

WORK ORDER NUMBER 2018006-2

SECTOR 3 (WABASSO BEACH) BEACH AND DUNE RESTORATION PROJECT

DESIGN AND PERMITTING SERVICES

This Work Order Number 2018006-2 is entered into as of this ____ day of _____, 2018 pursuant to that certain Contract Agreement relating to Engineering and Biological support services for Sector 3 (Wabasso Beach) 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 Aptim Environmental & Infrastructure, Inc. ("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
Aptim Environmental & Infrastructure, Inc.

BOARD OF COUNTY COMMISSIONERS
OF INDIAN RIVER COUNTY

By: _____
Thomas P. Pierro, P.E., D.CE

By: _____
Peter D. O'Bryan, Chairman

Title: Director of Operations

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. DeBraal, Deputy County Attorney

Exhibit 1



Aptim Environmental & Infrastructure, Inc.
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Boca Raton, FL 33431
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Fax: +1 561 391 9116
www.aptim.com

March 14, 2018 (revised from March 8, 2018)

Mr. James Gray
Indian River County
Public Works - Coastal Engineering Division
1801 27th St, Building A
Vero Beach, FL 32960

**Subject: Indian River County, FL
Sector 3 – 2018006 – Work Order #2
Design and Permitting**

Dear James:

This proposal outlines a scope of work for Aptim Environmental & Infrastructure, Inc. (APTIM) to provide professional services to Indian River County (the County) in support of design and permitting efforts for the Sector 3 (Wabasso Beach) Beach and Dune Renourishment Project. The initial Sector 3 project was completed in three phases between 2010 and 2012, and authorized under FDEP Joint Coastal Permit No. 0285993-001-JC. Following damages due to Hurricane Sandy in 2012, a dune repair project was constructed in the winter of 2014/15, authorized under Modification 008-JN of the original permit. Authorization for construction activity under the original permit has since expired. The Sector 3 shoreline has recently experienced significant erosion of the beach berm and dune, most notably from impacts of Hurricane Matthew in October 2016 and Hurricane Irma in September 2017. As directed from the most recent update of the County's Beach Preservation Plan (2015), the Sector 3 shoreline is to be managed with the "beach fill" strategy. As such, there is a need for renourishment of the Sector 3 shoreline to maintain protection to upland properties and infrastructure. This proposal outlines a scope of work to support the County in developing a beach renourishment project in Sector 3. The work is broken up into eight separate Tasks. Each cost was developed following the provisions of the Professional Services Agreement between Indian River County and APTIM, dated January 9, 2018, to provide engineering and biological support services for the Sector 3 (Wabasso Beach) Beach and Dune Renourishment Project (RFQ#2018006).

- Task 1: Preliminary Project Design and Feasibility Report
- Task 2: Pre-Application Meetings and Coordination
- Task 3: Supplemental Environmental Assessment
- Task 4: Permit Applications
- Task 5: Response to RAI
- Task 6: Construction Plans and Specifications
- Task 7: Geotechnical Evaluation and Compatibility Analysis
- Task 8: Multibeam Bathymetric Survey of South Borrow Area

Each Task is described on the following pages...

Task 1: Preliminary Project Design and Feasibility ReportTask 1: Scope of Work

As the basis for the initial design and permitting effort, APTIM will utilize the most recent beach survey data collected by the County's surveyor (winter 2018 survey). Shoreline and volume changes will be updated to evaluate trends and hot spots of the existing beach conditions. Fill templates previously utilized for the initial Sector 3 project and the dune repair project will be evaluated to investigate their appropriateness for the proposed renourishment project. Development of the alongshore distribution of the fill will consider previous project performance and recently observed shoreline and volume change trends and hot spots. The proposed design will have a specific focus on minimizing the potential for adverse impacts to the hardbottom resources nearshore of the project ("no-impact design"). A cross-shore equilibrium profile analysis of the recommended design will be conducted to evaluate the potential for hardbottom impacts.

Sand sources, both offshore and upland, will be preliminarily evaluated to be utilized for fill material. These sources will be evaluated based on beach compatibility and cost. The sand source evaluation will be included as an Appendix, and summarized in the main text.

The recommended design, required fill volume, and proposed sand sources will be used to estimate construction costs and timeline. Recommendations to move forward with the project, as designed, will be included in the report.

Task 1: Deliverable

APTIM will provide the County an electronic version of the draft Feasibility Report for the County's review and comments. Once finalized, APTIM will provide the County one hardcopy and one electronic version of the final feasibility report. The final version will be included as an attachment in the State and Federal permit applications.

Task 1: Schedule

This task will begin upon approval from the County to proceed with this work order. It is anticipated that 75 days will be required to complete the analysis and compose a feasibility report documenting the findings. At such time, a draft report will be provided to the County for its review and comments. Once the comments are returned to APTIM, the final report addressing the comments will be submitted to the County within 15 days.

Task 1: Cost

The lump sum cost for this task is \$38,979.00.

Task 2: Pre-Application Meetings and CoordinationTask 2: Scope of Work

We will request, prepare for, and lead two separate pre-application meetings with regulatory staff of 1) the Florida Department of Environmental Protection (FDEP) and 2) US Army Corps of Engineers (USACE) and Federal

commenting agencies (USFWS, NOAA-NMFS). This meeting will be conducted via teleconference. In general, the purpose of the meetings will be to describe the proposed project and determine the agencies' requirements for the pending permit application. Available information will be presented to the agencies to determine the sufficiency of the information for permit file development.

We will arrange, prepare for, and lead a public outreach meeting with County staff and project stakeholders to describe the general scope of the Sector 3 project and answer questions. The County will assist with identifying a local meeting venue and notifying project stakeholders.

Task 2: Deliverable

APTIM will request, prepare for, and lead two separate pre-application meetings. Following the meeting, APTIM will compose minutes documenting the discussions and distribute the minutes to the County and the permitting agencies.

APTIM will arrange, prepare for, and lead a public outreach meeting with County staff and project stakeholders. Following the meeting, APTIM will compose minutes documenting the discussions and distribute the minutes to the County and stakeholders.

Task 2: Schedule

The pre-application meetings will be held upon completion of the draft version of the Feasibility Report. APTIM will provide a draft of the meeting minutes to all participants within 7 days of each meeting.

The public outreach meeting will be held upon completion of the final version of the Feasibility Report. APTIM will provide a draft of the meeting minutes to all participants within 7 days of the meeting.

Task 2: Cost

The lump sum cost for this task is \$15,650.00.

Task 3: Supplemental Environmental Assessment

Task 3: Scope of Work

The National Environmental Policy Act (NEPA) requires federal agencies to consider environmental impacts during their decision-making process for major federal actions. An Environmental Assessment (EA) was prepared for the initial Sector 3 project (Dial Cordy 7 Coastal Tech, 2009). NEPA regulations encourage a tiered approach to avoid repetition of issues and to focus on the actual issues apt for decision at each level of environmental review. Therefore, APTIM will tier off the existing EA to include any updates to the project design, updated physical conditions of the project area, natural resources present, wildlife survey data, ESA listed species that utilize the project area, sediment characteristics of offshore and upland sand sources, and pertinent data collected since the completion of the original EA. Red Knots will be included, as they were not yet a listed species at the time of the original EA development. The EA will include a description of the proposed action and alternatives, affected

environments, and environmental consequences. If necessary, the EA will also consider and evaluate measures to mitigate for potential impacts to natural resources.

Task 3: Deliverable

APTIM will provide the County an electronic version of the draft Supplemental EA for the County's review and comments. Once finalized, APTIM will provide the County with an electronic version of the final Supplemental EA. The final version will be submitted as part of the State and Federal permit applications.

Task 3: Schedule

It is anticipated that 75 days will be required to complete the analysis and compose the Supplemental EA. At such time, a draft report will be provided to the County for its review and comments. Once the comments are returned to APTIM, the final report addressing the comments will be submitted to the County within 15 days.

Task 3: Cost

The lump sum cost for this task is \$19,337.00.

Task 4: Permit Applications

Task 4: Scope of Work

APTIM will act as the agent for the County throughout the permit application process for the proposed project. In general, we will represent the County before regulatory agency staff with the goal of obtaining permits for the project. This may include compiling, clarifying, and providing information as requested, as well as negotiating permit conditions that are acceptable to the regulatory agencies and the County.

To satisfy State permitting, we will develop and submit a Joint Coastal Permit (JCP) application to the State permitting agency (FDEP). To satisfy Federal permitting, we will develop and submit an ENG Form 4345 to the Federal permitting agency (USACE) and Federal commenting agencies (USFWS, NOAA-NMFS). We will fill out the application forms and submit it to the County for original signature. We will provide responses to all of the questions included in the permit application, except as noted below, where we will coordinate the response with the County.

We will develop signed and sealed permit sketches for the beach fill based on the design fill template and the most recent physical conditions. To support the permit application, we will incorporate topographic and bathymetric surveys based on the most recent physical monitoring being performed independently by the County's contracted surveyor. We will incorporate the most recent aerial photography, as well as the most recent landward edge of hardbottom mapped along the project area. Collection of aerial photography and/or delineation of aerials to map the hardbottom edge are not included in this scope of work. Collection of aerial photography took place in July 2017, and is planned to take place in 2018 as part of the annual physical monitoring of the previous Sector 3 project.

We will develop a draft construction schedule for the County's review.

We will develop Biological, Physical, and Turbidity Monitoring Plans as necessary.

We will compile and submit required information related to proposed upland and offshore sand sources for the project. We will develop a Sediment QA/QC plan for upland and offshore sand sources as necessary.

We will work with FDEP to help develop the requirement for sufficient information to consider an upland sand mine as a potential source for the project. We will also work with FDEP to help develop minimum geotechnical standards to identify acceptable material from the upland sources. We will coordinate directly with FDEP and the upland sand mines as needed.

We will work with FDEP regarding utilizing previous data and analysis of the offshore borrow areas of the County to be acceptable in assisting with the design and permitting of an offshore borrow area for this project. We will work with FDEP to help develop what additional data or analysis, if any, may be required to move forward with an offshore borrow area as a sand source for this project. If additional field work is required by FDEP for development of an offshore borrow area, then the associated field work, analysis, and coordination will be conducted under a separate work order.

We will coordinate with the County and Ecological Associates to incorporate sea turtle nesting data and any wildlife surveys conducted on site.

We will coordinate with FDEP regarding artificial reef mitigation planning. We will work to resolve possible mitigation requirements for the previous Sector 3 project. We will work with FDEP to develop an acceptable Mitigation Plan for the upcoming project, which may include a Contingency Mitigation Plan similar to the previous project.

We will coordinate with USFWS regarding this project being covered by the Statewide Programmatic Biological Opinion (SPBO). Separate consultation on piping plovers and red knots may be required. It is anticipated that consultation with National Marine Fisheries Service (NMFS) will be required in order to determine appropriate reasonable and prudent measures, terms and conditions and conservation measures for sea turtles, smalltooth sawfish, loggerhead critical habitat and listed coral species.

We will coordinate with the County regarding the sovereign submerged lands portion of the application (questions 10 through 12). The County will be responsible for responding to this section, including demonstrating that the applicant has sufficient control and interest in the riparian upland property, developing a list of names and addresses of owners of all riparian property within 500 feet, and a legal property description and acreage of any sovereign submerged land that would be encompassed by the requested lease or easement.

We will follow guidance provided by the FDEP and USACE with respect to the filing convention and submittal requirements. We will coordinate with the FDEP and USACE ahead of submittal when and where possible to avoid Requests for Additional Information (RAI). We will follow-up with the FDEP and USACE to ensure receipt and distribution of the applications.

We will coordinate with the agencies and the County regarding posting the public notice with the local newspaper(s) and will address the agencies' publication requirements.

Task 4: Deliverable

APTIM will provide the County an electronic version of the draft applications for the County's review and comments. Once finalized, APTIM will submit the applications and associated attachments electronically to the FDEP and USACE FTP websites. We will also submit an electronic copy to the County for their records.

The coordination efforts as part of this Task will likely be informal and conducted via phone calls and emails. The County will be notified and/or copied on emails regarding pertinent correspondence for this project.

Task 4: Schedule

It is estimated that 120 days will be required to complete the permit application and develop the necessary documentation once the Feasibility Report is finalized (Task 1) and the pre-application meetings are held (Task 2).

Task 4: Cost

The lump sum cost for this task is \$61,926.00.

Task 5: Response to RAI

Task 5: Scope of Work

The FDEP has 90 days to review the application and either issue a Notice of Intent to issue the permit or issue a Request for Additional Information (RAI). FDEP RAI's may also include comments from the Florida Fish and Wildlife Conservation Commission, other State agencies and the general public. The USACE does not have a timeline requiring their response but may also submit a request for additional information. USACE RAI's may also include questions from USFWS, NOAA-NMFS, other Federal agencies and the general public.

We will attempt to consolidate the agencies RAI's into a single response. We will coordinate with the County on the extent of the response and what the implication may be to the permitting process and construction. We will draft a response and submit this to the County for review prior to submittal to the agencies. It is expected that one teleconference meeting with FDEP and separately with USACE will be required.

Task 5: Deliverable

APTIM will provide the County an electronic version of the draft RAI's response for the County's review and comments. Once finalized, we will submit the response electronically to the regulatory agencies, with the County copied.

If necessary, APTIM will prepare for, attend and lead a meeting regarding the RAI response with FDEP and separately with USACE. APTIM will provide a draft of the meeting minutes to all participants.

Task 5: Schedule

The schedule for the response to the RAI's and for the meeting is dependent on the extent of the questions. We will attempt to respond to the questions within 60 days of receipt of the RAI's. We will inform the County if we are unable to meet this schedule due to the extent of response required or the availability of meeting participants.

Task 5: Cost

The lump sum cost for this task is \$33,512.00. We will coordinate with the County upon receipt of the RAI's and determine whether the cost included herein is representative of the extent of work required to develop the response.

Task 6: Construction Plans and Specifications

Task 6: Scope of Work

APTIM will develop construction plans and technical specifications that will provide the necessary details to the Contractor to construct the project, establish payment criteria, and adhere to the permit conditions. It is assumed that the County will provide front-end documents, including general conditions, and provide the overall format of the contract documents such that the technical specifications can be incorporated without duplication or conflict in terms and conditions.

Task 6: Deliverable

APTIM will provide the County an electronic version of the draft plans and specifications for the County's review and comments. Once finalized, we will submit one hardcopy of the construction plans (11"X17") and technical specifications (8.5"x11") to the County. We will also submit an electronic copy of the final version of the construction plans and technical specifications to the County.

Task 6: Schedule

The draft deliverable for the work will be submitted within 30 days of obtainments of permits or upon request by the County to begin. Once the County's comments are returned to APTIM, the finalized documents addressing the comments will be submitted within 14 days.

Task 6: Cost

The lump sum cost for this task is \$26,943.00.

Continued on next page...

Task 7: Geotechnical Evaluation and Compatibility Analysis

Task 7: Scope of Work

APTIM will develop a study to investigate potential fill sources to determine their compatibility with the native sand of Sector 3. Sand sources, both offshore and upland, will be preliminarily evaluated to be utilized for fill material. Sediment characteristics that will be analyzed include grain size distribution, carbonate content, and color.

Native sand of Sector 3 will be represented by geotechnical data obtained from previous studies in the County. It is assumed that no additional sampling will be required; thus, this proposal does not include native beach sampling as part of the scope. A composite grain size curve of the Sector 3 native sand will be developed to compare to potential fill sources.

Offshore sand sources will be preliminarily designed and evaluated by utilizing existing data from previous offshore sand source investigations (ATM, 2001), including core logs and granulometric data. The offshore evaluation will focus on the South Borrow Area, as it has been previously permitted and successfully used in the County. If additional field work of the offshore borrow area is required by FDEP, then the associated field work, analysis, design, and coordination will be conducted under a separate work order. Offshore areas will be evaluated in terms of available sand, proximity to the Sector 3 shoreline, and compatibility with the Sector 3 native beach sand in terms of grain size distribution, carbonate content, and color. If sufficient data exists, composite grain size curves and statistics will be developed to represent offshore borrow areas. These curves and composite statistics will be used to evaluate the compatibility with the native sand of Sector 3.

Evaluation of upland sand sources will include those previously utilized for construction on the County's beaches, have geotechnical data of recent representative samples of the proposed fill material, actively produce sand (or can easily reestablish producing sand), have sufficient quantities available, have sufficient stockpiling area, provide operational information, and are compatible with the Sector 3 native beach sand in terms of grain size distribution, carbonate content, and color. If sufficient data exists, composite grain size curves will be developed to represent potential upland sources. These curves and composite statistics will be used to evaluate the compatibility with the native sand of Sector 3.

Recommendations will be provided to move forward with upland and/or offshore sand sources as fill material for the Sector 3 project. If required, steps will be identified to further investigate possible upland or offshore sources.

Task 7: Deliverable

A summary of the work described above will be included as an Appendix in the Feasibility Report (Task 1), unless the offshore bathymetric survey collection (Task 8) dictates this to be submitted later under separate cover.

Task 7: Schedule

APTIM will provide the deliverable with the Feasibility Report (Task 1).

Task 7: Cost

The lump sum cost for this task is \$22,752.00.

Task 8: Multibeam Bathymetric Survey of South Borrow Area

Task 8: Scope of Work

A multibeam bathymetry survey will be collected for Indian River County's South Borrow Area – Sub Area 1, 2, and 3. Approximately 35 linear miles of data will be collected to achieve a detailed bathymetric surface to assist with volumetric calculations to determine the amount for resources remaining within the borrow area. Additional data will be collected to account for holidays within shallower portions of the Borrow Area. All work will be conducted under the direct supervision of a Florida registered Professional Surveyor and Mapper as well as a Certified Hydrographer. The survey and all deliverables will adhere to Chapter 472 of the Florida Statutes (FS) as well as the Standards of Practice set forth in 5J-17 of the Florida Administrative Code (FAC)

Prior to the start of the survey, reconnaissance of published National Geodetic Survey (NGS) monuments will be conducted to confirm that the survey control is accurate and undisturbed. The survey will be controlled using 2nd order monuments or greater in order to achieve required accuracy. Horizontal and vertical positioning checks will be conducted at the beginning and end of each hydrographic survey day using 2nd order monuments located in the project area. All data will be collected in feet relative to the North American Datum of 1983(2011) and the North American Vertical Datum of 1988 (Geoid12a)

The survey will be collected onboard APTIM's 24' survey vessel using a Teledyne Reson 7125 SV2 Multibeam Echosounder. Vessel navigation, horizontal positioning, and water level corrections will be provided by RTK GNSS relative to NGS published monuments located during the reconnaissance survey. An Applanix POS MV WaveMaster will be used to correct for vessel attitude (heave, pitch, and roll) and heading. The Applanix POS MV works by combining GNSS angular rate and acceleration data from an inertial measurement unit (IMU) and heading from GNSS Azimuth Measurement System (GAMS) to produce a precise inertial position solution. All altitude and position data will be logged for post processing using Applanix POSpac Mobile Mapping Suite (if necessary). GAMS calibration and a multibeam patch test must be performed prior to the start of multibeam data collection to account for system misalignments relative to the vessel's reference frame. Sounding data will be acquired using Hypack 2017a Hysweep software and processed with Hypack's MBMAX64 utility.

Task 8: Deliverable

A certified hydrographic survey map, signed and sealed by a Florida Registered Professional Surveyor and Mapper, will be provided. Survey maps will include a full color digital elevation model (DEM) created from reduced soundings at 1m resolution or greater. Full resolution ASCII XYZ files of all soundings collected will be provided as well as gridded (reduced) soundings used to create the DEM.

Task 8: Schedule

Field work is anticipated to take up to 7 days with deliverables provided within 30 days of completion of field work.

Task 8: Cost

The lump sum cost for this task is \$39,390.00.

Summary of Cost

\$ 38,979.00	Task 1: Preliminary Project Design and Feasibility Report
\$ 15,650.00	Task 2: Pre-Application Meetings and Coordination
\$ 19,337.00	Task 3: Supplemental Environmental Assessment
\$ 61,926.00	Task 4: Permit Applications
\$ 33,512.00	Task 5: Response to RAI
\$ 26,943.00	Task 6: Construction Plans and Specifications
\$ 22,752.00	Task 7: Geotechnical Evaluation and Compatibility Analysis
\$ 39,390.00	Task 8: Multibeam Bathymetric Survey of South Borrow Area
\$258,489.00	Total lump sum cost to perform the proposed work for Sector 3 – 2018006 – Work Order #2

APTIM will proceed with developing the project design and permitting of the project upon receipt of a work order from Indian River County. It is noted that many aspects of the project permitting are dependent upon agency review and outside the control of APTIM and the County. As such, the schedule described herein is provided as a guideline. APTIM will strive to maintain the schedule and costs as reasonably as can be expected. We will coordinate with the County if deviations from the schedule or costs arise due to unforeseen issues or circumstances.

Thank you for the opportunity to serve Indian River County. We look forward to continuing to provide successful professional services to the County. Please do not hesitate to call if you have any questions.

Sincerely,



William Reilly, P.E.
Senior Coastal Engineer
Aptim Environmental & Infrastructure, Inc.



*Approved for use via email dated 3/8/2018
Approved revisions via phone 3/14/2018*

Authorized Corporate Signature

Thomas P. Pierro, P.E., D.CE

Printed Name

Director of Operations

Title

Enclosure

cc: Thomas Pierro, P.E., D.CE, APTIM
Stacy Buck, APTIM
Debbie Neese, APTIM

EXHIBIT 2



SPM REVISION: 2018 - REV 18.1
PROJECT NUMBER: 631235714

Sector 3 - 2018006 - Work Order #2 Design and Permitting Indian River County, FL

Summary of Cost by Task

Task Number	Task Name	Labor	Sub-contractors	Equipment	Materials	Mobilization/Travel	Totals
Task 1	Preliminary Project Design and Feasibility Report	\$ 38,979.00	\$ -	\$ -	\$ -	\$ -	\$ 38,979.00
Task 2	Pre-Application Meetings and Coordination	\$ 15,650.00	\$ -	\$ -	\$ -	\$ -	\$ 15,650.00
Task 3	Supplemental Environmental Assessment	\$ 19,337.00	\$ -	\$ -	\$ -	\$ -	\$ 19,337.00
Task 4	Permit Applications	\$ 61,926.00	\$ -	\$ -	\$ -	\$ -	\$ 61,926.00
Task 5	Response to RAI	\$ 33,512.00	\$ -	\$ -	\$ -	\$ -	\$ 33,512.00
Task 6	Construction Plans and Specifications	\$ 26,943.00	\$ -	\$ -	\$ -	\$ -	\$ 26,943.00
Task 7	Geotechnical Evaluation and Compatibility Analysis	\$ 22,752.00	\$ -	\$ -	\$ -	\$ -	\$ 22,752.00
Task 8	Multibeam Bathymetric Survey of South Borrow Area	\$ 27,052.00	\$ -	\$ 9,842.00	\$ -	\$ 2,496.00	\$ 39,390.00
Totals =		\$ 246,151.00	\$ -	\$ 9,842.00	\$ -	\$ 2,496.00	\$ 258,489.00

Submitted By: William Reilly
Submitted To: Indian River County, FL
Submission Date: 3/14/2018