommendations

4.2 EXCAVATION AND EMBANKMENT SLOPE CONSIDERATIONS

In Federal Register, Volume 54, No.209 (October 1989), the Unite States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, whether they utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in all local, state, and federal safety-regulations.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

4.0 REPORT LIMITATIONS

The Geotechnical Engineer warrants that the findings contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

The services provided were conventional in nature and did not include any special services that may lessen the risk of conditions that can contribute to moisture, mold or other microbial contaminant growth in buildings. You may be aware that mold is abundant throughout nature and is comprised of a wide variety of microscopic fungi. Due to its nature, the potential for mold infestations cannot be completely eliminated.

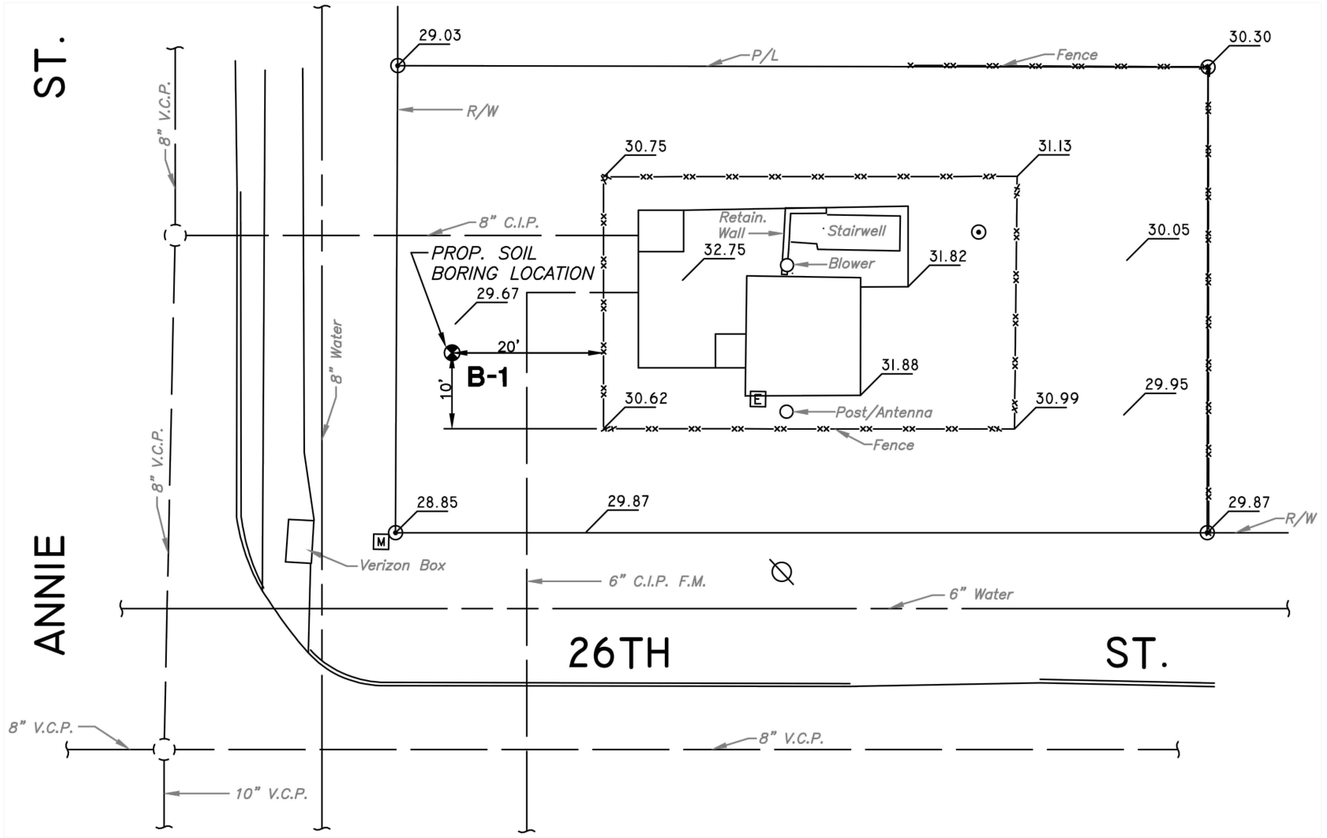
The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, ground water, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors, unusual or suspicious items or conditions are strictly for the information of our client.

Florida is underlain by a soluble limestone formation, which can dissolve and result in surface subsidence and the formation of sinkholes. A more comprehensive assessment

of the recycle center site for the potential for sinkhole development typically includes Ground Penetrating Radar (GPR) studies and the extension of deeper soil borings into the underlying limestone formation. Such an assessment is beyond the scope of this proposed study, but can be performed at significant additional cost, if desired.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of the City of Tampa Wastewater Department and their consultants, for the specific application to the proposed Lift Station Rehab project at 9602 North 26th Street in Tampa, Florida.

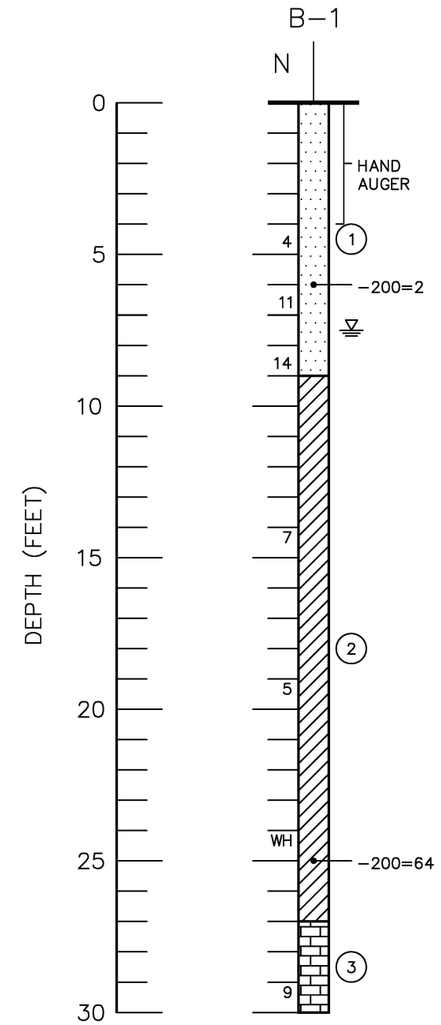
APPENDIX



BORING LOCATION PLAN

0 20'

PLAN SCALE



SOIL PROFILE

0 5'

VERTICAL SCALE

LEGEND

1. Tan and light brown to gray fine SAND to slightly silty fine SAND (SP/SP-SM)
2. Rusty brown and pale green to gray CLAY (CL)
3. LIMESTONE

SP — Unified Soil Classification System (ASTM D 2487) group symbol as determined by visual review

Groundwater level, November 2013

N — SPT N-value in blows/foot

WH — Fell under weight of rod & hammer

-200 — Fines passing No. 200 sieve (%)

Approximate SPT boring location

NOTE: Based upon site plan provided to PSI by City of Tampa Wastewater Department

DRAWN	DJG
CHECKED	MEM
APPROVED	MEM
SCALE	NOTED

GEOTECHNICAL SERVICES

PROPOSED PUMPING STATION AT NORTHWEST CORNER OF ANNIE ST. AND 26TH ST.

TAMPA, FLORIDA

psi *Information To Build On*

Engineering • Consulting • Testing

DATE	PROJ. NO.	SHEET
NOV 13	07751951	SHEET 1

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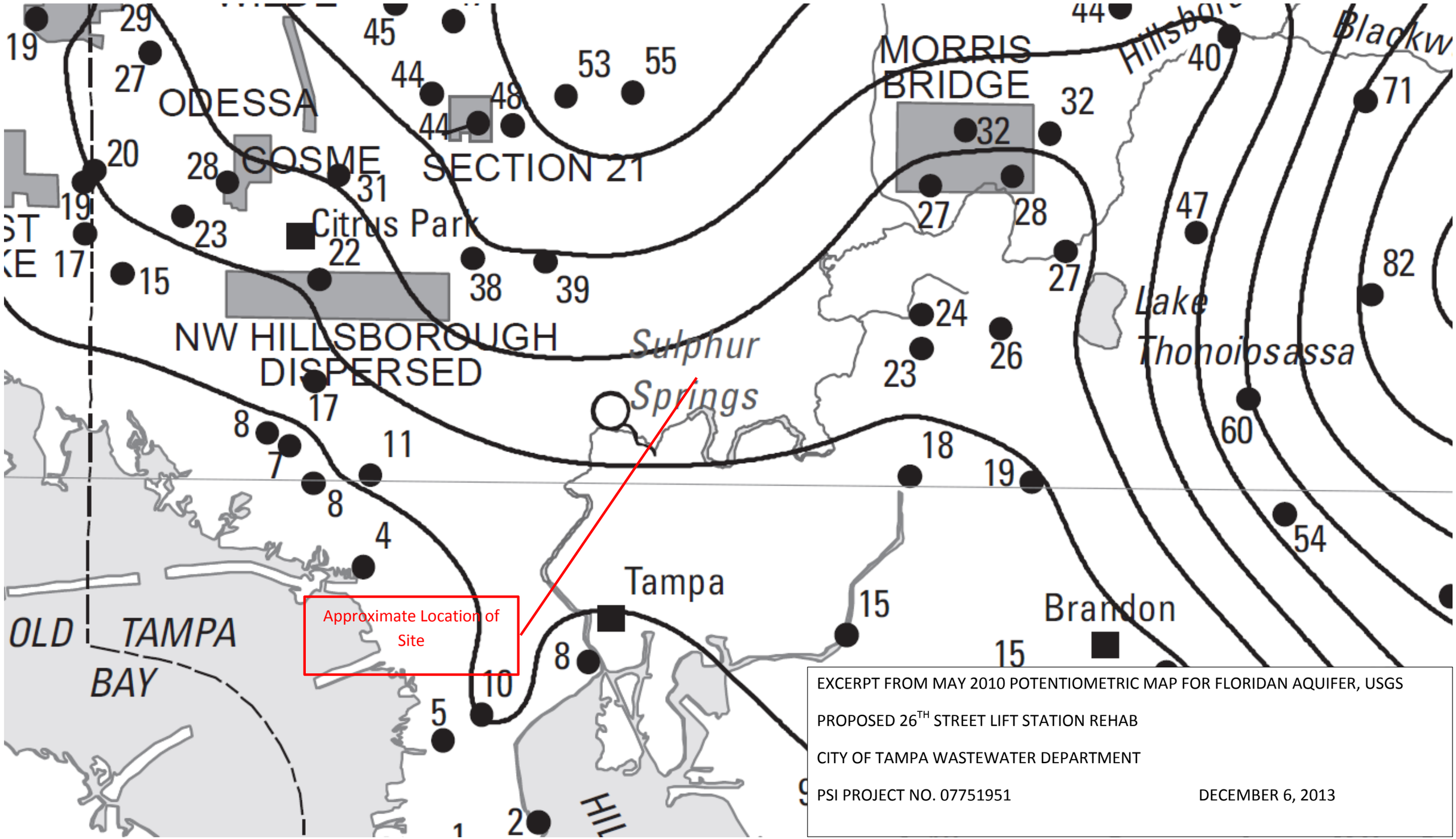

EXCERPT FROM MAY 2010 POTENTIOMETRIC MAP FOR FLORIDAN AQUIFER, USGS

PROPOSED 26TH STREET LIFT STATION REHAB

CITY OF TAMPA WASTEWATER DEPARTMENT

PSI PROJECT NO. 07751951 DECEMBER 6, 2013

Project: 26th Street Lift Station

PSI Project No.: 07751951

Client: City of Tampa

Date: 12/4/2013

GEOTECHNICAL ENGINEERING DESIGN PARAMETERS

Boring No.	Depth (ft)	Soil Description	Soil Type	Average SPT-N	Unit Weight (pcf)		Cohesion (psf)	Friction Angle (degree)	Coefficient of Lateral Pressure		
					Total	Submerge			Ka	Kp	Ko
B-1	0 - 5	SP/SP-SM	Cohesionless	4	100	37.6	-	29	0.350	2.859	0.468
	5-9	SP/SP-SM	Cohesionless	13	105	42.6	-	31	0.325	3.074	0.441
	9-22	CL	Cohesive	6	110	47.6	750	-	1.000	1.000	1.000
	22-27	CL	Cohesive	1	100	37.6	125	-	1.000	1.000	1.000
	27 - 30	Rock	Cohesive	9	115	52.6	1125	-	1.000	1.000	1.000

CONTRACT 14-C-00038 26th St. Pumping Station Rehabilitation - Pre-Bid Meeting On site 9602 N 26th St. 7-1-14 10:00

E-Mail to **Register as a Plan Holder** and E-Mail All **Questions** to; **ContractAdministration@tampagov.net**

Sign-In Sheet Please Print — City of Tampa, Contract Administration Department

	Name	Organization	E-Mail OR Phone
1	*Jody Gray*	*Tampa Contract Administration Dept.*	jody.gray@tampagov.net
2	Bill Hoffman	Thompson Pump	choffman@thompsonpump.com
3	Rob Ahearn	Thompson Pump	RAhearn@thompsonpump.com
4	Daniel E. Hankins	Carl Hankins Inc	CARLHANKINSINC@TampaBay.RR.com
5	Nick Collard	COT	
6	JOHNNY GRANGER	GRANGER MAINT. + CONST.	JOHNNYGRANGER@GRANGERMAINT.com
7	DANIEL STANEK	DALLAS 1	daniel.stanek@d1cd.com
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