CITY OF DELRAY BEACH

CONSULTING SERVICE AUTHORIZATION

DATE: March 4, 2021

SERVICE AUTHORIZATION NO._____FOR CONSULTING SERVICES

CITY P.O. NO._____CITY EXPENSE CODE:_____

CITY PROJECT NO. _____CONSULTANTS PROJECT NO. _____

TITLE: 2021 Coastal Engineering Services

This Service Authorization, when executed, shall be incorporated in and shall become an integral part of the Contract.

TITLE: Coastal Engineering Consulting Services Contract 2017-048 (dated August 31, 2017 and as Amended)

I. PROJECT DESCRIPTION

The City of Delray Beach (City) has one of the most successful beach maintenance and preservation programs in the United States. Prior to 1973, beach erosion was so severe that portions of State Road A1A had collapsed into the Atlantic Ocean. In 1973, the City embarked on a program, supplemented by Federal, State and County funding, to nourish and maintain the eroded beach. Since 1973, the beach has been successfully maintained by the City. Currently, the City is continuing post-construction monitoring of the 2020 Flood Control and Coastal Emergency (FCCE) project, and entering the pre-construction phase for the 6th Periodic Renourishment event.

II. SCOPE OF SERVICES

Task 1 – 2021 Physical Monitoring

The 2021 physical monitoring surveys will be collected throughout the City's monitoring area to satisfy post-construction monitoring of the 2020 FCCE project. This survey will also be utilized to update project volumes for the 6th Periodic Beach Renourishment project and may serve as the permit required pre-construction surveys dependent upon construction timing.

1A. Beach Nourishment Program Support

Project administration includes assistance with State and Federal agency coordination, quarterly reporting, and the annual Local Government Funding Request. The APTIM Environmental & Infrastructure, LLC and its subconsultant, Coastal Protection Engineering (the APTIM Team), will also attend City meetings as required, and other associated assistance specific to the renourishment program.

1B. Beach Profile Surveys (R-171 to R-192)

In accordance with the Bureau of Beaches and Coastal Systems (BBCS) Monitoring Standards for Beach Erosion Control Projects, topographic (onshore) and bathymetric (offshore) surveys of the beach and offshore in Delray Beach will be conducted during the summer of 2021. The monitoring data will be used to assess, with quantitative measurements, the performance of the beach renourishment projects. The monitoring data will provide the City, the Florida Department of Environmental

Protection (FDEP), and the United States Army Corps of Engineers (USACE) information necessary to continue planning for the next renourishment project and evaluate beach performance.

The 2021 monitoring event will consist of topographic and bathymetric surveys of the beach to include both the full permitted beach renourishment areas, and to approximately one mile north and south of the combined project limits as required by the physical monitoring plan. The monitoring surveys will include twenty-two (22) FDEP profile lines from R-171 to R-192. All profile surveys will extend offshore a minimum of 3,000 ft. or to the -30 ft. (NAVD) contour. All work activities and deliverables shall be conducted in accordance with the March 2014 BBCS Monitoring Standards for Beach Erosion Control Projects, Sections 01000 and 01100. A survey report with signed and sealed survey drawings will be provided as deliverable for this task.

1C. Engineering Evaluation & Monitoring Report

The APTIM Team will develop and submit the 2021 physical monitoring engineering report to the FDEP within 90 days following completion of the survey. The engineering report will address the 2021 physical monitoring results, will summarize and discuss the project performance since completion of the beach renourishment projects and will be a useful tool for updating the expected volume needed for the 6th Periodic Renourishment.

Task 2 –6th Periodic Beach Renourishment Project – Pre-Construction

2A. Pre-Construction Resource Investigation for Submerged Aquatic Vegetation (SAV) in the Mixing Zone of Borrow Area D-IV

The FDEP Permit (0303553-010-JN) requires a survey of the 150-m mixing zone to survey for submerged aquatic vegetation (SAV) during the growing season (June 1 – September 30) as per the Delray Beach Borrow Area Submerged Aquatic Vegetation Monitoring Plan (SMP). Qualified marine biologists will use a towed video camera integrated with a Differential Global Positioning System (DGPS) to conduct the investigation within the 150-meter mixing zone. The survey lines will be spaced 5 meters (16.4 ft) apart and run through the extent of the project borrow area's mixing zone. A topside marine biologist will watch the video in real time to ensure the camera is positioned at the appropriate angle and video is of sufficient quality to identify resources. Biologists will record the coordinates (take a fix) of any benthic resources that are observed in order to come back for diver verification of the potential resources. If no benthic resources are documented in the mixing zone, the monitoring described in Task 2b is not required.

Deliverable: The deliverable will include an observation report of the pre-construction resource investigation of the mixing zone that details the presence or absence of any SAV resources. The observation report will detail the species observed and provide a qualitative description. It will also include a georeferenced map of the surveyed area with the location of SAV resources identified.

2B. Optional Allowance if Required Task: Pre-Construction Monitoring of SAV in the Mixing Zone of Borrow Area D-IV

If Task 2a reveals the presence of SAV in the mixing zone, pre-construction monitoring will be conducted during the growing season (June 1 – September 30). The extent of SAV resources will be delineated, the site conditions will be visually assessed qualitatively, and resources will be quantitatively evaluated.

Delineation. The edge of each SAV patch shall be recorded as accurately as possible using a sub-meter accurate DGPS unit to determine the total acreage of each patch. If the SAV is extensive and continuous (extends to the edge of the 150-meter mixing zone), then only the SAV edge that is proximate to the borrow areas will be delineated. The pre-construction delineation shall be used as a baseline for comparison to post-construction conditions. The post-construction monitoring is not proposed herein but will be proposed under a separate post-construction service authorization, if needed.

Qualitative Assessment. An *in situ* visual assessment shall be completed to document the condition of each mapped SAV area. The community structure of submerged aquatic vegetation will be visually assessed, and approximate density of SAV will be recorded, and functional indicators will be noted. Any evidence of anthropogenic impacts, physical damage, or sedimentation will also be noted.

Quantitative Assessment. Benthic data will be collected using a quadrat-based assessment to determine density and abundance of SAV resources. The FDEP SMP requires at least 5% of each SAV area to be surveyed using quadrats.

Although the level of effort of Task 2b is unknown until Task 2a is completed, we have proposed a allowance for up to 5 days of fieldwork to conduct the pre-construction SAV monitoring. This is based on the information that seagrass was observed in February 2020 near Borrow Area I; however, no seagrass was documented in the baseline investigation of Borrow Areas D-IV and D-V in summer 2020. We, therefore, propose a daily survey rate of $6,711.00 to be charged for each day of fieldwork up to 5 days. This includes the labor and equipment required to conduct the monitoring per day. It does not include coordination, data reduction, and reporting, as those hours are not directly correlated to field hours/costs. The full estimated cost for up to 5 days of fieldwork and in-office work is provided in Table 1. If Task 2a reveals more than 5 days of fieldwork are needed to conduct the pre-construction monitoring, APTIM will request an amendment to the contract for the additional funds needed.

Deliverable: The deliverable for Task 2b includes a pre-construction monitoring report and submittal of raw data to the City and FDEP. The pre-construction monitoring report will include a georeferenced map with SAV boundaries, representative photographs, and a description of the site conditions. Raw data (scanned field datasheets and Excel spreadsheets), ArcGIS files, and representative photographs will also be submitted to FDEP's Joint Coastal Permit (JCP) Compliance officer. All deliverables will be submitted to FDEP within 45 days of completion of the survey.

2C. Pre-Construction Borrow Area Survey

Bathymetric surveys of Borrow Area D-IV will be conducted in Fall 2021 to satisfy pre-construction requirements of the Physical Monitoring Plan. Survey grid lines across the borrow area will be spaced to provide sufficient detail for accurate volumetric calculations but spaced not more than a maximum of 500 feet apart and will extend a minimum of 500 feet beyond the boundaries of the borrow area. Work activities and deliverables will be consistent with the BBCS Monitoring Standards for Beach Erosion Control Projects, Section 01200. A survey report with signed and sealed survey drawings will be provided as deliverable for this task

III. COMPENSATION

APTIM proposes to provide the outlined services herein on a Lump Sum basis. The total proposed Lump Sum cost is $181,560.00 as summarized in Table 1 below and detailed in Attachment 1. Should the project require additional services not represented in this proposal, APTIM will request a mutually agreeable service authorization from the City of Delray Beach.

Table 1. Breakdown of costs associated for each task.

	APTIM Cost	Sub-Consultant Cost	Total
1. 2021 Physical Monitoring	**$43,361.90**	**$23,950.00**	**$69,706.90**
1a. Beach Nourishment Program Support	$8,956.00	$10,752.00	
1b. Beach Profile Surveys R-171 to R-192	$19,603.90	$1,216.00	
1c. Engineering Evaluation & Monitoring Report	$14,802.00	$11,982.00	
2. 6th Beach Renourishment Project - Pre-Construction	**$94,659.00**	**$15,631.00**	**$111,853.10**
2a. Pre-Construction SAV Investigation of the Mixing Zone	$49,718.00	$6,174.00	
2b. Pre-Construction SAV Monitoring (Optional Allowance If Required)	$32,729.00	$8,849.00	
2c. Pre-Construction Borrow Area Survey	$12,212.00	$608.00	
Total			**$181,560.00**

*Includes 10% sub-consultant markup

This Service Authorization is approved contingent upon the City's acceptance of and satisfaction of the completion of the services rendered in the previous phase whereas encompassed by the previous Service Authorization. If the City in its sole discretion is unsatisfied with the services provided in the previous phase or Service Authorization, the City may terminate the contract without incurring any further liability. The Consultant shall commence work upon City Commission approval and this Service Authorization to be included as part of the contract without any further notice to proceed.

Approved by:

CITY OF DELRAY BEACH:

Date _____

_____
Shelly Petrolia
Mayor

Attest:

_____
Lynn Gelin, City Attorney

_____
Katerri Johnson, City Clerk

CONSULTANT: Aptim Environmental & Infrastructure, LLC

Date March 4, 2021

_____
NAME (Signature)

Beau C. Suthard, PG
NAME (Printed)

_____
Witness (Signature)

Doris D Otero, PhD
Witness (Printed)

STATE OF FLORIDA
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me this 4 day of March, 2020,21 was acknowledged by Beau Suthard on behalf of the Corporation Aptim Environmental & Infrastructure, LLC and said person executed the same free and voluntarily for the purpose there-in expressed. This person is personally known to me.

_____
Notary Public
State of Florida

My Commission Expires

Notary Public State of Florida
Tracie H McCauley
My Commission GG 240662
Expires 08/19/2022

Attachment 1

Fee Proposal

CITY OF DELRAY BEACH, FL

FEE PROPOSAL FOR

2021 COASTAL SERVICES

BEACH NOURISHMENT PROGRAM

March 5, 2021

PREPARED BY:

APTIM ENVIRONMENTAL & INFRASTRUCTURE, LLC

CITY OF DELRAY BEACH, FL

FEE PROPOSAL FOR

2021 COASTAL SERVICES

BEACH NOURISHMENT PROGRAM

PROJECT PROPOSAL SUMMARY

PREPARED BY: APTIM ENVIRONMENTAL & INFRASTRUCTURE, INC.

TASK	DESCRIPTION	LABOR COSTS	EQUIPMENT COSTS	TASK COST
1	2021 Physical Monitoring	$65,487.00	$4,219.90	$69,706.90
2	6th Beach Renourishment Project - Pre-Construction	$84,556.10	$27,297.00	$111,853.10
	SUBTOTALS	$150,043.10	$31,516.90	
				$181,560.00

CITY OF DELRAY BEACH
2021 COASTAL SERVICES
FEE PROPOSAL FOR

BEACH NOURISHMENT PROGRAM

LABOR, EQUIPMENT & DIRECT COST RATES

PREPARED BY: APTIM ENVIRONMENTAL & INFRASTRUCTURE, INC.

LABOR RATES (HOURLY)	
Principal Engineer	$230
Expert Witness (Testimony)	$230
Senior Project Manager	$215
Senior Coastal Engineer	$185
Program Manager	$165
Coastal Engineer III	$150
Coastal Engineer II	$125
Coastal Engineer I	$110
Coastal Modeler II	$130
Coastal Modeler I	$110
Professional Surveyor & Mapper	$130
Hydrographer	$125
Surveyor	$95
Survey Technician	$80
Senior Marine Biologist	$140
Marine Biologist II	$95
Marine Biologist I	$72
Professional Geologist	$130
Geologist III	$130
Geologist II	$95
Geologist I	$80
Senior CAD Operator	$150
CAD Operator	$110
GIS Operator	$110
Boat Captain	$80
Bookkeeper	$80
Clerical	$72
Technician	$57
EQUIPMENT RATES (DAILY)	
Survey Boat 24'	$790
Truck (Road Use per mile)	$0.565
Trimble RTK GPS	$495
GPS Integrated Underwater Video Camera	$435
SCUBA Tanks (Nitrox)	$19
Dive Equipment and Insurance per diver per day in addition to normal hourly rates for personnel	$75
Heave, Pitch & Roll Compensator	$215
Speed of Sound Velocity Meter	$63
Hypack/DredgePack Navigation System	$260
Odom Hydrotrack Sounder	$165
X-Star Chirp 512i Seismic Profiling System	$1,150
Seismic Profiler Thermal Printer	$130
Edgetech 4200 FS Sidescan Sonar System	$695
Geometric G-881 Magnetometer	$215
Enclosed 18' Trailer	$78
Nikon Level/Tripod/Rod	$65
Digital Camera	$10
All Terrain Vehicle	$105
Sonar Wizard Map Seismic Data Processing Package	$155
Sieve Analysis	$70
Carbonate Analysis	$60
SEAS V700 Vibracore System	$3,750
Jet Probe with Pump	$35
Generator	$45
Ponar Grab Sampler	$25
DIRECT COSTS - Actual Cost plus 10%	
Actual Cost plus 10%	1.10

CITY OF DELRAY BEACH, FL

FEE PROPOSAL FOR

2021 COASTAL SERVICES
BEACH NOURISHMENT PROGRAM

PREPARED BY: APTIM ENVIRONMENTAL & INFRASTRUCTURE, INC.

	Total Labor & Sub Cost Per Sub Task	Sub-Consultant	Coastal Engineer II	Professional Surveyor and Mapper	Survey Technician	Surveyor	Senior CAD Operator	CAD Operator	GIS Operator	Marine Biologist II	Boat Captain	Clerical
			(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)	(Hours)
1. 2021 Physical Monitoring												
1a. Beach Nourishment Program Support	$20,783.20	$10,752.00	40				2	16	12			8
1b. Beach Profile Surveys R-171 to R-192	$16,721.60	$1,216.00	2	12	120		1		16		24	2
1c. Engineering Evaluation & Monitoring Report	$27,982.20	$11,982.00	102				2	12				6
2. 6th Beach Renourishment Project - Pre-Construction												
2a. Pre-Construction SAV Investigation of the Mixing Zone	$40,480.40	$6,174.00	1						8	244	117	2
2b. Pre-Construction SAV Monitoring (Optional Allowance If Required)	$33,182.90	$8,849.00	1						8	180	65	2
2c. Pre-Construction Borrow Area Survey	$10,892.80	$608.00	2	12	16	40	1		16		16	2
Total Hours =		$39,581.00	148	24	136	40	6	28	60	424	222	22
Rate =		1.10	$125	$130	$80	$95	$150	$110	$110	$95	$80	$72
Cost =		$43,539.10	$18,500	$3,120	$10,880	$3,800	$900	$3,080	$6,600	$40,280	$17,760	$1,584

TOTAL LABOR COSTS = $106,504.00
TOTAL EQUIPMENT COSTS = $31,516.90
TOTAL SUB COSTS = $43,539.10
TOTAL COSTS = $181,560.00

CITY OF DELRAY BEACH, FL
FEE PROPOSAL FOR

2021 COASTAL SERVICES
BEACH NOURISHMENT PROGRAM

PREPARED BY: APTIM ENVIRONMENTAL & INFRASTRUCTURE, INC.

		EQUIPMENT COSTS										
		Survey Boat 24'	Truck (Road Use per mile)	Trimble RTK GPS	Odom Hydrotrack Sounder	Heave, Pitch & Roll Compensator	All Terrain Vehicle	Speed of Sound Velocity Meter	Hypack/DredgePack Navigation System	SCUBA Tanks (Nitrox)	Dive Equipment	Digital Camera
	Task Equipment Cost	(Days)	(Miles)	(Days)	(Days)	(Days)	(Days)	(Days)	(Days)	(Days)	(Person/Day)	(Days)
1. 2021 Physical Monitoring												
1a. Beach Nourishment Program Support												
1b. Beach Profile Surveys R-171 to R-192	$4,219.90	2	60	2	2	2	2	2	2			
1c. Engineering Evaluation & Monitoring Report												
2. 6th Periodic Beach Renourishment Project - Pre-Construction												
2a. Pre-Construction SAV Investigation of the Mixing Zone	$16,029.00	9		9					9	36	18	9
2b. Pre-Construction SAV Monitoring (Optional Allowance If Required)	$9,280.00	5		5					5	20	15	5
2c. Pre-Construction Borrow Area Survey	$1,988.00	1		1	1	1		1	1			
	Total Hours =	17	60	17	3	3	2	3	17	56	33	14
	Rate =	$790	$0.565	$495	$165	$215	$105	$63	$260	$19	$75	$10
	Cost =	$13,430	$33.90	$8,415	$495	$645	$210	$189	$4,420	$1,064	$2,475	$140

TOTAL EQUIPMENT COSTS = $31,516.90

Attachment 2

Sub-Consultant Proposal

COASTAL PROTECTION ENGINEERING
5301 N. FEDERAL HWY, SUITE 335
BOCA RATON, FL 33487
561-565-5100

February 26, 2021

Revised March 1, 2021

Doris Otero
Project Manager
Aptim Environmental & Infrastructure, LLC
Submitted via email to Doris.Otero@aptim.com

Re: Proposal to Assist with Delray Beach 2021 Coastal Services

Dear Doris

This proposal is in response to Aptim Environmental & Infrastructure's (APTIM) request for Coastal Protection Engineering LLC (CPE) to assist APTIM with the Delray Beach 2021 Coastal Services work. We propose to provide professional services as Principal Engineer, Program Manager and Senior Marine Biologist as listed below by Task as well as assist with schedule management and client coordination throughout the project.

Task 1A: A CPE Program Manager will guide APTIM staff in preparing the annual Local Government Funding Request providing input on project timing and funding request needs and will assist in reviewing FDEP quarterly reports. CPE's Program Manager, Principal Engineer, and Senior Marine Biologist will assist in replying to miscellaneous client requests for program assistance specific to the renourishment program.

Task 1B: CPE Program Manager will coordinate with APTIM's survey department on strategic data collection timing related to other tasks within Delray Beach.

Task 1C: A CPE Professional Engineer will guide monitoring analyses, graphic development, and report writing conducted by APTIM coastal engineers and GIS/CAD operators. Once drafted, CPE's Program Manager and Principal Engineer will review the monitoring report for accuracy and provide input on evaluation of project performance for continued project planning.

Task 2A: A CPE Senior Marine Biologist will support the pre-construction investigation for submerged aquatic vegetation (SAV) within the mixing zone. This will include coordination of field activities, up to two days of fieldwork, data review, and reporting support.

Task 2B: A CPE Senior Marine Biologist will support the pre-construction biological monitoring for SAV within the mixing zone. This will include coordination of field activities, up to three days of fieldwork, and support with data analysis and reporting.

Task 2C: CPE Program Manager will coordinate with APTIM's survey department on strategic data collection timing related to other tasks within Delray Beach.

CPE proposes to provide these services for a lump sum amount of $39,581.00. A fee proposal including estimated hours to provide these services is attached. It is assumed that all surveying, GIS/CAD and production of deliverables will be performed by APTIM. All work will be performed in accordance with the existing Master Service Agreement between APTIM and CPE executed July 24, 2019. This cost is limited to a projection of hours and estimate of effort based on information known at this time. Should the project or client require additional services beyond these estimated hours, CPE and APTIM will discuss adjustments as deemed appropriate.

If you have any questions, please feel free to contact me directly at 631-896-9137.

Sincerely,

Tara Brenner, PG, PE
Senior Coastal Engineer
Coastal Protection Engineering LLC

Mobile: 631-896-9137
tbrenner@coastalprotectioneng.com

Quote No. 2021015

Submitted to:
APTIM Environmental & Infrastructure LLC
2481 NW Boca Raton Blvd, Boca Raton,
Florida, 33431

Client Contact:
Doris Otero

Project Name:

Provided by:
Coastal Protection Engineering LLC
5301 N. Federal Hwy, Suite #335
Boca Raton, FL, 33487

Project manager:
Tara Brenner
Phone: +16318969137
E-mail: tbrenner@coastalprotectioneng.com

Date: 03/01/2021

Product name & additional info	Quantity	Price	Sum
Task 1A Program Support			
Delray - Principal Engineer (TP)	8	215.00	1,720.00
Delray - Program Manager (TB)	56	152.00	8,512.00
Delray - Senior Marine Biologist (SB)	4	130.00	520.00
		Subheading subtotal:	**10,752.00**
Task 1B - 2021 Survey			
Delray - Program Manager (TB)	8	152.00	1,216.00
		Subheading subtotal:	**1,216.00**
Task 1C - 2021 Monitoring Report			
Delray - Principal Engineer (TP)	2	215.00	430.00
Delray - Program Manager (TB)	76	152.00	11,552.00
		Subheading subtotal:	**11,982.00**
Task 2A - Pre-Con SAV Investigation			
Delray - Program Manager (TB)	2	152.00	304.00
Delray - Senior Marine Biologist (SB)	44	130.00	5,720.00
Direct Costs	2	75.00	150.00
		Subheading subtotal:	**6,174.00**
Task 2B - Pre-Con SAV Monitoring			
allowance as required			
Delray - Program Manager (TB)	2	152.00	304.00
Delray - Senior Marine Biologist (SB)	64	130.00	8,320.00
Direct Costs	3	75.00	225.00
		Subheading subtotal:	**8,849.00**
Task 2C - Pre-Con BA Survey			
Delray - Program Manager (TB)	4	152.00	608.00
		Subheading subtotal:	**608.00**

Quote No. 2021015

Product name & additional info	Quantity	Price	Sum
		Subtotal:	**39,581.00**
		Tax:	0.00
		Total (USD):	**39,581.00**