REPORT OF GEOTECHNICAL INVESTIGATION

PARK PLACE CRYSTAL LAGOON
Pasco County, Florida

PREPARED FOR:
EPPERSON RANCH, LLC
2502 N. Rocky Point Drive, Suite 1050
Tampa, Florida 33607

FES PROJECT NO.: 14-2447

November 13, 2014

PREPARED BY:

FAULKNER
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2734 Causeway Center Drive
Tampa, Florida 33619

FAULKNER
ENGINEERING SERVICES, Inc.

GEOTECHNICAL ENGINEERING
& CONSTRUCTION
MATERIALS TESTING

November 13, 2014

Mr. Kartik Goyani
Epperson Ranch, LLC
2502 N. Rocky Point Drive, Suite 1050
Tampa, Florida 33607

RE: Report of Geotechnical Investigation
Park Place Crystal Lagoon
Pasco County, Florida
FES Project No.: 14-2447

Dear Mr. Goyani:

Faulkner Engineering Service, Inc. (FES) has completed a geotechnical investigation for the referenced project. The purpose of our investigation was to explore the subsurface soil and groundwater conditions at the Crystal Lagoon and Phase 1 site and provide information for stormwater pond design; recommendations for flexible pavement design; and generally address the requirements outlined in Section 807 of the Pasco County Land Development Code relating to a Geotechnical/Geological Engineering Report and Investigation. This report summarizes our field investigation and presents our findings, conclusions and geotechnical engineering recommendations.

PROJECT INFORMATION

Existing Site

Park Place (AKA Epperson Ranch South) is an approximately 300 acre (+/-) property located south of the southwest corner of Curley Road and Elam Road in Pasco County, Florida. The Crystal Lagoon and Phase 1 sites are currently undeveloped and used as pasture land for cattle. Several wetlands and drainage ditches were observed throughout the site. The site topography is generally level to gently sloping.

Proposed Construction

Based on our review of information provided by Florida Design Consultants, Inc., (FDC) we understand that site will include construction of a Crystal Lagoon with a planned stormwater pond and a sump. In addition the access roadway in Phase 1 has been altered and additional roadway borings were required.

Soil Survey Review

According to the "Soil Survey of Pasco County, Florida", as prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (formerly the Soil Conservation Service) the subject property is primarily underlain by:

- *Pomona fine sand* – The NRCS describes this soil unit as nearly level and poorly drained, located on low ridges. The NRCS indicates that this soil unit has a surface layer of black fine sand about 6 inches thick that is underlain by gray, gray-brown, dark brown and pale brown fine sand to about 4 feet. Below the upper sands are gray fine sandy loam and loamy fine sand to about 6½ feet or more. The NRCS indicates the seasonal high groundwater level is within 10 inches of ground surface for 1 to 3 months.

- *Palmetto, Zephyr, Seller complex* –The NRCS describes Palmetto unit as nearly level and very poorly drained. The NRCS indicates that typically this unit has a surface layer of black and very dark gray fine sand about 4 inches thick that grades to gray fine sand about 6 inches thick underlain by very dark grayish brown that grades to dark brown, brown fine sand to a depth of about 28 inches. Below is pale brown fine sand to a depth of 46 inches underlying by light brownish gray sand y clay to a depth of 57 inches. Below is light gray sandy loam that grades to gray to a depth of 80 inches or more. The NRCS indicates that under natural conditions the seasonal high groundwater level is within 10 inches of the surface for 2 to 6 months and recedes at a depth of 10 to 30 inches for more than 6 months. Also, flooding occurs frequently during the rainy season. The NRCS describes Zephyr unit as nearly level and very poorly drained. The NRCS indicates that typically this unit has a surface layer of black muck about 5 inches thick and black fine sand about 7 inches thick that grades to light gray fine sand about 4 inches thick underlain by grayish brown that grades to a depth of 22 inches. Below is grayish brown fine sandy loam that grades to dark grayish brown sandy clay to a depth of 37 inches. Below is grayish brown sandy clay loam about 22 inches thick underlying by light gray loamy fine sand to a depth of 80 inches or more. The NRCS indicates this soil unit is ponded for more than 6 months. The NRCS describes Sellers unit as nearly level and very poorly drained. The NRCS indicates that typically this unit has a surface layer of dark reddish brown mucky loamy fine sand about 5 inches thick and black fine sand about 28 inches thick that grades to dark brown and yellowish brown fine sand to a depth of 80 inches or more. The NRCS indicates this soil unit is ponded for 3 to 6 months and recedes to a depth of about 30 inches or more during dry seasons.

- *Newnan fine sand, 0 to 5 percent slopes* – The NRCS describes this soil unit as poorly drained, located in the low ridges in the flatwoods. The NRCS indicates that this soil unit has a surface layer of dark gray fine sand about 5 inches thick that is underlain by light brownish gray to a depth of about 22 inches. Below is dark brown, dark yellowish brown, yellowish brown and pale brown to a depth of 44 inches. Below the upper sands is yellowish brown sandy clay loam to about 14 inches thick underlying by mottled brownish yellow and grayish brown sandy clay loam to a depth of 80 inches or more. The NRCS indicates the seasonal high groundwater level is at a depth of about 24 to 40 inches for about 2 to 4 months and recedes to more than 60 inches during dry periods.

SUBSURFACE INVESTIGATION

Field Investigation

During our field investigation, four (4) standard penetration test (SPT) borings were drilled to a depth of approximately 25 feet below ground surface (bgs) (2 in the planned Crystal Lagoon; 1 in the stormwater pond; and 1 in the planned sump). In addition, five (5) auger borings were advanced to an approximate depth of 5 feet (bgs) at generally 400 foot intervals along the planned Phase 1 access roadway. The fieldwork was performed on October 28-29, 2014. The procedures used by FES for field sampling and testing were in general accordance with ASTM procedures, industry standards of care and established geotechnical engineering practice.

The SPT borings were advanced by means of truck accessible drilling equipment employing wet rotary drilling techniques. The drillers collected soil samples using a split barrel sampler driven by an automatic hammer system in general accordance with standard penetration test procedures (ASTM D1586). The standard penetration test was performed continuously in the upper ten feet of the borings and at five-foot intervals thereafter.

The auger borings were advanced by mechanically rotating an approximate 4-inch diameter continuous flight auger into the subsurface soils. The cuttings brought to the surface were logged in the field and representative samples were obtained at each change in the soil stratum.

The samples recovered from the SPT and auger borings were placed in sealed containers and transported to the FES laboratory for further evaluation. Detailed descriptions of the soils encountered during the field investigation are presented on the attached Boring Logs in Appendix A.

A member of our staff was onsite during the fieldwork to monitor the drilling and also perform a brief cursory site reconnaissance, noting pertinent site and topographic features as well as surface indicators of soil conditions. FES staff located the borings by using GPS coordinates provided by FDC. Because of the methods used the boring locations shown on the attached Boring Location Plan (Plan 1) should be considered approximate.

Soil Sample Handling and Classification

The soil samples obtained during our drilling operations were placed in sealed containers to retain moisture and returned to our laboratory. The samples were visually classified by a staff geotechnical engineer according to the "Unified Soil Classification System" (ASTM D2487) and reviewed by a Senior Professional Engineer. To aid in classification and evaluation of geotechnical engineering properties, laboratory analyses were performed on select soil samples collected during the SPT and auger boring sampling. The laboratory testing performed was in general accordance with appropriate sections of (ASTM D 1140) material finer than the No. 200 sieve and (ASTM D 2974) organic content. The results from the testing are presented on the boring logs contained in Appendix A.

FINDINGS

Subsurface Conditions

General Soil Profile

The conditions presented below highlight the major subsurface stratifications encountered during our field investigation of the site. More detailed descriptions of the materials encountered are provided on the attached soil profiles presented in Appendix A. It should be understood that subsurface conditions will vary across this site and between boring locations. Changes in subsurface strata may be more gradual than indicated.

The SPT borings performed within the planned Crystal Lagoon, stormwater pond and sump generally encountered varying colored fine sand (SP), fine sand with trace of silt (SP-SM), silty sand (SM) and clayey sand (SC) from the ground surface to depths ranging from approximately 13 feet (bgs) to the termination of the borings at 25 feet (bgs). These soils were also encountered at various depths and thicknesses interbedded within strata of clay soils. Underlying the upper sands was clay (CL) extending to depths ranging from approximately 18 feet to the termination of the borings at 25 feet (bgs).

The auger borings performed along the planned access roadways generally encountered varying colored fine sand (SP), fine sand with trace of silt fines (SP-SM) from the ground surface to the termination of the auger borings at 5 feet (bgs).

Groundwater

Groundwater was encountered in the SPT borings at depths ranging from 2.5 (bgs) to not encountered within the depths explored at the time of drilling and in our auger borings at depths ranging from approximately 2.6 feet to 3.0 feet (bgs). Groundwater levels will fluctuate with time due to seasonal rainfall and locally heavy precipitation events; therefore, future groundwater levels may be encountered at depths different from those indicated by our borings. Please refer to the attached Groundwater Data Table (Table 1) for the groundwater conditions at the time of drilling and our estimates for seasonal high groundwater table.

The seasonal high water table is typically encountered during late summer following the rainy season. Several factors can affect the seasonal high groundwater level such as drainage characteristics of the soils; land surface elevation; and relief points such as lakes, rivers and swamps. Based on our experience, the soil indicators exposed in our borings (when encountered), review of the soil survey for Pasco County, and considering existing groundwater levels and the heavy rainfall received this rainy season, we estimate the seasonal high groundwater levels at the areas investigated may likely be encountered near the existing groundwater levels at depths ranging from approximately 2.0 to 3.3 feet (bgs).

CONCLUSIONS

Our geotechnical engineering evaluation of this site and our recommendations with respect to the site are based on our site observations and the field exploratory data obtained from our borings. We anticipate the soils excavated from the Crystal Lagoon, stormwater pond and sump will be used for fill material onsite.

The SP and SP-SM soils if excavated will provide a good source for structural fill during site development. The SM and SC soils will also provide a source of structural fill provided they conform to the requirements presented in the following sections of this report. The clay soils (CL) are considered unsuitable for reuse as structural fill or utility backfill.

Based the data obtained from our roadway borings, it appears that the shallow subsurface soils will generally provide a suitable subgrade for roadway pavement after proper site preparation and in-place densification described in the appropriate sections that follow in this report.

It should be noted that subsurface conditions can vary across this site and between boring locations. Conditions can also vary in areas not explored by our borings. Contractors bidding earthwork requirements are urged to conduct their own borings, test pits or other investigations to determine those conditions that may affect their specific work requirements. FES can not be responsible for interpretations made by others based on the information contained in this report and the attachments.

RECOMMENDATIONS

Site Preparation

Site Stripping/Undercutting

Before earthwork and construction activities begin, all existing topsoil, vegetation, large roots down to finger-size and any other deleterious material should be removed from within the construction limits. Site stripping should extend at least ten feet beyond the construction area. Any pockets of organics, organic laden soils and/or deleterious material should be undercut to suitable soil. The resulting excavations should be backfilled with structural fill placed in maximum one-foot thick lifts. Backfill soils should be of the same composition and be compacted to the same criteria as structural fill soils. This process should be observed by a representative of FES to check that all organic and/or deleterious material has been removed.

Proof-Rolling / In-Place Densification

Following site stripping and prior to any fill placement or beginning construction, proof-rolling / in-place densification of the ground surface with a heavy vibratory roller should be performed within the construction area. Compaction within the construction area should continue until the soils appear relatively firm and unyielding and the soils have achieved a relative compaction of at least 95 percent of modified proctor maximum dry density (ASTM D-1557) to a depth of at least 2 feet below the present ground surface. The subgrade soil 1-foot below new pavement should be compacted to at least 98 percent.

Proof-rolling and densification efforts should be closely monitored by a FES engineering technician to observe any unusual or excessive deflection of the soils beneath the compacting equipment used. If unusual or excessive deflection is observed, then the areas should be undercut to firm soil and backfilled with compacted structural fill placed in maximum one-foot thick lifts. Density tests should be performed for every 2,000 ft².

Borrow Areas

Structural Fill Suitability

Definition

The preferred soil used for structural fill and backfill can be defined as clean fine sand containing less than twelve percent material by weight that is finer than a number 200 sieve (material conforming to SP to SP-SM or SP-SC in the Unified Soils Classification System).

Encountered material containing up to 35 percent fines (materials conforming to SC or SM in the Unified Soil Classification System) may also be utilized as structural fill, provided their plasticity index is less than 10, and the working subgrade is above the existing groundwater level.

Soil Suitability

The borings and test pits performed at this property suggest sands conforming to the preferred SP and SP-SM/SP-SC soils are present from ground surface to depths ranging from 2 feet to 6 feet (bgs). Please refer to the attached Suitable Fill Table (Table 2) for a more detailed approximation of the depths of suitable fill within the Crystal Lagoon, stormwater pond and sump.

Placement

Structural fill with less than 12 percent fines should be placed in lifts not to exceed one foot thick. Materials with fines content greater than 12 percent should be placed in maximum 6-inch loose lifts. The fill material should be compacted to at least 95 percent of its modified Proctor maximum dry density (ASTM D-1557). Confined areas, such as utility trenches, should be compacted with manually operated vibratory compaction equipment.

Field density testing to verify compaction should be performed for each lift of structural fill placed for each 2,500 square feet of area below structures and for each 5,000 square feet below pavements. In pavement areas, the subbase and base materials should be tested to the same frequency.

Density tests should be performed for each lift of fill for every 100 linear feet of backfill placed in utility excavations or other excavations that are within the paving areas.

Depending on the time of year construction occurs, materials excavated and imported containing clay fines may exist in a saturated condition. These soils will require processing and drying to achieve a moisture content to allow placement and proper compaction. Spreading the clayey material in thin lifts (6 inches loose thickness) and aerating by disking can facilitate and hasten the drying process. Disking will also be useful to breakdown larger clods of clayey soils. Specialty equipment typically associated with clayey soils such as a sheep's foot roller will also be required to achieve proper compaction.

The placement and compaction of moisture sensitive soils of this type will require time and effort beyond that typically associated with sand soil. A grading contractor experienced with placing and compaction of clay soils can likely reduce costly project delays due to soil conditions.

Groundwater Control

Groundwater may be encountered during excavation activities. Dewatering may be accomplished by either draining the water to sumps which can then be pumped away from the area or by the use of sanded, vacuum well points. Groundwater fluctuations can occur due to variations in rainfall and other site specific factors. These variations should be considered when planning earthwork activities.

An alternative to dewatering in shallow undercut areas where groundwater is encountered is to use clean sand classified as SP material (less than 5% fines) according to the Unified Soil Classification System as a first lift through any standing water. This first lift will create a platform to place and compact additional fill material upon.

Flexible Pavement Recommendations

The following minimum pavement sections are provided for consideration for this development. However, the project civil engineer should develop the actual minimum pavement thickness based on anticipated traffic loads and other considerations in accordance with FDOT and Pasco County standards. A base material other than limerock should be used if an underdrain is required to control groundwater.

Section Description	Light Duty (inches)	Heavy Duty (inches)
Surface Course Type SP-9.5 or SP-12.5 Asphaltic compacted to at least 95 percent of the maximum laboratory Marshall density.	1.5	3
Base Course Limerock having a minimum LBR of 100 and compacted to at least 98 percent of its modified Proctor maximum dry density (ASTM D-1557). **If the bottom of the base is within 2 feet of the seasonal high groundwater level, then a moisture tolerant base will be required such as soil cement or crushed concrete.**	6	10
Subbase A minimum LBR of 40 and compacted to at least 98 percent of the modified Proctor maximum dry density (ASTM D-1557).	12	12

Methods and materials used for pavement construction should conform to applicable sections of the most recent edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. We further recommend that LBR testing be performed on the subgrade soils to establish an LBR value to determine the level of stabilization required, if any.

POTENTIAL FOR SINKHOLE DEVELOPMENT

Most of Florida is prone to sinkhole formation because it is underlain by carbonate deposits that are susceptible to dissolution by circulating ground water. The soluble limestone and dolomites that constitute the carbonate deposits are altered by dissolution and weathering processes to a distinct geomorphology known as "Karst". Where the carbonate rock is covered by relatively insoluble deposits such as the sand and clay deposits that exist in west-central Florida, the buried Karst features form a distinctive type of terrain known as "mantled Karst". In mantled Karst regions, the carbonate rock is not exposed at the land surface; however the presence may be indicated by sinkholes or surface depressions that result when the overburden materials take the shape of the underlying Karst features. [Tihansky, A.B., 1999, *Sinkholes, West-Central Florida*, in Galloway, Devin, Jones, D.R., and Ingebritsen, S.E., eds., Land Subsidence in the United States: *USGS Circular 1182*.].

At the time of our fieldwork, we observed no strong visual evidence to suggest that active sinkhole conditions exist on the property explored nor were suggestive near surface conditions observed in our borings. A review of a map titled "Pasco County Sinkholes" published in 2008 by the Florida Center for Instructional Technology (FCIT) indicates that the area in the vicinity of the planned Park Place Crystal Lagoon site is not an area of reported excessive sinkhole activity. Furthermore, we asses that the risk of sinkhole occurrence at the property explored is no greater or less than that of the surrounding area. However, because Florida is underlain by limestone bedrock that is susceptible to dissolution and the subsequent development of karst features such as voids and sinkholes in the natural soil overburden, construction in Pasco and surrounding counties is accompanied by some risk that internal soil erosion and ground subsidence could affect new structures in the future. It is not possible to investigate or design to completely eliminate the possibility of future sinkhole related problems. In any event, the Owner must understand and accept this risk.

One way to minimize the risk of structural damage due to sinkhole activity is to design and construct a foundation system that is capable of spanning an approximately 10 foot loss of subgrade support. Typical sinkholes in Pasco County are 8 to 10 feet in diameter due to the shallow depth of limestone. Stiffing the foundation system and wall reinforcement to span this localized loss of support is an economical way to minimize this risk.

TESTING AND MONITORING

Construction testing and monitoring are essential to proper site construction and performance. Observation and testing of site preparation and earthwork activities is an integral part of the engineering recommendations contained in this report. Having FES provide the construction materials testing and inspection services provides continuity and increases the potential that our recommendations will be properly implemented.

LIMITATIONS

This report has been prepared for the exclusive use of **Epperson Ranch, LLC** and their designers for the specific application to the project previously discussed. Our conclusions and recommendations have been rendered using generally accepted standards of geotechnical engineering and geology practice in the state of Florida. No other warranty is expressed or implied.

Our conclusions and recommendations are based on the design information furnished to us, the data obtained from the previously described subsurface exploration, and our experience. They do not reflect variations in the subsurface conditions that are likely to exist in the region of our borings and in unexplored areas of the site. These variations are due to the inherent variability of the subsurface conditions in this geologic region. Should variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon our on-site observations of the conditions.

The scope of our services does not include any environmental assessments or investigations for the possible presence of hazardous or toxic materials in the soil, groundwater or surface water within or in the general vicinity of the site studied. Any statements made in this report or shown on the test boring logs regarding unusual subsurface conditions and/or composition, odor, staining, origin or other characteristics of the surface and/or subsurface materials are strictly for the information of our client and may or may not be indicative of an environmental problem.

If changes are made in the overall design or the location of the planned Crystal Lagoon, stormwater pons or roadway areas, the recommendations presented in this report must not be considered valid unless the changes are reviewed by our firm and recommendations modified or verified in writing. We should be given the opportunity to review the applicable portions of the project specifications when the design is finalized. This review will allow us to check whether these documents are consistent with the intent of our recommendations.

CLOSING

Faulkner Engineering Services Inc. appreciates the opportunity to be of service **Epperson Ranch, LLC** by providing these geotechnical consulting services and we look forward to assisting you through project completion. If you have any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Faulkner Engineering Services, Inc.

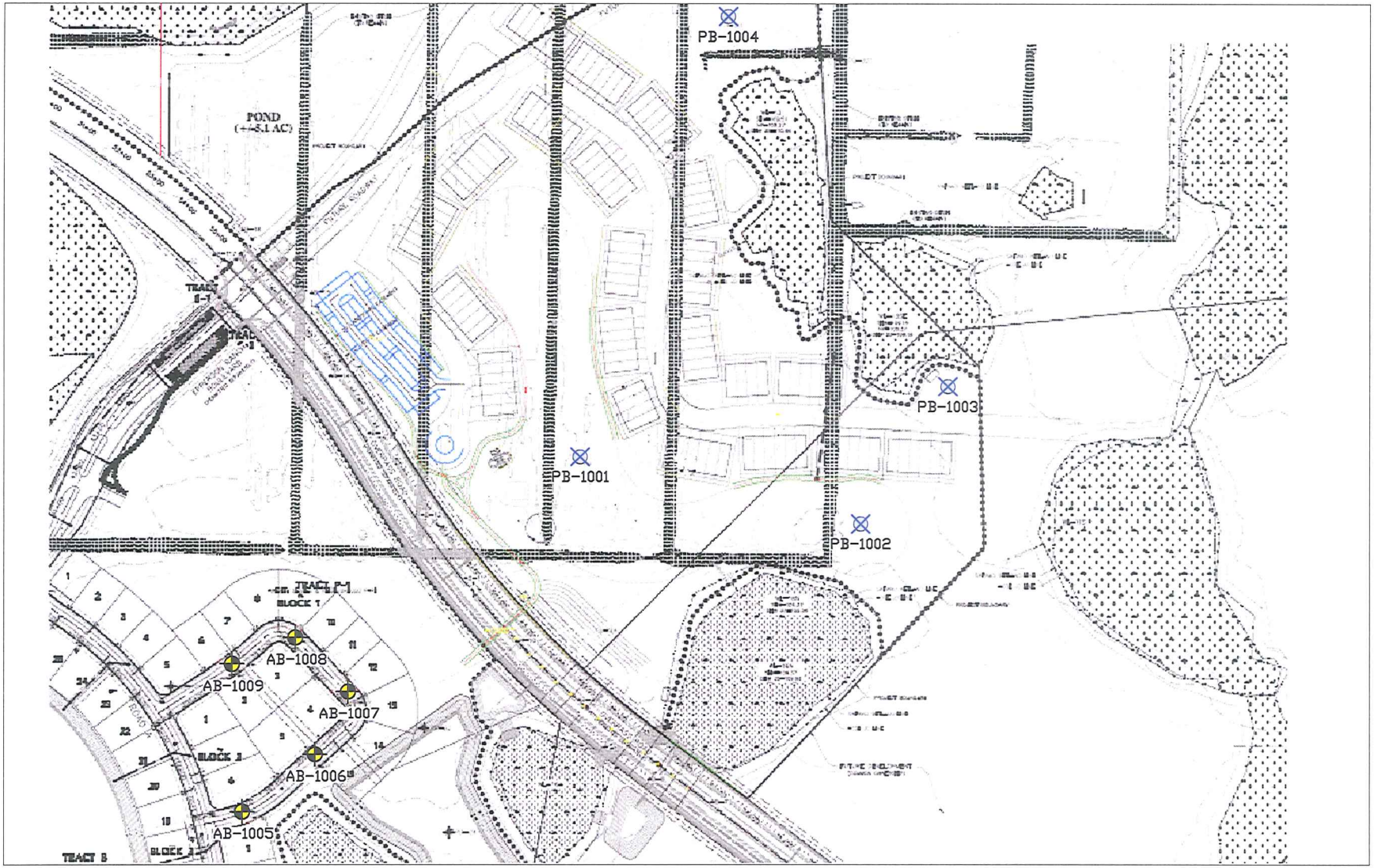
David W. Faulkner, P.E.
President
Florida License No. 50740

Copy to: Al Belluccia, P.E. (Florida Design Consultants) (2)
Art Woodworth (Tetra Rouge Group, Inc.)

Attachments: Boring Location Plan (Plan 1)
Groundwater Table (Table 1)
Suitable Fill Table (Table 2)

Appendix A: Logs of Soil Borings
Appendix B: Key to Soil Classification

BORING LOCATION PLAN



LEGEND

AB-1005 APPROXIMATE LOCATION OF AUGER BORING

PB-1001 APPROXIMATE LOCATION OF POND BORING

FAULKNER
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Park Place
Crystal Lagoon

N.T.S.	DATE 11.14.14	JOB NO. 14-2447
DRAWN: RH CHKD: DF	PLAN 1	

Table 1 - Groundwater Data

Project Name: Park Place Crystal Lagoon FES Project No.: 14-2447

Boring No.	Ground Elevation[1] (ft)	Groundwater Data at Time of Drilling		Estimated Seasonal High Watertable	
		Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)
Stormwater Pond SPT and Roadway Auger Borings					
PB-1001	NA	--	NE[2]	--	3.3
PB-1002	NA	--	NE	--	3.0
PB-1003	NA	--	2.5	--	2.0
PB-1004	NA	--	3.8	--	3.0
AB-1005	NA	--	3.0	--	2.5
AB-1006	NA	--	2.6	--	2.0
AB-1007	NA	--	2.8	--	2.3
AB-1008	NA	--	3.0	--	2.5
AB-1009	NA	--	3.0	--	2.5

Notes:

1. Ground Elevations were not available at the time of drilling.
2. Groundwater not encountered at the time of drilling.

Table 2 - Suitable Fill Table

Project Name: Park Place Crystal Lagoon **FES Project No.:** 14-2447

Boring No.	Ground Elevation (ft)[1]	Estimated Depth of Suitable Fill	
		Elevation (ft)	Estimated Depth (ft)
PB-1001	N.A.	--	15.0
PB-1002	N.A.	--	13.0
PB-1003	N.A.	--	10.0
PB-1004	N.A.	--	18.0

APPENDIX A

LOGS OF SOIL BORINGS

FAULKNER
ENGINEERING SERVICES, Inc.

DRILL HOLE LOG
BORING NO.: PB-1001

Project No.: 14-2447
Date: 10-28-2014

Project: Park Place Crystal Lagoon
Client: Epperson Ranch, LLC
Location: Pasco County, Florida
Driller: J & R Precision Drilling
Drill Rig: CME-550
Depth to Water> **Initial** ▽ :

Elevation: N/A
Logged By: JC
At Completion ▽ : NE

Depth	Soil Symbols	USCS	Description	Sample Type	Sample No.	Blows	N	Standard Penetration Test: Penetration Resistance (10 20 30 40 60 80)
0		SP	Very Loose, gray, fine SAND		1	1 1 2	3	
		SP-SM	Loose, light brown, slightly silty, fine SAND		2	2 3 4	7	
5		SC	Medium-Dense, light gray, clayey SAND		34	3 5 7	12	
					4	4 5 8	13	
					5	6 7 7	14	
10								
			Loose, (-200 = 37%)		6	3 4 4	8	
15								
					7	4 4 5	9	
20								
			With rock fragments		8	3 5 5	10	
25			End of Boring					
30								
35								

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FAULKNER
ENGINEERING SERVICES, Inc.

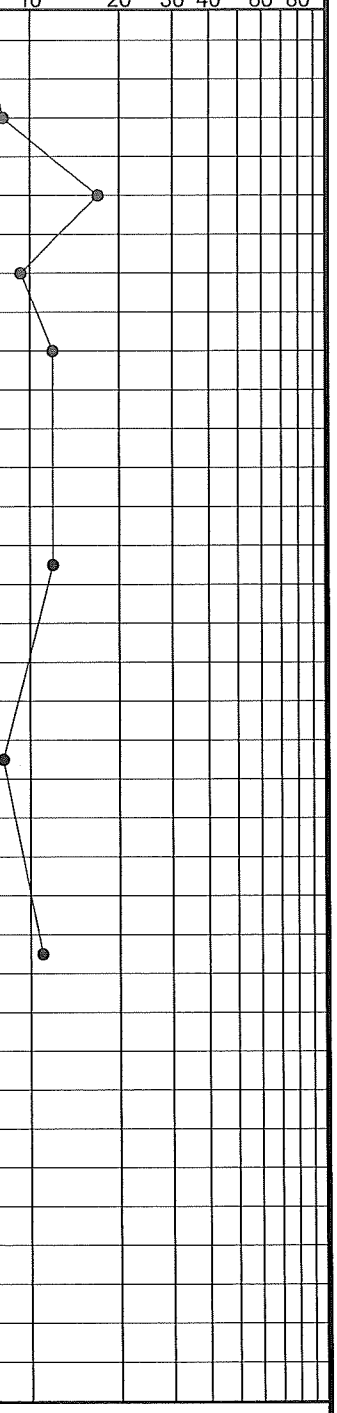
DRILL HOLE LOG
BORING NO.: PB-1002

Project No.: 14-2447
Date: 10-28-2014

Project: Park Place Crystal Lagoon
Client: Epperson Ranch, LLC
Location: Pasco County, Florida
Driller: J & R Precision Drilling
Drill Rig: CME-550
Depth to Water> **Initial** ▽ :

Elevation: N/A
Logged By: JC
At Completion ▽ : NE

Depth	Soil Symbols	USCS	Description	Sample Type	Sample No.	Standard Penetration Test Blows	N
0		SP	Loose, light gray, fine SAND		1	1 2 3	5
			Dark gray, slightly organic (organic content = 5%)		2	1 3 4	7
5		SM	Medium-Dense, brown, silty SAND		34	9 9 8	17
		SC	Loose, gray, clayey SAND		4	5 4 5	9
			Medium-Dense (-200 = 27%)		5	5 6 6	12
10							
		CL	Stiff, gray CLAY		6	5 5 7	12
15							
		SC	Loose, gray, clayey SAND		7	2 3 4	7
20							
			Medium-Dense, light gray		8	3 6 5	11
25			End of Boring				
30							
35							



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FAULKNER
ENGINEERING SERVICES, Inc.

DRILL HOLE LOG
BORING NO.: PB-1003

Project No.: 14-2447
Date: 10-28-2014

Project: Park Place Crystal Lagoon
Client: Epperson Ranch, LLC
Location: Pasco County, Florida
Driller: J & R Precision Drilling
Drill Rig: CME-550
Depth to Water> **Initial** ▽ :

Elevation: N/A
Logged By: JC
At Completion ▽ : 2.5'

Depth	Soil Symbols	USCS	Description	Sample Type	Sample No.	Standard Penetration Test: Blows	N	Penetration Resistance (10 20 30 40 60 80)
0		SP	Loose, light gray, fine SAND		1	1 2 4	6	
		SC	Loose, dark brown, clayey SAND		2	2 3 2	5	
5		CL	Medium, gray CLAY		34	2 2 3	5	
		SC	Medium-Dense, gray, clayey SAND (-200 = 27%)		4	3 5 8	13	
					5	7 8 8	16	
10								
		CL	Medium, light gray CLAY		6	3 3 4	7	
15								
		SC	Loose, light gray, clayey SAND		7	3 3 3	6	
20								
					8	3 3 5	8	
25			End of Boring					
30								
35								

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FAULKNER
ENGINEERING SERVICES, Inc.

DRILL HOLE LOG
BORING NO.: PB-1004

Project No.: 14-2447
Date: 10-28-2014

Project: Park Place Crystal Lagoon
Client: Epperson Ranch, LLC
Location: Pasco County, Florida
Driller: J & R Precision Drilling
Drill Rig: CME-550
Depth to Water> **Initial** ▽ :

Elevation: N/A
Logged By: JC
At Completion ▽ : 3.8'

Depth	Soil Symbols	USCS	Description	Sample Type	Sample No.	Standard Penetration Test Blows	N	Penetration Resistance
0		SP	Very Loose, gray, fine SAND		1	1 2 2	4	
			Loose, dark brown		2	3 4 3	7	
5			Light brown		34	2 3 2	5	
		SC	Medium-Dense, gray, clayey SAND		4	3 7 8	15	
		SM	Medium-Dense, gray, silty SAND		5	7 12 13	25	
10								
		SC	Medium-Dense, gray, clayey SAND (-200 = 24%)		6	7 8 9	17	
15								
		CL	Medium, greenish gray CLAY		7	2 2 4	6	
20								
					8	2 3 3	6	
25			End of Boring					
30								
35								

Penetration Resistance: 10 20 30 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

KEY TO SYMBOLS

Symbol Description

Strata symbols

 Poorly graded sand

 Poorly graded sand with silt

 Clayey sand

 Silty sand

 Low plasticity clay

Misc. Symbols

 Water table at boring completion

Soil Samplers

 Standard penetration test

Notes:

1. Exploratory boring were performed using a 2-inch diameter split barrel sampler driven by a 140 lbs hammer (In accordance with ASTM D1586)

2. These logs are subject to the limitations, conclusions, and recommendations in this report.

AB-1005

Depth (feet BGS)	Soil Description
0 - 3.0	Gray, fine SAND (SP)
3.0 - 4.0	Dark brown, fine SAND (SP)
4.0 - 5.0	Brown, fine SAND (SP)
5.0	Auger boring terminated

Groundwater was encountered at approximately 3.0' (bgs).

AB-1006

Depth (feet BGS)	Soil Description
0 - 2.0	Gray, fine SAND (SP)
2.0 - 4.0	Dark brown, fine SAND (SP)
4.0 - 5.0	Light brown, fine SAND (SP)
5.0	Auger boring terminated

Groundwater was encountered at approximately 2.6' (bgs).

AB-1007

Depth (feet BGS)	Soil Description
0 - 2.0	Gray, fine SAND (SP)
2.0 - 4.0	Dark brown, slightly silty, fine SAND (SP-SM)
4.0 - 5.0	Brown, fine SAND (SP)
5.0	Auger boring terminated

Groundwater was encountered at approximately 2.8' (bgs).

AB-1008

Depth (feet BGS)	Soil Description
0 - 3.0	Gray, fine SAND (SP)
3.0 - 4.0	Dark brown, slightly silty, fine SAND (SP-SM)
4.0 - 5.0	Brown, fine SAND (SP)
5.0	Auger boring terminated

Groundwater was encountered at approximately 3.0' (bgs).

AB-1009

Depth (feet BGS)	Soil Description
0 - 3.0	Gray, fine SAND (SP)
3.0 - 4.0	Dark brown, fine SAND (SP)
4.0 - 5.0	Brown, fine SAND (SP)
5.0	Auger boring terminated

Groundwater was encountered at approximately 3.0' (bgs).

APPENDIX B

KEY TO SOIL CLASSIFICATION

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

Major Division		Group Symbol	Laboratory Classification Data		Soil Description
			Finer than No. 200 Sieve %	Supplementary Requirements	
Coarse-Grained (Over 50% by Weight Coarser than No. 200 Sieve)	Gravelly Soils (Over Half of Coarse Fraction Larger than No. 4 Sieve)	GW	0 - 5*	$C_u \geq 4$ and $1 \leq C_c \leq 3$	Well-Graded Gravels, Sandy Gravels
		GP	0 - 5*	$C_u < 4$ and / or $1 > C_c > 3$	Gap-Graded or Uniform Gravels, Sandy Gravels
		GM	12 or More*	PI < 4 or Below A-Line	Silty Gravels, Silty Sandy Gravels
		GC	12 of More*	PI ≥ 7 and On or Above A-Line	Clayey Gravels, Clayey Sandy Gravels
	Sandy Soils (Over Half of Coarse Fraction Larger than No. 4 Sieve)	SW	0 - 5*	$C_u \geq 6$ and $1 \leq C_c \leq 3$	Well-Graded Sands, Gravelly Sands
		SP	0 - 5*	$C_u < 6$ and / or $1 > C_c > 3$	Gap-Graded or Uniform Sands, Gravelly Sands
		SM	12 or More*	PI < 4 or Below A-Line	Silty Sands, Silty Gravelly Sands
		SC	12 of More*	PI ≥ 7 and On or Above A-Line	Clayey Sands, Clayey Gravelly Sands
Fine-Grained (Over 50% by Weight Finer than No. 200 Sieve)	LOW Compressibility (Liquid Limit Less Than 50)	ML	Plasticity Chart		Silts, Very Fine Sands, Silty or Clayey Fine Sands, Micaceous Silts
		CL	Plasticity Chart		Low Plasticity Clays, Sandy or Silty Clays
		OL	Plasticity Chart, Organic Odor or Color		Organic Silts and Clays of Low Plasticity
	HIGH Compressibility (Liquid Limit Greater Than 50)	MH	Plasticity Chart		Micaceous Silts, Diatomaceous Silts, Volcanic Ash
		CH	Plasticity Chart		Highly Plastic Clays and Sandy Clays
		OH	Plasticity Chart, Organic Odor or Color		Organic Silts and Clays of High Plasticity
Soils with Fibrous Organic Matter		PT	Fibrous Organic Matter, Will Char, Burn, or Glow		Peat, Sandy Peats, and Clayey Peat

*For Soils having 5 to 12 percent passing the No. 200 Sieve, use a dual symbol such as GW-GC.