

## MEMORANDUM



**olsen**  
associates, inc.  
Coastal Engineering

Date: 14 February 23

To: Phillip West – City of Orange Beach, AL

From: Albert E. Browder, Ph.D., P.E. *AEB*  
Principal Engineer, Project Manager

Re: Re: Contract: RFQ 2021-1020 Engineered Beaches Restoration

Task Order 2023-01: Pre-Construction Beach/Borrow Area Survey/Analyses

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Please see the attached Task Order for the pre-construction beach profile and borrow area survey and analysis along the Romar Beach and Perdido Key segments of the Orange Beach/Gulf State Park/Gulf Shores Beach Restoration Project, to be utilized for the 2023 Engineered Beach Renourishment Project. That survey is currently scheduled to occur in Spring 2023 (approx.).

The subtasks and cost listed in the Task Order represent the Orange Beach share of the design/analyses work proposed for the entire three-party project. The survey profiles and digital aerial orthophotography has been divided amongst the three parties based upon shoreline length, while the borrow area surveys and analysis for the unified project report are split evenly into thirds. The Task Order is thus written for the Orange Beach portion of the pre-con survey work.

Please do not hesitate to contact us with any questions. Thank you.

**CITY OF ORANGE BEACH, AL**  
**Task Order Memorandum**

<b>To:</b> Olsen Associates, Inc. 2618 Herschel St. Jacksonville, FL 32204	<b>Date:</b> 14 February 2023
	<b>Contract:</b> Coastal Engineering
	<b>Request Made By:</b> Phillip West
	<b>Request Received By:</b> Albert E. Browder, Ph.D., P.E.
	<b>Task Order No:</b> 2023-02

**Task Order:** Pre-Construction Beach/Borrow Area Survey/Analyses  
2023 Engineered Beach Project Renourishment – Orange Beach Segments  
Orange Beach/Gulf State Park/Gulf Shores Beach Restoration Project

Consultant shall complete the pre-construction design survey and analyses for the Orange Beach segments of the three-party project referenced above, as described in the attached Scope-of-Work (Exhibit A). Deliverables for this task are likewise described in Exhibit A and shall be provided in electronic format unless otherwise stated. All work shall be performed on a Lump Sum basis.

**Fee: \$ 50,700.00 (Lump Sum)**

**Requested Completion Date:** Three (3) months from receipt of survey.

**Olsen Associates, Inc.**



Albert E. Browder, Ph.D., P.E., V.P.

Date:

14 February 2023

**City of Orange Beach, AL**

Mr. Tony Kennon, Mayor

Date:

**2023 Engineered Beach Renourishment  
Pre-Construction Design Survey and Analysis  
Orange Beach/Gulf State Park/Gulf Shores Beach Restoration Project  
ADEM Permit No. COE-2011-274-COE  
USACE Permit No. SAM-2011-0687-DEM**

Survey/Analysis Scope of Work

Scope Prepared by:  
Olsen Associates, Inc.  
2618 Herschel St.  
Jacksonville, FL 32204  
(904) 387-6114

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## Overview & Purpose

The purpose of the task is to conduct the pre-construction design survey for the renourishment of the engineered three-party Orange Beach/Gulf State Park/Gulf Shores Beach Restoration Project, as directed by the Alabama Department of Environmental Management Permit #COE-2011-274 and its associated physical monitoring and maintenance plan. This survey will be used to update beach fill design templates and the overall sand volume needs in each project segment. The design survey area extends over eighteen miles, from just east of the AL/FL State Line, to just beyond the Laguna Key subdivision in Gulf Shores, including established survey monuments B-04 eastward to monument A-97 (98 transects, see **Figure 1**). The survey likewise includes the offshore sand borrow areas to be used in the 2023 project. The project was last nourished in 2012-2013.

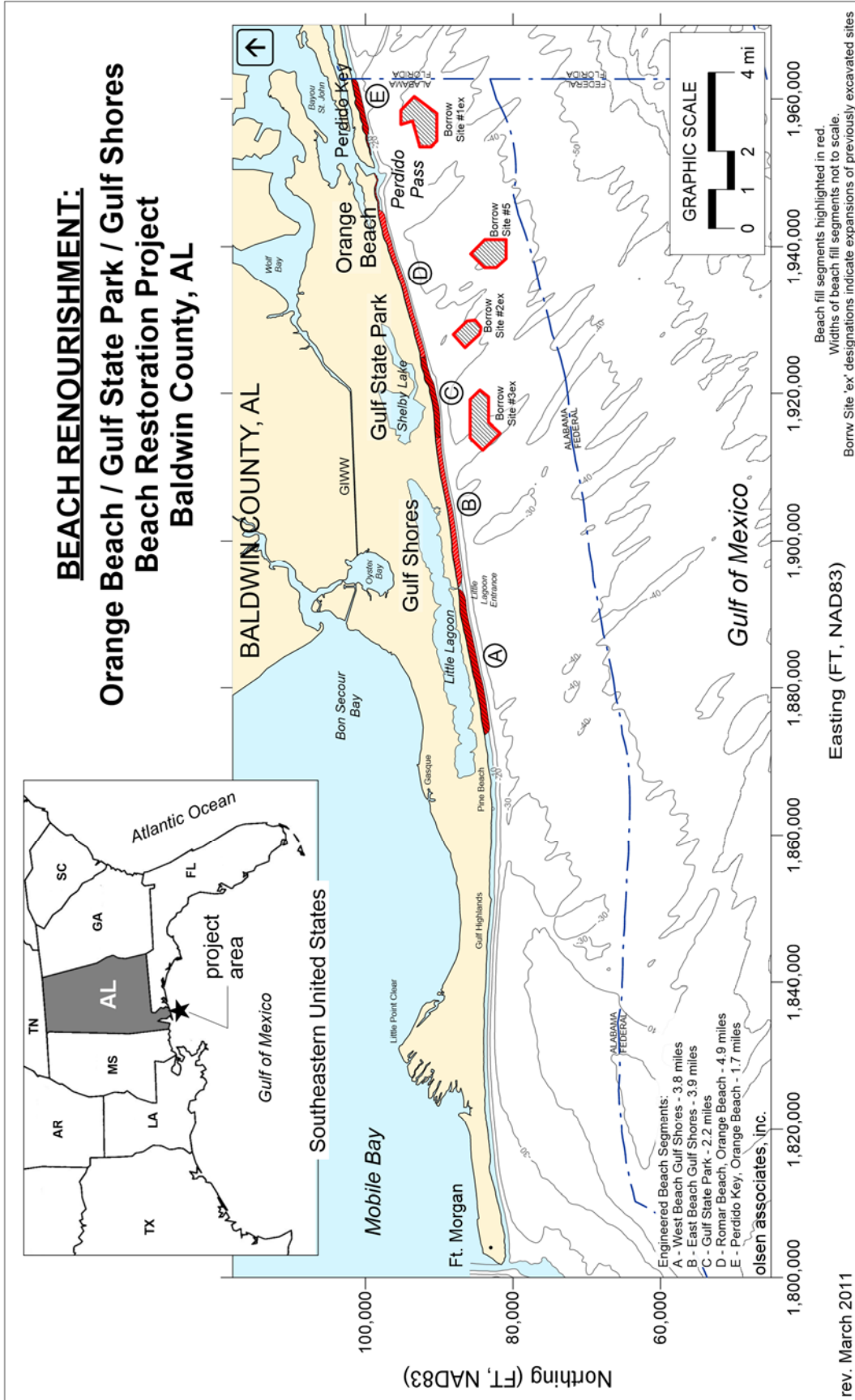
### **Subtask 1.0 – Beach Profile Surveys**

Consistent with the design plans, the physical monitoring plan, and previous surveys of the project shoreline, a certified hydrographic surveyor (subcontractor) will conduct the beach and offshore project surveys for pre-construction. These data shall be collected in accordance with Standards of Practice for Surveying in the State of Alabama and in general conformance with the Florida Department of Environmental Protection standards for data collection for monitoring projects

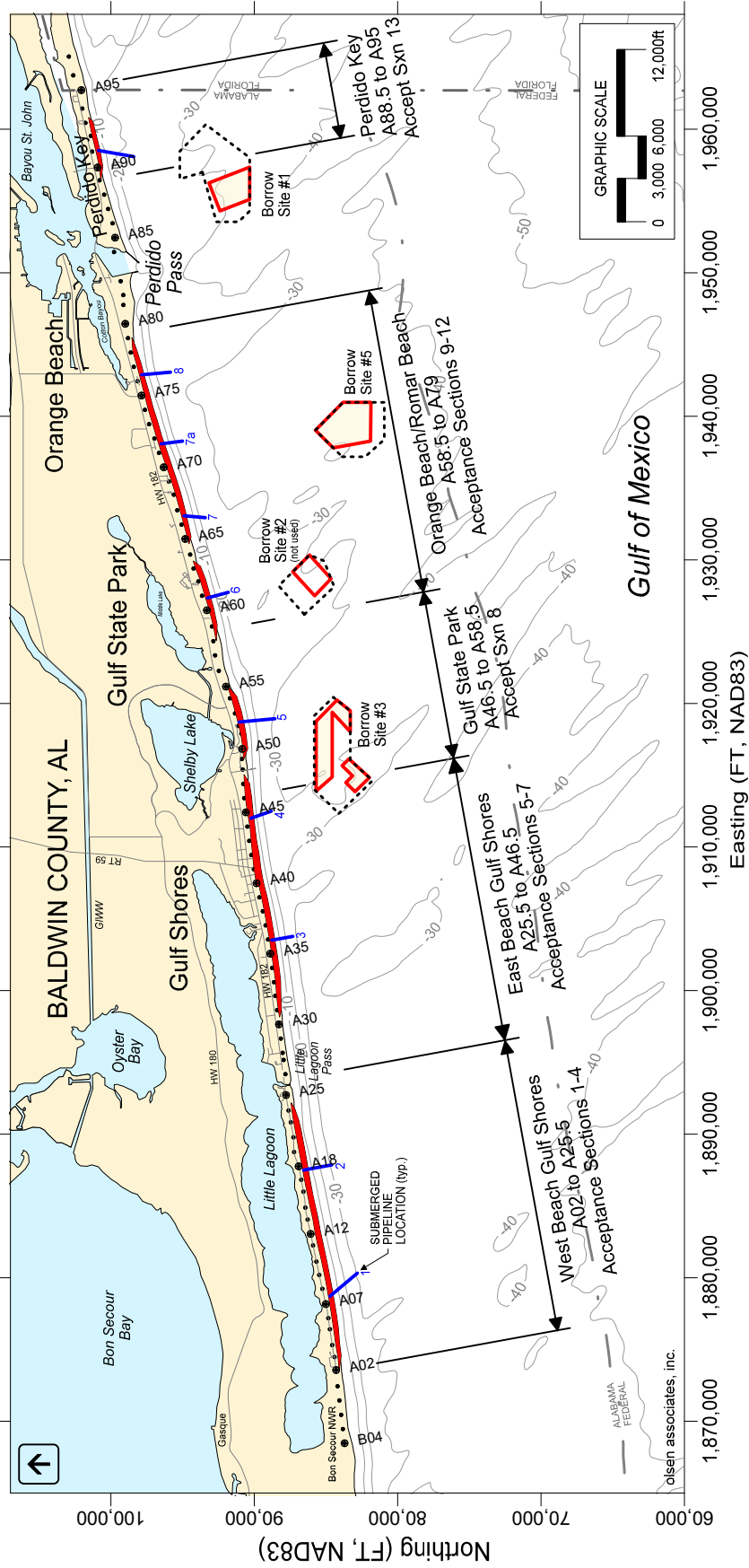
<https://floridadep.gov/sites/default/files/PhysicalMonitoringStandards.pdf>

98 beach and offshore profile lines, B-04 to A-97, shall be surveyed and the data provided to the Engineer (Orange Beach – 39 lines, GSP – 12 lines, Gulf Shores – 47 lines, See **Figure 2**). Engineer shall provide ongoing liaison tasks with Client, survey subcontractor, and with neighboring Bon Secour National Wildlife Refuge personnel (B-04 to A-01).

*Continued...*



**Figure 1** Location map – Orange Beach/Gulf State Park/Gulf Shores Beach Restoration Project – Baldwin County, AL.



**Figure 2** Project Limits and Monument Locations for the 2012/2013 renourishment of the Orange Beach / Gulf State Park / Gulf Shores Beach Restoration Project. 2023 segments shall follow a similar footprint.

**Subtask 1.0 – Deliverables** Surveyor shall provide electronic copies of the survey data in the prescribed datums to the Engineer. Surveyor shall likewise provide to Engineer (and Owner) an electronically-signed PDF-format set of the survey drawings. Plots of historical beach profiles shall be prepared by the Engineer and provided as part of the analyses (Subtask 3.0).

### **Subtask 2.0**

#### **Digital Aerial Orthophotography [not collected in 2023 (pre-construction)]**

Utilizing a qualified subcontractor experienced with the area, controlled digital color aerial orthophotography at approximately low tide shall be flown at the same approximate time of the annual beach survey. Efforts will be taken to maximize water clarity and light penetration in the shallow nearshore areas (with consideration to the tide stage). These data shall be collected in accordance with the Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems (FDEP BBCS) monitoring standards for beach erosion control projects

<https://floridadep.gov/sites/default/files/PhysicalMonitoringStandards.pdf>

The limits of photography shall begin at a point approximately one mile west of Laguna Key in Gulf Shores, AL, and shall extend westward along the Gulf of Mexico shoreline to a point approximately one mile east of the AL/FL State Line. Digital orthophotos (image tiles, with associated world files) will be produced, corrected to the State Plane Coordinate System (NAD83, Alabama West Zone Zone). Aerials shall be flown at an altitude sufficient to produce an image resolution of 0.4-ft/pixel.

**Subtask 2.0 – Deliverables** Aerial photography subcontractor shall provide electronic copies of the spatially-referenced imagery (in MrSid and \*.TIFF file format, with world files) on USB thumb drive.

### **Subtask 3.0**

#### **QA/QC, analyses, management, engineering and reporting, regulatory documentation.**

The Consultant shall prepare a detailed pre-construction design report, which will update the project's performance to pre-con conditions, and will rebalance the beach fill template lines and grades as well as overall sand volume needs. These data shall likewise update the annual as well as cumulative data base and assess project performance prior to project construction. The report includes graphic presentations of temporal and cumulative changes of selected beach contours over time. Volumetric changes at each survey profile and throughout the limits of fill shall be computed and presented in tabular and graphic forms. Aerial photography will be utilized to further analyze shoreline changes that may occur between survey lines (beach cusps, rhythmic bar features, etc.). Changes over time within and adjacent to the constructed borrow sites, if surveyed, shall be quantified and discussed. Analyses shall discuss shoreline change trends, potential cause and effect relationships, building proximity (and vulnerability) to the MHWL, storm impacts, other littoral impacts, and a local sediment budget for the area of interest. Net changes to the adjacent shorelines shall be assessed.

Data from the survey shall be utilized to update the construction plans for the 2023 engineered beach renourishment project.

Major report(s) of findings will be submitted approximately 90 days subsequent to the survey.

Sub-task includes:

- Contract and Subcontractor management,
- Data quality control and quality assurance,
- Data assimilation/formatting per contract specifications,
- Permit maintenance and reporting to regulatory agencies (ADEM, COE, DCNR),
- Update of pre-renourishment and post-2013 construction history:
  - Overall project history
  - Storms
  - Wave climate for prior year
  - Other beach impacts, such as oil-spill cleanup activities
  - Beach maintenance activities,
- Update of sea turtle nesting activities upon project shoreline,
- Analysis of shoreline position changes (graphical and tabular data created):
  - Most recent annual intersurvey-period
  - Since renourishment (2012-2013)
  - Since restoration (pre-restoration dates vary)
  - Interpretation of aerial photography and effects of alongshore variations
- Analysis of beach volume changes (graphical and tabular data created):
  - **UPDATE OF 2023 CONSTRUCTION PLANS**
  - Most recent annual intersurvey-period
  - Since renourishment (2012-2013)
  - Since restoration (pre-restoration dates vary)
  - Analysis of percentage of placed sand remaining prior to renourishment
  - Interpretation of aerial photography and effects of alongshore variations
- Analysis of borrow area changes and sand volume status
  - **UPDATE OF 2023 CONSTRUCTION PLANS (if needed)**
- Interpretation and summary of overall project performance
  - **ADJUSTMENT OF 2023 PROJECT VOLUME NEEDS (if applicable)**
  - Relative to design intent and local sediment budget
  - Relative to particular beach impacts experienced
- Preparation of historical beach profile plots, including most recent survey,
- Preparation of shoreline aerial maps [not collected pre-con 2023],
- Assembly of submittals
  - Electronic copy of report (PDF format)
  - Aerial photography (thumb drive) [not collected pre-con 2023],
- Document preparation, printing, and distribution

Subtask 3.0 – Deliverables As deliverables for subtask 3.0, the three-party Owner group shall each receive one hardcopy of the analyses report (prepared jointly as one report encompassing the entire 18+ miles of monitored shoreline), and an electronic copy of the report in \*.PDF format on thumb drive.