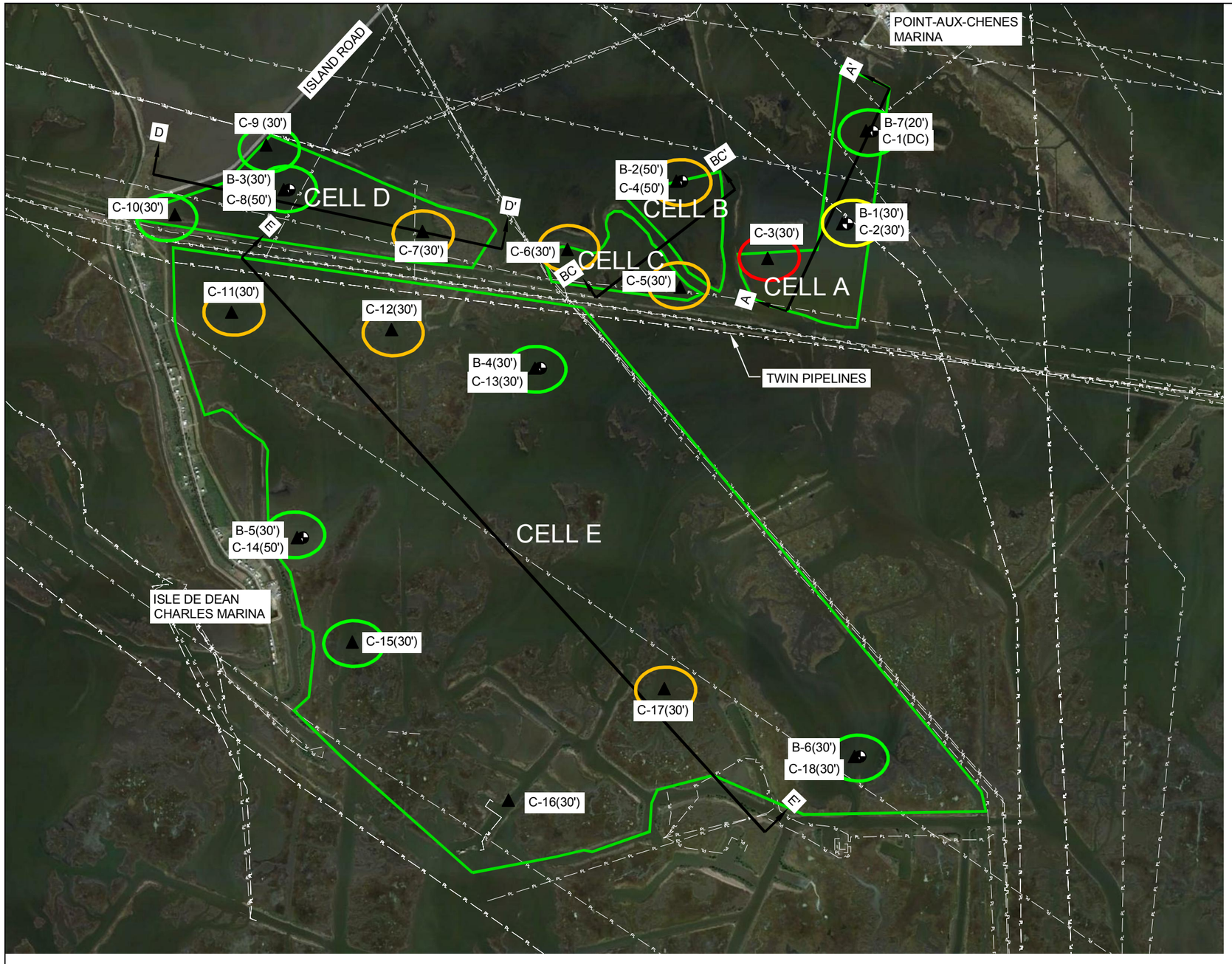
Figure 1



CPT DETAILS			
CPT #	LATITUDE	LONGITUDE	DEPTH BELOW MUDLINE
C-1	N 29° 24' 38.5"	W 90° 26' 58.2"	DATA CORRUPT
C-2	N 29° 24' 22.9"	W 90° 27' 03.4"	30 FT.
C-3	N 29° 24' 15.7"	W 90° 27' 13.1"	30 FT.
C-4	N 29° 24' 30.7"	W 90° 27' 39.4"	50 FT.
C-5	N 29° 24' 11.5"	W 90° 27' 38.8"	30 FT.
C-6	N 29° 24' 17.9"	W 90° 28' 01.7"	30 FT.
C-7	N 29° 24' 21.3"	W 90° 28' 28.6"	30 FT.
C-8	N 29° 24' 27.9"	W 90° 28' 56.5"	50 FT.
C-9	N 29° 24' 36.3"	W 90° 29' 01.2"	30 FT.
C-10	N 29° 24' 25.1"	W 90° 29' 18.3"	30 FT.
C-11	N 29° 24' 04.3"	W 90° 29' 07.5"	30 FT.
C-12	N 29° 24' 04.2"	W 90° 28' 35.5"	30 FT.
C-13	N 29° 23' 57.1"	W 90° 28' 06.1"	30 FT.
C-14	N 29° 23' 26.2"	W 90° 28' 53.6"	22.5 FT.*
C-15	N 29° 23' 08.5"	W 90° 28' 43.6"	30 FT.
C-16	N 29° 22' 40.6"	W 90° 28' 11.5"	30 FT.
C-17	N 29° 23' 00.4"	W 90° 27' 40.6"	30 FT.
C-18	N 29° 22' 50.7"	W 90° 27' 01.7"	30 FT.

*UNABLE TO ADVANCE CONE TO FULL DEPTH DUE TO SAND LAYERS

SOIL BORING DETAILS			
BORING #	LATITUDE	LONGITUDE	DEPTH BELOW MUDLINE
B-1	N 29° 24' 22.9"	W 90° 27' 03.4"	30 FT.
B-2	N 29° 24' 30.7"	W 90° 27' 39.4"	50 FT.
B-3	N 29° 24' 27.9"	W 90° 28' 56.5"	30 FT.
B-4	N 29° 23' 57.1"	W 90° 28' 06.1"	30 FT.
B-5	N 29° 23' 26.2"	W 90° 28' 53.6"	30 FT.
B-6	N 29° 22' 50.7"	W 90° 27' 01.7"	30 FT.
B-7	N 29° 24' 38.5"	W 90° 26' 58.2"	20 FT.

LEGEND

- B-1 Approximate Soil Boring Location
- C-1 Approximate CPT Location
- Cell Location
- A A' Cross Section
- Pipeline

Maximum Crown Elevation - Single Lift

4 | 3.5 | 3 | 2.5

Notes:
1. GeoEngineers field crew followed T. Baker Smith representatives directions to access the exploration locations.
2. The locations of all features shown are approximate.
3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: 1. Aerial image was taken from Google Earth Pro., Licensed to GeoEngineers Inc., Imagery Dated: November 14, 2012
2. Cell locations were provided by CPRA, Base Map.dwg, St. Project # TE-117, Sheet 2-2, Dated July 2014
3. Soil Boring and CPT locations were staked and surveyed by Lonnie G. Harper & Associates, Dated February 23, 2015
4. Pipeline routes were provided by CPRA, Island Road Marsh Creation, State Project Number:TE-117, Sheet 2, Dated July 2014

N W E S

2000 0 2000
FEET

SITE PLAN

Island Road Marsh Creation and Nourishment (TE-117)
Terrebonne Parish, Louisiana

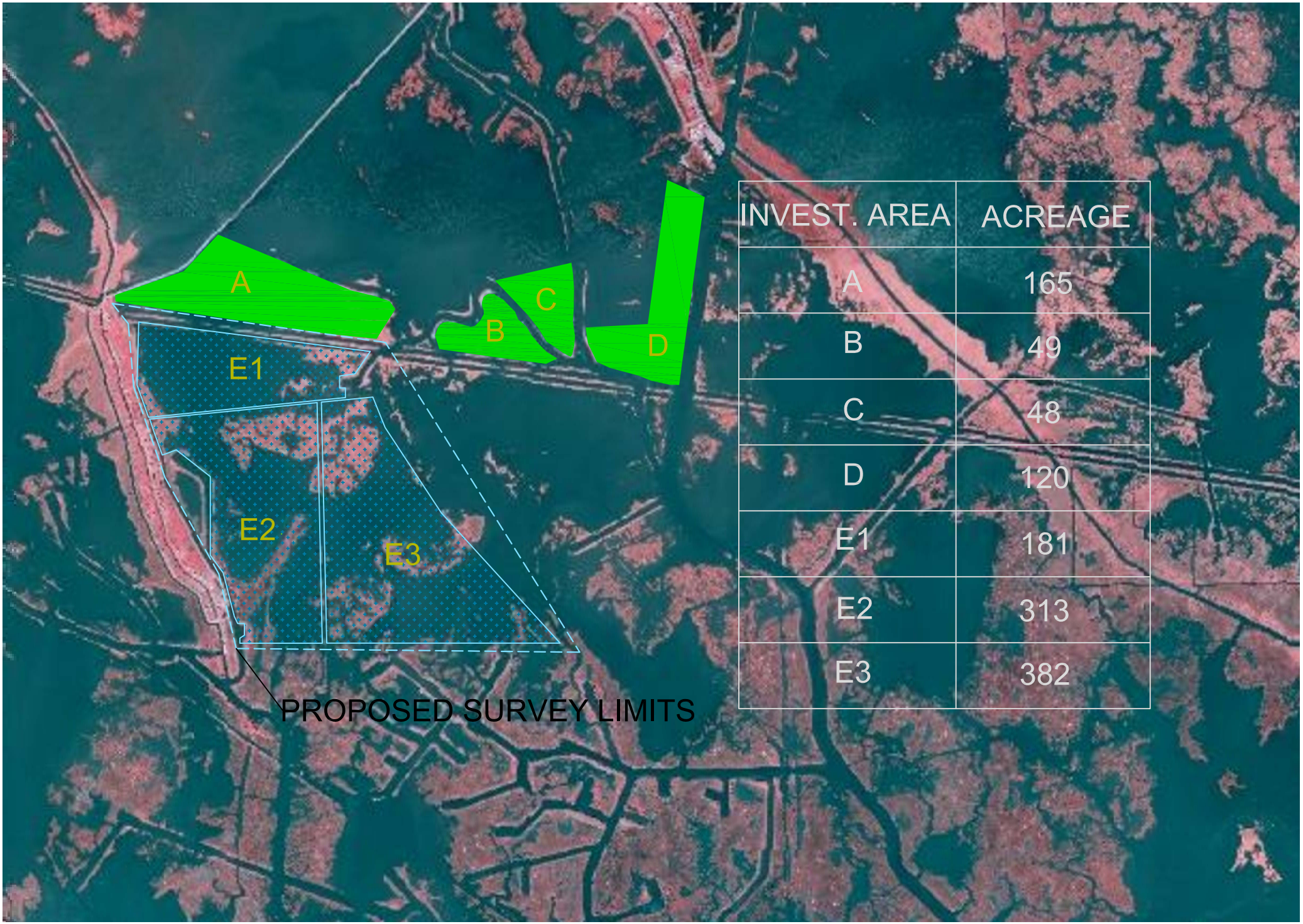
GEOENGINEERS

Figure 2

VT : KMC

P:\16\1671504\00\CAD\Base Map.dwg\TAB:Layout1 modified on Jun 22, 2015 - 9:02am

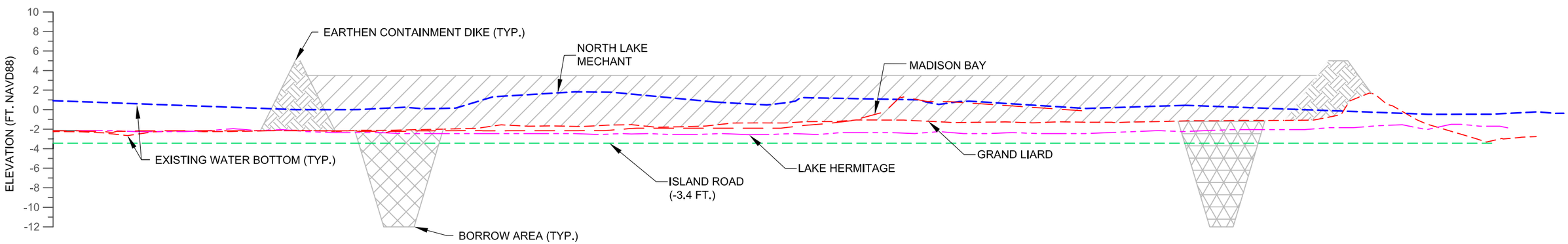
Figure 2



INVEST. AREA	ACREAGE
A	165
B	49
C	48
D	120
E1	181
E2	313
E3	382

Figure 3

D-D' 10 6 TYPICAL SECTION



HORIZONTAL GRAPHIC SCALE

100' 50' 0 100' 200'

10' 5' 0 10' 20'

VERTICAL GRAPHIC SCALE

LEGEND

- EARTHEN CONTAINMENT DIKE
- EARTHEN RIDGE
- BORROW AREA
- SECONDARY BORROW AREA
- MARSH FILL - LIFT 1
- EXISTING WATER BOTTOM

NOTES:

1. BASED ON RECOMMENDATIONS FROM THE GEOTECHNICAL ANALYSIS A TWO LIFT SYSTEM IS REQUIRED TO MEET THE LONG TERM TARGET ELEVATIONS.
2. THE CONTRACTOR SHALL CONSTRUCT THE MARSH CREATION AREAS IN THE TWO CONSTRUCTION LIFT SEQUENCE AS SPECIFIED IN TS-8.5 OF THE SPECIFICATIONS.
3. ALL MARSH CREATION AREAS SHALL BE DEWATERED IN ACCORDANCE WITH TS-13 OF THE SPECIFICATIONS.

REV.	DATE	DESCRIPTION	BY

COASTAL PROTECTION AND RESTORATION AUTHORITY
450 LAUREL STREET
BATON ROUGE, LOUISIANA 70801

DRAWN BY: DESIGNED BY:

MARSH FILL COMPARISONS MULTIPLE RESTORATION PROJECTS

STATE PROJECT NUMBER:

FEDERAL PROJECT NUMBER:

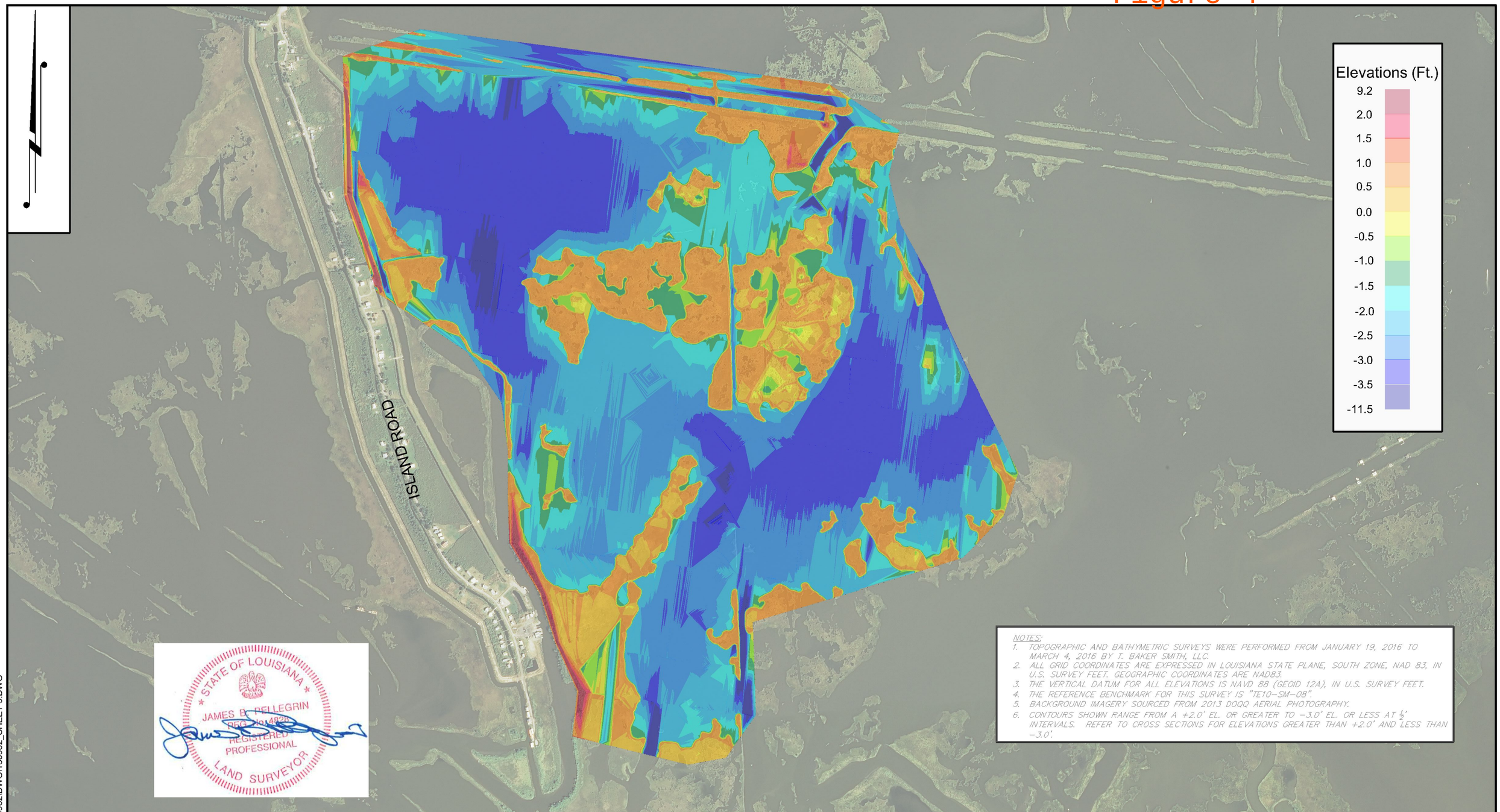
APPROVED BY:

MARSH CREATION TYPICAL SECTION

DATE: AUGUST 2015

SHEET OF

Figure 4



NOTES:
1. TOPOGRAPHIC AND BATHYMETRIC SURVEYS WERE PERFORMED FROM JANUARY 19, 2016 TO MARCH 4, 2016 BY T. BAKER SMITH, LLC.
2. ALL GRID COORDINATES ARE EXPRESSED IN LOUISIANA STATE PLANE, SOUTH ZONE, NAD 83, IN U.S. SURVEY FEET. GEOGRAPHIC COORDINATES ARE NAD83.
3. THE VERTICAL DATUM FOR ALL ELEVATIONS IS NAVD 88 (GEOID 12A), IN U.S. SURVEY FEET.
4. THE REFERENCE BENCHMARK FOR THIS SURVEY IS "TE10-SM-08".
5. BACKGROUND IMAGERY SOURCED FROM 2013 DOQQ AERIAL PHOTOGRAPHY.
6. CONTOURS SHOWN RANGE FROM A +2.0' EL. OR GREATER TO -3.0' EL. OR LESS AT ½' INTERVALS. REFER TO CROSS SECTIONS FOR ELEVATIONS GREATER THAN +2.0' AND LESS THAN -3.0'.

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE
412 South Van Ave, Houma, LA 70363
(985)868-1050 - tbsmith.com

SCALE IN FEET
1000' 500' 0' 1000'

REV. NO:	00	REV. DATE:	--/--/--	REV. BY:	---

REVISION DESCRIPTION:
--

DRAWN BY:	JTR	APPROVED BY:	KAK
DATE:	4/7/2016	JOB NO:	2015.0962
DRAWING NAME:	150962_SHEET 3.dwg		

PROJECTION: LOUISIANA SOUTH
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

SHEET NO: 3 OF 29

Contour Map

Island Road Marsh Creation and Nourishment Project (TE-117))
For
Coastal Protection and Restoration Authority
of Louisiana
Terrebonne Parish,
Louisiana

4/28/2016 - P:\Y-2015\2015.0962\DWG\150962_SHEET 3.DWG

Figure 5

CELL E1 (166 ACRES)
CELL E2 (182 ACRES)
CELL E4 (199 ACRES)
CELL E3 (66 ACRES)
Island Rd
Google earth
© 2015 Google
N
3000 ft

August 31, 2015 Figure 6

Project:	TE-117 Island Road Marsh Creation and Nourishment	Date:	31-Aug-15	Revised:	
Computed by:	Jacques Boudreaux, E.I.	*SCENARIO 1 - TOTAL MARSH CREATION =* **414 ACRES**			
Item No.	**Work or Material**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	Mobilization / Demobilization[1, 4]	1	LS	$4,912,552.00	$4,912,552
2	Access Dredging[4]	1	LS	$500,000.00	$500,000
3	Vegetative Plantings[2]	227,500	PLANTS	$5.00	$1,137,500
4	Construction Surveys[3]	1	LS	$455,108.80	$455,109
	CELL E1 (166 ACRES)				
E1-5	Marsh Fill	2,750,006	CY	$4.25	$11,687,526
E1-6	Earthen Containment Dikes	219,170	CY	$3.50	$767,095
E1-7	Sheetpile	83,160	SF	$30.00	$2,494,800
	CELL E2 (182 ACRES)				
E2-5	Marsh Fill	2,995,492	CY	$4.25	$12,730,841
E2-6	Earthen Containment Dikes	220,720	CY	$3.50	$772,520
E2-7	Sheetpile	65,660	SF	$30.00	$1,969,800
	CELL E3 (66 ACRES)				
E3-5	Marsh Fill	1,168,986	CY	$4.25	$4,968,191
E3-6	Earthen Containment Dikes	162,750	CY	$3.50	$569,625
E3-7	Sheetpile	39,200	SF	$30.00	$1,176,000

NOTES:

1. **Line-item cost estimate from CWPPRA PPL 23 project development**
2. **Line-item cost estimate from CWPPRA PPL 23 project development**
3. **Line-item cost estimate from CWPPRA PPL 23 project development**
4. **Costs for Item No. 1 and Item No. 2 could be reasonably expected to increase based on additional complexity in construction**

ESTIMATED CONSTRUCTION COST	**$44,141,558**
ESTIMATED CONSTRUCTION + 25% CONTINGENCY	**$55,176,947**

August 31, 2015 Figure 7

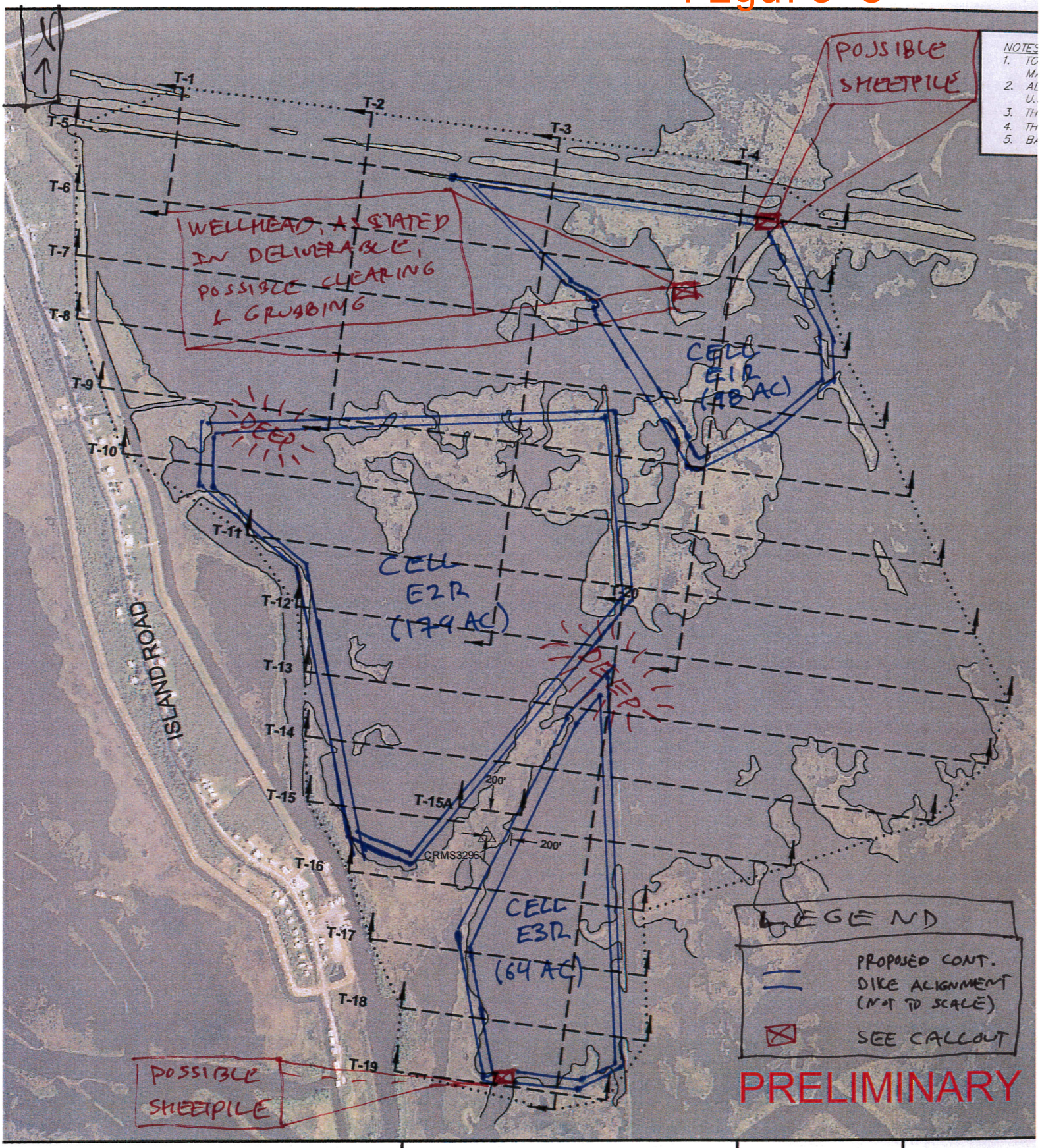
Project:	TE-117 Island Road Marsh Creation and Nourishment	Date:	31-Aug-15	Revised:	
Computed by:	Jacques Boudreaux, E.I.	*SCENARIO 2 - TOTAL MARSH CREATION =* **381 ACRES**			
Item No.	**Work or Material**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	Mobilization / Demobilization[1, 4]	1	LS	$4,912,552.00	$4,912,552
2	Access Dredging[4]	1	LS	$500,000.00	$500,000
3	Vegetative Plantings[2]	227,500	PLANTS	$5.00	$1,137,500
4	Construction Surveys[3]	1	LS	$455,108.80	$455,109
	CELL E2 (182 ACRES)				
E2-5	Marsh Fill	2,995,492	CY	$4.25	$12,730,841
E2-6	Earthen Containment Dikes	220,720	CY	$3.50	$772,520
E2-7	Sheetpile	65,660	SF	$30.00	$1,969,800
	CELL E4 (199 ACRES)				
E4-5	Marsh Fill	3,201,974	CY	$4.25	$13,608,390
E4-6	Earthen Containment Dikes	168,020	CY	$3.50	$588,070
E4-7	Sheetpile	126,420	SF	$30.00	$3,792,600

NOTES:

1. **Line-item cost estimate from CWPPRA PPL 23 project development**
2. **Line-item cost estimate from CWPPRA PPL 23 project development**
3. **Line-item cost estimate from CWPPRA PPL 23 project development**
4. **Costs for Item No. 1 and Item No. 2 could be reasonably expected to increase based on additional complexity in construction**

ESTIMATED CONSTRUCTION COST	**$40,467,381**
ESTIMATED CONSTRUCTION + 25% CONTINGENCY	**$50,584,227**

Figure 8



T. BAKER SMITH
SOLUTIONS START HERE
412 South Van Ave, Houma, LA 70363
(985)868-1050 - tbsmith.com

SCALE IN FEET
1000' 500' 0' 1000'

REV. NO:	00	REV. DATE:	--/--/--	REV. BY:	---

REVISION DESCRIPTION:
--

DRAWN BY:	JTR	APPROVED BY:	
DATE:	2/29/2016	JOB NO:	2015.(
DRAWING NAME:	150962_SHEET 2-9		

PROJECTION: LOUISIANA SOUTH
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

SHEET NO: 2 OF 29

Figure 9

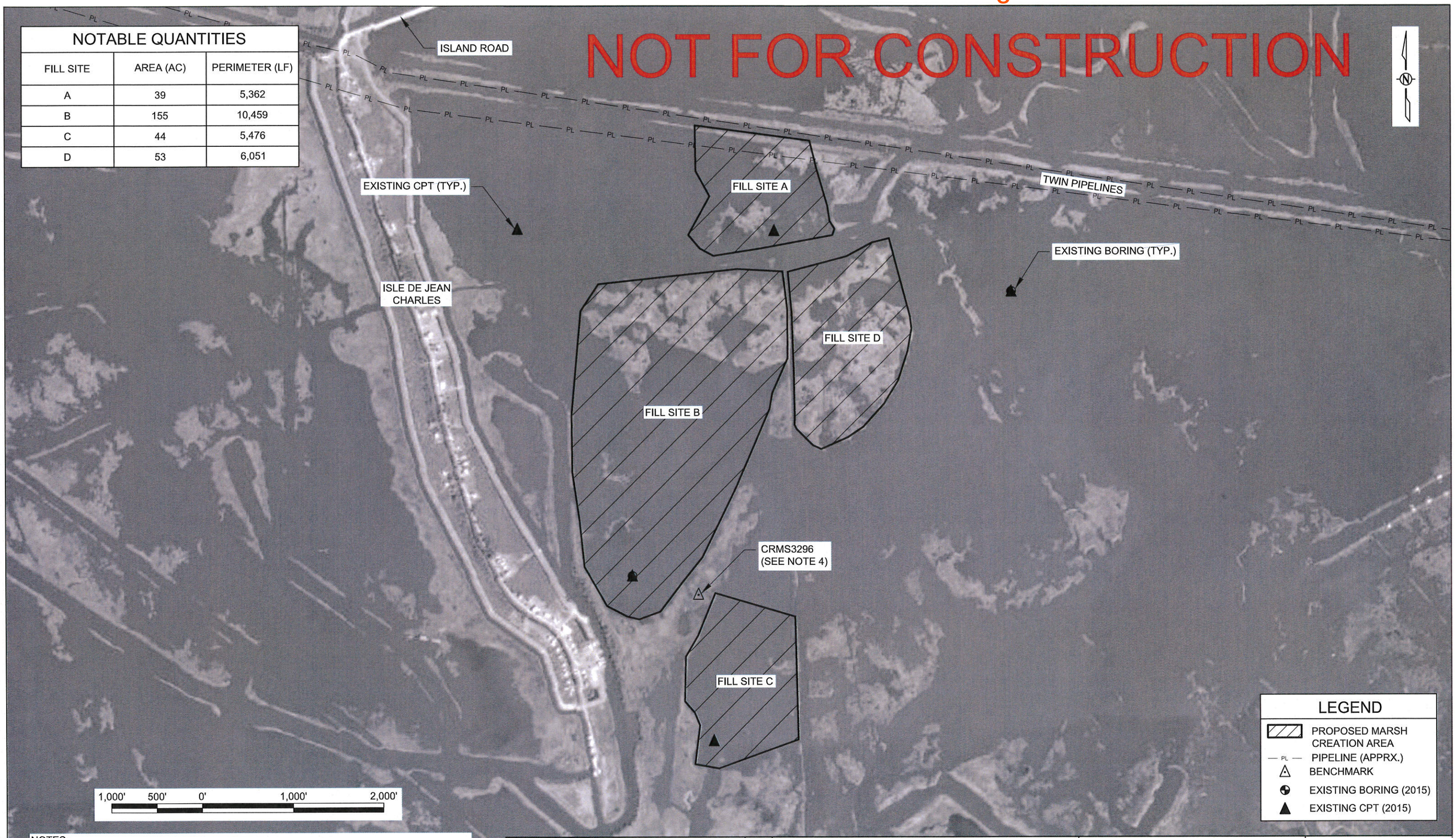
Project:	TE-117 Island Road Marsh Creation and Nourishment	Date:	18-Apr-16	Revised:	
Computed by:	Jacques Boudreaux, E.I.	*TOTAL MARSH CREATION =* **341 ACRES** (2019 RECOMMENDED)			
Item No.	**Work or Material**	**Quantity**	**Unit**	**Unit Cost**	**Amount**
1	Mobilization / Demobilization[1, 4]	1	LS	$4,912,552.00	$4,912,552
2	Access Dredging[4]	1	LS	$500,000.00	$500,000
3	Vegetative Plantings[2]	227,500	PLANTS	$5.00	$1,137,500
4	Construction Surveys[3]	1	LS	$455,108.80	$455,109
	CELL E1R (98 ACRES)				
E1-5	Marsh Fill[5]	1,390,938	CY	$5.89	$8,192,626
E1-6	Earthen Containment Dikes[6]	8,728	LF	$120.00	$1,047,378
E1-7	Sheetpile[7]	12,000	SF	$30.00	$360,000
E1-8	Plug and Abandon Wellhead[8]	1	LS	$0.00	$0
	CELL E2R (179 ACRES)				
E2-5	Marsh Fill[5]	2,624,613	CY	$5.89	$15,458,968
E2-6	Earthen Containment Dikes[6]	11,212	LF	$120.00	$1,345,390
E2-7	Sheetpile[7]	14,000	SF	$30.00	$420,000
	CELL E3R (64 ACRES)				
E4-5	Marsh Fill[5]	1,068,954	CY	$5.89	$6,296,140
E4-6	Earthen Containment Dikes[6]	7,485	LF	$120.00	$898,236
E4-7	Sheetpile[7]	13,500	SF	$30.00	$405,000

NOTES:

1. Line-item cost estimate from CWPPRA PPL 23 project development.
2. Line-item cost estimate from CWPPRA PPL 23 project development.
3. Line-item cost estimate from CWPPRA PPL 23 project development.
4. Costs for Item No. 1 and Item No. 2 could be reasonably expected to increase based on additional complexity in construction.
5. Quantities shown are preliminary. Unit rate of $5.89/CY is recommended probable unit rate for pay-on-the-cut inland marsh creation project for 2019.
6. Quantity selected based on an assumed representative cross section and was not calculated with average-end area method. Please see 'CALCULATIONS_S3' tab for detailed information. Unit rate selected based on comparisons to select inland marsh creation project containment dike bids and barrier island project containment dike bids.
7. Sheetpile quantities rounded up to multiples of 500 units, based on expected vendor availability. Possible control structures envisioned for these areas. Please see 'CALCULATIONS_S3' tab for details. Unit rate selected based on discussions with Tye Fitzgerald, P.E.
8. Work envisioned for possible wellhead and other structures located within fillsite.

ESTIMATED CONSTRUCTION COST	**$41,428,898**
ESTIMATED CONSTRUCTION + 25% CONTINGENCY	**$51,786,123**

Figure 10



NOTABLE QUANTITIES

FILL SITE	AREA (AC)	PERIMETER (LF)
A	39	5,362
B	155	10,459
C	44	5,476
D	53	6,051

NOTES:
1. BACKGROUND IMAGERY WAS TAKEN IN 2013.
2. WETLANDS AND EXISTING MARSH WILL NOT BE IMPACTED BY OPERATIONS.
3. PROPOSED FILL SITE GEOMETRIES ARE NOT FINAL AND ARE SUBJECT TO CHANGE BASED ON GEOTECHNICAL ENGINEERING ANALYSIS AND RECOMMENDATIONS.
4. A CPRA BIOLOGIST SHALL BE CONSULTED FOR ANY ACTIVITY WITHIN THE VICINITY OF CRMS3296.

REV.	DATE	DESCRIPTION	BY

COASTAL PROTECTION AND RESTORATION AUTHORITY
450 LAUREL STREET
BATON ROUGE, LOUISIANA 70801

DRAWN BY: SHANE FAUST
DESIGNED BY: JACQUES BOUDREAUX, E.I.

ISLAND ROAD MARSH CREATION AND NOURISHMENT PROJECT

STATE PROJECT NUMBER: TE-117
FEDERAL PROJECT NUMBER: TE-117
APPROVED BY: GLENN LEDET, P.E.

GEOTECHNICAL SITE LAYOUT

DATE: MAY 2016
SHEET 1 OF 1

Figure 11

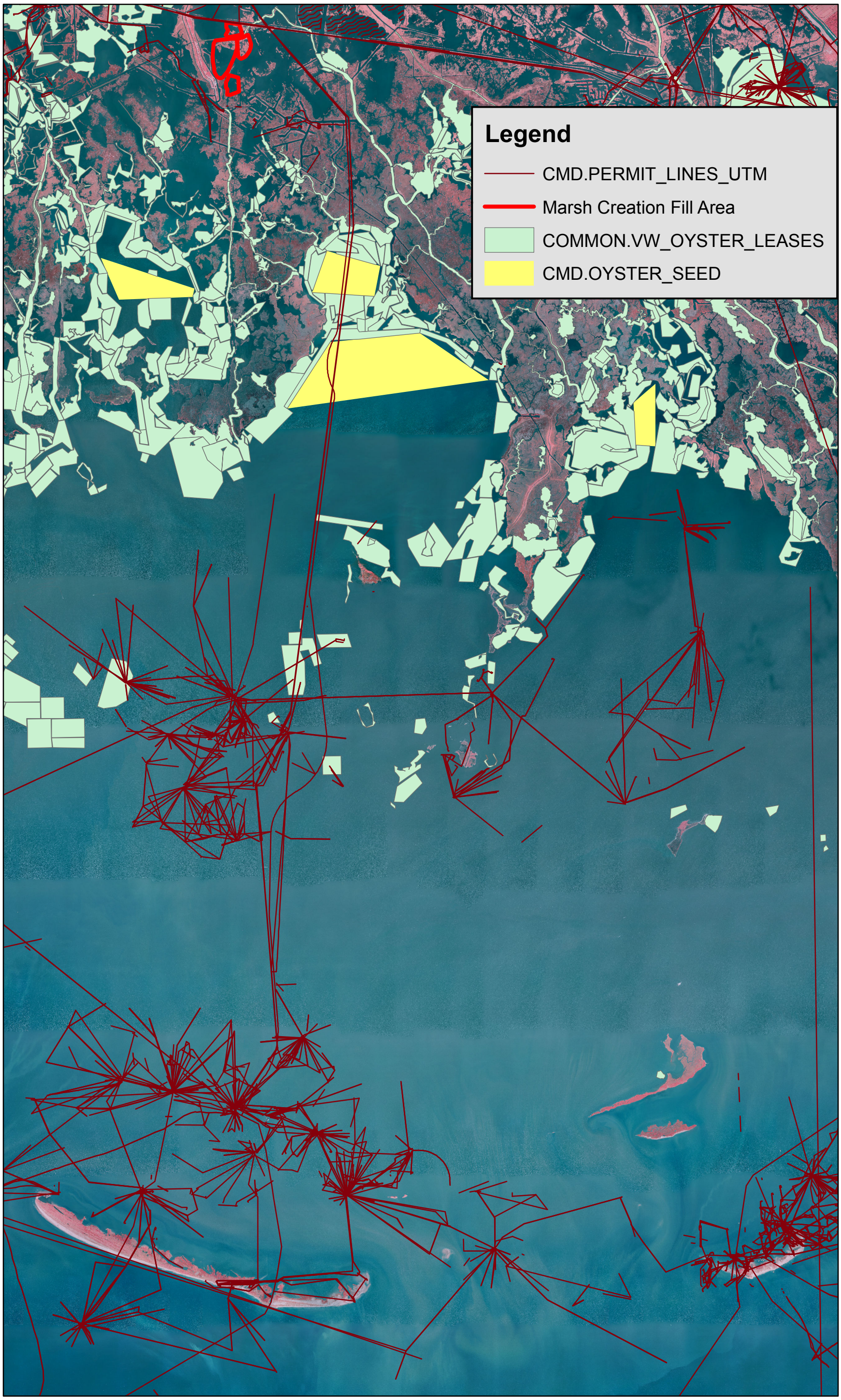

Legend
CMD.PERMIT_LINES_UTM
Marsh Creation Fill Area
COMMON.VW_OYSTER_LEASES
CMD.OYSTER_SEED

Figure 12

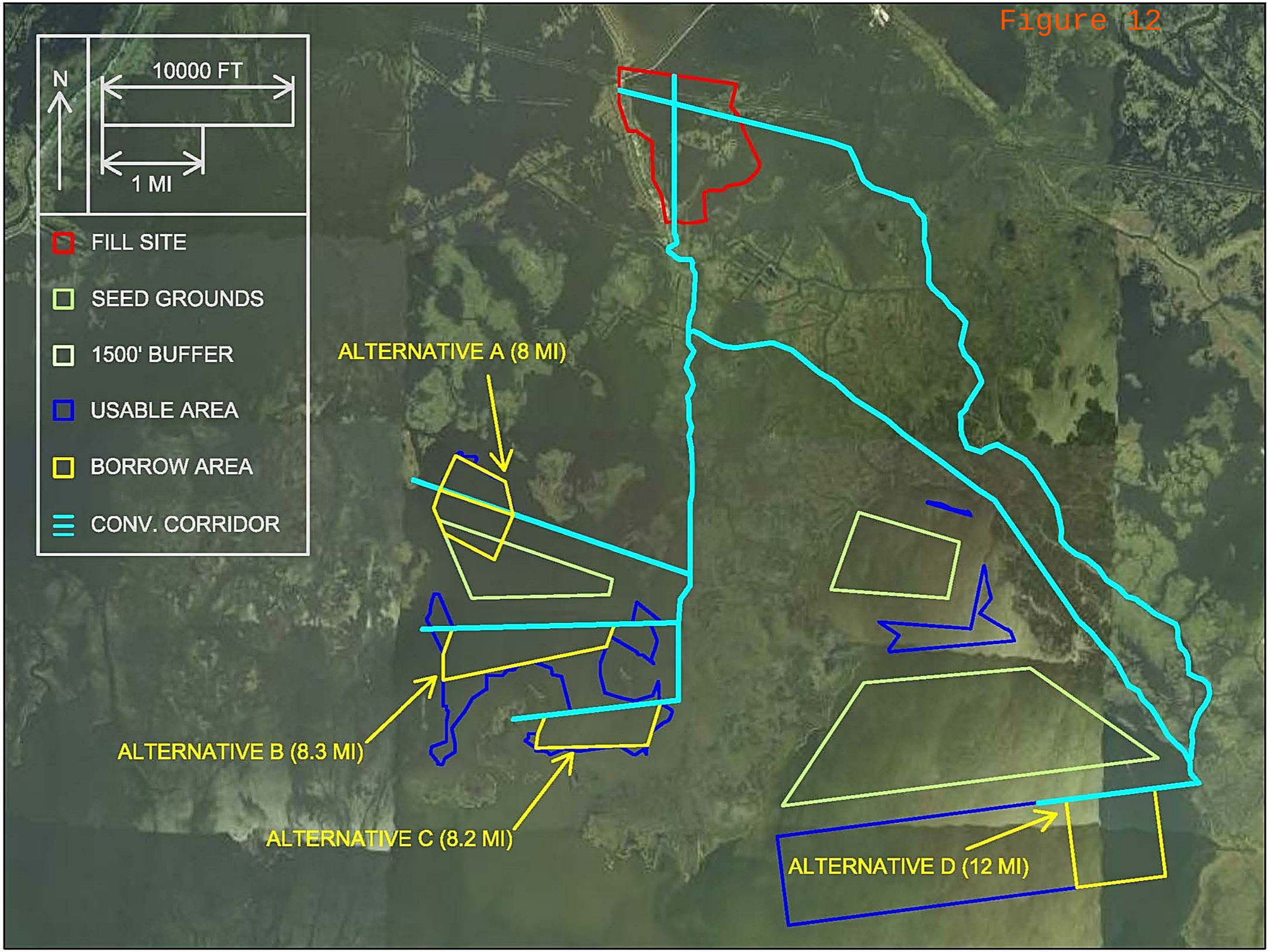
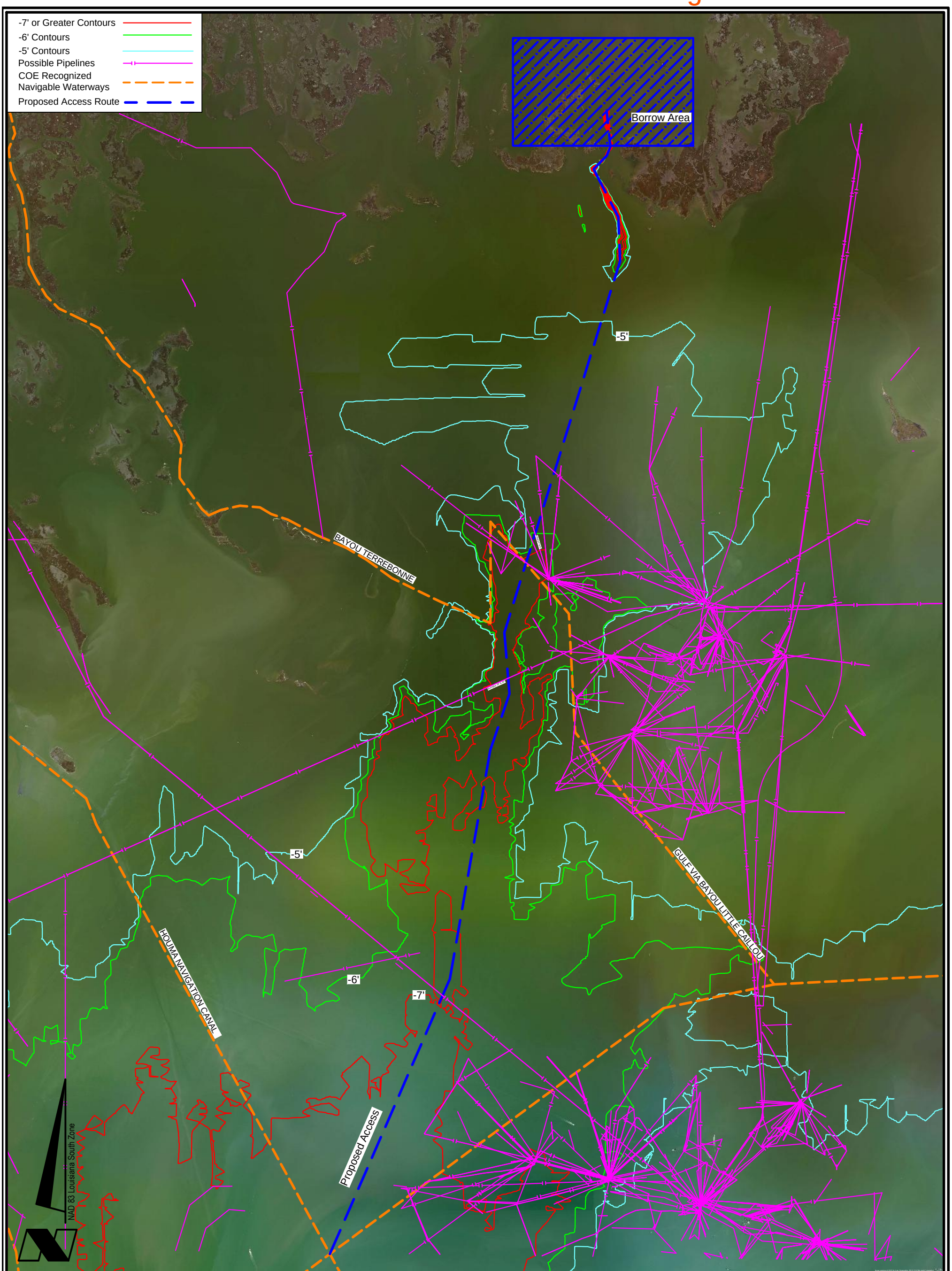

N
10000 FT
1 MI
FILL SITE
SEED GROUNDS
1500' BUFFER
USABLE AREA
BORROW AREA
CONV. CORRIDOR
ALTERNATIVE A (8 MI)
ALTERNATIVE B (8.3 MI)
ALTERNATIVE C (8.2 MI)
ALTERNATIVE D (12 MI)

Figure 13



Coastal Protection and Restoration Authority

Island Road Marsh Creation And Nourishment Project
Exhibit A Southern Access Route
Terrebonne Bay
Terrebonne Parish

Not to be used for construction, bidding, recordation, conveyance, sales, or engineering design.

PRELIMINARY

FENSTERMAKER
C. H. Fenstermaker & Associates, L.L.C.
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

Scale: 1" = 6000'
6,000' 0 3,000' 6,000'

DRAWN BY: TSM	REVISIONS		
PROJ. MGR.: DA	No.	DATE:	REVISED BY:
DATE: 09/05/2016	No.	DATE:	REVISED BY:
FILENAME: T:\2016\2164587\REASEARCH\ACCESS ROUTE.dwg			