

EAST GRAND TERRE PROJECT No. BA-30

SURVEY REPORT

PREPARED FOR:

LOUISIANA DEPARTMENT OF NATURAL RESOURCES OFFICE OF COASTAL PROTECTION AND RESTORATION





JANUARY 21, 2011

SUBMITTED BY:





EAST GRAND TERRE PROJECT NO. BA-30 SURVEY REPORT

Prepared for: O.C.P.R.

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Digital Appendix (presented on accompanying CD)

- Data Collection Report file (PDF format)
- Project digital drawing files (AutoCAD, and PDF format)
- Topographic and Bathymetric digital survey point data (ASCI II format)
- Survey Field Notes (PDF Format)



SURVEY REPORT

EAST GRAND TERRE PROJECT NO. BA-30

1.0 <u>Introduction</u>

The purpose of the data collection tasks summarized in this report is to determine the impacts of construction activities in the area of East Grand Terre Island (BA-30) following the Deepwater Horizon oil spill. The services provided under this task order involved topographic and bathymetric field data collection, related data processing, and the organization of all data into a workable format for analysis purposes.

2.0 PROJECT OVERVIEW

The East Grand Terre Island beach survey is authorized by the Louisiana Department of Natural Resources (DNR), Office of Coastal Protection and Restoration (OCPR). The scope of this project provides for Topographic and Bathymetric surveys of littoral, beach, and dunes of East Grand Terre Island. Transects started at Station 8+00 and continued on 125 foot intervals to Station 157+22, while also including any intermediate surveys needed on abnormal features. Coordinates for transects were provided by the client.

3.0 DATA COLLECTION SUMMARY

During the period of October 2010 through November 2010, T. Baker Smith, Inc. (TBS) collected field data throughout the project area. This data collection task consisted of numerous topographic and bathymetric surveys along the beach. The data was collected by a three-man survey crew aboard a 24 foot Survey vessel w/ outboard motors.

3.1 BEACH PROFILES

Topographic and Bathymetric surveys were performed along 119 transects located perpendicular to the beach at 125 foot intervals. The Bathymetric surveys began at the minus six foot NAVD 88 contour and continued toward the beach to the minus one



and a half foot contour. The Topographic surveys began where the Bathymetric data ended, around the minus one and a half foot contour, and went to the crest of the dune and beyond based on field observations. The results of the Beach Profiles can be found in Appendix 2.

On the western side of East Grand Terre Island between Station 18+76 and Station 42+52, a minus six contour was not able to be achieved due to shallow conditions within Pass Abel. After confirming the shallow depths with profiles extending over 2000 feet without reaching the desired elevation, we used an approximate profile length of 1500 feet. The Rigid Pipe Boom (RPB) also impeded the collection of Bathymetric data between Station 48+78 and Station 59+98. Bathymetric data near the RPB was collected in sections starting in the Gulf and heading north until boom was reached, and then starting from the beach and heading south until the boom was reached. Some profiles in Appendix 2 show a gap where data was unable to be collected.

3.2 TOPOGRAPHIC SURVEYS

Topographic Surveys included profiles of the beach at each of the designated stations and intermediate surveys necessary to capture irregularities in normal beach slope. Surveys were also taken across areas that appeared to be mechanically excavated or deposited. Various features and irregularities can be seen on the Contour drawing in Appendix 1.

4.0 <u>METHODOLOGY</u>

4.1 SURVEY CONTROL AND DATUM INFORMATION

The primary horizontal and vertical survey control used for data collection on this project was Benchmark "MPH". This benchmark was used during construction of the East Grand Terre Island Restoration Project and is located on the west bank of Bay Dispute within East Grand Terre Island. It was determined that benchmark "MPH" was unsuitable for the setup of GPS equipment, so two additional Temporary Benchmarks were established for day to day survey control. One temporary benchmark was set near



benchmark "MPH" on the west bank of Bay Dispute within East Grand Terre Island. The other temporary benchmark was set on the East end of East Grand Terre Island approximately 675' North of the survey baseline near Station 154+40. The horizontal datum for all survey data collected is Louisiana State Plane, South Zone (1702), NAD 83, in U.S. Survey feet. The vertical datum for all data is NAVD 88, in U.S. Survey feet. The temporary control points were checked and verified at the beginning of each day of field work. The location of the benchmark and temporary control points can be seen in Appendix 1

4.2 TOPOGRAPHIC SURVEYS

Topographic Surveys were performed using a standard three-man survey crew, traveling to the survey area using a 24' survey vessel with outboards and accessing the beach on foot. In areas with a clear, unobstructed view of the sky, a Trimble© model R7/R8 GPS RTK unit was used to collect the topographic field data. The manufacturer's stated accuracy of this unit is 2-3 cm horizontal, and 3-4 cm vertical. All RTK GPS Survey information was stored digitally using a Trimble TSC-2 Data Collector.

Topographic survey data was downloaded from the Trimble TSC-2 Data Collector into the Trimble Geomatics Office software for processing. This software allows for QA/QC of GPS data, and was used to check for instrument setup errors, antenna height errors, and other blunders. This data was exported to point files and then entered into AutoCAD Civil 3D for further processing. Using this point data, 3D surface models were produced for all areas. These surface models were used to generate elevation contours and profiles for the final deliverable drawings. The processed survey data was also exported to one complete digital csv file containing X, Y, Z coordinates.

4.3 BATHYMETRIC SURVEYS

Bathymetric Surveys were performed using a standard three-man survey crew aboard the 24' Survey Vessel "Surveyor X." The bathymetric data was collected using a *Hydrotrac* digital echosounder interfaced with the *HYPACK MAX* survey navigation software in conjunction with the Trimble RTK GPS unit previously mentioned. Real -



time position data was output from the GPS receiver to the *HYPACK* software 10 times each second. Digital water depth data was also output from the depth sounder 20 times each second. The *HYPACK* software is able to use the above information to display course corrections to help the surveyor navigate the predefined track line. The software is also able to compute a precise, centimeter level, position of each sounding.

In order to ensure accurate measurements were being recorded, equipment checks and calibrations were performed several times each day. The digital depthsounder was calibrated several times a day for sound velocity corrections. This is performed by lowering an acoustic target, with precisely measured marks, below the transducer to the desired survey depth. The depthsounder's sound velocity correction factor is then adjusted so that the depthsounder reads the precise depth of the acoustic target. The measurements of the onboard GPS system were also checked by observing navigation checkpoints, or "Nav-checks", set throughout the project area.

Bathymetric survey data was transferred from the onboard laptop computer to the office for processing. The processing was accomplished by using Hypack's Single Beam Editor. The Hypack software allowed a profile-type review of the data, where any position or sounding outliers were manually removed. Once the data had been processed and gone through an internal QA/QC review, it was presorted and points, spaced at 5' intervals along the line, were exported in X,Y,Z format. These X,Y,Z point files were then imported into AutoCAD Civil 3D for grouping, management, and further QA/QC.



APPENDIX 1

Elevation Contour Drawing



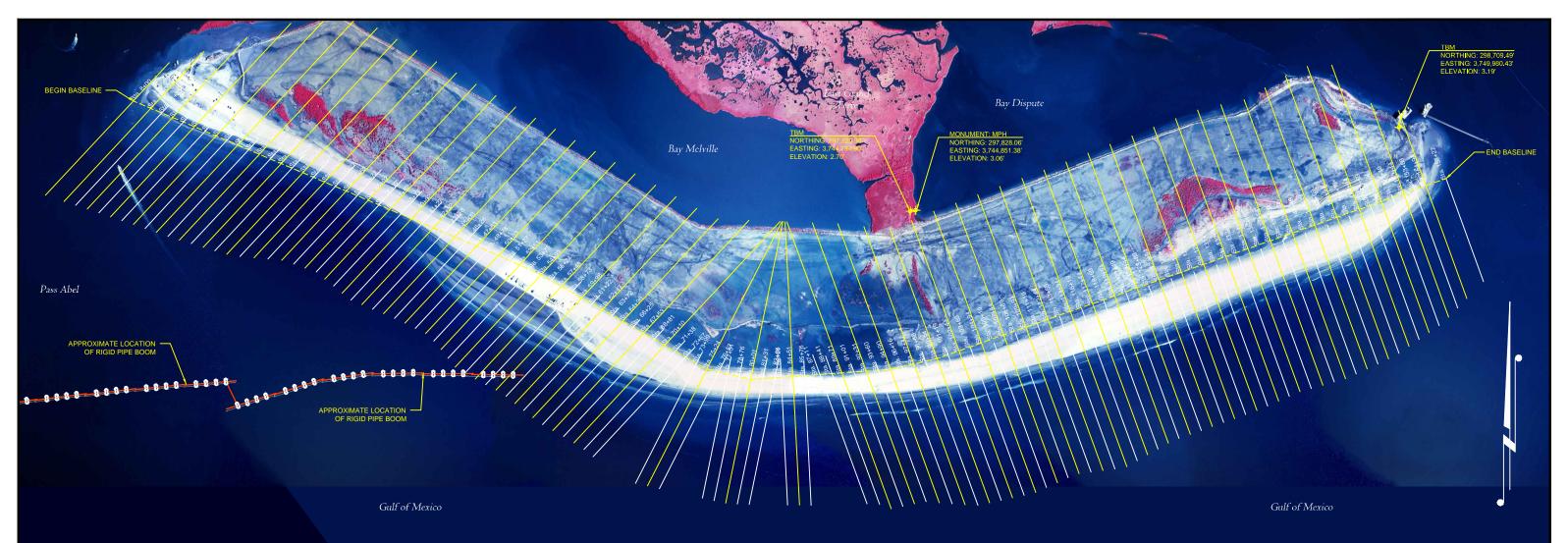
APPENDIX 2

Beach Profiles



APPENDIX 3

Survey Field Notes



BEACH PROFILE COORDINATE TABLE					
Station	Begin		E	ind	
Station	Northing	Easting	Northing	Easting	
8+00	297988.16	3735620.12	299393.85	3736930.95	
10+00	297923.14	3735816.54	299513.30	3737299.39	
11+25	297882.50	3735939.31	298932.37	3736918.33	
12+50	297841.86	3736062.07	299662.61	3737759.95	
13+76	297801.22	3736184.84	298842.73	3737156.06	
15+01	297760.58	3736307.60	299811.92	3738220.50	
16+26	297719.95	3736430.37	298751.96	3737392.73	
17+51	297679.03	3736552.87	299961.22	3738681.05	
18+76	297637.25	3736674.58	298660.60	3737628.86	
20+01	297595.48	3736796.28	299882.96	3738929.39	
21+26	297553.70	3736917.99	298576.35	3737871.62	
22+51	297512.68	3737040.40	299762.38	3739138.27	
23+76	297474.87	3737165.80	298495.63	3738117.67	
25+01	297437.07	3737291.21	299641.89	3739347.24	
26+26	297399.26	3737416.61	298423.89	3738372.09	
27+51	297361.45	3737542.01	299523.07	3739557.75	
28+76	297341.22	3737683.81	298356.16	3738630.26	
30+02	297327.10	3737831.30	299404.20	3739768.24	
31+27	297312.98	3737978.80	298304.14	3738903.07	
32+52	297298.86	3738126.29	299284.62	3739978.04	

BEACH PROFILE COORDINATE TABLE					
0:	Be	egin	E	nd	
Station	Northing	Easting	Northing	Easting	
33+77	297260.83	3738251.49	298258.27	3739181.61	
35+02	297217.78	3738372.01	299165.02	3740187.84	
36+27	297174.74	3738492.53	298159.33	3739410.67	
37+52	297099.78	3738583.29	299045.10	3740397.33	
38+77	297024.82	3738674.05	298033.88	3739615.02	
40+02	296949.86	3738764.81	298925.25	3740606.89	
41+27	296878.05	3738858.50	297911.18	3739821.91	
42+53	296829.59	3738973.97	298806.58	3740817.55	
43+78	296781.12	3739089.44	297790.37	3740030.58	
45+03	296732.66	3739204.91	298687.92	3741028.22	
46+28	296684.20	3739320.38	297674.88	3740244.21	
47+53	296631.99	3739432.36	298569.58	3741239.19	
48+78	296577.76	3739542.45	297399.42	3740308.66	
50+03	296523.53	3739652.54	298451.30	3741450.21	
51+27	296444.41	3739739.42	297369.56	3740602.13	
52+51	296352.44	3739814.32	298334.08	3741662.23	
53+75	296260.48	3739889.23	297197.50	3740763.01	
54+99	296168.52	3739964.13	298216.80	3741874.18	
56+24	296100.20	3740066.14	297121.30	3741018.33	
57+48	296040.93	3740176.73	298094.62	3742091.82	

BEACH PROFILE COORDINATE TABLE							
Station	Ве	egin	E	nd			
Station	Northing	Easting	Northing	Easting			
58+73	295981.66	3740287.32	297067.33	3741299.72			
59+98	295922.44	3740397.81	297972.44	3742309.47			
61+22	295857.94	3740503.39	296929.73	3741502.85			
62+47	295781.83	3740598.27	297850.37	3742527.21			
63+72	295705.73	3740693.15	296785.08	3741699.67			
64+96	295629.68	3740787.96	297738.68	3742754.64			
66+25	295556.94	3740891.05	296665.87	3741925.14			
67+53	295493.06	3741002.39	297723.89	3743082.67			
68+82	295429.17	3741113.74	296563.21	3742171.24			
70+10	295365.29	3741225.08	297709.56	3743411.14			
71+38	295295.71	3741331.11	296442.20	3742400.23			
72+67	295217.29	3741428.90	296375.85	3742509.27			
73+99	294934.49	3741878.47	296327.72	3742588.36			
75+24	294906.60	3742004.55	297708.84	3743432.36			
76+53	294878.71	3742130.63	296268.82	3742838.93			
77+51	294777.31	3742589.00	296268.95	3742892.48			
78+76	294750.31	3742711.07	296269.25	3743020.10			
80+01	294723.31	3742833.13	297708.52	3743440.48			
81+31	294714.32	3742958.86	296259.58	3743273.25			
82+61	294712.31	3743086.02	296250.74	3743399.01			

BEACH PROFILE COORDINATE TAB				TABLE		BEAC	H PROF	ILE COOR	DINATE	TABLE
Begin End			Begin End			Ве	egin	Е	ind	
Station	Northing	Easting	Northing	Easting		Station	Northing	Easting	Northing	Easting
83+26	294705.91	3743491.75	296249.68	3743414.06		108+69	294993.95	3746466.49	296529.71	3745907.52
84+51	294703.94	3743617.00	297707.53	3743465.85		109+94	295036.43	3746584.06	297994.50	3745507.41
85+76	294701.96	3743742.26	296229.65	3743665.38		111+19	295053.86	3746710.74	296622.57	3746139.77
87+11	294643.34	3744332.74	296221.49	3743758.33		112+44	295071.28	3746837.42	298081.59	3745741.76
88+41	294635.36	3744468.66	296209.44	3743895.74		113+69	295088.71	3746964.10	296703.25	3746376.45
89+71	294662.93	3744591.65	297706.81	3743483.77		114+94	295109.97	3747089.38	298168.67	3745976.11
91+01	294690.50	3744714.64	296201.32	3744164.74		116+19	295172.93	3747199.48	296788.22	3746611.57
92+31	294718.07	3744837.62	297695.76	3743753.83		117+44	295235.90	3747309.59	298255.77	3746210.45
93+61	294740.90	3744962.34	296221.47	3744423.45		118+69	295298.86	3747419.69	296877.49	3746845.12
94+90	294729.29	3745099.58	297684.71	3744023.90		119+94	295361.83	3747529.80	298342.90	3746444.78
96+16	294717.69	3745236.83	296177.75	3744705.41		121+19	295410.94	3747644.95	296958.61	3747081.65
97+42	294706.08	3745374.08	297657.45	3744299.87		122+44	295453.13	3747762.62	298435.19	3746677.24
98+68	294699.45	3745509.51	296328.40	3744916.62		123+69	295495.33	3747880.28	297031.33	3747321.22
99+94	294726.72	3745632.61	297628.74	3744576.36		124+94	295537.52	3747997.95	298527.48	3746909.69
101+19	294753.98	3745755.70	296369.22	3745167.80		126+20	295579.51	3748115.68	297104.21	3747560.73
102+44	294781.25	3745878.80	297721.04	3744808.81		127+44	295621.51	3748233.42	298619.96	3747142.07
103+69	294808.52	3746001.90	296373.92	3745432.14		128+69	295663.50	3748351.15	297177.24	3747800.20
104+94	294838.46	3746124.03	297818.44	3745039.40		129+94	295705.50	3748468.89	298712.44	3747374.46
106+19	294890.28	3746238.18	296424.04	3745679.94		131+19	295755.17	3748583.83	297253.39	3748038.52
107+44	294942.11	3746352.34	297906.47	3745273.40		132+44	295805.94	3748698.38	298802.83	3747607.60

Station	Be	egin	E	nd
Station	Northing	Easting	Northing	Easting
108+69	294993.95	3746466.49	296529.71	3745907.52
109+94	295036.43	3746584.06	297994.50	3745507.41
111+19	295053.86	3746710.74	296622.57	3746139.77
112+44	295071.28	3746837.42	298081.59	3745741.76
113+69	295088.71	3746964.10	296703.25	3746376.45
114+94	295109.97	3747089.38	298168.67	3745976.11
116+19	295172.93	3747199.48	296788.22	3746611.57
117+44	295235.90	3747309.59	298255.77	3746210.45
118+69	295298.86	3747419.69	296877.49	3746845.12
119+94	295361.83	3747529.80	298342.90	3746444.78
121+19	295410.94	3747644.95	296958.61	3747081.65
122+44	295453.13	3747762.62	298435.19	3746677.24
123+69	295495.33	3747880.28	297031.33	3747321.22
124+94	295537.52	3747997.95	298527.48	3746909.69
126+20	295579.51	3748115.68	297104.21	3747560.73
127+44	295621.51	3748233.42	298619.96	3747142.07
128+69	295663.50	3748351.15	297177.24	3747800.20
129+94	295705.50	3748468.89	298712.44	3747374.46
131+19	295755.17	3748583.83	297253.39	3748038.52
132+44	295805.94	3748698.38	298802.83	3747607.60

O:	Be	egin	E	nd
Station	Northing	Easting	Northing	Easting
133+69	295856.70	3748812.92	297332.87	3748275.
134+94	295907.47	3748927.47	298893.22	3747840.
136+19	295941.44	3749048.13	297418.03	3748510.
137+44	295975.32	3749168.82	298947.64	3748086.
138+69	296009.21	3749289.51	297509.12	3748743.
139+94	296043.09	3749410.20	299001.93	3748333.
141+19	296095.26	3749524.23	297594.36	3748978.
142+44	296147.72	3749638.16	299128.01	3748553.
143+69	296200.17	3749752.09	297673.73	3749215.
144+94	296252.62	3749866.02	299255.09	3748773
146+19	296311.87	3749977.48	297768.64	3749447.
147+44	296385.78	3750083.60	299354.09	3749003.
148+69	296459.68	3750189.72	297878.16	3749673.
149+94	296533.59	3750295.85	299369.20	3749263.
151+19	296607.50	3750401.97	297991.06	3749898.
152+44	296696.54	3750502.59	298960.40	3749678
153+69	296794.68	3750599.88	298106.77	3750122
154+94	296892.83	3750697.18	298885.02	3749972.
157+22	297071.54	3750874.35	298166.00	3750476.

BASELINE ALIGNMENT TABLE					
Sation	Northing	Easting			
8+00	298988.05	3736552.53			
50+03	297350.70	3740423.88			
54+99	297146.43	3740876.05			
75+24	296144.33	3742635.21			
80+01	296035.00	3743100.00			
94+90	296142.30	3744585.29			
99+94	296257.14	3745075.58			
157+22	298166.00	3750476.00			



erall - overall	NOTES:			SCA	LE IN FEET	
60/Dwg02 - Plan/Overall		1000'	500'	0	1000'	2000'
010\2010.0760\Dwg\02						

REV.	DATE	DESCRIPTION	BY



OFFICE OF COASTAL PROTECTION & RESTORATION	
RESTORATION DIVISION	

450 LAUREL STREET BATON ROUGE, LOUISIANA 70801

EAST GRAND TERRE SURVEY (BA-30)	OVERALL LAYOUT AND COORDINATE TABLES
STATE PROJECT NUMBER: BA-30	COORDINATE TABLES
FEDERAL PROJECT NUMBER: BA-30	DATE: DECEMBER 10, 2010
APPROVED BY: BJK	SHEET 1 OF 34

DRAWN BY: MKF DESIGNED BY: KCO

