

SURVEY METHODOLOGY REPORT

October 27, 2022

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY
NORTHWEST TURTLE BAY MARSH CREATION (BA-0125)

JEFFERSON PARISH, LOUISIANA

Prepared for:
Coastal Protection and Restoration Authority



150 Terrace Avenue
Baton Rouge, LA 70802

Prepared by:
Delta Coast Consultants, LLC



631 South Hollywood Road
Houma, LA 70360
www.deltacoastllc.com

TABLE OF CONTENTS

1.0	General Project Description.....	3
	Project Overview.....	3
	Project Timeline.....	4
2.0	Project Planning.....	5
	Reference Systems and Project Control.....	5
	Preparation of Survey Transects.....	5
3.0	Permission and Access	6
4.0	Survey Control and Data Processing	16
	Equipment.....	16
	Survey Control.....	16
	Data Processing.....	17
	Primary Survey Control.....	17
	Data Acquisition.....	17
5.0	Northwest Turtle Bay Marsh Creation Survey	18
	Equipment.....	18
6.0	Deliverables.....	19
	LASARD.....	19

APPENDICES

A.	Equipment.....	20
B.	Reports and Results.....	24
	Point List.....	24
	Network Adjustment Report.....	25
	OPUS Solutions.....	37
	Difference in Solutions.....	46
C.	Drawings.....	47

Section 1: General Project Description

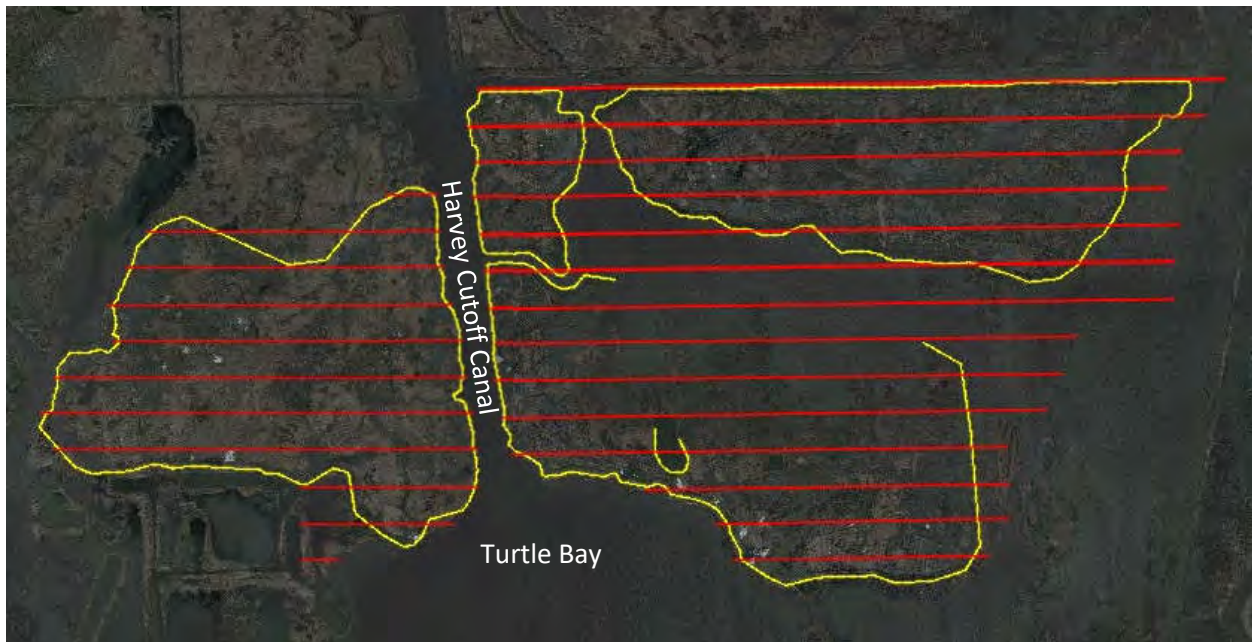
Project Overview

Coastal Protection and Restoration Authority (CPRA) has requested a post-construction assessment of the Northwest Turtle Bay Marsh Creation (BA-0125) project. The objective being to provide orthometric heights for the evaluation of temporal factors such as erosion, subsidence, and the integrity of the ecosystem. Orthometric heights were captured using Real-Time Kinematic (RTK) methods along transects common to the initial as-built survey.

This scope of services involves conducting a topographic survey within the proposed project area.

The project site is located in Jefferson Parish, Louisiana, centered in the Barataria Basin Landbridge just North of Turtle Bay by the mouth of the Harvey Cutoff canal. Approximate coordinates for the center of the project are 29°33'35.07"N and 90°07'47.18"W

Vicinity Map



Project Timeline

Project #	Group	Date
BA-0125	Authorization to proceed work	07/21/2022
BA-0125	Rigolets Limited Partnership access permit	07/27/2022
BA-0125	Receipt of verbal permission to access properties	07/29/2022
BA-0125	Static Survey	08/01/2022
BA-0125	Static Survey	08/04/2022
BA-0125	Topographic Survey	08/08/2022
BA-0125	Topographic Survey	08/10/2022
BA-0125	Topographic Survey	08/15/2022
BA-0125	Topographic Survey	08/22/2022
BA-0125	Topographic Survey	08/29/2022
BA-0125	Louisiana Land Corporation, LLC access permit	08/30/2022
BA-0125	Topographic Survey	09/08/2022
BA-0125	Topographic Survey	09/15/2022
BA-0125	Topographic Survey	09/21/2022
BA-0125	Topographic Survey	09/22/2022
BA-0125	Topographic Survey	10/10/2022
BA-0125	Topographic Survey	10/11/2022
BA-0125	Topographic Survey	10/12/2022

Section 2: Project Planning

Reference Systems and Project Control

Horizontal Datum (2011) Epoch 2010.0: NAD 83 Louisiana South Zone (LA-1702) US feet.

Vertical Datum: NAVD 88 GEOID 12B US feet.

All surveys performed were adjusted and calibrated to the specified project monuments listed in the Scope of Work and plans as “BA206 SM 01” and “BA27 SM 01 RESET.” TBM’s established were tied to the primary project control monument. The project control points used are listed below in Table 2:

Table 2: Project Control Points

Survey Control Points				
Name	Northing	Easting	Elevation	Description
BA206 SM 01	390,279.73	3,663,447.03	1.21	9/16” deep rod
BA27 SM 01 RESET	392,242.42	3,651,413.48	1.37	9/16” deep rod

Preparation of Survey Transects

All survey transects described in this “Report” were converted using AutoCAD Civil 3D® to a digital format that is compatible with the surveyor(s) task-specific data collection equipment for the use of navigation and data acquisition.

Section 3: Permission and Access

Temporary access was provided by Louisiana Land and Exploration Company LLC and Rigolets Limited Partnership. Stipulations pertaining to equipment and access can be found in the permits provided below. The Contracting Party used the following contact information from the respective permits:

Louisiana Land and Exploration Company, LLC
806 Bayou Black Dr.
Houma, LA 70360
Email: Ashley.Golmon@conocophillips.com

Rigolets Limited Partnership
1100 Poydras Street
Suite 3100
New Orleans, LA 70163
Email: tessier@carverdarden.com
Phone: 504-585-3809

TEMPORARY ACCESS PERMIT

AP0538

This temporary access permit ("Permit") is effective August 1, 2022 ("Effective Date") and is between **The Louisiana Land and Exploration Company LLC ("LL&E")** and **Delta Coast Consultants, LLC ("Delta")** whose mailing address is 631 S. Hollywood Rd. Houma, LA 70360 (individually a "Party", or collectively the "Parties").

WHEREAS, This Permit serves as Delta's permission for its employees, representatives, agents and contractors, subject to all terms and provisions set forth below, to access certain LL&E lands ("Lands") defined in yellow and more specifically shown in red, blue, and teal colors on Exhibit B attached hereto and access shall be for the sole purpose described on Exhibit A attached hereto and made a part hereof.

NOW, THEREFORE, in consideration of the terms and conditions listed herein, Delta and LL&E agree as follows:

1. **Term.** This Permit is effective from the Effective Date and ends on October 1, 2022 ("Primary Term"). This Permit shall remain in effect for the Primary Term but may nevertheless be canceled without cause by LL&E upon 10 days prior written notice to Delta. Such termination shall have no effect on any of Delta's obligations that have accrued under the Permit at the time of cancellation.
2. **Activity Notice and Travel.** Delta shall give at least 48 hours' notice to LL&E prior to commencing any field activity or work authorized by this Permit. Delta's activities authorized by this Permit conducted on the Lands shall be accessed only by boats and airboats (tracked or marsh buggies are not allowed). Any other method to physically access the Lands for field operations is not permitted without prior written approval from LL&E. During Louisiana waterfowl hunting season, including the split, Delta is not permitted to use airboats on Saturday and Sunday and is further limited to airboat use from 10:00 a.m. CT to 3:30 p.m. CT Monday through Friday. Waterfowl hunting season, as used herein, includes all time periods established by state and federal regulatory authorities for the lawful hunting of migratory waterfowl.
3. **Lands and Equipment Suitability.** Delta's exercise of rights under or pursuant to this Permit, and that of Delta's employees, agents, contractors and representatives, constitutes acceptance of the condition of Lands, roadways leading to the Lands or situated thereupon. Delta may inspect the Lands and any accessible canal or waterway leading to the Lands. LL&E makes no representation as to the condition or the suitability of the Lands or access thereto for activities under this Permit or any other purpose.
4. **Surveys.** If Delta conducts any survey work under this Permit that relates to or affects LL&E's property boundary lines, unit boundaries, or other users of the Lands, then Delta shall coordinate such survey work with LL&E representatives. Upon completion of such survey work Delta shall submit one copy of any such survey plat(s), including as-built surveys, to LL&E.
5. **Planning.** Delta shall submit work/project plans to LL&E's Coastal Wetlands Office, attention Ashley Golmon, at 806 Bayou Black Drive, Houma, LA 70360, showing the location and scope of any activity authorized by this Permit that Delta proposes on the Lands for its prior approval;

provided, however, such approval will not diminish any of Delta's obligations hereunder, including without limitation, the hold harmless and indemnity obligation set forth below.

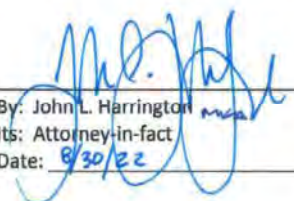
6. **Reporting.** Delta will provide LL&E with weekly updates regarding the progress of any work undertaken on the Lands. Delta will not place any personal property or material upon the Lands in a manner which unreasonably impedes or restricts the use of any portion of the Lands by LL&E or those holding existing or future mineral or surface leases, permits, licenses, rights of way or rights under other agreements, recorded and unrecorded, on the Lands. If Delta conducts tests or research under this Permit that relates to or affects the Lands, Delta shall, within six (6) months after expiration of this Permit, submit one (1) copy of any final report, scientific journal article, study, laboratory analysis, agency report, or any other written document produced as a result of the tests or research to LL&E's Coastal Wetlands Office. Information may be sent via LL&E Coastal Wetlands office at 806 Bayou Black Dr., Houma, LA 70360 or Ashley.Golmon@conocophillips.com.
7. **Restoration.** Upon completion of Delta's activities authorized by this Permit or cancellation of this Permit, whichever first occurs, Delta shall immediately remove any personal property or materials placed or caused to be placed by Delta upon the Lands. Delta shall repair/restore the Lands to their condition at the inception of this Permit. Failure for Delta to perform these after activities obligations may result in the following actions by LL&E, at Delta's expense:
 - a. Seek specific performance of Delta's obligations;
 - b. Removal and disposal of Delta's personal property or materials;
 - c. Conduct necessary repair or restoration; and
 - d. Pursuit of a claim for recovery of damages representing the cost of such removal, repairs and/or restoration.
8. **Indemnification.** Delta acknowledges that it has had the opportunity to inspect the Leased Premises and any and all roadways, canals or waterways on LL&E's adjoining lands that may lead thereto, and it accepts the Leased Premises and all of the same in their present "as is, where is" conditions. Delta further agrees that it will, during the term hereof and thereafter, pay LL&E for and protect, defend, indemnify and hold LL&E, its parent, subsidiary, and affiliated entities, and the employees, officers, directors, agents, contractors, representatives and the insurers of all of the same (herein, collectively, "LL&E Indemnitees") harmless from and against any and all loss, damage, liability, cost or expense, including fines, penalties and reasonable attorneys' fees, on account of injuries to or death of persons, damage to property of any kind, pollution or other damage to the environment or the violation of any law, rule or regulation (herein, collectively, a "Loss"), arising wholly or partially out of or in connection with or resulting from any use of the Leased Premises or any roadway, canal or waterway leading thereto by Delta, its employees, agents, contractors, representatives, sub-lessees, successors in interest or assigns, and/or Delta's guests, invitees or visitors (collectively, for the purposes of this paragraph, "Delta") or the exercise by Delta of any of the rights granted herein or any activity of Delta hereunder, or the breach of any provision of this Agreement, except only where such Loss arises from the sole negligence or willful misconduct of LL&E Indemnitees or any of them; and, in the event of any suit or other proceeding against LL&E Indemnitees or any of them on account thereof, Delta shall, at LL&E's request, appear and defend same, and Delta shall pay any assessment or judgment which may be rendered against any of the LL&E Indemnitees therein as to which Delta is obliged to indemnify LL&E Indemnitees hereunder.

9. **Insurance.** Delta shall, at its own sole cost and expense, maintain in full force, during the entire existence of this Permit, (i) **Worker's Compensation Insurance**, where Delta is required by law to carry such insurance and then in such coverage limits as are necessary to satisfy minimum requirements of Louisiana law, (ii) **Employers' Liability Insurance**, where Delta is required by law to carry Worker's Compensation insurance, with a minimum limit of **\$1,000,000 per accident/occurrence**, and (iii) **Commercial General Liability Insurance**, with combined single limit each occurrence for bodily injury/personal injury and property damage of not less than **\$1,000,000**, specifically including blanket contractual liability for obligations assumed by Delta under this Permit. LL&E shall be named as an additional insured on the Commercial General Liability policy, as its interests may appear. All insurance coverage required above shall be primary to any insurance coverage available to LL&E. The above-stated coverages are minimum requirements only, and they are not intended to, nor do they, indicate amounts and types of insurance that Delta needs or may ultimately need. All policies shall be endorsed to provide that underwriters and insurance companies shall waive all rights of subrogation against the LL&E Indemnitees. Said policies shall provide that the insurance is in full force and effect and that it shall not be canceled or materially changed without 30 days prior written notice to LL&E. Delta shall furnish Certificates of Insurance to LL&E evidencing the insurance required herein. Failure to maintain said insurance during the term of this Permit shall be deemed a material breach entitling LL&E to cancel this Permit, at LL&E's option, immediately on written notice to Delta.

IN WITNESS WHEREOF, the Parties have executed and accepted this Permit on the dates set out below, but effective as of the Effective Date.

The Louisiana Land and Exploration Company LLC

Delta Coast Consultants, LLC


By: John L. Harrington
Its: Attorney-in-fact
Date: 8/30/22

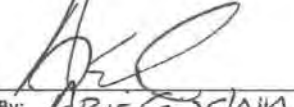

By: Aric O. Scain
Title: Project Mgr.
Date: 8-4-22

EXHIBIT A

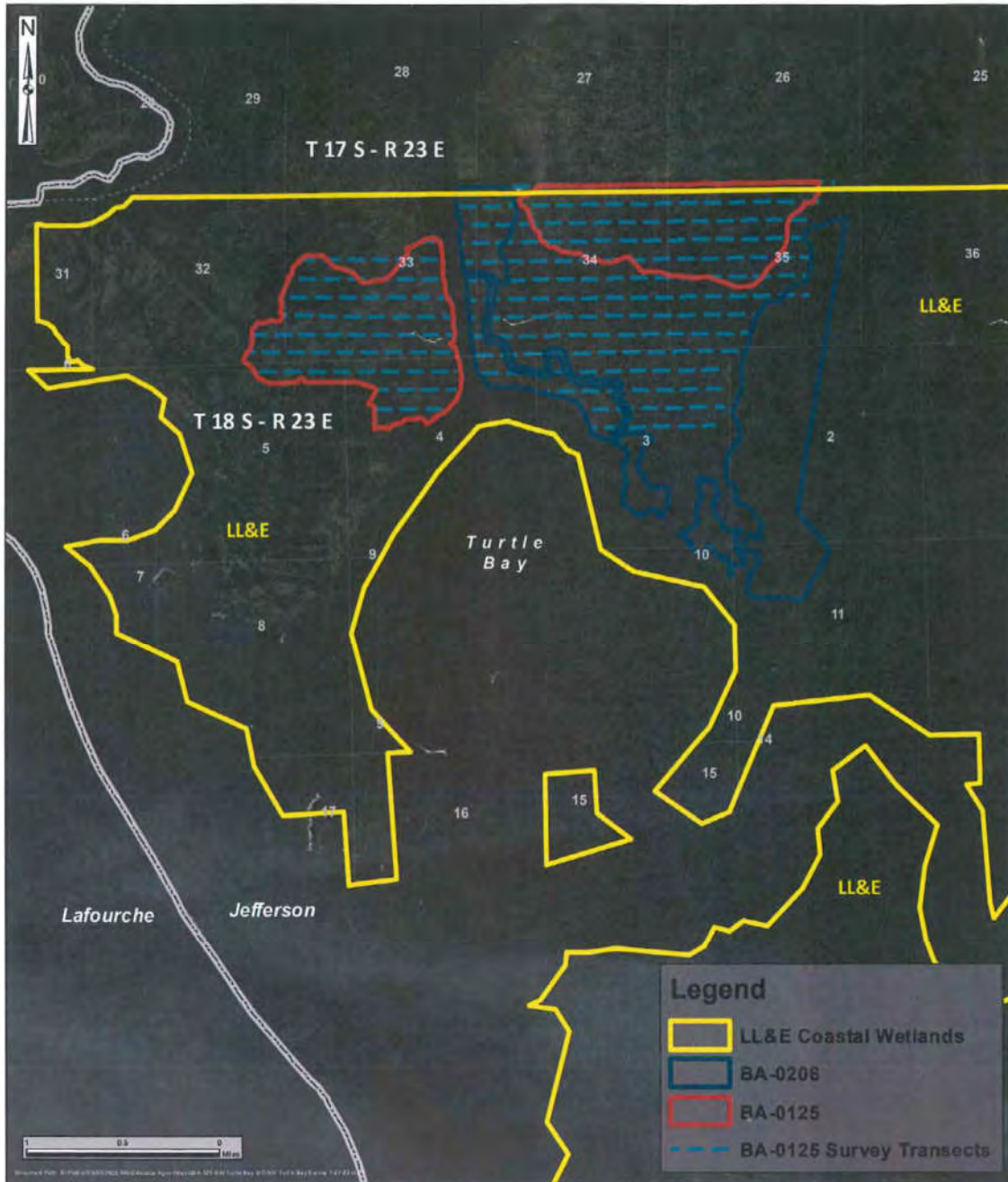
(Work Activities)

LL&E grants Delta access to enter its Lands in the Turtle Bay area to perform post construction survey work by collecting elevation data for CPRA's coastal restoration projects Northwest Turtle Bay Marsh Creation (BA-125) and Northeast Turtle Bay Marsh Creation and Critical Shoreline Protection (BA-206).

Exhibit B

(Lands)

Survey transects located in portions of Sections 32-35, T17S-R23E and Sections 2-5, T18S-R23E
Jefferson Parish, La.



RIGOLETS LIMITED PARTNERSHIP

Energy Centre
1100 Poydras Street - Suite 3100 - New Orleans, LA 70163
Telephone (504)585-3800 Telecopier (504)585-3801

July 26, 2022

Delta Coast Consultants, L.L.C.
19128 Robert Rd.
Hammond, LA 70401

Attention: Aric Gisclair

Re: Access Permit
BA0125
Section 26, 27, and 28 Township 17 South - Range 23 East
Jefferson Parish, Louisiana

Gentlemen:

When executed by you, this letter (the "Permit") shall be a contract between you and Rigolets Limited Partnership ("Rigolets", which term includes its general and limited partners, officers, employees, attorneys and representatives) and grant you (the person identified below) permission, and permission for your employees, agents, contractors and representatives, subject to all terms and provisions set forth below, to enter upon certain lands as outlined in red on the plat(s) attached hereto and made a part hereof that are owned by and are situated within the area referenced above (the "Subject Lands"). Such entry shall be for the sole purpose described on Exhibit "1" attached hereto and made a part hereof. The term "You" includes your employees, agents, contractors and representatives.

You shall give at least forty-eight (48) hours prior email or telephone notice to Rigolets office (as indicated below) prior to commencing any activity or work authorized by this Permit on the Subject Lands. Any activity (deemed to include any work) authorized by this Permit shall be conducted on the Subject Lands via access thereto only from boats and airboats; neither tracked or marsh buggies, nor landing a helicopter, will be allowed thereon without our prior written approval.

It is understood and agreed that in connection with your exercise of rights under or pursuant to this Permit upon the Subject Lands that You, for yourself and for your employees, agents, contractors and representatives are accepting the condition of the same and all canals and waterways leading thereto or thereupon as they exist. You assume the condition of the Subject Lands and assume the risk as to any vices and defects in the Subject Lands, whether those vices or defects are latent and/or not discoverable upon simple inspection, including those vices or defects, knowledge of which would deter You from entering into this Permit. You and your assigns and transferees hereby accept the Subject Lands, as is, where is, in its existing condition and waive, discharge, and release Rigolets from any and all claims and/or causes of action which You or your assigns or transferees may have or hereafter be otherwise entitled to, whether affecting person

Delta Coast Consultants, L.L.C.

July 26, 2022

Page 2 of 4

and/or property, for any liabilities arising from any condition of or improvement on said Subject Lands. You specifically acknowledge that one or more pipelines, pilings and other improvements may traverse the Subject Lands and agree that You and your employees, agents, contractors and representatives shall be advised of such conditions and shall take every necessary precaution in traversing or performing any authorized activities on said Subject Lands.

You hereby acknowledge that You have been afforded the opportunity to inspect the Subject Lands and any canal or waterway leading thereto or thereupon, and that Rigolets makes no representation as to the condition of the same or the suitability thereof for the purpose of this Permit or any other purpose. You will not place any personal property, equipment, or material upon the Subject Lands in a manner which unreasonably impedes or restricts the use of any portion thereof by us or those holding rights from us to use the Subject Lands for any purpose. You shall further submit plans to Rigolets showing the location and scope of any activity authorized by this Permit that You propose to do on the Subject Lands for its prior approval; provided, however, such approval shall not diminish any of your obligations hereunder, including, without limitation, the hold harmless and indemnity obligation set forth below. It is further understood that upon completion of your activities authorized by this Permit or cancellation of this Permit by either party, whichever first occurs, that You shall promptly remove any personal property, equipment, or materials that You placed or caused to be placed upon the Subject Lands, and You shall repair/restore the Subject Lands to their condition at the inception of this Permit. If You fail to do so, then Rigolets, at its option, may either have such personal property or materials removed and disposed of, and/or conduct such repair or restoration, at your expense, or pursue a claim for recovery of damages representing the cost of such removal, repairs and/or restoration, or seek specific performance of your obligations in those respects, including any and all attorney's fees expended by Rigolets in seeking the performance of your obligations hereunder.

Additionally, You further agree that You will protect, defend and hold Rigolets, its general and limited partners, and all employees, officers, directors, agents, contractors, representatives and the insurers of all of the same (herein, collectively, "Rigolets Indemnitees") harmless from, and You will indemnify them for all loss, damage or liability on account of injuries to or death of persons or damage to property of any kind, including pollution or other damage to the environment or the violation of any law or regulation, including any and all attorney's fees incurred by Rigolets Indemnitees in defending such matters (collectively, a "Loss") arising wholly or partially out of or in connection with any activity upon or use You or your employees, agents, contractors or representatives make of the Subject Lands (including any canals or waters leading thereto or thereupon) or in the exercise by You of any rights granted herein or your activities hereunder, including any Loss arising from the negligence, fault, strict or absolute liability of the Rigolets Indemnitees or any of them, but excluding any Loss arising from or on account of the willful misconduct of the Rigolets Indemnitees or any of them. You will further obey and comply with all laws and regulations which may be applicable to the Subject Lands or your use thereof. If any Federal or State permitting is required for any activity or work authorized by this Permit, You shall coordinate with Rigolets prior to submitting proposed plans to the permitting agencies.

It is further understood that if the purpose of this Permit extends to You conducting any survey work that relates to or affects Rigolets' property boundary lines, unit boundaries, etc., You shall coordinate that survey work with Rigolets; and, upon completion thereof, You shall submit one (1) copy of any final survey plat to Rigolets. Furthermore, if the purpose of this Permit relates to testing and research, You shall, upon completion of such testing and research, submit one (1) copy of any final report, scientific journal articles, studies, laboratory analysis and agency reports that You may prepare, or cause to be prepared, to Rigolets.

You shall, at your own sole cost and expense, maintain in full force, during the entire existence of this Permit, (i) *Worker's Compensation Insurance*, where You are required by law to carry such insurance and then in such coverage limits as are necessary to satisfy minimum requirements of Louisiana law, (ii) *Commercial General Liability Insurance*, with combined single limit each occurrence for bodily injury/personal injury and property damage of not less than \$1,000,000.00, specifically including blanket contractual liability for obligations assumed by You under this permit, and (iii) \$4,000,000 umbrella coverage on top of the above coverage. Rigolets shall be named as an additional insured on the Commercial General Liability policy, as our interests may appear. All insurance coverage required above shall be primary to any insurance coverage available to us. The above-stated coverages are minimum requirements only. All policies shall be endorsed to provide that underwriters and insurance companies shall waive all rights of subrogation against us and the Rigolets Indemnitees. Said policies shall provide that the insurance is in full force and effect and that it shall not be canceled or materially changed without thirty (30) days prior written notice to us. You shall furnish Certificates of Insurance to us evidencing the insurance required herein. Failure to maintain said insurance during the term of this Permit shall be deemed a material breach entitling us to cancel this instrument, at our option, on written notice to you.

This Permit shall remain in effect for a period of one hundred twenty (120) days from the date hereof, but it may nevertheless be canceled without cause upon ten (10) days prior notice to you. Such cancellation shall have no effect on any of your obligations that have accrued hereunder at the time thereof.

You agree that You shall only use airboats on an infrequent basis (meaning use separated by wide intervals of time) during waterfowl hunting season; and, in no event shall they be used prior to 10:00 A.M. or after 3:30 P.M. on any day during waterfowl hunting season. Waterfowl hunting season, as used herein, includes all time periods established by regulatory authorities for the lawful hunting of migratory waterfowl.

This permit is granted without any warranty, express or implied, by, or any recourse against, Rigolets and the Rigolets Indemnitees whatsoever, and is further subject to all mineral and surface leases, permits, licenses, rights of way or other agreements, recorded and unrecorded, which now or may hereafter affect the subject lands.

If Rigolets commences an action against You arising out of or in connection with the violation or breach of the terms of this Permit, it shall be entitled to have and recover from You

Delta Coast Consultants, L.L.C.

July 26, 2022

Page 4 of 4

all reasonable expenses and charges incurred in such actions, including without limitation attorneys' fees, and court costs of suit.

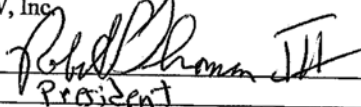
Rigolets contact information is as follows:

Rigolets Limited Partnership
1100 Poydras Street
Suite 3100
New Orleans, LA 70163
Email: tessier@carverdarden.com
Phone: 504-585-3809

Should this Permit, as written, meet with your approval, please signify your acceptance of and agreement to be bound by its terms by signing, dating and returning two (2) executed originals to this office for our file.

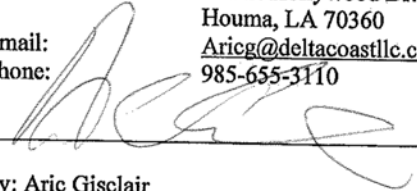
Yours truly,

Rigolets Limited Partnership
By TT&W, Inc.

By: 
Title: President

Effective as of the 27 day of July, 2022, the named permittee hereby agrees to the terms and conditions of this Permit and agrees to timely comply with its provisions.

Name of Permittee: Delta Coast Consultants, L.L.C.
Address: 631 S. Hollywood Dr.
Houma, LA 70360
Email: Aricg@deltacoastllc.com
Phone: 985-655-3110



(Permittee)

By: Aric Gisclair
Title: Survey Project Manager

Section 4: Survey Control and Data Processing

Equipment

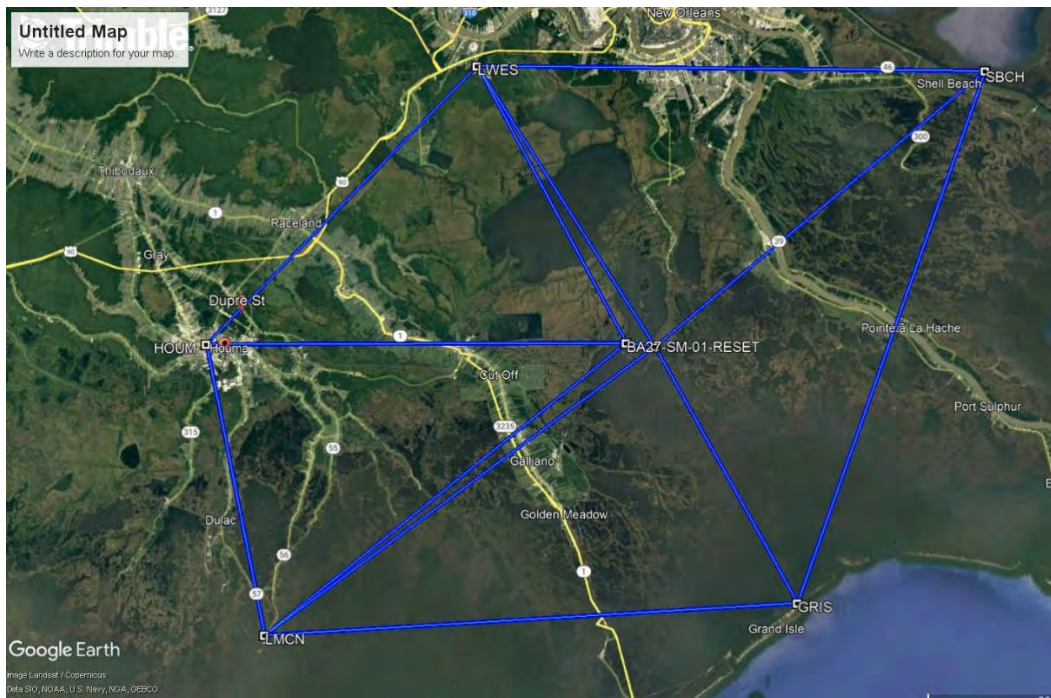
Equipment utilized during survey:

- One (1) Trimble® Survey Grade RTK System including but not limited R-10 and R-12 Receivers (Includes Base and Rover and accessories).
- One (1) Closed Cabin Survey Vessel or Airboat.

The manufacturer's specification sheets for each item can be found in **Appendix A** at the end of this document.

Survey Control

A preliminary survey was performed to locate and verify the primary project control, which is listed in the Scope of Work and Plans as “BA206 SM 01” and “BA27 SM 01 RESET.” Once the project monuments were located and visually inspected for integrity, a base receiver was set up on each respectively. GNSS static data was logged for further analysis on the quality of the project control. Processing and adjustment were performed in Trimble Business Center, additionally a NGS OPUS solution was performed as a check.



Solutions for the preliminary static survey can be found in **Appendix B**:

Data Processing

Data was processed using Trimble Business Center Software (Ver 3.90).

All processed data is presented in tabular format

All data was collected and processed using Geoid 12B.

Primary Survey Control

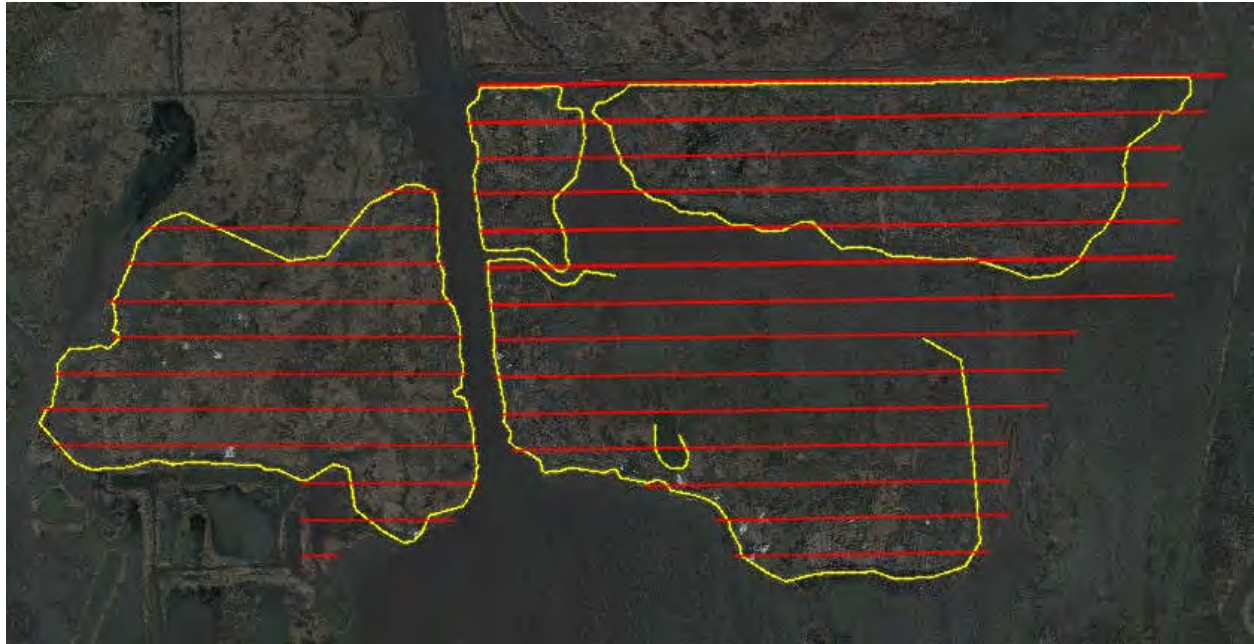
Post static survey found the control provided by CPRA to be within tolerance of their published values. BA206 SM 01 was used as the primary control point with BA27 SM 01 RESET being utilized as a check point.

Data Acquisition

Position and elevation were recorded at 50-foot intervals along each transect line with elevation changes of greater than 0.5 foot also captured. A plate was attached to both the range pole and level rod (used for water depths) to prevent sinking in unstable soil. Where applicable transects that crossed water features were captured by obtaining water depths at 50-foot intervals with a respective tide measurement. As per CPRA instruction through the Scope of Services RTK shots were taken on natural ground.

Section 5: Northwest Turtle Bay Marsh Creation Survey

The transects provided by CPRA were approximately 500ft apart and of varying length. CPRA specs required shots every 50' along transects and at elevation changes of greater than 0.5 foot.



Equipment

Equipment utilized during survey:

- One (1) Trimble® Survey Grade RTK System including but not limited to R-10 and R-12 Receivers (Includes Base and Rover and accessories).
- One (1) Airboat
- One (1) Fixed Height Tripod used in both RTK and Static Surveys
- One (1) 25' level rod with flat plat used in taking water depths
- One (1) 2-meter pole with flat plat used in RTK data acquisition

The manufacturer's specification sheets for appropriate items can be found in **Appendix A** at the end of this document.

Section 6: Deliverables

The deliverables include a plan set submitted electronically in PDF format. It will include plan views with labeled survey transects and detailed cross-sections. Also included will be processed survey data with point number, northing, easting, elevation and description of each survey point in an electronic ASCII approved survey data format. All surveys are stamped by a professional land surveyor licensed in the State of Louisiana.

LASARD

LASARD Deliverables shall be submitted to CPRA electronically or on compact disc in the data format following protocols defined in the LASARD SOP (Appendix C of the Scope of Work) for acceptance before the survey report is finalized. The deliverables and corresponding data reporting format outlined in this section are in addition to the deliverables and data reporting format outlined above.

Two (2) digital copies of the final LASARD deliverables on compact discs shall be submitted to CPRA after acceptance of the draft LASARD deliverables. Each compact disc shall include one (1) digital copy of the final LASARD deliverables as defined by the Attribute Specifications and LASARD GIS Templates provided by CPRA.

APPENDIX A EQUIPMENT



Trimble R10

GNSS SYSTEM

A NEW LEVEL OF PRODUCTIVITY

Collect more accurate data faster and easier – no matter what the job or the environment, with the Trimble® R10 GNSS System. Built with powerful technologies integrated into a sleek design, this unique system provides Surveyors with a powerful way to increase productivity in every job, every day.

Trimble HD-GNSS Processing Engine

The advanced Trimble HD-GNSS processing engine provides markedly reduced convergence times as well as high position and precision reliability while reducing measurement occupation time. Transcending traditional fixed/float techniques, it provides a more accurate assessment of error estimates than traditional GNSS technology.

Trimble SurePoint

With Trimble SurePoint™ technology, advanced sensors onboard the Trimble R10 continuously stream pole tilt and heading information that is used to display an electronic level bubble on the Trimble controller screen, allowing surveyors to maintain focus where it matters most. Full tilt compensation allows the survey pole to be tilted up to 15° when measuring, allowing the Trimble R10 to capture points that would be inaccessible to other GNSS surveying systems.

Trimble 360 Receiver

Powerful Trimble 360 receiver technology in the Trimble R10 supports signals from all existing and planned GNSS constellations and augmentation systems. With two integrated Trimble Maxwell™ 6 chips, the Trimble R10 offers 440 GNSS channels.

Trimble CenterPoint RTX

Trimble CenterPoint® RTX delivers RTK level precision anywhere in the world without the use of a local base station or VRS network.

Survey using satellite delivered, CenterPoint RTX corrections in areas where terrestrial based corrections are not available. When surveying over a great distance in a remote area, such as a pipeline or utility right of way, CenterPoint RTX eliminates the need to continuously move base stations or maintain connection to a cellular network.

Trimble xFill

Leveraging a worldwide network of Trimble GNSS reference stations and satellite datalinks, Trimble xFill™ seamlessly fills in for gaps in your RTK or VRS connection stream. Maintain centimeter level accuracy beyond five minutes with a CenterPoint RTX subscription.

Smart, Versatile

A smart lithium-ion battery inside the Trimble R10 system delivers extended battery life and more reliable power. A built-in LED battery status indicator allows the user to quickly check remaining battery life.

The Trimble R10 system provides a number of communications options to support any workflow. Receive VRS corrections and connect to the Internet from the field with the integrated cellular modem. Using Wi-Fi, easily connect to the Trimble R10 system using a laptop or smartphone to configure the receiver without a Trimble controller.

The Complete Solution

Bring the power and speed of the Trimble R10 system together with trusted Trimble software solutions, including Trimble Access™ and Trimble Business Center.

Trimble Access field software provides specialized and customized workflows to make surveying tasks quicker and easier while enabling teams to communicate vital information between field and office in real time. Back in the office, users can seamlessly process data with Trimble Business Center software.

Key Features

- ▶ Cutting-edge Trimble HD-GNSS processing engine
- ▶ Precise position capture and full tilt compensation with Trimble SurePoint technology
- ▶ Trimble CenterPoint RTX provides RTK level precision anywhere without the need for a base station or VRS network
- ▶ Trimble xFill technology provides centimeter-level positioning during connection outages
- ▶ Advanced satellite tracking with Trimble 360 receiver technology
- ▶ Sleek ergonomic design for easier handling



Trimble R10 GNSS SYSTEM

HARDWARE	
PHYSICAL	
Dimensions (W×H)	11.9 cm x 13.6 cm
Weight	1.12 kg with internal battery, internal radio with UHF antenna, 3.57 kg items above plus range pole, controller & bracket
Temperature ^a	Operating -40° C to +65° C Storage -40° C to +75° C
Humidity	100%, condensing
Ingress Protection	IP67 dustproof, protected from temporary immersion to depth of 1 m
Shock and vibration (Tested and meets the following environmental standards)	
Shock	Non-operating: Designed to survive a 2 m pole drop onto concrete. Operating: to 40 G, 10 msec, sawtooth
Vibration	MIL-STD-810F, FIG.514.5C-1
ELECTRICAL	
	Power 11 to 24 V DC external power input with over-voltage protection on Port 1 and Port 2 (7-pin Lemo)
	Rechargeable, removable 7.4 V, 3.7 Ah Lithium-ion smart battery with LED status indicators
	Power consumption is 5.1 W in RTK rover mode with internal radio ^b
Operating times on internal battery ^c	450 MHz receive only option 5.5 hours 450 MHz receive/transmit option (0.5 W) 4.5 hours 450 MHz receive/transmit option (2.0 W) 3.7 hours Cellular receive option 5.0 hours
COMMUNICATIONS AND DATA STORAGE	
Serial	3-wire serial (7-pin Lemo)
USB v2.0	Supports data download and high speed communications
Radio Modem	Fully Integrated, sealed 450 MHz wide band receiver/transmitter with frequency range of 403 MHz to 473 MHz, support of Trimble, Pacific Crest, and SATEL radio protocols: Transmit power: 2 W Range: 3–5 km typical / 10 km optimal ^d
Cellular	Integrated, 3.5 G modem, HSDPA 7.2 Mbps (download), GPRS multi-slot class 12, EDGE multi-slot class 12, UMTS/HSDPA (WCDMA/FDD) 850/1900/2100MHz, Quad-band EGSM 850/900/1800/1900 MHz, GSM CSD, 3GPP LTE
Bluetooth	Fully integrated, fully sealed 2.4 GHz communications port (Bluetooth) ^{e,f}
Wi-Fi	802.11 b.g, access point and client mode, WPA/WPA2/WEP64/WEP128 encryption
USB v2.0	Supports data download and high speed communications
External communication devices for corrections supported on	Serial, USB, TCP/IP and Bluetooth ports
Data storage	4 GB internal memory; over seven years of raw observables (approx. 1.4 MB /day), based on recording every 15 seconds from an average of 14 satellites CMR+, CMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 input and output 24 NMEA outputs, GSOF, RT17 and RT27 outputs
WEBUI	
	Offers simple configuration, operation, status, and data transfer
	Accessible via Wi-Fi, Serial, USB, and Bluetooth
SUPPORTED TRIMBLE CONTROLLERS	
	Trimble TSC7, Trimble T10, Trimble TSC3, Trimble Slate, Trimble CU, Trimble Tablet Rugged PC
CERTIFICATIONS	
	IEC 60950-1 (Electrical Safety); FCC DET Bulletin 65 (RF Exposure Safety); FCC Part 15.105 (Class B), Part 15.247, Part 90; PTCRB (AT&T); Bluetooth SIG; WFA IC ES-003 (Class B); Radio Equipment Directive 2014/53/EU, RoHS, WEEE; Australia & New Zealand RCM; Japan Radio and Telecom MIC

DATASHEET

PERFORMANCE SPECIFICATIONS		
MEASUREMENTS		
	Measuring points sooner and faster with Trimble HD-GNSS technology	
	Increased measurement productivity and traceability with Trimble SurePoint electronic tilt compensation	
	Worldwide centimeter level positioning using Trimble CenterPoint RTX satellite delivered corrections	
	Reduced downtime due to loss of radio signal with Trimble xFill technology	
	Advanced Trimble Maxwell 6 Custom Survey GNSS chips with 440 channels	
	Future-proof your investment with Trimble 360 GNSS tracking	
	Satellite signals tracked simultaneously:	GPS: L1C/A, L1C, L2C, L2E, L5 GLONASS: L1C/A, L1P, L2C/A, L2P, L3 SBAS: L1C/A, L5 (For SBAS satellites that support L5) Galileo: E1, E5A, E5B, E5 AltBOC BeiDou: B1, B2, B3
	CenterPoint RTX, OmniSTAR® HP, XP, G2, VBS positioning	
	QZSS, WAAS, EGNOS, GAGAN, MSAS	
	Positioning Rates	1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz
POSITIONING PERFORMANCE ¹		
CODE DIFFERENTIAL GNSS POSITIONING		
	Horizontal	0.25 m + 1 ppm RMS
	Vertical	0.50 m + 1 ppm RMS
	SBAS differential positioning accuracy ²	typically <5 m 3DRMS
STATIC GNSS SURVEYING		
High-Precision Static		
	Horizontal	3 mm + 0.1 ppm RMS
	Vertical	3.5 mm + 0.4 ppm RMS
STATIC AND FAST STATIC		
	Horizontal	3 mm + 0.5 ppm RMS
	Vertical	5 mm + 0.5 ppm RMS
REAL TIME KINEMATIC SURVEYING		
Single Baseline <30 km		
	Horizontal	8 mm + 1 ppm RMS
	Vertical	15 mm + 1 ppm RMS
Network RTK³		
	Horizontal	8 mm + 0.5 ppm RMS
	Vertical	15 mm + 0.5 ppm RMS
	RTK start-up time for specified precisions ⁴	2 to 8 seconds
TRIMBLE RTX™ TECHNOLOGY (SATELLITE AND CELLULAR/INTERNET (IP))		
CenterPoint RTX⁵		
	Horizontal	2 cm RMS
	Vertical	5 cm RMS
	RTX convergence time for specified precisions - Worldwide	< 15 min
	RTX QuickStart convergence time for specified precisions	< 1 min
	RTX convergence time for specified precisions in select regions (Trimble RTX Fast Regions)	< 1 min
TRIMBLE XFILL⁶		
	Horizontal	RTK ⁷ + 10 mm/minute RMS
	Vertical	RTK ⁷ + 20 mm/minute RMS

APPENDIX B Reports and Results

Project file data		Coordinate System	
Name:	P:\2022\2022.056\Survey\GPS Files\CPRA STATIC SURVEY2.vce	Name:	United States/State Plane 1983
Size:	123 KB	Zone:	Louisiana South 1702
Modified:	10/27/2022 7:48:52 AM (UTC:-5)	Datum:	NAD 1983 (Conus)
Time zone:	Central Standard Time	Global reference datum:	NAD83(2011)
Reference number:		Global reference epoch:	2010
Description:		Geoid:	GEOID12B (Conus)
Comment 1:		Vertical datum:	
Comment 2:		Calibrated site:	
Comment 3:			

Point List

ID	Northing (US survey foot)	Easting (US survey foot)	Elevation (US survey foot)	Feature Code
BA27-SM-01-RESET	392242.400	3651413.455	1.317	
ba206sm01	390279.722	3663447.003	1.181	
GRIS	281033.478	3719590.188	27.345	
HOUM	397729.334	3474618.954	45.350	
LMCN	275191.100	3495143.511	31.658	
LWES	510595.859	3592587.493	33.499	
SBCH	501341.865	3806984.559	35.981	

10/27/2022 8:20:38 AM	P:\2022\2022.056\Survey\GPS Files\CPRA STATIC SURVEY2.vce	Trimble Business Center
--------------------------	---	-------------------------

Network Adjustment Report

Project File Data	Coordinate System
Name: P:\2022\2022.056\Survey\GPS Files\CPRA STATIC SURVEY2.vce	Name: United States/State Plane 1983
Size: 123 KB	Zone: Louisiana South 1702
Modified: 10/27/2022 7:48:52 AM (UTC:-5)	Datum: NAD 1983 (Conus)
Time zone: Central Standard Time	Global reference datum: NAD83(2011)
Reference number:	Global reference epoch: 2010
Description:	Geoid: GEOID12B (Conus)
Comment 1:	Vertical datum:
Comment 2:	Calibrated site:
Comment 3:	

Adjustment Settings

Set-Up Errors

GNSS

Error in Height of Antenna: 0.000 ft

Centering Error: 0.000 ft

Covariance Display

Horizontal:

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.000

Three-Dimensional

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.000

Adjustment Statistics

Number of Iterations for Successful Adjustment: 2

Network Reference Factor: 1.00

Chi Square Test (95%): Passed

Precision Confidence Level: DRMS

Degrees of Freedom: 62

Post Processed Vector Statistics

Reference Factor: 1.00

Redundancy Number: 62.00

A Priori Scalar: 4.41

Control Coordinate Comparisons

Values shown are control coordinates minus adjusted coordinates.

Point ID	Δ Northing (US survey foot)	Δ Easting (US survey foot)	Δ Elevation (US survey foot)	Δ Height (US survey foot)
LWES	-0.021	-0.012	?	-0.074
SBCH	-0.006	-0.040	?	-0.119

Control Point Constraints

Point ID	Type	North σ (US survey foot)	East σ (US survey foot)	Height σ (US survey foot)	Elevation σ (US survey foot)
GRIS	Global	Fixed	Fixed	Fixed	
HOUM	Global	Fixed	Fixed	Fixed	
LMCN	Global	Fixed	Fixed	Fixed	

Fixed = 0.000003(US survey foot)

Adjusted Grid Coordinates

Point ID	Northing (US survey foot)	Northing Error (US survey foot)	Easting (US survey foot)	Easting Error (US survey foot)	Elevati on (US survey foot)	Elevation Er ror (US survey foot)	Constra int
ba206sm01	390279.722	0.014	3663447.003	0.015	1.181	0.092	
BA27-SM-01-RESET	392242.400	0.016	3651413.455	0.017	1.317	0.102	
GRIS	281033.478	?	3719590.188	?	27.345	?	LLh
HOUM	397729.334	?	3474618.954	?	45.350	?	LLh
LMCN	275191.100	?	3495143.511	?	31.658	?	LLh
LWES	510595.859	0.010	3592587.493	0.010	33.499	0.076	
SBCH	501341.865	0.014	3806984.559	0.012	35.981	0.099	

Adjusted Geodetic Coordinates

Point ID	Latitude	Longitude	Height (US survey foot)	Height Error (US survey foot)	Constraint
ba206sm01	N29°34'03.57243"	W90°07'47.13620"	-80.540	0.092	
BA27-SM-01-RESET	N29°34'24.23288"	W90°10'03.17304"	-80.510	0.102	
GRIS	N29°15'55.88303"	W89°57'26.26220"	-51.315	?	LLh
HOUM	N29°35'32.10965"	W90°43'24.98848"	-37.182	?	LLh
LMCN	N29°15'17.90434"	W90°39'40.65195"	-48.392	?	LLh

LWES	N29°54'01.29561"	W90°20'57.83356"	-51.471	0.076	
SBCH	N29°52'05.20560"	W89°40'23.63796"	-48.608	0.099	

Adjusted ECEF Coordinates

Point ID	X (US survey foot)	X Err or (US survey foot)	Y (US survey foot)	Y Er ror (US surv ey foot)	Z (US survey foot)	Z Err or (US surve y foot)	3D Err or (US survey foot)	Constrai nt
ba206sm01	41252.933 ⁻	0.015	18215273.534 ⁻	0.080	10264965.655	0.047	0.094	
BA27-SM-01-RESET	53263.344 ⁻	0.017	18214212.439 ⁻	0.089	10266780.895	0.053	0.105	
GRIS	13616.881	?	18269305.501 ⁻	?	10169272.606	?	?	LLh
HOUM	229986.086 ⁻	?	18209490.634 ⁻	?	10272765.226	?	?	LLh
LMCN	210876.373 ⁻	?	18269971.291 ⁻	?	10165927.176	?	?	LLh
LWES	110713.258 ⁻	0.010	18154998.005 ⁻	0.067	10370043.685	0.039	0.078	
SBCH	103575.637 ⁻	0.012	18160886.026 ⁻	0.086	10359876.792	0.050	0.100	

Error Ellipse Components

Point ID	Semi-major axis (US survey foot)	Semi-minor axis (US survey foot)	Azimuth
ba206sm01	0.022	0.020	74°
BA27-SM-01-RESET	0.025	0.023	97°
LWES	0.014	0.013	17°
SBCH	0.019	0.017	17°

Adjusted GNSS Observations

Transformation

Parameters

Deflection in Latitude: -0.104 sec (DRMS) 0.044 sec

Deflection in Longitude: -0.013 sec (DRMS) 0.079 sec

Azimuth Rotation: -0.014 sec (DRMS) 0.006 sec

Scale Factor: 1.00000012 (DRMS) 0.00000004

Observation ID		Observation	A-posteriori Error	Residual	Standardized Residual
LMCN --> HOUM (PV84)	Az.	350°49'38.0"	0.006 sec	0.045 sec	2.616
	ΔHt.	11.273 ft	0.046 ft	0.012 ft	0.254
	Ellip Dist.	124247.999 ft	0.005 ft	-0.024 ft	-2.277
LMCN --> HOUM (PV80)	Az.	350°49'38.0"	0.006 sec	0.055 sec	2.501
	ΔHt.	11.273 ft	0.046 ft	0.001 ft	0.017
	Ellip Dist.	124247.999 ft	0.005 ft	-0.013 ft	-0.988
SBCH --> ba206sm01 (PV105)	Az.	233°05'54.1"	0.017 sec	0.098 sec	2.375
	ΔHt.	-31.979 ft	0.089 ft	-0.067 ft	-0.286

	Ellip Dist.	181498.873 ft	0.016 ft	0.031 ft	0.568
ba206sm01 --> BA27-SM-01-RESET (PV65)	Az.	279°51'54.3"	0.192 sec	-0.157 sec	-0.867
	ΔHt.	0.032 ft	0.070 ft	-0.012 ft	-0.188
	Ellip Dist.	12193.117 ft	0.012 ft	-0.027 ft	-2.287
LWES --> ba206sm01 (PV99)	Az.	149°59'47.8"	0.023 sec	-0.069 sec	-1.273
	ΔHt.	-29.134 ft	0.089 ft	0.118 ft	0.453
	Ellip Dist.	139640.464 ft	0.015 ft	0.089 ft	2.162
LMCN --> GRIS (PV81)	Az.	88°50'56.1"	0.006 sec	-0.014 sec	-1.269
	ΔHt.	-2.935 ft	0.048 ft	0.021 ft	0.302
	Ellip Dist.	224520.749 ft	0.008 ft	0.039 ft	2.048
LWES --> ba206sm01 (PV93)	Az.	149°59'47.8"	0.023 sec	0.042 sec	0.672
	ΔHt.	-29.134 ft	0.089 ft	-0.114 ft	-0.391
	Ellip Dist.	139640.464 ft	0.015 ft	-0.093 ft	-2.045
SBCH --> ba206sm01 (PV112)	Az.	233°05'54.1"	0.017 sec	-0.087 sec	-2.007
	ΔHt.	-31.979 ft	0.089 ft	0.079 ft	0.333
	Ellip Dist.	181498.873 ft	0.016 ft	-0.008 ft	-0.149
ba206sm01 --> BA27-SM-01-RESET (PV66)	Az.	279°51'54.3"	0.192 sec	0.335 sec	1.190
	ΔHt.	0.032 ft	0.070 ft	0.010 ft	0.088

	Ellip Dist.	12193.117 ft	0.012 ft	0.028 ft	1.869
LMCN --> GRIS (PV85)	Az.	88°50'56.1"	0.006 sec	-0.010 sec	-1.111
	ΔHt.	-2.935 ft	0.048 ft	-0.015 ft	-0.283
	Ellip Dist.	224520.749 ft	0.008 ft	0.025 ft	1.585
GRIS --> ba206sm01 (PV72)	Az.	333°29'16.6"	0.026 sec	0.063 sec	1.134
	ΔHt.	-29.166 ft	0.089 ft	0.011 ft	0.050
	Ellip Dist.	122830.956 ft	0.015 ft	-0.052 ft	-1.401
GRIS --> ba206sm01 (PV69)	Az.	333°29'16.6"	0.026 sec	-0.056 sec	-1.050
	ΔHt.	-29.166 ft	0.089 ft	-0.110 ft	-0.497
	Ellip Dist.	122830.956 ft	0.015 ft	0.043 ft	1.239
HOUM --> LWES (PV95)	Az.	46°34'18.8"	0.011 sec	-0.011 sec	-0.949
	ΔHt.	-14.240 ft	0.050 ft	-0.010 ft	-0.176
	Ellip Dist.	163275.211 ft	0.009 ft	0.011 ft	1.218
LMCN --> ba206sm01 (PV88)	Az.	55°58'25.2"	0.015 sec	0.072 sec	1.121
	ΔHt.	-32.101 ft	0.090 ft	0.092 ft	0.234
	Ellip Dist.	203894.950 ft	0.016 ft	0.071 ft	0.760
GRIS --> SBCH (PV103)	Az.	22°19'37.1"	0.008 sec	0.004 sec	0.395
	ΔHt.	2.813 ft	0.052 ft	0.019 ft	0.249

	Ellip Dist.	237019.357 ft	0.011 ft	-0.019 ft	-0.942
LWES --> BA27-SM-01- RESET (PV92)	Az.	154°03'47.6"	0.027 sec	0.068 sec	0.827
	ΔHt.	-29.102 ft	0.099 ft	-0.051 ft	-0.159
	Ellip Dist.	132174.921 ft	0.017 ft	-0.026 ft	-0.452
LMCN --> BA27-SM-01- RESET (PV82)	Az.	53°30'14.4"	0.018 sec	0.045 sec	0.813
	ΔHt.	-32.069 ft	0.100 ft	-0.080 ft	-0.287
	Ellip Dist.	195250.841 ft	0.017 ft	0.014 ft	0.204
LWES --> SBCH (PV106)	Az.	92°57'50.6"	0.008 sec	-0.007 sec	-0.801
	ΔHt.	2.845 ft	0.048 ft	-0.005 ft	-0.097
	Ellip Dist.	214612.154 ft	0.011 ft	-0.002 ft	-0.161
LMCN --> ba206sm01 (PV83)	Az.	55°58'25.2"	0.015 sec	-0.029 sec	-0.695
	ΔHt.	-32.101 ft	0.090 ft	-0.075 ft	-0.286
	Ellip Dist.	203894.950 ft	0.016 ft	0.023 ft	0.365
HOUM --> LWES (PV90)	Az.	46°34'18.8"	0.011 sec	0.001 sec	0.048
	ΔHt.	-14.240 ft	0.050 ft	0.024 ft	0.322
	Ellip Dist.	163275.211 ft	0.009 ft	-0.008 ft	-0.642
HOUM --> BA27-SM-01- RESET (PV74)	Az.	92°05'03.3"	0.019 sec	0.014 sec	0.244
	ΔHt.	-43.342 ft	0.101 ft	-0.091 ft	-0.306

	Ellip Dist.	176888.065 ft	0.018 ft	-0.048 ft	-0.593
GRIS --> SBCH (PV109)	Az.	22°19'37.1"	0.008 sec	0.000 sec	0.011
	ΔHt.	2.813 ft	0.052 ft	-0.001 ft	-0.011
	Ellip Dist.	237019.357 ft	0.011 ft	-0.009 ft	-0.544
LMCN --> BA27-SM-01- RESET (PV87)	Az.	53°30'14.4"	0.018 sec	-0.053 sec	-0.504
	ΔHt.	-32.069 ft	0.100 ft	0.095 ft	0.162
	Ellip Dist.	195250.841 ft	0.017 ft	0.034 ft	0.258
HOUM --> BA27-SM-01- RESET (PV78)	Az.	92°05'03.3"	0.019 sec	-0.030 sec	-0.377
	ΔHt.	-43.342 ft	0.101 ft	0.064 ft	0.132
	Ellip Dist.	176888.065 ft	0.018 ft	-0.040 ft	-0.362
LWES --> BA27-SM-01- RESET (PV98)	Az.	154°03'47.6"	0.027 sec	0.021 sec	0.284
	ΔHt.	-29.102 ft	0.099 ft	0.123 ft	0.366
	Ellip Dist.	132174.921 ft	0.017 ft	0.009 ft	0.169
LWES --> SBCH (PV100)	Az.	92°57'50.6"	0.008 sec	-0.004 sec	-0.315
	ΔHt.	2.845 ft	0.048 ft	0.004 ft	0.059
	Ellip Dist.	214612.154 ft	0.011 ft	-0.003 ft	-0.136

Histogram of Standardized Residuals

Critical Tau Value: 3.7

Observations Failing the Tau Test: 0

Covariance Terms

From Point	To Point		Components	A-posteriori Error	Horiz. Precision (Ratio)	3D Precision (Ratio)
ba206sm01	BA27-SM-01-RESET	Az.	279°51'54.3"	0.193 sec	1 : 1040670	1 : 1039678
		ΔHt.	0.030 ft	0.070 ft		
		ΔElev.	0.137 ft	0.070 ft		
		Ellip Dist.	12193.118 ft	0.012 ft		
ba206sm01	GRIS	Az.	153°24'11.6"	0.026 sec	1 : 8517376	1 : 8519470
		ΔHt.	29.225 ft	0.092 ft		
		ΔElev.	26.165 ft	0.092 ft		
		Ellip Dist.	122830.972 ft	0.014 ft		
ba206sm01	LMCN	Az.	236°14'04.9"	0.015 sec	1 : 13378145	1 : 13373902
		ΔHt.	32.148 ft	0.092 ft		
		ΔElev.	30.477 ft	0.092 ft		
		Ellip Dist.	203894.976 ft	0.015 ft		
ba206sm01	LWES	Az.	330°06'20.0"	0.023 sec	1 : 9442434	1 : 9445664

		ΔHt.	29.069 ft	0.093 ft		
		ΔElev.	32.318 ft	0.093 ft		
		Ellip Dist.	139640.482 ft	0.015 ft		
ba206sm01	SBCH	Az.	52°52'19.4"	0.018 sec	1 : 10563374	1 : 10560222
		ΔHt.	31.932 ft	0.103 ft		
		ΔElev.	34.800 ft	0.103 ft		
		Ellip Dist.	181498.895 ft	0.017 ft		
BA27-SM-01-RESET	HOUM	Az.	272°21'31.6"	0.019 sec	1 : 10168799	1 : 10168996
		ΔHt.	43.328 ft	0.102 ft		
		ΔElev.	44.033 ft	0.102 ft		
		Ellip Dist.	176888.087 ft	0.017 ft		
BA27-SM-01-RESET	LMCN	Az.	233°44'47.4"	0.018 sec	1 : 11543627	1 : 11537544
		ΔHt.	32.118 ft	0.102 ft		
		ΔElev.	30.340 ft	0.102 ft		
		Ellip Dist.	195250.865 ft	0.017 ft		
BA27-SM-01-RESET	LWES	Az.	334°09'12.3"	0.027 sec	1 : 7770254	1 : 7774228
		ΔHt.	29.039 ft	0.104 ft		
		ΔElev.	32.182 ft	0.104 ft		
		Ellip Dist.	132174.937 ft	0.017 ft		
GRIS	LMCN	Az.	269°11'34.8"	0.000 sec	1 : 0	1 : 0
		ΔHt.	2.923 ft	0.000 ft		
		ΔElev.	4.312 ft	0.000 ft		
		Ellip Dist.	224520.777 ft	0.000 ft		
GRIS	SBCH	Az.	22°19'37.1"	0.010 sec	1 : 17344214	1 : 17347876

		ΔHt.	2.708 ft	0.099 ft		
		ΔElev.	8.635 ft	0.099 ft		
		Ellip Dist.	237019.387 ft	0.014 ft		
HOUM	LMCN	Az.	170°47'47.8"	0.000 sec	1 : 0	1 : 0
		ΔHt.	-11.210 ft	0.000 ft		
		ΔElev.	-13.693 ft	0.000 ft		
		Ellip Dist.	124248.014 ft	0.000 ft		
HOUM	LWES	Az.	46°34'18.9"	0.012 sec	1 : 16192512	1 : 16197728
		ΔHt.	-14.289 ft	0.076 ft		
		ΔElev.	-11.851 ft	0.076 ft		
		Ellip Dist.	163275.232 ft	0.010 ft		
LWES	SBCH	Az.	92°57'50.6"	0.009 sec	1 : 20223897	1 : 20224849
		ΔHt.	2.863 ft	0.057 ft		
		ΔElev.	2.482 ft	0.057 ft		
		Ellip Dist.	214612.181 ft	0.011 ft		

Date: 10/27/2022 8:11:20 AM	Project: P:\2022\2022.056\Survey\GPS Files\CPRA STATIC SURVEY2.vce	Trimble Business Center
-----------------------------	---	-------------------------

OPUS Solutions

FILE: 07702130.22o OP1666120042217

NGS OPUS SOLUTION REPORT BA27-SM-01-RESET

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: wyatt.aucoin@deltacoastllc.com DATE: October 18, 2022
RINEX FILE: 0770213p.22o TIME: 19:08:37 UTC

SOFTWARE: page5 2008.25 master291.pl 160321 START: 2022/08/01 15:07:00
EPHEMERIS: igs22211.eph [precise] STOP: 2022/08/01 18:48:00
NAV FILE: brdc2130.22n OBS USED: 11024 / 11340 : 97%
ANT NAME: TRMR12 NONE # FIXED AMB: 42 / 53 : 79%
ARP HEIGHT: 2 OVERALL RMS: 0.022(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2022.5828)

X: -16234.683(m) 0.005(m) -16235.555(m) 0.005(m)
Y: -5551703.096(m) 0.012(m) -5551701.596(m) 0.012(m)
Z: 3129321.095(m) 0.010(m) 3129320.903(m) 0.010(m)

LAT: 29 34 24.23276 0.011(m) 29 34 24.25134 0.011(m)
E LON: 269 49 56.82760 0.005(m) 269 49 56.79502 0.005(m)
W LON: 90 10 3.17240 0.005(m) 90 10 3.20498 0.005(m)
EL HGT: -24.494(m) 0.012(m) -25.891(m) 0.012(m)
ORTHO HGT: 0.381(m) 0.082(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES
UTM (Zone 15) SPC (1702 LA S)
Northing (Y) [meters] 3274865.135 119555.719

Easting (X) [meters] 774402.035 1112953.064
Convergence [degrees] 1.39879722 0.58290833
Point Scale 1.00052917 0.99995339
Combined Factor 1.00053302 0.99995724

US NATIONAL GRID DESIGNATOR: 15RYN7440274865(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	39759.9
DJ9603	LWES LAKEWOOD ELMENTRY CORS ARP	N295401.295	W0902057.833	40286.8
DG5315	HOUH HOUHMA CORS ARP	N293532.109	W0904324.988	53915.3

NEAREST NGS PUBLISHED CONTROL POINT

AU2833	POI 1934	N293211.496	W0900951.415	4099.2
--------	----------	-------------	--------------	--------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

FILE: 07702160.22o OP1666120086656

NGS OPUS SOLUTION REPORT BA27-SM-01-RESET

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: wyatt.aucoin@deltacoastllc.com DATE: October 18, 2022
RINEX FILE: 0770216n.22o TIME: 19:08:50 UTC

SOFTWARE: page5 2008.25 master276.pl 160321 START: 2022/08/04 13:35:00
EPHEMERIS: igs22214.eph [precise] STOP: 2022/08/04 15:40:00
NAV FILE: brdc2160.22n OBS USED: 5892 / 6000 : 98%
ANT NAME: TRMR12 NONE # FIXED AMB: 29 / 32 : 91%
ARP HEIGHT: 2 OVERALL RMS: 0.017(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2022.5907)

X: -16234.701(m) 0.020(m) -16235.574(m) 0.020(m)
Y: -5551703.080(m) 0.012(m) -5551701.580(m) 0.012(m)
Z: 3129321.083(m) 0.016(m) 3129320.891(m) 0.016(m)

LAT: 29 34 24.23269 0.012(m) 29 34 24.25127 0.012(m)
E LON: 269 49 56.82691 0.020(m) 269 49 56.79430 0.020(m)
W LON: 90 10 3.17309 0.020(m) 90 10 3.20570 0.020(m)
EL HGT: -24.514(m) 0.017(m) -25.911(m) 0.017(m)
ORTHO HGT: 0.361(m) 0.088(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 15) SPC (1702 LA S)

Northing (Y) [meters] 3274865.132 119555.717
Easting (X) [meters] 774402.017 1112953.046
Convergence [degrees] 1.39879722 0.58290833
Point Scale 1.00052917 0.99995339
Combined Factor 1.00053302 0.99995724

US NATIONAL GRID DESIGNATOR: 15RYN7440274865(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG5315	HOUM HOUMA CORS ARP	N293532.109	W0904324.988	53915.3
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	39759.9
DJ9603	LWES LAKEWOOD ELMENTRY CORS ARP	N295401.295	W0902057.833	40286.8

NEAREST NGS PUBLISHED CONTROL POINT

AU2833	POI 1934	N293211.496	W0900951.415	4099.2
--------	----------	-------------	--------------	--------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

FILE: 04742160.22o OP1666119065901

NGS OPUS SOLUTION REPORT ba206sm01

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: wyatt.aucoin@deltacoastllc.com DATE: October 18, 2022
RINEX FILE: 0474216n.22o TIME: 18:53:27 UTC

SOFTWARE: page5 2008.25 master250.pl 160321 START: 2022/08/04 13:38:00
EPHEMERIS: igs22214.eph [precise] STOP: 2022/08/04 16:27:00
NAV FILE: brdc2160.22n OBS USED: 7886 / 8114 : 97%
ANT NAME: TRMR10 NONE # FIXED AMB: 32 / 44 : 73%
ARP HEIGHT: 2 OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2022.5908)

X: -12573.937(m) 0.009(m) -12574.810(m) 0.009(m)
Y: -5552026.502(m) 0.055(m) -5552025.002(m) 0.055(m)
Z: 3128767.807(m) 0.034(m) 3128767.615(m) 0.034(m)

LAT: 29 34 3.57254 0.008(m) 29 34 3.59112 0.008(m)
E LON: 269 52 12.86314 0.009(m) 269 52 12.83059 0.009(m)
W LON: 90 7 47.13686 0.009(m) 90 7 47.16941 0.009(m)
EL HGT: -24.518(m) 0.065(m) -25.916(m) 0.065(m)
ORTHO HGT: 0.316(m) 0.111(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 15) SPC (1702 LA S)

Northing (Y) [meters] 3274318.868 118957.500
Easting (X) [meters] 778080.138 1116620.862
Convergence [degrees] 1.41723333 0.60180278
Point Scale 1.00055425 0.99995414
Combined Factor 1.00055810 0.99995799

US NATIONAL GRID DESIGNATOR: 15RYN7808074319(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	37438.8
DP7419	INRI LOYOLA UNIVERSITY CORS ARP	N295613.211	W0900707.837	40954.6
DO8512	MARY MARY_289 LSU C4G CORS ARP	N300122.709	W0895446.801	54649.0

NEAREST NGS PUBLISHED CONTROL POINT

AU2822	BAY 1934	N293252.806	W0900725.521	2255.3
--------	----------	-------------	--------------	--------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

FILE: 04742130.22o OP1666119029277

NGS OPUS SOLUTION REPORT ba206sm01

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: wyatt.aucoin@deltacoastllc.com DATE: October 18, 2022
RINEX FILE: 0474213o.22o TIME: 18:53:11 UTC

SOFTWARE: page5 2008.25 master271.pl 160321 START: 2022/08/01 14:42:00
EPHEMERIS: igs22211.eph [precise] STOP: 2022/08/01 18:42:00
NAV FILE: brdc2130.22n OBS USED: 11617 / 12171 : 95%
ANT NAME: TRMR10 NONE # FIXED AMB: 51 / 58 : 88%
ARP HEIGHT: 2 OVERALL RMS: 0.020(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2022.5827)

X: -12573.897(m) 0.007(m) -12574.770(m) 0.007(m)
Y: -5552026.529(m) 0.026(m) -5552025.029(m) 0.026(m)
Z: 3128767.793(m) 0.027(m) 3128767.601(m) 0.027(m)

LAT: 29 34 3.57172 0.011(m) 29 34 3.59029 0.011(m)
E LON: 269 52 12.86461 0.007(m) 269 52 12.83207 0.007(m)
W LON: 90 7 47.13539 0.007(m) 90 7 47.16793 0.007(m)
EL HGT: -24.502(m) 0.037(m) -25.899(m) 0.037(m)
ORTHO HGT: 0.332(m) 0.090(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 15) SPC (1702 LA S)

Northing (Y) [meters] 3274318.844 118957.475
Easting (X) [meters] 778080.179 1116620.902
Convergence [degrees] 1.41723333 0.60180278
Point Scale 1.00055425 0.99995414
Combined Factor 1.00055810 0.99995799

US NATIONAL GRID DESIGNATOR: 15RYN7808074319(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DO8512	MARY MARY_289 LSU C4G CORS ARP	N300122.709	W0895446.801	54649.0
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	37438.8
DJ9603	LWES LAKEWOOD ELMENTRY CORS ARP	N295401.295	W0902057.833	42562.3

NEAREST NGS PUBLISHED CONTROL POINT

AU2822	BAY 1934	N293252.806	W0900725.521	2255.2
--------	----------	-------------	--------------	--------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

FILE: 07702160.22o OP1666118977449

NGS OPUS SOLUTION REPORT BA27-SM-01-RESET

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: wyatt.aucoin@deltacoastllc.com DATE: October 18, 2022
RINEX FILE: 0770216n.22o TIME: 18:53:02 UTC

SOFTWARE: page5 2008.25 master274.pl 160321 START: 2022/08/04 13:35:00
EPHEMERIS: igs22214.eph [precise] STOP: 2022/08/04 15:40:00
NAV FILE: brdc2160.22n OBS USED: 5903 / 6001 : 98%
ANT NAME: TRMR10 NONE # FIXED AMB: 31 / 32 : 97%
ARP HEIGHT: 2 OVERALL RMS: 0.016(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2022.5907)

X: -16234.701(m) 0.004(m) -16235.574(m) 0.004(m)
Y: -5551703.101(m) 0.028(m) -5551701.601(m) 0.028(m)
Z: 3129321.096(m) 0.017(m) 3129320.904(m) 0.017(m)

LAT: 29 34 24.23273 0.004(m) 29 34 24.25130 0.004(m)
E LON: 269 49 56.82691 0.004(m) 269 49 56.79430 0.004(m)
W LON: 90 10 3.17309 0.004(m) 90 10 3.20570 0.004(m)
EL HGT: -24.489(m) 0.033(m) -25.886(m) 0.033(m)
ORTHO HGT: 0.386(m) 0.094(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 15) SPC (1702 LA S)

Northing (Y) [meters] 3274865.133 119555.718
Easting (X) [meters] 774402.017 1112953.046
Convergence [degrees] 1.39879722 0.58290833
Point Scale 1.00052917 0.99995339
Combined Factor 1.00053302 0.99995724

US NATIONAL GRID DESIGNATOR: 15RYN7440274865(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH7121	GRIS GRAND ISLE CORS ARP	N291555.883	W0895726.262	39759.9
DJ9603	LWES LAKEWOOD ELMENTRY CORS ARP	N295401.295	W0902057.833	40286.8
DP7419	INRI LOYOLA UNIVERSITY CORS ARP	N295613.211	W0900707.837	40579.2

NEAREST NGS PUBLISHED CONTROL POINT

AU2833	POI 1934	N293211.496	W0900951.415	4099.2
--------	----------	-------------	--------------	--------

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

Difference in Solutions

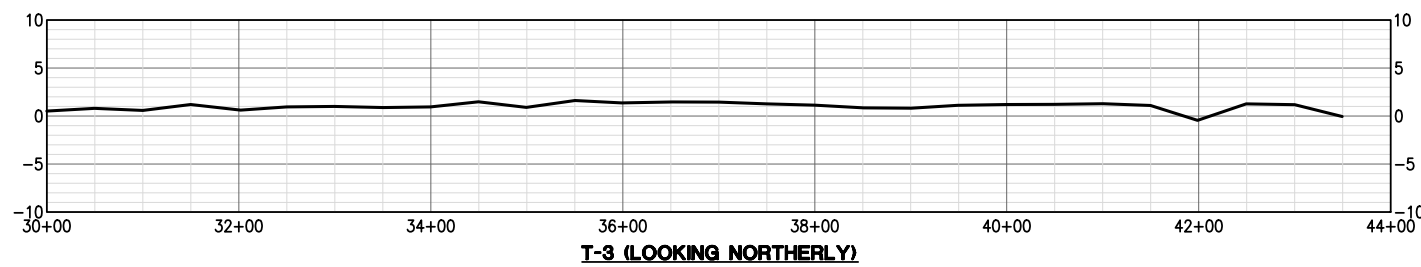
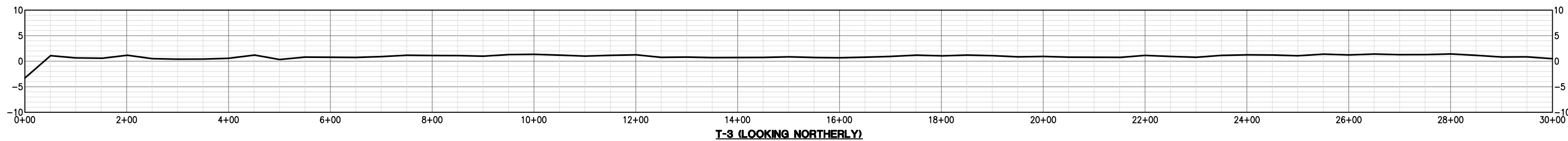
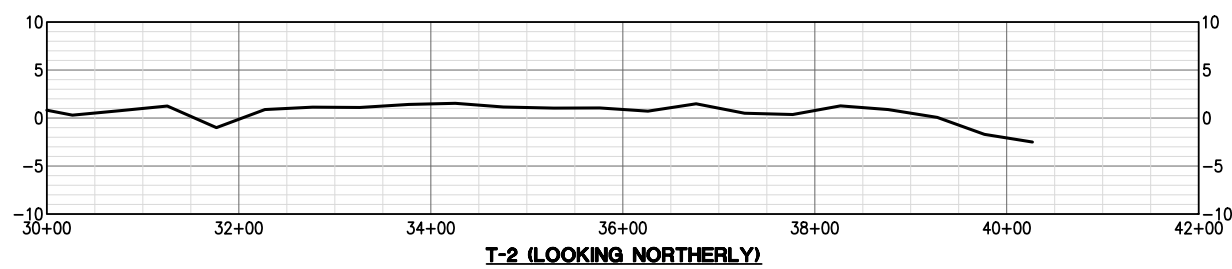
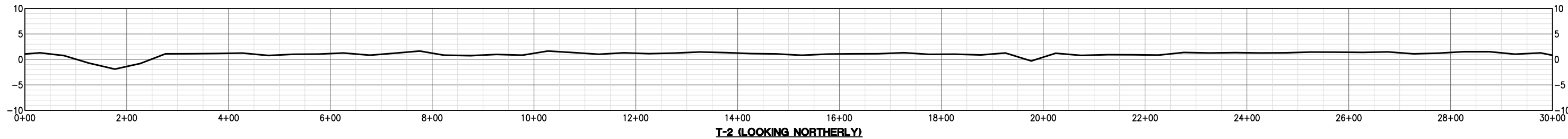
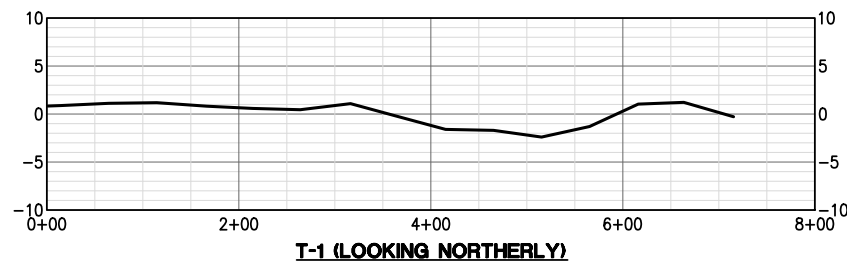
Note: BA206 SM01 published vs. observed position (12b Geoid)

Name	Northing	Easting	Elevation	Description
BA206 SM01	390,279.73	3,663,447.03	1.21	published
BA206 SM01	390,279.72	3,663,447.00	1.18	observed
BA206 SM01	0.01	0.03	0.03	difference

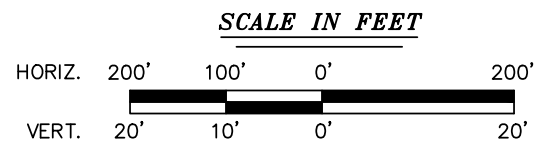
Note: BA27 SM01 RESET published vs. observed position (12b Geoid)

Name	Northing	Easting	Elevation	Description
BA27 SM01 RESET	392,242.42	3,651,413.48	1.37	published
BA27 SM01 RESET	392,242.40	3,651,413.46	1.32	observed
BA27 SM01 RESET	0.02	0.02	0.05	difference

Appendix C



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

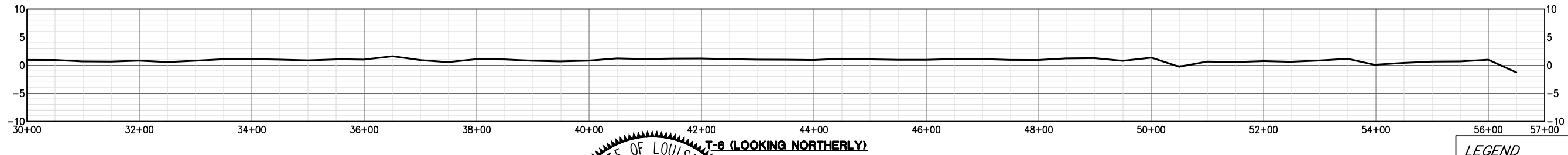
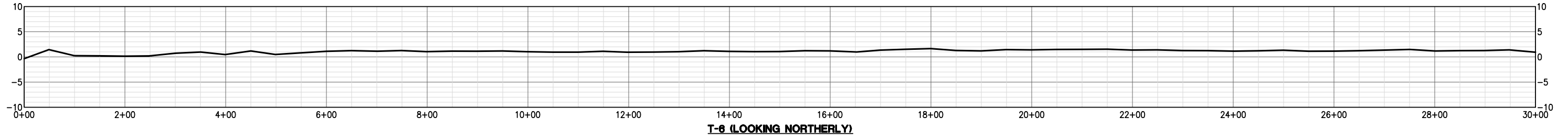
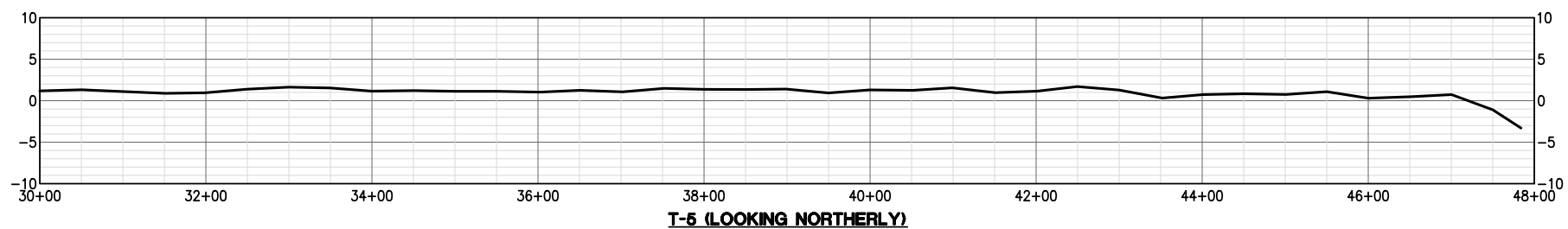
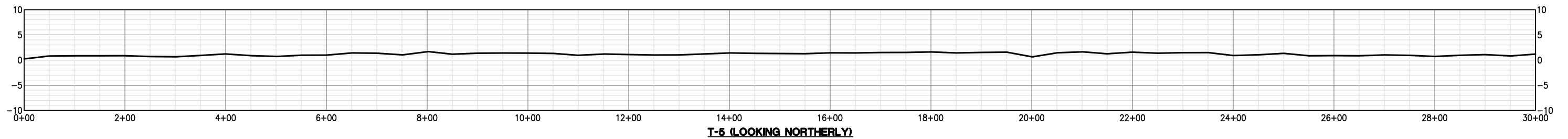
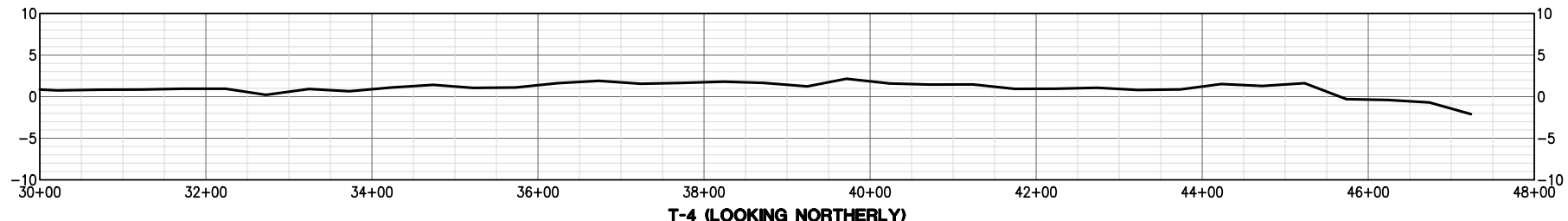
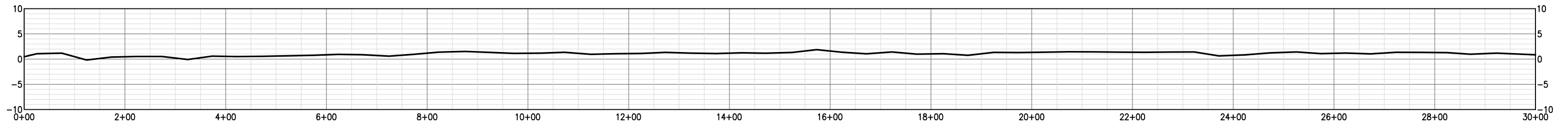
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

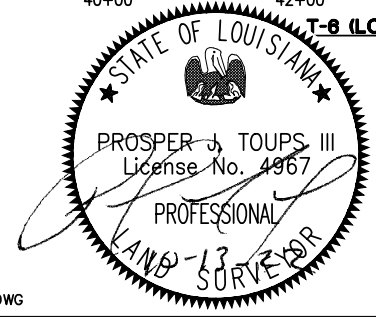
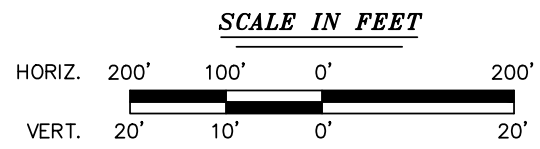
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **3**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

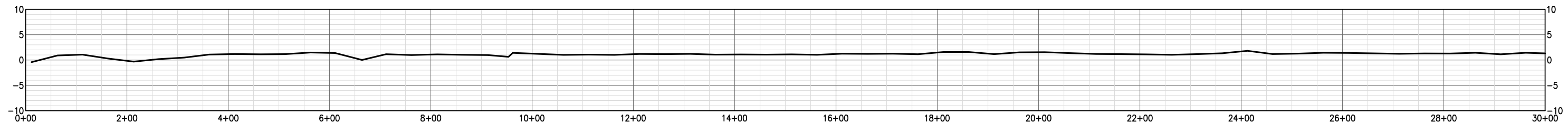
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

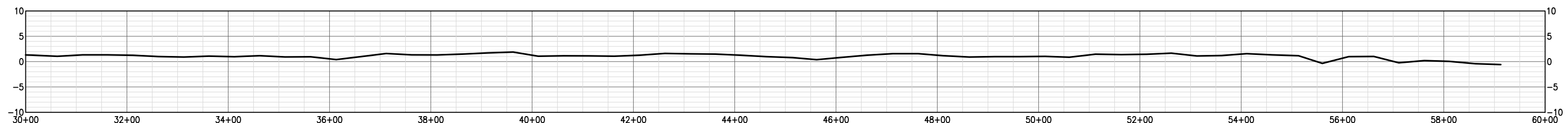
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

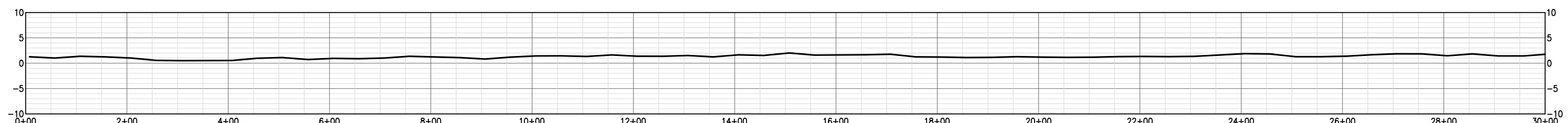
SHEET NO. **4**
 OF
13



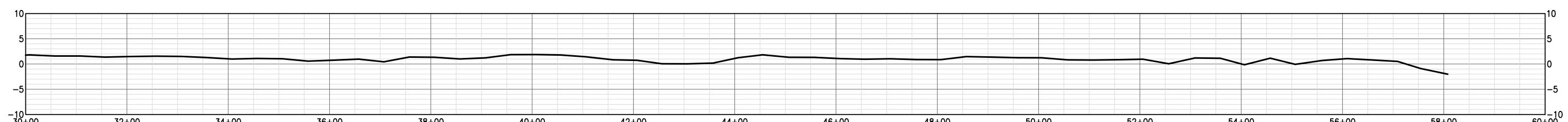
T-7 (LOOKING NORTHERLY)



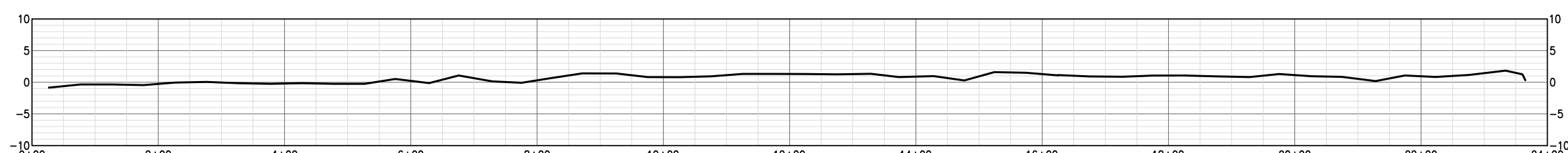
T-7 (LOOKING NORTHERLY)



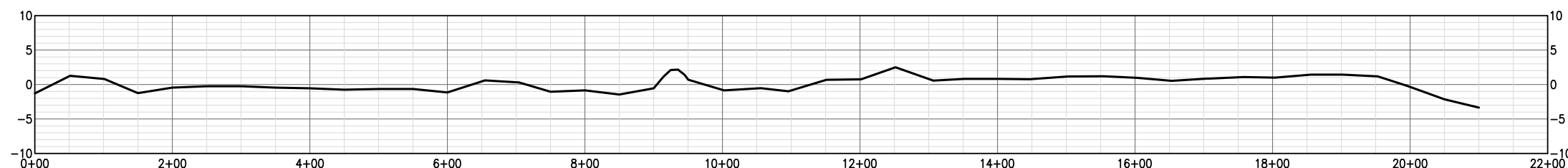
T-8 (LOOKING NORTHERLY)



T-8 (LOOKING NORTHERLY)

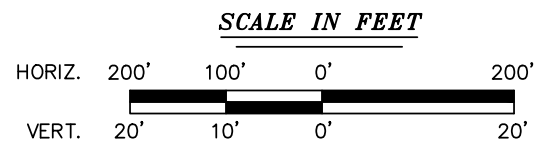


T-9 (LOOKING NORTHERLY)



T-10 (LOOKING NORTHERLY)

LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

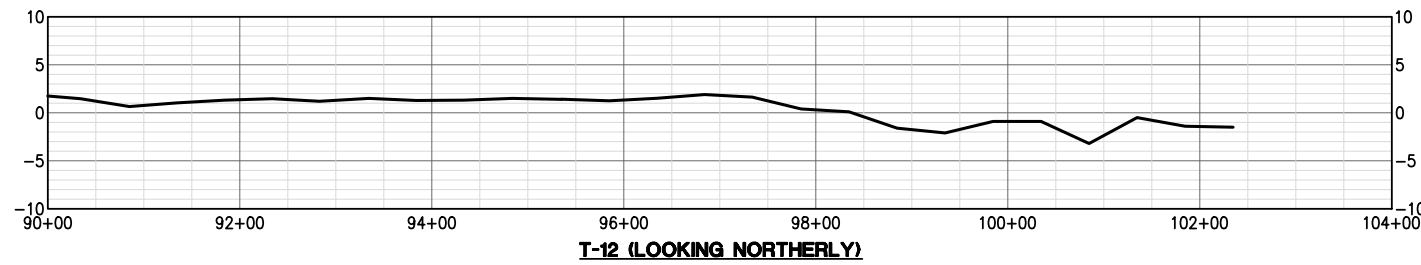
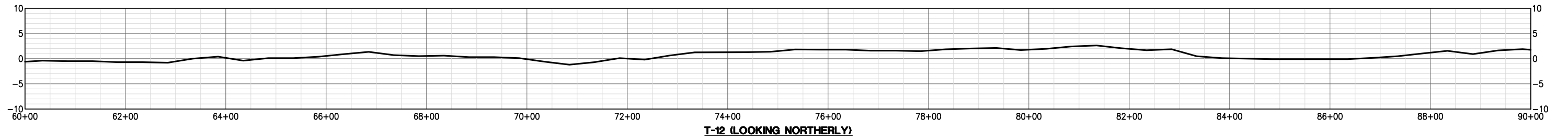
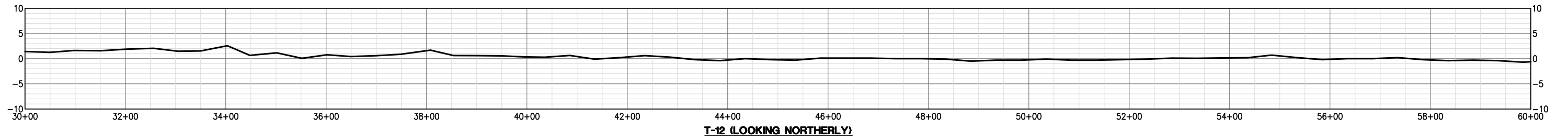
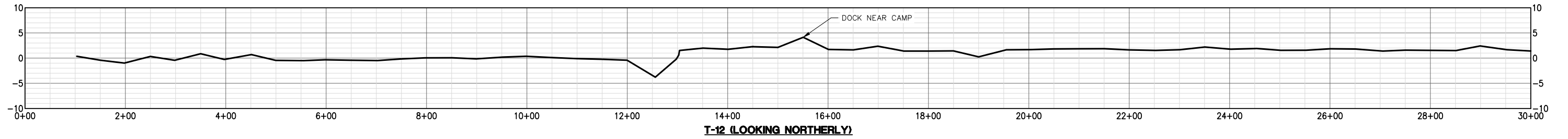
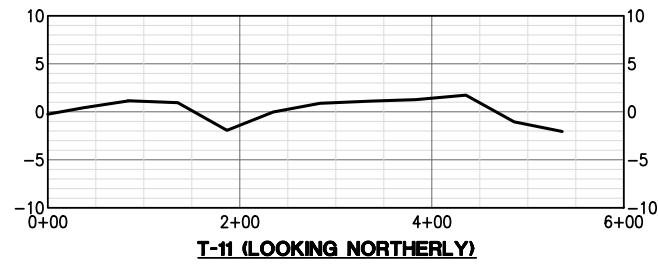
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

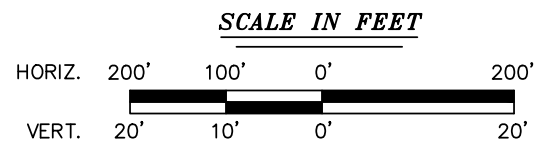
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **5**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: TAA
 DRAWN BY: TAA
 CHECKED BY: PJT

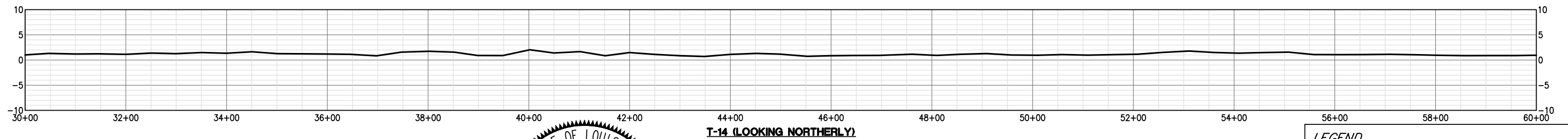
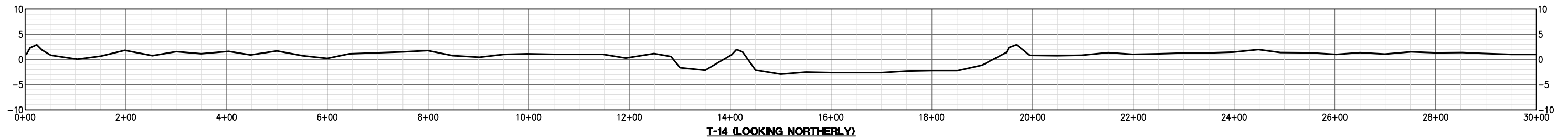
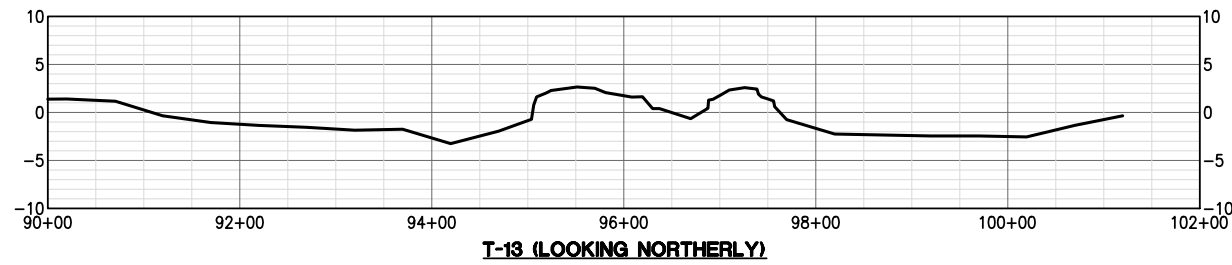
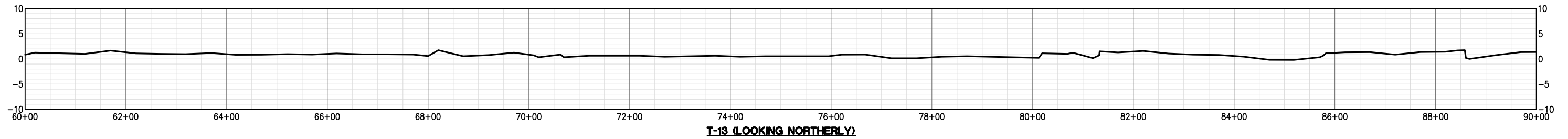
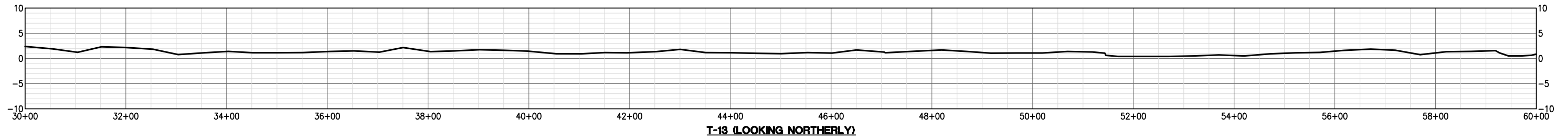
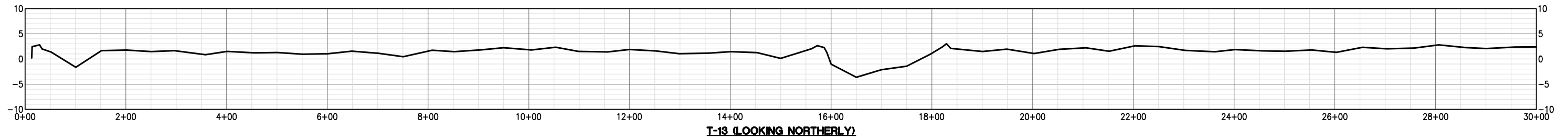
SCALE SHOWN
 DATE: 10/13/22
 PROJECT: 2019.010
 FIELD BOOK

TRANSECTS

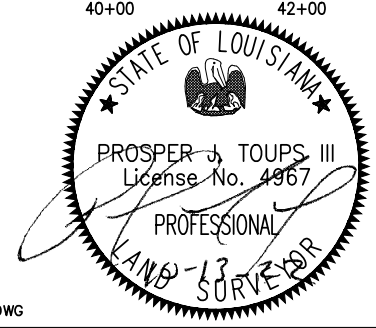
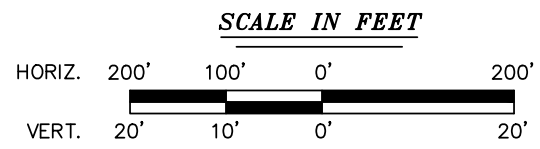
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **6**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: TAA
 DRAWN BY: TAA
 CHECKED BY: PJT

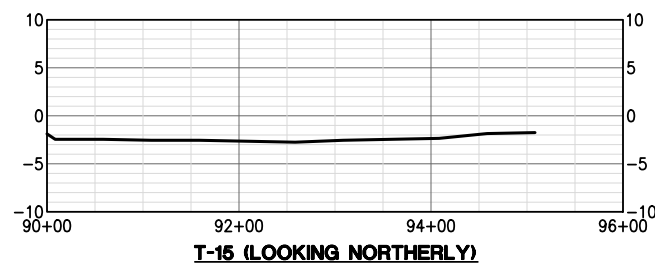
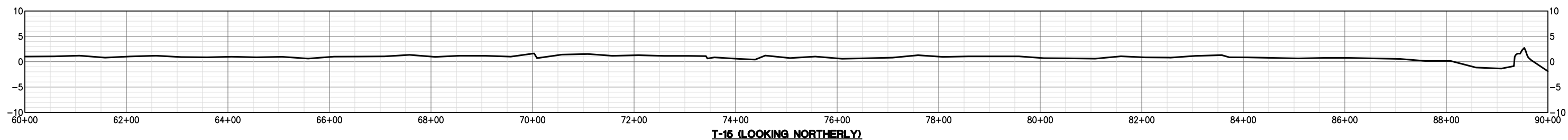
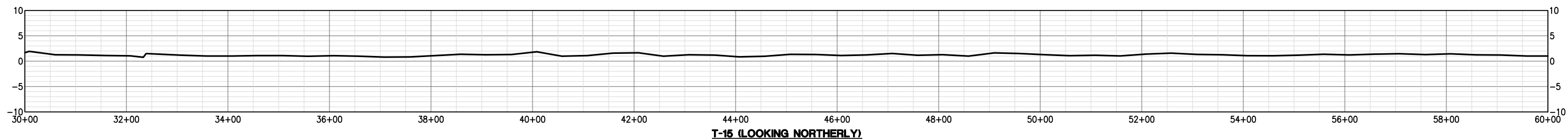
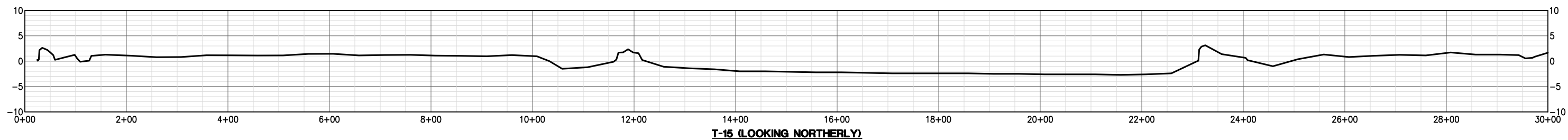
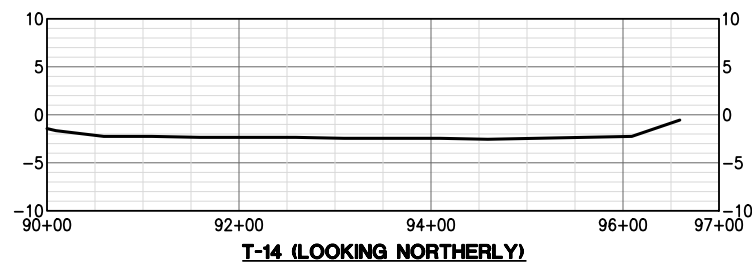
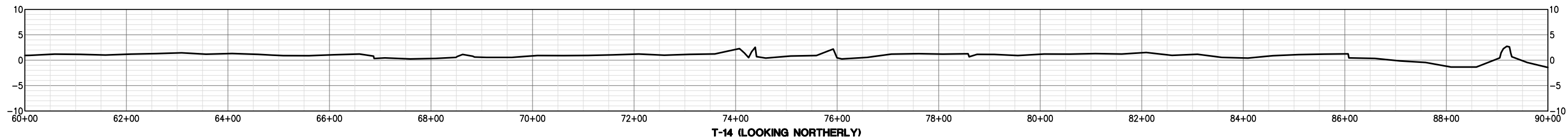
SCALE SHOWN
 DATE: 10/13/22
 PROJECT: 2019.010
 FIELD BOOK

TRANSECTS

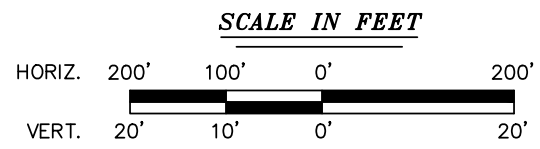
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **7**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

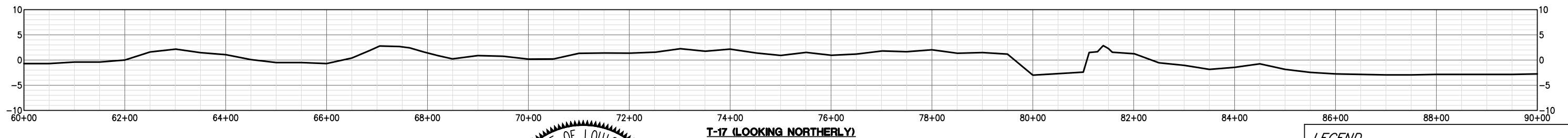
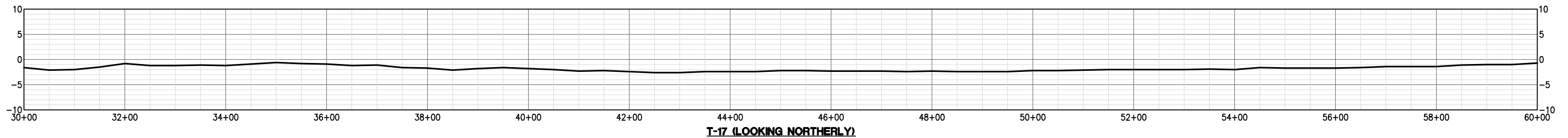
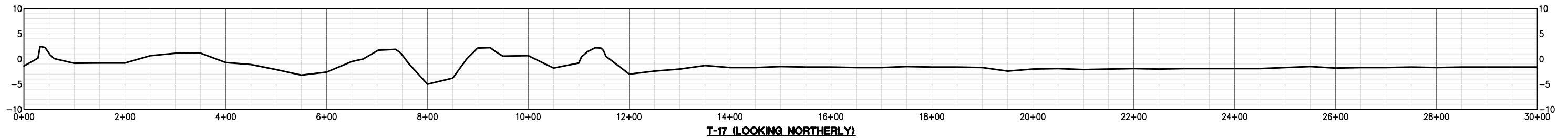
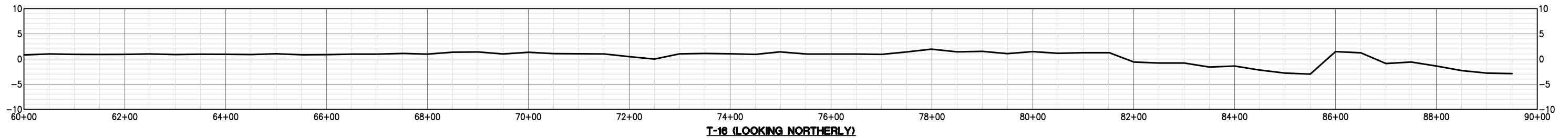
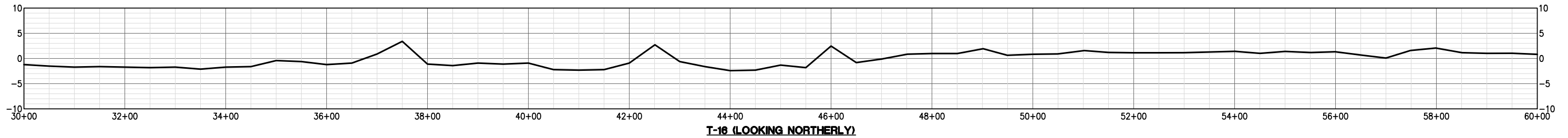
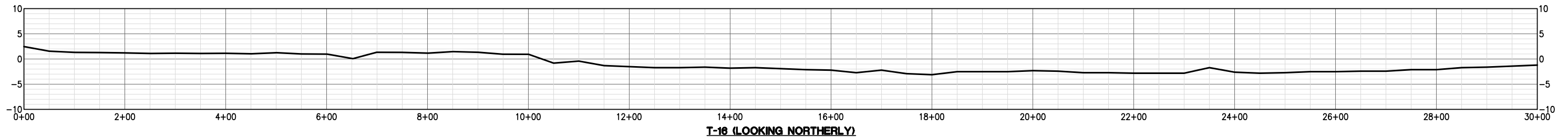
SCALE SHOWN
DATE 10/13/22
PROJECT 2019.010
FIELD BOOK

TRANSECTS

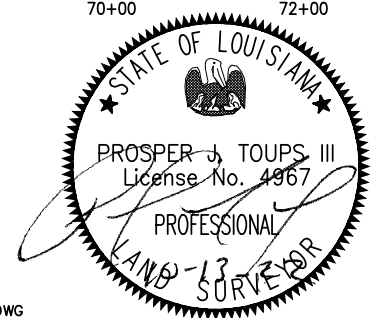
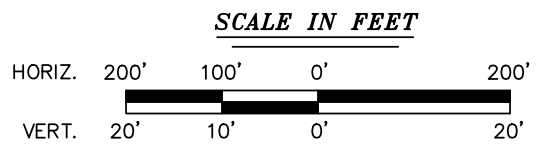
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO.
8
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: TAA
 DRAWN BY: TAA
 CHECKED BY: PJT

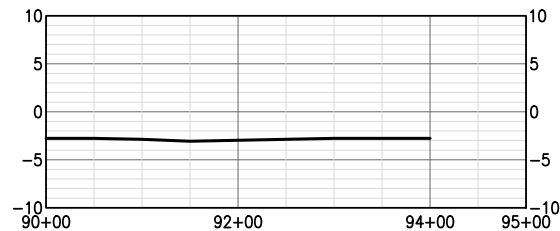
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

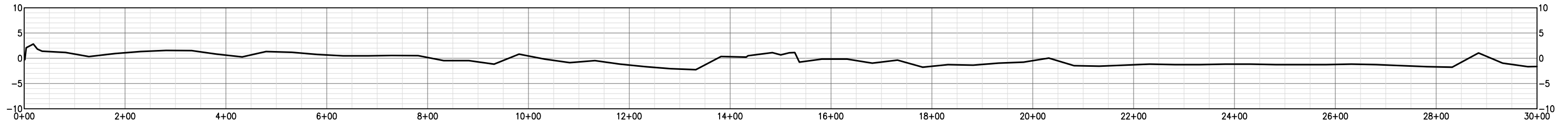
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

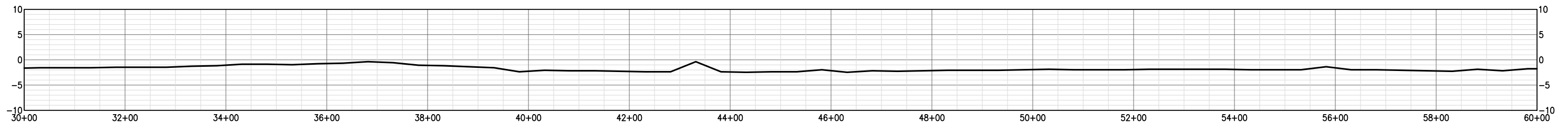
SHEET NO. **9**
 OF
13



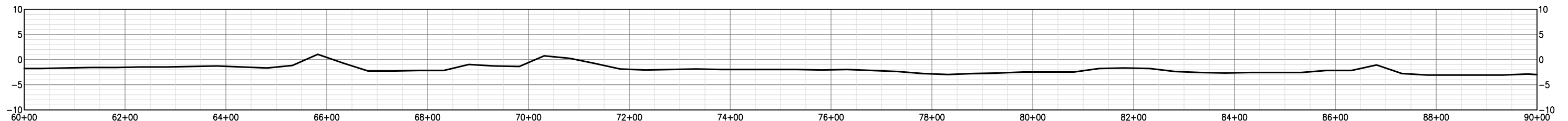
T-17 (LOOKING NORTHERLY)



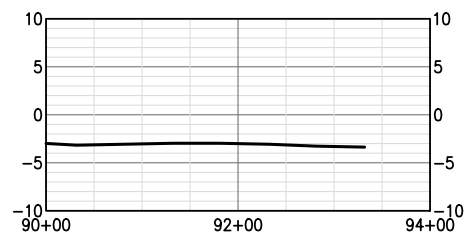
T-18 (LOOKING NORTHERLY)



T-18 (LOOKING NORTHERLY)

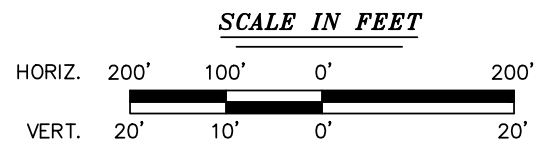


T-18 (LOOKING NORTHERLY)



T-18 (LOOKING NORTHERLY)

LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE



DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

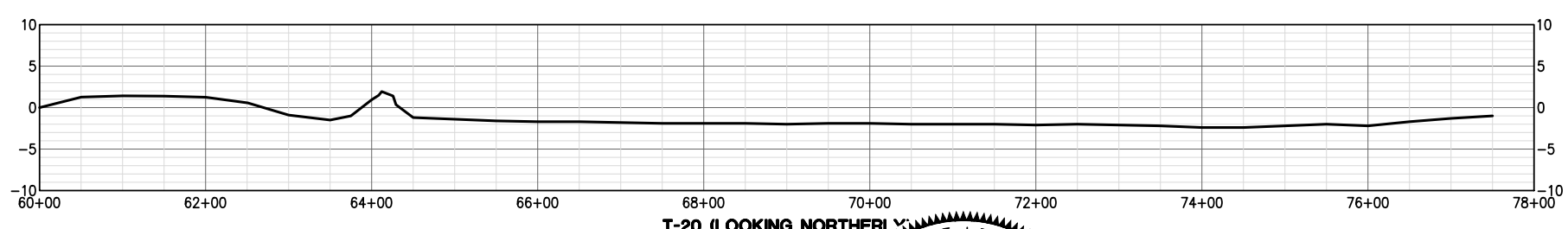
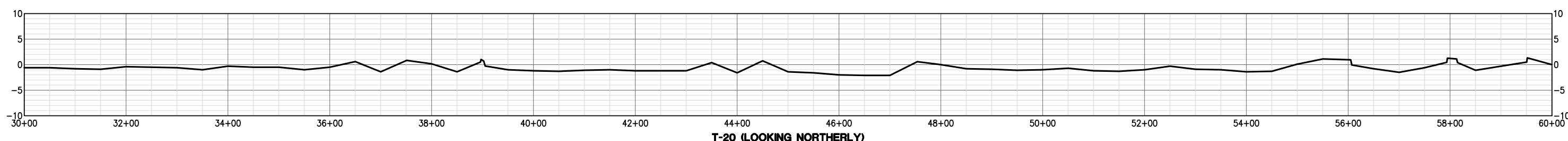
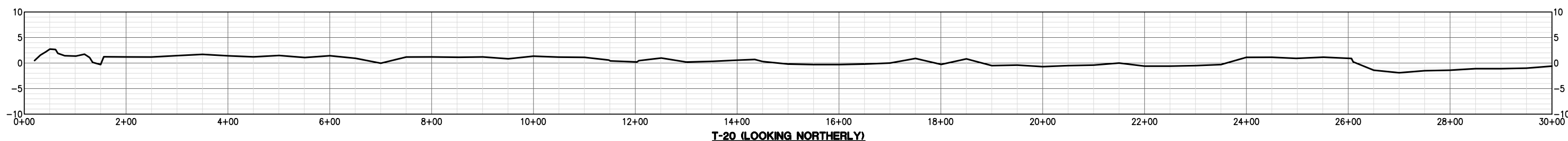
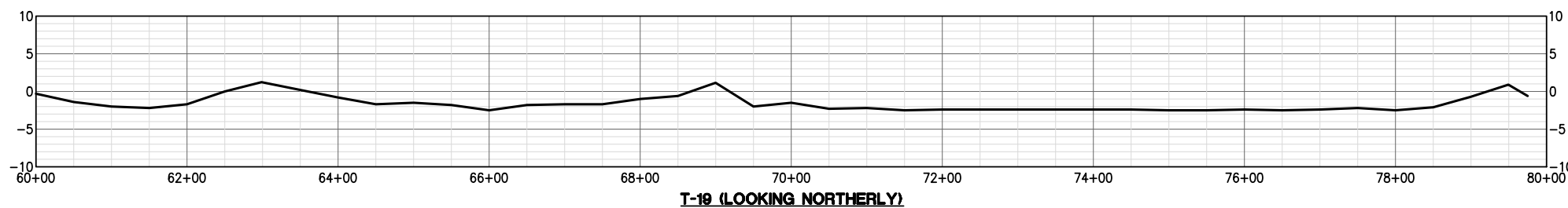
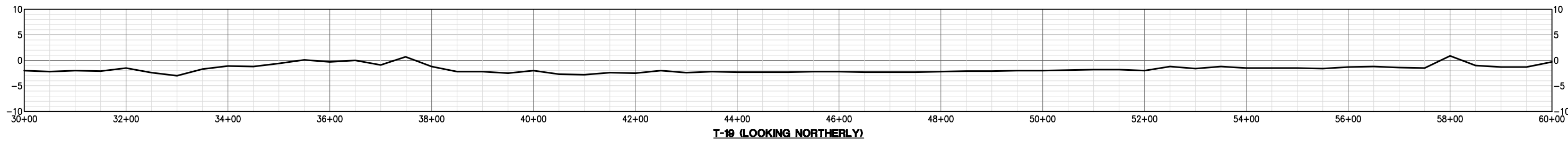
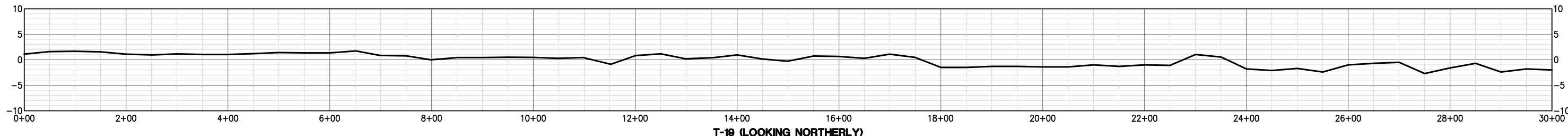
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

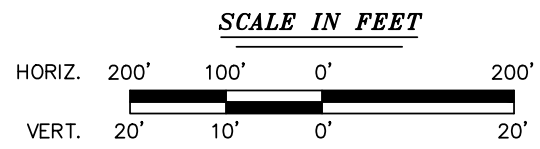
ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO.
10
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

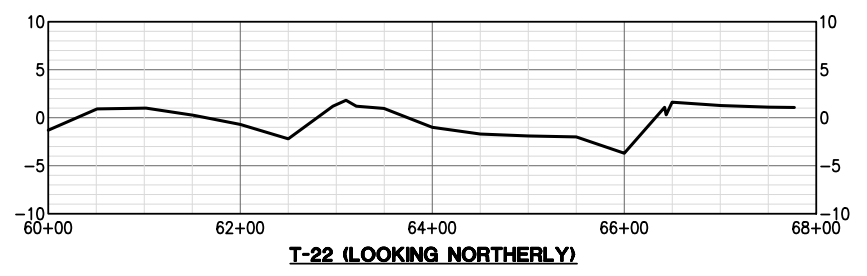
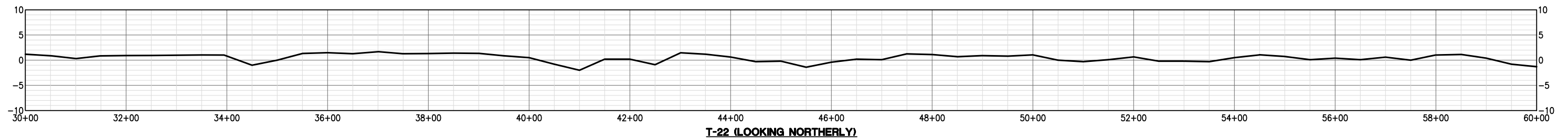
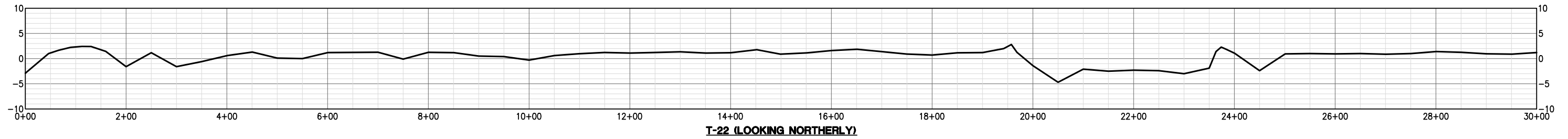
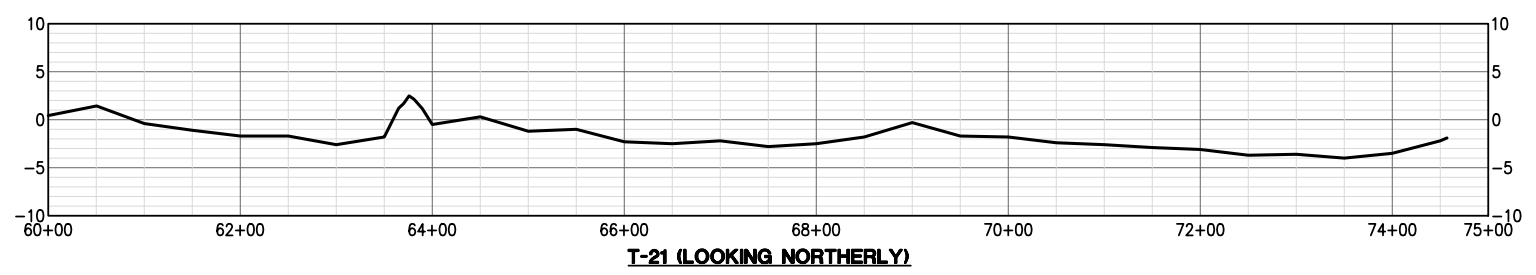
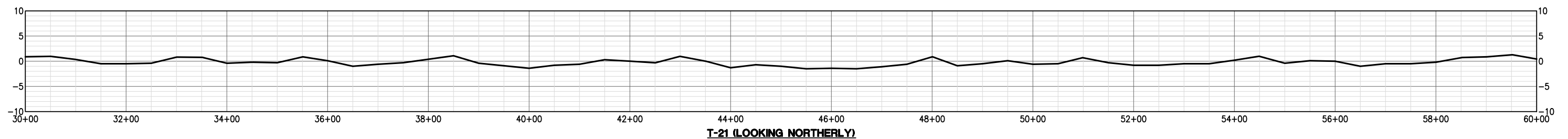
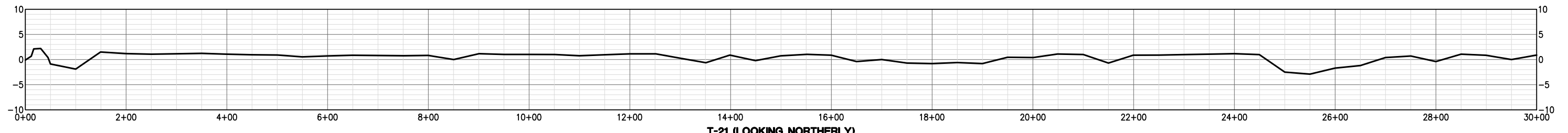
SCALE SHOWN
DATE
PROJECT
FIELD BOOK

TRANSECTS

ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **11**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY

SCALE IN FEET
 HORIZ. 200' 100' 0' 200'
 VERT. 20' 10' 0' 20'



NO.	REVISION	DATE

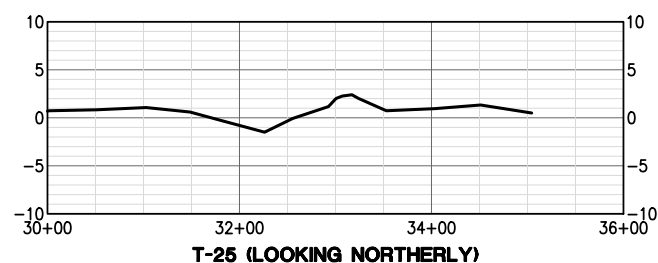
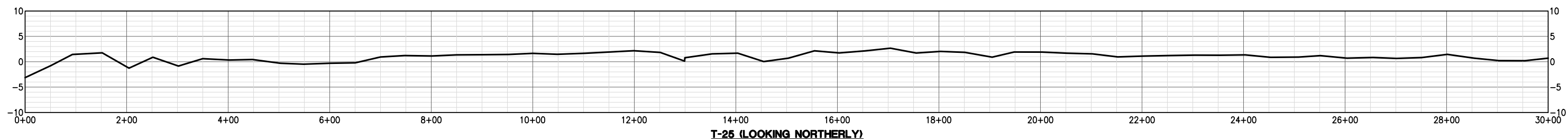
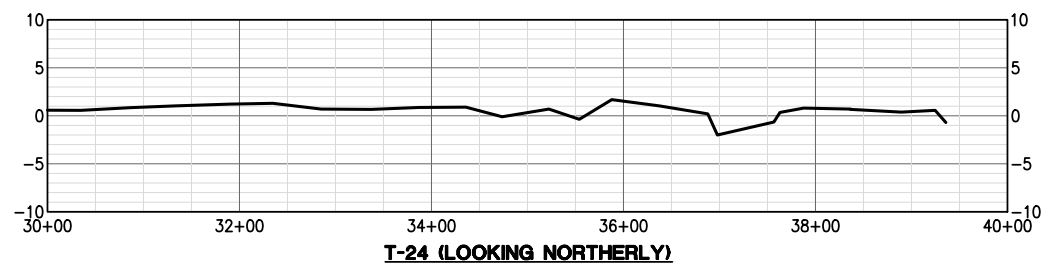
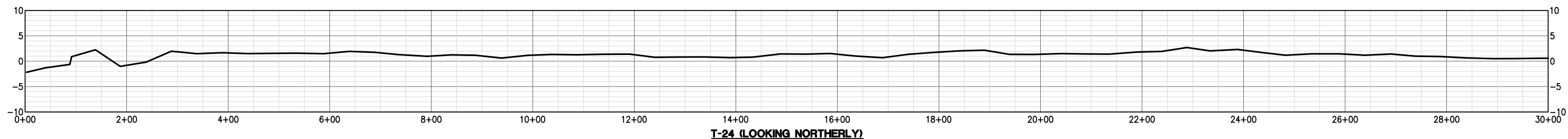
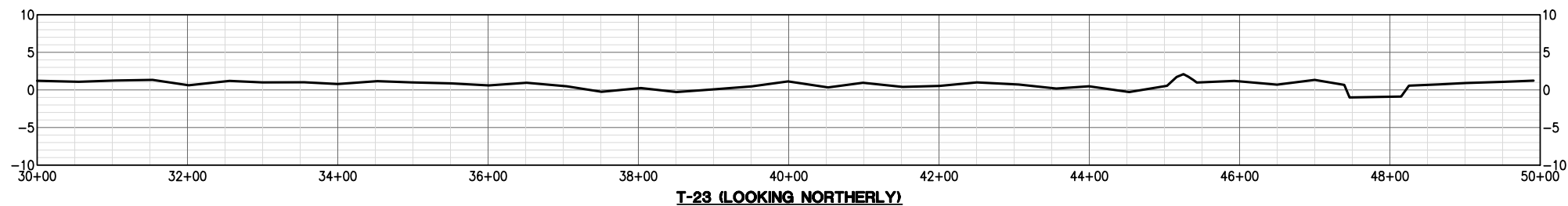
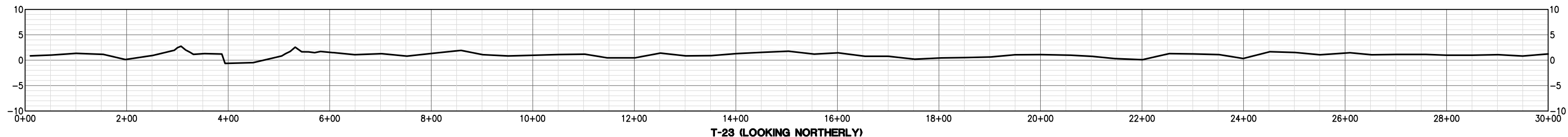
DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: _____
 DRAWN BY: TAA
 CHECKED BY: PJT

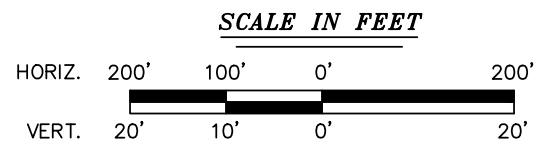
SCALE SHOWN
 DATE 10/13/22
 PROJECT 2019.010
 FIELD BOOK

TRANSECTS
 ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125
 LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **12**
 OF
13



LEGEND
 _____ 1 YEAR POST-CONSTRUCTION SURVEY



NO.	REVISION	DATE

DELTA COAST CONSULTANTS, LLC
 631 S. HOLLYWOOD RD.
 HOUMA, LA 70360
 PHONE: 985-655-3100 www.deltacoastllc.com

DESIGNED BY: TAA
 DRAWN BY: TAA
 CHECKED BY: PJT

SCALE SHOWN
DATE: 10/13/22
PROJECT: 2019.010
FIELD BOOK

TRANSECTS

ONE YEAR POST-CONSTRUCTION MONITORING SURVEY
 COASTAL PROTECTION & RESTORATION AUTHORITY
 NORTHWEST TURTLE BAY MARSH CREATION
 PROJECT BA-0125

LAFITTE, LOUISIANA JEFFERSON PARISH

SHEET NO. **13**
 OF **13**