ALEXANDER ISLAND
BORING SUMMARY SHEET

BORING ID:	13-B03
BORING TYPE:	Borrow Source
DEPTH:	15'
ELEVATION:	27.42'
X (US SURVEY FT):	3224781.02
Y (US SURVEY FT):	13829832.05
DEPTH TO WATER:	6.4'

13-B03

Contract No. W912HY-13-D0001 DY06

Client: USACE-Galveston District		Boring: 13-B03	Page 1 of 1
Date/Time Drilling Begun: 12.18.13/0830		Date/Time Drilling Ended: 12.18.13 / 1010	
Driller: J. New	Logger: E. Ficker	Designated X (Easting): 3224655	
Drill Rig: Mobile B57		Designated Y (Northing): 13829970	Z (Elevation):
Total depth: 15.5 ft	Initial Water Encounter (Depth, date/time): 6.6 ft 12.18.13 857	Water Depth (15 min.): 6.4 ft.	

Feet	USCS Log	Sample Interval (ft)	Amount Material Obtained (in)	Sample Type Blow Counts	Number of Tubes	Pocket Pene. (tsf)	Shear Strength (tsf)	Description (SOIL TYPE, color, moisture, plasticity, consistency, density, inclusions, etc.)
0	CH	0-2	14	ST	1 T	1.25	–	CLAY, Reddish Brown + Light Gray, Moist, High Plast, Mixed V. Light Grayish-Brown with SAND (F-C)
2' 4'	SM/SC	2-4	16	ST	1 B	–	–	Silty, Clayey, SAND (F-C), V. Light Grayish Brown, Moist, Common Loose Shell frags
5	SC	~~4-8~~ 5	10	SS 3-3-4	1 B	–	–	Clayey SAND (F-C) light Gray, Wet, Loose.
7'		~~6-8~~						to 7.0 ft
9'6"	SM	~~8-10~~ 8.5-10	12	SS 3-2-2	1 B			7.0 V. Silty Sand (F-M), Wet, V. Loose, Light Gray 9'6" – CLAY, Dk Gray to Blk, Moist, High Plast., Soft, Fine SA lams at base
10	CH							to 11'6"
11'6"	CH	10-12	15	ST	2 T T	Ø 0.75	0.2 –	11'6" CLAY, Moist Dark Grayish Brown, High Plast, Common Roots, Med Stiff, Fine SA lams at base
12'	CH	12-14	15	ST	2 B T	1.5	–	CLAY Reddish Brown + Light Gray, Moist, High Plast, Stiff
13'6"	SM							13'6" Silty SAND
15	SM/CH	14-15.5	12	SS 2-6-6	1 B	0 to 0.75	–	+14' Alternating/Mixed CLAY Reddish Brown, Moist, High Plast Med. Stiff, with CLAY, Gray, Moist, High Plast, V. Soft, Clay separated by Silty SAND (F-C)
15'6"								
20								

0830 ↑ Dredge Spoil ↓ 1010

Weather: Foggy, Calm, ~55°F B=bag, T=tube

Comments:

USCS Log Legend: F-C = fine to coarse grained Frags = fragments Drk = Dark Blk = Black V. = Very Plast. = Plasticity SA = SAND lams = laminations

GW GP GM GC SW SP SM SC ML CL OL MH CH OH PT

US Army Corps of Engineers, Southwestern Division
Galveston District
2000 Fort Point Road/P.O. Box 1229
Galveston, TX 77553-1229

Alexander Island
Houston Ship Channel
Baytown, TX

QRI Quaternary Resource Investigations, L.L.C.
Government & Industry in Harmony with the Environment
13588 Florida Boulevard, Baton Rouge, Louisiana 70819

Quaternary Resource Investigations, LLC
13588 Florida Boulevard
Baton Rouge, LA 70820
Telephone: 225-292-1400
Fax: 225-292-1404

BORING NUMBER 13-B03

CLIENT USACE-Galveston District
PROJECT NAME Alexander Island
PROJECT NUMBER W912HY-13-D-0001-DY06
PROJECT LOCATION Alexander Island, Baytown, TX
DATE STARTED 12/18/2013 8:30:00 AM **COMPLETED** 12/18/2013 10:10:00 AM **GROUND ELEVATION** 27.4229 ft **HOLE SIZE** 8.25 inches
DRILLING CONTRACTOR QRI
NORTHING 13829970 ft **EASTING** 3224655 ft
DRILLING METHOD Hollow Stem Auger
DRILLING RIG MAKE/MODEL Mobile B57 on Gemco Articulated Platform
LOGGED BY Eddie Ficker **TOTAL DEPTH** 15.5 ft
GROUND WATER LEVEL ▽ **AT TIME OF DRILLING** 6.60 ft / Elev 20.82 ft
WEATHER foggy, 55, calm
▼ **24 HOURS AFTER DRILLING** 6.40 ft / Elev 21.02 ft

GRAPHIC LOG	USCS SYMBOL	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE	RECOVERY (in)	SPT BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	FIELD TORVANE (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	MINUS #200 SIEVE CONTENT (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)
	CL	Sandy CLAY; reddish brown and light gray, moist, high plasticity CLAY mixed with very light grayish brown SAND (fine to coarse grained)	0	ST	14		1.25		104	15	47	16	31		0.40	7	0
	SC	Clayey SAND; fine to coarse grained, very light grayish brown, moist, loose, shell fragments common		ST	16		-			17				47			
		fine to coarse grained, light gray, wet, loose	5	SS	10	3-3-4 (7)	-			22				47			
		▼ fine to medium grained, light gray, wet, very loose		NR	0												
	CH	CLAY; dark gray to black, moist, high plasticity, soft, fine SAND laminations at base	10	SS	12	3-2-2 (4)	-			54	74	24	50				
				ST	15		0/0.75	0.2/-	55	74					0.24	3	0
		dark grayish brown, moist, high plasticity, medium stiff, fine sand laminations at base, roots common		ST	15		1.5			16	19	12	7				
	CL-ML	Silty CLAY; reddish brown and light gray, stiff, low plasticity	15	SS	12	2-6-6 (12)	0-0.75			27							
		layer of silty SAND															
		alternating layers of reddish brown (medium stiff) and gray (very soft) CLAY, moist, high plasticity; clay separated by fine to coarse grained silty SAND															

Bottom of borehole at 15.5 feet.

SUMMARY TABLE OF LABORATORY TEST DATA

Project Name: Alexander Island | **Client: QRI** | **Terracon Project # : 92135456**

Boring	Depth	Field Tests			Atterberg Limits			Grain Size Analysis											USCS Symbol	Wc	γd	Strenght Tests																				
								% by weight passing sieve														Unconfined Compression				UU Triaxial Test				Direct Shear				CU Triaxial Test							
		PP	TV	SPTn	LL	PL	PI	3/8	4	10	40	100	200	gravel	sand	silt	clay	sieve 200				C	Wc	γd	Symbol	C	Wc	γd	Symbol	C	φ	Wc	Symbol	C	φ	c'	φ'	Wc	γd	Symbol
	ft	tsf	tsf	bl/ft	%	%	%	%	%	%	%	%	%	%	%	%	%	%		%	pcf	ksf	%	pcf		ksf	%	pcf		ksf	°	%		ksf	°	ksf	°	%	pcf	
13-B01	0-2	1.0			43	16	27												CL*	22																			
	2-4	2.0-2.5																		23																			
	4-6	-								100	97		11	0	89			11	SP-SC*	23																			
	5-8.5																																							
	8.5-10	-		0						100	100		52	0	48			52	CL*	28																			
	10-13.5	-																																						
	13.5-15	-		4																33																			
13-B02	0-2	1.0-2.0			44	14	30												CL*	20																			
	2-4	-			34	12	22	99	98	98	89		49	2	49			49	SC	19																			
	4-5	0.5-2			32	11	21	100	100	99	93		67	0	33			67	CL	21																			
	5-7	1.0-2.0																																						
	7-9	-						100	100	100	88		61	0	39			61	CH*	33																			
	9-10	0	0.25																	78																			
	10-12	0	0.35																																					
	12-14	0.5	0.5																																					
	14-15.5	-		8																24																			
13-B03	0-2	1.25			47	16	31												CL*	15	104	0.40	15	104	CL**															
	2-3.5	-						99	98	95	79		47	2	51			47	SC*	17																			
	4-5	-		7				100	98	95	77		47	2	51			47	SC*	22																			
	5-8.5																																							
	8.5-10	-		4	74	24	50												CH*	54																			
	10-12	0/0.75	0.2/-																	74	55	0.24	74	55	CH**															
	12-14	1.5			19	12	7												CL-ML*	16																			
	14-15.5	0-0.75		12																27																			
13-B04	0-2	-																		13																			
	2-3.5																																							
	3.5-5	-		3				100	96	89	63		36	4	60			36	SM*	30																			
	5-8.5																																							
	8.5-10	-		15																20																			
	10-12																																							
	13.5-15	-		1																23																			
13-B05	0-2	-			29	13	16	100	99	99	94		80	1	19			80	CL	30																			
	2-4	-																		16																			
	4-5.5			8																20																			
	5.5-8.5																																							
	8.5-10			3																26																			
	10-12																																							
	13.5-15			14																28																			
13-B06	0-2	-							100	98	59		16	0	84			16	SC*	9																			
	2-3.5																																							
	3.5-5	-		4																18																			
	5-8.5																																							
	8.5-10	-		5																25																			
	10-12																																							
	13.5-15	-		13																41																			
13-B07	0-2	-								100	98	86	69	0	31	29	40	69	CH*	25																			
	2-3.5																																							
	3.5-5	-		10																26																			
	5-8.5																																							No recovery at depth 5-8.5.
	8.5-10	-		4																21																			
	10-12																																							
	13.5-15	0	0.35	13																41																			
13-B08	0-2	-																		23																			
	2-3.5																																							
	3.5-5	-		7																18												0.30	40	18	SP**					Classified as unsuitable during suitability testing. Suitable during sample preparation
	5-8.5																																						
	8.5-10	0	0.25	2	97	32	65												CH*	50																			
	10-12	0	0.25						100	100	90		31	0	69			31		22																			
	12-14	0	0.1-0.3		84	34	50												CH*	56																			
	14-15	-																		24																			
13-B09	0-2	-						100	100	99	70		6	0	94			6	SP-SM*	4																			
	2-3.5																																							
	3.5-5	-		12				100	100	98	71		11	0	89			11	SP-SC*	19																			
	5-8.5																																							
	8.5-10	-		5																22																			
	10-12																																							
	13.5-15	-/0	-/0.35	4																43																			
13-B10	0-2	-																		3																			
	2-3.5																																							
	3.5-5	-		11					100	100	73		3	0	97			3	SP*	20																			
	5-8.5																																							
	8.5-10	-/0	-/0.15	2																29																			
	10-12	0	0.15		47	17	30												CL*	46																			
	12-14	0	0.15																	87																			
	14-16	0	0.15		98	25	73												CH*	72																			

POINT	EASTING (X)	NORTHING (Y)	ELEV.(Z)	BORING
1	3,224,839.86	13,829,574.96	26.07	13-B01 SURVEYED
2	3,224,468.96	13,829,647.11	27.56	13-B02 SURVEYED
3	3,224,781.02	13,829,832.05	27.42	13-B03 SURVEYED
4	3,225,085.04	13,829,951.90	28.02	13-B04 SURVEYED
5	3,224,798.15	13,830,185.96	26.71	13-B05 SURVEYED
6	3,225,137.02	13,830,319.06	27.97	13-B06 SURVEYED
7	3,225,402.24	13,830,377.84	27.40	13-B07 SURVEYED
8	3,225,137.84	13,830,656.99	27.34	13-B08 SURVEYED
9	3,225,431.15	13,830,710.11	28.02	13-B09 SURVEYED
10	3,225,763.04	13,830,892.08	27.75	13-B10 SURVEYED
11	3,225,389.99	13,831,061.05	26.37	13-B11 SURVEYED
12	3,225,579.86	13,831,378.86	26.12	13-B12 SURVEYED
13	3,225,136.04	13,831,406.95	26.39	13-B13 SURVEYED
14	3,225,382.99	13,831,732.99	28.30	13-B14 SURVEYED
15	3,225,027.98	13,831,671.05	27.36	13-B15 SURVEYED
16	3,224,743.97	13,831,628.99	25.72	13-B16 SURVEYED
17	3,224,619.87	13,832,095.98	27.15	13-B17 SURVEYED
18	3,224,819.95	13,832,313.05	29.49	13-B18 SURVEYED
19	3,225,218.97	13,832,197.96	29.61	13-B19 SURVEYED
20	3,225,789.02	13,832,191.02	24.98	13-B20 SURVEYED
21	3,225,424.06	13,832,424.86	25.99	13-B21 SURVEYED
22	3,225,960.93	13,832,420.96	23.86	13-B22 SURVEYED
23	3,226,409.90	13,832,382.04	22.95	13-B23 SURVEYED
24	3,226,641.04	13,832,554.90	23.17	13-B24 SURVEYED
25	3,226,468.10	13,832,757.96	23.39	13-B25 SURVEYED
26	3,226,192.06	13,832,587.05	23.82	13-B26 SURVEYED
27	3,225,917.94	13,832,796.84	24.65	13-B27 SURVEYED
28	3,225,689.17	13,832,584.94	24.74	13-B28 SURVEYED
29	3,225,406.03	13,832,775.88	26.23	13-B29 SURVEYED
30	3,225,210.96	13,832,605.92	27.31	13-B30 SURVEYED
31	3,224,956.08	13,832,789.07	30.03	13-B31 SURVEYED
32	3,224,892.10	13,832,575.99	29.78	13-B32 SURVEYED
33	3,224,600.87	13,832,572.04	30.06	13-B33 SURVEYED
34	3,228,153.92	13,827,285.05	25.73	13-P01 SURVEYED
35	3,225,272.89	13,827,557.13	24.82	13-P02 SURVEYED
36	3,224,485.02	13,828,683.79	23.82	13-P03 SURVEYED
37	3,224,458.15	13,829,880.09	24.00	13-P04 SURVEYED
38	3,225,186.78	13,830,885.15	27.81	13-P05 SURVEYED

3,224,655.30 13,829,970.20 Via Exxon Mobil

3,225,009.40 13,830,410.30 Via Exxon Mobil

3,225,494.19 13,830,624.52 Via Exxon Mobil

3,225,508.40 13,831,329.60 Via QRI

3,225,326.00 13,831,726.80 Via QRI

Removed from Contract
Removed from Contract
Removed from Contract
3,226,407.90 13,832,440.70 Via QRI

PROJECT BENCHMARK:

HARRIS COUNTY FLOODPLAIN REFERENCE MARK NUMBER Q70020. BRASS DISC IN THE WEST END OF THE NORTH HEADWALL PARK ROAD 1836 APPROXIMATELY 845 FEET SOUTHEAST OF HIGHWAY 134

ELEV. 3.68 FEET. NAVD 1988. 2001 ADJUSTMENT.

THE MONUMENT IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORPS ARP ADJUSTED BY NGS IN 2001 AND AS PUBLISHED IN PID AJ6430 EPOCH DATE 1997.00

RYAN 2006 CORPS OF ENGINEERS MONUMENT BRASS DISC IN CONCRETE LOCATED AT THE NORTHWEST CORNER OF PEGGY LAKE PLACEMENT AREA.

ELEV. 4.34. NAVD 88

NOTES:

1. THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID CORRDINATES (NAD 83). AS DERIVED FROM GPS OBSERVATIONS.

   GPS OBSERVATIONS ARE BASED ON THE SMARTNET SYSTEM OPERATED BY LEICA GEOSYSTEMS UTILIZING SPIDERNET SOFTWARE TO OBTAIN CENTIMETER ACCURACIES. MEASURMENTS WERE MADE UTILIZING LEICA VIVA GS15 AND GS12 RECEIVERS.

2. ALL BORING LOCATIONS ARE AS NOTED IN THE TABLE ABOVE.

3. SMARTNET ADJUSTED STATION COORDINATES ARE TIED TO NAD83 (NA2011) DATUM AS DEFINED BY THE NGS CORS DATASHEETS OF THOSE STATIONS HELD FIXED IN THE ADJUSTMENT. FULLY CONSTRAINED ADJUSTED COORDINATES ARE REPORTED TO BE ACCURATE TO ABOUT +/-0.5 CM IN HORIZONTAL AND +/- 1. 5 CM IN VERTICAL AT 95% CONFIDENCE (2-SIGMA) LEVEL.

4. BORE HOLES WERE ADJUSTED IN THE FIELD BY ORI STAFF AND SURVEYED IN THAT LOCATION COORDINATES FOR THAT LOCATION ARE AS SHOWN IN THE TABLE ABOVE.

I. KEVEIN DREW MCRAE. A TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR. HEREBY CERTIFY THAT THIS SURVEY WAS PERFORMED ON THE GROUND BY ME OR UNDER MY SUPERVISION ON THIS THE 19TH DAY OF NOVEMBER. 2013.

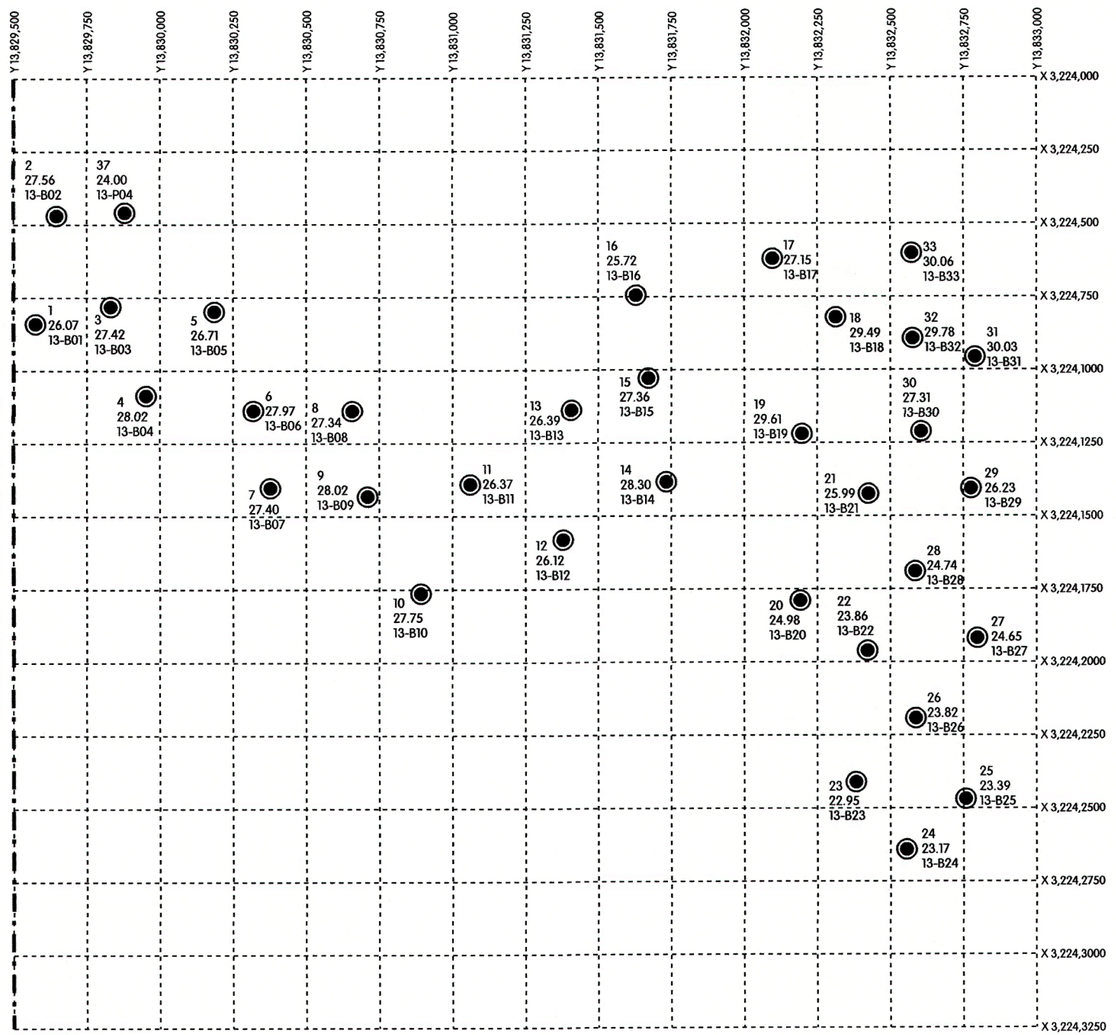
KEVIN DREW McRAE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 5485

STATE OF TEXAS REGISTERED KEVIN DREW McRAE 5485 PROFESSIONAL LAND SURVEYOR

PLAN

0 500 1000 1500

SCALE IN FEET



DRAWN BY: CTC | CHECKED BY: KDM

KM Surveying, LLC
3902A REESE ROAD – SUITE 300
ROSENBERG, TEXAS 77471
713-234-6627
www.kmsurveying.com

U.S. Army Corps of Engineers
Galveston District

TIME:2:34:30 PM
DATE: 1/18/2014
BY: $USER$

Rev.	Description	Date	By

Date: X
Scale: AS SHOWN
Approval Recommended:
BOBBY BICHWELL, P.E.
Chief, Engineering Branch

Drawn by: X
Designed by: X
Checked by: X
Submitted by: DAVID B. BROWN, P.E. – Chief, General Engineering
Approved by: PETE G. PEREZ, P.E. – Chief, Engineering and Construction Division

U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
CHRISTOPHER W. SALLESE, COL, C.E.,
DISTRICT COMMANDER

BORING HOLE LOCATIONS
TASK ORDER NO. DY06
CONTRACT NO. W912HY-13-D-0001
ALEXANDER ISLAND PLACEMENT AREA

PASADENA, TEXAS
HARRIS COUNTY, TEXAS

Drawing No.:

Sheet 1 of 2

File No. xxx XXX-XXX

File: $FILE$

POINT	EASTING (X)	NORTHING (Y)	ELEV.(Z)	BORING	
1	3,224,839.86	13,829,574.96	26.07	13-B01 SURVEYED	
2	3,224,468.96	13,829,647.11	27.56	13-B02 SURVEYED	
3	3,224,781.02	13,829,832.05	27.42	13-B03 SURVEYED	3,224,655.30 13,829,970.20 Via Exxon Mobil
4	3,225,085.04	13,829,951.90	28.02	13-B04 SURVEYED	
5	3,224,798.15	13,830,185.96	26.71	13-B05 SURVEYED	
6	3,225,137.02	13,830,319.06	27.97	13-B06 SURVEYED	3,225,009.40 13,830,410.30 Via Exxon Mobil
7	3,225,402.24	13,830,377.84	27.40	13-B07 SURVEYED	
8	3,225,137.84	13,830,656.99	27.34	13-B08 SURVEYED	
9	3,225,431.15	13,830,710.11	28.02	13-B09 SURVEYED	3,225,494.19 13,830,624.52 Via Exxon Mobil
10	3,225,763.04	13,830,892.08	27.75	13-B10 SURVEYED	
11	3,225,389.99	13,831,061.05	26.37	13-B11 SURVEYED	
12	3,225,579.86	13,831,378.86	26.12	13-B12 SURVEYED	3,225,508.40 13,831,329.60 Via QRI
13	3,225,136.04	13,831,406.95	26.39	13-B13 SURVEYED	
14	3,225,382.99	13,831,732.99	28.30	13-B14 SURVEYED	3,225,326.00 13,831,726.80 Via QRI
15	3,225,027.98	13,831,671.05	27.36	13-B15 SURVEYED	
16	3,224,743.97	13,831,628.99	25.72	13-B16 SURVEYED	
17	3,224,619.87	13,832,095.98	27.15	13-B17 SURVEYED	
18	3,224,819.95	13,832,313.05	29.49	13-B18 SURVEYED	
19	3,225,218.97	13,832,197.96	29.61	13-B19 SURVEYED	
20	3,225,789.02	13,832,191.02	24.98	13-B20 SURVEYED	Removed from Contract
21	3,225,424.06	13,832,424.86	25.99	13-B21 SURVEYED	Removed from Contract
22	3,225,960.93	13,832,420.96	23.86	13-B22 SURVEYED	Removed from Contract
23	3,226,409.90	13,832,382.04	22.95	13-B23 SURVEYED	3,226,407.90 13,832,440.70 Via QRI
24	3,226,641.04	13,832,554.90	23.17	13-B24 SURVEYED	
25	3,226,468.10	13,832,757.96	23.39	13-B25 SURVEYED	
26	3,226,192.06	13,832,587.05	23.82	13-B26 SURVEYED	
27	3,225,917.94	13,832,796.84	24.65	13-B27 SURVEYED	
28	3,225,689.17	13,832,584.94	24.74	13-B28 SURVEYED	
29	3,225,406.03	13,832,775.88	26.23	13-B29 SURVEYED	
30	3,225,210.96	13,832,605.92	27.31	13-B30 SURVEYED	
31	3,224,956.08	13,832,789.07	30.03	13-B31 SURVEYED	
32	3,224,892.10	13,832,575.99	29.78	13-B32 SURVEYED	
33	3,224,600.87	13,832,572.04	30.06	13-B33 SURVEYED	
34	3,228,153.92	13,827,285.05	25.73	13-P01 SURVEYED	
35	3,225,272.89	13,827,557.13	24.82	13-P02 SURVEYED	
36	3,224,485.02	13,828,683.79	23.82	13-P03 SURVEYED	
37	3,224,458.15	13,829,880.09	24.00	13-P04 SURVEYED	
38	3,225,186.78	13,830,885.15	27.81	13-P05 SURVEYED	

PROJECT BENCHMARK:

HARRIS COUNTY FLOODPLAIN REFERENCE MARK NUMBER 070020, BRASS DISC IN THE WEST END OF THE NORTH HEADWALL PARK ROAD 1836 APPROXIMATELY 845 FEET SOUTHEAST OF HIGHWAY 134

ELEV. 3.68 FEET, NAVD 1988, 2001 ADJUSTMENT.

THE MONUMENT IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORPS ARP ADJUSTED BY NGS IN 2001 AND AS PUBLISHED IN PID AJ6430 EPOCH DATE 1997.00

RYAN 2006 CORPS OF ENGINEERS MONUMENT BRASS DISC IN CONCRETE LOCATED AT THE NORTHEWEST CORNER OF PEGGY LAKE PLACEMENT AREA.

ELEV. 4.34, NAVD 88

NOTES:

1. THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID CORRDINATES (NAD 83), AS DERIVED FROM GPS OBSERVATIONS.

   GPS OBSERVATIONS ARE BASED ON THE SMARTNET SYSTEM OPERATED BY LEICA GEOSYSTEMS UTILIZING SPIDERNET SOFTWARE TO OBTAIN CENTIMETER ACCURACIES. MEASURMENTS WERE MADE UTILIZING LEICA VIVA GS15 AND GS12 RECEIVERS.

2. ALL BORING LOCATIONS ARE AS NOTED IN THE TABLE ABOVE.

3. SMARTNET ADJUSTED STATION COORDINATES ARE TIED TO NAD83 (NA2011) DATUM AS DEFINED BY THE NGS CORS DATASHEETS OF THOSE STATIONS HELD FIXED IN THE ADJUSTMENT. FULLY CONSTRAINED ADJUSTED COORDINATES ARE REPORTED TO BE ACCURATE TO ABOUT +/-0.5 CM IN HORIZONTAL AND +/- 1. 5 CM IN VERTICAL AT 95% CONFIDENCE (2-SIGMA) LEVEL.

4. BORE HOLES WERE ADJUSTED IN THE FIELD BY ORI STAFF AND SURVEYED IN THAT LOCATION COORDINATES FOR THAT LOCATION ARE AS SHOWN IN THE TABLE ABOVE.

I, KEVEIN DREW MCRAE, A TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR, HEREBY CERTIFY THAT THIS SURVEY WAS PERFORMED ON THE GROUND BY ME OR UNDER MY SUPERVISION ON THIS THE 19TH DAY OF NOVEMBER, 2013.

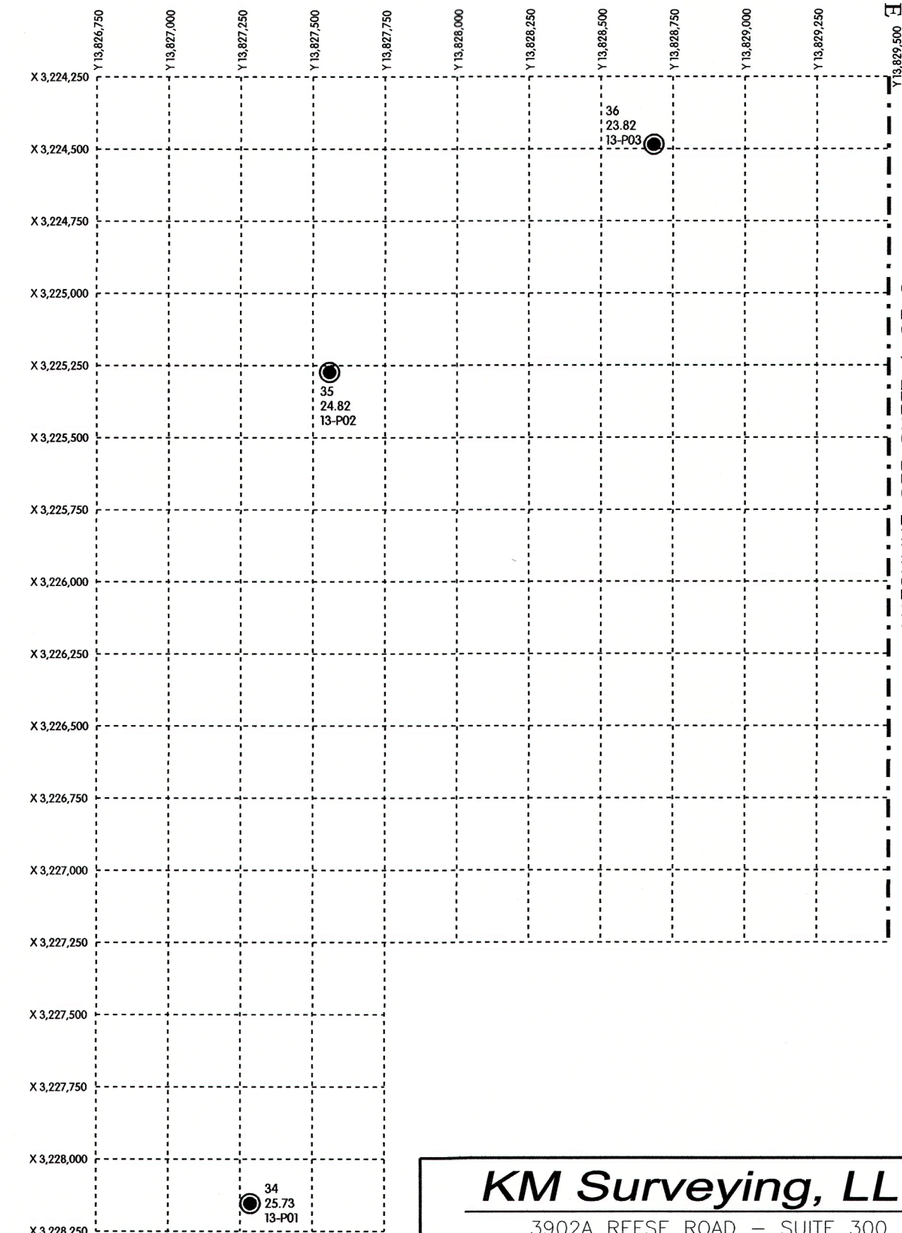
KEVIN DREW McRAE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 5485

STATE OF TEXAS REGISTERED KEVIN DREW McRAE 5485 PROFESSIONAL LAND SURVEYOR

PLAN

0 500 1000 1500

SCALE IN FEET



DRAWN BY: CTC | CHECKED BY: KDM

KM Surveying, LLC
3902A REESE ROAD – SUITE 300
ROSENBERG, TEXAS 77471
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U.S. Army Corps of Engineers
Galveston District

TIME:2:56:39 PM
DATE:1/19/2014
BY:$USER$

Rev.	Description	Date	By

Date: X
Drawn by: X
Designed by: X
Checked by: X
Submitted by: DAVID A. BROWN, P.E. - Chief, Engineering Division
Approved by: PETE G. PEREZ, P.E. - Deputy Chief, Engineering and Construction Division
Scale: AS SHOWN
Approval Recommended: ROBERT SCHNELL, P.E. - Chief, Engineering Branch
Rev. X

U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
CHRISTOPHER W. SALLESE, Col., C.E.,
DISTRICT COMMANDER

BORING HOLE LOCATIONS
TASK ORDER NO. DY06
CONTRACT NO. W912HY-13-D-0001
ALEXANDER ISLAND PLACEMENT AREA

PASADENA, TEXAS
HARRIS COUNTY, TEXAS

Drawing No.:

Sheet 2 of 2
File No. xxx XXX-XXX

File: $FILE$