



Sea Diversified, Inc.

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December 10, 2019

Mr. Steve Foge, P.E.
Humiston & Moore Engineers
5679 Strand Court, Suite 110
Naples, Florida 34110

*Sent via electronic mail 12/10/2019
(SF@HumistonandMoore.com)*

**Re: Proposal / Agreement for Professional Services
Collier County 2020 Physical Monitoring Survey
Collier Beach, Wiggins Pass, Doctors Pass, Doctors Pass Structures,
Central & South Marco Beach and Collier Creek
Collier County, Florida
Sea Diversified P.N. 19-2845**

Dear Mr. Foge:

In accordance with your request, Sea Diversified, Inc. (SDI) is pleased to submit the following proposal for professional services. The scope of work shall include onshore/offshore beach profile surveys of Collier Beach and Doctors Pass structures, and South Marco Island project areas. In accordance with your summary of scope provided on November 8, 2019, the 2020 monitoring survey effort shall encompass the following:

Task One: Collier Beach & Offshore Profiles (Collier Beach, Wiggins Pass & Doctors Pass)

Beach profiles at R-10 to R-22, including intermediate profiles (R-10.5, R-11.5, R-12.5, R-13.5, R-14.5, R-15.5, R-17.5, R-18.5, R-19.5, R-20.5, R-21.5), R-23 to R-42, U-55 to R-84, and R-58A, R-60+518, R-61+408, R-61+816, totaling 78 profiles

Collier Beach & Offshore Profiles (Park Shore)

Beach profiles at R-43 to T-54, totaling 12 profiles

Task Two: Wiggins Pass Bathymetry and Beach Profiles

- MHWL from R-17 to the NE 1,500 feet on the south side of the inlet
- Entrance channel, Stations -2+00 to 15+00 (R-15 to R-18.5), totaling 18 transects
- Internal channels C-3 to C-34, CN-35, CN-36 and CN-37, totaling 35 transects

Task Three: Doctors Pass Bathymetry

Dredge template profiles, totaling 77 transects

Task Four: Doctors Pass Structures Beach & Offshore Profiles

Beach profiles at R58A-400, R58A-300, R58A-150, R58A, R58A+150, R58A+300, R58A+425, R-58, R58+150, R58+300, R58+600, and R-59 to R-64, totaling 17 profiles

Task Five/Six: Central & South Marco Island Beach & Offshore Profiles

Beach profiles at U-130 to R-148, R-135.5, R-136.5, R-137.5, G-1 to G-5, and K-1 to K-2, totaling 29 profiles

Task Seven: Collier Creek Bathymetry (West Collier Creek)

Channel profiles at C-1 through C-11, H-15 and H-16, totaling 17 transects



General:

SDI shall provide supervision, field / office support staff and equipment to perform the scope of work described, herewith. All work shall be conducted to the highest level of industry standards and under the responsible charge of a Professional Surveyor and Mapper registered in the State of Florida. All work shall meet or exceed the Standards of Practice (Standards) set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes, and in compliance with the Florida Department of Environmental Protection (FDEP) Bureau of Beaches and Coastal Systems Monitoring Standards for Beach Erosion Control Projects, Sections 01000 and 01100 (Updated October 2014). If time permits, deviations from the scope of work shall be addressed via formal approved addendum to the executed Agreement for Professional Services.

Horizontal and Vertical Data:

Horizontal Datum: Feet, relative to the Florida State Plane Coordinate System, East Zone, North American Datum of 1983 (NAD83)

Vertical Datum: Feet, relative to the North American Vertical Datum of 1988 (NAVD88)

Horizontal / Vertical Control Verification

SDI will verify the horizontal and vertical position of all found and used monuments for the survey. Horizontal and vertical positions will be verified via Real-Time Kinematic GPS procedures. In the event vertical obstructions prohibit the use of GPS, conventional methodologies will be employed.

Temporary control points (TBM's) will be set in the event a monument cannot be readily found. As practical, the TBM will be set at the reference monument location. If the specified location is not practical, the TBM will be set at a more suitable location either landward or seaward along the specified profile azimuth. H&M shall be notified of any missing monuments and shall be provided with the horizontal and vertical position of all TBM's.

Onshore Profile Data Collection - Topographic

Onshore profile data collection shall extend from the FDEP profile control monument seaward to approximate wading depth or as required to overlap the offshore profile data a minimum distance of fifty (50) feet. Profile data collection shall extend landward to the seawalls or fifty (50) feet landward of the five-foot (+5.0') NAVD88 contour line and shall include location of the seaward vegetation line.

In the event there is a physical barrier on line between the beach and the monument, every reasonable attempt shall be made to extend the survey beyond the barrier to the reference monument position. It is understood that certain physical barriers may be considered impassible such as large buildings, private residences with difficult access, waterbodies, mangroves or other heavy vegetation requiring line clearing. At the discretion of the surveyor, data collection will be terminated at the first physical barrier if deemed impassible using practical means of extending the survey landward. Profiles terminated due to impassible barriers will be noted in the field books.

Profile data will be collected using either conventional differential leveling or Real-time Kinematic Differential Global Positioning techniques. Data points will be collected at a maximum interval of twenty-five (25) feet and at all grade breaks (exceeding one-foot) and material changes along the profile. In the event the profile control monument is located more than three hundred (300) feet landward of the vegetation line, data points shall be extended to intervals of one hundred (100) feet from two hundred (200) feet landward of the approximate vegetation line to the monument location. The reference monument shall be recorded as range 0.0 along the



profile with positive ranges extending seaward of the monument and negative ranges extending landward of the monument.

Offshore Profile Data Collection - Bathymetric

Bathymetric profile data shall be collected as close to high tide as practical and shall extend landward to a depth that overlaps the onshore portion of the survey a minimum distance of fifty (50) feet. Bathymetric profile data collection shall extend seaward to the negative thirteen (-13) feet NGVD29 contour (approximately -14.5' NAVD88) at Collier Beach and South Marco Beach, and negative fifteen (-15) feet NGVD29 contour (approximately -16.3' NAVD88) at Doctors Pass Structures, or two thousand (2,000) feet from the shoreline, whichever is the greater distance. Bathymetric data collection shall occur as close to the time of the onshore topographic survey as practical, which shall not exceed seven (7) days of time difference between the two (2) survey events. Maximum wave height during the course of bathymetric data collection shall be three (3) feet.

Bathymetric data shall be collected using an automated hydrographic system comprised of a survey launch equipped with a marine grade sounder, differential global positioning system and computer-based navigation / data collection system, and when deemed necessary may be interfaced with a DMS-05 Motion Sensor System. The motion sensor will be employed as necessary to reduce the effects of vessel heave, pitch and roll during the course of data collection. The sounder shall be calibrated via bar checks prior to the start of the survey. Prior to the start of the survey a tide staff or gauge will be established in proximity to the project for recording water levels during the course of the data collection activities. The tide staff or gauge will be set relative to published control in the vicinity of the project.

Digital Ground Photography

During the course of field data collection, digital photographs shall be taken at approximate mid-beach along each profile line. Three (3) photographs shall be captured, one each shore-parallel north and south of the profile and one towards the monument location. An additional photograph of the monument or TBM shall be taken with sufficient clarity to read the monument stamping. Digital images shall be provided to H&M in .jpg format at a minimum 640 x 480 resolution.

Data Processing and Final Deliverables

Upon completion of field survey activities, data will be edited and reduced to the project datum and translated to an x,y,z, ASCII format for submittal to H&M. H&M will be provided the following deliverables:

1. Survey report certified by a Professional Surveyor and Mapper.
2. Description of all monuments and TBM's used for the survey, including identification, stamping, coordinates, elevations and profile azimuths. Control description shall be provided in both hardcopy and digital formats (ASCII and Excel), as applicable.
3. Bathymetric data and / or profile data in ASCII x,y,z format
4. Digital photographs in .jpg format with appropriate labeling
5. Metadata files

Cost Breakdown:

Task One:	\$ 47,520.00 Lump Sum
Task Two:	\$ 17,510.00 Lump Sum
Task Three:	\$ 11,439.00 Lump Sum
Task Four:	\$ 9,900.00 Lump Sum
Task Five/Six:	\$ 17,550.00 Lump Sum
Task Seven:	\$ 11,250.00 Lump Sum



Should you have questions or require additional information please do not hesitate to contact us at your convenience. We appreciate this opportunity to assist you with this project and look forward to hearing from you soon.

Best Regards,

A handwritten signature in black ink, appearing to be "W. Sadler", written over a light blue rectangular background.

William T. Sadler Jr., P.E., P.S.M.
President
Sea Diversified, Inc.

Approved this ____ day of _____, 2019

Mr. Steve Foge, P.E. or Authorized
Humiston & Moore Engineers Representative