VOLUME 2 OF 2

THIS PROJECT IS ADVERTISED ON AN UNRESTRICTED BASIS
AS A STAND-ALONE "C" TYPE INVITATION FOR BID (IFB) SOLICITATION

SOLICITATION NO: **W9127821B0001**
CADD NO: **CHC20010**

SPECIFICATIONS

FOR

MOBILE HARBOR, ALABAMA
DEEPENING AND WIDENING - PHASE 3

MOBILE, ALABAMA

THIS IS A CIVIL WORKS PROGRAM PROCUREMENT AND IS NOT FUNDED BY THE DEPARTMENT OF DEFENSE

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MOBILE DISTRICT

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APPENDICES

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APPENDIX A

GEOTECHNICAL BORING LOGS
AND
LAB DATA

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Project I.D. | Boring Designation **SS-95**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.473463 LONG = -88.017534	
		STATE PLANE COORDINATES X = 1,805,465 Y = 172,561	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -27.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 23.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-27.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0	

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 3 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,805,465 Y = 172,561	-27.8 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	23.5									

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,465 Y = 172,561	**ELEVATION TOP OF BORING** -27.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **MHVBC-34-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.46976648 LONG = -88.01643054

STATE PLANE COORDINATES X = 1,805,806 Y = 171,215

DATE OF BORING	***STARTED***	***COMPLETED***
	01-09-20	01-09-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -48.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR J. McConnell, Geotechnical Engineer

NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ AUTO HAMMER ☐ MANUAL HAMMER

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 17.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-48.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore	At El. -52 Ft. -200= 98%, PL= 36, LL= 60, PI= 24, MC= 143%, Gs= 2.89		
-56.0	8.0		(CL) CLAY, lean, high plasticity, soft consistency, some silt, few fine to coarse gravel-sized shell, few organic matter, wet, gray							

0 1 2 3 4 5 6 7 8 9 10

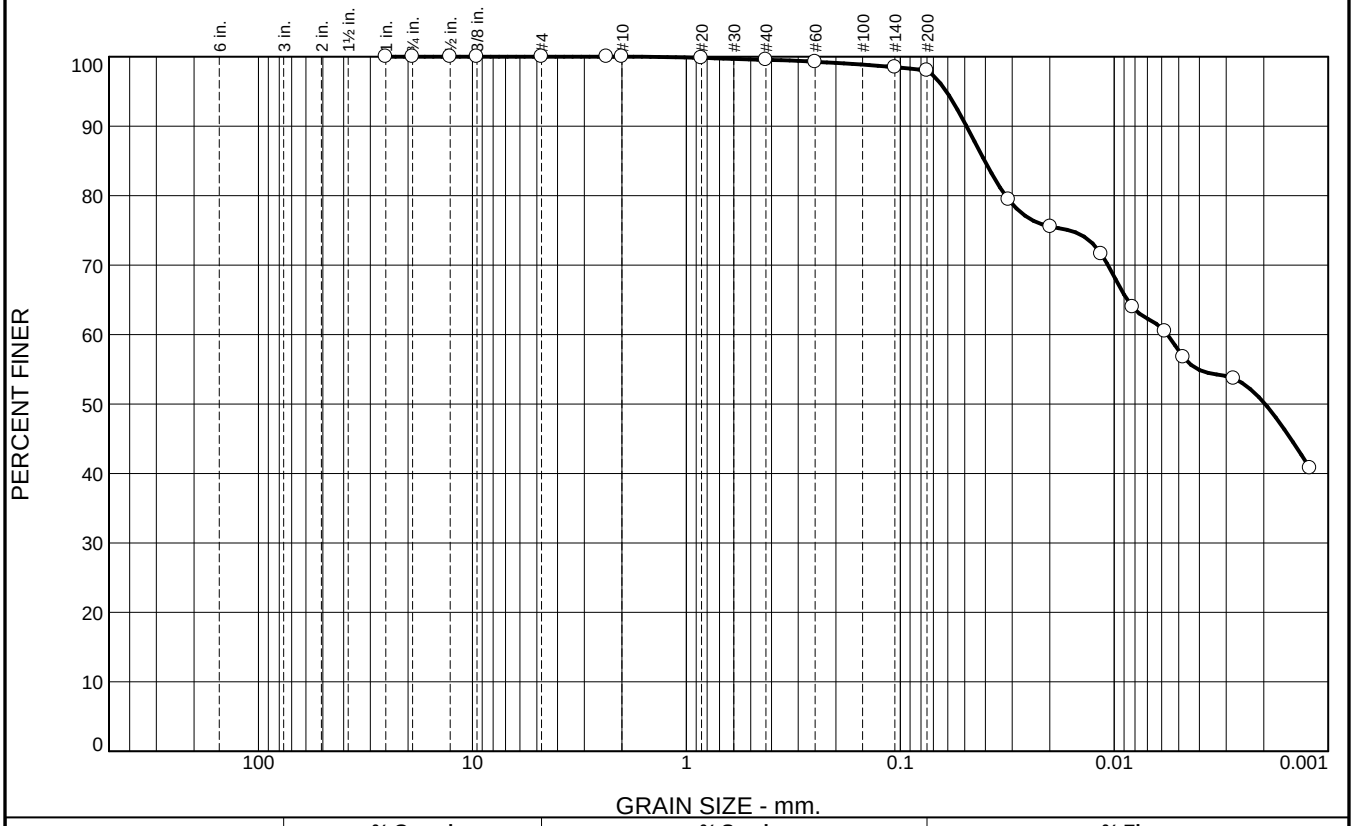
DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,806 Y = 171,215	**ELEVATION TOP OF BORING** -48.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore	At El. -58 Ft. -200= 95%, PL= 21, LL= 40, PI= 19, MC= 55%, Gs= 2.89		
-63.5	15.5		(PT) PEAT, wet, dark brown							
-65.0	17.0									

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	1.5	40.3	57.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#20	99.8		
#40	99.5		
#60	99.2		
#140	98.5		
#200	98.0		

* (no specification provided)

Material Description

BROWN SILT

Atterberg Limits

PL= 36 LL= 60 PI= 24

Coefficients

D_{90}= 0.0490 D_{85}= 0.0403 D_{60}= 0.0056
D_{50}= 0.0020 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= MH AASHTO= A-7-5(31)

Remarks

MOISTURE CONTENT: 143.1%
SPECIFIC GRAVITY: 2.89

Source of Sample: MHVBC-34-19 **Depth:** 4'-6'

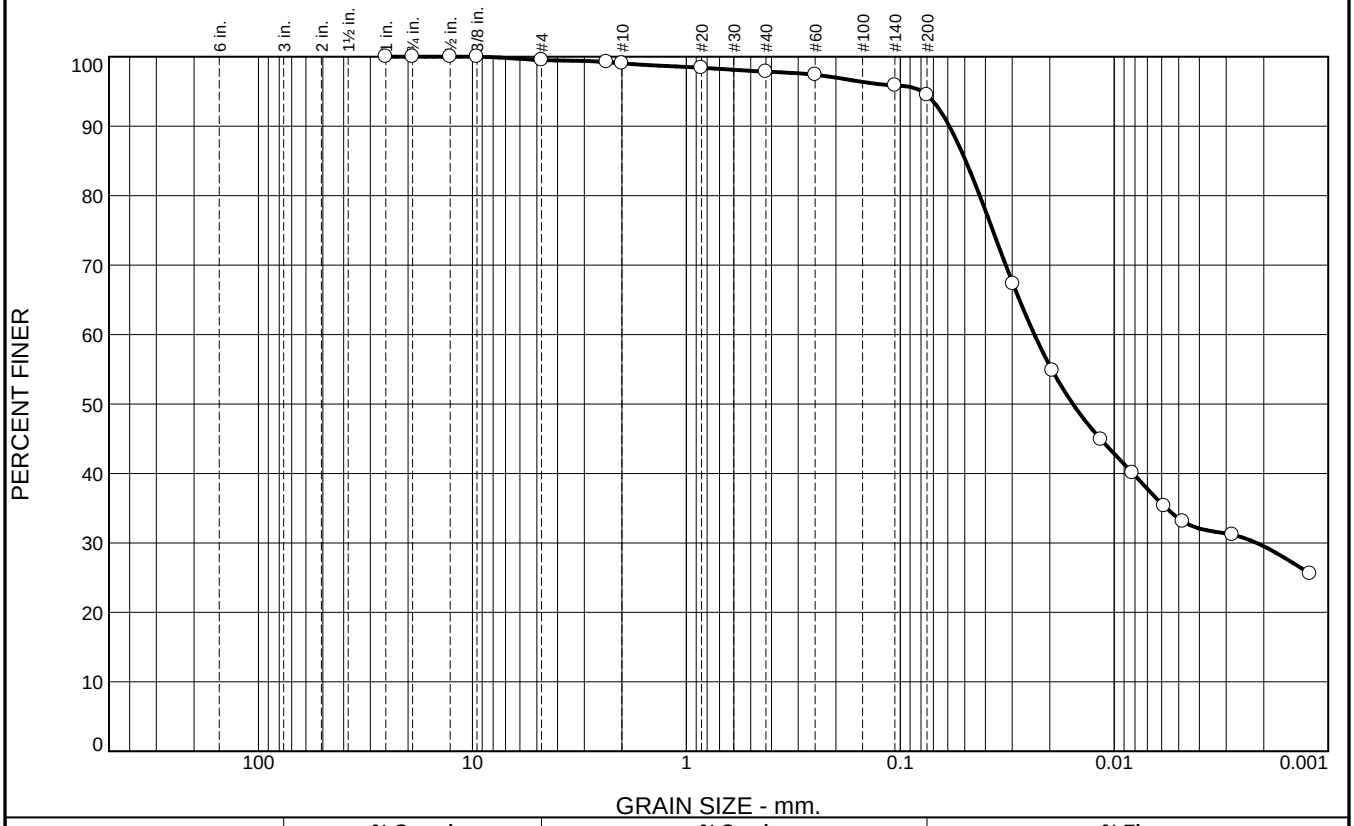
Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.5	1.2	3.3	61.0	33.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.5		
#8	99.2		
#10	99.0		
#20	98.4		
#40	97.8		
#60	97.4		
#140	95.8		
#200	94.5		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 21 LL= 40 PI= 19

Coefficients

D_{90}= 0.0589 D_{85}= 0.0494 D_{60}= 0.0236
D_{50}= 0.0156 D_{30}= 0.0022 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(19)

Remarks

MOISTURE CONTENT: 54.7%
SPECIFIC GRAVITY: 2.89

Source of Sample: MHVBC-34-19 **Depth:** 10'-12'

Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-97**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.468135 LONG = -88.015185	
		STATE PLANE COORDINATES X = 1,806,196 Y = 170,620	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -33.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-33.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,196 Y = 170,620	**ELEVATION TOP OF BORING** -33.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	17.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-24-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.464442 LONG = -88.015455

STATE PLANE COORDINATES X = 1,806,105 Y = 169,277

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -44.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist

NAME OF DRILLER C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 27.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-44.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, black and dark gray, with organic material							
			At El. -46.4 Ft., soft consistency, light gray							
				100	1		Vibracore	At El. -48.5 Ft. -200=97.6%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,105 Y = 169,277	**ELEVATION TOP OF BORING** -44.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-61.0	17.0			100	1		Vibracore	At El. -58.5 Ft. -200=97.6%		
-64.7	20.7		(OL) CLAY, organic-L, wet, black and brown					At El. -64.5 Ft. -200=96.3%		
-67.0	23.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, light gray							
			(SM) SAND, silty, wet, white, poorly graded							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,105 Y = 169,277	**ELEVATION TOP OF BORING** -44.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-71.0	27.0			100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-99**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.462516 LONG = -88.016311	
		STATE PLANE COORDINATES X = 1,805,832 Y = 168,578	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -26.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 24.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-26.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

Boring Designation **SS-99**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,832 Y = 168,578	**ELEVATION TOP OF BORING** -26.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,832 Y = 168,578	**ELEVATION TOP OF BORING** -26.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	24.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-33-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.46041659 LONG = -88.01513633

STATE PLANE COORDINATES X = 1,806,199 Y = 167,813

DATE OF BORING	***STARTED***	***COMPLETED***
	01-18-20	01-18-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. ***HORIZ.*** NAD83 ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS ***TOP OF BORING*** -49.0 Feet ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer

NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ AUTO HAMMER ☐ MANUAL HAMMER

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES ***DISTURBED*** 1 ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 17.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-49.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray, trace shell							
-52.0	3.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, trace shell, inorganic							
				100	1		Vibracore	At El. -53 Ft. -200= 97%, PL= 21, LL= 50, PI= 29, MC= 69%		
			At El. -58.0 Ft. some shell							

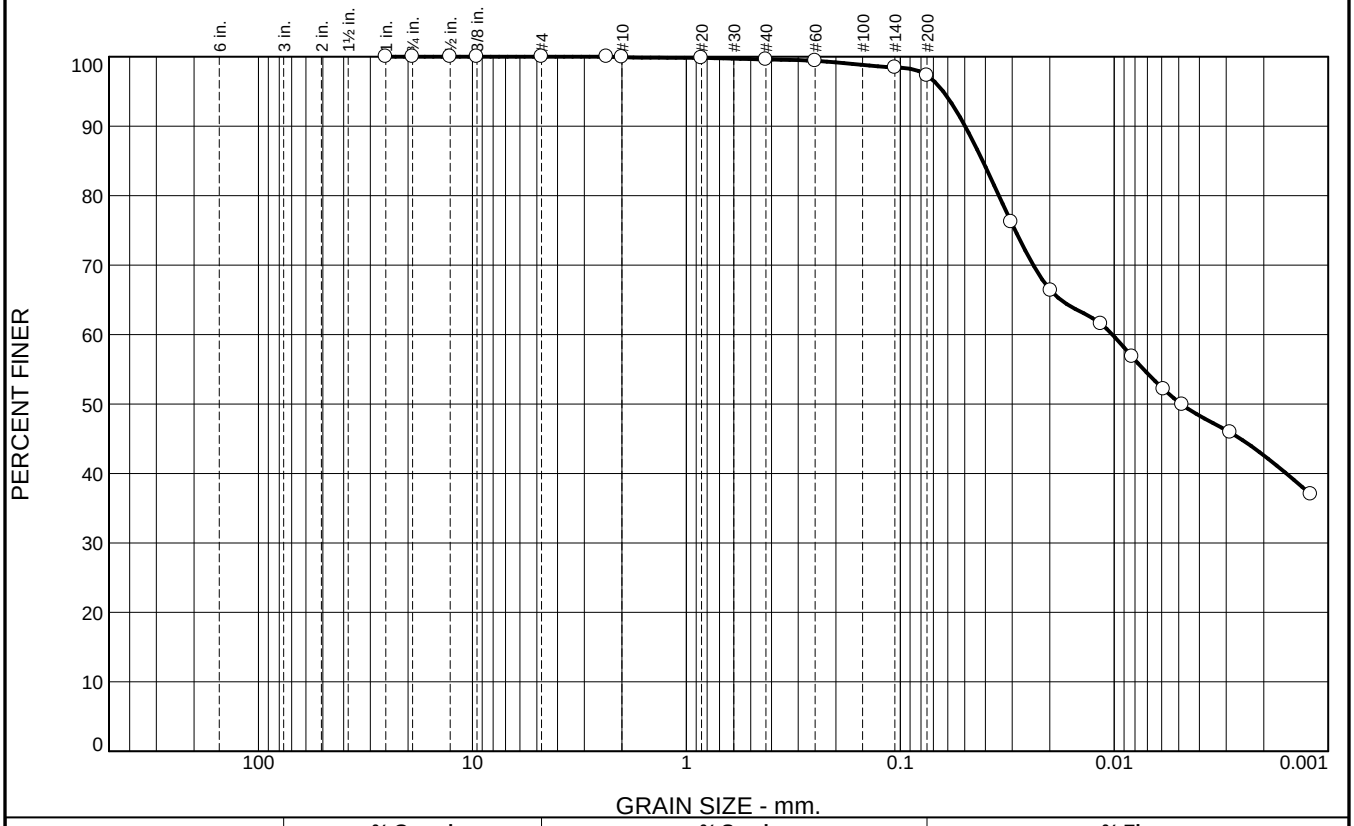
0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,199 Y = 167,813	-49.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-63.0	14.0			100	1		Vibracore			
-66.0	17.0		(SM) SAND, silty, wet, dark brown, organic laden, with roots/wood					At El. -65 Ft. -200= 42%, PL= 52, LL= 66, PI= 14, MC= 194%		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.3	2.3	47.0	50.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	99.9		
#20	99.8		
#40	99.6		
#60	99.4		
#140	98.5		
#200	97.3		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 21 LL= 50 PI= 29

Coefficients

D_{90}= 0.0498 D_{85}= 0.0412 D_{60}= 0.0102
D_{50}= 0.0049 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(31)

Remarks

MOISTURE CONTENT: 68.8%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-33-19 **Depth:** 4'-5'

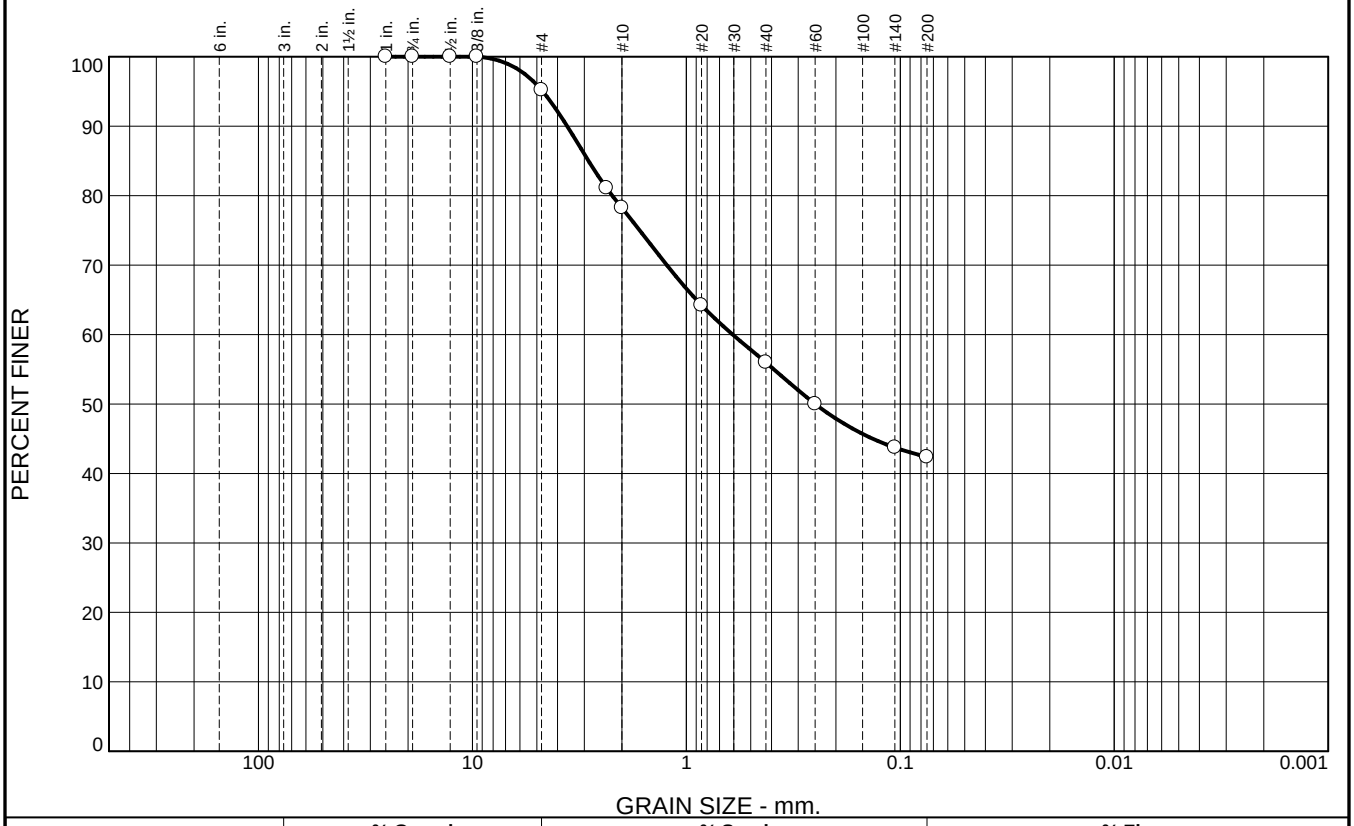
Date: 3/2/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.8	17.0	22.2	13.6	42.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	95.2		
#8	81.1		
#10	78.2		
#20	64.2		
#40	56.0		
#60	50.0		
#140	43.7		
#200	42.4		

* (no specification provided)

Material Description

BLACK SILTY SAND W/ ORGANICS

Atterberg Limits

PL= 52 LL= 66 PI= 14

Coefficients

D_{90}= 3.6076 D_{85}= 2.8662 D_{60}= 0.6076
D_{50}= 0.2500 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-7-5(3)

Remarks

MOISTURE CONTENT: 193.5%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-33-19 **Depth:** 16'-17'

Date: 3/2/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-101**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.457116 LONG = -88.014829	
		STATE PLANE COORDINATES X = 1,806,290 Y = 166,612	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -38.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 12.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-38.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,290 Y = 166,612	**ELEVATION TOP OF BORING** -38.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	12.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. | Boring Designation **MHVBC-32-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.45585261 LONG = -88.01493028

STATE PLANE COORDINATES X = 1,806,256 Y = 166,153

DATE OF BORING	***STARTED***	***COMPLETED***
	01-18-20	01-18-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -50.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer

NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ AUTO HAMMER ☐ MANUAL HAMMER

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 18.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-50.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
-52.5	2.5		(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, inorganic							
			At El. -53.0 Ft. with indurated clay nodules							
				100	1		Vibracore			
								At El. -56 Ft. -200= 98%, PL= 24, LL= 51, PI= 27, MC= 74%		
			At El. -57.0 Ft. with indurated clay nodules							

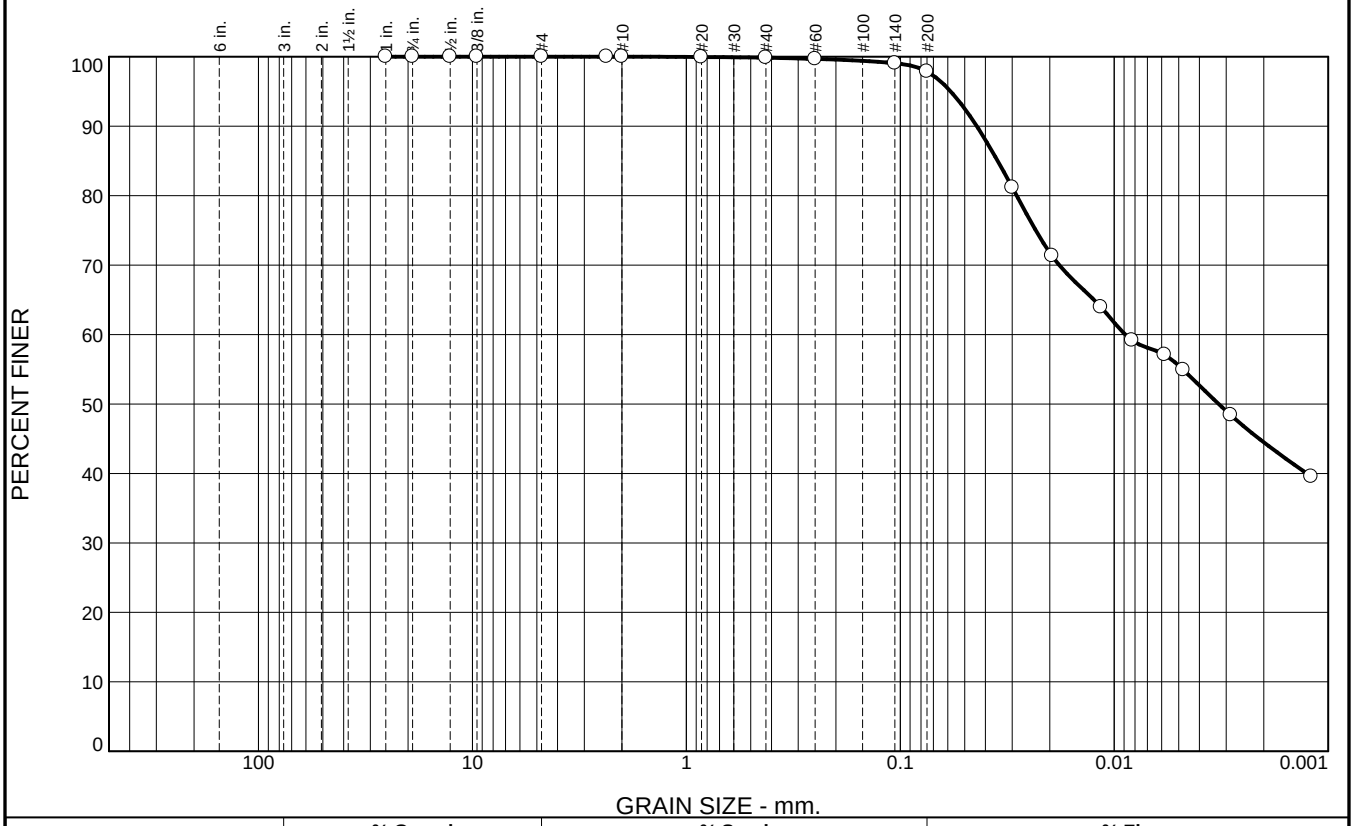
0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,256 Y = 166,153	**ELEVATION TOP OF BORING** -50.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			At El. -62.0 Ft. trace shell							
				100	1		Vibracore			
			At El. -66.0 Ft. trace wood							
-68.0	18.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	2.0	42.3	55.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#20	99.9		
#40	99.8		
#60	99.7		
#140	99.0		
#200	97.8		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 24 LL= 51 PI= 27

Coefficients

D_{90}= 0.0439 D_{85}= 0.0351 D_{60}= 0.0089
D_{50}= 0.0032 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(30)

Remarks

MOISTURE CONTENT: 73.7%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-32-19 **Depth:** 6'-7'

Date: 3/2/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-103**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.451716 LONG = -88.013347	
		STATE PLANE COORDINATES X = 1,806,748 Y = 164,646	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -29.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 21.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-29.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

Boring Designation **SS-103**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,748 Y = 164,646	**ELEVATION TOP OF BORING** -29.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
-51.3	21.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

SAM FORM 1836-A **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

Boring Designation **SS-103**

Project I.D. | Boring Designation **MHVBC-31-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.45052422 LONG = -88.0140657
STATE PLANE COORDINATES X = 1,806,520 Y = 164,213

DATE OF BORING	***STARTED***	***COMPLETED***
	01-19-20	01-19-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -46.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer
NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 15.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore			
-53.0	7.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, with trace shell and wood					At El. -55 Ft. -200= 98%, PL= 25, LL= 54, PI= 29, MC= 72%		

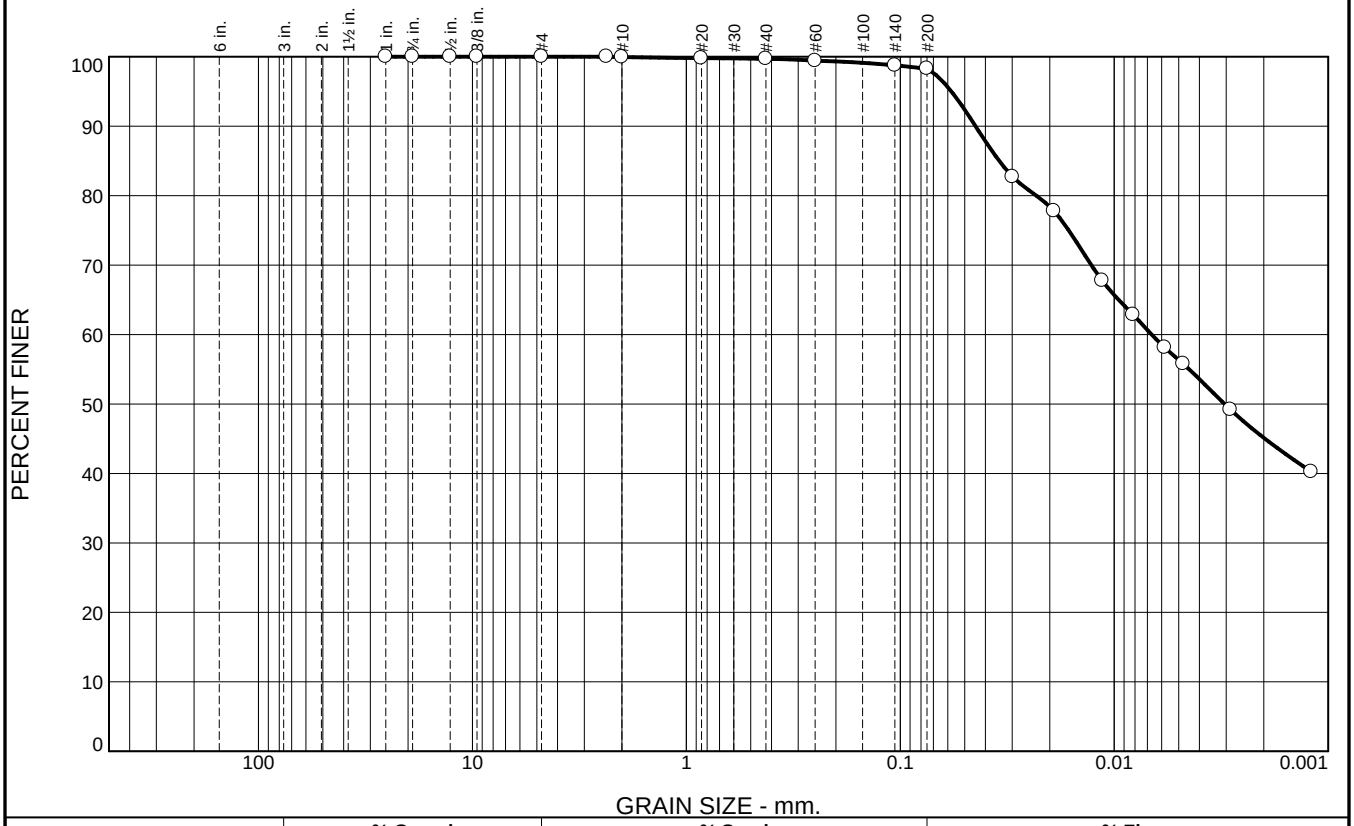
0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,520 Y = 164,213	**ELEVATION TOP OF BORING** -46.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-58.0	12.0									
			(PT) PEAT, soft consistency, wet, black, with roots	100	1		Vibracore	At El. -58.5 Ft. -200=23%, MC=251%		
-60.0	14.0									
			(SM) SAND, silty, low plasticity, medium consistency, wet, gray, inorganic							
-61.0	15.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.2	1.4	41.9	56.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	99.9		
#20	99.8		
#40	99.7		
#60	99.4		
#140	98.8		
#200	98.3		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 25 LL= 54 PI= 29

Coefficients

D_{90}= 0.0445 D_{85}= 0.0345 D_{60}= 0.0067
D_{50}= 0.0031 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(33)

Remarks

MOISTURE CONTENT: 71.9%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-31-19 **Depth:** 9'-10'

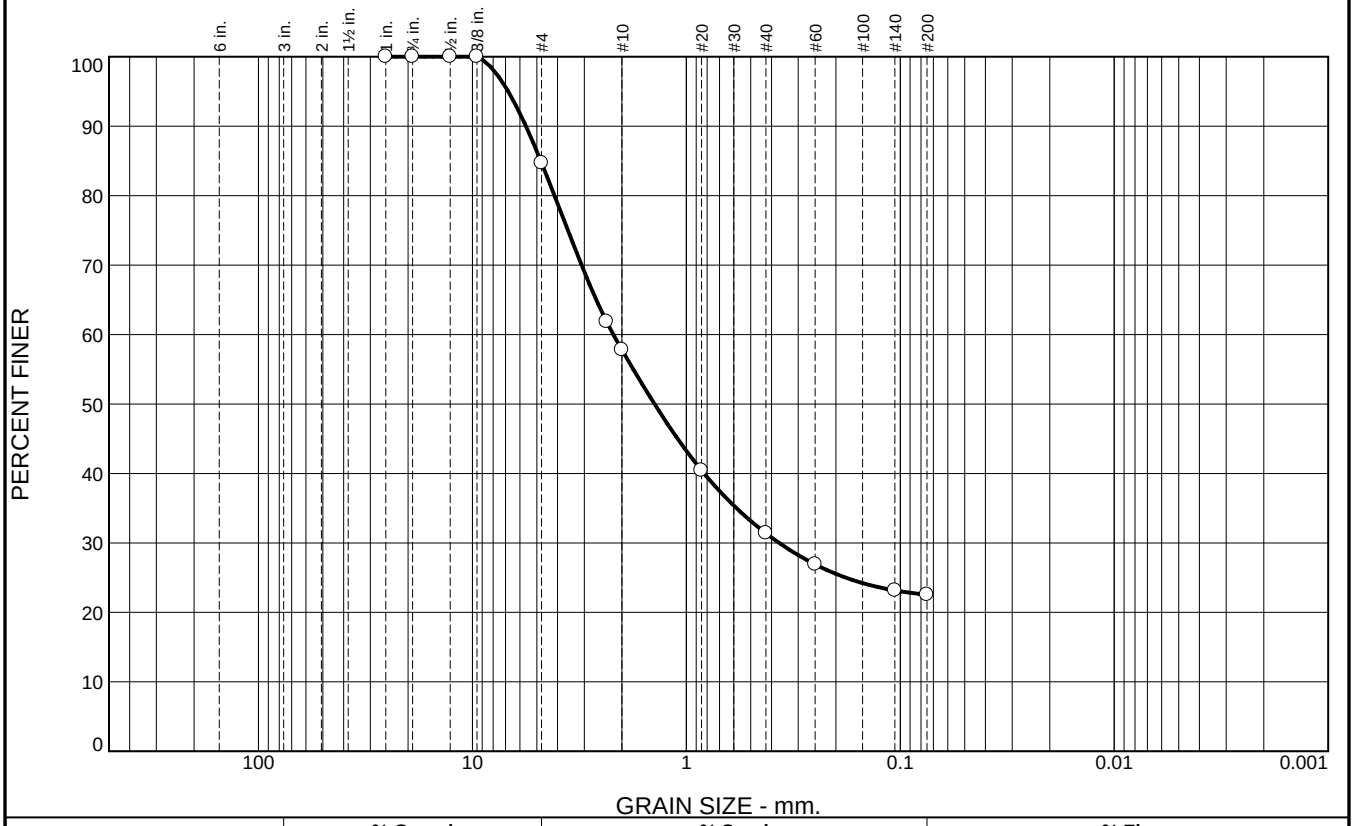
Date: 3/2/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.3	26.9	26.4	8.9	22.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	84.7		
#8	61.9		
#10	57.8		
#20	40.4		
#40	31.4		
#60	26.9		
#140	23.2		
#200	22.5		

* (no specification provided)

Material Description

BLACK ORGANICS

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.6241 D_{85}= 4.7925 D_{60}= 2.1936
D_{50}= 1.4089 D_{30}= 0.3682 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

MOISTURE CONTENT: 250.5%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-31-19 **Depth:** 12.5'-13.5'

Date: 3/2/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-105**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.446095 LONG = -88.014472	
		STATE PLANE COORDINATES X = 1,806,384 Y = 162,603	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -33.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-33.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,384 Y = 162,603	**ELEVATION TOP OF BORING** -33.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	17.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. Boring Designation **VC-26-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.445203 LONG = -88.013608

STATE PLANE COORDINATES X = 1,806,655 Y = 162,277

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -43.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist

NAME OF DRILLER C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 25.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-43.0	0.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, gray							
				100	1		Vibracore			

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

Boring Designation **VC-26-84**

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 3 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,655 Y = 162,277	-43.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,655 Y = 162,277	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-68.0	25.0			100	1		Vibracore			

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

Project I.D. | Boring Designation **MHVBC-30-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.4412254 LONG = -88.0134637
STATE PLANE COORDINATES X = 1,806,694 Y = 160,831

DATE OF BORING	***STARTED***	***COMPLETED***
	01-19-20	01-19-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -45.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer
NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 20.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-45.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
-49.5	4.5									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, with sand	100	1		Vibracore			
-53.5	8.5									
			(CL) CLAY, lean, dark gray, with fine to medium sand and shell					At El. -54 Ft. -200= 78%, PL= 22, LL= 45, PI= 23, MC= 58%		

0 1 2 3 4 5 6 7 8 9 10

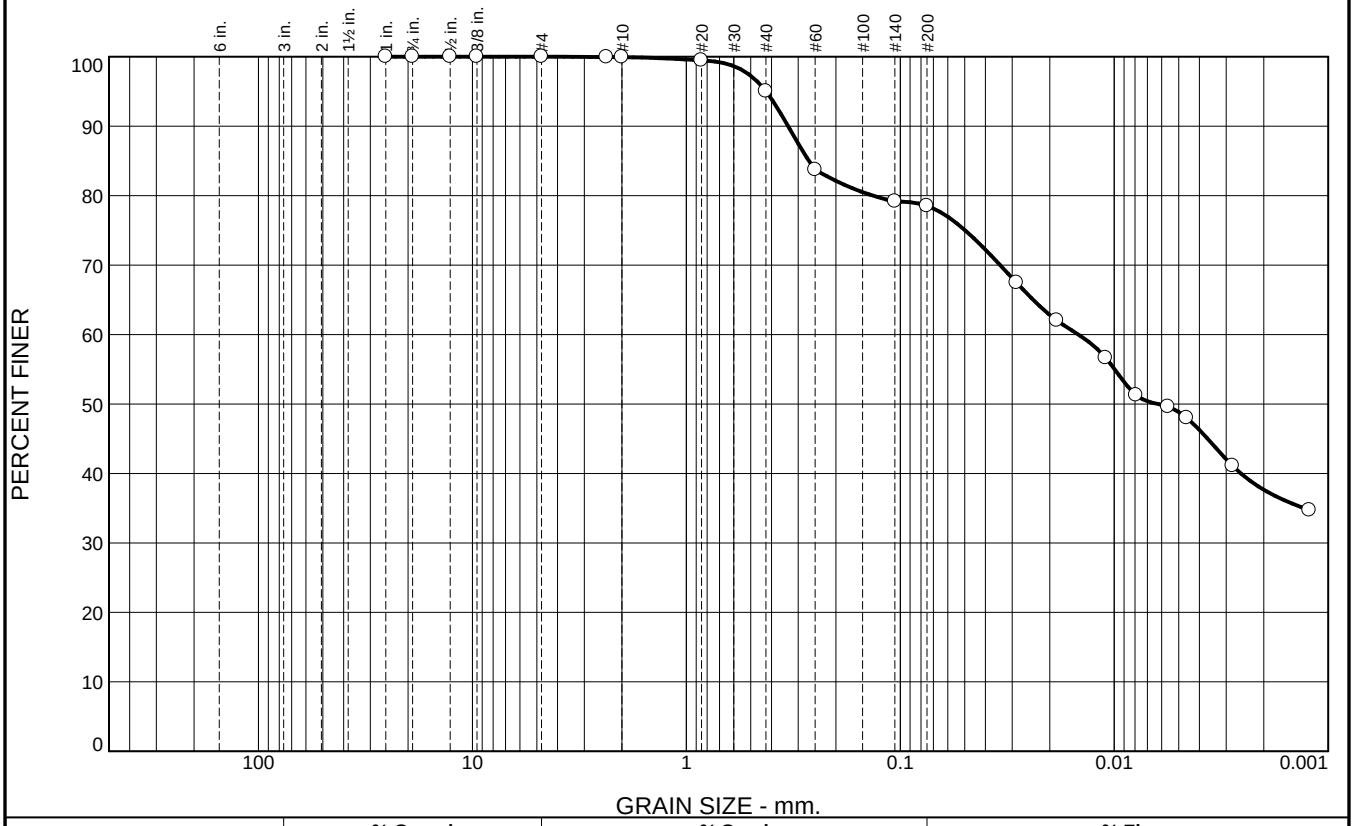
DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,694 Y = 160,831	-45.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			At El. -57.0 Ft., low plasticity, medium consistency, wet, gray sandy					At El. -57 Ft. -200= 59%, PL= 19, LL= 37, PI= 18, MC= 46%		
-58.0	13.0		(SC) SAND, clayey, medium consistency, wet, gray							
-60.1	15.1		At El. -60.0 Ft. sand lense	100	1		Vibracore			
			(OH) CLAY, organic-H, wet, gray, with wood							
			At El. -61.5 Ft. sand lense							
-63.0	18.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, gray							
			At El. -64.0 Ft. wood trapped in bit							
-65.0	20.0		NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	4.9	16.5	29.6	48.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	99.9		
#10	99.9		
#20	99.5		
#40	95.0		
#60	83.7		
#140	79.2		
#200	78.5		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 22 LL= 45 PI= 23

Coefficients

D_{90}= 0.3344 D_{85}= 0.2676 D_{60}= 0.0147
D_{50}= 0.0063 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(18)

Remarks

MOISTURE CONTENT: 58.1%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-30-19 **Depth:** 9'-10'

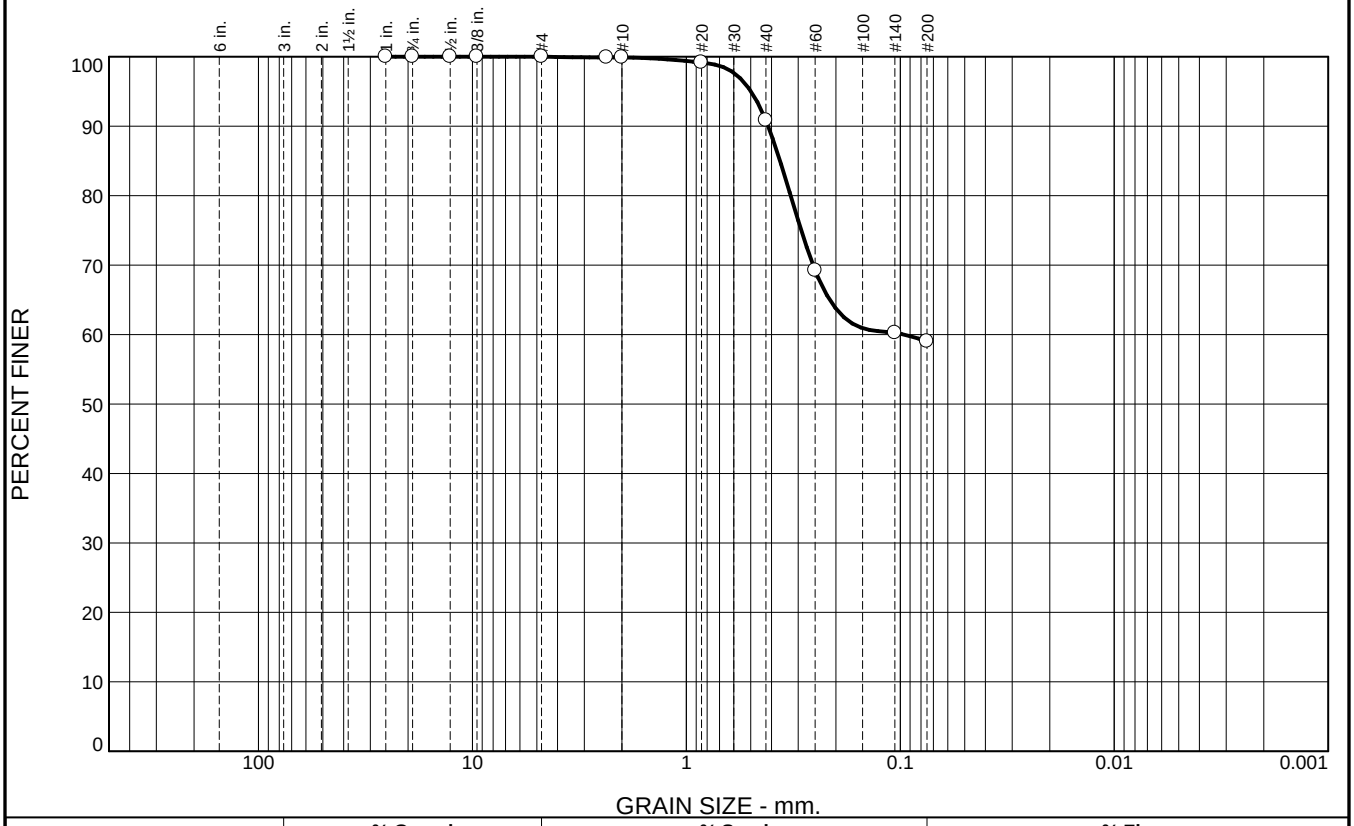
Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	9.1	31.8	59.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	99.9		
#10	99.9		
#20	99.2		
#40	90.8		
#60	69.2		
#140	60.2		
#200	59.0		

* (no specification provided)

Material Description

GRAY CLAY W/ SAND

Atterberg Limits

PL= 19 LL= 37 PI= 18

Coefficients

D_{90}= 0.4147 D_{85}= 0.3648 D_{60}= 0.0965
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(8)

Remarks

MOISTURE CONTENT: 46.1%

Source of Sample: MHVBC-30-19 **Depth:** 12'-13'

Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-107**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.440666 LONG = -88.012727	
		STATE PLANE COORDINATES X = 1,806,925 Y = 160,626	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -32.5 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 18.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-32.5	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,925 Y = 160,626	-32.5 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.0	18.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-27-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.437230 LONG = -88.013408
STATE PLANE COORDINATES X = 1,806,705 Y = 159,377

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -38.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist
NAME OF DRILLER C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 22.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-38.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, with organic material							
			At El. -40.8 Ft., soft consistency							
				100	1		Vibracore	At El. -42.5 Ft. -200=97.2%		

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 AUG 2017 | *AFTER DRILLING* ▼ *DURING DRILLING* ▽ | *(Continued)* | *Boring Designation* **VC-27-84**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,705 Y = 159,377	**ELEVATION TOP OF BORING** -38.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-51.2	13.2		(PT) PEAT, wet, dark brown and gray clayey	100	1		Vibracore	At El. -52.5 Ft. LOI=21.7, -200=91%		
-60.0	22.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-109**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.435174 LONG = -88.013666	
		STATE PLANE COORDINATES X = 1,806,620 Y = 158,630	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -38.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 12.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-38.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,620 Y = 158,630	**ELEVATION TOP OF BORING** -38.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	12.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-29-29**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.43253299 LONG = -88.01391342
STATE PLANE COORDINATES X = 1,806,538 Y = 157,670

DATE OF BORING	***STARTED***	***COMPLETED***
	01-19-20	01-19-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. ***HORIZ.*** NAD83 ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS ***TOP OF BORING*** -45.0 Feet ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer
NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES ***DISTURBED*** 1 ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 18.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-45.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
				100	1		Vibracore			

0 1 2 3 4 5 6 7 8 9 10

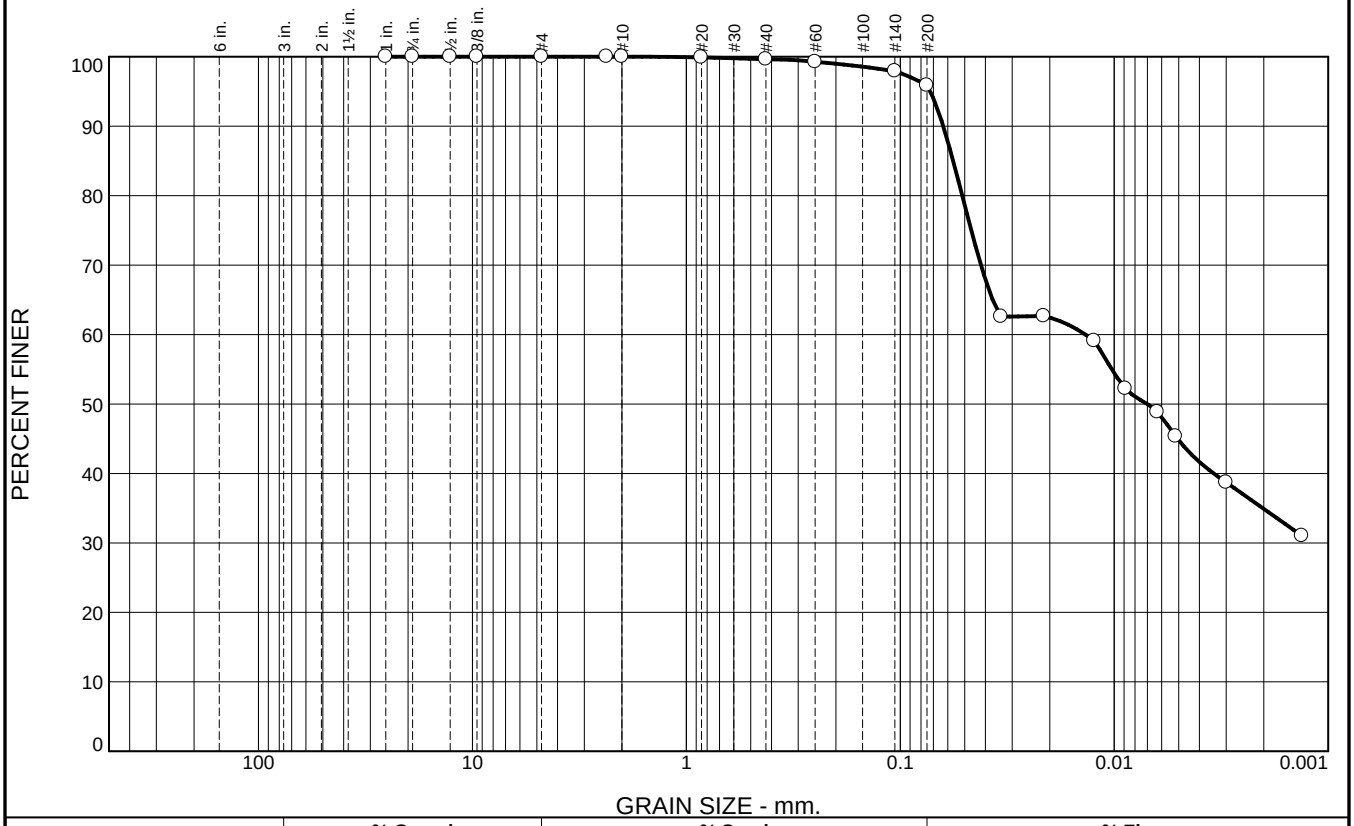
DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,538 Y = 157,670	-45.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-57.0	12.0							At El. -56 Ft. -200= 96%, PL= 33, LL= 58, PI= 25, MC= 128%		
-58.0	13.0		(CL) CLAY, lean, low plasticity, soft consistency, wet, gray							
-63.0	18.0		(SC) SAND, clayey, low plasticity, soft consistency, wet, gray, trace wood At El. -61.0 Ft. trace shell	100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	3.7	51.1	44.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#20	99.9		
#40	99.6		
#60	99.2		
#140	97.9		
#200	95.9		

* (no specification provided)

Material Description

GRAY SILT

Atterberg Limits

PL= 33 LL= 58 PI= 25

Coefficients

D_{90}= 0.0630 D_{85}= 0.0566 D_{60}= 0.0136
D_{50}= 0.0070 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= MH AASHTO= A-7-5(30)

Remarks

MOISTURE CONTENT: 127.7%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-29-19 **Depth:** 10'-11'

Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-111**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.429682 LONG = -88.014605	
		STATE PLANE COORDINATES X = 1,806,315 Y = 156,634	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -34.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 16.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-34.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0	
									0/0.0'	0+
									0/-0.5'	
							Advanced Boring			
				NR			SPT Sampler		0	
									0	
									0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,315 Y = 156,634	**ELEVATION TOP OF BORING** -34.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	16.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-28-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1982-1984 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.427741 LONG = -88.013993	
		STATE PLANE COORDINATES X = 1,806,505 Y = 155,927	
DATE OF BORING	***STARTED*** 01-08-84 / ***COMPLETED*** 01-08-84	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -43.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist	**NAME OF DRILLER** C. Fuller	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 30.0 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-43.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, black	100	1		Vibracore	At El. -47.5 Ft. LOI=11%, -200=99.4%		
			At El. -49.5 Ft., gray					At El. -52.5 Ft. -200=92.2%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,505 Y = 155,927	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-58.5	15.5		(SP) SAND, poorly-graded, wet, gray	100	1		Vibracore			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,505 Y = 155,927	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-73.0	30.0			100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-113**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.424121 LONG = -88.013570	
		STATE PLANE COORDINATES X = 1,806,632 Y = 154,610	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -30.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 20.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-30.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,632 Y = 154,610	**ELEVATION TOP OF BORING** -30.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	20.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **MHVBC-28-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.4213228 LONG = -88.01471302
STATE PLANE COORDINATES X = 1,806,267 Y = 153,594

DATE OF BORING	***STARTED***	***COMPLETED***
	01-20-20	01-20-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -45.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer | **NAME OF DRILLER** CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 19.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-45.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
-47.0	2.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, with sand					At El. -48 Ft. -200= 81%, PL= 28, LL= 72, PI= 44, MC= 80%		
				100	1		Vibracore			
-54.0	9.0									
			(SC) SAND, clayey, medium plasticity, soft consistency, wet, gray					At El. -54 Ft. -200= 49%, PL= 14, LL= 30, PI= 16, MC= 40%		

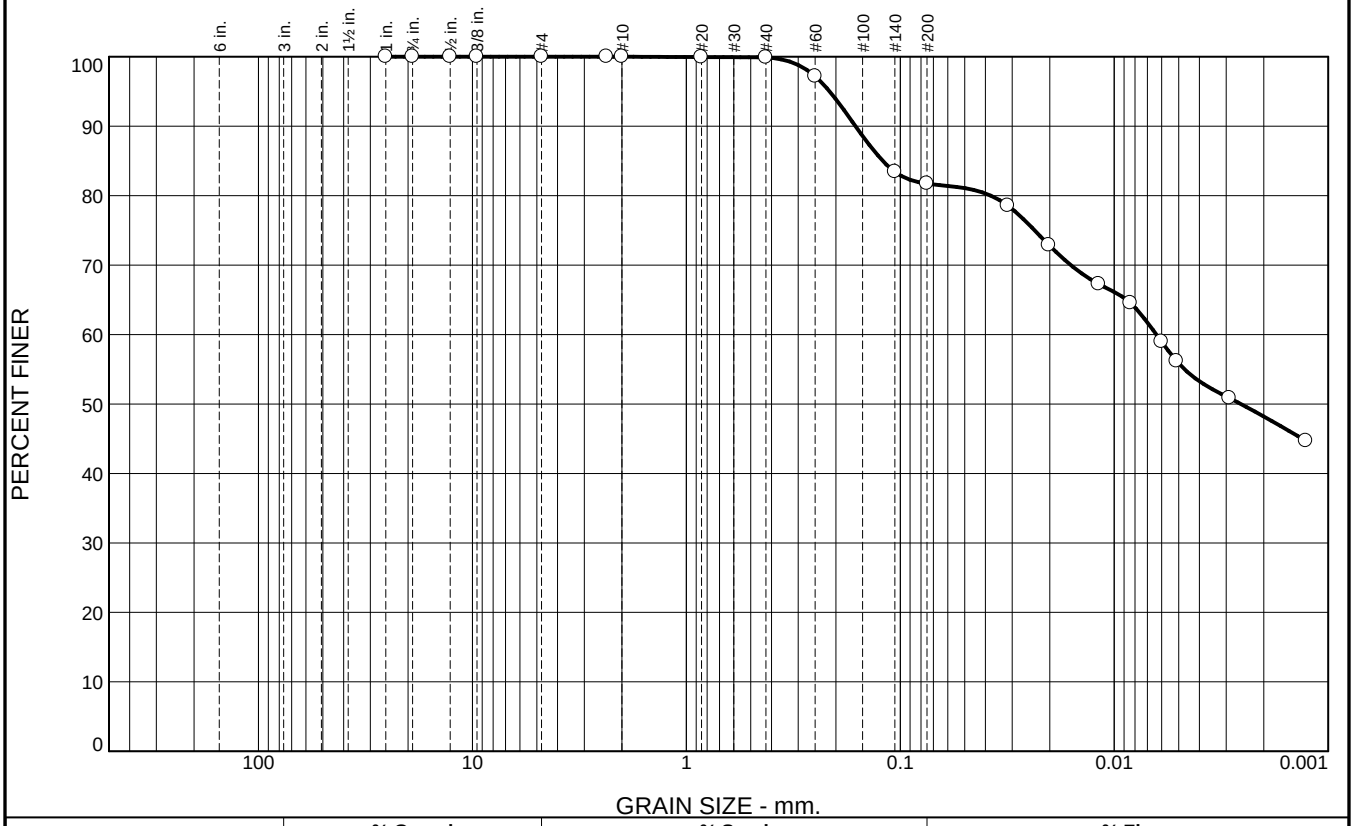
0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,267 Y = 153,594	-45.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-57.0	12.0									
			(CL) CLAY, lean, low plasticity, soft consistency, wet, gray, sandy							
			At El. -58.0 Ft. shell layer							
				100	1		Vibracore			
-61.0	16.0									
			(SC-SM) SAND, silty, clayey, wet, gray							
-62.0	17.0									
			(OH) CLAY, organic-H, gray and brown, with wood							
-63.0	18.0									
			(CH) CLAY, fat, gray							
-64.0	19.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.1	18.2	25.8	55.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#20	99.9		
#40	99.9		
#60	97.2		
#140	83.4		
#200	81.7		

* (no specification provided)

Material Description

GRAY CLAY

Atterberg Limits

PL= 28 LL= 72 PI= 44

Coefficients

D_{90}= 0.1620 D_{85}= 0.1208 D_{60}= 0.0064
D_{50}= 0.0026 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO= A-7-6(40)

Remarks

MOISTURE CONTENT: 80.1%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-28-19 **Depth:** 3'-4'

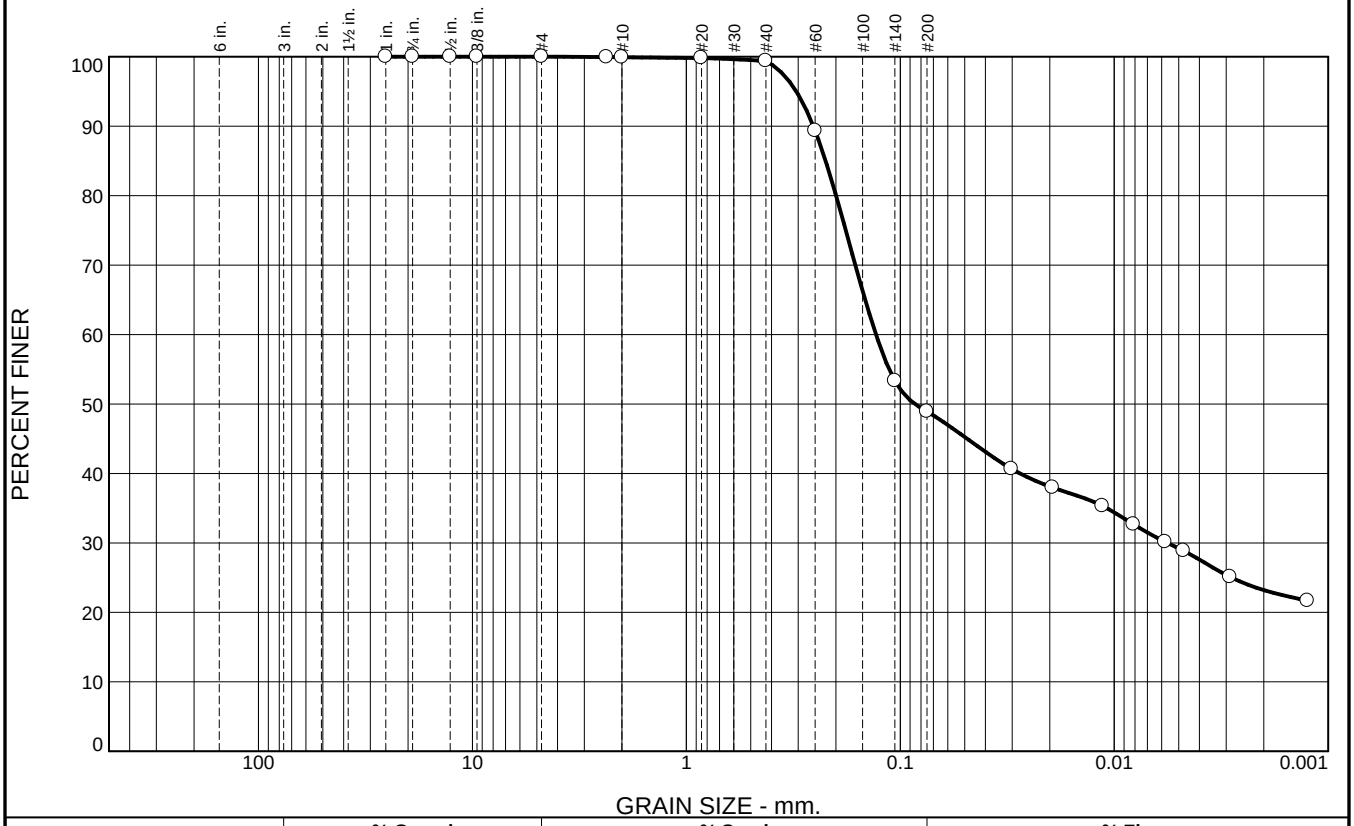
Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.5	50.5	19.7	29.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#8	99.9		
#10	99.9		
#20	99.8		
#40	99.4		
#60	89.3		
#140	53.3		
#200	48.9		

* (no specification provided)

Material Description

GRAY CLAYEY SAND

Atterberg Limits

PL= 14 LL= 30 PI= 16

Coefficients

D_{90}= 0.2549 D_{85}= 0.2235 D_{60}= 0.1299
D_{50}= 0.0855 D_{30}= 0.0056 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-6(4)

Remarks

MOISTURE CONTENT: 40.0%
ASSUMED SPEC. GRAVITY: 2.7

Source of Sample: MHVBC-28-19 **Depth:** 9'-10'

Date: 3/4/2020

SOUTHERN EARTH SCIENCES
Mobile, Alabama

Client: ARCHWAY SOLUTIONS
Project: USACOE - MOBILE HARBOR W91278-19-D-0045

Project No: M20-069 **Figure**

Project I.D. | Boring Designation **SS-115**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.418851 LONG = -88.016087	
		STATE PLANE COORDINATES X = 1,805,830 Y = 152,697	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -36.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 14.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-36.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,830 Y = 152,697	**ELEVATION TOP OF BORING** -36.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	14.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. Boring Designation **MHVBC-27-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.41604007 LONG = -88.01582982

STATE PLANE COORDINATES X = 1,805,906 Y = 151,674

DATE OF BORING	***STARTED***	***COMPLETED***
	01-20-20	01-20-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -44.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer

NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 19.5 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-44.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore	At El. -53 Ft. -200= 97%, PL= 34, LL= 63, PI= 29, MC= 137%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,906 Y = 151,674	**ELEVATION TOP OF BORING** -44.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-56.5	12.5									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, gray, with trace sand and shell, inorganic	100	1		Vibracore	At El. -56.5 Ft. -200= 91%, PL= 26, LL= 56, PI= 30, MC= 88%		
-63.5	19.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-117**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.413300 LONG = -88.016007	
		STATE PLANE COORDINATES X = 1,805,846 Y = 150,678	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -35.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 15.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-35.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET 2 OF 2 SHEETS
Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,805,846 Y = 150,678	-35.8 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
-51.3	15.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-30-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.411929 LONG = -88.014544
STATE PLANE COORDINATES X = 1,806,305 Y = 150,177

DATE OF BORING	***STARTED***	***COMPLETED***
	08-01-84	08-01-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -42.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
H. Gates, Geologist	C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 30.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-42.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, black							
			At El. -46.0 Ft., high plasticity, soft consistency, light gray	100	1		Vibracore	At El. -46.5 Ft. LL=77, PL=22, PI=55		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 3 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,806,305 Y = 150,177	-42.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,806,305 Y = 150,177	**ELEVATION TOP OF BORING** -42.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-70.0	28.0			100	1		Vibracore			
-72.0	30.0		(CH) CLAY, fat, high plasticity, soft consistency, light gray with high amounts of organics and wood fragments							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **MHVBC-26-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.41072471 LONG = -88.01624768

STATE PLANE COORDINATES X = 1,805,766 Y = 149,742

DATE OF BORING	***STARTED***	***COMPLETED***
	01-20-20	01-20-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -46.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer

NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 19.5 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore	At El. -50 Ft. -200= 98%, PL= 40, LL= 60, PI= 20, MC= 139%		
-52.5	6.5		(CH) CLAY, fat, high plasticity, soft consistency, wet, gray, with trace shell, inorganic					At El. -55 Ft. -200= 98%, PL= 32, LL= 63, PI= 31, MC= 91%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION			SHEET 2 OF 2 SHEETS
Mobile District			
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL**	**VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**		
X = 1,805,766 Y = 149,742	-46.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			
			At El. -62.5 Ft. with wood at 16.5' to 19'							
-65.5	19.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-119**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.407749 LONG = -88.015930	
		STATE PLANE COORDINATES X = 1,805,861 Y = 148,659	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -31.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-31.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,861 Y = 148,659	**ELEVATION TOP OF BORING** -31.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	19.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-25-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.40555442 LONG = -88.01735141
STATE PLANE COORDINATES X = 1,805,409 Y = 147,863

DATE OF BORING	***STARTED***	***COMPLETED***
	01-20-20	01-20-20

COORDINATE SYSTEM/DATUM/UNITS	***HORIZ.***	***VERT.***
State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS

TOP OF BORING	***GROUND WATER***
-45.0 Feet	Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
M. Shekouh, Geotechnical Engineer	CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES ***DISTURBED*** 1 ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.5 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-45.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore	At El. -50 Ft. -200= 94%, PL= 40, LL= 66, PI= 26, MC= 145%		
-54.0	9.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, gray, inorganic					At El. -54 Ft. -200= 89%, PL= 28, LL= 52, PI= 24, MC= 175%		
-55.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836
AUG 2017

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,409 Y = 147,863	**ELEVATION TOP OF BORING** -45.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			(CL) CLAY, lean, medium plasticity, soft consistency, wet, gray, sandy					At El. -56 Ft. -200= 53%, PL= 17, LL= 36, PI= 19, MC= 44%		
				100	1		Vibracore			
			At El. -60.0 Ft., low plasticity, soft consistency, wet, gray, inorganic							
-62.5	17.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-121**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.402482 LONG = -88.018447	
		STATE PLANE COORDINATES X = 1,805,059 Y = 146,747	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -34.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 16.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-34.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,059 Y = 146,747	**ELEVATION TOP OF BORING** -34.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	16.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **CD-4-72**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 4 **SHEETS**

PROJECT 1970-1972 Subsurface			**LAT/LONG COORDINATES** LAT = 30.400637 LONG = -88.019243	
			STATE PLANE COORDINATES X = 1,804,805 Y = 146,077	
DATE OF BORING	***STARTED*** 09-21-72	***COMPLETED*** 09-22-72	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -12.7 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR Wilsford, Geologist		**NAME OF DRILLER** Dobbs	**MANUFACTURER'S DESIGNATION OF DRILL** CME-75	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 8 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 35.5 Feet			**TOTAL RECOVERY FOR BORING** 93 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-12.7	0.0									
			(MH) SILT, inorganic-H, high plasticity, gray	100	1		3" I.D. Shelby Tube			
							Advanced Boring			
			At El. -17.7 Ft., gray and black with organics	100	2		3" I.D. Shelby Tube			
							Advanced Boring			
-22.7	10.0									

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,805 Y = 146,077	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			(OH) SILT, organic-H, high plasticity, gray	100	3		3" I.D. Shelby Tube			
							Advanced Boring			
				100	4		3" I.D. Shelby Tube			
							Advanced Boring			
				40	5					
							Advanced Boring			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,805 Y = 146,077	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-37.7	25.0						Advanced Boring			
			(CH) CLAY, fat, high plasticity, gray with organic odor and limestone fragments	100	6		3" I.D. Shelby Tube			
							Advanced Boring			
			At El. -42.7 Ft., high plasticity, gray	100	7		3" I.D. Shelby Tube			
							Advanced Boring			
-48.2	35.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Sampler lost obtaining sample No.5.	100	8		3" I.D. Shelby Tube Advanced Boring			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,805 Y = 146,077	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			Moved Barge approx. 10 north of CD-4-72. Fish tailed to depth -47.7, then pushed sample No.8 to -50.2 feet.	100	8					

38 39 40 41 42 43 44 45 46 47 48 49 50

Project I.D. Boring Designation **MHVBC-24-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation			**LAT/LONG COORDINATES** LAT = 30.40020571 LONG = -88.01778357		
			STATE PLANE COORDINATES X = 1,805,264 Y = 145,918		
DATE OF BORING	***STARTED*** 01-21-20	***COMPLETED*** 01-21-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83	***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -46.0 Feet	***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer		**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**	
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks		
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0		
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.5 Feet			**TOTAL RECOVERY FOR BORING** 100 %		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray	100	1		Vibracore	At El. -55 Ft. -200= 98%, PL= 39, LL= 69, PI= 30, MC= 145%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,805,264 Y = 145,918	-46.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-60.0	14.0									
-62.0	16.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, gray, inorganic, with shell	100	1		Vibracore			
-65.5	19.5		(CL) CLAY, lean, low plasticity, soft consistency, wet, gray, with fine sand and shell, inorganic					At El. -62 Ft. -200= 74%, PL= 24, LL= 46, PI= 22, MC= 52%		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-123**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.396835 LONG = -88.017503	
		STATE PLANE COORDINATES X = 1,805,347 Y = 144,692	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -30.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 20.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-30.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,805,347 Y = 144,692	-30.8 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	20.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-32-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT
1963-1964 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.394866 LONG = -88.018579
STATE PLANE COORDINATES X = 1,805,005 Y = 143,977

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -43.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
H. Gates, Geologist	C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 26.5 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-43.0	0.0		(CH) CLAY, fat, high plasticity, very soft consistency, wet, black, with organic material	100	1		Vibracore	At El. -45.5 Ft. LOI=11.7%		
			At El. -49.6 Ft., soft consistency, gray							

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,005 Y = 143,977	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-60.5	17.5		(SC) SAND, clayey, soft consistency, gray	100	1		Vibracore			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,805,005 Y = 143,977	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-69.5	26.5			100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-125**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.391473 LONG = -88.019153	
		STATE PLANE COORDINATES X = 1,804,818 Y = 142,744	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -37.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 13.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-37.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,818 Y = 142,744	**ELEVATION TOP OF BORING** -37.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	13.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **MHVBC-23-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.3910328 LONG = -88.01941658
STATE PLANE COORDINATES X = 1,804,734 Y = 142,584

DATE OF BORING	***STARTED***	***COMPLETED***
	01-21-20	01-21-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -45.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer
NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ AUTO HAMMER ☐ MANUAL HAMMER

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ VERTICAL ☐ INCLINED		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.5 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-45.0	0.0									
-45.5	0.5		(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
			(CH) CLAY, fat, high plasticity, soft consistency, wet, gray, inorganic, with traces of sand							
				100	1		Vibracore	At El. -50 Ft. -200= 90%, PL= 30, LL=59, PI= 29, MC=92%		
			At El. -53.0 Ft. with fine sand and shell					At El. -53 Ft. -200= 85%, PL= 26, LL= 56, PI= 30, MC= 89%		
-55.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,804,734 Y = 142,584	-45.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-57.0	12.0		(CL) CLAY, lean, low plasticity, soft consistency, wet, gray, with traces of shell, inorganic	100	1		Vibracore	At El. -61 Ft. -200= 40%, PL= 21, LL= 27, PI= 6, MC= 35%		
-60.5	15.5		(CL-ML) CLAY, silty, low plasticity, soft consistency, wet, gray, sandy and silty, inorganic							
-62.5	17.5		(SC-SM) SAND, silty, clayey, low plasticity, loose, wet, gray, very clayey, with traces of shell							
-64.5	19.5		(SM) SAND, silty, low plasticity, loose, wet, gray, with trace shell							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

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SAM FORM 1836-A
AUG 2017

AFTER DRILLING ▼ *DURING DRILLING* ▽

Project I.D. Boring Designation **MHVBC-22-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation			**LAT/LONG COORDINATES** LAT = 30.38744705 LONG = -88.01966322		
			STATE PLANE COORDINATES X = 1,804,650 Y = 141,281		
DATE OF BORING	***STARTED*** 01-21-20	***COMPLETED*** 01-21-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83	***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -47.0 Feet	***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR M. Shekouh, Geotechnical Engineer		**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore		☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks		
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0		
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.5 Feet			**TOTAL RECOVERY FOR BORING** 100 %		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-47.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
-49.0	2.0		At El. -48.8 Ft. with wood debris (CH) CLAY, fat, high plasticity, soft consistency, wet, gray, inorganic							
				100	1		Vibracore	At El. -55 Ft. -200= 77%, PL= 29, LL=67, PI= 38, MC= 78%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,804,650 Y = 141,281	-47.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			At El. -61.0 Ft. with traces of wood	100	1		Vibracore			
-62.5	15.5		(CL) CLAY, lean, low plasticity, soft consistency, wet, gray, with traces of wood, inorganic					At El. -63 Ft. -200= 59%, PL= 18, LL= 38, PI= 20, MC= 49%		
-66.5	19.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-127**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.386110 LONG = -88.020805	
		STATE PLANE COORDINATES X = 1,804,288 Y = 140,796	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -26.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 24.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-26.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			1-3/8" I.D. Shelby Tube			
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

Boring Designation **SS-127**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,288 Y = 140,796	**ELEVATION TOP OF BORING** -26.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
	10						Advanced Boring			
	11			NR			SPT Sampler		0 0	0
	12								0	
	13						Advanced Boring			
	14									
	15									
	16									
	17			NR			SPT Sampler		0 0	0
	18								0	
	19						Advanced Boring			
	20									
	21									
	22									
	23			NR			SPT Sampler		0 0	0

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,288 Y = 140,796	**ELEVATION TOP OF BORING** -26.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	
-51.3	24.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. | Boring Designation **MHVBC-21-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.38217045 LONG = -88.02073748
STATE PLANE COORDINATES X = 1,804,303 Y = 139,363

DATE OF BORING	***STARTED***	***COMPLETED***
	01-22-20	01-22-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -49.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer
NAME OF DRILLER CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-49.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray					At El. -51 Ft. -200= 96%, PL= 36, LL= 60, PI= 24, MC= 117%		
-53.0	4.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, with traces of wood and shell, inorganic	100	1		Vibracore	At El. -56 Ft. -200= 99%, PL= 29, LL= 65, PI= 36, MC= 95%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION Mobile District			**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,303 Y = 139,363	**ELEVATION TOP OF BORING** -49.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-65.0	16.0			100	1		Vibracore			
-68.0	19.0		(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray, with sand							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-129**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.380466 LONG = -88.019859	
		STATE PLANE COORDINATES X = 1,804,577 Y = 138,742	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -27.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 23.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-27.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0	

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,577 Y = 138,742	**ELEVATION TOP OF BORING** -27.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	23.5									

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,577 Y = 138,742	**ELEVATION TOP OF BORING** -27.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. Boring Designation **MHVBC-20-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation		**LAT/LONG COORDINATES** LAT = 30.37679681 LONG = -88.02108899	
		STATE PLANE COORDINATES X = 1,804,183 Y = 137,409	
DATE OF BORING	***STARTED*** 01-22-20 / ***COMPLETED*** 01-22-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -48.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer	**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 18.0 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-48.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray							
				100	1		Vibracore	At El. -52 Ft. -200= 94%, PL= 35, LL= 55, PI= 20, MC= 152%		
			At El. -54.0 Ft., high plasticity, soft consistency, wet, dark gray							
								At El. -55 Ft. -200= 97%, PL= 32, LL= 60, PI= 28, MC= 113%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,804,183 Y = 137,409	**ELEVATION TOP OF BORING** -48.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			
-64.0	16.0									
			(SC) SAND, clayey, soft consistency, wet, dark gray							
-66.0	18.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-131**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.375196 LONG = -88.022378	
		STATE PLANE COORDINATES X = 1,803,774 Y = 136,829	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -25.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 25.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-25.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

Boring Designation **SS-131**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,774 Y = 136,829	**ELEVATION TOP OF BORING** -25.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 3 OF 3 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,803,774 Y = 136,829	-25.8 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	
							Advanced Boring			
-51.3	25.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-19-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation			**LAT/LONG COORDINATES** LAT = 30.37144584 LONG = -88.02225243		
			STATE PLANE COORDINATES X = 1,803,807 Y = 135,465		
DATE OF BORING	***STARTED*** 01-22-20	***COMPLETED*** 01-22-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83	***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -47.0 Feet	***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer		**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**	
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks		
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0		
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.0 Feet			**TOTAL RECOVERY FOR BORING** 100 %		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-47.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray,							
				100	1		Vibracore	At El. -54 Ft. -200= 95%, PL= 36, LL= 57, PI= 21, MC= 130%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,807 Y = 135,465	**ELEVATION TOP OF BORING** -47.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-62.0	15.0			100	1		Vibracore			
-63.0	16.0		(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray, inorgainc							
-66.0	19.0		(SC) SAND, clayey, soft consistency, wet, dark gray, inorganic At El. -64.5 Ft. with shell							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-133**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.369648 LONG = -88.022297	
		STATE PLANE COORDINATES X = 1,803,790 Y = 134,811	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -35.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 16.3 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-35.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	INSTALLATION		SHEET 2 OF 2 SHEETS
	Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL**	**VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**		
X = 1,803,790 Y = 134,811	-35.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	16.3									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. Boring Designation **MHVBC-18-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation		**LAT/LONG COORDINATES** LAT = 30.36604189 LONG = -88.02261343	
		STATE PLANE COORDINATES X = 1,803,684 Y = 133,500	
DATE OF BORING	***STARTED*** 01-22-20 / ***COMPLETED*** 01-22-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -50.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer	**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 16.5 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-50.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray					At El. -52 Ft. -200= 98%, PL=46, LL= 64, PI= 18, MC= 143%		
-54.0	4.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, with sand and shell and traces of wood, inorganic	100	1		Vibracore	At El. -56 Ft. -200= 79%, PL= 30, LL= 56, PI= 26, MC= 83%		
-60.0	10.0									

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,803,684 Y = 133,500	-50.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray							
-62.0	12.0									
			(SC-SM) SAND, silty, clayey, soft consistency, wet, dark gray	100	1		Vibracore			
			At El. -65.0 Ft. shelly							
-66.5	16.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-135**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.364097 LONG = -88.022217	
		STATE PLANE COORDINATES X = 1,803,806 Y = 132,792	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -22.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 28.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-22.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0	

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 2 OF 3 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,803,806 Y = 132,792	-22.8 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,806 Y = 132,792	**ELEVATION TOP OF BORING** -22.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	28.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. | Boring Designation **VC-36-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1982-1984 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.360751 LONG = -88.023789	
		STATE PLANE COORDINATES X = 1,803,305 Y = 131,577	
DATE OF BORING	***STARTED*** 01-08-84 / ***COMPLETED*** 01-08-84	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -42.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist	**NAME OF DRILLER** C. Fuller	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 28.5 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-42.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, black, with organic material					At El. -43.5 Ft. LOI=11.6%		
			At El. -46.0 Ft., soft consistency, gray	100	1		Vibracore	At El. -51.5 Ft. LL=74, PL=27,		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,305 Y = 131,577	**ELEVATION TOP OF BORING** -42.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
								PI=47		
-56.0	14.0		(ML) SILT, inorganic-L, soft consistency, wet, gray, with fine grained sand and a trace of shells (max size of 1")					At El. -57.5 Ft. -200=94.5%		
				100	1		Vibracore			
-62.0	20.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, gray							

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,305 Y = 131,577	**ELEVATION TOP OF BORING** -42.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-70.5	28.5			100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

Project I.D. | Boring Designation **SS-137**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.358827 LONG = -88.024735	
		STATE PLANE COORDINATES X = 1,803,003 Y = 130,879	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -33.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-33.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,003 Y = 130,879	**ELEVATION TOP OF BORING** -33.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
-51.3	17.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **MHVBC-17-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.35484434 LONG = -88.02464822

STATE PLANE COORDINATES X = 1,803,024 Y = 129,431

DATE OF BORING	***STARTED***	***COMPLETED***
	01-22-20	01-22-20

COORDINATE SYSTEM/DATUM/UNITS	***HORIZ.***	***VERT.***
State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -46.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
C. Long, Geotechnical Engineer	CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 17.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray, trace sand and shell	100	1		Vibracore	At El. -49 Ft. -200= 86%, PL= 35, LL= 56, PI= 21, MC= 136%		
-53.0	7.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, inorganic, trace sand and shell					At El. -55 Ft. -200= 89%, PL= 26, LL= 61, PI= 35, MC= 84%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,803,024 Y = 129,431	-46.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-57.0	11.0									
			(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray, inorganic							
-58.0	12.0									
			(SC) SAND, clayey, soft consistency, wet, gray, trace shell	100	1		Vibracore			
-63.0	17.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-139**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.353183 LONG = -88.023789	
		STATE PLANE COORDINATES X = 1,803,292 Y = 128,825	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -25.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 26.3 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-25.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,292 Y = 128,825	**ELEVATION TOP OF BORING** -25.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0	

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,803,292 Y = 128,825	**ELEVATION TOP OF BORING** -25.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	26.3									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-16-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation		**LAT/LONG COORDINATES** LAT = 30.34946773 LONG = -88.02492916	
		STATE PLANE COORDINATES X = 1,802,926 Y = 127,476	
DATE OF BORING	***STARTED*** 01-22-20 / ***COMPLETED*** 01-22-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -46.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer	**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.0 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray, trace shell					At El. -48 Ft. -200= 91%, PL= 34, LL= 64, PI= 30, MC= 127%		
-50.0	4.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, trace shell, inorganic	100	1		Vibracore	At El. -55 Ft. -200= 99%, PL=30, LL= 63, PI= 33, MC=		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,926 Y = 127,476	**ELEVATION TOP OF BORING** -46.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-59.0	13.0							96%		
			(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray, trace shell	100	1		Vibracore			
-63.0	17.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-141**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.347820 LONG = -88.025440	
		STATE PLANE COORDINATES X = 1,802,762 Y = 126,877	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -27.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 23.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-27.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 2 OF 3 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,802,762 Y = 126,877	-27.8 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	23.5									

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,762 Y = 126,877	**ELEVATION TOP OF BORING** -27.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **CD-5-72**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 4 **SHEETS**

PROJECT 1970-1972 Subsurface			**LAT/LONG COORDINATES** LAT = 30.344514 LONG = -88.027190	
			STATE PLANE COORDINATES X = 1,802,205 Y = 125,677	
DATE OF BORING	***STARTED*** 09-21-72	***COMPLETED*** 09-22-72	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -12.7 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR Wilsford, Geologist		**NAME OF DRILLER** Dobbs	**MANUFACTURER'S DESIGNATION OF DRILL** CME-75	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES** ***DISTURBED*** 8	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 35.5 Feet			**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-12.7	0.0									
			(MH) SILT, inorganic-H, high plasticity, gray	100	1		3" I.D. Shelby Tube			
							Advanced Boring			
				100	2		3" I.D. Shelby Tube			
							Advanced Boring			
-22.7	10.0									

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,205 Y = 125,677	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			(CH) CLAY, fat, high plasticity, grey	100	3		3" I.D. Shelby Tube			
							Advanced Boring			
				100	4		3" I.D. Shelby Tube			
							Advanced Boring			
			At El. -32.7 Ft. with shell	100	5		3" I.D. Shelby Tube			
							Advanced Boring			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,205 Y = 125,677	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
							Advanced Boring			
				100	6		3" I.D. Shelby Tube			
							Advanced Boring			
				100	7		3" I.D. Shelby Tube			
							Advanced Boring			
-48.2	35.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.	100	8		3" I.D. Shelby Tube Advanced Boring			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 4 **OF** 4 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,205 Y = 125,677	**ELEVATION TOP OF BORING** -12.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	8					

38 39 40 41 42 43 44 45 46 47 48 49 50

Project I.D. | Boring Designation **MHVBC-15-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
2020 Geotechnical Investigation

LAT/LONG COORDINATES LAT = 30.34414935 LONG = -88.02622357
STATE PLANE COORDINATES X = 1,802,509 Y = 125,543

DATE OF BORING	***STARTED***	***COMPLETED***
	01-22-20	01-22-20

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -48.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
C. Long, Geotechnical Engineer	CSI

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 17.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-48.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray,					At El. -50 Ft. -200=92%, PL=34, LL=61, PI=27, MC=148%		
				100	1		Vibracore			
-54.0	6.0		(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, inorganic, trace shell					At El. -56 Ft. -200= 98%, PL=32, LL=65, PI= 33, MC= 107%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,802,509 Y = 125,543	-48.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			
-62.1	14.1		At El. -62.0 Ft. with shells (CH) CLAY, fat, high plasticity, very stiff consistency, wet, tan							
-65.0	17.0									

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-143**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.342457 LONG = -88.027089	
		STATE PLANE COORDINATES X = 1,802,233 Y = 124,929	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -31.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-31.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0	

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,233 Y = 124,929	**ELEVATION TOP OF BORING** -31.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	19.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-38-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.338743 LONG = -88.026525
STATE PLANE COORDINATES X = 1,802,405 Y = 123,577

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -43.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
H. Gates, Geologist	C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A
TOTAL NUMBER CORE BOXES 0
DEPTH TO TOP OF ROCK N/A
TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 21.0 Feet
TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/1 FT.	N-VALUE
-43.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, black, with organic material					At El. -44.5 Ft. LOI=9.9%, -200=81.3%		
			At El. -47.0 Ft., soft consistency, dark gray							
				100	1		Vibracore			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,405 Y = 123,577	**ELEVATION TOP OF BORING** -43.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			
			At El. -60.0 Ft., medium consistency, light gray							
-64.0	21.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-145**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.336813 LONG = -88.026146	
		STATE PLANE COORDINATES X = 1,802,521 Y = 122,875	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -25.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 25.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-25.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray, organic				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION	SHEET / OF
Mobile District	SHEET 2 OF 3 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,802,521 Y = 122,875	-25.8 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
	10						Advanced Boring			
	11									
	12			NR			SPT Sampler		0 0 0	0
	13									
	14						Advanced Boring			
	15									
	16									
	17									
	18			NR			SPT Sampler		0 0 0	0
	19						Advanced Boring			
	20									
	21									
	22									
	23			NR			SPT Sampler		0 0	0

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,521 Y = 122,875	**ELEVATION TOP OF BORING** -25.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	
-51.3	25.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. Boring Designation **MHVBC-14-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation		**LAT/LONG COORDINATES** LAT = 30.33480101 LONG = -88.02715384	
		STATE PLANE COORDINATES X = 1,802,200 Y = 122,145	
DATE OF BORING	***STARTED*** 01-17-20 / ***COMPLETED*** 01-17-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -46.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer	**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 20.0 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0		(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, dark gray, traces of shell from 0' to 1'							
			At El. -50.0 Ft. sand lense	100	1		Vibracore	At El. -50 Ft. -200=91%, PL=37, LL=65, PI=28, MC=153%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,802,200 Y = 122,145	**ELEVATION TOP OF BORING** -46.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-56.5	10.5									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, inorganic, traces of shell	100	1		Vibracore			
-66.0	20.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-147**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.331543 LONG = -88.028660	
		STATE PLANE COORDINATES X = 1,801,719 Y = 120,962	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -28.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 22.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-28.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,719 Y = 120,962	**ELEVATION TOP OF BORING** -28.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	22.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils				140# hammer w/30" drop used with 2.0' split spoon			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,719 Y = 120,962	**ELEVATION TOP OF BORING** -28.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			Classification System.				(1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **MHVBC-13-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation		**LAT/LONG COORDINATES** LAT = 30.32946113 LONG = -88.02830475	
		STATE PLANE COORDINATES X = 1,801,827 Y = 120,204	
DATE OF BORING	***STARTED*** 01-17-20 / ***COMPLETED*** 01-17-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -46.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer	**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.0 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-46.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, black,							
-49.5	3.5									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, traces of shell, inorganic	100	1		Vibracore	At El. -53 Ft. -200=97%, PL=34, LL=70, PI=36, MC=112%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,827 Y = 120,204	**ELEVATION TOP OF BORING** -46.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-59.5	13.5									
			(SC) SAND, clayey, soft consistency, wet, dark gray	100	1		Vibracore	At El. -60 Ft. -200=45%, PL=14, LL=29, PI=15, MC=47%		
			At El. -62.0 Ft., soft consistency, wet, dark gray							
-63.0	17.0									
			(SM) SAND, silty, soft consistency, wet, dark gray							
-65.0	19.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-149**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.325992 LONG = -88.028579	
		STATE PLANE COORDINATES X = 1,801,735 Y = 118,943	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -34.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 16.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-34.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,735 Y = 118,943	**ELEVATION TOP OF BORING** -34.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	16.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **VC-40-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1982-1984 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.324161 LONG = -88.028824	
		STATE PLANE COORDINATES X = 1,801,655 Y = 118,277	
DATE OF BORING	***STARTED*** 01-08-84 / ***COMPLETED*** 01-08-84	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -42.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR H. Gates, Geologist	**NAME OF DRILLER** C. Fuller	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 28.7 Feet		**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-42.0	0.0		(CH) CLAY, fat, high plasticity, very soft consistency, wet, black, with organic material							
			At El. -45.5 Ft., soft consistency, gray	100	1		Vibracore			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,655 Y = 118,277	**ELEVATION TOP OF BORING** -42.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
			At El. -58.0 Ft., medium consistency	100	1		Vibracore			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,655 Y = 118,277	**ELEVATION TOP OF BORING** -42.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-70.7	28.7			100	1		Vibracore			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **MHVBC-12-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation			**LAT/LONG COORDINATES** LAT = 30.32201493 LONG = -88.02894799	
			STATE PLANE COORDINATES X = 1,801,612 Y = 117,497	
DATE OF BORING	***STARTED*** 01-17-20	***COMPLETED*** 01-17-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -49.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer		**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 1 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 18.0 Feet			**TOTAL RECOVERY FOR BORING** 100 %	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-49.0	0.0									
			(MH) SILT, inorganic-H, high plasticity, very soft consistency, wet, black, with shell							
			At El. -51.0 Ft., soft consistency, dark gray							
-52.0	3.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, traces of sand and shell, inorganic							
				100	1		Vibracore			
								At El. -56 Ft. -200=99.2%, PL=29, LL=61, PI=32, MC=112%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,612 Y = 117,497	**ELEVATION TOP OF BORING** -49.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-62.0	13.0									
			(CL) CLAY, lean, low plasticity, soft consistency, wet, dark gray, inorganic	100	1		Vibracore	At El. -63 Ft. -200=52%, PL=20, LL=44, PI=24, MC= 53%		
-65.0	16.0									
			(SC) SAND, clayey, soft consistency, wet, dark gray, inorganic							
-67.0	18.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-151**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.320444 LONG = -88.028502	
		STATE PLANE COORDINATES X = 1,801,750 Y = 116,925	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -32.3 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 19.0 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-32.3	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,750 Y = 116,925	**ELEVATION TOP OF BORING** -32.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	19.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. Boring Designation **MHVBC-11-19**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 2020 Geotechnical Investigation			**LAT/LONG COORDINATES** LAT = 30.31673335 LONG = -88.03016603		
			STATE PLANE COORDINATES X = 1,801,219 Y = 115,578		
DATE OF BORING	***STARTED*** 01-17-20	***COMPLETED*** 01-17-20	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83	***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM			**ELEVATIONS**	***TOP OF BORING*** -49.0 Feet	***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR C. Long, Geotechnical Engineer		**NAME OF DRILLER** CSI	**MANUFACTURER'S DESIGNATION OF DRILL** Vibrocore		☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL**	**BEARING**	**SIZE AND TYPE OF BIT** See Remarks		
THICKNESS OF OVERBURDEN N/A			**TOTAL NUMBER CORE BOXES** 0		
DEPTH TO TOP OF ROCK N/A			**TOTAL SAMPLES**	***DISTURBED*** 1	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 20.0 Feet			**TOTAL RECOVERY FOR BORING** 100 %		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-49.0	0.0									
			(CH) CLAY, fat, high plasticity, soft consistency, wet, dark gray, inorganic, trace shell							
			At El. -51.5 Ft. with light gray indurated clay/silt nodules							
				100	1		Vibracore			
								At El. -55 Ft. -200=99%, PL=30, LL=66, PI=36, MC=110%		

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,219 Y = 115,578	**ELEVATION TOP OF BORING** -49.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
				100	1		Vibracore			
-69.0	20.0									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.							

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Project I.D. | Boring Designation **SS-153**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.315174 LONG = -88.031015	
		STATE PLANE COORDINATES X = 1,800,948 Y = 115,012	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -28.3 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 23.0 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-28.3	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0	

0 1 2 3 4 5 6 7 8 9 10

Boring Designation **SS-153**

DRILLING LOG (Cont. Sheet)	INSTALLATION: Mobile District	SHEET 2 OF 3 SHEETS
PROJECT	COORDINATE SYSTEM/DATUM: State Plane - Alabama West - U.S. Survey Ft. / HORIZONTAL: NAD83 / VERTICAL: MLLW	
LOCATION COORDINATES: X = 1,800,948 Y = 115,012	ELEVATION TOP OF BORING: -28.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	23.0									
			NOTES:				140# hammer w/30" drop used			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,948 Y = 115,012	**ELEVATION TOP OF BORING** -28.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			1. Soils are field visually classified in accordance with the Unified Soils Classification System.				with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

Project I.D. | Boring Designation **SS-155**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.309530 LONG = -88.030072	
		STATE PLANE COORDINATES X = 1,801,236 Y = 112,958	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -29.0 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 22.3 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-29.0	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,236 Y = 112,958	**ELEVATION TOP OF BORING** -29.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-51.3	22.3									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,801,236 Y = 112,958	**ELEVATION TOP OF BORING** -29.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

DRILLING LOG	DIVISION: South Atlantic Division	INSTALLATION: Mobile Harbor AL	SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings		9. COORDINATE SYSTEM: State Plane - Alabama West	HORIZONTAL: NAD83 / VERTICAL: MLLW
		10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge	
2. HOLE NUMBER: MHSPT-16-19	LOCATION COORDINATES: N 113538.444 E 1801187.853	11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750	
3. DRILLING AGENCY: Corps of Engineers - CESAS		12. TOTAL SAMPLES	DISTURBED: 9 / UNDISTURBED: 0
4. NAME OF DRILLER: Joe Bowerman		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG FROM VERTICAL: --- / BEARING	14. ELEVATION GROUND WATER: See Remarks	
		15. DATE BORING	STARTED: 9/27/20 / COMPLETED: 9/27/20
6. THICKNESS OF OVERBURDEN: >14'		16. ELEVATION TOP OF BORING: -46.23'	
7. DEPTH DRILLED INTO ROCK		17. TOTAL CORE RECOVERY FOR BORING: N/A	
8. TOTAL DEPTH OF BORING: 14'		18. SIGNATURE AND TITLE OF INSPECTOR: Chris Killam, Geologist	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			CLAYEY SILT (MH), olive green, saturated, high plasticity, trace fine sand.	47	S1		USCS	0 0 0	0
-48.2	2.0								
			SILT (ML), dark olive gray, little sand, trace shells.	87	S2			0 0 0	0
				100	S3			0 0 0	0
-52.2	6.0			100	S4			0 0 0	0
			CLAYEY SILT (MH), high plasticity, trace fine sand.	100	S5			0 0 0	0
				100	S6			0 0 0	0
			Greenish gray.	100	S7			0 0 0	0
				100	S8			0 0 0	0
				100	S9			0 0 0	0
-60.2	14.0								

0
5
10

BOTTOM OF BOREHOLE AT 14.0 ft

Notes:

1. Soils visually field classified in accordance with the Unified Soil Classification System.
2. N-Value: Total blows over last 1.0 foot of 1.5-foot driven interval, unless otherwise indicated, using a 1 3/8-inch ID splitspoon with 140-pound hammer falling 30 inches.
3. The CME-750 drilling rig utilizes an automatic trip hammer.
4. Undisturbed sampling with 3" by 30" Shelby tube, mechanically pushed with CME-750.
5. Component Percentages: Trace: 0 to 5%, Few: 5 to 10%, Little: 15 to 25%, Some 30 to 45%, With 50 to 100%.
6. MLLW was calculated from measuring barge deck to mud line, then subtracting barge deck to water and closest observation station tide reading.

Project I.D. | Boring Designation **VC-42-84**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT
1982-1984 Subsurface Investigation

LAT/LONG COORDINATES LAT = 30.307791 LONG = -88.031271

STATE PLANE COORDINATES X = 1,800,855 Y = 112,327

DATE OF BORING	***STARTED***	***COMPLETED***
	01-08-84	01-08-84

COORDINATE SYSTEM/DATUM/UNITS State Plane - Alabama West - U.S. Survey Ft. | ***HORIZ.*** NAD83 | ***VERT.*** MLLW

DRILLING AGENCY Corps of Engineers - CESAM

ELEVATIONS | ***TOP OF BORING*** -41.0 Feet | ***GROUND WATER*** Underwater

NAME & TITLE OF FIELD INSPECTOR	**NAME OF DRILLER**
H. Gates, Geologist	C. Fuller

MANUFACTURER'S DESIGNATION OF DRILL Vibrocore ☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**

DIRECTION OF BORING	**DEG. FROM VERTICAL**	**BEARING**
☒ **VERTICAL** ☐ **INCLINED**		

SIZE AND TYPE OF BIT See Remarks

THICKNESS OF OVERBURDEN N/A

TOTAL NUMBER CORE BOXES 0

DEPTH TO TOP OF ROCK N/A

TOTAL SAMPLES | ***DISTURBED*** 1 | ***UNDISTURBED (UD)*** 0

TOTAL DEPTH OF BORING 20.0 Feet

TOTAL RECOVERY FOR BORING 100 %

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-41.0	0.0		(CH) CLAY, fat, high plasticity, very soft consistency, wet, black							
			At El. -43.6 Ft., soft consistency, gray	100	1		Vibracore			

0 1 2 3 4 5 6 7 8 9 10

SAM FORM 1836 **AUG 2017**

AFTER DRILLING ▼ *DURING DRILLING* ▽

(Continued)

Boring Designation **VC-42-84**

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,855 Y = 112,327	**ELEVATION TOP OF BORING** -41.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 1 FT.	N-VALUE
-61.0	20.0			100	1		Vibracore			

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Mobile Harbor AL

SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings

9. COORDINATE SYSTEM: State Plane - Alabama West | HORIZONTAL: NAD83 | VERTICAL: MLLW

10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge

2. HOLE NUMBER: MHSPT-15-19 | LOCATION COORDINATES: N 111830.896 E 1800543.956

11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750

3. DRILLING AGENCY: Corps of Engineers - CESAS

12. TOTAL SAMPLES: DISTURBED 13 | UNDISTURBED 0

4. NAME OF DRILLER: Joe Bowerman

13. TOTAL NUMBER CORE BOXES: 0

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING: STARTED 9/23/20 | COMPLETED 9/23/20

6. THICKNESS OF OVERBURDEN: >19.5'

16. ELEVATION TOP OF BORING: -40.5'

7. DEPTH DRILLED INTO ROCK:

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 19.5'

18. SIGNATURE AND TITLE OF INSPECTOR: Adam Tew, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			LEAN CLAY (CL), gray, wet, medium plasticity, trace shell fragments.	100	S1		USCSall drives WOR	0 0 0	0
				100	S2			0 0 0	0
				100	S3			0 0 0	0
				100	S4			0 0 0	0
				100	S5			0 0 0	0
				100	S6			0 0 0	0
				73	S7			0 0 0	0
				67	S8			0 0 0	0
				73	S9			0 0 0	0
				53	S10			0 0 0	0
				87	S11			0 0 0	0
				80	S12			0 0 0	0
-60.0	19.5			100	S13			0 0 0	0

0 5 10 15

BOTTOM OF BOREHOLE AT 19.5 ft

Notes:

1. Soils visually field classified in accordance with the Unified Soil Classification System.
2. N-Value: Total blows over last 1.0 foot of 1.5-foot driven interval, unless otherwise indicated, using a 1 3/8-inch ID splitspoon with 140-pound hammer falling 30 inches.
3. The CME-750 drilling rig utilizes an automatic trip hammer.
4. Undisturbed sampling with 3" by 30" Shelby tube, mechanically pushed with CME-750.
5. Component Percentages: Trace: 0 to 5%, Few: 5 to 10%, Little: 15 to 25%, Some 30 to 45%, With 50 to 100%.
6. MLLW was calculated from measuring barge deck to mud line, then subtracting barge deck to water and closest observation station tide reading.

Project I.D. | Boring Designation **SS-157**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.304167 LONG = -88.031719	
		STATE PLANE COORDINATES X = 1,800,707 Y = 111,010	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -37.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 13.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-37.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,707 Y = 111,010	**ELEVATION TOP OF BORING** -37.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	13.5						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Mobile Harbor AL

SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings

9. COORDINATE SYSTEM: State Plane - Alabama West | HORIZONTAL: NAD83 | VERTICAL: MLLW

10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge

2. HOLE NUMBER: MHSPT-14-19 | LOCATION COORDINATES: N 109730.091 E 1800752.382

11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750

3. DRILLING AGENCY: Corps of Engineers - CESAS

12. TOTAL SAMPLES | DISTURBED: 11 | UNDISTURBED: 0

4. NAME OF DRILLER: Joe Bowerman

13. TOTAL NUMBER CORE BOXES: 0

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING | STARTED: 9/25/20 | COMPLETED: 9/25/20

6. THICKNESS OF OVERBURDEN: >16.5'

16. ELEVATION TOP OF BORING: -43.77'

7. DEPTH DRILLED INTO ROCK:

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 16.5'

18. SIGNATURE AND TITLE OF INSPECTOR: Michael Loveland, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			CLAYEY SILT (ML), greenish gray, saturated, very soft, non plastic, no toughness, few fine sand, trace organics.	0	S1		USCS	0 0 0	0
				20	S2			0 0 0	0
-47.9	4.1			80	S3			0 0 0	0
			ELASTIC SILT (MH), dark gray, saturated, medium plasticity, no dilatancy, no toughness, trace shells.	100	S4			0 0 0	0
			Dark gray and black.	100	S5			0 0 0	0
				100	S6			0 0 0	0
				100	S7			0 0 0	0
				100	S8			0 0 0	0
				100	S9			0 0 0	0
			Interbedded fine to medium sand.	100	S10			0 0 0	0
-58.8	15.0								
-60.3	16.5		SILTY SAND (SM), greenish gray, fine to medium grained, saturated, some silt.	100	S11			0 0 0	0

0 5 10 15

BOTTOM OF BOREHOLE AT 16.5 ft

Notes:

1. Soils visually field classified in accordance with the Unified Soil Classification System.
2. N-Value: Total blows over last 1.0 foot of 1.5-foot driven interval, unless otherwise indicated, using a 1 3/8-inch ID splitspoon with 140-pound hammer falling 30 inches.
3. The CME-750 drilling rig utilizes an automatic trip hammer.
4. Undisturbed sampling with 3" by 30" Shelby tube, mechanically pushed with CME-750.
5. Component Percentages: Trace: 0 to 5%, Few: 5 to 10%, Little: 15 to 25%, Some 30 to 45%, With 50 to 100%.
6. MLLW was calculated from measuring barge deck to mud line, then subtracting barge deck to water and closest observation station tide reading.

Project I.D. | Boring Designation **SS-159**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.298801 LONG = -88.033370	
		STATE PLANE COORDINATES X = 1,800,177 Y = 109,061	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -26.3 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 25.0 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-26.3	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,177 Y = 109,061	**ELEVATION TOP OF BORING** -26.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
	10						Advanced Boring			
	11									
	12									
	13			NR			SPT Sampler		0	0
	14								0	
	15								0	
	16						Advanced Boring			
	17									
	18									
	19			NR			SPT Sampler		0	0
	20								0	
	21								0	
	22						Advanced Boring			
	23			NR			SPT Sampler		0	

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,177 Y = 109,061	**ELEVATION TOP OF BORING** -26.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE	
				NR			SPT Sampler		0 0 0	0	24
-51.3	25.0						Advanced Boring				25
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).				26 27 28 29 30 31 32 33 34 35 36 37

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Mobile Harbor AL

SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings

9. COORDINATE SYSTEM: State Plane - Alabama West | HORIZONTAL: NAD83 | VERTICAL: MLLW

10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge

2. HOLE NUMBER: MHSPT-13-19 | LOCATION COORDINATES: N 107831.342 E 1800095.395

11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750

3. DRILLING AGENCY: Corps of Engineers - CESAS

12. TOTAL SAMPLES: DISTURBED 9 | UNDISTURBED 0

4. NAME OF DRILLER: Joe Bowerman

13. TOTAL NUMBER CORE BOXES: 0

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING: STARTED 9/20/20 | COMPLETED 9/20/20

6. THICKNESS OF OVERBURDEN: >34.5'

16. ELEVATION TOP OF BORING: -46.7'

7. DEPTH DRILLED INTO ROCK:

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 34.5'

18. SIGNATURE AND TITLE OF INSPECTOR: Adam Tew, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SILT (ML), greenish brown, saturated, non plastic.	40	S1		USCS	0 0 0	0
			Dark gray.	73	S2		hole drilled using rotary spade bit and water	0 0 0	0
				73	S3		minimal fluid return throughout drilling	0 0 0	0
			Interbedded fine to medium sand.	100	S4			0 0 0	0
				100	S5			0 0 0	0
				100	S6			0 0 0	0
			Trace shell fragments, discontinue interbedded sand.	100	S7			0 0 0	0
-58.7	12.0		Gray, very soft, medium plasticity, some fine sand.	100	S8		WOR to 11.0 ft.	0 0 0	0
-60.2	13.5		SILTY SAND (SM), light gray, fine grained, saturated, some silt.	27	S9			0 0 2	2

0 5 10 15 20 25 30

Project I.D. | Boring Designation **SS-161**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.293157 LONG = -88.032424	
		STATE PLANE COORDINATES X = 1,800,466 Y = 107,007	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -24.3 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 27.0 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-24.3	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,466 Y = 107,007	**ELEVATION TOP OF BORING** -24.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,800,466 Y = 107,007	**ELEVATION TOP OF BORING** -24.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-51.3	27.0						Advanced Boring			
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Mobile Harbor AL

SHEET 1 OF 2 SHEETS

1. PROJECT: Mobile Harbor Borings

9. COORDINATE SYSTEM: State Plane - Alabama West | HORIZONTAL: NAD83 | VERTICAL: MLLW

10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge

2. HOLE NUMBER: MHSPT-12-19 | LOCATION COORDINATES: N 105901.235 E 1800496.571

11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750

3. DRILLING AGENCY: Corps of Engineers - CESAS

12. TOTAL SAMPLES | DISTURBED: 27 | UNDISTURBED: 0

4. NAME OF DRILLER: Joe Bowerman

13. TOTAL NUMBER CORE BOXES: 0

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING | STARTED: 9/26/20 | COMPLETED: 9/26/20

6. THICKNESS OF OVERBURDEN: >40.5'

16. ELEVATION TOP OF BORING: -20.26'

7. DEPTH DRILLED INTO ROCK:

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 40.5'

18. SIGNATURE AND TITLE OF INSPECTOR: Michael Loveland, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			CLAYEY ELASTIC SILT (MH), greenish gray, saturated, high plasticity, no dilatancy, trace fine sand, trace shells.	73	S1		USCS	0 0 0	0
				60	S2			0 0 0	0
				100	S3			0 0 0	0
				100	S4			0 0 0	0
				100	S5			0 0 0	0
				100	S6			0 0 0	0
				100	S7			0 0 0	0
				100	S8			0 0 0	0
				100	S9			0 0 0	0
				100	S10			0 0 0	0
				80	S11			0 0 0	0
			Trace silty sand (SM) seams.	80	S12			0 0 0	0
				100	S13			0 0 0	0
-41.3	21.0			53	S14			0 0 0	0
			SANDY SILT (ML), greenish gray, saturated, very soft, non plastic, trace shells.	40	S15			0 0 0	0
-44.3	24.0			20	S16			0 0 0	0
			SAND (SM), greenish gray, fine to medium grained, saturated, little silt, trace shells.	47	S17			0 0 0	0
				93	S18			0 1 0	1
			Interbedded silt.	73	S19			0 0 0	0
-48.8	28.5								
-50.3	30.0		POORLY GRADED SAND (SP), gray, poorly graded, fine to medium grained, saturated, very loose, trace silt, trace shells.	53	S20			0 0 0	0
			CLAY (CH), green and gray, moist, very soft, high plasticity, trace sp nodules.	100	S21			0 0 0	0
-52.7	32.4			100	S22			0 0 1	1
			CLAYEY ELASTIC SILT (MH), blueish green, moist, very soft to stiff, trace fine sand.	100	S23			1 3 2 3 3	5

DRILLING LOG (Cont Sheet)

INSTALLATION: Mobile Harbor AL		SHEET 2 OF 2 SHEETS
PROJECT: Mobile Harbor Borings	COORDINATE SYSTEM: State Plane / HORIZONTAL: NAD83	VERTICAL: MLLW
LOCATION COORDINATES: N 105901.235 E 1800496.571	ELEVATION TOP OF BORING: -20.26'	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
-55.8	35.5			73	S24			4 6	10
			SILTY SAND (SM), green with yellowish brown, fine grained, wet, low plasticity, few clay.	100	S25			3 3 4	7
				100	S26			5 4 4	8
			Light gray, fine grained, saturated, few silt, With trace silt (ML) blue green seams.	100	S27			5 6 6	12
-60.8	40.5								

35

40

BOTTOM OF BOREHOLE AT 40.5 ft

Notes:

1. Soils visually field classified in accordance with the Unified Soil Classification System.
2. N-Value: Total blows over last 1.0 foot of 1.5-foot driven interval, unless otherwise indicated, using a 1 3/8-inch ID splitspoon with 140-pound hammer falling 30 inches.
3. The CME-750 drilling rig utilizes an automatic trip hammer.
4. Undisturbed sampling with 3" by 30" Shelby tube, mechanically pushed with CME-750.
5. Component Percentages: Trace: 0 to 5%, Few: 5 to 10%, Little: 15 to 25%, Some 30 to 45%, With 50 to 100%.
6. MLLW was calculated from measuring barge deck to mud line, then subtracting barge deck to water and closest observation station tide reading.

Project I.D. | Boring Designation **SS-163**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.287890 LONG = -88.034939	
		STATE PLANE COORDINATES X = 1,799,663 Y = 105,095	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -25.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES** ***DISTURBED*** 0	***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 25.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-25.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION			SHEET 2 OF 3 SHEETS
Mobile District			
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL**	**VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83	MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**		
X = 1,799,663 Y = 105,095	-25.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
-45.8	20.0		(SC) SAND, clayey, very loose, wet, gray,							
				NR			SPT Sampler		0 0	0

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,799,663 Y = 105,095	**ELEVATION TOP OF BORING** -25.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0	
							Advanced Boring			
-51.3	25.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Boring Designation MHSPT-11-19

DRILLING LOG	DIVISION: South Atlantic Division	INSTALLATION: Mobile Harbor AL	SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings		9. COORDINATE SYSTEM: State Plane - Alabama West	HORIZONTAL: NAD83 / VERTICAL: MLLW
		10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge	
2. HOLE NUMBER: MHSPT-11-19	LOCATION COORDINATES: N 104081.253 E 1799422.912	11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750	
3. DRILLING AGENCY: Corps of Engineers - CESAS		12. TOTAL SAMPLES	DISTURBED: 24 / UNDISTURBED: 0
4. NAME OF DRILLER: Joe Bowerman		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG FROM VERTICAL: --- / BEARING	14. ELEVATION GROUND WATER: See Remarks	
		15. DATE BORING	STARTED: 9/19/20 / COMPLETED: 9/19/20
6. THICKNESS OF OVERBURDEN: >34.5'		16. ELEVATION TOP OF BORING: -28.6'	
7. DEPTH DRILLED INTO ROCK		17. TOTAL CORE RECOVERY FOR BORING: N/A	
8. TOTAL DEPTH OF BORING: 34.5'		18. SIGNATURE AND TITLE OF INSPECTOR: Adam Tew, Geologist	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SANDY SILT (ML), dark gray, very soft, low plasticity, few fine sand, trace shells.	100	S1		USCS	0 0 0	0
				100	S2		hole drilled using rotary spade bit and water	1 0 1	1
				93	S3		minimal fluid return throughout drilling	0 0 0	0
				100	S4			0 0 0	0
				47	S5			2 0 0	0
				100	S6			0 0 0	0
-38.6	10.0			100	S7			0 0 0	0
			SILTY SAND (SM), light gray, fine grained, wet, very loose, some silt.	100	S8			1 1 1	2
				80	S9			0 2 2	4
				100	S10			1 2 1	3
			SAND, light brownish gray, fine to medium grained, very loose, little silt.	87	S11			0 0 1	1
-46.1	17.5			87	S12			0 1 0	1
			CLAY (CH), greenish gray, high plasticity, no dilatancy.	33	17.5			0 0 0	0
				93	S13			1 2 2	4
				47	S14			0 1 2	3
				100	S15			1 1 2	3
			Grayish brown, trace wood.	100	S16			0 0 2	2
				80	S17			0 2 1	3
				100	S18			0 2 1	3
-56.1	27.5			100	S19			1 2 2	4
			SANDY CLAY (CL), grayish brown, wet, medium plasticity, some fine to medium sand. Few fine sand.	100	S20			0 1 2	3
				100	S21			1 2 2	4
				100	S22			0 1 2	3
-63.1	34.5			100	S23			1 1 3	4

SAS FORM 1836-A FEB 08

BOTTOM OF BOREHOLE AT 34.5 ft

Boring Designation MHSPT-11-19

Project I.D. | Boring Designation **SS-165**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.282339 LONG = -88.034859	
		STATE PLANE COORDINATES X = 1,799,679 Y = 103,076	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -32.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 18.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-32.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 2 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,799,679 Y = 103,076	**ELEVATION TOP OF BORING** -32.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
-46.8	14.0		(SC) SAND, clayey, dense, wet, gray,							
				NR			SPT Sampler		15 25 38	63
							Advanced Boring			
-51.3	18.5									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

Project I.D. | Boring Designation **SS-167**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 2 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.276788 LONG = -88.034778	
		STATE PLANE COORDINATES X = 1,799,695 Y = 101,057	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -36.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 14.5 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-36.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)

INSTALLATION		SHEET 2 OF 2 SHEETS
Mobile District		
PROJECT	**COORDINATE SYSTEM/DATUM**	**HORIZONTAL** / **VERTICAL**
	State Plane - Alabama West - U.S. Survey Ft.	NAD83 / MLLW
LOCATION COORDINATES	**ELEVATION TOP OF BORING**	
X = 1,799,695 Y = 101,057	-36.8 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				NR			SPT Sampler		0 0 0	0
-49.8	13.0						Advanced Boring			
-51.3	14.5		(SC) SAND, clayey, wet, gray with layers of fat clay							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).			

10 11 12 13 14 15 16 17 18 19 20 21 22 23

Boring Designation MHSPT-09-19

DRILLING LOG	DIVISION: South Atlantic Division	INSTALLATION: Mobile Harbor AL	SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings		9. COORDINATE SYSTEM: State Plane - Alabama West	HORIZONTAL: NAD83 / VERTICAL: MLLW
		10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge	
2. HOLE NUMBER: MHSPT-09-19	LOCATION COORDINATES: N 100364.582 E 1798938.319	11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750	
3. DRILLING AGENCY: Corps of Engineers - CESAS		12. TOTAL SAMPLES	DISTURBED: 21 / UNDISTURBED: 0
4. NAME OF DRILLER: Joe Bowerman		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG FROM VERTICAL: --- / BEARING	14. ELEVATION GROUND WATER: See Remarks	
		15. DATE BORING	STARTED: 9/11/20 / COMPLETED: 9/11/20
6. THICKNESS OF OVERBURDEN: >32'		16. ELEVATION TOP OF BORING: -27.98'	
7. DEPTH DRILLED INTO ROCK		17. TOTAL CORE RECOVERY FOR BORING: N/A	
8. TOTAL DEPTH OF BORING: 32'		18. SIGNATURE AND TITLE OF INSPECTOR: April Kelly, Geologist	

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SANDY SILT (ML), dark greenish gray, medium plasticity, little fine sand, trace shells.	100	S1		USCS	0 0 0	0
				87	S2			0 0 0	0
			Organic odor.	100	S3			0 0 0	0
				100	S4			0 0 0	0
-35.5	7.5		Some fine sand.	80	S5			0 0 0	0
-37.0	9.0		SILTY SAND (SM), dark gray, fine grained, little silt, trace shells.	100	S6			0 0 0	0
			SILTY SAND (SP-SM), dark gray, few silt, trace shells.	60	S7			0 0 1	1
				73	S8			0 1 2	3
				100	S9			1 1 2	3
				53	S10			0 1 1	2
-44.5	16.5			33	S11			0 0 0	0
-46.0	18.0		SANDY SILT (ML), dark blueish gray, medium plasticity, few fine sand, trace shells.	100	S12			1 1 1	2
			ELASTIC SILT (MH), high plasticity, trace wood, trace fine sand.	33	S13			3 2 2	4
				100	S14			1 2 1	3
				100	S15			0 0 0	0
				100	S16			1 1 1	2
				100	S17			1 2 1	3
-54.2	26.2			80	S18			0 2 2	4
			SANDY PEAT (OL), dark gray and dark brown, little fine sand, little wood.	20	S20			0 3 2	5
			ELASTIC SILT (MH), dark grayish green, high plasticity, trace wood, trace fine sand.	100	S21			2 1 3	4
-60.0	32.0			100	S22			1 2 3 4	5

BOTTOM OF BOREHOLE AT 32.0 ft

DRILLING LOG

DIVISION: South Atlantic Division

INSTALLATION: Mobile Harbor AL

SHEET 1 OF 1 SHEETS

1. PROJECT: Mobile Harbor Borings

9. COORDINATE SYSTEM: State Plane - Alabama West | HORIZONTAL: NAD83 | VERTICAL: MLLW

10. SIZE AND TYPE OF BIT: 4" Fishtail Upward Discharge

2. HOLE NUMBER: MHSPT-10-19 | LOCATION COORDINATES: N 101921.727 E 1799799.836

11. MANUFACTURER'S DESIGNATION OF DRILL: CME-750

3. DRILLING AGENCY: Corps of Engineers - CESAS

12. TOTAL SAMPLES: DISTURBED 11 | UNDISTURBED 0

4. NAME OF DRILLER: Joe Bowerman

13. TOTAL NUMBER CORE BOXES: 0

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED | DEG FROM VERTICAL: --- | BEARING:

14. ELEVATION GROUND WATER: See Remarks

15. DATE BORING: STARTED 9/12/20 | COMPLETED 9/12/20

6. THICKNESS OF OVERBURDEN: >16.5'

16. ELEVATION TOP OF BORING: -41.65'

7. DEPTH DRILLED INTO ROCK:

17. TOTAL CORE RECOVERY FOR BORING: N/A

8. TOTAL DEPTH OF BORING: 16.5'

18. SIGNATURE AND TITLE OF INSPECTOR: April Kelly, Geologist

ELEV	DEPTH	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	RQD %	REMARKS	Blows/ 0.5 ft	N-Value
			SANDY SILT (ML), dark gray, low plasticity, little fine sand, trace shells.	33	S1		USCS	0 0 0	0
			Trace fine sand, no shells.	87	S2			0 0 0	0
				47	S3			0 0 0	0
-47.7	6.0			100	S4			0 0 0	0
-49.2	7.5		SILTY SAND (SM), dark gray, fine grained, few silt.	47	S5			2 0 0	0
			SANDY SILT (ML), dark gray, medium plasticity, few fine sand.	100	S6			0 0 0	0
				100	S7			0 0 0	0
			Trace wood.	100	S8			0 0 0	0
			Low plasticity, some fine sand. Dark gray and dark brown, few fine sand, few wood.	100	S9			0 1 2	3
-56.7	15.0			100	S10			1 2 1	3
-57.7	16.0		ELASTIC SILT (MH), dark grayish green, high plasticity, trace wood, trace fine sand.	100	S11			0 2 2	4

BOTTOM OF BOREHOLE AT 16.5 ft

Notes:

1. Soils visually field classified in accordance with the Unified Soil Classification System.
2. N-Value: Total blows over last 1.0 foot of 1.5-foot driven interval, unless otherwise indicated, using a 1 3/8-inch ID splitspoon with 140-pound hammer falling 30 inches.
3. The CME-750 drilling rig utilizes an automatic trip hammer.
4. Undisturbed sampling with 3" by 30" Shelby tube, mechanically pushed with CME-750.
5. Component Percentages: Trace: 0 to 5%, Few: 5 to 10%, Little: 15 to 25%, Some 30 to 45%, With 50 to 100%.
6. MLLW was calculated from measuring barge deck to mud line, then subtracting barge deck to water and closest observation station tide reading.

Project I.D. | Boring Designation **SS-169**

DRILLING LOG	**DIVISION** South Atlantic	**INSTALLATION** Mobile District	**SHEET** 1 **OF** 3 **SHEETS**

PROJECT 1963-1964 Subsurface Investigation		**LAT/LONG COORDINATES** LAT = 30.271517 LONG = -88.037293	
		STATE PLANE COORDINATES X = 1,798,892 Y = 99,144	
DATE OF BORING	***STARTED*** / ***COMPLETED***	**COORDINATE SYSTEM/DATUM/UNITS** State Plane - Alabama West - U.S. Survey Ft.	***HORIZ.*** NAD83 / ***VERT.*** MLLW
DRILLING AGENCY Corps of Engineers - CESAM		**ELEVATIONS**	***TOP OF BORING*** -28.8 Feet / ***GROUND WATER*** Underwater
NAME & TITLE OF FIELD INSPECTOR N/A, Geologist	**NAME OF DRILLER** N/A	**MANUFACTURER'S DESIGNATION OF DRILL** N/A	☐ **AUTO HAMMER** ☐ **MANUAL HAMMER**
DIRECTION OF BORING ☒ **VERTICAL** ☐ **INCLINED**	**DEG. FROM VERTICAL** / **BEARING**	**SIZE AND TYPE OF BIT** See Remarks	
THICKNESS OF OVERBURDEN N/A		**TOTAL NUMBER CORE BOXES** 0	
DEPTH TO TOP OF ROCK N/A		**TOTAL SAMPLES**	***DISTURBED*** 0 / ***UNDISTURBED (UD)*** 0
TOTAL DEPTH OF BORING 22.4 Feet		**TOTAL RECOVERY FOR BORING** Not Recorded	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-28.8	0.0									
			(CH) CLAY, fat, high plasticity, very soft consistency, wet, gray,				Advanced Boring			
				NR			SPT Sampler		0 0 0	0
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0

0 1 2 3 4 5 6 7 8 9 10

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 2 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,798,892 Y = 99,144	**ELEVATION TOP OF BORING** -28.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring			
				NR			SPT Sampler		0 0 0	0
-43.8	15.0		(SC) SAND, clayey, wet, gray,							
							Advanced Boring			
-51.2	22.4									
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x			

DRILLING LOG (Cont. Sheet)	**INSTALLATION** Mobile District		**SHEET** 3 **OF** 3 **SHEETS**
PROJECT	**COORDINATE SYSTEM/DATUM** State Plane - Alabama West - U.S. Survey Ft.	**HORIZONTAL** NAD83	**VERTICAL** MLLW
LOCATION COORDINATES X = 1,798,892 Y = 99,144	**ELEVATION TOP OF BORING** -28.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	ADVANCEMENT METHOD	DRILLING REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			Classification System.				2" O.D.).			

24 25 26 27 28 29 30 31 32 33 34 35 36 37

APPENDIX B

ENVIRONMENTAL COMPLIANCE

Turtle Trawl Net Specifications

Turtle Trawl Net Specifications

DESIGN: 4 Seam, 4 Legged, 2 Bridal Trawl Net
WEBBING: 4 inch bar, 8 inch stretch
Top - 36 Gauge Twisted Nylon Dipped
Side - 36 Gauge Twisted Nylon Dipped
Bottom - 84 Gauge Braided Nylon Dipped
NET LENGTH: 60 ft from cork line to cod end
BODY TAPER: 2 to 1
WING END HEIGHT: 6 feet
CENTER HEIGHT: Dependent on depth of trawl - 14 to 18 feet
COD END: Length 50 meshes x 4 inches equals 16.7 feet
Webbing 2 inch bar, 4 inch stretch, 84 gauge braid nylon
Dipped, 80 meshes around, 40 rigged meshes with ¼ x 2 inch choker rings, 1 each ½ x 4 inch at end
Cod End Cover - none
Chaffing Gear - none
HEAD ROPE: 60 ft ½ inch combination rope (braid nylon with stainless cable center)
FOOT ROPE: 65 ft ½ inch combination rope
LEG LINE: Top - 6 ft, Bottom - 6 ft
FLOATS: Size - Tuna Floats (football style), Diameter - 7 Inches; Length - 9 inches; number 12 each;
Spacing - center of top net 2 inches apart
MUD ROLLERS: Size - 5 inch Diameter, 5.5 inch length
Number - 22 each; spacing - 3 ft attached with 3/8 inch Polypropylene rope (replaced with snap on roller when broken)
TICKLER CHAINS: NONE (Discontinued - but previously used ¼ inch x 74 ft galvanized chain)
WEIGHT: 20 ft of ¼ inch galvanized chain on each wing, 40 ft per net looped and tied
DOOR SIZE: 7 ft x 40 inches (or 8 ft x 40 inches); Shoe - 1 inch X 6 inch: bridles - 3/8 inch high test chain
CABLE LENGTH: (Bridle Length, Total) : 7/16 inch x 240-300 ft varies with bottom conditions
FLOAT BALL: NONE
LAZY LINES: 1 inch nylon
PICKUP LINES: 3/8 inch polypropylene
WHIP LINES: 1 inch nylon

ODESS System Requirements and Forms

HARDWARE REQUIREMENTS FOR THE ODESS SYSTEM

The dredge shall be equipped and the contractor is responsible for an ODESS hardware system consisting of a tablet computer, wireless keyboard, wireless mouse and data modem (or equivalent onboard internet connection) along with a proper tote bag and setup location for the afore mentioned hardware components. If a hardware problem occurs, or if a part of the system is physically damaged, the Contractor shall be responsible for repairing it within 48 hours of determination of the condition. The contractor shall also keep ODESS personnel updated on the status of the onboard ODESS system and the progress of any repairs.

Computer

The Contractor shall provide a dedicated onboard tablet computer for use by the observers and shall have ODESS software installed on it prior to project initiation. This computer shall be located and oriented to allow data entry and data viewing. It must meet or exceed the following specifications:

Tablet Hardware Component	**Specification**
CPU	Intel or AMD processor with a (non-overclocked) clock speed of at least 2.4 gigahertz (GHz)
Hard Disk	128 gigabytes (GB); solid state internal storage
RAM	4 gigabytes (GB)
Network Adapter	Internal wired or wireless network hardware to match internet connection
Video Adapter	Support for 1024x768 resolution at 16-bit color depth
Display	>= 10.8 in.
Integrated Camera	2MP HD webcam (front); 8MP (back)
Ports	1 free USB port

Internet Access

The Contractor shall maintain an Internet connection capable of transmitting data to the ODESS database. The telemetry system shall always be available and have connectivity in the contract area. If connectivity is lost, unsent data shall be stored locally within the FC tool and transmitted upon restoration of connectivity. The Contractor shall acquire and install all necessary hardware and software to make the Internet connection available for data transmission to the ODESS database. The hardware and software must be configured to allow remote access to the computer by USACE ODESS personnel. Coordination between

the dredging company's IT and ODESS Support may be required in order to configure remote access through any security, firewall, router, and telemetry systems. Telemetry systems must be capable of meeting these minimum reporting requirements in all operating conditions.

SOFTWARE REQUIREMENTS

ODESS personnel shall be responsible for installing and testing all ODESS software tools on the dedicated onboard ODESS tablet computer. No other software which conflicts with the ODESS function of recording and transmitting data shall be installed on the tablet computer. The Contractor shall be responsible for installing and/or maintaining any necessary manufacturer-provided software for the installed hardware. If any software problem occurs, the Contractor shall contact ODESS Support at ODESS@usace.army.mil or 1-877-840-8024.

The ODESS tablet computer shall have the following minimum software installed in support of the ODESS system:

Software	**Specification**
Operating System	Windows 10, Contractor-installed
Browser**	Chrome, Internet Explorer, Contractor-installed
ODESS Software	Field Collector (FC) tool, USACE ODESS Support Installed
Remote Access Software	Team Viewer, USACE ODESS Support-installed

**Latest version recommended, Chrome is preferred

Operations and Dredging Endangered Species System (ODESS)
USACE Sea Turtle Deflector Checklist for Hopper Dredges for USACE and USACE/Army-Permitted Projects

1. Read the contract plans and specs and/or all applicable permits (Dept. of the Army Permit, State Permits) to determine the contract or permit requirements for the protection of endangered sea turtles. (Each District spec or permit may be different.)
2. Read the Biological Opinion and any USACE Protocol, if available.
3. Develop a list of inspection requirements:
   a. Deflector leading edge angle (90° or less).
   b. Approach angle or leading edge plowing depth (6" or more).
   c. Aft rigid attachment of the deflector to the draghead (hinged or trunnion).
   d. Forward deflector attachment point (adjustable pinned or cable/chain with stop).
   e. Opening between draghead and deflector (4" x 4" max).
   f. Dredged material screening requirement (yes/no).
   g. Screen type requirement (inflow, overflow, or both).
   h. Inflow basket screen openings (4" x 4" max) and dredged material screening (100%).
   i. Lighting of the inflow and overflow screens and proper access for cleaning (must meet EM 385-1-1).
   j. UXO (Unexploded Ordnance) screening in use (yes/no).
   k. Structural design of the deflector (per the approved deflector submittal).
   l. Dredge operational requirements (starting/stopping the dredge pump, draghead plugging, raising the draghead, turning the dredge).

m. Dredging Quality Management (DQM) dredging data recording requirement. Is dredging data recording (drag elevation, slurry density, and velocity) required by specs or permit? If so, is it being collected, is DQM turned on, and is data being submitted?

n. Turtle trawling requirement. Is turtle trawling required by specs or permit? If so, is it being performed?

o. Turtle observer requirements (12 or 24 hours).

p. A copy of the approved turtle deflector submittal is on board the vessel.

q. Copies of the contract plans and specs or the Dept. of the Army permit are on board the vessel.

4. Review the turtle deflector submittal. (Do not allow dredging to start until the submittal is approved.)

   a. Structural soundness.

   b. Deflector leading edge angle (90° or less).

   c. Approach angles submitted for the project's dredging depths.

   d. 4" x 4" opening between the deflector and the draghead.

   e. Aft rigid deflector attachment to draghead (hinged or trunnion).

   f. Forward deflector attachment point (adjustable pinned or cable/chain with stop).

5. Ensure that the Contractor Quality Control (CQC) performs a pre-dredging inspection. The CQC is required to review and inspect all items in section 3.

6. Ensure that the CQC performs a startup-dredging inspection:

   a. The CQC is required to check the turtle deflector to see if the deflector is installed and adjusted for the required dredge depth of the project in accordance with the approved deflector submittal.

   b. The CQC is required to ensure that the drag tenders are operating the dredge pump and draghead in accordance with the specs/permit.

   c. The CQC should perform a paint test to ensure that the deflector is plowing at least 6" into the dredge material while the dragtender is consistently maintaining the submitted and approved approach angle to a tolerance of +0 to -4°.

   d. The CQC should note the inspection results in the Quality Control (QC) Daily Report.

7. Quality Assurance (QA) should perform a dredging operation inspection soon after the dredge starts dredging:

   a. Review and inspect all items in section 3.

b. Inspect the turtle deflector to ensure that the deflector is installed and adjusted for the required dredge depth of the project in accordance with the approved deflector submittal.

c. Require the contractor to perform a paint test to ensure that the deflector is plowing at least 6" into the dredge material while the dragtender is consistently maintaining the submitted and approved approach angle to a tolerance of +0 to -4°. (While over-penetration of the deflector may reduce production and increase fuel consumption of the dredge, it is allowed.)

d. Ride the dredge through at least one dredging cycle (from dredging to the dump and then back to the dredge site).

e. Watch the dragtender to ensure that he/she is operating the dredging equipment in accordance with the plans and specs:

   i Starting the dredge pump only when the draghead is firmly on the bottom by watching the slurry specific gravity and swell compensator.

   ii Reducing the slurry velocity to the dredge pump idle speed velocity before raising the draghead off the bottom.

   iii Consistently maintaining the approach angle to a tolerance of +0 to -4° whenever the draghead is on the bottom and the dredge pump is operating

   iv Raising the draghead off the bottom due to draghead plugging or ship crabbing.

f. Ensure that the lockout tagout procedure for cleaning the inflow and overflow screens meets EM 385-1-1.

g. Talk to the turtle observers to ensure that they are aware of contract and permit requirements and that they are inspecting the screens and deflectors and reporting any required maintenance to the dredge personnel. Also ensure that correct turtle observer forms are being used and filled out properly.

h. Talk to the dredge Captain about maintaining the screens and deflectors.

i. Ensure that DQM data is being sent to the National Dredging Quality Management Program.

j. Note all pre-dredge/post-dredge and followup inspections in the QA and the QC Daily Reports.

Project Name: _____

Project Location: _____

Contract No.: _____

Dept. of the Army Permit No.: _____

Dredging Company Name: _____

Dredge Name: _____

Contractor CQC Inspector's Name: _____

USACE Inspector Name: _____

Office Symbol: _____ Date of Inspection: _____

Comments: _____

_____

_____

_____

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Operations and Dredging Endangered Species System (ODESS)
USACE Sea Turtle Inspection Checklist for Hopper Dredges
National Dredging Quality Management (DQM) Program
Version 5 • July 2016
Page 4 of 4

Operations & Dredging Endangered Species System (ODESS)

Dredge Load

US Army Corps of Engineers®

District | Project | Contract | Dredge | Dredging Company

Load Number (*Required*)/Date | Start Date (*Required*) | Start Time (*24 hours*) (*Required*) | Stop Date (*Required*) | Stop Time (*24 hours*) (*Required*)

Port Screen Condition
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Bad

Starboard Screen Condition
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Bad

Overflow Screen Condition
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Bad

Inflow Screen Percent
- ☐ 25%
- ☐ 50%
- ☐ 75%
- ☐ 100%

Overflow Screen Percent
- ☐ 25%
- ☐ 50%
- ☐ 75%
- ☐ 100%

Other Screen Percent
- ☐ 25%
- ☐ 50%
- ☐ 75%
- ☐ 100%

Dragheads Used

Draghead Length (*ft*)

Draghead Width (*ft*)

Draghead Type
- ☐ California Style
- ☐ IHC
- ☐ IHC + Water Injection
- ☐ Wild Dragon
- ☐ Other (Specify)

Deflector Condition
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ None

UXO Screening in Use?
- ☐ Yes
- ☐ No

Material Type
- ☐ Clay
- ☐ Consolidated Material
- ☐ Mud
- ☐ Other
- ☐ Rock
- ☐ Sand - Course
- ☐ Sand - Fine
- ☐ Sand - Medium
- ☐ Sand - Mixed
- ☐ Shell
- ☐ Silt
- ☐ Unknown

Weather Conditions
- ☐ Sunny
- ☐ Cloudy
- ☐ Partly Cloudy

Beaufort Sea Scale
- ☐ 0 (0-1 kn, 0-0 ft)
- ☐ 1 (1-3 kn, 0-1 ft)
- ☐ 2 (4-6 kn, 1-2 ft)
- ☐ 3 (6-10 kn, 2-3.5 ft)
- ☐ 4 (10-16 kn, 3.5-6 ft)
- ☐ 5 (16-21 kn, 6-9 ft)
- ☐ 6 (21-27 kn, 9-13 ft)
- ☐ 7 (27-33 kn, 13-19 ft)
- ☐ 8 (33-40 kn, 19-25 ft)
- ☐ 9 (40-47 kn, 25-32 ft)
- ☐ 10 (47-55 kn, 32-41 ft)
- ☐ 11 (55-63 kn, 41-52 ft)
- ☐ 12 (>63 kn, >52 ft)

Wave Height (*ft*)

Wind Speed (*K*)

Wind Direction (°)

Tide
- ☐ High
- ☐ Low
- ☐ Slack
- ☐ Rising
- ☐ Falling
- ☐ Unknown

Air Temp (°C)

Surface Water Temp (°C)

Mid-Depth Water Temp (°C)

Bottom Water Temp (°C)

Trawling Being Conducted?
- ☐ Yes
- ☐ No

Any Incidents Involving Endangered or Protected Species?
- ☐ Yes
- ☐ No

If Yes, Which Species? (*Complete a Turtle or Sturgeon Incident form*)
- ☐ Marine Mammal
- ☐ Sea Turtle
- ☐ Sturgeon
- ☐ Other
- ☐ Unknown

Whale Sighting Notification Received?
- ☐ Yes
- ☐ No

Alert Sent to District?
- ☐ Yes
- ☐ No

Screen Contents
1 Port Screen
Contents (*incl. # of each item*)

2 Starboard Screen
Contents (*incl. # of each item*)

3 Overflow Screens
Contents (*incl. # of each item*)

4 Other Screen or Location (*Specify*)
Contents (*incl. # of each item*)

5 Port Draghead
Contents (*incl. # of each item*)

6 Starboard Draghead
Contents (*incl. # of each item*)

Comments

Observers Used/24 Hours

% Monitoring/Project
- ☐ None
- ☐ 25%
- ☐ 50%
- ☐ 75%
- ☐ 100%

Observer(s) Name(s) (*Req; Print*) | Observer(s) Signature(s) | Observer(s) Company

Notes:
- Screen Contents—Examples include sea turtle (sp.), sturgeon (sp.), shark (sp.), ray (sp.), other fish of note (sp.), horseshoe crab, blue crab, other crab species, coral, jellyballs, other species of note, environmental debris, and trash.

ODESS Form 1(7) - 071116

Operations & Dredging Endangered Species System (ODESS)

Marine Mammal Observation

US Army Corps of Engineers®

District | Project | Contract

Dredge | Dredging Company | Load Number (*Required*)/Date

Start Date (*Required*) | Start Time (*24 hours*) (*Required*) | End Date (*Required*) | End Time (*24 hours*) (*Required*)

Beaufort Sea State

- ☐ 0 (0-1 kn, 0-0 ft)
- ☐ 1 (1-3 kn, 0-1 ft)
- ☐ 2 (4-6 kn, 1-2 ft)
- ☐ 3 (6-10 kn, 2-3.5 ft)
- ☐ 4 (10-16 kn, 3.5-6 ft)
- ☐ 5 (16-21 kn, 6-9 ft)
- ☐ 6 (21-27 kn, 9-13 ft)
- ☐ 7 (27-33 kn, 13-19 ft)
- ☐ 8 (33-40 kn, 19-25 ft)
- ☐ 9 (40-47 kn, 25-32 ft)
- ☐ 10 (47-55 kn, 32-41 ft)
- ☐ 11 (55-63 kn, 41-52 ft)
- ☐ 12 (>63 kn, >52 ft)

Species Observed (*Required*)

- ☐ Bryde's/Sei Whale #____ Est. Length (ft.) ____
- ☐ Fin Whale #____ Est. Length (ft.) ____
- ☐ Humpback Whale #____ Est. Length (ft.) ____
- ☐ Manatee #____ Est. Length (ft.) ____
- ☐ Minke Whale #____ Est. Length (ft.) ____
- ☐ Pilot Whale #____ Est. Length (ft.) ____
- ☐ Right Whale #____ Est. Length (ft.) ____
- ☐ Unknown #____ Est. Length (ft.) ____

Air Temp (℃) | Water Temp (℃) | Winds (*K*) | Seas (*ft*) | Cloud Cover (%)

Magnetic Bearing to Sighting | Estimated Distance | Vessel's Heading | Heading of Animal(s)

Coloration | Fins or Flippers Observed

Behaviors Observed | Surfacing Intervals Time | Surfacing Intervals Distance

Comments (*Was the behavior of the animal(s) affected by the vessel? How far did the animal(s) move? Who was notified?*)

Observer(s) Name(s) (*Required; Print*) | Observer(s) Signature(s) | Observer(s) Company

ODESS Form 4(7) - 071116

Operations & Dredging Endangered Species System (ODESS)

Sturgeon Incident

US Army Corps of Engineers®

District | Project | Contract

Dredge | Dredging Company

Species (*Required*)
☐ Atlantic ☐ Gulf ☐ Unknown
☐ Green ☐ Shortnose

Load Number (*Required*)/Date | Recovery Date (*Required*) | Recovery Time (*24 hours*) (*Required*)

Is this a Take? (*Required*)
☐ Yes
☐ No

Incident/Take Description

Location Specimen Recovered
☐ Deck
☐ Draghead
☐ Inflow Cage (*Circle one*) Starboard/Port/Other
☐ Hopper
☐ Overflow Screen (*Circle one*) Starboard/Port/Other
☐ Pipe

Specimen Condition
☐ Alive
☐ Dead
☐ Fresh Dead
☐ Moderately Decomposed
☐ Severely Decomposed
☐ Skeleton
☐ Skeleton Old Bone
☐ Undetermined

Rows of Preanal Shields (*SSN = 1/ATL = 2*)

Location Comment

Dorsal Scutes (*SSN = 8-13/ATL = 7-16*) | # Lateral Scutes (*SSN = 22-33/ATL = 24-35*) | # Ventral Scutes (*SSN = 7-11/ATL = 6-9*)

Fork Length (*cm/in*) | Standard Length (*cm/in*) | Total Length (*cm/in*)

Mouth Width (*cm/in*) | Head Width at Eyes (*cm/in*) | Other (*cm/in*)

Genetic Samples Taken?
☐ Yes ☐ No

Samples Frozen/Preserved?
☐ Yes ☐ No

Photo Attached?
(*If Yes, label the species, date, geographic site, and dredge name on the photo*)
☐ Yes ☐ No

Comments

Use these diagrams to illustrate the specimen/part that was recovered.

Observer(s) Name(s) (*Required; Print*) | Observer(s) Signature(s) | Observer(s) Company

ODESS Form 3(6)-071116

Operations & Dredging Endangered Species System (ODESS)

Turtle Incident

US Army Corps of Engineers®

District

Project

Contract

Dredge

Dredging Company

Species *(Required)*
- ☐ Green
- ☐ Hawksbill
- ☐ Kemp's Ridley
- ☐ Leatherback
- ☐ Loggerhead
- ☐ Unknown

Load Number *(Required)*/Date

Is this a Take? *(Required)*
- ☐ Yes
- ☐ No

Project Incident # *(Required)*

Recovery Date *(Required)*

Recovery Time *(24 hours) (Required)*

Incident/Take Description

Air Temp (℃)

Surface Water Temperature (℃)

Mid-Depth Water Temperature (℃)

Bottom Water Temperature (℃)

Location Specimen Recovered
- ☐ Deck
- ☐ Draghead
- ☐ Inflow Cage *(Circle one)* Starboard/Port/Other
- ☐ Hopper
- ☐ Overflow Screen *(Circle one)* Starboard/Port/Other
- ☐ Pipe

Location Comment

Age Class
- ☐ Juvenile *(10.1-80 cm)*
- ☐ Sub-Adult *(80.1-87 cm)*
- ☐ Adult *(>87 cm)*
- ☐ Unknown

Gender
- ☐ Female
- ☐ Male
- ☐ Unknown

Specimen Condition
- ☐ Alive
- ☐ Dead
- ☐ Fresh Dead
- ☐ Moderately Decomposed
- ☐ Severely Decomposed
- ☐ Skeleton
- ☐ Skeleton Old Bone
- ☐ Undetermined

How Gender Determined
- ☐ Tail Length
- ☐ Eggs Observed
- ☐ Other

Photo Attached? *(If Yes, label the species, date, geographic site, and dredge name on the photo)*
- ☐ Yes ☐ No

Tag Type
- ☐ Flipper
- ☐ Pit
- ☐ Other *(Specify)*

Head Width *(cm/in)*

Tag Number

Plastron Length *(cm/in)*

Carapace Straight Length *(cm/in)*

Carapace Curved Length *(cm/in)*

Tag Date

Plastron Width *(cm/in)*

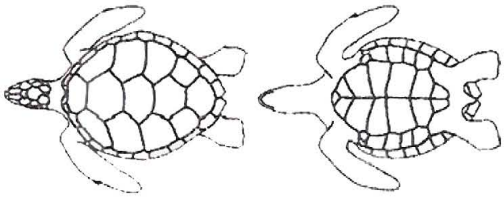
Carapace Straight Width *(cm/in)*

Carapace Curved Width *(cm/in)*

Genetic Samples Taken?
- ☐ Yes
- ☐ No

Final Disposition of Specimen

Use these diagrams to illustrate the specimen/part that was recovered.



Comments

Observer(s) Name(s) *(Required; Print)*

Observer(s) Signature(s)

Observer(s) Company

ODESS Form 2(6) - 071116

Operations & Dredging Endangered Species System (ODESS)

Trawling Report

US Army Corps of Engineers®

Date _____ Dredge Site _____ Dredge _____

Trawler _____ Biologist(s) _____ Captain _____

Tide (Time/High or Low) _____ Hrs ☐ H ☐ L _____ Hrs ☐ H ☐ L _____ Hrs ☐ H ☐ L _____ Hrs ☐ H ☐ L

Water Temperature (°C) _____ Air Temperature (°C) _____ Wind Speed/Direction _____ Wave Height _____

Bottom Type _____ Station #s _____

Tow #	Start Time	Start Lat/Long dd mm.mm	Stop Time	Stop Lat/Long dd mm.mm	Tide: Ebb/Flood	Water Depth	Vessel Heading/Speed	Turtles? Sturgeon? Species?	By-catch/Comments (Change in Weather/Water Temperature, Net Damage, etc.)

ODESS Form 6(2) - 071116

Cooperative Marine Turtle Tagging Program (CMTTP) Tagging Data Form

COOPERATIVE MARINE TURTLE TAGGING PROGRAM (CMTTP)
TAGGING DATA FORM

SPECIES:_____	**DATE CAPTURED:**	DAY__	MO____	YR____	**DATE RELEASED:**	DAY____	MO____	YR____

TAG NUMBERS (LIST ALL NUMBERS AND LETTER PREFIXES; CIRCLE TAG NUMBERS ALREADY ON THE TURTLE [="OLD TAGS"]):

LEFT FRONT: _____	**RIGHT FRONT:**_____	**LEFT REAR:**_____	**RIGHT REAR:**_____

PIT TAG#:_____	**LOCATION OF PIT TAG:**_____

WAS TURTLE CARRYING TAGS WHEN ENCOUNTERED?:	YES	NO	IF YES, THEN CIRCLE CORRECT STATEMENT:

1. RECAPTURE OF SAME PROJECT TURTLE (EITHER WITHIN SEASON OR BETWEEN SEASONS)
2. RECAPTURE OF DIFFERENT PROJECT TURTLE (NOT A TAG YOUR GROUP APPLIED)

TAG RETURN ADDRESS:

ORGANIZATION TAGGING AND/OR RELEASING TURTLE (INCLUDE AREA CODE/PHONE NUMBER; AND EMAIL):

PROJECT TYPE (CIRCLE ONE):

[NESTING BEACH]	[TANGLE NET]	[POUND NET]	[HAND CATCH]	[STRANDING]	[OTHER, DESCRIBE]

IF NESTING BEACH: DID TURTLE NEST?	YES	NO	UNDETERMINED

FACILITY WHERE TURTLE WAS BEING HELD:

DESCRIBE CAPTURE LOCATION. BE SPECIFIC, INCLUDE COUNTY AND LAT/LONG IF AVAILABLE

DESCRIBE RELEASE LOCATION. BE SPECIFIC, INCLUDE COUNTY AND LAT/LONG IF AVAILABLE.

TURTLE MEASUREMENTS:

STRAIGHT CARAPACE LENGTH (SCL MINIMUM):	_____ CM	_____ INCHES
STRAIGHT CARAPACE LENGTH (SCL NOTCH-TIP):	_____ CM	_____ INCHES
STRAIGHT CARAPACE WIDTH (SCW):	_____ CM	_____ INCHES
CURVED CARAPACE LENGTH (CCL MINIMUM):	_____ CM	_____ INCHES
CURVED CARAPACE LENGTH (CCL NOTCH-TIP)	_____ CM	_____ INCHES
CURVED CARAPACE WIDTH (CCW):	_____ CM	_____ INCHES
WEIGHT:	_____ KG	_____ LBS

TURTLE WAS INSPECTED AND/OR SCANNED FOR:

TAG SCARS:	YES	NO	WHERE LOCATED?
PIT TAGS:	YES	NO	WHAT FREQUENCY?
MAGNETIC WIRES:	YES	NO	WHERE LOCATED?
LIVING TAGS:	YES	NO	WHERE LOCATED?

ADDITIONAL REMARKS OR DATA ON BACK OF FORM:	YES	NO

MAIL COMPLETED FORM TO:
ARCHIE CARR CENTER FOR SEA TURTLE RESEARCH, DEPARTMENT OF ZOOLOGY, PO BOX 118525
UNIVERSITY OF FLORIDA, GAINESVILLE, FL 32611 USA
and
SCDNR Marine Turtle Program, PO Box 12559, Charleston, SC 29422

Protocol for Collecting Tissue from Live and Dead Turtles for Genetic Analysis

Appendix II:

PROTOCOL FOR COLLECTING TISSUE FROM DEAD TURTLES FOR GENETIC ANALYSIS

Method for Dead Turtles

<<<IT IS CRITICAL TO USE A NEW SCALPEL BLADE AND GLOVES FOR EACH TURTLE TO AVOID CROSS-CONTAMINATION OF SAMPLES>>>

1. Put on a new pair of latex gloves.
2. Use a new disposable scalpel to cut out an approx. 1 cm (½ in) cube (bigger is NOT better) piece of muscle. Easy access to muscle tissue is in the neck region or on the ventral side where the front flippers "insert" near the plastron. It does not matter what stage of decomposition the carcass is in.
3. Place the muscle sample on a hard uncontaminated surface (plastron will do) and make slices through the sample so the buffer solution will penetrate the tissue.
4. Put the sample into the plastic vial containing saturated NaCl with 20% DMSO *(SEE BELOW)
5. Use the pencil to write the stranding ID number (observer initials, year, month, day, turtle number by day), species, state and carapace length on the waterproof paper label and place it in the vial with the sample. EXAMPLE: For a 35.8 cm curved carapace length green turtle documented by Jane M. Doe on July 15, 2001 in Georgia, the label should read "JMD20010715-01, C. mydas, Georgia, CCL=35.8 cm". If this had been the third turtle Jane Doe responded to on July 15, 2001, it would be JMD20010715-03.
6. Label the outside of the vial with the same information (stranding ID number, species, state and carapace length) using the permanent marker.
7. Place clear scotch tape over the writing on the vial to protect it from being smeared or erased.
8. Wrap parafilm around the cap of the vial by stretching it as you wrap.
9. Place vial within whirlpak and close.
10. Dispose of the scalpel.
11. Note on the stranding form that a part was salvaged, indicating that a genetic sample was taken and specify the location on the turtle where the sample was obtained.
12. Submit the vial with the stranding report to your state coordinator. State coordinators will forward the reports and vials to NMFS for processing and archiving.

*The 20% DMSO buffer in the plastic vials is nontoxic and nonflammable. Handling the buffer without gloves may result in exposure to DMSO. This substance soaks into skin very rapidly and is commonly used to alleviate muscle aches. DMSO will produce a garlic/oyster taste in the mouth along with breath odor. The protocol requires that you WEAR gloves each time you collect a sample and handle the buffer vials.

The vials (both before and after samples are taken) should be stored at room temperature or cooler. If you don't mind the vials in the refrigerator, this will prolong the life of the sample. DO NOT store the vials where they will experience extreme heat (like in your car!) as this could cause the buffer to break down and not preserve the sample properly.

Questions:

Sea Turtle Program
NOAA/NMFS/SEFSC
75 Virginia Beach Drive
Miami, FL 33149
305-361-4207

THANK YOU FOR COLLECTING SAMPLES FOR SEA TURTLE GENETIC RESEARCH!!

Genetic Sample Kit Materials – DEAD turtles

latex gloves
single-use scalpel blades (Fisher Scientific 1-800-766-7000, cat. # 08-927-5A)
plastic screw-cap vial containing saturated NaCl with 20% DMSO, wrapped in parafilm
waterproof paper label, ¼" x 4"
pencil to write on waterproof paper label
permanent marker to label the plastic vials
scotch tape to protect writing on the vials
piece of parafilm to wrap the cap of the vial
- whirl-pak to return/store sample vial

Appendix III:

PROTOCOL FOR COLLECTING TISSUE FROM LIVE TURTLES FOR GENETIC ANALYSIS

Method for Live Turtles

<<<IT IS CRITICAL TO USE A NEW BIOPSY PUNCH AND GLOVES FOR EACH TURTLE TO AVOID CROSS-CONTAMINATION OF SAMPLES>>>

1. Turn the turtle over on its back.
2. Put on a new pair of latex gloves.
3. Swab the entire cap of the sample vial with alcohol.
4. Wipe the ventral and dorsal surfaces of the rear flipper 5-10 cm from the posterior edge with the Betadine/iodine swab.
5. Place the vial under the flipper edge to use the cleaned cap as a hard surface for the punch.
6. Press a new biopsy punch firmly into the flesh as close to the posterior edge as possible and rotate one complete turn. Cut all the way through the flipper to the cap of the vial.
7. Wipe the punched area with Betadine/iodine swab; rarely you may need to apply pressure to stop bleeding.
8. Use a wooden skewer to transfer the sample from the biopsy punch into the plastic vial containing saturated NaCl with 20% DMSO *(SEE BELOW)
9. Use the pencil to write the stranding ID number (observer initials, year, month, day, turtle number by day), species, state and carapace length on the waterproof paper label and place it in the vial with the sample. EXAMPLE: For a 35.8 cm curved carapace length green turtle documented by Jane M. Doe on July 15, 2001 in Georgia, the label should read "JMD20010715-01, C. mydas, Georgia, CCL=35.8 cm". If this had been the third turtle Jane Doe responded to on July 15, 2001, it would be JMD20010715-03.
10. Label the outside of the vial with the same information (stranding ID number, species, state and carapace length) using the permanent marker.
11. Place clear scotch tape over the writing on the vial to protect it from being smeared or erased.
12. Wrap parafilm around the cap of the vial by stretching it as you wrap.
13. Place vial within whirlpak and close.
14. Dispose of the biopsy punch.
15. Note on the stranding form that a part was salvaged, indicating that a genetic sample was taken and specify the location on the turtle where the sample was obtained.
16. Submit the vial with the stranding report to your state coordinator. State coordinators will forward the reports and vials to NMFS for processing and archiving.

*The 20% DMSO buffer in the plastic vials is nontoxic and nonflammable. Handling the buffer without gloves may result in exposure to DMSO. This substance soaks into skin very rapidly and is commonly used to alleviate muscle aches. DMSO will produce a garlic/oyster taste in the mouth along with breath odor. The protocol requires that you WEAR gloves each time you collect a sample and handle the buffer vials.

The vials (both before and after samples are taken) should be stored at room temperature or cooler. If you don't mind the vials in the refrigerator, this will prolong the life of the sample. DO NOT store the vials where they will experience extreme heat (like in your car!) as this could cause the buffer to break down and not preserve the sample properly.

Questions:

Sea Turtle Program

NOAA/NMFS/SEFSC

75 Virginia Beach Drive

Miami, FL 33149

305-361-4207

THANK YOU FOR COLLECTING SAMPLES FOR SEA TURTLE GENETIC RESEARCH!!

Genetic Sample Kit Materials – LIVE turtles

- latex gloves
  alcohol swabs
  Betadine/iodine swabs
  4-6 mm biopsy punch – sterile, disposable (Moore Medical Supply 1-800-678-8678, part #0052442)
  plastic screw-cap vial containing saturated NaCl with 20% DMSO, wrapped in parafilm
  wooden skewer
  waterproof paper label, ¼" x 4"
- pencil to write on waterproof paper label
  permanent marker to label the plastic vials
  scotch tape to protect writing on the vials
  piece if parafilm to wrap the cap of the vial
  whirl-pak to return/store sample vial

Sea Turtle Handling and Resuscitation Guidelines

Appendix IV: SEA TURTLE HANDLING AND RESUSCITATION GUIDELINES

Any sea turtles taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to the following procedures:

A) Sea turtles that are actively moving or determined to be dead (as described in paragraph (B)(4) below) must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

B) Resuscitation must be attempted on sea turtles that are comatose or inactive by:

1. Placing the turtle on its bottom shell (plastron) so that the turtle is right side up and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 to 24 hours. The amount of elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.

2. Sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, carapace, and flippers is the most effective method in keeping a turtle moist.

3. Sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, if possible) must be returned to the water in the same manner as that for actively moving turtles.

4. A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise, the turtle is determined to be comatose or inactive and resuscitation attempts are necessary.

Any sea turtle so taken must not be consumed, sold, landed, offloaded, transshipped, or kept below deck.

These guidelines are adapted from 50 CFR § 223.206(d)(1). Failure to follow these procedures is therefore a punishable offense under the Endangered Species Act.

Online Resources

REFERENCE THE GRBO AND REVISIONS ONLINE AT:

https://www.fisheries.noaa.gov/content/endangered-species-act-section-7-biological-opinions-southeast

ADEM Water Quality and Coastal Zone Consistency Certifications

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

May20, 2020

Department of the Army
Mobile District, U.S. Army Corps of Engineers
Mr. Todd A. Nettles, Acting Chief
Planning and Environmental Division
Post Office Box 2288
Mobile, Alabama 36628-0001

RE: State of Alabama Water Quality Certification (WQC) Pursuant to Clean Water Act (CWA) §401(a)
Mobile Harbor Federal Navigation
U.S. Army Corps of Engineers (USACE) Joint Public Notice (JPN): FP15-MH01-10
Alabama Department of Environmental Management (ADEM) Tracking Code: ADEM-2018-345-WQC-COEP

Dear Mr. Nettles:

On April 13, 2020, the ADEM received the USACE's request for WQC for the above referenced federal activity.

In this proposed federal activity, the U.S. Army Corps of Engineers would widen the Mobile Harbor Navigation Channel utilizing mechanical and hydraulic dredging methods. The area would be dredged to a total depth of -56 - 54 feet within a previously dredged area of Mobile Bay. Minor bend easings would occur at the double bends in the Bar Channel approach to the Bay Channel. The Bay Channel would be widened from 400 to 500 feet to a total depth of 54 feet from the mouth of Mobile Bay northward for three nautical miles to provide two-way traffic area for passing. In addition, the Choctaw Pass Turning Basin will be expanded 250 feet to the south to a total depth of 56 feet for safe turning. The purpose is to provide sufficient water depth and lateral clearance for larger vessels experiencing transportation delays and inefficiencies due to limited channel width and depth of the existing channel dimensions. Dredged material will be disposed of in established, protected, and previously approved disposal areas which include the Relic Shell Mined Area, Sand Island Beneficial Use Area, and the Ocean Dredged Material Site.

Action pertinent to WQC is required by CWA §401(a)(1), 33 U.S.C. §1251, et. seq. If conducted in accordance with the conditions prescribed herein, there is reasonable assurance that the discharge resulting from the proposed activities will not violate applicable water quality standards established under §303 of the CWA and §22-22-9(g), Code of Alabama (1975). By this letter, the ADEM hereby notifies the USACE that CWA §401 WQC is **granted.** This WQC terminates with the expiration of FP15-MH01-10. This WQC only addresses potential discharges to state waters resulting from the activities. ADEM certifies that there are no applicable effluent limitations under §301 and §302 nor applicable standards under §306 and §307 of the CWA in regard to the activities specified.

In recognition that projects are site specific in nature and conditions can change during project implementation, the ADEM reserves the right to request additional information or request additional management measures to be implemented, as necessary on a case-by-case basis, in order to ensure the protection of water quality and coastal resources. Deviation from the approved project design may necessitate additional coordination.

This WQC does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of Federal, State, or local laws or regulations and in no way purports to vest in the USACE title to lands now owned by the State of Alabama nor shall it be construed as acquiescence by the State of Alabama of lands owned by the State that may be in the USACE's possession. This certification is not transferable without prior written notice and approval of the ADEM. Upon such notice, the Director may require submission of additional information.

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

Adherence to the following conditions is required in order to ensure protection of water quality.

1. Appropriate and Effective Best Management Practices (BMPs) shall be implemented to minimize turbidity impacts to the maximum extent practicable. Turbidity generated by the activity must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units above background in state waters. If turbidity generated from project exceeds acceptable levels, operations must cease until turbidity is restored to acceptable levels. The ADEM Mobile Coastal office (251) 304-1176 must be notified of resultant work stoppage.

2. Upon the loss or failure of any treatment facility, BMP, or other management control measure as identified by responsible on-site staff during day-to-day operations or as identified by ADEM technical staff during inspections, work/activity and all discharges shall, where necessary to maintain compliance with this WQC, be suspended, halted, reduced, or otherwise controlled until effective treatment is restored.

3. The USACE and/or its assigns are responsible for the condition of land-based dredge spoil disposal areas for the life of the placement activity and until the disposal areas are reclaimed or adequately stabilized, and for pumping and discharge rates to ensure settling of suspended solids within the confines of the spoil disposal areas sufficient to ensure that turbidity in the return water will not cause substantial visible contrast within the receiving waters, or result in an increase of 50 NTUs above background turbidity levels in the receiving waters. The salinity of return waters shall be similar to that of the receiving waters.

4. Spoil material utilized beneficially through strategic placement onto state water bottoms shall be free of toxic pollutants in toxic amounts.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter. Allen Phelps is the Mobile-Coastal office contact for this project; he may be reached by phone at 251.304.1176 or by e-mail at cap@adem.alabama.gov.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

cc: EPA, Molly Martin
DCNR.Coastal@dcnr.alabama.gov
USACE, Donald Mroczko

ASH/jsb/cap

File: 401WQC/12532

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
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May 20, 2020

Department of the Army
Mobile District, U.S. Army Corps of Engineers
Mr. Todd A. Nettles, Acting Chief
Planning and Environmental Division
Post Office Box 2288
Mobile, Alabama 36628-0001

RE: State of Alabama Concurrence with the U.S. Army Corps of Engineers' Coastal Consistency Determination
Modifications to the Mobile Harbor Federal Navigation Channel
U.S. Army Corps of Engineers (USACE) Joint Public Notice (JPN): FP15-MH01-10
Alabama Department of Environmental Management (ADEM) Tracking Code: ACAMP-2018-345-FC-FAA-COEP

Dear Mr. Nettles:

On April 13, 2020 the ADEM received the USACE's Consistency Determination (CD) that the proposed federal activity, referenced above, is consistent with the Alabama Coastal Area Management Program.

In this proposed federal activity, the U.S. Army Corps of Engineers would widen the Mobile Harbor Navigation Channel utilizing mechanical and hydraulic dredging methods. The area would be dredged to a total depth of -56 -54 feet within a previously dredged area of Mobile Bay. Minor bend easings would occur at the double bends in the Bar Channel approach to the Bay Channel. The Bay Channel would be widened from 400 to 500 feet to a total depth of 54 feet from the mouth of Mobile Bay northward for three nautical miles to provide two-way traffic area for passing. In addition, the Choctaw Pass Turning Basin will be expanded 250 feet to the south to a total depth of 56 feet for safe turning. The purpose is to provide sufficient water depth and lateral clearance for larger vessels experiencing transportation delays and inefficiencies due to limited channel width and depth of the existing channel dimensions. Dredged material will be disposed of in established, protected, and previously approved disposal areas which include the Relic Shell Mined Area, Sand Island Beneficial Use Area, and the Ocean Dredged Material Site.

Pursuant to Title 15 C.F.R. §930.41(a) and based upon review of the information submitted by the USACE, by this letter the ADEM hereby notifies the USACE of its **concurrence** with the USACE's CD.

Should it become necessary to modify the activities described in the JPN after this concurrence has been issued, a revised CD may be necessary pursuant to Title 15 C.F.R. §930.46. Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter. Allen Phelps is the Mobile-Coastal office contact for this project; he may be reached by phone at 251.304.1176 or by e-mail at cap@adem.alabama.gov.

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
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2204 Perimeter Road
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Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

cc: EPA, Molly Martin
DCNR.Coastal@dcnr.alabama.gov
USACE, Donald Mroczko

ASH/jsb/cap

File: CZCERT/12532

Letter from U.S. Fish and Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:
2016-CPA-0130

DEC 21 2018

Lekesha W. Reynolds
Chief, Coastal Environment Team
Department of the Army
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, AL 36628

Dear Ms. Reynolds:

Thank you for your letter received by our office on November 20, 2018, requesting Endangered Species Act (ESA) Section 7 concurrence on the Army Corps of Engineers (USACE) effects determination for the Mobile Harbor Federal Navigation Project Draft Integrated General Reevaluation Report with Supplemental Environmental Impact Statement. The project is located in Mobile County, Alabama. Our comments are provided in accordance with provisions of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

We understand that you determined this project may affect, but is not likely to adversely affect the following federally listed species:

West Indian manatee (*Trichechus manatus)* – Threatened
Wood stork (*Mycteria americana*) - Threatened
Piping plover (*Charadrius melodus*) – Threatened
Red knot (*Calidris canutus rufa*) – Threatened
Southern clubshell (*Pleurobema decisum*) - Endangered
Inflated heelspliter (*Potamilus inflatus*) – Threatened
Gopher tortoise (*Gopherus polyphemus*) – Threatened
Eastern indigo snake (*Drymarchon corais couperi*) – Endangered
Black pine snake (*Pituophis melanoleucus lodingi*) – Threatened
Alabama red-bellied turtle (*Pseudemys alabamensis*) - Endangered

We are concerned about the potential indirect or direct physical impact on manatees that may be migrating through the project area during the proposed dredging operation. Direct impacts could occur from either boat, barge, cutterhead, or hydraulic pipeline strikes. Because manatees are known to seasonally occur in the Mobile channel, and could be affected by this activity, we believe that a "may affect" situation exists for the manatee.

PHONE: 251-441-5181 FAX: 251-441-6222

Ms. Lekesha W. Reynolds 2

You have proposed to implement our "Standard Manatee Construction Conditions" for this project. We believe that if these conditions can be implemented, then there will be no adverse impact to this species and further consultation will not be required for the manatee. If these steps cannot be exercised, or there is an occurrence of collision with and/or injury to a manatee, because of the proposed project, then further consultation may be required.

Based upon a review of our records and the information provided in your letter, we concur with your determination that the project actions may affect, but are not likely to adversely affect the species listed above.

We also understand that, for this project, Gulf sturgeon and sea turtles fall under the jurisdiction of the National Marine Fisheries Service (NMFS). USACE will utilize the NMFS issued Gulf Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining Areas Using Hopper Dredges by USACE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287).

Thank you for the opportunity to provide ESA Section 7 concurrence for your project. For further discussion, please contact Mr. Josh Rowell of my staff at (251) 441-5836. Please refer to the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

Letter from NOAA National Marine Fisheries Service

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

September 7, 2018 F/SER46/BH:jk
225/389-0508

Ms. Jennifer L. Jacobson
Planning and Environment Division
Mobile District Environmental Branch
U.S. Army Corps of Engineers
Post Office Box 2288
Mobile, Alabama 86628-0001

Dear Ms. Jacobson:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Draft Integrated General Reevaluation Report with Supplemental Environmental Impact Statement (SEIS), dated July 24, 2018, on the "**Mobile Harbor Navigation Project**." The U.S. Army Corps of Engineers (USACE) proposes to conduct maintenance dredging and placement activities. The maintenance dredging includes a navigation channel from the Gulf of Mexico to turning basins near the Cochrane Bridge, Alabama State Docks, and McDuffie Island. The following is provided in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and 600.920 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; P.L. 104-297).

The NMFS provided comments to the public notice for the project by letter dated January 25, 2017, recommending the beneficial use of dredge material. The USACE responded by letter dated February 21, 2017, acknowledging the comments. The maintenance dredging will generate approximately 5.5 million cubic yards of sediment annually. As proposed in the Public Notice, the sediment would be disposed at the Mobile Offshore Dredged Material Disposal Site (ODMDS), open bay thin-layer disposal areas, the Sand Island Beneficial Use Area (SIBUA), Blakely Island, and Gilliard Island.

Section 2.5.4 of the SEIS confirms little change to water quality parameters such as turbidity, salinity, and dissolved oxygen will result from the project. Due to NMFS' early involvement as a cooperating agency and close coordination with USACE, the project has been designed in such a way as to not have a substantial adverse effect on EFH or federally managed fishery species in Mobile Bay and surrounding waters. The NMFS Habitat Conservation Division does not object to the project as proposed and agrees with USACE's determination the project will not adversely affect EFH.

We appreciate your consideration of our comments. If you wish to discuss this project further or have questions concerning our recommendations, please contact Brandon Howard at (225) 389-0508, extension 203.

Sincerely,

Virginia M. Fay

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Paul_Necaise@fws.gov
F/SER46, Swafford
F/SER4, Dale, Fay, Silverman
Files

Letter from Alabama State Historic Preservation Officer

ALABAMA HISTORICAL COMMISSION

468 South Perry Street
P.O. Box 300900
Montgomery, Alabama 36130-0900
334-242-3184 / Fax: 334-240-3477

Lisa D. Jones
Executive Director
State Historic Preservation Officer

July 6, 2020

Patrick O'Day
Corps of Engineers
P.O. Box 2288
Mobile, AL 36628-0001

Re: AHC 20-1051
CRA
Mobile Harbor Phase II Diver Verification Survey Report
Mobile County

Dear Mr. O'Day:

Upon review of the cultural resource assessment conducted for the above referenced project, we have determined that project activities will have no effect on cultural resources eligible for or listed on the National Register of Historic Places. Therefore, we concur with the proposed project activities.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Alabama Burial Act (*Code of Alabama* 1975, §13A-7-23.1, as amended; Alabama Historical Commission Administrative Code Chapter 460-X-10 Burials) should be followed. This stipulation shall be placed on the construction plans to insure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Amanda McBride at 334.230.2692 or Amanda.McBride@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Wofford

Lee Anne Wofford
Deputy State Historic Preservation Officer

LAW/amh

Section 103 Concurrence from EPA

UNITED STATES ENVIRONMENTALPROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-3104

July 14, 2020

Mr. Todd A. Nettles
Acting Chief-Planning and Environmental Division
U.S. Army Corps of Engineers-Mobile District
P.O. Box 2288
Mobile, Alabama 36628

Dear Mr. Nettles:

This letter is in response to your request for concurrence on the proposed disposal of new work dredged material from the Mobile Harbor GRR Project into the Mobile Ocean Dredged Material Disposal Site (ODMDS). We received your concurrence request and evaluation of dredged material suitability on June 16, 2020 with additional information provided on July 6, 2020.

Pursuant to Section 103(c) of the Marine Protection, Research, and Sanctuaries Act (Act), as amended, concurrence from the U.S. Environmental Protection Agency is based upon compliance with the criteria, conditions and restrictions established pursuant to Sections 102(a) [environmental criteria], and Section 102(c) [disposal site designation and management] of the Act. Based upon our review of the information you provided, we concur that the proposed new work dredged material from the Mobile Harbor GRR Project meets the criteria for ocean disposal as proposed and with the conditions described below.

The proposed project includes new work dredging parts of the navigation channel segments of the Mobile Harbor Federal Navigation Project including the River Channel, the Bay Channel, and Bar Channel. The Choctaw Pass Turning Basin is also included. Dredged material volumes are estimated to be approximately 17 million cubic yards.

Our concurrence on the disposal of this material is contingent upon compliance with all specifications and conditions of the Mobile ODMDS Site Management and Monitoring Plan (SMMP). Specifically, disposal shall occur no less than 330 feet (100 meters) inside the site boundaries of the ODMDS. In accordance with the SMMP, the USACE or site user is required to conduct post-disposal bathymetric surveys within 30 days and submit a final disposal summary report to the EPA within 90 days of project completion. Disposal will be completed prior to leaving the ODMDS boundaries as indicated by hull status showing that the hopper doors are closed. All reporting should be consistent with the SMMP. Notification of initiation must be provided 15 days in advance of the start date to EPA. Disposal monitoring data

shall be provided to the EPA electronically on a weekly basis. The operator shall notify the USACE and the EPA within 24 hours if a violation of the contract and/or concurrence conditions occur during disposal operations. At no time may any debris be placed in the ODMDS. In addition, the SMMP also requires that monitoring and precautions be taken to protect sea turtles and Gulf sturgeon when using hopper dredges in accordance with the National Marine Fisheries Service *Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredges by Corps Galveston, New Orleans, Mobile, and Jacksonville Districts,* or any version current as of the time of dredging and disposal. This concurrence is based on dredging by hydraulic methods and load volumes not to exceed 15,000 cubic yards. Furthermore, this concurrence is conditioned on the EPA's review and approval of any relevant sections of dredging contract specifications addressing ocean disposal.

A copy of the current SMMP (amended version of March 2019) must be provided to the contractor (or prospective contractors) and EPA must be notified that the document has been provided to them. If possible, it may be worthwhile to share the upcoming SMMP revision to avoid potential issues once that SMMP becomes effective.

The EPA reserves the right to provide an amended concurrence if changes are required to manage the ODMDS. Revisions to the SMMP may also require the EPA to provide an amended concurrence.

The EPA' s concurrence is effective for a three-year period as of the date of this letter. If you have any questions concerning this letter, please contact Dr. Wade Lehmann at (404) 562-8082.

Sincerely,

JEANEANNE GETTLE
Digitally signed by JEANEANNE GETTLE
Date: 2020.07.14 08:45:24 -04'00'

Jeaneanne M. Gettle, Director
Water Division

Mobile Harbor ODMDS Site Management and Monitoring Plan (SMMP)

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MOBILE DISTRICT
P.O. BOX 2288
MOBILE, AL 36628-0001

REPLY TO
ATTENTION OF

CESAM-PD-E 22 February 2019

MEMORANDUM FOR THE DISTRICT COMMANDER

SUBJECT: Mobile 4.75-square nautical mile (nm^2) Ocean Dredged Material Management Site (ODMDS) Site Management and Monitoring Plan (SMMP)

1. PROBLEM. It is the responsibility of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) pursuant to Section 102 of the Marine, Protection, Research and Sanctuaries Act (MPRSA) of 1972 to manage and monitor each designated ODMDS. All ODMDSs must have a current SMMP in order to actively utilize the site for dredged material placement. The SMMP for the Mobile 4.75-nm^2 ODMDS must be extended for 2 years to ensure continue maintenance operations can occur for the Federal Mobile Harbor navigation project.

2. RECOMMENDATION. It is recommended that the District Commander initial the enclosed Memorandum.

APPROVED SM SEE ME_____ OTHER_____

3. BACKGROUND AND DISCUSSION.

a. The existing Mobile 4.75 nm^2 ODMDS was previously designated by the EPA in accordance with Section 102 of the MPRSA of 1972. Continued use of this 4.75 nm^2 site is necessary until EPA finalizes its rule-making effort to designate the 24-nm^2 ODMDS, which overlays and expands the existing smaller site.

b. EPA in conjunction with the USACE published the SMMP for the Mobile 4.75 nm^2 ODMDS on 30 April 2015. In anticipation of completing an expansion of the Mobile ODMDS prior to 2019, the 2015 SMMP was developed for use on a short-term basis and included an expiration date of 29 April 2019. However, the process to complete the expansion of the Mobile ODMDS has taken longer than initially anticipated, thereby warranting an extension of the effective period of the 2015 SMMP not to exceed an additional two years. During this time, it is expected that the expansion of the ODMDS, and development of a new SMMP for the expanded site, will be complete. The Memorandum will serve as an addendum to the 2015 SMMP to extend the expiration of the current SMMP from 29 April 2019, until such time as the final rulemaking for the proposed expansion of the Mobile ODMDS is completed and goes into effect, or to 29 April 2021, whichever occurs sooner.

CESAM-PD-E 22 February 2019
SUBJECT: Mobile 4.75-square nautical mile (nm^2) Ocean Dredged Material Management Site (ODMDS) Site Management and Monitoring Plan (SMMP)

4. IMPACTS. Without the District Commander's signature, use of the ODMDS would be discontinued and navigation utilizing the Federal Mobile Harbor channel would be impeded.

5. MOBILE DISTRICT POC. Please contact the undersign at (251) 690-2724.

Encls

JENNIFER L. JACOBSON
Chief, Environment and Resources Branch

MEMORANDUM

SUBJECT: Extension to the current expiration date of the Site Management and Monitoring Plan for the Mobile Ocean Dredged Material Disposal Site

FROM: Mary S. Walker, Acting Regional Administrator
U.S. Environmental Protection Agency, Region 4 2/15/2019

Sebastian P. Joly, Colonel, Corps of Engineers 3/4/19
District Commander, Mobile District

TO: File

Pursuant to the Water Resources Development Act Amendments of 1992 (WRDA 92) to the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), the Environmental Protection Agency, Region 4 (EPA), in conjunction with the U.S. Army Corps of Engineers, Mobile District (USACE), published the Site Management and Monitoring Plan (SMMP) for the Mobile Ocean Dredged Material Disposal Site (Mobile ODMDS) on April 30, 2015. In anticipation of completing an expansion of the Mobile ODMDS prior to 2019, the 2015 SMMP was developed for use on a short-term basis and included an expiration date of April 29, 2019. However, the process to complete the expansion of the Mobile ODMDS has taken longer than initially anticipated, thereby warranting an extension of the effective period of the 2015 SMMP not to exceed an additional two years. During this time, it is expected that the expansion of the ODMDS, and development of a new Site Management and Monitoring Plan for the expanded site, will be complete. Through this memorandum, which will serve as an addendum to the 2015 SMMP, the EPA and the USACE are extending the expiration of the current SMMP from April 29, 2019, until such time as the final rulemaking for the proposed expansion of the Mobile ODMDS is completed and goes into effect, or to April 29, 2021, whichever occurs sooner.

The MPRSA Section 102(c)(3), as amended by WRDA 92, sets forth several requirements regarding the content and development of site management plans, as follows:

(a) A baseline assessment of conditions at the site;

The initial baseline assessment of the Mobile ODMDS was conducted in 1985, as part of the Environmental Impact Statement process for the establishment of the site. This study included assessment of the physical, chemical, geological, and biological structure of the site, as well as consideration of the impacts of disposal at the ODMDS. More recently, a new baseline study was conducted in 2010 to assess baseline conditions at the proposed expanded Mobile ODMDS. This included further sampling at the existing site.

(b) A program for monitoring the site;

Since the initial baseline assessment conducted in 1985, a regular monitoring program examining the physical, chemical, and biological conditions at the site has been in

place. The most recent monitoring of the site was a Status and Trends study conducted in October of 2017. The survey found no significant differences in conditions inside and outside of the Mobile ODMDS, and no significant changes since the previous Status and Trends study conducted in 2009.

(c) Special management conditions or practices to be implemented at each site that are necessary for the protection of the environment;

Based on the results of the most recent monitoring study conducted in 2017, the EPA and USACE found no need to change or alter the management conditions and practices currently in place at the Mobile ODMDS (as described in the current SMMP), as these management conditions and practices are still appropriate.

(d) Consideration of the quantity of the material to be disposed of at the site, and the bioavailability of the contaminants in the material;

Projected volumes and rates of operation and maintenance (O&M) dredged material disposal for existing projects during the next few years, from both Federal and private applicants, are expected to be similar to disposal volumes and rates from previous years. Since 2012, open-water in bay thin-layer disposal of dredged material has been utilized for the disposal of some of the O&M dredged material. This has decreased the average O&M material being disposed of in the Mobile ODMDS from 4,400,000 to 2,900,000 cubic yards annually. However, the Alabama State Port Authority has proposed a project to deepen and widen portions of the Federal Mobile Harbor Navigation project. This proposed project could potentially add an approximate 24,000,000 cubic yards of new work material and an associated increase of 2,000,000 cubic yards in annual O&M material to the amount of sediment being disposed of at the Mobile ODMDS. In the future, further deepening and widening of the Mobile Harbor Navigation project could add a total of approximately 100,000,000 cubic yards of material to the Mobile ODMDS.

All material to be disposed of at the Mobile ODMDS will continue to be tested to the level outlined in Section 103 of the MPRSA, as well as in Title 40 of the Code of Federal Regulations, Parts 220-228. The suitability of the dredged material for ocean disposal must be verified by the USACE and the EPA prior to disposal.

(e) Consideration of the anticipated use of the site over the long term, including the anticipated closure date for the site, if applicable, and any need for management of the site after the closure of the site; and

The current site does not have the capacity to accommodate the projected amount of material that is expected to be disposed at the Mobile ODMDS during the next ten years. As a result of the proposed Mobile Harbor expansion project, as well as regular new work and O&M needs, the EPA has proposed to expand the current Mobile ODMDS from its current 4.75 square nautical mile (nmi^2) size to an area of approximately 23.8 nmi^2. The draft Environmental Assessment and draft SMMP for

the expanded site was provided for public notice and comment on September 24, 2018. The expanded site coordinates and new SMMP would supersede the current site and SMMP when finalized.

In the interim period, remaining site capacity at the current Mobile ODMDS will be closely monitored. The SMMP for the existing Mobile ODMDS outlines several monitoring strategies and thresholds for action, including ensuring a safe navigable depth of the site, which will be implemented if necessary.

(f) *A schedule for review and revision of the plan (which shall not be reviewed and revised less frequently than 10 years after the adoption of the plan, and every 10 years thereafter).*

The current SMMP was signed on April 30, 2015, and has been in place for approximately four years. Typically, SMMPs are in place for a period of ten years before they are revised. The current SMMP was initially established for a shorter period, in anticipation of the completion of an expansion of the site by April 2019. Pursuant to this memorandum, the SMMP will remain effective until April 29, 2021, or the date an expansion of the ODMDS is effective, whichever occurs sooner. If an expansion of the ODMDS does not occur by April 29, 2021, a revised SMMP for the current Mobile ODMDS will be published before then.

Any questions related to the extension of the current SMMP for the Mobile ODMDS may be addressed to the Site Manager, Ms. Lena Weiss (404-562-9228 or weiss.lena@epa.gov).

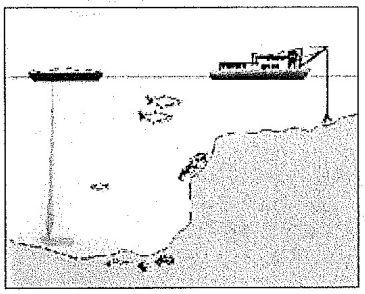
March 2015

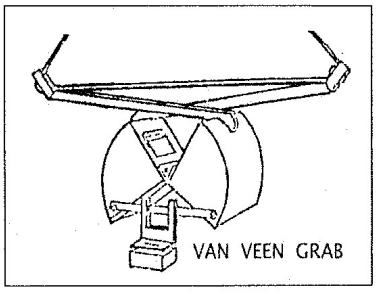
EPA

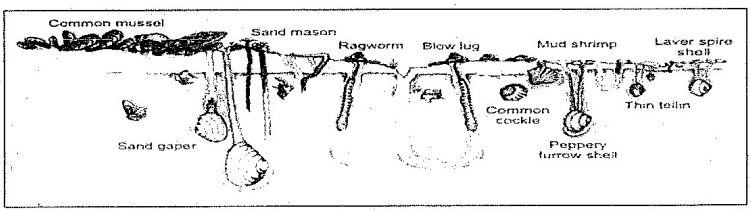
Mobile
OCEAN DREDGED MATERIAL DISPOSAL SITE

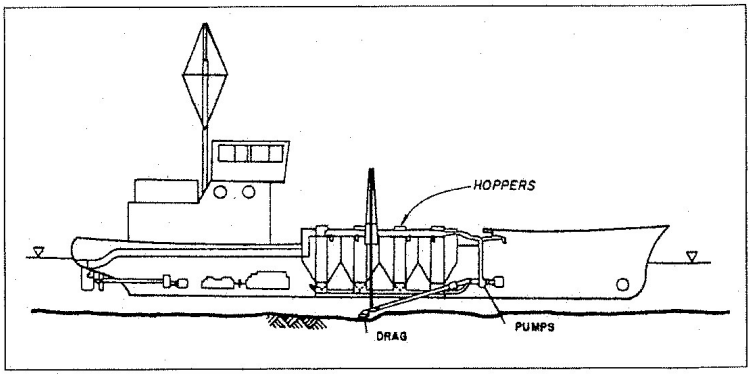
U.S. Army Corps of Engineers

SITE MANAGEMENT AND MONITORING PLAN









The following Site Management and Monitoring Plan for the Mobile ODMDS has been developed pursuant to the Water Resources Development Act Amendments of 1992 (WRDA 92) to the Marine Protection, Research, and Sanctuaries Act of 1972 for the management and monitoring of ocean disposal activities.

Jon J. Chytka 30 APR 15
Jon J. Chytka Date
Colonel, U.S. Army
District Commander
Mobile District
U.S. Army Corps of Engineers
Mobile, Alabama

MAR 2 7 2015
Heather McTeer Toney Date
Regional Administrator
U.S. Environmental Protection Agency
Region 4
Atlanta, Georgia

This plan is effective from the date of EPA and USACE signature for a period not to exceed four years.

MOBILE OCEAN DREDGED MATERIAL DISPOSAL SITE
SITE MANAGEMENT AND MONITORING PLAN

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Mobile ODMDS
Site Management and Monitoring Plan

1.0 INTRODUCTION

It is the responsibility of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) under the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 to manage and monitor each of the Ocean Dredged Material Disposal Sites (ODMDSs) designated by the EPA pursuant to Section 102 of MPRSA. Section 102(c)(3) of the MPRSA requires development of a Site Management and Monitoring Plan (SMMP) for each ODMDS and review and revision of the SMMP not less frequently than every 10 years. The 1996 document, *Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites* (EPA/USACE, 1996) and the EPA Region 4 and USACE South Atlantic Division (SAD) Memorandum of Understanding (EPA/USACE, 2007) have been used as guidance in developing this SMMP.

Specific responsibilities of EPA and the USACE are:

EPA: EPA is responsible for designating/de-designating MPRSA Section 102 ODMDSs, for implementing and evaluating environmental effects of disposal dredged material at these sites, and for reviewing and concurring on dredged material suitability determinations.

USACE: The USACE is responsible for evaluating dredged material suitability, issuing MPRSA Section 103 permits, regulating site use, and developing and implementing disposal monitoring programs.

The SMMP provisions shall be requirements for all dredged material disposal activities at the site. All Section 103 (MPRSA) ocean disposal permits or contract specifications shall be conditioned as necessary to assure consistency with the SMMP.

2.0 SITE MANAGEMENT

Section 228.3 of the Ocean Dumping Regulations (40 CFR 220-229) states: "Management of a site consists of regulating times, rates, and methods of disposal and quantities and types of materials disposed of; developing and maintaining effective ambient monitoring programs for the site; conducting disposal site evaluation studies; and recommending modifications in site use and/or designation."

2.1 Disposal Site Characteristics

The designation of the Mobile ODMDS can be found in 40 CFR 228.15(h)(14). Coordinates in the CFR are provided in NAD 27. The Mobile ODMDS is a 4.75 square nautical mile (nmi^2) area.

Table 1: Site Coordinates

Geographic (NAD 27)	
30°10'00"N	88°07'42"W
30°10'24"N	88°05'12"W
30°09'24"N	88°04'42"W
30°08'30"N	88°05'12"W
30°08'30"N	88°08'12"W

The site (see Figure 1) lies on the shallow continental shelf, 4 nmi offshore Mobile Point, Alabama with an average depth of 14 meters. Physical, chemical, and biological conditions at the ODMDS are described in, "Final Environmental Impact Statement for the Pensacola, FL, Mobile, AL, and Gulfport, MS Dredged Material Disposal Site Designation." (EPA, 1987)

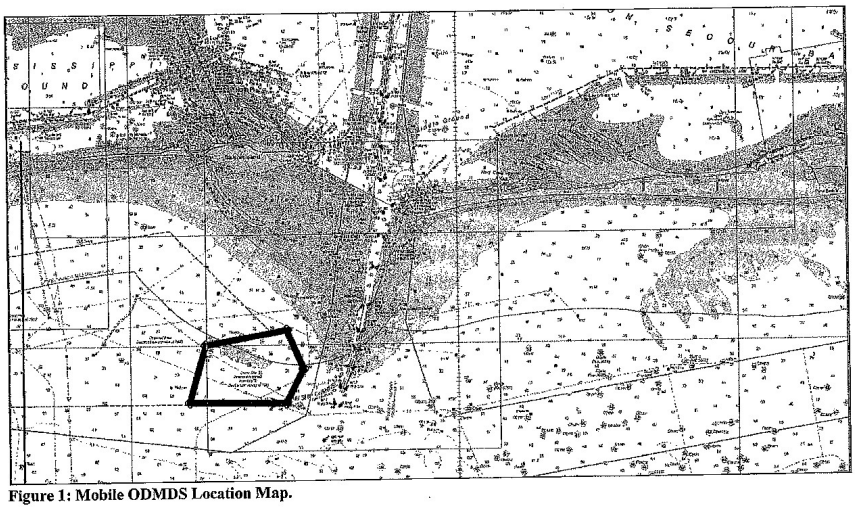

Figure 1: Mobile ODMDS Location Map.

2.2 Management Objectives. Appropriate management of an ODMDS is aimed at assuring that disposal activities will not unreasonably degrade or endanger human health, welfare, the marine environment or economic potentialities (MPRSA §103(a)). The primary objectives in the management of these ODMDSs are:

- Protection of the marine environment;
- Documentation of disposal activities and compliance; and
- Maintenance of a long term disposal alternative for dredged material, while encouraging beneficial use where practical.

The following sections provide the framework for meeting these objectives to the extent possible.

2.3 Disposal History and Dredged Material Volumes. Disposal history can be found at the Ocean Disposal Database maintained by the USACE (http://el.erdc.usace.army.mil/odd/). The Mobile ODMDS and the Mobile North ODMDS (selected by the USACE pursuant to Section 103 of the MPRSA) have been used for disposal of 120 million cubic yards since 1987 (USACE, 2014). Currently, the average annual disposal volume is about 4 million cys. The composition of the dredged material is primarily silts and clays. Future volumes and rates of disposal, from both Federal and private applicants, are expected to be similar to previous years. However, this estimate may increase if it is determined feasible to deepen and widen the Federal channel into Mobile Harbor to its currently authorized project dimensions. Also, the Mobile Harbor Turning Basin constructed in 2010 requires annual maintenance dredging of about 425,000 cubic yards per year which may go to the ODMDS (USACE, 2014). The USACE has estimated the remaining capacity of the Mobile ODMDS at 15 million cubic yards based on projected volumes and the remaining capacity the ODMDS has an estimated life of four years (USACE 2014). EPA in cooperation with the Mobile District is in the process of expanding the Mobile ODMDS through preparation of an Environmental Assessment and rulemaking and expects to expand the site within the next four years.

2.4 Dredged Material Characteristics.

2.4.1 Associated Beach Quality Materials. USACE Beneficial Use of Dredged Material EM 1110-2-5026 requires dredged material be maximized within the coastal system. Dredged materials that qualify for beach or near-shore placement per the applicable State standards shall be beneficially placed in such location, to the maximum extent practicable. It is expected that the applicable State will exercise its authority and responsibility, regarding beach nourishment, to the full extent during any future permitting activities. Beneficial use of beach compatible dredged material for beach nourishment is strongly encouraged and supported by EPA. Most sandy material is placed in the Sand Island Beneficial Use Area located due east of the ODMDS (USACE, 2014).

2.4.2 Dredged Material Quality Verification. The suitability of dredged material for ocean disposal must be verified by the USACE and agreed to via written concurrence from EPA prior to disposal. Verification will be valid for three years from the most current verification.

Verification process:

1) Case-specific evaluation against the exclusion criteria (40 CFR 227.13(b)).
2) Determination of testing requirements for non-excluded material based on the potential of sediment contamination since last verification.
3) When applicable, execute testing and determination of suitability of non-excluded material for ocean disposal.

Verification documentation for suitability will be completed prior to use of the ODMDS. Documentation will be in the form of a MPRSA Section 103 Evaluation. Potential testing and the Evaluation will follow the procedures outlined in the 1991 EPA/USACE Dredged Material Testing Manual and 2008 Southeast Regional Implementation Manual (SERIM) or the appropriate updated versions. This includes how dredging projects will be subdivided into project segments for sampling and analysis. The MPRSA Section 103 Evaluation will be in the form outlined in Appendix C of the SERIM. Water Quality Compliance determinations will be made using the STFATE (ADDAMS) model. Only material determined to be suitable and in compliance with the Ocean Dumping Criteria (40 CFR Part 227) through the verification process by the USACE and EPA, Region 4 can be disposed in this ODMDS.

2.5 Time of disposal. At present no restrictions have been determined to be necessary for disposal related to seasonal variations in ocean current or biotic activity at the Mobile ODMDS.

2.6 Disposal Technique. No specific disposal technique is required for the site. In order to protect sea turtles and Gulf sturgeon, the National Marine Fisheries Service, Protected Resources Division requires monitoring according to guidance outlined in the *Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredges by USACE Galveston, New Orleans, Mobile, and Jacksonville Districts* (NMFS, 2003 and amended 2005 & 2007). In addition, standard surveillance and evasive measures to protect sea turtles and marine mammals shall be employed during all disposal operations at the ODMDS.

2.7 Disposal Location. 40 CFR §227.28 requires all disposals to occur at least 330 feet (100 meters) inside any site boundaries. Release zones may be established by the USACE in consultation with EPA at the time of site use for operational reasons or to insure compliance with the Ocean Dumping Criteria (40 CFR Part 227). Disposal shall be initiated within the applicable release zone boundary and completed (i.e. doors closed) prior to leaving the ODMDS boundaries. Placement methods, which prevent mounding of dredged materials from becoming an unacceptable navigation hazard, will be used. Dredged material shall be disposed so that at no point will depths less than -25 feet Mean Lower Low Water (MLLW) occur (i.e., a clearance of

25 feet above the bottom will be maintained). The physical removal or leveling of material above -25 feet MLLW is a management alternative should mounds greater than that elevation occur. Disposal shall not occur closer than 1,300 feet to any oil and gas rigs that may be present within the site boundaries.

2.8 Permit and Contract Conditions. The disposal monitoring and post-disposal monitoring requirements described under Site Monitoring will be included as permit conditions on all MPRSA Section 103 permits and will be incorporated in the contract language for all federal projects. A summary of the management and monitoring requirements to be included are listed in Table 2.

Table 2. Summary of Permit and Contract Conditions

Condition	Reference
Dredged Material Suitability and Term of Verification	SMMP page 3, Southeast Regional Implementation Manual
Disposal within Appropriate Zones	SMMP page 4
Pre and Post Bathymetric Surveys	SMMP pages 6,8
Disposal Monitoring and Recording of Disposal Locations	SMMP pages 7-8
Reporting Requirements: Disposal Summary Reports within 90 Days of Project Completion	SMMP page 10

2.9 Permit Process. All disposal of dredged material in the ocean, with the exception of Federal Civil Works projects, requires an ocean dumping permit issued by the USACE pursuant to Section 103 of the MPRSA. A summary of the permitting process can be found at: http://www.epa.gov/region4/water/oceans/Dredged_Material_Permit_Process.htm.

2.10 Information Management of Dredged Material Placement Activities. EPA Region 4 and USACE SAD have agreed on an eXtensible Markup Language (XML) standard for sharing of disposal monitoring data (see also Section 3.5).

3.0 SITE MONITORING

The MPRSA establishes the need for including a monitoring program as part of the Site Management Plan. Site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site and to verify compliance with the site designation criteria, any special management conditions, and with permit requirements. Monitoring programs should be flexible, cost effective, and based on scientifically sound procedures and methods to meet site-specific monitoring needs. The intent of the program is to provide the following:

(1) Information indicating whether the disposal activities are occurring in compliance with the permit and site restrictions;

(2) Information indicating the short-term and long-term fate of materials disposed of in the marine environment.

(3) Information concerning the short-term and long-term environmental impacts of the disposal.

The main purpose of a disposal site monitoring program is to determine whether dredged material site management practices, including disposal operations at the site, need to be changed to avoid significant adverse impacts.

3.1 Baseline Monitoring. The results of investigations presented in the designation EIS (EPA, 1987) and subsequent surveys listed in Table 3 will serve as the main body of data for the monitoring of the impacts associated with the use of the Mobile ODMDS. A bathymetric survey will be conducted by the USACE or site user within three (3) months prior to project disposal for projects expected to exceed 50,000 cubic yards. Bathymetric surveys will be used to monitor the disposal mound to insure a navigation hazard is not produced, to assist in verification of material placement, to monitor bathymetry changes and trends and to insure that the site capacity is not exceeded, ie., the mound does not exceed the site boundaries. Surveys will conform to the minimum performance standards for Corps of Engineers Hydrographic Surveys as described in the USACE Engineering Manual, EM1110-2-1003, Hydrographic Surveying dated November 30, 2013[http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1003.pdf] or updates. The number and length of transects required will be sufficient to encompass the release zone and a 500 foot-wide area around it. The surveys will be taken along lines spaced at 500-foot intervals or less. The minimum performance standards from Table 3-1 in Hydrographic Surveying shall be followed. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing a differential global positioning system. The vertical datum will be referenced to prescribed NOAA Mean Lower Low Water (MLLW) datum. The horizontal datum should be referenced to the local State Plane Coordinate System (SPCS) for that area or in Geographical Coordinates (latitude-longitude). The horizontal reference datum should be the North American Datum of 1983 (NAD 83). No additional pre-disposal monitoring is required.

Table 3. Surveys and Studies Conducted at or in the vicinity of the Mobile ODMDS

Survey/Study Title	Conducted By:	Date	Purpose	Results
Analysis & Synthesis of Oceanic Conditions in the Mississippi Sound Offshore Region	USACE	March 1984	Determine the direction and amount of sediment transport from a dredged material disposal site.	Circulation patterns within the site are controlled by astronomical tides, winds, and freshwater discharges.
Sediment Mapping	UGA Center for Applied Isotopes for EPA	2002	Characterization of bottom sediments using gamma spectrometry	- Baseline Survey
Mobile ODMDS Expansion Survey	USACE/EPA	May 2010	Collect physical, chemical and biological data on sediments and water	-Collected and analyzed 30 sediment and 10 water samples covering entire ODMDS
Mobile ODMDS Post Oil Spill Sediment Sampling	USACE	December 2010	Determine if any oil from the Deep Water Horizon Oil Spill has contaminated the sediments.	-Test results released February 2011 indicate there were no discernible changes in the sediment quality attributed to the Deepwater Horizon Oil Spill
Bathymetric Survey	USACE	Before and After Event	Monitor bathymetry changes	-Safe navigation depths have been maintained

3.2 Disposal Monitoring. For all disposal activities, an electronic tracking system (ETS) must be utilized. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track the horizontal location and draft condition (accuracy= 0.1 foot) of the disposal vessel (i.e. hopper dredge or disposal scow) from the point of dredging to the disposal site and return to the point of dredging. Data shall be collected at least every 0.25 nautical mile or every 4 minutes during travel to and from the ODMDS and twelve seconds or every 30 feet of travel, while the hull status is open within the ODMDS. In addition to the continuous tracking data, the following trip information shall be electronically recorded for each disposal cycle:

a. Load Number
b. Disposal Vessel Name and Type (e.g. scow)
c. Estimated volume of Load
d. Description of Material Disposed
e. Source of Dredged Material
f. Date, Time and Location at Initiation and Completion of Disposal Event

It is expected that disposal monitoring will be conducted utilizing the Dredging Quality Management (DQM) system for Civil Works projects [see http://dqm.usace.army.mil/Specifications/Index.aspx], although other systems are acceptable. Disposal monitoring and ETS data will be reported to EPA Region 4 on a weekly basis (within one week of disposal) utilizing the eXtensible Markup Language (XML) specification and protocol per Section 3.5. EPA Region 4 and the USACE District shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if excessive leakage occurs.

3.3 Post Discharge Monitoring. The USACE or other site user will conduct a bathymetric survey consistent with the pre-disposal survey requirements within 30 days after disposal project completion. Surveys will not be required for projects less than 50,000 cubic yards. If a release zone is utilized and adhered to, the number and length of the transects required will be sufficient to encompass the release zone and a 500 foot wide area around it. Bathymetric surveys will be used to monitor the disposal mound to insure a navigation hazard is not produced, to assist in verification of material placement, to monitor bathymetry changes and trends and to insure that the site capacity is not exceeded, i.e., the mound does not exceed the site boundaries.

3.4 Disposal Effects Monitoring. Based on the type and volume of material disposed and impacts of concern, various monitoring surveys can be used to examine if and the direction the disposed dredged material is moving, and what environmental effect the material is having on the site and adjacent areas. At the current time, no nearby biological resources have been identified that are of concern for potential impact. The Mobile ODMDS is at least one nautical mile from all known fish havens, artificial reefs, and fishing areas. The site has been characterized as dispersive. This means that it is expected that material will be moved outside the site boundaries. It is also expected that this material will not move in distinct mounds, but instead will blend with the surrounding environment causing a progressive transition to sediments containing a higher percentage of silt and clay. Changes in sediment composition will likely alter the benthic community structure. However, based on previous benthic studies, it is unlikely that permanent or long-term adverse impacts will result due to changes in sediment composition. At a minimum, a Trend Assessment Survey (40 CFR 228.13) will be conducted approximately every ten years.

Table 4. Site Monitoring Strategies and Thresholds for Action

Goal	Technique	Sponsor	Rationale	Frequency	Threshold for Action	Management Options	
						Threshold of Concern Exceeded	Threshold Exceeded
Trend Assessment	Water and Sediment Quality, Benthic Community Analysis (40CFR228.13)	U.S. EPA	Periodically evaluate the impact of disposal on the marine environment (40CFR 228.9)	Approximately every 10 years	-Absence from the site of pollution sensitive biota -Progressive non-seasonal changes in water or sediment quality	Continue Monitoring per site specific SMMP	-Conduct Environmental Effects Monitoring or Advanced Environmental Effects Monitoring per site specific SMMP. -Review dredged material evaluation procedures
Insure Safe Navigation Depth & Monitor Bathymetric Trends	Bathymetry	Site User	Determine height of mound and any excessive mounding	Pre & Post disposal for projects greater than 50,000 cy	Mound height > -30 feet mean lower low water (MLLW)	Continue Monitoring	-Modify future disposal method/placement -Restrict disposal volumes
					Mound height > -25 feet MLLW	Continue Monitoring	- Physically level material
Compliance	Disposal Site Use Records in EPA Region 4's XML format	Site User	-Insure management requirements are being met -To assist in site monitoring	Report weekly during the project	Disposal records required by SMMP are not submitted or are incomplete	Continue Monitoring	-Restrict site use until requirements are met

3.5 Reporting and Data Formatting.

3.5.1 Project Initiation and Violation Reporting. The USACE or other site user shall notify EPA 15 days prior to the beginning of a dredging cycle or project disposal. The user is also required to notify the USACE and the EPA within 24 hours if a violation of the permit and/or contract conditions related to MPRSA Section 103 or SMMP requirements occur during disposal operations.

3.5.2 Disposal Monitoring Data. It is expected that disposal monitoring will be conducted utilizing the Dredge Quality Management (DQM) system for Civil Works projects [see http://dqm.usace.army.mil/Specifications/Index.aspx], although other systems are acceptable. Disposal monitoring data shall be provided to EPA Region 4 electronically on a weekly basis (within one week of disposal event). Data shall be provided per the EPA Region 4 XML format and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

3.5.3 Post Disposal Summary Reports. A Post Disposal Summary Report shall be provided to EPA within 90 days after project completion. These reports should include: dredging project title; permit number and expiration date (if applicable); contract number; name of contractor(s) conducting the work, name and type of vessel(s) disposing material in the ODMDS; disposal timeframes for each vessel; volume disposed at the ODMDS (total paid and un paid *in situ* volume, and gross volume reported by dredging contractor in the disposal logs), number of loads to ODMDS, type of material disposed at the ODMDS; identification by load number of any misplaced material; dates of pre and post disposal bathymetric surveys of the ODMDS and a narrative discussing any violation(s) of the 103 concurrency and/or permit (if applicable). The narrative should include a description of the violation, indicate the time it occurred and when it was reported to the EPA and USACE, discuss the circumstances surrounding the violation, and identify specific measures taken to prevent reoccurrence. The Post Disposal Summary Report should be accompanied by the bathymetry survey results (plot and X,Y,Z ASCII data file), a summary scatter plot of all disposal start locations, and a summary table of the trip information required by Section 3.2 with the exception of the disposal completion data. If all data is provided in the required XML format, scatter plots and summary tables will not be necessary.

3.5.4 Environmental Monitoring. Disposal effects monitoring shall be coordinated with and be provided to appropriate federal and state agencies as specified in the site specific SMMP to be developed. Reports prepared by or for EPA will be posted to EPAs website at: http://www.epa.gov/region4/water/oceans/sites.html or alternative EPA website.

4.0 MODIFICATION OF THE MOBILE ODMDS SMMP

This SMMP will be effective for four years from the date of signature. It is expected that EPA will expand the Mobile ODMDS within four years and a new SMMP will be developed for the

expanded ODMDS and supersede this SMMP.

5.0 REFERENCES

ANAMAR Environmental Consulting, Inc. 2010. Final Report Mobile ODMDS Designation Survey Mobile, AL. W91278-08-D-0053. Project 09-0011, May 2010.

Center for Applied Isotope Studies, 1996. Postdisposal Areal Mapping of Sediment Chemistry at the Mobile, Mississippi ODMDS. EPA Contract No. 68-C2-0134, April 8, 1996.

EA Engineering, Science, and Technology, Inc. Draft Report Post-Oil Spill Surface Sediment Evaluation; Mobile Harbor Federal Navigation Channels Mobile, AL. February 2011.

Fredette, Thomas J., Nelson, David A., Clausner, James E., and Anders, Fred J. 1990. *Guidelines for Physical and Biological Monitoring of Aquatic Dredged Material Disposal Sites*, Technical Report D-90-12, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

NMFS. (2003). Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining ("Borrow") Areas Using Hopper Dredging by USACE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287), NOAA, NMFS, Southeast Regional Office, Protected Resources Division, St. Petersburg, FL, 121 pp.

Pequegnat, Willis E., Gallaway, Benny J., and Wright, Thomas D., 1990. *Revised Procedural Guide for Designation Surveys of Ocean Dredged Material Disposal Sites*, Technical Report D-90-8, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

U.S. Army Corps of Engineers (COE). 2002. *Engineering & Design - Hydrographic Surveying*. Engineering Manual 1110-2-1003, Department of the Army, Washington D.C.

U.S. Army Corps of Engineers Mobile District (USACE). 2014. *Working Draft Environmental Assessment for the Proposed Expansion Mobile Section 102 ODMDS* November 2014.

U.S. Environmental Protection Agency, 1987. *Final Environmental Impact Statement for the Pensacola, FL, Mobile, AL, and Gulfport, MS Dredged Material Disposal Site Designation*. EPA Region 4, January 27, 1987.

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U.S. Environmental Protection Agency, Region 4, 2007. Dredged Material Ocean Disposal Verification System - Specifications for Data Submittal, revised October 30, 2007. Prepared by Wetlands and Marine Regulatory Section.

U.S. Environmental Protection Agency Region 4 and U.S. Army Corps of Engineers South Atlantic Division, 2008. *Southeast Regional Implementation Manual Requirements and Procedures for Evaluation of the Ocean Disposal of Dredged Material in Southeastern Atlantic and Gulf Coastal Waters*, August 2008.

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APPENDIX A

WATER COLUMN EVALUATIONS NUMERICAL MODEL (STFATE) INPUT PARAMETERS

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Water Column Evaluations
Numerical Model (STFATE) Input Parameters
Mobile ODMDS

SITE DESCRIPTION

Parameter	Value	Units
Number of Grid Points (left to right)	80	
Number of Grid Points (top to bottom)	80	
Spacing Between Grid Points (left to right)	250	ft
Spacing Between Grid Points (top to bottom)	250	ft
Constant Water Depth	46	ft
Roughness Height at Bottom of Disposal Site	.005[1]	ft
Slope of Bottom in X-Direction	0	Deg.
Slope of Bottom in Z-Direction	0	Deg.
Number of Points in Ambient Density Profile Point[1]	3	
Ambient Density at Depth = 3 ft	1.0206	g/cc
Ambient Density at Depth = 26 ft	1.0206	g/cc
Ambient Density at Depth = 46 ft	1.0207	g/cc

[1] from EPA Mobile ODMDS Designation Survey Report (2009) for Zone A

AMBIENT VELOCITY DATA

Parameter	Value	Units
Profile[2]	2-Point at constant depth	
X-Direction Velocity = 11 feet	0.12	ft/sec
Z-Direction Velocity = 11 feet	-0.41	ft/sec
X-Direction Velocity = 33 feet	0.22	ft/sec
Z-Direction Velocity = 33 feet	-0.37	ft/sec

[2] from EPA Mobile ODMDS Designation Survey Report (2009)

DISPOSAL OPERATION DATA

Parameter	Value	Units
Location of Disposal Point from Top of Grid	10,000	ft
Location of Disposal Point from Left Edge of Grid	10,000	ft
Dumping Over Depression	0	

INPUT, EXECUTION AND OUTPUT

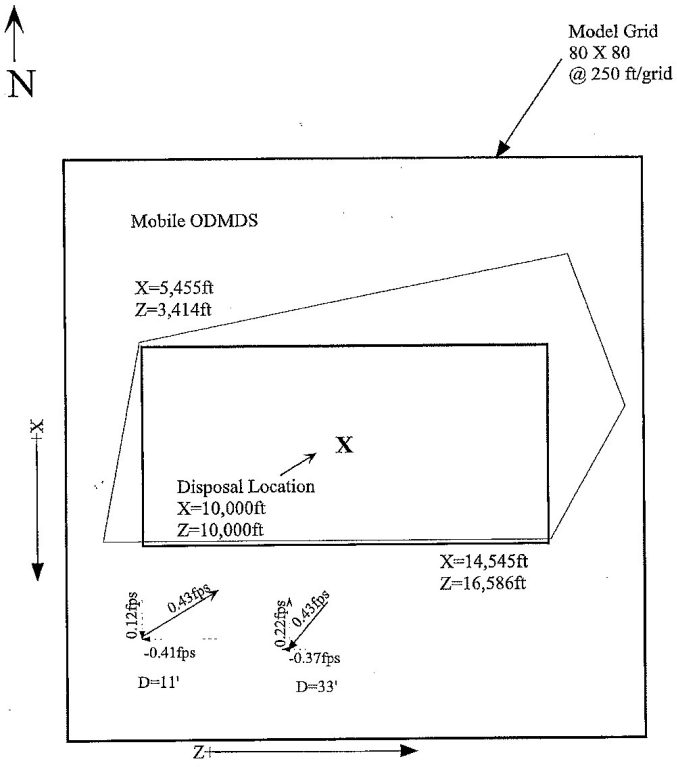
Parameter	Value	Units
Location of the Upper Left Corner of the Disposal Site - Distance from Top Edge	5,455	ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	3,414	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	14,545	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	16,586	ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

COEFFICIENTS

Parameter	Keyword	Value
Settling Coefficient	BETA	0.000[1]
Apparant Mass Coefficient	CM	1.000[1]
Drag Coefficient	CD	0.500[1]
Form Drag for Collapsing Cloud	CDRAG	1.000[1]
Skin Friction for Collapsing Cloud	CFRIC	0.010[1]
Drag for an Ellipsoidal Wedge	CD3	0.100[1]
Drag for a Plate	CD4	1.000[1]
Friction Between Cloud and Bottom	FRICTN	0.010[1]
4/3 Law Horizontal Diffusion Dissipation Factor	ALAMDA	0.001[1]
Unstratified Water Vertical Diffusion Coefficient	AKYO	Pritchard Expression
Cloud/Ambient Density Gradient Ratio	GAMA	0.250[1]
Turbulent Thermal Entrainment	ALPHAO	0.235[1]
Entrainment in Collapse	ALPHAC	0.100[1]
Stripping Factor	CSTRIP	0.003[1]

[1] Model Default Value

Mobile ODMDS STFATE Input Parameters



Mobile ODMDS Background Water Concentration.	
Chemicals of Concern	**Background Concentration Levels (µg/l)**
Arsenic	1.66 [1]
Cadmium	0.01 [1]
Chromium (VI)	0.75 [1]
Copper	1.11 [1]
Lead	0.75 [1]
Mercury	0.10 [1,3]
Nickel	0.75 [1]
Selenium	0.23 [1]
Silver	0.005[1]
Zinc	3.78[1]
Cyanide	
Tributyltin (TBT)	0.025 [2,3]
Aldrin	0.005 [1,3]
Chlordane	0.10 [1,3]
DDT	0.05 [1,3]
Dieldrin	0.005 [1,3]
alpha - Endosulfan	0.005 [1,3]
beta - Endosulfan	0.005 [1,3]
Endrin	0.005 [1,3]
gamma-BHC (Lindane)	0.005 [1,3]
Heptachlor	0.005 [1,3]
Heptachlor Epoxide	0.005 [1,3]
Toxaphene	.25 [1,3]
Pentachlorophenol	5.0 [2,3]

[1] Mobile ODMDS Site Designation Study (2010)
[2] Pensacola ODMDS Trend Assessment Study (2013)
[3] Analyte not detected. Value based on one half the reporting limit.

APPENDIX B

TEMPLATE
For
MPRSA Section 103 Permits

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TEMPLATE
GENERIC SPECIAL CONDITIONS
FOR MPRSA SECTION 103 PERMITS
Mobile-North ODMDS

I. DISPOSAL OPERATIONS

A. For this permit, the term disposal operations shall mean: navigation of any vessel used in disposal of operations, transportation of dredged material from the dredging site to the Mobile ODMDS, proper disposal of dredged material at the disposal area within the Mobile ODMDS, and transportation of the hopper dredge or disposal barge or scow back to the dredging site.

B. The Mobile ODMDS is defined as the polygon with corner coordinates as follows:

Site Coordinates

Geographic (NAD 27)	
30°10'00"N	88°07'42"W
30°10'24"N	88°05'12"W
30°09'24"N	88°04'42"W
30°08'30"N	88°05'12"W
30°08'30"N	88°08'12"W

C. No more than [NUMBER] cubic yards of dredged material excavated at the location defined in [REFERENCE LOCATION IN PERMIT] are authorized for disposal at the Mobile ODMDS.

D. The permittee shall use an electronic positioning system to navigate to and from the Mobile ODMDS. For this section of the permit, the electronic positioning system will be as per the DQM specifications. If the electronic positioning system fails or navigation problems are detected, all disposal operations shall cease until the failure or navigation problems are corrected.

E. The permittee shall certify the accuracy of the electronic positioning system proposed for use during disposal operations at the Mobile ODMDS. The certification shall be accomplished by providing current certification documentation from the National DQM Program for scow and hopper dredge

instrumentation systems. The National DQM certification is valid for one year from the date of certification.

F. The permittee shall not allow any water or dredged material placed in a hopper dredge or disposal barge or scow to flow over the sides or leak from such vessels during transportation to the Mobile ODMDS.

G. A disposal operations inspector and/or captain of any tugboat, hopper dredge or other vessel used to transport dredged material to the Mobile ODMDS shall insure compliance with disposal operation conditions defined in this permit.

1. If the disposal operations inspector or the captain detects a violation, he shall report the violation to the permittee immediately.

2. The permittee shall contact the U.S. Army Corps of Engineers, Mobile District's Regulatory Branch (251) 690-2658 and EPA Region 4 at (404) 562-9395 to report the violation within twenty-four (24) hours after the violation occurs. A complete written explanation of any permit violation shall be included in the post-dredging report.

H. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the Mobile ODMDS as defined in Special Condition B. Additionally, disposal shall occur within a specified disposal zone defined as [DEFINE COORDINATES AND SIZE OF DISPOSAL ZONE]. Disposal shall not occur closer than 1,300 feet to any oil and gas rigs that may be present within the site boundaries.

I. The permittee shall use an automated disposal verification system that is certified by the National DQM program to continuously track the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) to and from the Mobile ODMDS. This real-time information is available on-line to the Mobile District and will be provided to the EPA Region 4 via email using the eXtensible Markup Language (XML) specification and protocol. Data shall be provided per the EPA Region 4 XML format and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

J. The permittee shall conduct a bathymetric survey of the Mobile ODMDS within 30 days following project completion.

1. The number and length of the survey transects shall be sufficient to encompass the defined disposal zone within the Mobile ODMDS and a 500 foot wide area around the disposal zone. The transects shall be spaced at 500-foot intervals or less with a depth recording density of 20 to 70 feet.

2. Vertical accuracy of the survey shall be ±0.1 feet. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing either microwave line of site system or differential global positioning system. The vertical datum will be referenced to prescribed NOAA Mean Lower Low Water (MLLW) datum. MLLW is 1.8 feet below NGVD 1929. The horizontal datum will be Alabama State Plane (zone 2301 MS East) or Geographic (NAD 1983). State Plane coordinates shall be reported to the nearest 0.10 foot and latitude and longitude coordinates shall be reported as degrees and decimal minutes to the nearest 0.01 minutes.

K. The permittee has read and agrees to assure that they are in compliance with the requirements of the Mobile ODMDS Site Management and Monitoring Plan.

II. REPORTING REQUIREMENTS

A. The permittee shall send the U.S. Army Corps of Engineers, Mobile District's Regulatory Branch and EPA Region 4' s Wetlands, Oceans and Streams Protection Branch (61 Forsyth Street, Atlanta, GA 30303) a notification of commencement of work at least fifteen (15) days before initiation of any dredging operations authorized by this permit.

B. The permittee shall submit to the U.S. Army Corps of Engineers weekly disposal monitoring reports. These reports shall contain the information described in Special Condition I.1.

C. The permittee shall develop and send one (1) copy of the disposal summary report to the Mobile District's Regulatory Branch and one (1) copy of the disposal summary report to EPA Region 4 documenting compliance with all general and special conditions defined in this permit. The disposal summary report shall be sent within 90 days after completion of the disposal operations authorized by this permit. The disposal summary report shall include the following information:

1. The report shall indicate whether all general and special permit conditions were met. Any violations of the permit shall be explained in detail.

2. The disposal summary report shall include the following information: USACE permit number, actual start date and completion date of dredging and disposal operations, total cubic yards disposed at the Mobile ODMDS, locations of disposal events, and post disposal bathymetric survey results (in hard and electronic formats).

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APPENDIX C

TYPICAL CONTRACT LANGUAGE FOR IMPEMENTING THE MOBILE ODMDS SMMP REQUIREMENTS

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TYPICAL CONTRACT LANGUAGE FOR IMPEMENTING SMMP REQUIREMENTS

3.3 DISPOSAL OF DREDGED MATERIAL

3.3.1 General

All material dredged shall be transported to and deposited in the disposal area(s) designated on the drawings. The approximate maximum and average distance to which the material will have to be transported are as follows:

Disposal Area	Maximum Distance Statute Miles	Average Distance Statute Miles
Mobile ODMDS		
[INSERT DISPOSAL AREA 2]	[XX miles]	[XX miles]

[IF MATERIAL FROM DIFFERENT PROJECT AREAS GO TO DIFFERENT DISOSAL AREAS, IT COULD BE SPECIFIED HERE]

3.3.2 Ocean Disposal Notification

a. The contractor shall notify EPA Region 4 's Wetlands, Oceans and Streams Protection Branch (61 Forsyth Street, Atlanta, GA 30303) at least 15 calendar days and the local Coast Guard Captain of the Port at least 5 calendar days prior to the first ocean disposal. The notification will be by certified mail with a copy to the Contracting Officer. The following information shall be included in the notification:
   (1) Project designation; Corps of Engineers' Contracting Officer's name and contract number; and, the Contractor's name, address, and telephone number.
   (2) Port of departure.
   (3) Location of ocean disposal area (and disposal zone if required).
   (4) Schedule for ocean disposal, giving date and time proposed for first ocean disposal.

3.3.3 Ocean Dredged Material Disposal Sites (ODMDS)

The material excavated shall be transported to and deposited in the Mobile ODMDS shown on the drawings. When dredged material is disposed, no portion of the hopper dredge or disposal barge or scow shall be outside of the boundaries of the Mobile ODMDS as shown on the drawings. Additionally, disposal shall be initiated within the disposal release zone defined by the following coordinates:

[insert coordinates for appropriate release zone]

Vertices	Geographic NAD 83		State Plane NAD 83	
Center				
North				
West				
South				
East				

3.3.4 Logs

The Contractor shall keep a log for each load placed in the Mobile ODMDS. The log entry for each load shall include:

a. Load Number
b. Disposal Vessel Name and Type (e.g. scow)
c. Estimated volume of Load
d. Description of Material Disposed
e. Source of Dredged Material
f. Date, Time and Location at Initiation and Completion of Disposal Event

At the completion of dredging and at any time upon request, the log(s) shall be submitted in paper and electronic formats to the Contracting Officer for forwarding to the appropriate agencies.

3.3.5 Overflow, Spills and Leaks

Water and dredged materials shall not be permitted to overflow or spill out of barges, hopper dredges, or dump scows during transport to the disposal site(s). Failure to repair leaks or change the method of operation which is resulting in overflow of spillage will result in suspension of dredging operations and require prompt repair or change of operation to prevent overflow or spillage as a prerequisite to the resumption of dredging.

3.3.6 Electronic Tracking System (ETS) for Ocean Disposal Vessels

The Contractor shall furnish an ETS for surveillance of the movement and disposition of dredged material during dredging and ocean disposal. This ETS shall be established, operated and maintained by the Contractor to continuously track in real-time the horizontal location and draft condition of the disposal vessel (hopper dredge or disposal barge or scow) for the entire dredging cycle, including dredging area and disposal area. The ETS shall be capable of displaying and recording in real-time the disposal vessel's draft and location.

[FOR DQM PROJECTS]

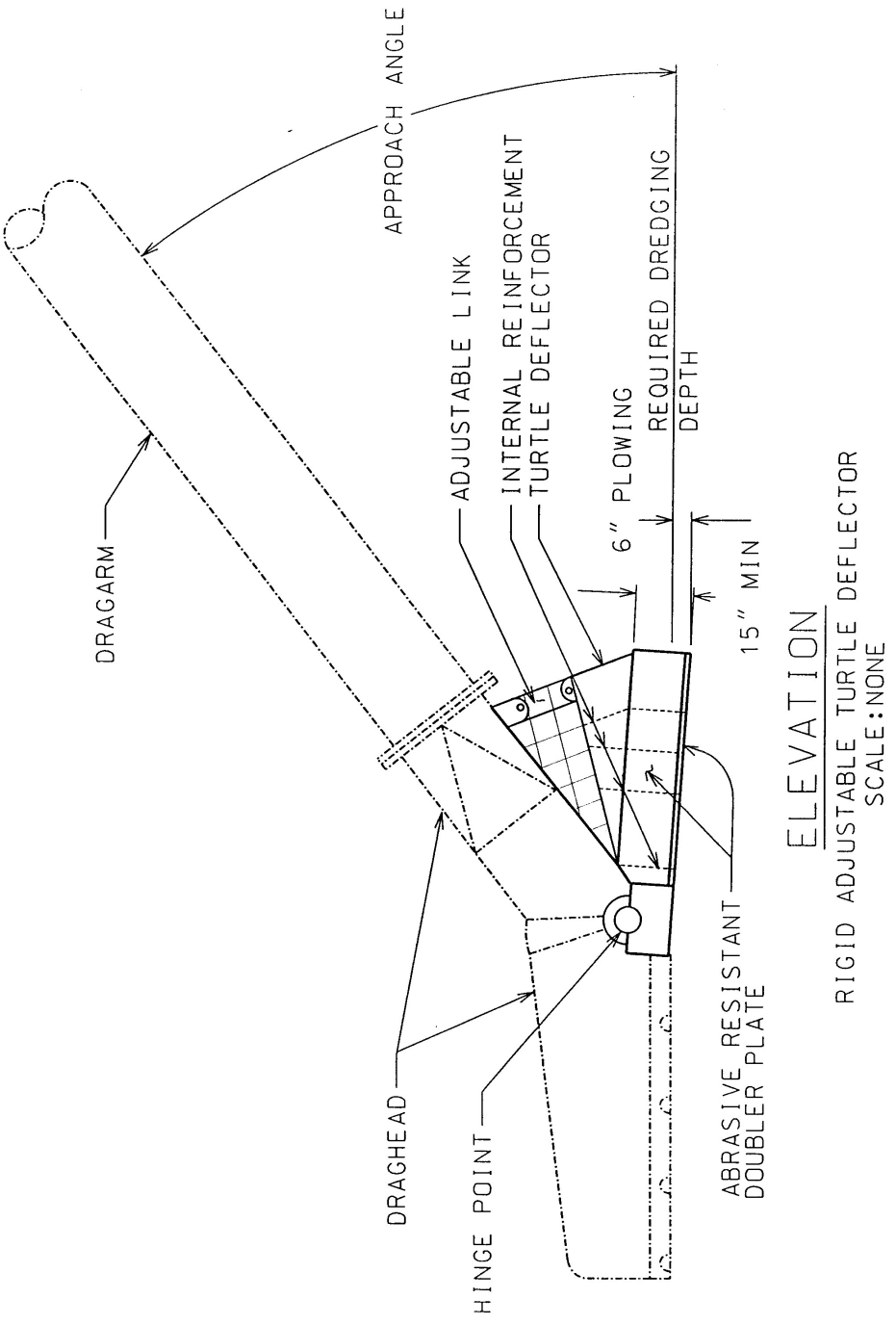
See: http://dqm.usace.army.mil/Specifications/Index.aspx

For scows, the monitoring profile, TDS profile or Ullage profile shall be used.

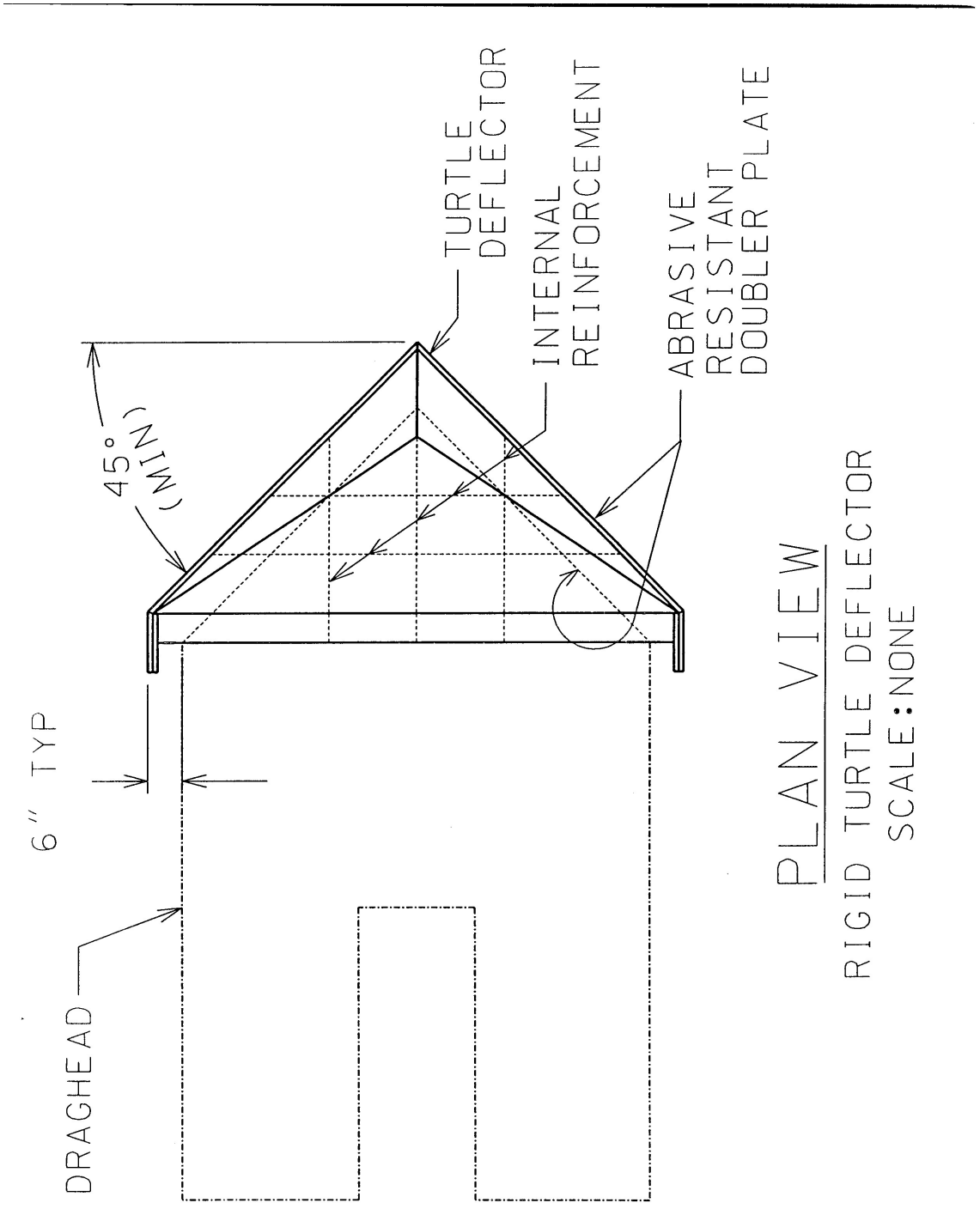
3.3.6.1 Misplaced Materials

Materials deposited outside of the disposal zone specified in 3.3.3 will be classified as misplaced material and will result in a suspension of dredging operations. Redredging of such materials will be required as a prerequisite to the resumption of dredging unless the Contracting Officer, at his discretion, determines that redredging of such material is not practical. If redredging of such material is not required then the quantity of such misplaced material shall be deducted from the Contractor's pay quantity. If the quantity for each misplaced load to be deducted cannot initially be agreed to by both the Contractor and Contracting Officer, then an average hopper/scow load quantity for the entire contract will be used in the determination. Misplaced loads may also be subject to penalty under the Marine, Protection, Research and Sanctuaries Act. Materials deposited above the maximum indicated elevation or outside of the disposal area template shown will require the redredging or removal of such materials at the Contractor's expense. In addition, the Contractor must notify the Contracting Officer and the Environmental Protection Agency Region 4 's Wetlands, Oceans and Streams Protection Branch (61 Forsyth Street, Atlanta, GA 30303) within 24 hours of a misplaced dump or any other violation of the Site Management and Monitoring Plan for the Mobile ODMDS. Corrective actions must be implemented by the next dump and the Contracting Officer must be informed of actions taken.

Sea Turtle Deflector Specification


APPROACH ANGLE
ADJUSTABLE LINK
INTERNAL REINFORCEMENT
TURTLE DEFLECTOR
6" PLOWING
REQUIRED DREDGING DEPTH
15" MIN
DRAGARM
DRAGHEAD
HINGE POINT
ABRASIVE RESISTANT
DOUBLER PLATE
ELEVATION
RIGID ADJUSTABLE TURTLE DEFLECTOR
SCALE:NONE

01355- 1


TURTLE DEFLECTOR
INTERNAL REINFORCEMENT
ABRASIVE RESISTANT DOUBLER PLATE
45° (MIN)
6" TYP
DRAGHEAD
PLAN VIEW
RIGID TURTLE DEFLECTOR
SCALE:NONE

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Turbidity Monitoring Report

TURBIDITY MONITORING REPORT
IRVINGTON SITE OFFICE
CONTRACT NUMBER:

==========

DATE: REPORT NO. #

TIME OF DAY SAMPLE TAKEN:_____hrs

WEATHER CONDITIONS:

DIRECTION OF WATER FLOW:_____TIDAL STAGE: _____

WATER TEMP:_____° WIND SPEED _____ (MPH)

WAVE CONDITIONS (CALM, CHOPPY, ROUGH): _____

==========

TURBIDITY MEASUREMENT TAKEN APPROX. _____ FT. FROM DREDGE

TURBIDITY MEASUREMENT TAKEN APPROX._____FT. FROM DISCHARGE

DISCHARGE IS APPROX._____FT FROM DREDGE WITH AZIMUTH_____°

DEPTH AT DREDGE: _____ FT. DEPTH AT DISCHARGE:_____FT.

SURFACE TURBIDITY AT DREDGE:_____NTU

MID-DEPTH TURBITY AT DREDGE:_____NTU

SURFACE TURBIDITY AT DISCHARGE:_____NTU D/A #: 11, SECTION 1a

MID-DEPTH TURBITY AT DISCHARGE:_____NTU

==========

BACKGROUND TURBIDITY TAKEN APPROX._____FT FROM DREDGE

AZIMUTH FROM DREDGE:_____°

WATER DEPTH:_____FT

SURFACE TURBIDITY:_____NTU MID-DEPTH TURBIDITY:_____NTU

==========

REMARKS (VISIBLE PLUME, ETC.): Sea too rough for samples_____

INSPECTOR: _____

Standard Manatee Conditions

STANDARD MANATEE CONSTRUCTION CONDITIONS
April 2003

a. The lessee/grantee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel are responsible for observing water-related activities for the presence of manatees.

b. The lessee/grantee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to, or exit from, essential habitat.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

e. If manatees are seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure their protection. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. Operation of any equipment closer than 50 feet to a manatee shall necessitate immediate shutdown of that equipment. Activities will not resume until the manatee(s) has departed the project area of its own volition.

f. Any collision with and/or injury to a manatee shall be reported immediately to Mr. Paul Necaise at (228) 493-6631 of the U.S. Fish and Wildlife Service in Jackson, Mississippi.

g. Temporary signs concerning the manatees shall be posted prior to and during all construction/dredging activities. All signs are to be removed by the lessee/grantee upon completion of the project. A sign measuring at least 3 ft. by 4 ft. which reads *Caution: Manatee Area* will be posted in a location prominently visible to water related construction crews. A second sign should be posted if vessels are associated with the construction, and should be placed visible to the vessel operator. The second sign should be at least 8',6" by 11" which reads *Caution: Manatee Habitat. Idle speed is required if operating a vessel #7 the construction area. All equipment must be shutdown if a manatee comes within 50 feet of operation. Any collision with and/or injury to a manatee shall be reported immediately to the U.S. Fish and Wildlife Service in Jackson, Mississippi (228-493-6631).*

APPENDIX C

DREDGING QUANTITIES

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APPENDIX C, CUT TEMPLATE AVERAGE END AREA VOLUME REPORT
MOBILE HARBOR, ALABAMA, DEEPENING AND WIDENING - PHASE 3

DREDGE VOLUMES

	Phase 3 Dredge Template			Phase 3 O&M Template			Phase 3 New Work Template		
Baseline Station	Cut Area (S.F.)	Cut Volume (C.Y.)	Cumulative Volume (C.Y)	Cut Area (S.F.)	Cut Volume (C.Y.)	Cumulative Volume (C.Y.)	Cut Area (S.F.)	Cut Volume (C.Y.)	Cumlative Volume (C.Y.)
950+00.00	2896.2	0.0	0.0	559.9	0.0	0.0	2336.3	0.0	0.0
955+00.00	2998.0	54575.6	54575.6	631.6	11031.6	11031.6	2366.4	43544.0	43544.0
960+00.00	3041.3	55919.2	110494.8	656.4	11925.5	22957.1	2384.9	43993.7	87537.7
965+00.00	2985.3	55801.3	166296.1	615.7	11779.0	34736.1	2369.6	44022.3	131560.0
970+00.00	2921.0	54687.2	220983.3	537.3	10676.3	45412.4	2383.7	44010.9	175570.9
975+00.00	2663.4	51706.9	272690.2	402.3	8700.3	54112.7	2261.1	43006.6	218577.5
980+00.00	2506.6	47870.4	320560.6	276.2	6282.9	60395.6	2230.4	41587.5	260165.0
985+00.00	2702.5	48232.5	368793.2	401.9	6278.9	66674.5	2300.6	41953.6	302118.7
990+00.00	3040.5	53175.8	421969.0	646.0	9703.2	76377.7	2394.5	43472.6	345591.3
995+00.00	3182.4	57619.2	479588.1	728.4	12726.4	89104.1	2454.0	44892.8	390484.0
1000+00.00	3204.3	59135.6	538723.7	743.6	13629.7	102733.8	2460.7	45505.9	435989.9
1005+00.00	3158.7	58916.7	597640.4	718.4	13537.0	116270.8	2440.3	45379.7	481369.6
1010+00.00	3078.4	57751.2	655391.6	672.0	12874.4	129145.2	2406.4	44876.8	526246.4
1015+00.00	3083.7	57056.0	712447.6	666.5	12393.8	141539.0	2417.2	44662.2	570908.6
1020+00.00	3028.6	56594.9	769042.5	633.0	12032.1	153571.1	2395.6	44562.8	615471.4
1025+00.00	2957.5	55426.6	824469.2	556.4	11012.6	164583.7	2401.1	44414.0	659885.4
1030+00.00	3050.7	55631.0	880100.1	664.7	11306.0	175889.8	2386.0	44325.0	704210.4
1035+00.00	3156.9	57477.0	937577.1	721.7	12836.4	188726.1	2435.2	44640.6	748851.0
1040+00.00	3418.2	60879.7	998456.9	829.9	14366.4	203092.6	2588.2	46513.3	795364.3
1045+00.00	3770.4	66561.2	1065018.0	974.1	16703.4	219796.0	2796.4	49857.8	845222.1
1050+00.00	4099.5	72869.4	1137887.4	1190.3	20039.9	239835.8	2909.2	52829.5	898051.6
1055+00.00	4400.4	78702.2	1216589.6	1265.6	22739.5	262575.4	3134.8	55962.7	954014.3
1060+00.00	4262.8	80214.5	1296804.1	1225.2	23062.6	285638.0	3037.6	57151.9	1011166.2
1065+00.00	3937.5	75928.7	1372732.8	1102.5	21552.0	307190.0	2835.1	54376.6	1065542.8
1070+00.00	3541.8	69253.3	1441986.1	904.6	18584.3	325774.3	2637.2	50669.0	1116211.8
1073+60.09	3314.7	45721.9	1487707.9	810.6	11419.3	337193.6	2504.1	34302.6	1150514.3
1075+00.00	3280.7	17088.3	1504796.2	808.8	4213.5	341407.1	2471.9	12874.8	1163389.1
1080+00.00	3339.7	61300.1	1566096.3	799.6	14892.7	356299.9	2540.1	46407.3	1209796.4

1085+00.00	3352.1	61960.7	1628057.0	807.5	14880.4	371180.3	2544.6	47080.3	1256876.7
1090+00.00	3324.2	61816.9	1689873.9	796.9	14855.4	386035.7	2527.2	46961.5	1303838.2
1095+00.00	3442.9	62658.1	1752532.0	925.5	15948.0	401983.7	2517.5	46710.1	1350548.3
1098+75.99	3510.1	48412.2	1800944.1	925.5	12867.8	414851.5	2584.5	35544.3	1386092.6
1100+00.00	3593.5	16313.2	1817257.3	1001.3	4446.0	419297.5	2592.2	11867.2	1397959.8
1105+00.00	4112.0	71347.5	1888604.8	1278.1	21105.2	440402.7	2834.0	50242.2	1448202.0
1110+00.00	4568.1	80371.4	1968976.2	1517.0	25879.8	466282.5	3051.1	54491.6	1502693.7
1115+00.00	4900.4	87671.4	2056647.6	1704.5	29828.6	496111.1	3195.9	57842.8	1560536.5
1120+00.00	4459.4	86664.8	2143312.4	1412.4	28860.1	524971.2	3047.0	57804.7	1618341.2
1125+00.00	3945.4	77821.6	2221134.0	1065.4	22942.7	547913.9	2879.9	54879.0	1673220.1
1130+00.00	3451.1	68485.6	2289619.6	793.3	17210.1	565124.0	2657.9	51275.5	1724495.7
1133+58.40	3201.8	44155.3	2333774.9	676.5	9727.4	574851.3	2525.3	34427.9	1758923.5
1135+00.00	3175.2	16722.3	2350497.1	662.7	3536.4	578387.8	2512.5	13185.8	1772109.3
1140+00.00	3243.9	59436.2	2409933.4	756.7	13142.6	591530.3	2487.2	46293.7	1818403.0
1145+00.00	3364.1	61185.2	2471118.5	828.5	14677.5	606207.8	2535.6	46507.7	1864910.7
1150+00.00	3271.2	61437.6	2532556.1	725.2	14386.0	620593.9	2546.0	47051.5	1911962.2
1155+00.00	3275.8	60619.8	2593175.9	746.5	13626.9	634220.7	2529.3	46992.9	1958955.2
1160+00.00	3261.6	60531.2	2653707.1	752.0	13875.2	648095.9	2509.6	46656.1	2005611.2
1165+00.00	3222.6	60038.6	2713745.7	732.5	13745.8	661841.7	2490.1	46292.8	2051904.0
1170+00.00	3336.4	60730.8	2774476.5	838.2	14543.7	676385.4	2498.2	46187.1	2098091.1
1175+00.00	3286.6	61323.2	2835799.7	791.1	15085.8	691471.2	2495.5	46237.4	2144328.5
1180+00.00	3335.9	61318.6	2897118.3	806.5	14792.3	706263.5	2529.4	46526.2	2190854.8
1185+00.00	3331.9	61738.0	2958856.2	829.1	15144.6	721408.1	2502.7	46593.4	2237448.1
1190+00.00	3315.7	61551.2	3020407.4	802.6	15108.3	736516.4	2513.1	46442.9	2283891.0
1195+00.00	3301.4	61268.7	3081676.1	794.7	14789.8	751306.2	2506.6	46478.9	2330369.9
1200+00.00	3353.0	61614.2	3143290.3	842.3	15157.3	766463.5	2510.7	46456.9	2376826.9
1205+00.00	3341.9	61989.9	3205280.3	814.1	15337.0	781800.5	2527.8	46652.9	2423479.8
1210+00.00	3394.8	62376.6	3267656.9	857.4	15477.4	797277.9	2537.3	46899.3	2470379.0
1215+00.00	3402.6	62938.6	3330595.5	863.1	15931.1	813209.0	2539.5	47007.5	2517386.5
1220+00.00	3354.5	62566.0	3393161.5	851.9	15880.1	829089.0	2502.6	46685.9	2564072.4
1225+00.00	3381.6	62371.4	3455532.9	867.9	15924.3	845013.4	2513.7	46447.1	2610519.5
1230+00.00	3401.5	62806.6	3518339.4	902.0	16387.8	861401.2	2499.6	46418.8	2656938.3
1235+00.00	3409.6	63066.0	3581405.4	883.7	16534.3	877935.4	2525.9	46531.7	2703470.0
1240+00.00	3400.9	63060.0	3644465.5	876.0	16293.7	894229.1	2524.9	46766.3	2750236.3
1245+00.00	3358.5	62586.9	3707052.3	832.5	15819.6	910048.7	2526.0	46767.3	2797003.6

1250+00.00	3418.6	62751.4	3769803.8	879.2	15849.3	925898.0	2539.5	46902.1	2843905.8
1255+00.00	3348.8	62661.1	3832464.8	858.0	16085.3	941983.3	2490.7	46575.8	2890481.5
1260+00.00	3398.4	62473.8	3894938.6	867.1	15973.4	957956.6	2531.3	46500.4	2936981.9
1265+00.00	3317.0	62179.5	3957118.0	823.2	15650.9	973607.6	2493.8	46528.6	2983510.5
1270+00.00	3361.7	61839.1	4018957.1	860.0	15585.0	989192.6	2501.7	46254.1	3029764.6
1275+00.00	3380.0	62422.9	4081380.1	865.5	15976.6	1005169.2	2514.5	46446.3	3076210.9
1280+00.00	3408.1	62853.3	4144233.3	877.0	16134.2	1021303.4	2531.1	46719.1	3122930.0
1285+00.00	3329.9	62389.2	4206622.6	853.9	16026.6	1037330.0	2476.0	46362.6	3169292.6
1290+00.00	3372.2	62056.6	4268679.2	870.1	15962.7	1053292.7	2502.1	46093.9	3215386.5
1295+00.00	3304.6	61822.1	4330501.2	819.7	15646.3	1068939.0	2484.9	46175.8	3261562.2
1300+00.00	3255.0	60736.7	4391237.9	796.2	14962.2	1083901.2	2458.8	45774.5	3307336.7
1305+00.00	3232.8	60072.1	4451310.1	783.0	14622.2	1098523.4	2449.8	45449.9	3352786.6
1310+00.00	3226.1	59804.8	4511114.9	757.7	14265.7	1112789.1	2468.4	45539.2	3398325.8
1315+00.00	3212.5	59616.7	4570731.6	765.2	14100.9	1126890.0	2447.3	45515.8	3443841.5
1320+00.00	3230.0	59652.9	4630384.5	777.0	14279.7	1141169.7	2453.0	45373.2	3489214.7
1325+00.00	3241.8	59923.8	4690308.3	779.7	14413.9	1155583.6	2462.1	45510.0	3534724.7
1330+00.00	3254.2	60147.3	4750455.6	784.3	14481.5	1170065.1	2469.8	45665.8	3580390.5
1335+00.00	3277.6	60478.9	4810934.4	814.2	14801.0	1184866.1	2463.4	45677.8	3626068.4
1340+00.00	3320.8	61095.4	4872029.9	818.4	15116.1	1199982.1	2502.4	45979.4	3672047.7
1345+00.00	3314.4	61437.0	4933466.8	827.7	15241.4	1215223.6	2486.7	46195.5	3718243.2
1350+00.00	3281.2	61070.6	4994537.4	804.5	15113.2	1230336.8	2476.7	45957.4	3764200.6
1355+00.00	3288.0	60825.8	5055363.2	818.9	15031.4	1245368.1	2469.1	45794.4	3809995.1
1360+00.00	3357.5	61532.4	5116895.6	876.2	15695.3	1261063.4	2481.3	45837.2	3855832.2
1365+00.00	3254.9	61225.4	5178121.0	785.7	15388.0	1276451.4	2469.1	45837.4	3901669.6
1370+00.00	3264.2	60361.5	5238482.5	767.2	14378.7	1290830.1	2497.0	45982.8	3947652.4
1375+00.00	3219.0	60029.6	5298512.1	759.2	14133.4	1304963.5	2459.8	45896.2	3993548.7
1380+00.00	3188.0	59324.5	5357836.6	739.9	13880.4	1318843.9	2448.2	45444.1	4038992.8
1385+00.00	3171.7	58886.3	5416722.9	714.2	13463.7	1332307.6	2457.5	45422.6	4084415.3
1390+00.00	3126.3	58314.5	5475037.3	676.5	12876.8	1345184.4	2449.8	45437.7	4129853.0
1395+00.00	3097.0	57623.1	5532660.4	650.8	12289.8	1357474.1	2446.2	45333.3	4175186.3
1400+00.00	3102.9	57406.2	5590066.6	651.5	12058.1	1369532.2	2451.4	45348.1	4220534.4
1405+00.00	3084.0	57285.9	5647352.5	652.8	12076.7	1381609.0	2431.2	45209.1	4265743.5
1410+00.00	3027.3	56586.4	5703938.8	605.8	11653.5	1393262.5	2421.6	44932.8	4310676.3
1415+00.00	3060.5	56368.6	5760307.4	612.7	11282.0	1404544.5	2447.8	45086.5	4355762.9
1420+00.00	3023.1	56329.4	5816636.8	587.4	11111.7	1415656.2	2435.7	45217.7	4400980.5

1425+00.00	2961.6	55414.2	5872051.0	542.9	10465.0	1426121.2	2418.8	44949.2	4445929.7
1430+00.00	3005.9	55255.1	5927306.1	563.3	10242.3	1436363.6	2442.6	45012.8	4490942.5
1435+00.00	2930.1	54963.3	5982269.4	532.2	10144.0	1446507.5	2397.9	44819.3	4535761.8
1440+00.00	2893.3	53920.2	6036189.6	494.6	9507.7	1456015.2	2398.7	44412.5	4580174.4
1445+00.00	2859.5	53265.8	6089455.4	468.1	8913.5	1464928.8	2391.4	44352.3	4624526.6
1450+00.00	2866.4	53017.1	6142472.5	456.2	8558.2	1473487.0	2410.2	44458.9	4668985.5
1455+00.00	2900.1	53393.3	6195865.7	476.2	8633.6	1482120.5	2423.9	44759.7	4713745.2
1460+00.00	2908.1	53779.2	6249644.9	476.3	8819.7	1490940.2	2431.8	44959.5	4758704.7
1465+00.00	2900.6	53784.3	6303429.2	500.4	9043.3	1499983.5	2400.3	44740.9	4803445.7
1470+00.00	2940.2	54081.4	6357510.6	516.2	9412.9	1509396.5	2423.9	44668.4	4848114.1
1475+00.00	2899.9	54074.4	6411585.0	504.8	9454.2	1518850.7	2395.1	44620.2	4892734.3
1480+00.00	2892.5	53633.6	6465218.6	479.7	9115.6	1527966.3	2412.9	44518.0	4937252.3
1485+00.00	2836.4	53045.9	6518264.5	446.7	8577.6	1536543.9	2389.7	44468.3	4981720.6
1490+00.00	2756.3	51784.0	6570048.5	396.7	7809.7	1544353.6	2359.5	43974.3	5025694.9
1495+00.00	2783.3	51292.6	6621341.0	396.2	7341.8	1551695.3	2387.2	43950.8	5069645.7
1500+00.00	2737.1	51114.8	6672455.8	366.4	7060.9	1558756.3	2370.7	44053.8	5113699.5
1505+00.00	2739.9	50712.2	6723168.0	355.0	6679.1	1565435.4	2384.9	44033.1	5157732.6
1510+00.00	2822.3	51501.8	6774669.8	426.1	7232.1	1572667.5	2396.2	44269.7	5202002.3
1515+00.00	2733.0	51438.2	6826108.0	379.3	7457.6	1580125.0	2353.7	43980.6	5245982.9
1520+00.00	2727.4	50559.1	6876667.0	353.9	6789.1	1586914.1	2373.5	43770.0	5289752.9
1525+00.00	2709.8	50344.1	6927011.1	335.1	6379.8	1593294.0	2374.7	43964.3	5333717.1
1530+00.00	2642.6	49558.9	6976570.0	297.4	5856.3	1599150.3	2345.2	43702.6	5377419.7
1535+00.00	2578.3	48341.6	7024911.6	261.1	5171.1	1604321.4	2317.2	43170.5	5420590.3
1538+01.00	2568.7	28689.5	7053601.1	260.0	2894.8	1607216.2	2308.7	25794.7	5446384.9
1540+00.00	2610.1	19085.0	7072686.1	255.1	1907.8	1609124.0	2355.0	17177.2	5463562.2
1545+00.00	2659.1	48788.5	7121474.7	217.0	4371.6	1613495.5	2442.1	44417.0	5507979.1
1550+00.00	2756.2	50141.6	7171616.3	207.2	3928.0	1617423.5	2549.0	46213.6	5554192.7
1555+00.00	2796.5	51414.1	7223030.4	153.3	3338.0	1620761.5	2643.2	48076.1	5602268.8
1560+00.00	3030.0	53948.6	7276979.0	176.8	3056.6	1623818.1	2853.1	50892.0	5653160.8
1565+00.00	3182.4	57521.6	7334500.5	171.4	3224.2	1627042.3	3011.0	54297.4	5707458.2
1570+00.00	3490.8	61788.6	7396289.1	190.0	3346.0	1630388.3	3300.8	58442.6	5765900.8
1575+00.00	3773.9	67265.7	7463554.8	176.3	3391.7	1633780.0	3597.6	63874.0	5829774.8
1580+00.00	3899.4	71049.0	7534603.7	167.6	3183.9	1636963.9	3731.8	67865.1	5897639.9
1585+00.00	3827.4	71544.4	7606148.1	132.8	2780.8	1639744.7	3694.6	68763.6	5966403.4
1590+00.00	3676.7	69482.2	7675630.3	146.8	2588.9	1642333.6	3529.8	66893.3	6033296.8