

ADDENDUM NO 2
S25-01
QUAIL HEIGHTS STORMWATER POND

Incorporate Attachment



Cal -Tech Testing, Inc.

- Engineering
- Geotechnical
- Environmental

LABORATORIES

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October 30, 2023

Mr. Ryan Asmus, P.E.
North Florida Professional Services, Inc.
1450 SW SR 47
Lake City, Florida 32025

**RE: Geotechnical Eng. Exploration & Field Soil Permeability Testing Report
Quail Heights-Stormwater Management Facilities
Lake City, Florida
Cal-Tech Testing Inc. Project No. 23-00418-01**

Dear Mr. Ryan Asmus, P.E.:

This report presents the results of our geotechnical engineering exploration and field soil permeability testing for the proposed Quail Heights Stormwater Management Facilities in Lake City, Florida.

SITE AND PROJECT INFORMATION

Based on observations during our field work the site is the north portion of the Quail Heights Country Club Golf Course, currently abandoned and presenting heavy overgrown trees and underbrush vegetation, which is proposed for the design and construction of Columbia County stormwater management facilities.

SUBSURFACE SOIL EXPLORATION

Per your request, the subsurface soil exploration was performed between October 24 and 30, 2023, and consisted of drilling 19 Standard Penetration Test (SPT) borings (B1 to B19) to a depth of 15 ft. at locations laid out by our field crew from Global Positioning System (GPS) coordinates provided by you and using a hand-held device. Furthermore, 19 field soil permeability tests were performed next to the SPT boring locations. Refer to the enclosed Boring Location Plan.

We contacted Sunshine State One Call of Florida to mark out existing, known underground utilities prior to the beginning of our field exploration.

The SPT borings were advanced using rotary drilling techniques with a continuous-flight auger and automatic hammer. The split-spoon sampling was performed continuously in the upper 10 ft. and at 5 ft. intervals thereafter to the termination depth of the borings at 15 ft. The penetration test was performed by driving a 2-inch O.D. split spoon sampler with an automatic hammer falling 30 inches. The number of hammer blows required to drive the sampler a total of 24 inches (upper 10 ft.) and 18 inches in 6-inch increments were recorded in boring logs. The penetration resistance, N-value, is the summation of the second and third 6-inch increments and is used to

derive soil engineering parameter indexes from empirical correlations. The boreholes were backfilled with soil cuttings at completion.

The field soil permeability tests were performed by driving a casing 0.5 ft. from the bottom of 1 ft. to 5 ft. deep hand-augered boreholes next to the boring locations. During the tests and after soil saturation we recorded the volume required to keep water at the top of the casing at 5 minutes intervals for 30 minutes.

All soil samples were delivered to our geotechnical laboratory for visual classification by our geotechnical engineer in accordance with the Unified Soil Classification System (USCS).

SUBSURFACE SOIL CONDITIONS

GENERALIZED SUBSURFACE SOIL PROFILE

The generalized subsurface soil profile inferred from the results of the field exploration consists of an approximately 3-ft to 7-ft. thick strata of SAND (SP) underlain by SILTY SAND (SM) and CLAYEY SAND strata (the confining layer) to the borings explored depth of 15 ft.

Details of the subsurface soil strata classification are presented in the log of borings enclosed to this report.

Groundwater

Measurements performed at least 24 hours after completion of the borings revealed the groundwater at depths varying from 2.5 ft. to 12.5 ft. though no groundwater was encountered at boring locations B14, B15 and B16. The US Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) indicates groundwater depths varying from depths of 6 inches to 30 inches for the map units covering the explored area.

Observation of the groundwater depths, soil particles coated with typical yellowish and reddish iron oxide and subtle increases and subsequent decreases of the SPT blow counts allowed to estimate the Seasonal High Groundwater Table (SHGWT) depth at each boring location as shown in the following Soil Permeability section.

SOIL PERMEABILITY

Analyses of the data obtained during the field soil permeability tests indicate the following results:

Test No.	GWT (ft.)	Estimated SHGWT (ft.)	Test Depth (ft.)	(K_v)¹ (ft/day)	(K_h)² (ft/day)	Fillable Porosity (%)	Confining Layer Depth (ft)	Hydrologic Soil Group (HSG)
B1	3.0	2.0	1.0	0.6	1.4	27	5.5	C
B2	6.5	5.0	5.0	0.9	1.9	30	7.5	B
B3	3.5	1.5	1.5	0.6	1.4	20	3.5	C/D
B4	4.5	1.5	1.0	0.9	1.9	20	3.5	C/D
B5	8.5	3.5	2.0	1.8	4.1	30	4.5	B/C
B6	6.5	2.5	1.5	1.3	3.0	30	3.5	B/C
B7	4.0	2.5	1.5	1.9	4.3	30	3.0	C
B8	6.5	3.5	2.5	3.4	7.7	30	5.0	A
B9	4.0	1.5	1.0	0.9	2.1	20	3.5	B/D

Test No.	GWT (ft.)	Estimated SHGWT (ft.)	Test Depth (ft.)	(K _{vu}) ¹ (ft/day)	(K _h) ² (ft/day)	Fillable Porosity (%)	Confining Layer Depth (ft)	Hydrologic Soil Group (HSG)
B10	2.5	1.5	1.0	0.5	1.2	20	5.5	C/D
B11	NE	3.0	2.0	2.7	6.0	30	4.0	A/C
B12	10.0	4.0	2.5	0.7	1.5	30	6.0	C
B13	7.0	3.0	2.0	2.7	6.0	30	7.5	A/C
B14	NE	2.0	1.0	0.3	0.6	27	2.0	C
B15	NE	3.0	2.0	2.2	5.0	30	5.5	A/C
B16	NE	3.0	2.0	1.7	3.9	30	3.0	C
B17	12.5	2.0	1.0	1.4	3.2	27	2.5	C
B18	7.0	3.0	2.0	0.6	1.4	30	8.0	C
B19	5.0	2.0	1.5	0.6	1.4	27	4.0	C

Note 1: K_{vu}= Soil Unsaturated Hydraulic Conductivity

Note 2: K_h= Soil Estimated Horizontal Hydraulic Conductivity

NE= Not Encountered

The estimated SHGWT and USDA NRCS Hydrology National Engineering Handbook criteria were used to assign the Hydrologic Soil Group (HSG) shown at each boring location.

LIMITATIONS

Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of the exploration.

CLOSURE

It has been a pleasure working with you and we look forward to continuing providing our geotechnical engineering and construction materials testing expertise on this and future projects.

Sincerely,

Cal-Tech Testing Inc.

Ivan E. Marciano, P.E.
 Sr. Geotechnical Engineer

Enclosures:
 Boring Location Plan
 Boring Logs



Mike Stalvey, Jr.
 Vice-President



CAL-TECH TESTING, INC.

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BORING LOCATION PLAN
Quail Heights Stormwater Management Facilities
Lake City, Florida

Project: **Quail Heights- Stormwater Management Facilities**
 Project Location: **Lake City, Florida**
 Project Number: **23-00418-01**

Cal-Tech Testing, Inc.
 3309 SR 247
 Lake City, Florida 32024

Log of Boring B1
 Page 1 of 1

Date(s) Drilled 10/24/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 3 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°20'24.05" W82°40'38.51"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Dark gray and yellowish brown SAND with silt (SP-SM)		0	1	X	3-4-7-7	11	Sample Type: 2-in Split Spoon SHGWT estimated at 2 ft.
Light brownish gray SAND (SP)		2	2	X	7-9-7-11	16	
		5	3	X	16-19-20-16	9	
Pinkish gray and yellowish brown SILTY SAND (SM)		4	4	X	15-16-15-11	31	
		5	5	X	9-9-9-8	18	
Light greenish gray CLAY (CL)		15	6	X	3-4-5	9	
Bottom of Boring at 15 ft.							
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B2 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/27/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 6.5 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°10'02.45" W82°40'40.21"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Light brownish gray SAND (SP)		0	1	X	1-2-3-4	5	Sample Type: 2-in Split Spoon SHGWT estimated at 5 ft.
		1	2	X	4-5-6-8	11	
		5	3	X	16-12-12-10	24	
Dark grayish brown SAND (SP)		4	4	X	12-12-12-13	24	
Gray SILTY SAND (SM)		5	5	X	13-14-12-13	26	
Pinkish gray with yellowish brown mottles SILTY SAND (SM)		10					
Reddish gray CLAY (CL)		15	6	X	5-5-7	10	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B3 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/27/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 3.5 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°10'00.47" W82°40'42.03"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Reddish gray SAND (SP)		0					Sample Type: 2-in Split Spoon SHGWT estimated at 1.5 ft.
		1	1	X	1-3-4-5	7	
		2	2	X	7-8-8-10	16	
Pinkish gray and yellowish brown SILTY SAND (SM)		5	3	X	18-35-48-50	83	
		4	4	X	35-38-42-49	80	
Light reddish brown SILTY SAND (SM)		5	5	X	38-42-49-50	89	
		10					
Light greenish gray CLAY (CL)		15	6	X	4-6-4	10	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B4 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/27/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 4.5 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'58.45" W82°40'44.09"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Reddish gray SAND (SP)		0					Sample Type: 2-in Split Spoon SHGWT estimated at 1.5 ft.
		1	1	X	2-3-8-10	7	
		2	2	X	12-10-10-9	20	
Yellowish red SILTY SAND (SM)		5	3	X	5-6-8-12	14	
Pinkish gray SILTY SAND (SM)		4	4	X	20-25-46-47	71	
		5	5	X	27-35-42-44	77	
		10					
Gray SILTY SAND (SM)		6	6	X	7-12-12	24	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B5 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled: 10/25/23	Logged By: BS	Checked By: IM
Drilling Method: Continuous Flight Auger	Drill Bit Size/Type: Drag Bit	Total Depth of Borehole: 15 feet bgs
Drill Rig Type: Mud Bug	Drilling Contractor: Cal-Tech Testing, Inc.	Approximate Surface Elevation: Referred to ground surface
Groundwater Level and Date Measured: 8.5 ft. (24 hours)	Sampling Method(s): Split Spoon	Hammer Data: Automatic Hammer
Borehole Backfill: Soil cuttings	Location: N30°09'56.82" W82°40'45.72"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Very dark gray SAND (SP)		0	1	X	2-1-2-1	3	Sample Type: 2-in Split Spoon
		2		X	2-4-4-4	8	SHGWT Estimated at 3.5 ft.
Dark reddish brown SAND (SP)				X			
Yellowish brown SILTY SAND (SM)		5	3	X	3-3-3-3	6	
Gray CLAYEY SAND (SC)		4		X	2-2-2-3	4	
		5		X	4-7-9-12	16	
		10					
Reddish gray CLAYEY SAND (SC)			6	X	6-17-23	40	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc.	Log of Boring B6
Project Location: Lake City, Florida	3309 SR 247	Page 1 of 1
Project Number: 23-00418-01	Lake City, Florida 32024	

Date(s) Drilled 10/26/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 6.5 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'54.15" W82°40'44.13"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Dark to light gray SAND (SP)		0	1	X	1-1-1-1	2	Sample Type: 2-in Split Spoon
		2	2	X	5-9-9-10	18	SHGWT Estimated at 2.5 ft.
Gray and yellowish red SILTY SAND (SM)		5	3	X	10-17-16-19	33	
		4	4	X	20-15-12-10	27	
Pinkish gray SILTY SAND (SM)		5	5	X	11-20-27-23	47	
		10					
		15	6	X	4-7-7	14	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: **Quail Heights- Stormwater Management Facilities**
 Project Location: **Lake City, Florida**
 Project Number: **23-00418-01**

Cal-Tech Testing, Inc.
 3309 SR 247
 Lake City, Florida 32024

Log of Boring B7
 Page 1 of 1

Date(s) Drilled 10/26/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 4 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'57.10" W82°40'42.35"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Pinkish gray SAND (SP)		0	1	X	2-6-10-11	16	Sample Type: 2-in Split Spoon SHGWT Estimated at 2.5 ft.
Pinkish gray SILTY SAND (SM)		2	2	X	7-9-7-7	16	
		5	3	X	7-14-22-38	38	
		4	4	X	26-24-28-31	52	
		5	5	X	18-11-8-8	19	
		10					
Light greenish gray and red CLAY (CL)		15	6	X	5-5-5	10	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B8 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/27/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 6.5 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°10'00.86" W82°40'39.29"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Reddish brown SAND (SP)		0					
		1	1	X	2-2-4-2	6	Sample Type: 2-in Split Spoon
		2	2	X	4-8-9-11	17	SHGWT Estimated at 3.5 ft.
Yellowish red SILTY SAND (SM)		5	3	X	7-8-6-3	14	
		4	4	X	1-2-4-7	6	
Reddish gray and red CLAYEY SAND (SC)		5	5	X	7-2-4-4	6	
		10					
Gray CLAY (CL)			6	X	4-6-8	14	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B9 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/24/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 4 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°10'02.01" W82°40'36.43"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Gray SAND (SP)		0					Sample Type: 2-in Split Spoon SHGWT estimated at 1.5 ft.
		1	1	X	3-3-4-6	7	
		2	2	X	4-4-5-4	9	
Gray and yellowish brown SILTY SAND (SM)		5	3	X	4-12-12-14	24	
		4	4	X	13-13-18-34	31	
		5	5	X	19-25-25-25	50	
Gray and red SILTY SAND (SM)		10					
							
Reddish gray SILTY SAND (SM)		15	6	X	11-13-15	28	
Bottom of Boring at 15 ft.							
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B11 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/26/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level Not encountered (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'57.18" W82°40'39.14"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Gray SAND (SP)		0					
		1	1	X	1-1-1-2	2	Sample Type: 2-in Split Spoon
		2	2	X	2-3-4-2	7	SHGWT Estimated at 3 ft.
Reddish gray SILTY SAND (SM)		5	3	X	2-1-1-2	2	
		4	4	X	3-7-8-6	15	
		5	5	X	7-8-9-7	17	
Light greenish gray CLAY (CL)		10					
		15	6	X	4-5-6	11	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B12 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled: 10/26/23	Logged By: BS	Checked By: IM
Drilling Method: Continuous Flight Auger	Drill Bit Size/Type: Drag Bit	Total Depth of Borehole: 15 feet bgs
Drill Rig Type: Mud Bug	Drilling Contractor: Cal-Tech Testing, Inc.	Approximate Surface Elevation: Referred to ground surface
Groundwater Level and Date Measured: 10 ft. (24 hours)	Sampling Method(s): Split Spoon	Hammer Data: Automatic Hammer
Borehole Backfill: Soil cuttings	Location: N30°09'56.06" W82°40'39.91"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Light gray SILTY SAND with yellowish brown mottles (SM)		0	1	X	2-5-7-4	12	Sample Type: 2-in Split Spoon
Gray SAND (SP)		2	2	X	4-4-3-3	7	SHGWT Estimated at 4 ft.
Light yellowish brown SAND (SP)		5	3	X	3-4-8-7	12	
Reddish gray SILTY SAND (SM)		4	4	X	5-8-11-14	19	
		5	5	X	12-14-12-24	26	
		10					
Reddish gray CLAYEY SAND with yellowish brown mottles (SC)		15	6	X	4-8-8	16	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B13 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/26/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 7 ft. (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'53.14" W82°40'40.53"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Dark gray SAND (SP)		0					
		1	1	X	1-1-2-3	3	Sample Type: 2-in Split Spoon
Grayish brown SAND (SP)		2	2	X	3-5-6-7	11	SHGWT Estimated at 3 ft.
Very dark reddish gray SAND (SP)		5	3	X	4-3-1-3	4	
		4	4	X	2-2-2-2	4	
Gray SILTY SAND< (SM)		5	5	X	5-8-14-12	22	
		10					
Gray and red CLAYEY SAND (SC)		6	6	X	9-11-10	21	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B14 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/25/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level Not encountered (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'49.75" W82°40'41.75"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Dark grayish brown SAND (SP)		0	1	X	1-2-5-7	7	Sample Type: 2-in Split Spoon SHGWT Estimated at 2 ft.
Pinkish gray SILTY SAND with yellowish brown mottles (SM)		2	2	X	6-6-8-8	14	
		5	3	X	6-9-10-12	19	
		4	4	X	8-10-9-14	19	
		5	5	X	11-14-17-16	31	
Gray CLAYEY SAND (SC)		15	6	X	4-6-6	12	
Bottom of Boring at 15 ft.							
		20					
		25					

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Project: **Quail Heights- Stormwater Management Facilities**
 Project Location: **Lake City, Florida**
 Project Number: **23-00418-01**

Cal-Tech Testing, Inc.
 3309 SR 247
 Lake City, Florida 32024

Log of Boring B16
 Page 1 of 1

Date(s) Drilled 10/26/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level Not encountered (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'50.42" W82°40'37.78"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Dark grayish brown SAND (SP)		0	1	X	2-2-7-7	9	Sample Type: 2-in Split Spoon
Yellowish red SILTY SAND (SM)		2	2	X	8-8-7-8	15	SHGWT Estimated at 3 ft.
		5	3	X	9-11-9-7	19	
Reddish gray CLAY (CL)		4	4	X	9-7-7-13	14	
		5	5	X	13-11-10-10	21	
		10					
		15	6	X	3-5-7	12	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B17 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled 10/25/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 12.5 (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'54.64" W82°40'36.90"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Very dark gray to grayish brown SAND (SP)		0	1	X	1-3-3-2	6	Sample Type: 2-in Split Spoon SHGWT Estimated at 2 ft.
Gray and yellowish red SILTY SAND (SM)		2	2	X	4-5-8-13	13	
		5	3	X	9-10-8-9	18	
		4	4	X	5-10-10-16	20	
Reddish gray SILTY SAND (SM)		5	5	X	8-10-10-8	20	
		10					
Reddish gray and Light greenish gray CLAYEY SAND (SC)		15	6	X	2-5-5	10	
Bottom of Boring at 15 ft.		15					
		20					
		25					

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Project: Quail Heights- Stormwater Management Facilities	Cal-Tech Testing, Inc. 3309 SR 247 Lake City, Florida 32024	Log of Boring B18 Page 1 of 1
Project Location: Lake City, Florida		
Project Number: 23-00418-01		

Date(s) Drilled: 10/25/23	Logged By BS	Checked By IM
Drilling Method: Continuous Flight Auger	Drill Bit Size/Type: Drag Bit	Total Depth of Borehole: 15 feet bgs
Drill Rig Type: Mud Bug	Drilling Contractor: Cal-Tech Testing, Inc.	Approximate Surface Elevation: Referred to ground surface
Groundwater Level and Date Measured: 7 (24 hours)	Sampling Method(s): Split Spoon	Hammer Data: Automatic Hammer
Borehole Backfill: Soil cuttings	Location: N30°09'54.73" W82°40'36.74"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Gray SAND (SP)		0	1	X	1-3-4-4	7	Sample Type: 2-in Split Spoon
			2	X	4-4-5-3	9	SHGWT Estimated at 3 ft.
Pinkish gray SILTY SAND (SM)		5	3	X	5-7-8-10	15	
Reddish gray SAND (SP)			4	X	9-12-15-20	27	
Reddish brown SILTY SAND (SM)		10	5	X	13-15-14-12	29	
		15	6	X	2-7-13	20	
Bottom of Boring at 15 ft.		20					
		25					

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Project: **Quail Heights- Stormwater Management Facilities**
 Project Location: **Lake City, Florida**
 Project Number: **23-00418-01**

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 3309 SR 247
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Log of Boring B19
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Date(s) Drilled 10/24/23	Logged By BS	Checked By IM
Drilling Method Continuous Flight Auger	Drill Bit Size/Type Drag Bit	Total Depth of Borehole 15 feet bgs
Drill Rig Type Mud Bug	Drilling Contractor Cal-Tech Testing, Inc.	Approximate Surface Elevation Referred to ground surface
Groundwater Level and Date Measured 5 (24 hours)	Sampling Method(s) Split Spoon	Hammer Data Automatic Hammer
Borehole Backfill Soil cuttings	Location N30°09'57.17" W82°40'36.36"	

MATERIAL DESCRIPTION	Symbol Log	Depth (ft)	Sample No.	Sample Type	Blow Counts/0.5 ft	N Value (blows/ft)	REMARKS (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, Etc.)
Gray SAND (SP)		0	1	X	2-5-4-4	9	Sample Type: 2-in Split Spoon SHGWT Estimated at 2 ft.
			2	X	6-7-6-4	13	
		5	3	X	1-2-1-3	3	
			4	X	4-9-13-23	22	
		10	5	X	20-18-27-25	45	
		15	6	X	12-13-18	31	
Pinkish gray SILTY SAND (SM)							
Bottom of Boring at 15 ft.		15					
		20					
		25					

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END OF ADDENDUM NO. 2
(Please acknowledge receipt of Addendums)