

WORK ORDER NUMBER 2018007-3

SECTOR 7 (PORPOISE POINT) BEACH AND DUNE RESTORATION PROJECT

2019 Reconnaissance Hardbottom Survey

This Work Order Number 2018007-3 is entered into as of this ____ day of _____, 2019 pursuant to that certain Contract Agreement relating to Engineering and Biological support services for Sector 7 (Porpoise Point) Beach and Dune Renourishment Project entered into as January 9, 2018 (“Agreement”), between Indian River County, a political subdivision of the State of Florida (“COUNTY”) and Coastal Technology Corporation (“CONSULTANT”).

The COUNTY has selected the Consultant to perform the professional services set forth on Exhibit 1, attached to this Work Order and made part hereof by this reference. The professional services will be performed by the Consultant for the fee schedule set forth in Exhibit 2, attached to this Work Order and made a part hereof by this reference. The Consultant will perform the professional services within the timeframe more particularly set forth in Exhibit 2, attached to this Work Order and made a part hereof by this reference all in accordance with the terms and provisions set forth in the Agreement. Pursuant to paragraph 1.3 of the Agreement, nothing contained in any Work Order shall conflict with the terms of the Agreement and the terms of the Agreement shall be deemed to be incorporated in each individual Work Order as if fully set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Work Order as of the date first written above.

CONSULTANT
Coastal Technology Corporation

BOARD OF COUNTY COMMISSIONERS
OF INDIAN RIVER COUNTY

By: _____
Charles T Fontaine III, P.E.

By: _____
Bob Solari, Chairman

Title: Vice President

Attest: Jeffrey R. Smith, Clerk of Court and
Comptroller

Date: _____

By: _____
(Seal) Deputy Clerk

Approved:

By: _____
Jason E. Brown, County Administrator

Approved as to form and legal sufficiency:

By: _____
William K. DeBaal, Deputy County Attorney

Exhibit 1 Scope of Work 2019 Reconnaissance Hardbottom Survey

Introduction: The “*Indian River County Beach Preservation Plan Update*” (*Plan*, dated February 2015) recommends re-nourishment of beaches within Sector 7, which extends from Florida Department of Environmental Protection (FDEP) reference monuments R-97 to R-108 (*Project*). The *Project* extends approximately 2.2 miles; a majority of the *Project* area is designated by FDEP as critically eroded. Sector 7 was damaged by Hurricane Matthew in 2016 and Hurricane Irma in 2017; beach re-nourishment is warranted. Construction and re-nourishment of the *Project* area is anticipated between November 2020 and May 2021 - outside the sea turtle nesting season.

The COUNTY previously authorized Work Order Number 2018007-1 for design and permitting of the *Project*. In concert with permit applications, FDEP has (a) identified the existence of recently exposed nearshore hardbottom, and (b) required a reconnaissance survey to map and characterize existing nearshore hardbottom that is susceptible to adverse impacts from the proposed Sector 7 re-nourishment. The objective of the survey is to document the current types, and spatial distribution of hardbottom resources just offshore of the beach nourishment *Project* area, and in the vicinity of the potential pipeline corridor. The survey is expected to (a) be conducted between August and September 2019, and (b) frame future monitoring activities. The survey work will be performed by CSA Ocean Sciences Inc. (CSA) and Morgan & Eklund, Inc. (M&E) under sub-contract with Coastal Technology Corporation (Coastal Tech), who will oversee and incorporate results into the preliminary design permit sketches for modification of permit applications. The following describes the specific scope of work under this *Work Order*.

Task 1.1 Side-scan Survey: A side-scan survey will be performed by Morgan & Eklund, Inc. to verify the locations of hardbottom within the *Project* area seaward of the 2007 permitted Equilibrated Toe of Fill (ETOF). The side-scan survey will be performed between FDEP R-monuments R-97 and R-111 and offshore a distance of approximately 350 m. The survey will also be conducted within 25m of the potential pipeline corridor. Hardbottom mapping data collected during the side-scan survey will be recorded and provided digitally. Coastal Tech will compare the side-scan survey to the 2019 beach profile data provided by the County and the preliminary habitat map and incorporate this information into the permit sketches.

Task 1.2 Preliminary Habitat Map: Via desktop, CSA will characterize the *Project* area utilizing information available on the condition and distribution of hardbottom resources. This information may include historical and current sonar surveys and diver delineated hardbottom edges, previous biological monitoring data and other applicable information for the Project Area. The work will include the existing hardbottom distribution (nearshore, intermediate, offshore) within the *Project* area and under the influence of the Project (300 m updrift, 900 m downdrift, and 30 m seaward of the current beach and seaward of the 2007 permitted ETOF) will be determined. In addition, the survey area for the proposed pipeline corridor shall encompass all areas within the corridor as well as areas 25 m on either side of the corridor.

1.3 Reconnaissance Diver Survey: CSA will monitor and note field conditions in the *Project* area daily following a notice to proceed until fieldwork is completed. Field conditions of note will include wind direction and speed, wave height, wave period, and water clarity (underwater visibility), as applicable, along with any significant weather conditions. Wave heights greater than 0.6 m typically result in increased turbidity and reduced underwater visibility, which prevents surveys from being conducted. During appropriate field conditions, CSA will perform the following:

- (a) Hardbottom Edge: CSA divers will use the diver positioning system to delineate portions of the nearshore hardbottom edge within the *Project* area and seaward of the 2007 permitted ETOF, and also within areas 300 m updrift and 900 m downdrift of the *Project* area, from FDEP Monuments R-97 to R-111. As the hardbottom edge is mapped, its relief characteristics will be recorded as: low (>0.3 m), medium (0.3 m to 1 m), or high (>1 m) relief. Results from this mapping will be compared to the most recent geo-rectified aerial imagery and side-scan sonar survey and will be used to verify the distance from both the shore and the 2007 permitted ETOF seaward to the hardbottom edge.
- (b) Pipeline corridor: CSA divers will use the diver positioning system and bounce dives to verify the distribution of potential hardbottom within the proposed pipeline corridor. Any hardbottom observed within the pipeline corridor will be delineated.
- (c) CSA divers will gather observations and measurements about the hardbottom relief, substratum type, sediment cover, and biological community composition and distribution within the *Project* area. CSA will use temporary transects to survey the *Project* area. Temporary transects will be approximately 30m in length. An estimated 30 cross-shore temporary transects, beginning at the landward edge of hardbottom located seaward of the 2007 permitted ETOF and extending directly offshore between FDEP Monuments R-97 and R-111, will be surveyed during the 2019 survey. Divers will collect qualitative video to document the seafloor and associated biota along each transect. A survey of the proposed pipeline corridor will also be conducted to verify the absence of hardbottom in this area. If any hardbottom is observed, it will be qualitatively assessed in the same manner as previously described.

1.4 Data Analysis and Reporting:

Findings from the Task 1.2 desktop analysis and the Task 1.3 in situ survey will be summarized provided by CSA in a habitat characterization report and as a habitat characterization map. The habitat characterization map will be (a) based on the preliminary desktop work and the reconnaissance and side scan surveys, and (b) will be supplied as a collection of shapefiles.

The habitat characterization report will be based on the data gathered during the surveys and the data presented in the habitat characterization map. The report will include methods, results, and discussions regarding hardbottom habitat, community types, and locations within the project area. The habitat characterization report will include figures documenting the survey transect positions with the location of hardbottom and substrate types along each survey line, qualitative survey video, digital images, and drawing files showing transect locations and substrate type in ArcView format. The habitat characterization map will be provided as a collection of shapefiles.

Exhibit 2

**Indian River County
Sector 7 Beach and Dune Restoration Project
2019 Reconnaissance Hardbottom Survey**

Work Order Number 2018007-3

Notice to Proceed			Estimated Fees and Schedule	
August 13, 2019				
Start	Finish	Days	Task Description	Task
13-Aug-19	12-Sep-19	30	Task 1.1: Side-scan Survey	\$19,890
13-Aug-19	10-Sep-19	28	Task 1.2: Preliminary Habitat Map	\$3,127
13-Aug-19	1-Nov-19	80	Task 1.3: Reconnaissance Diver Survey	\$52,671
1-Nov-19	30-Jan-20	90	Task 1.4: Data Analysis and Reporting	\$43,399
			Total Cost	\$119,087