CS-21-187

NASSAU COUNTY - SAISSA
Task Order Memorandum
Contract CM1852

To:	Olsen Associates, Inc. 2618 Herschel St. Jacksonville, FL 32204	**Date:** **Contract:** **Request Made By:** **Request Received By:** **Task Order No:**	11 February 2022 Coastal Engineering Bill Moore, SAISSA Rep. Albert E. Browder, Ph.D., P.E. **CM1852 TO #42**

Task Order: 2022 Year-1 Physical Monitoring of Engineered Beach Nourishment Project
2021 Renourishment: South Amelia Island Shore Stabilization Project

Consultant shall complete the 2022 annual physical monitoring of the South Amelia Island Shore Stabilization Project, as described for Year 1 in the attached approved Physical Monitoring Plan (Exhibit A). Deliverables shall include a detailed monitoring report documenting the 2022 pre-storm season condition of the engineered beach, including updated analyses of the performance of the beach fill since construction (relative to the 1994 pre-restoration and 2021 post-renourishment conditions). Any anomalous areas (hot-spots, etc.) observed in the data shall be identified and discussed. Up to two (2) hardcopies of the report shall be delivered to SAISSA along with an electronic *.PDF copy on USB drive or DVD-ROM disc. An electronically signed/sealed set of the beach profile survey maps shall be provided. Electronic copies of the controlled digital aerial orthophotography shall be provided on USB drive or DVD-ROM disc. All work shall be performed on a Lump Sum basis. The work described in this Task Order is eligible for cost-sharing reimbursement from the FL Department of Environmental Protection, under Beach Management Funding Assistance Program Grant 20NA1 (cost-share 43.06%).

Fee: $ 141,950.00 (Lump Sum)
Requested Completion Date: Four (4) months from receipt of survey.

Olsen Associates, Inc.

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

Date: 11 February 2022

SAISSA

Andrew L. Wallace, SAISSA President

Date: 2/16/2022

Nassau County, Board of County Commissioners

Aaron C. Bell
Its: Chair

Date: March 28, 2022

Attest to Chair Signature

John A. Crawford
It's: Ex-Officio Clerk

Date: March 28, 2022

Approved As To Form and Legal Sufficiency:

Michael S. Mullin

Date: 3/1/2022

JCP # 0187721-013-JC, Nassau County, FL
USACE DA Permit #SAJ-2001-03870 (SP-PRJ)

26 October 2020

South Amelia Island Shore Stabilization Project
Periodic Beach Renourishment

Physical Monitoring Plan

Prepared for:

Nassau County Board of County Commissioners
&
South Amelia Shore Stabilization Association (SAISSA)
&
Florida DEP Division of Recreation and Parks (FL Park Service)

Prepared By:

Olsen Associates, Inc.
2618 Herschel St.
Jacksonville, FL 32210
904-387-6114

1.0 INTRODUCTION

This plan describes the permit-mandated post-construction physical monitoring program for the periodic maintenance renourishment of the engineered South Amelia Island Shore Stabilization Project, located along the southern 3.6 miles (5.8 km) of the Atlantic Ocean shoreline of Amelia Island, Nassau County, FL. The project fill limits extend from FDEP R-monument R-59 at Burney Park southward to R-79 at the (buried) rock terminal groin on the Amelia Island State Park (AISP) property near the southern tip of the island at Nassau Sound. The project beach fill template typically requires up to 2.0 million cubic yards of sand (1.53 million cubic meters) every 9-10 years, based upon historical data. The first nourishment under this plan is proposed to occur in 2021 (at earliest). The project was last nourished in 2011. Portions of the AISP property were nourished in 2013 and 2019 with channel maintenance sand from the Atlantic Intracoastal Waterway (AIWW). The project beach fill template includes a dune feature along the landward limits of the template, to be maintained by sand placement, sand fence installation and maintenance where needed, and dune vegetation installation and maintenance, where needed. The project likewise includes an existing 275-ft (84m) detached rock breakwater near R-75, and a 1,600-ft (488m) permeable rock terminal groin at R-79 (currently buried) on AISP property. A third small rock groin lies just west of R-82 and west of the A1A and Crady bridges. These structures were constructed in 2004-2005. See **Figure 1**.

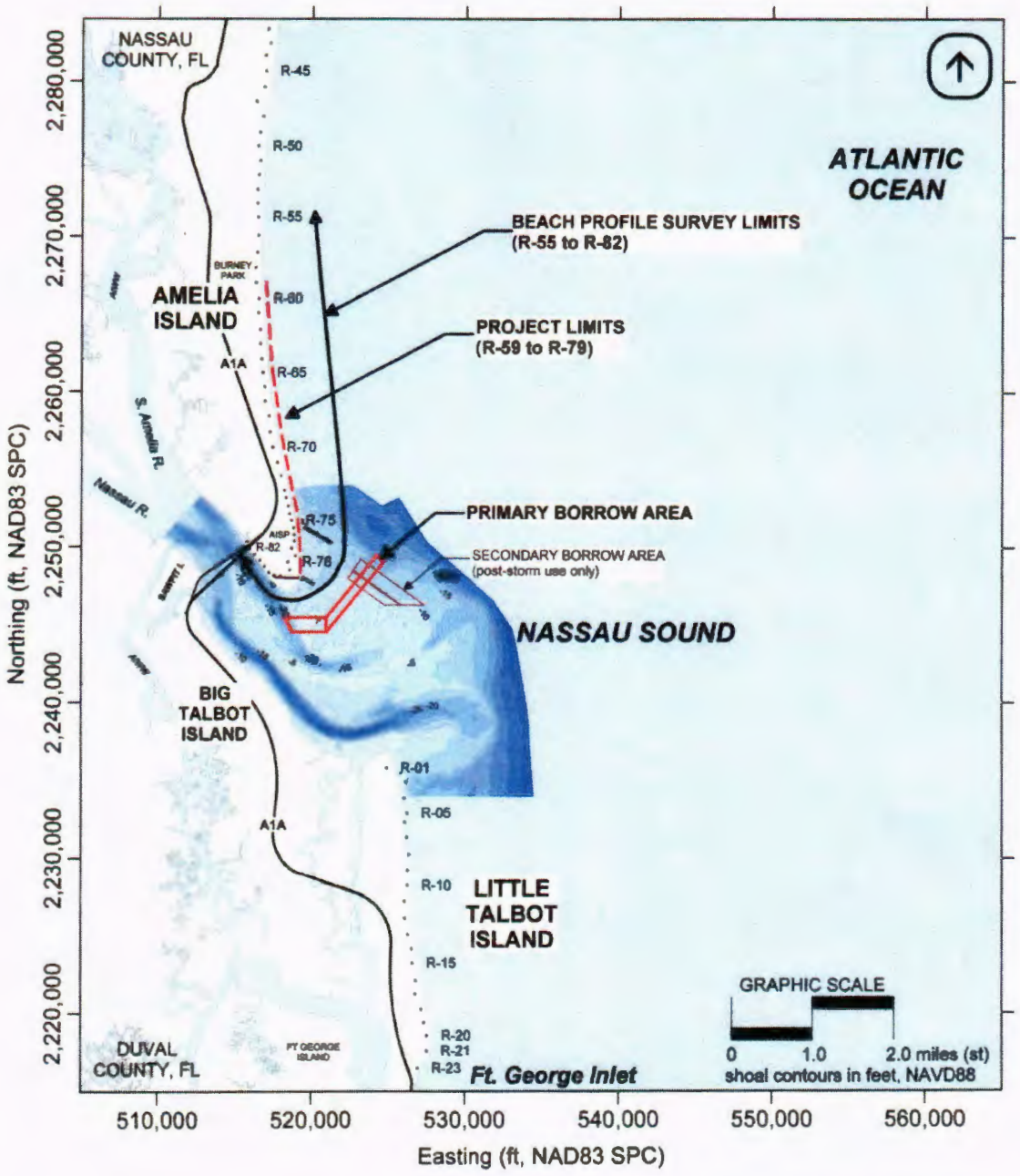

Figure 1 Location Map – South Amelia Island Shore Stabilization Project and Nassau Sound, FL.

As depicted in **Figure 1**, the primary borrow area lies within the adjacent Nassau Sound ebb shoal complex, south-southeast of the south tip of Amelia Island, and is intended to mimic the natural tidal channel alignments through the inlet. This borrow area occupies roughly 128 acres (52 hectares). The primary borrow area is expected to shoal in over the renourishment interval as the shoals and natural channels in the Sound migrate southward, such that the area is expected to be available for re-dredging in 9-10 years. A supplemental borrow area, occupying 139 acres of the seabed (56 hectares), is likewise identified and is intended only for post-storm response. The project shall be constructed via hydraulic cutterhead/pipeline dredge.

The physical monitoring plan is implemented by the Nassau County Board of County Commissioners, the South Amelia Island Shore Stabilization Association (SAISSA), and the FL Park Service as part of the well-established ongoing Long Range Beach Management Plan for South Amelia Island. The project shoreline has been formally monitored since the early 1990's, prior to the initial beach restoration along the SAISSA properties north of Amelia Island State Park. The purpose of the monitoring plan is to:

- meet the regulatory requirements of the permits issued for the proposed beach restoration projects (permit numbers noted above),
- evaluate the post-construction performance of the proposed beach fill project and borrow area.
- function as an important database for purposes of future beachfront development, planning or management activities,
- fulfill the requirements of FEMA with respect to disaster relief eligibility by maintaining the beach and documenting beach conditions prior to a major storm event, and
- provide design guidance for future beach maintenance activities along the South Amelia Island shoreline.

2.0 MONITORING PLAN ELEMENTS

The Monitoring Plan includes four basic elements:

- Comprehensive surveys of the renourished shoreline, the borrow area, and the Nassau Sound shoal system by a qualified hydrographic surveyor,
- Digital orthoimagery and oblique photography,
- Analysis of annual or biennial beach changes and maintenance of the project cumulative comparative database, and
- Formulation of a detailed *Annual or Biennial Report of Findings* for consideration by the County, SAISSA, the FL Park Service, the FDEP BIPP, USACE other State and Federal agencies, and the general public.

2.1 Survey - Scope of Work

2.1.1 Beach Profiles - Throughout the continuous 28,400 ft of monitored shoreline, beach profiles will be surveyed on 1,000-ft intervals utilizing the existing FDEP R-monuments (R-55 to R-82). Additional intermediate profiles will be surveyed at 500-ft intervals along the southern portion of the project, beginning at R-73/AP-19 and extending to R-82. At R-79, additional profiles are surveyed at different azimuths to document the shoreline conditions of the sand spit south of the rock terminal groin. In total, 40 beach profiles are to be surveyed. R-55 lies approximately 4,700 ft north of the northern limit of the project and 2,300 ft north of the Lewis St. beach access in American Beach. R-82 lies just east of the A1A bridge at the Amelia Island State Park main parking area. The FDEP BIPP standards for survey data collection for beach restoration projects shall be applied (FDEP 2014).

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

2.1.2 Beach profiles along the Atlantic Ocean shoreline shall extend a minimum of 3,000 ft offshore (from the MHWL at the time of survey) or to the -30 ft NAVD88 contour (whichever is reached first). Profiles extending into Nassau Sound shall extend for at least 1,000 ft unless truncated by an impassable shoal. In addition, a shoreline survey along the approximate MHWL shall be conducted from the south side of the rock terminal groin southward and westward beyond the A1A bridge to the small tidal creek west of the AISP restroom facility.

2.1.3 Beach profile surveys shall be conducted immediately before and after construction, and on an annual post-construction basis throughout the life of the project, typically in the months of May or June (**Figure 2**). This will assure eligibility for post-storm disaster relief funds from FEMA for this non-federally funded project. Consistent with recent FDEP permit requirements, detailed reporting of the survey results shall be conducted on the following schedule (Year 1, Year 2, Year 3, Year 5, etc., see **Figure 2**).

2.1.4 Post-Storm Survey Contingency – The County, SAISSA, and the FPS are advised that in the event of a major storm impact, it will be necessary to perform a post-storm survey of the beaches for purposes of evaluating storm losses. The post-storm survey will be compared to the regularly-scheduled annual survey to complete the evaluation and apply to FEMA for reimbursement for project repairs. Historically, the post-storm survey is considered eligible for reimbursement cost-sharing by FEMA for post-disaster recovery.

2.1.5 Borrow Area and Nassau Sound – The 128-acre project borrow area (as permitted and designed) shall be surveyed on the basis of transects spaced at 200 ft intervals. The remainder of the Nassau Sound shoal system shall be surveyed concurrently at appropriate line spacings of 200 to 500 ft, achieving bank-to-bank hydrographic survey coverage consistent with prior surveys of the Sound shoals (see **Figure 1**, example). As part of each survey, the transects shall extend beyond the borrow area limits into a survey buffer zone by a minimum of 500 ft. The borrow area shall be survey be surveyed on the following schedule (Year 1, Year 2, Year 3, Year 5, etc., see **Figure 2**). If excavated, the supplemental borrow area shall be surveyed in a like manner.

2.2 Digital Aerial Orthoimagery

2.2.1 Shoreline - Controlled digital aerial orthoimagery at approximately low tide shall be flown immediately subsequent to project construction -- as well as at the same approximate time of the annual/biennial beach surveys. The limits of photography shall begin at Ft. George Inlet at the south end of Little Talbot Island in Duval County and shall extend northward beyond R-55, Nassau County, on Amelia Island. The photography shall also include the Nassau Sound shoreline of Amelia Island from R-79 westward a distance of 6,500 ft west of the A1A bridge (just west of the AIWW). The photography shall likewise cover the Little Talbot, Big Talbot, and Sawpit Island shorelines of the Sound to west of the AIWW channel. Per FDEP BIPP specifications, digital orthophotos will be produced, corrected to the State Plane Coordinate System (NAD83, Florida East Zone).

2.2.2 Oblique Aerial Photography – To continue to monitor the project shoreline response, the effects associated with the previously constructed rock structures within the project limits, and potential changes associated with the excavation of the channel-like borrow area at Nassau

Sound, low-altitude drone-based oblique aerial photography will be collected semi-annually (approx.) along the fill limits. Digital copies of the images will be provided to the Owner.

2.3 Geotechnical

Per the project Quality Assurance/Quality Control Plan, sand samples shall be collected along the nourished beach berm following construction. Sample Munsell color, percentage fines and shell content will be estimated and a grain-size distribution curve formulated for each sample in accordance with applicable ASTM standards. Results of the analyses shall be included in the project post-construction report.

Within the borrow area, surface sand samples shall be obtained during the period of each borrow site survey at four selected sampling stations utilizing a Ponar Grab. Each sand sample shall be analyzed in a manner consistent with the sediment QA/QC plan and the results included in the corresponding report-of-findings.

2.4 Analyses

Engineering reports shall be formulated based upon the collected data and submitted within 90 days of the surveys. These annual or biennial reports shall summarize and discuss the data, the performance of the beach fill project, and identify erosion and accretion patterns within the monitored area. Results shall be analyzed for patterns, trends, or changes between annual surveys and cumulatively since project construction. In addition, the report shall include a comparative review of project performance to performance expectations and identification of adverse effects attributable to the project.

The report shall specifically include:

i. The volume and percentage of advance nourishment lost since the last beach nourishment event, as measured relative to the Mean High Water Line (MHWL)and other relevant datums of the most recent survey;
ii. The most recent Mean High Water Line position (in feet) in comparison with the design profile at each individual monument location;
iii. The mean high water shoreline position changes (feet) relative to the pre-construction survey at each individual monument location for all the monitoring periods;
iv. The total measured remaining volume (in cy) in comparison with the total predicted remaining volume (cy) above the MHWL and above the Depth of Closure for the entire project area over the successive monitoring periods;
v. Morphological changes and shoaling (infilling) of the project borrow area, and volumetric and morphological changes in the Nassau Sound shoal system;

vi. Shoreline and morphological changes and conditions along the Little Talbot, Big Talbot, and Sawpit Islands as evidenced through inspection of the time series of controlled digital orthoimagery datasets;

vii. Other shoreline position and volumetric analyses, with quantitative measurements, the Permittee or Engineer deem useful in assessing the performance of the project;

The report shall include computations, tables and graphic illustrations of volumetric and shoreline position changes for the monitoring area. An appendix shall include superimposed plots of the two most recent beach profile surveys, the pre- and post-construction beach profiles, and other relevant dates, at each individual monument location.

Major report(s) of findings will be submitted annually approximately 90 days subsequent to the receipt of each completed major monitoring survey. The purpose of each report shall be to summarize the annual as well as cumulative data base, assess project performance, evaluate potential impacts, etc. The first report shall be the immediate post-construction report.

2.5 Deliverables

After each annual or biennial monitoring effort, the consultant shall provide the Owner group with a complete electronic copy of the report and appendices (*.PDF format). Electronic copies of all beach profile and hydrographic survey data, surveyor reports, metadata, digital aerial orthoimagery, and flight/camera calibration reports, shall be submitted to FDEP and to the Owner group in the appropriate formats (PDF, EXCEL, metadata, etc.). If desired, the consultant shall make an annual presentation of the monitoring results at a mutually convenient scheduled date. A copy of any digital presentation media can be transferred to the Owner group.

2.6 Plan Schedule

The overall Monitoring Plan Schedule for the first five years subsequent to construction is summarized by **Figure 2**. It is anticipated that monitoring will continue beyond the five years depicted on the same annual/biennial basis indicated by Years 4 and 5. The continued annual monitoring of the beach profiles will primarily serve to provide the necessary pre-storm data to satisfy FEMA post-storm damage eligibility criteria. The monitoring program is anticipated to continue to be a permanent component of the Long Range Beach Management Plan for the Owner group. It is noted that the longevity of the beach fill may be significantly affected by impacts from severe storms. The collection of beach monitoring data shall assist in the determination by the Owner group and FDEP for the need to initiate renourishment activities in the future.

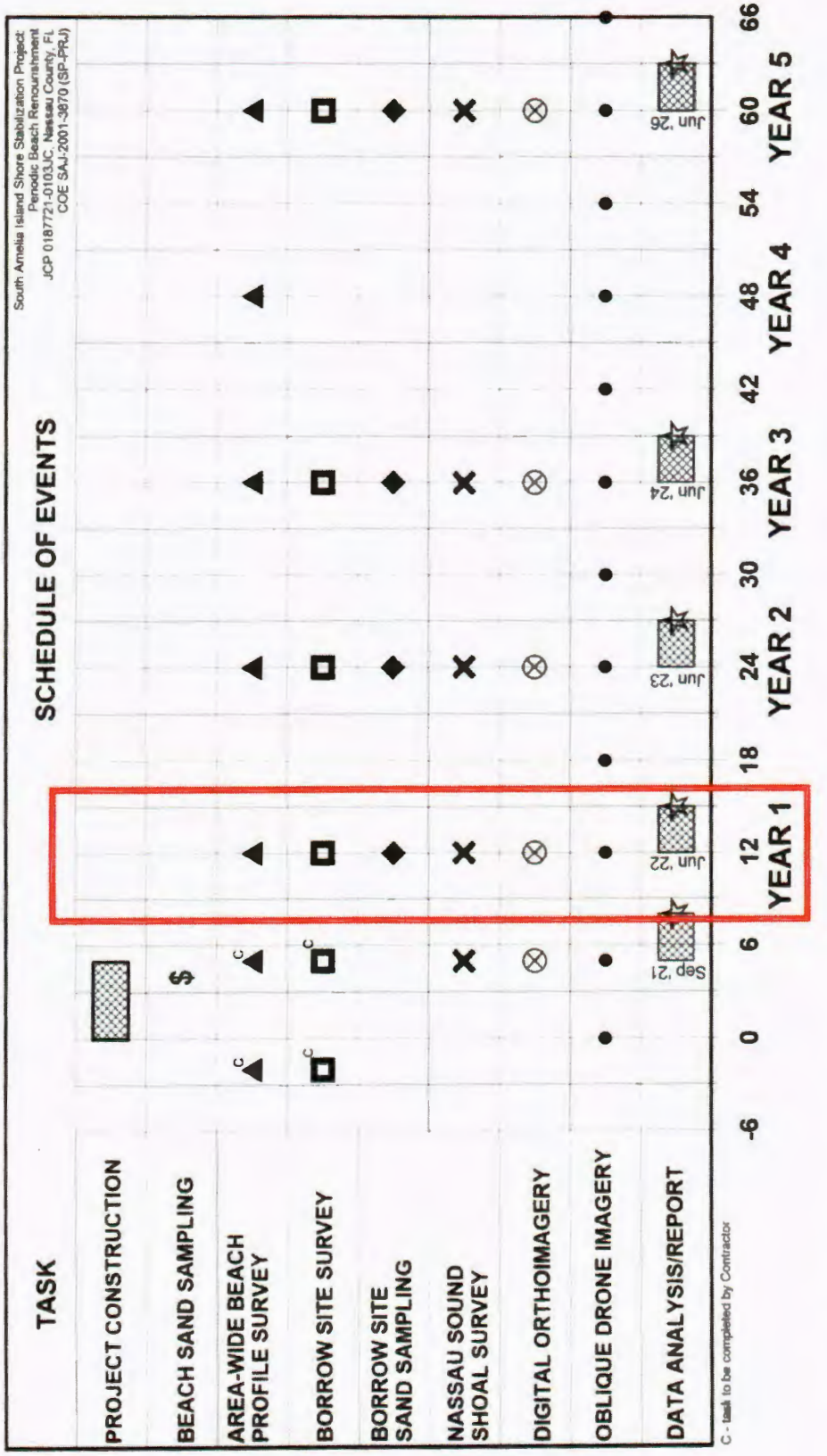

Figure 2 Schedule of monitoring events for the first five years following construction of the first periodic renourishment of the South Amelia Island Shore Stabilization Project. Monitoring elements beyond the 5-yr mark follow the same annual/biennial pattern of years 4 and 5. Aerial photography shall extend southward across Nassau Sound to Little Talbot Island and Ft. George Inlet.
*Schedule reflects construction in the Summer 2021 timeframe, such that the post-construction survey can be conducted in September 2021. Subsequent monitoring surveys will be held in the June pre-tropical storm season time frame (FEMA documentation).