



**TECHNICAL & COMMERCIAL PROPOSAL**  
**Collier County 2018 Hardbottom Biological Monitoring**  
**Professional Services for Nearshore Hardbottom Monitoring**  
**Contract #17-7188**

Submitted to:



Collier County, Florida  
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Submitted By:



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| Prepared For:  | Prepared By:  |
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The following versions of this proposal have been issued:

| Ver. | Date          | Description   | Approved |    |
|------|---------------|---|----------|----|
| 01   | 10 April 2018 | Technical & Commercial Proposal: Collier County 2018 Hardbottom Biological Monitoring | CB/DK    | FA |
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## 1.0 INTRODUCTION

CSA Ocean Sciences Inc. (CSA) is pleased to submit this technical & commercial proposal to conduct the required post-construction hardbottom monitoring for the Collier County Beach Nourishment Project in summer 2018 as well as a seagrass survey of Doctors Pass. Our estimate was prepared for a pending work order from Collier County under Professional Services for Nearshore Hardbottom Monitoring contract #17-7188 and is based on the scope of work for the Collier County Beach Nourishment Project Final Hardbottom Biological Monitoring Plan (BMP) (Revised 2013, **Attachment**). This project will conform to all associated Florida Department of Environmental Protection (FDEP) permits:

- Collier County Beach Renourishment FDEP Permit No. 02222355-001-JC and USACE Permit No. SAJ-2004-08754;
- Doctors Pass Maintenance Dredging FDEP Permit No. 0235740-001-JC and USACE Permit No. SAJ-2004-09754; and
- Wiggins Pass Maintenance Dredging and Navigation Improvement FDEP Permit No. 0142538-001-JC and USACE Permit No. SAJ-2004-07621.

The post-construction hardbottom monitoring includes in-water survey of 31 previously established monitoring transects. The survey will be conducted according to the 2013 BMP by experienced marine biologists using similar methods as those utilized in previous surveys for this project. CSA estimates 22 days will be required to complete the hardbottom monitoring field survey. A report of the 2018 results and comparison with previous surveys will be compiled. Per the BMP, the survey will be conducted between 1 May and 30 September 2018 and all data deliverables will be provided within 60 days of completion of fieldwork. Draft and final versions of the report will be submitted within 90 days of completion of fieldwork.

The Doctors Pass Maintenance Dredging Seagrass Survey is included as a separate task and includes a 2-day field survey that will be conducted in conjunction with the 2018 Collier County Nearshore Hardbottom Monitoring and compilation of data into a letter report to meet FDEP permit requirements. The purpose of the survey is to assess potential primary and secondary impacts to the seagrass community from maintenance dredging of the Pass.

CSA will provide two AAUS-certified marine biologists from our Ports, Beaches, & Harbors (PHB) division to join the Collier County team as Subject Matter Experts who will guide field activities and the data collection processes.

## 2.0 SCOPE OF WORK

### **TASK 1: PROJECT MANAGEMENT AND MOBILIZATION**

CSA will provide project oversight, coordination, and management for the 2018 nearshore hardbottom monitoring program. CSA's Project Manager will be responsible for supervising all managerial aspects of the project and will have oversight of all team personnel, including field scientists (i.e., Subject Matter Experts), authors, editors, and technical and support staff. CSA will plan and execute project activities in order to meet required deadlines and/or Client needs for the project.

CSA will hold a kickoff meeting with Collier County staff to review the scope of work and confirm project logistics prior to beginning mobilization efforts for the monitoring survey. After coordination with Collier County regarding acceptable weather and sea state conditions, CSA will mobilize a two-person scientific dive team and required equipment during ideal sea state and weather windows to perform surveys. It is assumed that Collier County will provide a vessel, captain, and two divers to assist with the survey. Several mobilizations and demobilizations may be necessary to complete all tasks depending on weather and sea conditions. Therefore, Task 1 includes provision for up to three round trips and associated meals for a two-person team. Additional trips to and from Collier County will be billed on a Time and Materials basis under the agreed upon rates. CSA will confirm visibility of nearshore waters with Collier County staff prior to mobilization to minimize travel back and forth during monitoring due to poor sea state and water visibility. Travel to and from Collier County is anticipated to take 0.5 days each.

### **TASK 2: HARDBOTTOM MONITORING SURVEY**

A total of 31 permanent monitoring transects (50-m length) established in 2006 by Coastal Planning and Engineering (CP&E) during the original baseline pre-construction survey will be monitored. The transects are located among four beach segments: Vanderbilt, 7 transects (R-21+080 to R-29+700); Pelican Bay, 6 transects (R-31+480 to R-38+380); Park Shore, 9 transects (R-43+550 to R-55); and Naples Beach, 9 transects (R-58+300 to R-65). The hardbottom monitoring survey is estimated to take 21 days. CSA will utilize the transect endpoints supplied by Collier County as listed in Table 1 of the BMP to re-survey all transects. Each transect will be re-occupied by extending a 50-m tape along the transect length and aligning it with permanent markers installed and maintained during previous monitoring surveys. CSA will maintain and replace permanent markers as necessary during the field survey.

#### ***Transect Monitoring***

Along each 50-m transect, the team will conduct line-intercept and interval sediment depth measurements, survey of 11 benthic quadrats, collect coral photo quadrats, and conduct a coral census as described in the BMP. Quantitative video of each transect will be recorded at 40-cm height off bottom at a slow, 4-m/min speed for archival purposes. A Canon XA-10 HD video camera in Light and Motion underwater housing with video lights and two lasers mounted to converge at a point 40 cm from the camera will be used to ensure divers maintain the appropriate height off bottom. Sediment depth measurements will be made at 1-m intervals along the entire length of the transect, with a marked stainless steel sediment probe or ruler inserted up to 30 cm into the sediment.

A 0.5-m by 0.5-m quadrat (0.25-m<sup>2</sup> area) will be sampled at 11 individual hardbottom locations spaced every 5 m along the transect, in the same locations as those established and surveyed by CP&E. Quadrats containing 100% sand due to cover by sand will be surveyed and included in the dataset.

Within each quadrat, percent cover by major benthic taxonomic groups, including macroalgae (total percent cover of the dominant species), coralline algae, sponges, hydroids, wormrock, octocorals, stony corals, bryozoans, and tunicates, will be visually estimated as well as percent cover of various substrate types. Maximum and average height of the thalli will be measured for the two dominant macroalgae species in each quadrat. Within each quadrat, sediment depth will be measured at five haphazardly selected positions and the maximum vertical relief of hardbottom will be measured. Photographs of each quadrat will be collected at the time of survey.

### *Nearshore Hardbottom Edge Surveys*

The nearshore hardbottom edge (landward edge of hardbottom) seaward of the equilibrium toe of fill (ETOF) of each beach segment will be mapped during the survey. Two divers will swim the nearshore hardbottom edge located west of the ETOF, videotaping the edge and associated benthic community. The team will tow a DGPS buoy on a short tether (taut-line) that transmits continuous buoy/diver positions to Hypack® hydrographic survey software on board the vessel. The HD video camera will be held at an oblique angle and film simultaneously with the DGPS buoy to allow geo-referencing. If the continuous nearshore hardbottom edge crosses east of the ETOF toward land, the mapping will continue until the edge of hardbottom ends.

### *Pipeline Corridor Surveys*

CSA will perform a pre-construction benthic survey of cross-shore pipeline corridors as marked by the dredging contractor to assess presence and condition of benthic resources (i.e., hardbottom) within the corridor. Following removal of the pipeline, a post-construction survey will be conducted to determine if any hardbottom was impacted during the construction project due to pipeline placement. CSA will survey up to four cross-shore pipeline corridors, each extending from the surf zone to approximately 1,200 m offshore. These tasks are estimated to take 2 days and, for cost-saving purposes, will be conducted in conjunction with the hardbottom monitoring survey. Additional travel to and from Collier County is outside the current scope and would be billed on a time and materials basis at the agreed upon rates.

## **TASK 3: MONITORING DATA DELIVERABLES, ANALYSIS, AND REPORT**

Data deliverables and reports will be provided to Collier County and the FDEP, with conformance to requirements and schedules set forth in the approved 2013 BMP. A comprehensive raw data deliverable will be provided on an external hard drive within 60 days of completion of field survey activities and will include all video and photo data, Point Count files, Excel spreadsheets of quadrat data, draft GIS shapefiles, and \*.pdf copies of field data sheets, as applicable. Notification of survey completion will be made by letter or email to the FDEP Joint Coastal Permit Compliance Officer.

Per Contract #17-7188, nearshore hardbottom monitoring results will be compiled into a report by 30 December of the same year (assuming fieldwork is completed by 30 September). The report will discuss the results of the current 2018 Nearshore Hardbottom Monitoring Survey and include comparisons with annual monitoring survey results from the most recent beach nourishment project. The monitoring report will include graphs, tables, and statistical analyses of collected data. Geo-referenced maps showing hardbottom along transects and the nearshore hardbottom edge will be included. All reports will be provided in electronic format with hardcopy upon request.

**TASK 4: DOCTORS PASS SEAGRASS SURVEY**

To meet the monitoring criteria of FDEP Permit 0331817-001-JC, CSA will perform a submerged resources survey in seagrass communities to assess potential primary and secondary impacts from maintenance dredging of Doctors Pass. Divers will swim previously surveyed transect lines, delineating the extent of seagrass beds using GPS for mapping and area estimations. CSA estimates 2 days to complete the survey. In areas of seagrass, divers will assess Braun-Blanquet quadrats for seagrass species composition and density. Snorkel surveys and diver tows may be employed instead of or in addition to diving surveys to provide adequate coverage in shallow areas and sections devoid of seagrasses. The seagrass survey will be conducted during the peak seagrass growth season between June and September and in conjunction with the hardbottom monitoring when conditions are optimal for survey.

Braun-Blanquet quadrats are the approved technique for estimating density and percent cover of seagrasses quickly and efficiently. An appropriate number of 1-m<sup>2</sup> quadrats will be distributed among seagrass beds identified during the mapping portion of the survey. Photographs of submerged seagrass communities and other benthic fauna observed during the surveys will be collected.

A brief letter report will be compiled to provide habitat maps, estimated densities, and representative photos of the encountered seagrass communities. Deliverables will include all photographs and GIS shapefiles of the mapped seagrass beds within the survey area. For cost-sharing purposes, this survey will be conducted in conjunction with the hardbottom monitoring survey to minimize mobilization and travel expenses. Additional mobilization and travel, if necessary, would be conducted under a time and materials basis at the agreed upon rates.

**TASK 5: CONTINGENCY CSA DIVER AND VESSEL SUPPORT**

Tasks 1 through 4 assume that the required four-person dive team will consist of two CSA divers and two Collier County Coastal Zone Management divers working from a Collier County vessel. In the event that Collier County divers are unable to participate, CSA can provide additional scientific divers as necessary. As a contingency, CSA can also provide a suitable survey vessel and operator in the event that the Collier County vessel is unavailable. This contingency task comprises up to 3 days of a full four-person CSA dive team, one vessel operator, CSA vessel, and all necessary equipment normally provided by Collier County as well as travel to and from Collier County. This task is included as contingency and would only be billed if necessary.

### 3.0 DELIVERABLES

| Deliverables                                 |   |
|--|---|
| <b>Task 2 - Hardbottom Monitoring</b>        |   |
| Data Deliverables                            | <ul style="list-style-type: none"> <li>• All video and photo data</li> <li>• Point Count files</li> <li>• Excel spreadsheets of quadrat data</li> <li>• Draft GIS shapefiles: pipeline corridors, nearshore hardbottom edge, and transects</li> <li>• Field data sheets provided electronically as *.pdf</li> </ul>   |
| Monitoring Report                            | <ul style="list-style-type: none"> <li>• Graphs, tables, and statistical analyses of collected data</li> <li>• Geo-referenced maps showing hardbottom along transects and the nearshore hardbottom edge</li> <li>• Selected qualitative imagery of transects and nearshore hardbottom edge</li> <li>• Provided in electronic format, *.pdf, with hardcopy on request</li> </ul> |
| <b>Task 4 - Doctors Pass Seagrass Survey</b> |   |
| Data Deliverables                            | <ul style="list-style-type: none"> <li>• Qualitative photographs</li> <li>• GIS shapefiles of the mapped seagrass beds within the survey area</li> <li>• Collected quadrat data in Excel spreadsheet format</li> </ul>  |
| Monitoring Report                            | <ul style="list-style-type: none"> <li>• Habitat maps</li> <li>• Estimated seagrass and macroalgal densities</li> <li>• Representative photos of the encountered seagrass communities</li> </ul>  |

### 4.0 PROJECT SCHEDULE

The project schedule will be updated twice per month by the Project Manager with input from Collier County and the FDEP (as appropriate) to provide status of task activities and track critical milestones and precedent activities. This bi-weekly update will identify any problems early and enable corrective action to be taken quickly. The updated schedule may be provided to Collier County upon request. CSA will convene a project kickoff meeting with Collier County staff and field survey participants to ensure all necessary personnel, field equipment, and monitoring standard operating procedures are in place prior to initiation of the survey. To minimize mobilization and travel costs, CSA will endeavor to conduct all surveys concurrently as weather permits.

### 5.0 RATES, RESOURCES, AND BILLING SCHEDULE

The rates found in the following table (**Table 1**) are from the Professional Services for Nearshore Hardbottom Monitoring Contract #17-7188 between CSA and Collier County, dated April 2018. The costs are on a Time and Materials Not-to-Exceed basis and will be billed monthly. CSA will begin mobilization within 15 days of Notice to Proceed and begin field work at the earliest weather window of suitable field conditions. CSA estimates completion of the 2018 project on or before the FDEP deadline of December 31, 2018. A summary of costs associated with the project is listed below.

|                            |                     |
|----------------------------|---------------------|
| <b>Tasks 1-4:</b>          | \$136,817           |
| <b>Contingency Task 5:</b> | \$31,589            |
| <b>Total:</b>              | <b>\$168,406.26</b> |

Travel to and from Collier County from CSA’s office in Stuart, Florida is provided in Task 1; room and board for CSA personnel while in Collier County is provided in Task 2. In order to provide Collier County with the most cost-effective program, our proposed cost estimate includes as much mobilization and travel cost sharing as possible. In addition, CSA has conservatively estimated the level of effort in order to decrease the likelihood of change orders or additional approval requirements from Collier County. Utilizing best management practices, we anticipate being able to complete the project tasks within or under the proposed budget (**Table 1**).

Table 1. Cost breakdown of CSA hours, survey days and travel by task.

| Project Task | Description   | Quantity | Rates (USD) | Subtotal    | Total              |
|--------------|---|----------|-------------|-------------|--------------------|
| <b>1</b>     | <b>Administration, Travel, Mobilization, and Demobilization</b> |          |             |             | <b>\$15,158.67</b> |
|              | Labor   |          |             | \$13,872.27 |                    |
|              | PS2   | 86       | \$106.19    |             |                    |
|              | PS1   | 42       | \$95.02     |             |                    |
|              | PM1   | 4        | \$122.96    |             |                    |
|              | T1  | 4        | \$64.27     |             |                    |
|              | Travel  |          |             | \$1,286.40  |                    |
|              | Vehicle Rental  | 8        | \$63.00     |             |                    |
|              | Fuel  | 96       | \$3.15      |             |                    |
|              | Meals   | 6        | \$80.00     |             |                    |
| <b>2</b>     | <b>Field Monitoring Survey</b>                                  |          |             |             | <b>\$72,210.07</b> |
|              | Labor   |          |             | \$53,119.57 |                    |
|              | PS2   | 264      | \$106.19    |             |                    |
|              | PS1   | 264      | \$95.02     |             |                    |
|              | Travel  |          |             | \$11,258.50 |                    |
|              | Vehicle Rental  | 22       | \$63.00     |             |                    |
|              | Fuel - Vehicle  | 110      | \$3.15      |             |                    |
|              | Lodging   | 44       | \$136.50    |             |                    |
|              | Meals   | 44       | \$80.00     |             |                    |
|              | Equipment   |          |             | \$7,832.00  |                    |
|              | Underwater Video Camera (2)                                     | 44       | \$95.00     |             |                    |
|              | Digital Camera (2)  | 44       | \$55.00     |             |                    |
|              | Dive Equipment (2)  | 44       | \$25.00     |             |                    |
|              | Diver Recall System   | 6.6      | \$20.00     |             |                    |
| <b>3</b>     | <b>Analysis, Reporting, and Deliverables</b>                    |          |             |             | <b>\$36,900.73</b> |
|              | Labor   |          |             | \$36,667.63 |                    |
|              | SS2   | 8        | \$209.59    |             |                    |
|              | SS1   | 8        | \$173.27    |             |                    |
|              | PS3   | 10       | \$139.73    |             |                    |
|              | PS2   | 176      | \$106.19    |             |                    |
|              | PS1   | 72       | \$95.02     |             |                    |
|              | GISA  | 28       | \$92.22     |             |                    |
|              | GIST  | 12       | \$81.04     |             |                    |
|              | OM  | 1        | \$192.84    |             |                    |
|              | TE2   | 10       | \$111.79    |             |                    |
|              | DP  | 24       | \$75.46     |             |                    |
|              | Equipment   |          |             | \$233.10    |                    |
|              | Digital Media   | 2        | \$78.75     |             |                    |
|              | Fedex   | 2        | \$37.80     |             |                    |

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| 4            | Doctors pass Seagrass Survey and Reporting          |       |          | \$12,547.63         |
|--------------|---|-------|----------|---------------------|
|              | Labor   |       |          | \$11,357.13         |
|              | PS3   | 4     | \$139.73 |                     |
|              | PS2   | 56    | \$106.19 |                     |
|              | PS1   | 28    | \$95.02  |                     |
|              | GISA  | 14    | \$92.22  |                     |
|              | TE2   | 4     | \$111.79 |                     |
|              | DP  | 6     | \$75.46  |                     |
|              | Travel  |       |          | \$870.50            |
|              | Vehicle Rental                                      | 2     | \$63.00  |                     |
|              | Fuel – Vehicle                                      | 10    | \$3.15   |                     |
|              | Lodging   | 2     | \$136.50 |                     |
|              | Meals   | 5.5   | \$80.00  |                     |
|              | Equipment   |       |          | \$320.00            |
|              | Digital Camera (2)                                  | 4     | \$55.00  |                     |
|              | Dive Equipment (2)                                  | 4     | \$25.00  |                     |
| 5            | Contingency – Four CSA Divers, Vessel, and Operator |       |          | \$31,589.17         |
|              | Labor   |       |          | \$22,379.02         |
|              | PS3   | 44    | \$139.73 |                     |
|              | PS2   | 44    | \$106.19 |                     |
|              | PS1   | 44    | \$95.02  |                     |
|              | T3  | 44    | \$103.40 |                     |
|              | T1  | 44    | \$64.27  |                     |
|              | Travel  |       |          | \$4,926.15          |
|              | Fuel – Truck  | 66    | \$3.15   |                     |
|              | Fuel – Vessel                                       | 90    | \$3.68   |                     |
|              | Dockage   | 3     | \$52.50  |                     |
|              | Lodging   | 20    | \$136.50 |                     |
|              | Meals   | 18.75 | \$80.00  |                     |
|              | Equipment   |       |          | \$4,284.00          |
|              | Survey Vessel                                       | 3     | \$550.00 |                     |
|              | CSA Truck   | 3     | \$150.00 |                     |
|              | Underwater Video Camera (2)                         | 6     | \$95.00  |                     |
|              | Digital Camera (2)                                  | 6     | \$55.00  |                     |
|              | Hypack® Computer                                    | 3     | \$180.00 |                     |
|              | Dive Equipment (4)                                  | 12    | \$25.00  |                     |
|              | Diver Recall System                                 | 3     | \$20.00  |                     |
|              | Dive tanks  | 48    | \$8.00   |                     |
| <b>TOTAL</b> |   |       |          | <b>\$168,406.26</b> |

## 6.0 PROPOSAL TERMS

CSA Ocean Sciences Inc.’s commercial proposal price calculations were based upon its “General Terms” as well as “Project-Specific Terms,” which are outlined below. If the Client has issues with any of these items, CSA Ocean Sciences Inc. reserves the right to modify its original proposal price in order to meet any cost increase arising from any modifications requested by the Client.

This proposal contains privileged, confidential, and/or proprietary information intended for a specific individual and purpose. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful.

### General Terms

- Quoted rates are valid for 90 days after date of proposal.
- Prices are quoted and payable in U.S. Dollars. Prices are exclusive of any local or national taxes, fees, and/or licenses.
- Services are subject to availability of personnel and equipment at time of award.
- If any proposed equipment becomes unavailable, CSA reserves the sole right to substitute it with any equipment they deem fit. If substituting the equipment results in a price increase, CSA will be required to obtain Client written approval prior to placing said equipment in service.
- Mutually agreed upon contract must be executed by both parties before any commencement of work, unless CSA receives a formal “Notice to Proceed.” Upon request, CSA can provide a “Notice to Proceed” template.
- Payment is due within 30 days of invoice unless otherwise stated in contract.
- Any additional costs incurred for express mobilization, including priority visas, will be charged at cost +15%.
- Any costs for third-party services or supplies not specified included will be billed at cost +15%.

### Project-Specific Terms

- Field days for the environmental sampling are estimated and assume that the vessel, operator, navigation, and two divers will be provided by Collier County. Actual costs charged will be based on the actual number of field days spent by CSA personnel based on rates listed in **Table 1**.
- The field survey operations cost estimate assumes that the required 22 survey days for the nearshore hardbottom and 2 days for the seagrass survey will be completed within three separate survey efforts; any additional costs incurred due to weather and sea conditions, vessel/equipment, and/or other delays will be charged at the stated field day rate.
- Tasks 1 through 4 assume that the following will be provided by Collier County at no cost to CSA Ocean Sciences Inc.:
  - Vessel and captain,
  - Two field team divers,
  - Diving tanks,
  - DGPS buoy with telemetry,
  - Hypack® navigation,
  - Transect maintenance equipment and supplies, and
  - A vessel log of daily activities.
- If any employees of the Client need to board a CSA-owned vessel, then the contractual terms must contain a mutual indemnification clause and the client must provide a Certificate of Insurance naming CSA Ocean Sciences Inc. as an additional insured (excluding workers compensation, employer’s liability, maritime liability & professional liability) and shall also include a Waiver of Subrogation in favor of CSA for all its insurance policies.
- Travel to and from Collier County is anticipated to take 0.5 days each and includes appropriate per diem according to Class B travel.
- Task 5 is included as contingency and would only be billed if necessary. The day rate of \$8, 808 would apply if additional survey time over 3 days is necessary.

### Reporting

- Project technical details, pertinent information necessary for the Project Description section of the report, and other requirements will be provided to CSA in a timely manner

- Cost for the project report is derived primarily from direct labor. This cost estimate assumes a single electronic draft document submitted to Collier County for their review and a reasonable number of compiled comments (i.e., no multiple drafts).
- Price for preparation of deliverables is based on a single draft and final document addressing a single set of comments for each deliverable.

### **Geospatial**

- CSA assumes that Collier County will provide all project metadata related to navigational data.
- If CSA is responsible for collecting the navigational data:
  - CSA will utilize the WGS 84 UTM geodesy and Esri data formats in all geospatial products unless otherwise specified at project outset by the Client; subsequent conversions to other formats and geodesy are provided at an additional cost.
  - Vertical and horizontal resolution of all geospatial data are provided without reference of vertical data to a tidal datum and at the resolution afforded by equipment, local, and space weather conditions at the time of collection.
  - CSA's default system is differential GPS; tidal datum integration, where possible, is provided at additional cost and may require installation of tide stations or additional water level measurement methods (RTK).
- CSA's geospatial products are not Signed and Sealed by a Professional Land Surveyor unless specified at project outset by the Client; this certification is provided at an additional cost.

Thank you for the opportunity to provide Collier County with this proposal. If you should have any questions concerning the proposed costs, please feel free to contact Chip Baumberger by email at [cbaumberger@conshelf.com](mailto:cbaumberger@conshelf.com) or by phone at (772) 219-3053.