CSRS | BUILDING STRONGER, SMARTER COMMUNITIES TOGETHER.

Exhibit AA.
Daly Farms Site
Preliminary Geotechnical Engineering Report

ONEACADIANA™

CSRS | 6767 Perkins Rd., Suite 200, Baton Rouge, LA 70808 | 225.769.0546 | www.csrsinc.com

Daly Farms Site Preliminary Geotechnical Engineering Report

ECS Southeast, LLP

Geotechnical Engineering Report

Daly Farms Site – St. Landry Parish, LA

HWY 182 & HWY 178
Sunset, LA 70584

ECS Project Number 65-1038

May 22, 2020

ECS SOUTHEAST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities

May 22, 2020

Mr. Zach Hager
One Acadiana
804 East St. Mary Boulevard
Lafayette, Louisiana 70503

zach@oneacadiana.org
(337) 408-3669

ECS Project No. 65-1038

Reference: Preliminary Geotechnical Site Characterization Report
Daly Farms Site
HWY 182 & HWY 178
Sunset, LA 70584

Dear Mr. Hager:

ECS Southeast, LLP (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the referenced project. Our services were performed in general accordance with our Proposal No. 65-1035P dated December 13th, 2019. ***This report is not a comprehensive geotechnical engineering report but is solely designed to address specific preliminary issues posed in a December 8, 2019 document from CSRS relative to this site. It must be emphasized that additional borings and testing will be required prior to development of the site.*** This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted. The report also contains our findings and recommendations for design and construction.

It has been our pleasure to be of service to One Acadiana during the preliminary design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully,
ECS SOUTHEAST, LLP

Landon Meyer P.E.
Geotechnical Project Manager

Mark J. Carlson, P.E., RPG, D.GE
Chief Engineer

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to conduct a *Preliminary* Geotechnical Characterization Investigation for the site that would generally characterize the site's soil, rock, and groundwater conditions to substantiate that unfavourable geotechnical conditions do not exist on the site. **This document *specifically* addresses preliminary design issues addressed in our Proposal No. 65-1035-P dated December 13, 2019.**

The preliminary recommendations developed for this report are based on project information provided by the client. This report contains the results of our subsurface exploration and geotechnical laboratory testing program, site characterization, engineering analyses, and preliminary recommendations.

1.2 SCOPE OF SERVICES

In order to obtain the necessary geotechnical information required for evaluation of subsurface soil conditions, two (2) borings to 30 feet below existing site grades, and a CPT sounding extending to 100 feet below existing site grades were performed. A laboratory-testing program was also implemented to characterize the physical and geotechnical engineering properties of the subsurface soils.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following:

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- A final copy of our preliminary soil test borings.
- Preliminary recommendations for site preparation.
- Preliminary Recommended foundation types.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 65-1035P dated December 13, 2019, and authorized by the client on February 11, 2020.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project is located adjacent to the southwest corner of Hwy 182 and Hwy 178 in St. Landry Parish in Sunset, Louisiana. The location is depicted in Figure 2.1.1 as shown below:

Figure 2.1.1 Site Location

2.2 CURRENT SITE CONDITIONS

The project site is currently undeveloped and appears to be recently been tilled for agricultural purposes. The topography of the site is relatively flat with surface elevations ranging from about 47 feet MSL to 54 feet MSL. The elevations and topographic variations were obtained from Google Earth Pro.

2.3 PROPOSED CONSTRUCTION

ECS understands that the Louisiana Economic Development (LED) Site Certification requires preliminary confirmation that the site is compatible with industrial development and that it could support the construction of a 'typical' manufacturing building encompassing 100,000 square feet and appurtenant on-site roadways and infrastructure. Detailed loadings was not provided to ECS at the time of this report. Soil augmentation methods that may be required for the construction of the foundations, buildings and roadways will be preliminarily addressed in this report.

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations consistent with the aforementioned CSRS criterion.

3.1.1 Test Borings and CPT Soundings

The subsurface conditions were explored by drilling a total of two (2) soil test borings and a CPT sounding. The two (2) borings were drilled to a depth of approximately 30 feet below the existing site grades. Also, the CPT sounding was advanced to a depth of approximately 100 feet below the existing site grades.

An ATV-mounted rig was utilized to drill the borings with continuous flight auger drilling techniques. The subsurface exploration was completed under the general supervision of an ECS representative.

The boring and CPT locations were selected by representatives of ECS based on the site plan provide by the client and identified in the field by ECS personnel using the supplied diagram and handheld GPS unit. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A. The approximate ground surface elevations noted in this report were obtained from Google Earth.

The CPT soundings were performed in general conformance with ASTM D 5778. The cone used in the sounding has a tip area of 15 cm^2 and a sleeve area of 225 cm^2. The CPT sounding recorded tip resistance, sleeve friction and pore water pressure measurements to assist in determining pertinent index and engineering properties of the site soils and the groundwater table. The ratio of the sleeve friction to tip resistance is then used to aid in assessing the soil types through which the tip is advanced.

Representative soil samples were obtained by means of Shelby tube sampling procedures in accordance with ASTM Specifications D-1587 in cohesive soils. In the Shelby tube sampling procedure, a thin walled, steel, seamless tube with sharp cutting edges is pushed hydraulically into the soil, and a relatively undisturbed sample is obtained.

Field logs of the soils encountered in the borings were maintained by the drill crew. After recovery, each geotechnical soil sample was removed for the sampler and visually classified. Representative portions of each soil sample was then wrapped in plastic and transported to our laboratory for further visual examination and laboratory testing. After completion of the drilling operations, the boreholes were backfilled with cuttings to the existing ground surface.

3.2 SUBSURFACE CHARACTERIZATION

The following text provides generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information specific information, please refer to the Boring and CPT Logs in Appendix B.

Table 3.2.1 Subsurface Stratigraphy

Approximate Depth to Bottom of Strata Below Grade (ft.)	Material Description	Consistency
0.5	Topsoil, brown	Soft
8-9	(CL) Lean Clay, tan and gray	Soft to Very Stiff
23-28	(CH) Fat Clay, tan & gray	Very Stiff
28	(CL) Lean Clay, tan	Very Stiff
30	(SM) Lean Clay, tan and gray	Very Stiff
63	(CL) Lean Clay, with interbedded layers of Fat Clay	Stiff to Very Stiff
65	(OH) Organic Clay, tan and gray with organics	Very Soft
83	(CL) Lean Clay, with interbedded layers of Fat Clay	Medium Stiff to Very Stiff
86	(OH) Organic Clay, tan and gray with organics	Very Soft
100*	(CH) Fat Clay, with interbedded layers of lean clay and sand	Soft to Stiff

* Soil boring termination depth.

Please refer to the attached boring logs and laboratory data summary for this field exploration for a more detailed description of the subsurface conditions encountered in the borings as the stratification descriptions above are generalized for presentation purposes.

3.3 GROUNDWATER OBSERVATIONS

Groundwater level observations were made in the borings during drilling operations. In auger drilling operations, water is not introduced into the borehole and the groundwater position can often be determined by observing water flowing into and out of the excavation. Furthermore, visual observation of soil samples retrieved can often be used in evaluating the groundwater conditions. Free groundwater was observed at the time of drilling in boring B-1 at 10 feet, B-2 at a depth of 15 feet, and in CPT-1 at about 16 feet.

The highest groundwater observations are normally encountered in the late winter or early spring, or following seasonal heavy rainfall events. Fluctuation in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff and other factors not immediately apparent at the time of his investigation. Therefore, the groundwater conditions at this site are expected to be significantly influenced by surface water runoff and rainfall.

4.0 LABORATORY TESTING

The laboratory testing was performed by ECS on selected samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples obtained from the test borings in order to aid in classifying soils according to the Unified Soil Classification System and to quantify and correlate engineering properties. The soil samples were tested for moisture content, Atterberg Limits, percent passing the US Standard No. 200 sieve, and unconfined compressive strength.

An experienced geotechnical professional visually classified each soil sample from the test borings on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS) and ASTM D-2488 (Description and Identification of Soils-Visual/Manual Procedures). After classification, the geotechnical professional grouped the various soil types into the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposition.

5.0 GEOTECHNICAL RECOMMENDATIONS

The following *preliminary* recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions. These recommendations are preliminary in nature and are for planning purposes and are based on a very limited geotechnical exploration. They should not be used for design or construction. Design and construction recommendations for planned structures will require a thorough geotechnical investigation and engineering analysis.

The proposed site is generally compatible with industrial development depending on the type and anticipated loads of the proposed structures. The following Sections of this document present our general recommendations with regard to the proposed site:

5.1 SITE PREPARATION

In a dry and undisturbed state, the near surface soils will provide good subgrade support for engineered fill placement and construction operations. However, when wet, this soil will degrade quickly with disturbance from contractor operations. Chemical stabilization of the insitu with lime, LKD or Portland cement may be necessary depending on seasonal conditions. Therefore, good site drainage should be maintained during earthwork operations, which would help maintain the integrity of the soil.

The surface of the site should be kept properly graded in order to enhance drainage of the surface water away from the proposed building areas during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern.

The soils at the site are moisture and disturbance sensitive, and contain fines which are considered moderately erodible. Therefore, the contractor should carefully plan his operation to minimize exposure of the subgrade to weather and construction equipment traffic, and provide and maintain good site drainage during earthwork operations to help maintain the integrity of the surficial soils. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current jurisdictional requirements.

In preparing the site for construction, all loose, poorly compacted existing soils, vegetation, organic soil, existing pavements, foundations or utilities, existing fill material, or other unsuitable materials should be removed from all proposed building and paving areas, and any areas receiving new fill.

5.2 SHALLOW FOUNDATIONS

Given that subgrades and structural fills are prepared properly, the proposed structure can be supported by conventional shallow spread footings. A net allowable soil bearing pressure of 2,000 psf may be used for footings bearing on compacted in-situ lean clay or on compacted select fill. Footings should extend at least 24 inches below grade in order to utilize this bearing pressure. The

Table (below) provides estimated size for square footing dimensions based on assumed column loads as required by the CSRS document:

Table 1 ESTIMATED SQUARE SPREAD FOOTING SIZE Net Allowable Bearing Capacity = 2,000 psf F.S.=3		
Assumed Column Load (Kips)	**Spread Footing Plan Dimensions**	
	Breadth (ft.)	**Width (ft.)**
25	4	4
50	5	5
100	7.5	7.5

These design parameters assume that positive drainage will be provided away from structures and with no excessive wetting or drying of soils adjacent to the foundations. Greater potential movements could occur with extreme wetting or drying of the soils due to ponding of water, plumbing leaks or lack of irrigation.

The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. The final footing and/or grade beam elevation should be evaluated by competent geotechnical engineering personnel to verify that the bearing soils are capable of supporting the recommended net allowable bearing pressure and suitable for foundation construction.

5.2 DEEP FOUNDATIONS

The recommended pile length and the estimated corresponding allowable capacities for 14-inch square precast prestressed concrete piles are presented in the following Table for use in feasibility studies, planning, and cost estimating purposes (per the CSRS document):

Table 2
PRELIMINARY ESTIMATED ALLOWABLE SINGLE PILE CAPACITIES (KIPS)

Pile Length (feet)	14-inch Square PPC Pile	
	Compression (KIPS)	Tension (KIPS)
30	32	13
40	39	15
50	45	17

The estimated pile capacities include a factor of safety of two (2) in compression and three (3) in tension which requires that a static load test will be performed. If a field load test is not performed, ECS recommends using a factor of safety of 2.5 for compression to determine the allowable capacities. The recommended pile lengths are referenced from the existing ground surface at the time of drilling. The allowable capacity estimates provided in the Table are based on field and laboratory testing and assume proper design and installation. As noted previously in this report boring CPT-1 indicated the presences of very soft soil strata containing organics at depths of 60 to 65 feet and 83 to 86 feet below ground surface. ECS does not recommend the toe of pile bear in this weak organic strata. Please note that these estimated capacities do not account for negative skin friction effects that may reduce total capacity if fill is placed on site.

6.0 REPORT LIMITATIONS AND CLOSING

ECS has prepared this report of findings, evaluations, and *preliminary* recommendations to generally characterize the sites soil and groundwater conditions to substantiate that unfavorable geotechnical conditions do not exist at the site.

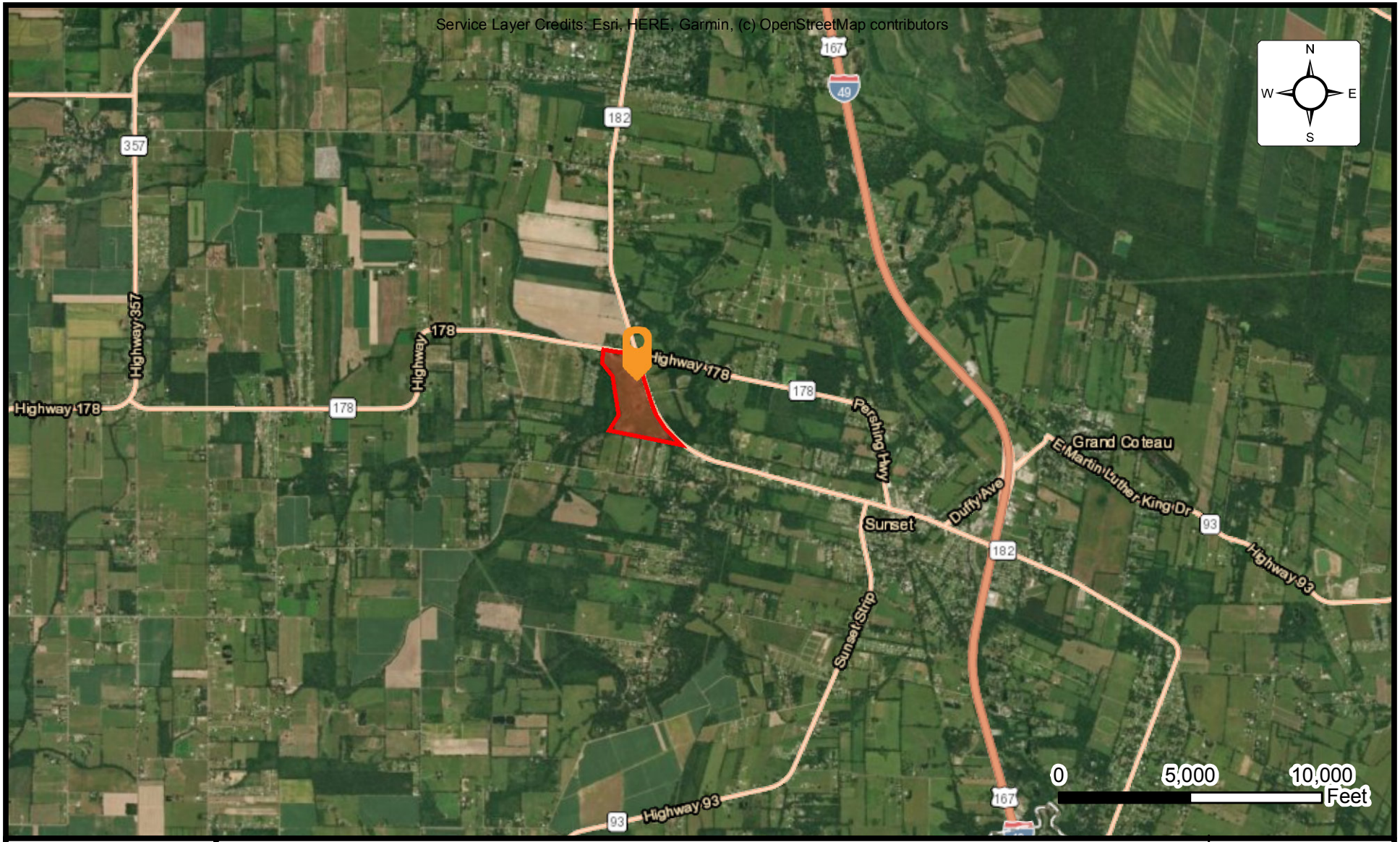
The preliminary recommendations provided in this report are based on the data obtained from the limited field exploration and laboratory testing at the specified boring locations for the purpose of a general site characterization. The recommendations are not intended for use in final design or construction. Final design and construction recommendations for any structure proposed on the site will require a more detailed investigation and engineering analysis.

The description of the proposed site is based on information provided to ECS by the client. If any of this information is inaccurate, either due to our interpretation of the documents provided or site that may occur later, ECS should be contacted immediately in order that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed site.

We recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

APPENDIX A – Figures

Site Location Map
Boring Location Diagram



Site Location Diagram
DALY FARMS SITE

SOUTHWEST CORNER OF HWY 182 & HWY 178, SUNSET, LOUISIANA
ONEACADIANA

ENGINEER	DM01
SCALE	1 " = 5280 '
PROJECT NO.	65:1038
SHEET	1 OF 1
DATE	5/22/2020

Boring Location Diagram
DALY FARMS SITE

HWY 182 & HWY 178 - SUNSET, LOUISIANA

ONE ACADIANA

ENGINEER	LANDON MEYER
SCALE	1 " = 600 '
PROJECT NO.	65:1038
SHEET	1 OF 1
DATE	5/20/2020

APPENDIX B – Field Operations

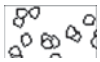
Reference Notes for Boring Logs
Boring Logs B-1 to B-2
Reference Notes for CPT Logs
CPT Logs CPT-1

REFERENCE NOTES FOR BORING LOGS

MATERIALS[1,2]

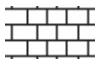

ASPHALT

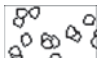

CONCRETE


GRAVEL


TOPSOIL


VOID


BRICK


ABC STONE


FILL[3] Man-placed or disturbed soils


GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures


GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures


SW **WELL-GRADED SAND**
gravelly sand, little or no fines


SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SILTY SAND**
sand-silt mixtures


SC **CLAYEY SAND**
sand-clay mixtures


ML **SILT**
non-plastic to medium plasticity


MH **ELASTIC SILT**
high plasticity


CL **LEAN CLAY**
low to medium plasticity


CH **FAT CLAY**
high plasticity


OL **ORGANIC SILT or CLAY**
non-plastic to low plasticity


OH **ORGANIC SILT or CLAY**
high plasticity


PT **PEAT**
highly organic soils


IGNEOUS ROCK


METAMORPHIC ROCK


SEDIMENTARY ROCK

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

WATER LEVELS[4]

	WL	Water Level (WS)(WD)
		(WS) While Sampling
		(WD) While Drilling
	SHW	Seasonal High WL
	ACR	After Casing Removal
	WL	Water Level as stated
	DCI	Dry Cave-In
	WCI	Wet Cave-In

RELATIVE PROPORTIONS	COARSE GRAINED	FINE GRAINED
Trace	<5%	<5%
Dual Symbol *(ex: SW-SM)*	10%	
With	15% - 20%	15%-25%
Adjective *(ex: "Silty")*	25% - <50%	30% - <50%

COHESIVE SILTS & CLAYS

UNCONFINED COMP. STRENGTH, Q_P[5] (TSF)	SPT[6] (BPF)	CONSISTENCY (COHESIVE
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Medium Stiff
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[6]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
51 - 99	Very Dense
100+	Partially Weathered Rock to Intact Rock

[1] Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.

[2] To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types.

[3] Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-***FILL***)].

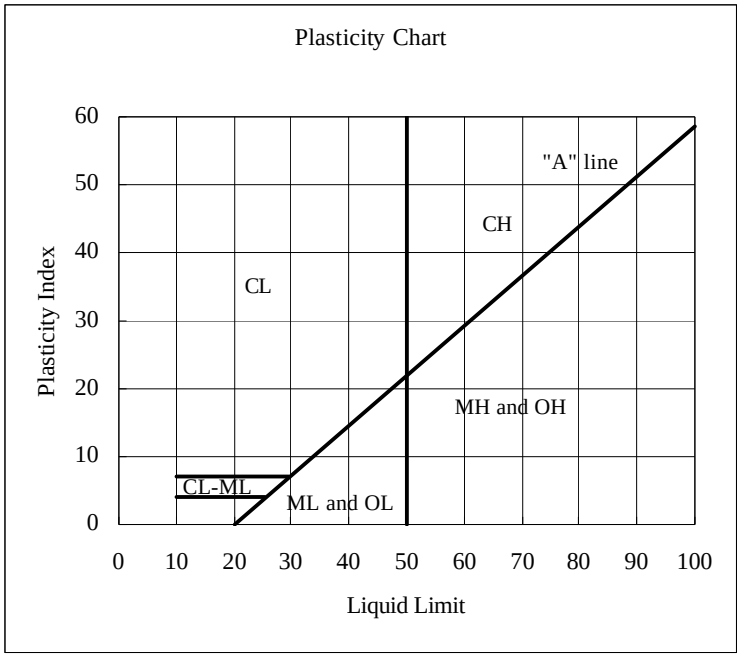
[4] The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally taken.

[5] Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[6] Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

Major Divisions			Group Symbols		Typical Names	Laboratory Classification Criteria		
Coarse-grained soils (More than half of material is larger than No. 200 Sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW		Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent GW, GP, SW, SP; More than 12 percent GM, GC, SM, SC; 5 to 12 percent Borderline cases requiring dual symbols [b]	$C_u = D_{60}/D_{10}$ greater than 4; $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW	
		Gravels with fines (Appreciable amount of fines)	GM [a]	d	Silty gravels, gravel-sand mixtures		Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
				u				
			GC		Clayey gravels, gravel-sand-clay mixtures		Atterberg limits below "A" line or P.I. less than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines		$C_u = D_{60}/D_{10}$ greater than 6; $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			SP		Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM [a]	d	Silty sands, sand-silt mixtures		Atterberg limits above "A" line or P.I. less than 4	Limits plotting in CL-ML zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
				u				
			SC		Clayey sands, sand-clay mixtures		Atterberg limits above "A" line with P.I. greater than 7	
Fine-grained soils (More than half material is smaller than No. 200 Sieve)	Silts and clays (Liquid limit less than 50)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity			
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL		Organic silts and organic silty clays of low plasticity			
	Silts and clays (Liquid limit greater than 50)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH		Inorganic clays of high plasticity, fat clays			
			OH		Organic clays of medium to high plasticity, organic silts			
	Highly Organic soils		Pt		Peat and other highly organic soils			



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder. (From Table 2.16 - Winterkorn and Fang, 1975)

CLIENT	Job #:	BORING #	SHEET
OneAcadiana	65:1038	1	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
Daly Farms Site	

SITE LOCATION: Southwest corner of Hwy 182 & Hwy 178, Sunset, St. Landry Parish, LA

NORTHING	EASTING	STATION
30.42266	-92.09986	

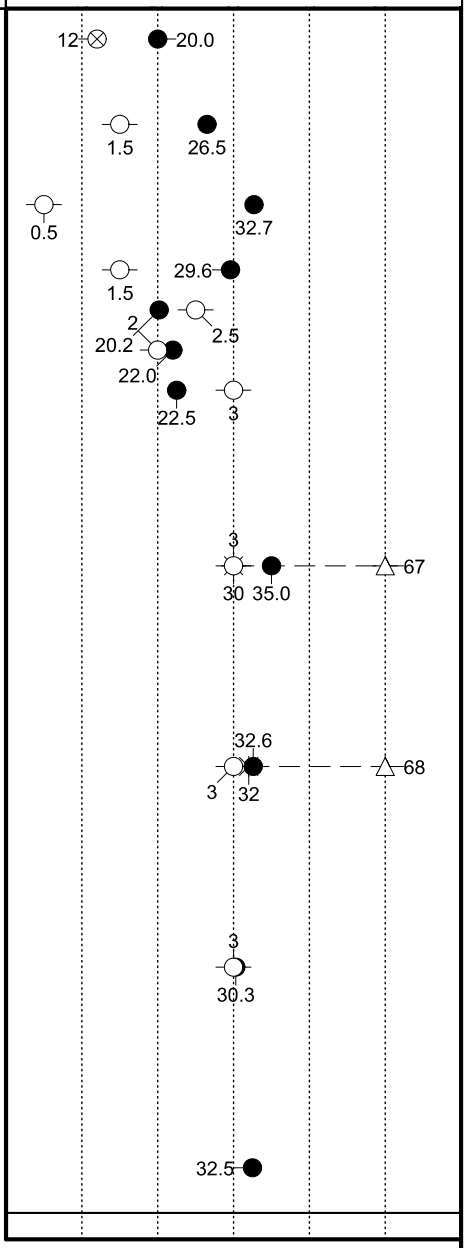
CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	Topsoil Thickness [6.00"] (CL) LEAN CLAY, brown, tan and gray, moist, soft to very stiff			4 5 7
	S-2	ST	21	21				
5	S-3	ST	21	21				
	S-4	ST	12	12				
	S-5	ST	12	12				
	S-6	ST	12	12				
	S-7	ST	12	12	(CH) FAT CLAY, tannish red, moist, very stiff, with ferrous nodules			
10								
	S-8	ST	21	21				
15								
	S-9	ST	21	21				
20								
	S-10	ST	21	21				
25								
	S-11	ST	21	21	(SM) SILTY SAND, tan and gray, wet, loose			
30					END OF BORING @ 30'			



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 18 WS ☐ WD ☒	BORING STARTED 04/03/20	CAVE IN DEPTH
WL(SHW) WL(ACR) 15	BORING COMPLETED 04/03/20	HAMMER TYPE Auto
WL	RIG Geoprobe FOREMAN Chucky	DRILLING METHOD SPT

CLIENT	Job #:	BORING #	SHEET
OneAcadiana	65:1038	2	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
Daly Farms Site	

SITE LOCATION: Southwest corner of Hwy 182 & Hwy 178, Sunset, St. Landry Parish, LA

NORTHING	EASTING	STATION
30.42743	-92.10118	

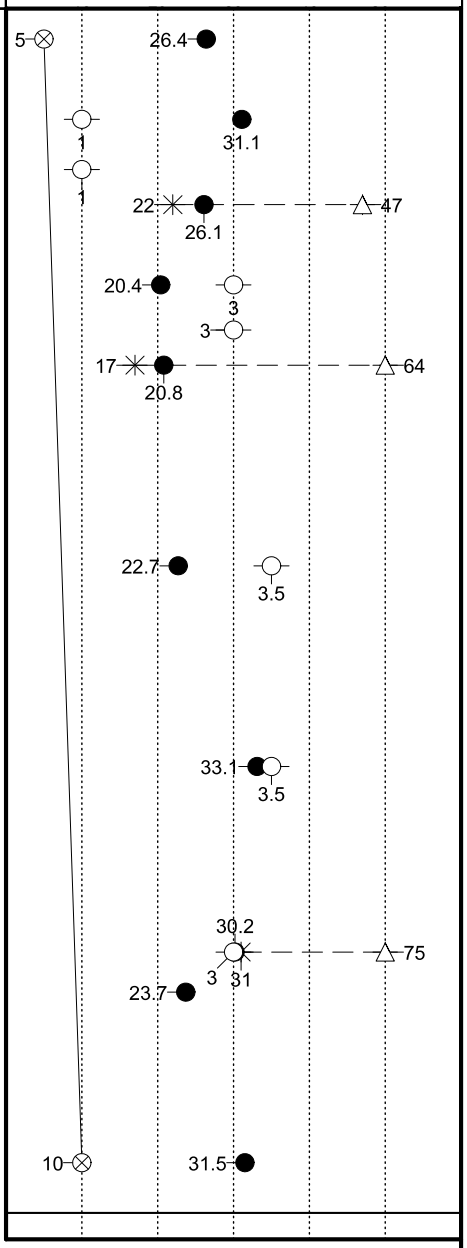
CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	Topsoil Thickness [6.00"] (CL) LEAN CLAY, brown, tan and gray, moist, soft to very stiff			4 3 2
	S-2	ST	18	18				
5	S-3	ST	21	21				
	S-4	ST	21	21				
	S-5	ST	21	21	(CH) FAT CLAY, tan and gray, moist, very stiff			
10	S-6	ST	21	21				
15	S-7	ST	21	21				
20	S-8	ST	12	12				
	S-9	ST	12	12	(CL) LEAN CLAY, tan, moist, very stiff			
25	S-10	SS	18	18	(SM) SILTY SAND, tan and gray, wet, loose			5 4 6
30					END OF BORING @ 30'			

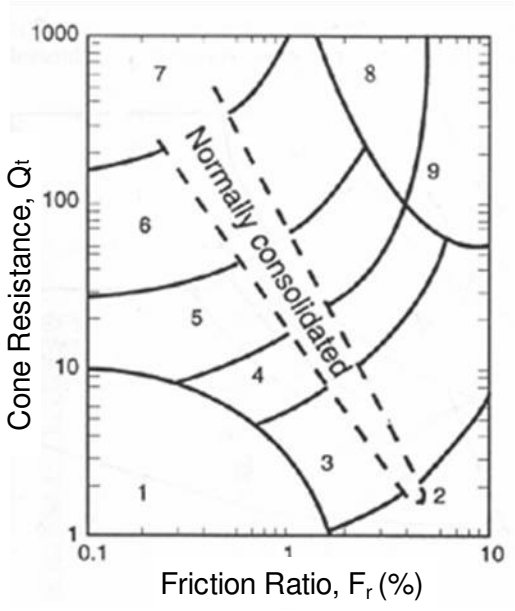


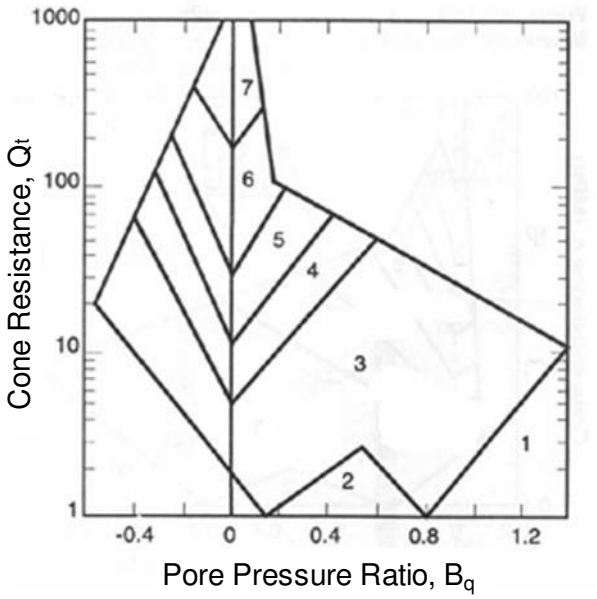
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 8 WS ☐ WD ☒	BORING STARTED 04/03/20	CAVE IN DEPTH
WL(SHW) WL(ACR)	BORING COMPLETED 04/03/20	HAMMER TYPE Auto
WL	RIG Geoprobe FOREMAN Chucky	DRILLING METHOD SPT

REFERENCE NOTES FOR CONE PENETRATION TEST (CPT) SOUNDINGS

In the CPT sounding procedure (ASTM-D-5778), an electronically instrumented cone penetrometer is hydraulically advanced through soil to measure point resistance (q_c), pore water pressure (u_2), and sleeve friction (f_s). These values are recorded continuously as the cone is pushed to the desired depth. CPT data is corrected for depth and used to estimate soil classifications and intrinsic soil parameters such as angle of internal friction, preconsolidation pressure, and undrained shear strength. The graphs below represent one of the accepted methods of CPT soil behavior classification (Robertson, 1990).





1. Sensitive, Fine Grained
2. Organic Soils-Peats
3. Clays; Clay to Silty Clay
4. Clayey Silt to Silty Clay
5. Silty Sand to Sandy Silt
6. Clean Sands to Silty Sands
7. Gravelly Sand to Sand
8. Very Stiff Sand to Clayey Sand
9. Very Stiff Fine Grained

The following table presents a correlation of corrected cone tip resistance (q_c) to soil consistency or relative density:

SAND		**SILT/CLAY**	
Corrected Cone Tip Resistance (q_c) (tsf)	**Relative Density**	**Corrected Cone Tip Resistance (q_c) (tsf)**	**Relative Density**
<20	Very Loose	<5	Very Soft
20-40	Loose	5-10	Soft
40-120	Medium Dense	10-15	Medium Stiff
		15-30	Stiff
120-200	Dense	30-45	Very Stiff
>200	Very Dense	45-60	Hard
		>60	Very Hard

ECS Southeast, LLP
11115 Industiplex Blvd, Suite 200
Baton Rouge, LA 70809
ECS Project # 65-1038

Project: **Daly Farms Site**
Location: **Sunset, Louisiana**

CPT: CPT-01
Total depth: 100.33 ft, Date: 4/6/2020
Coords: lat 30.4243° lon -92.0998°
Cone Operator: Charley Baker