



**COASTAL PROTECTION ENGINEERING**

5301 N. FEDERAL HWY, SUITE 335

BOCA RATON, FL 33487

561-565-5100

December 3, 2019

Duke Basha  
Assistant Purchasing Manager  
Town of Palm Beach  
Purchasing Office  
951 Okeechobee Road, Suite D  
West Palm Beach, FL 33401

Re: 2319 RFQ No. 2020-02 - Coastal Engineering Services

Dear Mr. Basha and Selection Committee:

Coastal Protection Engineering LLC (CPE) welcomes this opportunity to submit our enclosed qualifications for the subject Request for Qualifications (RFQ No. 2020-02) to provide professional Coastal Engineering Services to the Town of Palm Beach (Town). As a newly established coastal engineering firm comprised of industry leading professionals with strong credentials, CPE brings a renewed focus on providing local government clients with highly specialized consulting services in support of projects that restore, manage, and protect coastal resources and infrastructure. Our wide breadth of expertise and knowledge of your coastal program is further supported by the extensive depth of resources provided by Aptim Environmental & Infrastructure, LLC (APTIM) as our key subconsultant forming The CPE Team.

With APTIM as our exclusive subconsultant for this contract, The CPE Team draws upon more than a century of experience and the expertise of employees worldwide, bringing a wide range of services and financial stability. Our coastal engineering offices are located in Boca Raton, Florida and are staffed by professionals dedicated to serving coastal communities, including the Town. We are one of the few teams that can proudly demonstrate a local presence in Palm Beach County and direct experience with your program. Members of our team have surveyed your beaches, mapped your offshore areas, performed sand investigations along the coast, obtained permits for your shore protection projects, performed technical reviews of your coastal work performed by others, and designed your beach nourishment and coastal structure projects as longstanding coastal engineering professionals.

Key members of The CPE Team have worked with your staff on many projects over the last 15 years, which has provided us with direct experience and in-depth knowledge of the unique needs of your coastal program. Accordingly, we wish to thank you for the opportunity to have provided these services to the Town in the past and for allowing us to be a part of your coastal program development. We recognize that the Town's projects are unique, and we continue to be impressed with the expertise, dedication, and professionalism of the Town's staff. These qualities have driven us to work equally hard for the Town and our continued partnership in the management of your coast will result in many more successes to come.



The Town has made great strides in recent years by advancing the coastal protection program and implementing a dynamic strategy to execute the Comprehensive Coastal Management Plan (CCMP). The program has been adapted over decades to address the objectives of the Town Council and recommendations of the Shore Protection Board in an ever-changing regulatory climate. Throughout this process, the program has maintained its integrity through dedicated staff and well-defined projects, independent peer reviews, stakeholder input, and coordination with agencies and neighboring communities. Our understanding of this evolution will aid the Town in further advancing the program with a historic perspective and refinements for increased efficiency and sustainability into the future.

The steadfast approach of implementing the CCMP has been further strengthened by the Town's integral role in the development of the Beach Management Agreement (BMA), which has facilitated the permitting and construction of multiple beach nourishment projects within the Town's limits. CPE has a thorough understanding of the BMA, which is being utilized to obtain an Individual Project Authorization (IPA) for the Town-wide Groin Rehabilitation Project. The CPE Team also completed preparation of the Draft and Final Environmental Impact Statement (EIS) for the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project, paving the way for a permanent solution for the Reach 8 shoreline that is nearing final approval. Through experiences like these, our professionals have developed a strong working relationship with your staff by providing responsive services and delivering results the Town can rely on.

The CPE Team provides one of the most experienced, full-service workforces of coastal engineering professionals in the world with a specific focus on local government programs in the State of Florida. For decades, we have been providing Florida's coastal communities with a complete spectrum of coastal services including coastal engineering, environmental assessments, biological monitoring, environmental permitting, hydrographic and terrestrial surveying, numerical modeling, coastal geology, GIS, funding program assistance, bidding assistance, construction oversight, and post-project physical monitoring. Our enclosed response further details how we are fully qualified and have the experience, credentials, understanding, and availability to assist the Town in achieving the goals of the Scope of Work.

Our team is uniquely positioned to serve the Town by drawing upon the depth of knowledge offered by our professionals to review, assess, design, permit, and execute all components of a coastal engineering project. In addition to the Town of Palm Beach, our professional coastal staff has worked with several other southeast Florida clients including the City of Delray Beach, City of Boca Raton, Town of South Palm Beach, City of Deerfield Beach, Palm Beach County, Martin County, Broward County, Manatee County and Miami-Dade County on numerous major coastal projects. This vast experience also allows us to bring expertise gained from other projects back to the Town so that you are always on the forefront of coastal matters and are getting the best service the industry has to offer. This robust experience provides our staff with a comprehensive understanding of the processes and environment of the Florida coast and demonstrates our expertise in all aspects of coastal management, beach nourishment, coastal structures design and rehabilitation, and construction management.



Our comprehensive coastal staff is based in Palm Beach County and organized in the key disciplines required for coastal engineering, which is a distinct advantage we bring to our clients. Our multidisciplinary approach will facilitate project development and execution through a collaborative process with stakeholders, including the public, adjacent communities, funding partners, other Town consultants, and regulatory agencies. It may also help the Town develop solutions that achieve more cost-effective, defensible erosion control programs for storm protection in accordance with the CCMP.

Our experienced, multidisciplined technical staff is currently working with the Town of Palm Beach and has a great institutional knowledge of your coastal environment, which will be applied to future coastal projects for the betterment of the program and refinements over time. CPE commits to provide the Town access to all members of our team as needed, based on the task at hand and particular expertise required. The primary CPE professionals selected to work with the Town with the support of APTIM staff include:

- Thomas Pierro, PE, D.CE, is a registered Professional Engineer in the State of Florida with over 18 years of coastal engineering experience. Recognizing the needs and challenges facing the Town in the coming months and years, Mr. Pierro has committed to be the Senior Project Manager and Principal Engineer for this contract based on his proven success working with the Town in the past. In addition to solving many other complex coastal management issues around the State, Mr. Pierro has worked directly with the Town for well over a decade and brings a deep understanding of your program coupled with an established reputation with the Shore Protection Board and Town Council. He is a Board Certified Professional by the American Society of Civil Engineers (ASCE) as an ACOPNE Diplomate of Coastal Engineering and recipient of the distinguished FSBPA Engineering Award for outstanding contributions to coastal engineering in the State of Florida.
- Tara Brenner, PE, PG, has been selected as Project Manager to support Mr. Pierro in executing the Town's task orders. Ms. Brenner is a Professional Engineer and Professional Geologist with more than 12 years of experience in coastal engineering projects, including both federal and non-federal beach programs, truck haul projects, and complex studies. She not only brings a unique combination of credentials in engineering and geology, but excels in project management and public speaking, which will be an important asset to the Town.
- Stacy Buck, MS, is a Senior Marine Biologist that specializes in projects on the east coast of Florida and has been working on Town of Palm Beach projects since 2005, including biological monitoring for multiple beach projects and artificial reefs. She led preparation of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS published in 2016, which included analysis of the Reach 8 project. She also facilitated permitting for the Mid-Town groin constructed in 2018. Her proposed role in the contract will include assisting the Town with environmental permitting, regulatory coordination, NEPA compliance, and projects approved under the BMA.



- Lindino Benedet, Ph.D., MBA has nearly two decades of professional experience dedicated to technical/scientific activities and management of coastal sciences and engineering efforts. Dr. Benedet was the first coastal scientist to utilize the advanced numerical model Delft3D to support the evaluation and design of coastal projects in the State of Florida and has participated in dozens of numerical modeling studies globally with his unique qualifications. Dr. Benedet holds a Doctorate of Philosophy in one of the top coastal university programs in the world, the TU Delft University in the Netherlands, and has published many scientific papers in international journals and conferences. He will provide modeling support to the Town under this contract, as needed.
- Quin Robertson, Ph.D., GISP focuses on using conventional survey and remote sensing data to quantify change in coastal morphology and develop products using geographic information systems (GIS) for coastal analyses. Dr. Robertson specializes in working with multiple topographic and bathymetric data sets to create seamless digital elevation models (DEMs) that are critical for accurate geomorphic change analysis and serve as the basis for scientific conclusions. He will lead tasks involving surveying, mapping, CAD and GIS services for Town projects.

These CPE staff members are all leaders in coastal consulting within Florida and stand out as key professionals in the industry. Together with the staff of APTIM and its legacy companies, The CPE Team has planned, managed, engineered, and administered the construction of the most beach renourishment projects in the United States. Our team also has extensive experience with climate change adaptation, coastal resiliency, coastal structures, inlet management, habitat restoration, offshore sand searches, numerical modeling, flood protection, coastal vulnerability assessment, and coastal sustainability planning. Additional specific advantages of The CPE Team include:

- Maintains full-time local offices in Palm Beach County and remains committed to bringing the Town of Palm Beach the high level of service and responsiveness you have come to expect.
- Successfully designed and permitted over 100 beach nourishment projects and numerous coastal structures throughout Florida, the Gulf coast, and up the Atlantic seaboard that provide an unrivaled breadth of expertise and depth of knowledge to execute all facets of coastal projects.
- Utilizes long standing professional relationships with state and federal agencies to allow proactive discussions and facilitate permit review in advance of application preparation and submittal.
- Retains a full suite of technical services and multidisciplinary staff for reliable analyses, timely responses, and cost-effective products in every area of expertise needed for coastal management.
- Actively strives to utilize the most advanced coastal numerical models available in the industry, which allows us to provide clear and concise advice regarding alternatives analyses and results.



- Offers highly productive and superior quality survey services and marine investigations with local perspective and historic knowledge of your coastal areas to quickly respond to Town requests.
- Provides specific experience with federally authorized projects, including the delivery of design documents, permits, plans and specifications, and associated analyses required for partnering with the U.S. Army Corps of Engineers (USACE). This expertise will be critical for continued collaboration with the USACE for the Mid-Town project, which is planned to include non-federal components such as the Phipps addition with trucking to Reaches 8 and 9 as a Town initiative.

With a robust organization dedicated to coastal services and a well-documented history of responsiveness to the Town, we are confident that The CPE Team can meet or exceed all of the requirements of the Request for Qualifications (RFQ). Having worked with your staff on virtually every aspect of your coastal program, we have extensive experience and knowledge of your past, ongoing, and planned coastal projects as further described in our enclosed response package.

CPE's response is respectfully submitted subject to mutually acceptable contract terms and conditions, and we are excited about the prospect of working with the Town on this new contract to continue our successful relationship with your staff. It is our intent to deliver a level of service that meets the needs of the Town and provides sound professional services that synthesize the coastal program to protect what is one of the most prestigious, beautiful coastlines in the world.

This letter confirms that Coastal Protection Engineering LLC (CPE) understands the work to be performed and commits to performing the work within the anticipated time-period. We believe that our attached credentials demonstrate why The CPE Team is best qualified to perform the required services described in the RFQ. As stipulated by the solicitation, this proposal shall remain in effect for six (6) months.

Should you have any questions related to our submittal, please feel free to contact me directly at 561-756-2535 or [tpierro@coastalprotectioneng.com](mailto:tpierro@coastalprotectioneng.com).

Sincerely,

A handwritten signature in blue ink, appearing to read "Tom P.", with a long horizontal flourish extending to the right.

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

Principal Engineer

Coastal Protection Engineering LLC

Mobile: 561-756-2535

Email: [tpierro@coastalprotectioneng.com](mailto:tpierro@coastalprotectioneng.com)



### 1.2.2 Start Time

In compliance with RFQ No. 2020-02 - Coastal Engineering Services, this statement is to confirm that Coastal Protection Engineering LLC is prepared to start work under this Contract by February 28, 2020.

Sincerely,



Thomas P. Pierro, P.E., D.CE  
Principal Engineer  
Coastal Protection Engineering LLC

Mobile: 561-756-2535

Email: [tpierro@coastalprotectioneng.com](mailto:tpierro@coastalprotectioneng.com)

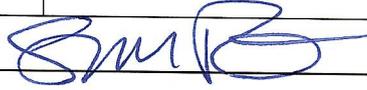


# TOWN OF PALM BEACH

## LIST OF PROPOSED SUBCONTRACTORS FORM

The undersigned bidder hereby designates, as follows, all major subcontractors whom he/she proposes to utilize for the major areas of work for the project. The bidder is further notified that all subcontractors shall be properly licensed, bondable and shall be required to furnish the TOWN with a Certificate of Insurance in accordance with the contract general conditions. Failure to furnish this information shall be grounds for rejection of the bidder's proposal. (If no subcontractors are proposed, state "None" on first line below.)

Name and Address of Subcontractor	Scope of Work	License #
1. Aptim Environmental & Infrastructure 2481 NW Boca Raton Blvd Boca Raton, FL 33431	Coastal engineering Survey and Mapping Geology Biology GIS/CAD	CA9317 LB8051 GB409
2.		
3.		
4.		
5.		

Signature and Date  12/2/2019

Title/Company Coastal Protection Engineering LLC



# TOWN OF PALM BEACH

## BIDDER'S QUALIFICATION FORM

The Vendor, as a result of this bid proposal, must hold a County and/or Municipal Tax Receipt (Occupational License) in the area of their fixed business location. Each proposer must complete the following information and submit with their proposal in order to be considered:

1. Legal Name and Address:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_ Phone/Fax: \_\_\_\_\_

2. Check One: Corporation ( ) Partnership ( ) Individual ( )

3. If Corporation, state: Date of Incorporation: \_\_\_\_\_ State in which Incorporated: \_\_\_\_\_

4. If an out-of-state Corporation, currently authorized to do business in Florida, give date of such authorization: \_\_\_\_\_

5. Name and Title of Principal Officers Date Elected:

_____	_____
_____	_____
_____	_____
_____	_____

6. The Vendor's length of time in business: \_\_\_\_\_ years

7. The Vendor's length of time (continuous) in business as a service organization in Florida: \_\_\_\_\_ years

8. All bidders must disclose with their bid the name of any officer, director or agent who is also an employee of the Town. Further, all bidders must disclose the name of any Town employee who owns, directly or indirectly, an interest in the bidder's firm or any of its branches.

Name \_\_\_\_\_ Percentage of Interest: \_\_\_\_\_

9. A copy of County and/or Municipal Tax Receipt (Occupational License) in the area of their fixed business location.

10. A current, signed copy of your firm's IRS form W-9.

**Note:** Information requested herein and submitted by the proposers will be analyzed by the Town of Palm Beach and will be a factor considered in awarding any resulting contract. The purpose is to insure that the Proposers, in the sole opinion of the Town of Palm Beach, can sufficiently and efficiently perform all the required services in a timely and satisfactory manner as will be required by the subject contract. If there are any terms and/or conditions that are in conflict, the most stringent requirement shall apply.

# Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

**Coastal Protection Engineering LLC**

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

- Individual/sole proprietor or single-member LLC    
  C Corporation    
  S Corporation    
  Partnership    
  Trust/estate  
 Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ **S**  
**Note:** Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.  
 Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) \_\_\_\_\_

Exemption from FATCA reporting code (if any) \_\_\_\_\_

*(Applies to accounts maintained outside the U.S.)*

5 Address (number, street, and apt. or suite no.) See instructions.

**5301 N Federal Hwy, Suite 335**

6 City, state, and ZIP code

**Boca Raton, FL, 33487**

7 List account number(s) here (optional)

Requester's name and address (optional)

Print or type. See Specific Instructions on page 3.

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number										
				-			-			

or

Employer identification number										
8	4	-	2	3	5	0	1	2	8	

## Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here     Signature of U.S. person ▶ *[Signature]*     Date ▶ *11/13/2019*

## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

## Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

*If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.*

**LOCAL BUSINESS TAX  
RECEIPT # 20 00073039**

COASTAL PROTECTION ENGINEERING  
PIERRO, THOMAS P  
5301 N FEDERAL HWY 335

COASTAL PROTECTION ENGINEERING  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON FL 33487

**CITY OF BOCA RATON  
BUSINESS TAX AUTHORITY**

**BUSINESS TAX RECEIPT  
CERTIFICATE OF USE  
EXPIRES: 9/30/20**

**THIS IS NOT A BILL**  
Any changes in name,  
address, suite, ownership, ect.  
will require a new application  
within 15 days to avoid  
penalty or the license is null  
and void.

Business Tax fee:	105.00
Penalty fee:	.00
Late fee:	.00
Additional fee:	80.50
Transfer fee:	.00
<b>Total paid:</b>	<b>185.50</b>

has paid the business tax at the above address for the period  
beginning the 1st day of October and ending the 30th day of  
September to engage in the business, profession or occupation of:

Classification: ENGIN FIRM\*ENG-NOT LOCATION

**LOCAL BUSINESS TAX  
RECEIPT # 20 00073040**

COASTAL PROTECTION ENGINEERING  
BRENNER, TARA D  
5301 N FEDERAL HWY 335

COASTAL PROTECTION ENGINEERING  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON FL 33487

**CITY OF BOCA RATON  
BUSINESS TAX AUTHORITY**

**BUSINESS TAX RECEIPT  
CERTIFICATE OF USE  
EXPIRES: 9/30/20**

**THIS IS NOT A BILL**  
Any changes in name,  
address, suite, ownership, ect.  
will require a new application  
within 15 days to avoid  
penalty or the license is null  
and void.

Business Tax fee:	105.00
Penalty fee:	.00
Late fee:	.00
Additional fee:	28.00
Transfer fee:	.00
<b>Total paid:</b>	<b>133.00</b>

has paid the business tax at the above address for the period  
beginning the 1st day of October and ending the 30th day of  
September to engage in the business, profession or occupation of:

Classification: ENGIN FIRM\*ENG-NOT LOCATION

**LOCAL BUSINESS TAX  
RECEIPT # 20 00073041**

COASTAL PROTECTION ENGINEERING  
PFEIFFER, MICHELLE R  
5301 N FEDERAL HWY 335

COASTAL PROTECTION ENGINEERING  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON FL 33487

**CITY OF BOCA RATON  
BUSINESS TAX AUTHORITY**

**BUSINESS TAX RECEIPT  
CERTIFICATE OF USE  
EXPIRES: 9/30/20**

**THIS IS NOT A BILL**  
Any changes in name,  
address, suite, ownership, ect.  
will require a new application  
within 15 days to avoid  
penalty or the license is null  
and void.

Business Tax fee:	105.00
Penalty fee:	.00
Late fee:	.00
Additional fee:	28.00
Transfer fee:	.00
<b>Total paid:</b>	<b>133.00</b>

has paid the business tax at the above address for the period  
beginning the 1st day of October and ending the 30th day of  
September to engage in the business, profession or occupation of:

Classification: ENGIN FIRM\*ENG-NOT LOCATION

**LOCAL BUSINESS TAX  
RECEIPT # 20 00072511**

COASTAL PROTECTION ENGINEERING  
CAMPBELL, THOMAS J  
5301 N FEDERAL HWY 335

COASTAL PROTECTION ENGINEERING  
5301 N FEDERAL HWY 335  
BOCA RATON FL 33487

**CITY OF BOCA RATON  
BUSINESS TAX AUTHORITY**

**BUSINESS TAX RECEIPT  
CERTIFICATE OF USE  
EXPIRES: 9/30/20**

**THIS IS NOT A BILL**  
Any changes in name,  
address, suite, ownership, ect.  
will require a new application  
within 15 days to avoid  
penalty or the license is null  
and void.

Business Tax fee:	105.00
Penalty fee:	.00
Late fee:	.00
Additional fee:	.00
Transfer fee:	.00
<b>Total paid:</b>	<b>105.00</b>

has paid the business tax at the above address for the period  
beginning the 1st day of October and ending the 30th day of  
September to engage in the business, profession or occupation of:

Classification: ENGIN FIRM\*ENG-NOT LOCATION



**ANNE M. GANNON**  
**CONSTITUTIONAL TAX COLLECTOR**  
*Serving Palm Beach County*  
**Serving you.**

P.O. Box 3353, West Palm Beach, FL 33402-3353  
www.pbctax.com Tel: (561) 355-2264

**\*\*LOCATED AT\*\***

5301 North FEDERAL HWY Ste 335  
BOCA RATON, FL 33487

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
54-0064 ENGINEER	COASTAL PROTECTION ENGINEERING LLC	33370	U20.89086 - 11/14/19	\$33.00	B40194888

This document is valid only when received by the Tax Collector's Office.

**STATE OF FLORIDA  
PALM BEACH COUNTY  
2019/2020 LOCAL BUSINESS TAX RECEIPT**

COASTAL PROTECTION ENGINEERING LLC  
COASTAL PROTECTION ENGINEERING LLC  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON, FL 33487

**LBTR Number: 2020124397  
EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.



**ANNE M. GANNON**  
**CONSTITUTIONAL TAX COLLECTOR**  
*Serving Palm Beach County*  
**Serving you.**

P.O. Box 3353, West Palm Beach, FL 33402-3353  
www.pbctax.com Tel: (561) 355-2264

**\*\*LOCATED AT\*\***

5301 North FEDERAL HWY Ste 335  
BOCA RATON, FL 33487

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
54-0064 ENGINEER	PIERRO THOMAS P	64683	U20.89086 - 11/14/19	\$33.00	B40194891

This document is valid only when received by the Tax Collector's Office.

**STATE OF FLORIDA**  
**PALM BEACH COUNTY**  
**2019/2020 LOCAL BUSINESS TAX RECEIPT**

COASTAL PROTECTION ENGINEERING LLC  
COASTAL PROTECTION ENGINEERING LLC  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON, FL 33487

**LBTR Number: 2020124400**  
**EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.



**ANNE M. GANNON**  
**CONSTITUTIONAL TAX COLLECTOR**  
*Serving Palm Beach County*

P.O. Box 3353, West Palm Beach, FL 33402-3353  
 www.pbctax.com Tel: (561) 355-2264

**\*\*LOCATED AT\*\***

5301 North FEDERAL HWY Ste 335  
 BOCA RATON, FL 33487

*Serving you.*

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
54-0064 ENGINEER	BRENNER TARA DEVINE	82305	U20.89086 - 11/14/19	\$33.00	B40194897

This document is valid only when received by the Tax Collector's Office.

**STATE OF FLORIDA  
 PALM BEACH COUNTY  
 2019/2020 LOCAL BUSINESS TAX RECEIPT**

COASTAL PROTECTION ENGINEERING LLC  
 COASTAL PROTECTION ENGINEERING LLC  
 5301 N FEDERAL HWY SUITE 335  
 BOCA RATON, FL 33487

**LBTR Number: 2020124405**  
**EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.



**ANNE M. GANNON**  
**CONSTITUTIONAL TAX COLLECTOR**  
*Serving Palm Beach County*

P.O. Box 3353, West Palm Beach, FL 33402-3353  
 www.pbctax.com Tel: (561) 355-2264

**\*\*LOCATED AT\*\***

5301 North FEDERAL HWY Ste 335  
 BOCA RATON, FL 33487

*Serving you.*

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
54-0064 ENGINEER	PFEIFFER MICHELLE REES	76209	U20.89086 - 11/14/19	\$33.00	B40194899

This document is valid only when received by the Tax Collector's Office.

**STATE OF FLORIDA**  
**PALM BEACH COUNTY**  
**2019/2020 LOCAL BUSINESS TAX RECEIPT**

COASTAL PROTECTION ENGINEERING LLC  
 COASTAL PROTECTION ENGINEERING LLC  
 5301 N FEDERAL HWY SUITE 335  
 BOCA RATON, FL 33487

**LBTR Number: 2020124407**  
**EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.



**ANNE M. GANNON**  
**CONSTITUTIONAL TAX COLLECTOR**  
*Serving Palm Beach County*

P.O. Box 3353, West Palm Beach, FL 33402-3353  
www.pbctax.com Tel: (561) 355-2264

**\*\*LOCATED AT\*\***

5301 North FEDERAL HWY Ste 335  
BOCA RATON, FL 33487

*Serving you.*

TYPE OF BUSINESS	OWNER	CERTIFICATION #	RECEIPT #/DATE PAID	AMT PAID	BILL #
54-0064 ENGINEER	CAMPBELL THOMAS JOHN	19998	U20.89086 - 11/14/19	\$33.00	B40194898

This document is valid only when received by the Tax Collector's Office.

**STATE OF FLORIDA**  
**PALM BEACH COUNTY**  
**2019/2020 LOCAL BUSINESS TAX RECEIPT**

COASTAL PROTECTION ENGINEERING LLC  
COASTAL PROTECTION ENGINEERING LLC  
5301 N FEDERAL HWY SUITE 335  
BOCA RATON, FL 33487

**LBTR Number: 2020124406**  
**EXPIRES: SEPTEMBER 30, 2020**

This receipt grants the privilege of engaging in or managing any business profession or occupation within its jurisdiction and **MUST** be conspicuously displayed at the place of business and in such a manner as to be open to the view of the public.



# TOWN OF PALM BEACH

## DRUG-FREE WORKPLACE CERTIFICATION FORM

Whenever two (2) or more bids/proposals, which are equal with respect to price, quality, and service, are received by the Town of Palm Beach for the procurement of commodities or contractual services, a bid/proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. In order to have a drug-free workplace program, a business shall:

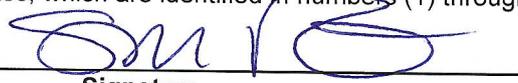
- (1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of controlled substances is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- (2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
- (3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in number (1).
- (4) In the statement specified in number (1), notify the employees that as a condition for working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction on or plea of guilty or nolo contendere to any violation of Chapter 893, Florida Statutes or of any controlled substance law of the United States or any singular state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- (5) Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community by any employee who is so convicted.
- (6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of Section 287.087, Florida Statutes.

This Certification is submitted by Thomas Pierro the  
(Individual's Name)  
Principal Engineer/AMBR of Coastal Protection Engineering LLC  
(Title/Position with Company/Vendor) (Name of Company/Vendor)

Who does hereby certify that said Company/Vendor has implemented a drug-free workplace program, which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

11/19/2019

Date

  
Signature



## TOWN OF PALM BEACH

### SCRUTINIZED COMPANIES

By execution of this Agreement, in accordance with the requirements of F.S. 287-135 and F.S. 215.473, Contractor certifies that Contractor is not participating in a boycott of Israel. Contractor further certifies that Contractor is not on the Scrutinized Companies that Boycott Israel list, not on the Scrutinized Companies with Activities in Sudan List, and not on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has Contractor been engaged in business operations in Syria. Subject to limited exceptions provided in state law, the Town will not contract for the provision of goods or services with any scrutinized company referred to above. Submitting a false certification shall be deemed a material breach of contract. The Town shall provide notice, in writing, to Contractor of the City's determination concerning the false certification. Contractor shall have five (5) days from receipt of notice to refute the false certification allegation. If such false certification is discovered during the active contract term, Contractor shall have ninety (90) days following receipt of the notice to respond in writing and demonstrate that the determination of false certification was made in error. If Contractor does not demonstrate that the Town's determination of false certification was made in error then the Town shall have the right to terminate the contract and seek civil remedies pursuant to Section 287.135, Florida Statutes, as amended from time to time.

This Certification is submitted by Thomas Pierro  
the \_\_\_\_\_

(Individual's Name)

Principal Engineer/AMBR of Coastal Protection Engineering LLC  
(Title/Position with Company/Vendor) (Name of Company/Vendor)

Who does hereby certify that said Company/Vendor has implemented a drug-free workplace program, which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

11/19/2019  
Date

[Signature]  
Authorized Signature

TRUTH-IN-NEGOTIATIONS CERTIFICATE

TOWN OF PALM BEACH, FLORIDA  
COUNTY OF PALM BEACH, FLORIDA

Before me, the undersigned authority, personally appeared Affiant, Thomas Pierro, who being first duly sworn, deposes and says:

1. That the undersigned firm is furnishing this Truth-in-Negotiation Certification pursuant to Section 287.055(5)(a) of the Florida Statutes for the undersigned firm to receive an agreement for professional services with the Town of Palm Beach, Palm Beach County, Florida.
2. That the undersigned firm is a corporation which engages in furnishing professional engineering services and is entering into an agreement with the Town of Palm Beach to provide professional Continuing Consulting Services.
3. That the undersigned firm will furnish the Town of Palm Beach a detailed analysis of the cost of the professional services that will be required to perform various tasks as each work order is proposed.
4. That the wage rates and other factual unit costs supporting the compensation for this project's agreement will be accurate, complete and current at the time the undersigned firm and the Town of Palm Beach enters into the agreement for professional continuing consulting services and at the time of execution of each work order.
5. The undersigned firm agrees that the original agreement price and any additions thereto shall be adjusted to exclude any significant sums by which the Town of Palm Beach determines the agreement price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. All such agreement adjustments shall be made within one (1) year following the end of the agreement. For the purpose of this certificate, the end of the agreement shall be deemed to be the date of final billing or acceptance of the work by the Town of Palm Beach, whichever is later. \*

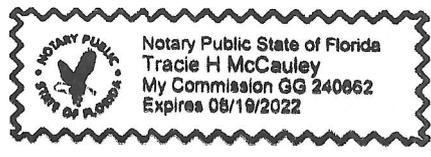
Name of Firm/Consultant: Coastal Protection Engineering LLC

By: [Signature]  
Authorized Signature Thomas Pierro

11/19/2019  
Date

Title: Principal Engineer / AMBR

Attest: [Signature] (Seal)



Notary

The foregoing instrument was acknowledged before me by Thomas Pierro who has produced \_\_\_\_\_ as identification or is personally known to me.

WITNESS my hand and official seal in the State last aforesaid this 19 day of November, 2019



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

11/19/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> <b>JB Ins Grp Inc dba Landmark Ins</b> <b>1920 Palm Beach Lakes Blvd Ste 216</b> <b>West Palm Beach FL 33409</b>	<b>CONTACT NAME:</b> <b>PHONE (A/C No., Ext): (561) 584-8621</b>		<b>FAX (A/C No.): (866) 594-1803</b>
	<b>E-MAIL ADDRESS: john@landmarkpb.com</b>		
<b>INSURED</b>  <b>Coastal Protection Engineering, LLC</b> <b>7901 4th St N Ste 8001</b> <b>St Petersburg FL 33702</b>	<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
	<b>INSURER A : Evanston Insurance Company</b>		
	<b>INSURER B :</b>		
	<b>INSURER C :</b>		
	<b>INSURER D :</b>		
	<b>INSURER E :</b>		

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	x	x	MKLV2ENV101320	08/16/2019	08/16/2020	EACH OCCURRENCE \$ <b>1,000,000</b> DAMAGE TO RENTED PREMISES (Ea occurrence) \$ <b>100,000</b> MED EXP (Any one person) \$ <b>10,000</b> PERSONAL & ADV INJURY \$ <b>1,000,000</b> GENERAL AGGREGATE \$ <b>2,000,000</b> PRODUCTS - COMP/OP AGG \$ <b>2,000,000</b> \$	
A	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	x	x	MKLV2ENV101320	08/16/2019	08/16/2020	COMBINED SINGLE LIMIT (Ea accident) \$ <b>1,000,000</b> BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$	
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$	
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y/N <b>(Mandatory in NH)</b> If yes, describe under DESCRIPTION OF OPERATIONS below		N/A				PER STATUTE <input type="checkbox"/> OTH-ER <input type="checkbox"/> E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$	
A	<b>Professional Liability</b>	x	x	MKLV2ENV101320	08/16/2019	08/16/2020	<b>\$1,000,000</b> <b>\$2,000,000</b>	<b>Each Claim</b> <b>Gen Aggregate</b>

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Engineering firm

**CERTIFICATE HOLDER****CANCELLATION**

<b>Town of Palm Beach</b> <b>360 South County Road</b> <b>PO Box 2029</b> <b>Palm Beach, FL 33480</b>	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  <b>AUTHORIZED REPRESENTATIVE</b> 
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# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

11/10/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Huckleberry Insurance Services, LLC 500 2nd Street Floor 0 San Francisco CA 94107	<b>CONTACT NAME:</b> Bryan O'Connell <b>PHONE (A/C, No, Ext):</b> (855) 255-4825 <b>E-MAIL ADDRESS:</b> agent@huckleberry.com	<b>FAX (A/C, No):</b>
	<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> Employers Insurance Company	
<b>INSURED</b> Coastal Protection Engineering LLC 5301 North Federal Highway Boca Raton FL 33487	<b>INSURER B:</b> <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>	

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	<b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
A	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	EIG2956113-00	11/11/2019	11/11/2020	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**CERTIFICATE HOLDER****CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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## 1.2.12 Minimum Qualifications

### Relevant Experience and Qualifications to meet the SOW

Based on the comprehensive services detailed in the Scope of Work provided by the Town within this RFQ, we are confident that The CPE Team can successfully implement each task of your coastal program. The items in this comprehensive list are encompassed in the core services that The CPE Team expertly provides to our clients.

The CPE Team provides one of the most experienced, full-service workforces of coastal engineering professionals in the world with a specific focus on local government programs in the State of Florida. For decades, these professionals have been providing Florida's coastal communities with a complete spectrum of coastal services including coastal engineering, environmental assessments, biological monitoring, environmental permitting, hydrographic and terrestrial surveying, numerical modeling, coastal geology, GIS, funding program assistance, bidding assistance, construction oversight, and post-project physical monitoring. Our enclosed response further details how we are uniquely qualified and have the experience, credentials, understanding, and availability to assist the Town in achieving the goals of the Scope of Work.

Our team is uniquely positioned to draw upon the depth of knowledge offered by our professionals to review, assess, design, permit, and execute all components of a coastal engineering project. Our vast experience allows us to bring expertise gained from other projects back to the Town so that you are always on the forefront of coastal matters and are getting the best service the industry has to offer. Staff of The CPE Team are leaders in coastal engineering within Florida and stand out from others as the local team that has planned, managed, engineered, and administered the construction of the most beach nourishment projects in the United States. We also have extensive experience with climate change adaptation, coastal resiliency, coastal structures, inlet management, habitat restoration, offshore sand searches, numerical modeling, flood protection, coastal vulnerability assessment and coastal sustainability planning.

In addition to the Town of Palm Beach, the coastal professionals that comprise our team have worked with several other southeast Florida clients including the City of Delray Beach, City of Boca Raton, Palm Beach County, Town of South Palm Beach, City of Deerfield Beach, Broward County, Manatee County and Miami-Dade County on numerous major coastal projects. Our enclosed response further demonstrates that we can bring knowledge gained from all around the State of Florida back to benefit of the Town. This robust experience provides our staff with a comprehensive understanding of the processes and environment of the Florida coast and demonstrates our expertise in all aspects of coastal management, beach nourishment, coastal structures design and rehabilitation, and construction management.

### Demonstrate Successful Performance with Respect to Comparable Requirements in Type, Size, and Complexity for a Minimum of 5 Years

The professionals that comprise The CPE Team have successfully designed and permitted over 100 beach nourishment and coastal structure projects throughout Florida, the Gulf coast and along the

Atlantic seaboard. This experience provides our team with a depth and breadth of knowledge that is unrivaled in the industry. We execute all aspects of coastal projects from feasibility and design, through permitting, construction administration, post-construction monitoring and permit compliance. The CPE Team has demonstrated successful performance of coastal programs and projects as summarized in the Project Specific Information at the end of this Section and detailed in the Project Descriptions (Current Related Projects and Completed Commercial and/or Governmental Coastal Projects over \$5,000,000) presented in Section 1.3.1.

We work with a variety of clientele and provide a range of services from engineering support to full program management and implementation. Our experience ranges from small-scale projects, such as seawall reconstruction for an HOA, to large-scale beach nourishment projects that span several miles, to comprehensive coastal program management. Each member of the core staff assigned to the Town is highly experienced in working on coastal projects similar in type, size and complexity to those that may be proposed by the Town. This experience includes not only working on coastal projects, but it includes working with each other. This specific team has demonstrated successful execution of projects not only throughout Florida, but within the Town of Palm Beach and will continue to do so should we be selected.

### Availability of Staff and Credentials

Prior to pursuing an opportunity similar to the one issued by the Town, we evaluate the current and projected workload with respect to the key personnel identified to perform the coastal engineering and related services requested. We have determined that there is sufficient capacity at the present time based on current staffing and foresee no future time where a workload conflict would impact The CPE Team's ability to meet the Town's needs. This evaluation was based on workload forecasts and employee utilization rates.

The CPE Team includes a full staff of qualified marine and coastal professionals and scientists, including engineers, numerical modelers, geophysicists, geologists, biologists, certified hydrographers, surveyors and GIS/CAD specialists. These professionals have extensive experience working together across disciplines to permit, design, construct and monitor numerous marine and coastal projects on Florida's Gulf and Atlantic coasts. We have a demonstrated history of effectively completing logistically challenging and technically demanding operations to provide clients throughout Florida with successful and cost-effective coastal programs. We will implement this approach to design beach restoration projects that meet the Town's needs.

The CPE Team is headquartered in Palm Beach County and organized in the key disciplines required for coastal engineering, which is a unique advantage we bring to our clients. Our experienced, multidisciplinary technical staff is currently working with the Town of Palm Beach and has a great institutional knowledge of your coastal environment, which is critical when designing a shore protection project. The CPE Team commits to provide the Town access to all members of our team as needed based on the task at hand and particular expertise required. Our core team members selected to work with the Town have all been working with each other for many years and have between 9 and 36 years of experience. Brief summaries of the staff assigned to the Town are presented in the next section.

## Experience of Staff Assigned to the Town

We have assembled the following core team members to fulfill the coastal engineering needs of the Town. Our proposed team offers its experience and proven multidisciplinary approach. Resumes of all proposed personnel assigned to the Town as displayed in the organizational chart are included in Section 1.3.2.

### Thomas Pierro, PE, D.CE, Senior Project Manager / Principal Engineer

Thomas Pierro is a registered Professional Engineer in the State of Florida with 18 years of coastal engineering experience. Mr. Pierro will continue to serve as Principal Engineer and Senior Project Manager for the Town of Palm Beach coastal program. Since 2001, he has designed, permitted, and supervised construction of numerous beach nourishment projects in Florida, including the Town of Palm Beach. Mr. Pierro has been the coastal engineering lead on numerous Florida beach projects. He directs complex analysis of beach/inlet processes, designs programs that control high erosion near coastal inlets and passes and promotes forward thinking throughout the team to support sustainable coastal programs. Mr. Pierro is a Board Certified Professional by the American Society of Civil Engineers as an ACOPNE Diplomate of Coastal Engineering and was awarded the Jim Purpura / T.Y. Chiu Award from the Florida Shore and Beach Preservation Association (FSBPA) for outstanding contribution to coastal engineering in the State of Florida in 2011. Mr. Pierro has worked on Town projects since 2006 and has an excellent long-term working relationship with the Town staff. In addition, his deep involvement with the FSBPA has provided him unique access to issues facing beach communities around the State, which is experience that he brings back to the advantage of our clients.

### Tara Brenner, PE, PG, Project Manager / Senior Coastal Engineer

Tara Brenner has been selected as Project Manager to support Mr. Pierro in executing the Town's task orders. Ms. Brenner is a Professional Engineer and Professional Geologist at CPE with more than 12 years of experience in coastal engineering projects, including both federal and non-federal beach programs, dredging and truck haul projects, and takes a pragmatic approach to complex studies. Her broad experience will be a tremendous advantage to the Town when completing the Mid-Town and Phipps projects, particularly the trucking component to Reaches 8 and 9. She also utilizes drone and laser scanning technologies to supplement in situ observations, where it can save time or money, and delivers cutting-edge interactive visual work products for clients' use. Ms. Brenner not only brings a unique combination of credentials in engineering and geology, but excels in project management and public speaking, which will be an important asset to the Town.

### Douglas Mann, PE, D.CE, Senior Technical Advisor / Senior Coastal Engineer

Douglas Mann has designed and implemented a broad range of coastal and marine civil engineering projects over his 32-year career at APTIM. Mr. Mann can provide a wide range of coastal engineering expertise applied to a given problem and has extensive experience in all types of regulatory permitting. Mr. Mann has been licensed by the State of Florida since 1991 and is recognized by ASCE as a Diplomate (expert) in coastal engineering. He was also awarded the FSBPA Per Bruun Distinguished Service Award in 2017. For this contract, Mr. Mann will act in an advisory role for The CPE Team, lending his depth and breadth of knowledge at critical points in the projects to ensure the team is planning ahead,

incorporating lessons learned from past experiences, and promoting a high level of technical quality.

#### **Michelle Pfeiffer, PE, Senior Coastal Engineer**

Michelle Pfeiffer is a Senior Coastal Engineer with CPE and has experience in all aspects of project development and implementation for shoreline stabilization. She has managed beach nourishment and marine structure design, project permitting, construction plans and specifications, construction observation and monitoring for 11 years. Ms. Pfeiffer specializes in working with local governments that have a mix of federal and non-federal projects that require coordination with the USACE, similar to the upcoming construction of Mid-Town and Phipps. She has managed numerous large- and small-scale dredging projects and has designed and implemented several groin projects, including new structures and rehabilitations. Ms. Pfeiffer was one of the authors of the Town's Coastal Structures Plan Peer Review and also has experience in conducting inlet management studies for adoption by the FDEP. She will support Mr. Pierro and Ms. Brenner as a Senior Coastal Engineer for the Town under this contract.

#### **Stacy Buck, MS, Senior Marine Biologist**

Stacy Buck has extensive experience in marine habitat assessment in Florida, which has facilitated her expertise in the design and implementation of numerous biological monitoring programs. She routinely prepares environmental documents for state and federal permitting and coordinates with federal consulting agencies (NMFS and USFWS) in support of ESA Section 7 Consultation and the Magnuson-Stevens Act. Ms. Buck specializes in projects on the east coast of Florida and has been working on Town of Palm Beach projects since 2005, including biological monitoring for Mid-Town, Phipps, Reach 8, and the 3.1-ac and 0.8-ac artificial reefs. She led preparation of the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS published in 2016, which included analysis of the Reach 8 project, and facilitated permitting for the Mid-Town groin constructed in 2018. Her responsibilities include project management, environmental permitting, development and implementation of mitigation and monitoring programs, marine and estuarine habitat assessment/monitoring, data analysis, database management and report preparation. Ms. Buck has been selected to lead all biological and environmental permitting services under this contract.

#### **Lindino Benedet, PhD, MBA, Principal**

Lindino Benedet, Ph.D., MBA has nearly two decades of professional experience dedicated to project and business management and technical/scientific activities in coastal sciences and engineering. Dr. Benedet was the first coastal scientist to utilize the advanced process-based numerical model Delft3D to support the evaluation and design of coastal projects in the state of Florida and has participated in dozens of numerical modeling studies in the state of FL, Louisiana and internationally, bringing unique numerical modeling qualifications to The CPE Team. Dr. Benedet has published several scientific papers in international journals and conferences, and has a Doctorate of Philosophy from one of the top Coastal University programs in the world, the TU Delft University in the Netherlands, where he became proficient with the Delft3D model and other related numerical modeling software.

### Quin Robertson, PhD, GISP Senior Scientist

Quin Robertson's research focuses on using conventional survey and remote sensing data to quantify change in coastal morphology and develop models from these results using geographic information systems (GIS) to aid in coastal mitigation. He specializes in working with multiple topographic and bathymetric data sets to create seamless digital elevation models (DEMs) that are critical for accurate geomorphic change analysis and often serve as the basis for scientific conclusions. Dr. Robertson uses the skills that he developed during his studies to develop high resolution DEMs utilizing voluminous data sets, quantify and predict morphologic change, and identify sediment sources and benthic habitats. Dr. Robertson will lead all survey and mapping investigations under this contract.

### Morjana Signorin, MBA, Coastal Modeler

Morjana Signorin is an Oceanographer/Coastal Modeler with APTIM with 9 years of experience in planning, measuring, processing and interpreting environmental data, implementing and calibrating numerical models. She has broad experience with coastal processes and has worked on over 30 projects focused on complex coastal and riverine systems. She has conducted in depth analysis and numerical modeling of coastal processes such as currents, water levels, waves, storm surge, sediment transport, and morphology in several locations along the Gulf and East Coast of the United States. As the APTIM Project Manager, Ms. Signorin will assist Ms. Brenner with executing tasks assigned to APTIM.

### Beau Suthard, PG, Geoscience Program Manager

Beau Suthard has over 18 years of experience in marine geosciences and has been with APTIM since 2005. He has conducted dozens of marine investigations and mapped hundreds of millions of cubic yards of beach compatible sand on the Atlantic and Gulf of Mexico continental shelves. Mr. Suthard recently completed a large-scale sand resource inventory mapping project for BOEM offshore of the Atlantic Coast of the United States from Massachusetts to Florida. This project has resulted in the identification of over 250 million cubic yards of beach compatible restoration materials for various coastal communities along the Atlantic seaboard. Mr. Suthard will support Ms. Brenner with geophysical and geotechnical data acquisition and review under this contract.

### Jeffrey Andrews, PSM, CH, Director of Operations Coastal & Marine

Jeffrey Andrews is a Director of Operations for APTIM and oversees all survey projects. He has extensive experience in hydrographic and land surveying. He is well versed in undertaking surveys in a variety of environments using the latest state-of-the-art equipment. He has conducted hundreds of marine investigations and mapped more than 100 million cubic yards of beach compatible sand on the continental shelf. Mr. Andrews has directed hydrographic and land surveys in Florida, Georgia, North Carolina, Virginia, New Jersey, New York, Massachusetts, Alabama, Louisiana, Texas, Alaska, Puerto Rico, Brazil and the Bahamas. He prepares hydrographic and topographic survey reports, including technical writing and supervision of data analysis. With over 36 years of experience, he continues to manage and direct hydrographic, topographic and geophysical data collection along the Gulf and Atlantic coasts and will support survey efforts under this contract.

## Project Specific Information

The projects listed below and in Section 1.3.1 (Experience of Firm / Past Performance) were performed by staff of The CPE Team as noted. The completed projects, and those shown on the Professional Reference Forms (Section 1.2.4), were executed under contracts secured by APTIM and legacy companies prior to the formation of CPE. In cases where work is ongoing at present, active sub-contracting agreements are in place between APTIM and CPE for contract compliance and execution.

### Town of Palm Beach Mid-Town Groin Project

**Owner:** Town of Palm Beach

**Description:** The Mid-Town Beach Nourishment Project was completed in 2015; however, the groin that was authorized for construction near R-99.3 was not constructed during the beach project. The CPE Team, including Tom Pierro and Stacy Buck, worked with the USACE and FDEP to expedite the permit modification to ensure construction would not interfere with sea turtle nesting. Additionally, initial authorization did not include consultation with NMFS for Section 7 consultation since the groin was originally planned to be built on the newly nourished beach. Our Team designed the project so that construction of the groin would be built “in the dry”, otherwise consultation would have not made construction feasible for that season. The permit modification requests were submitted in late December 2017 and the project was deemed substantially complete in May 2018.

**Contact Info:** Rob Weber, Ph: 561-838-5440, [rweber@townofpalmbeach.com](mailto:rweber@townofpalmbeach.com)

**Duration:** 2017 – 2018

**Contract Amount:** \$83,870.00

### Town of Palm Beach Groin Rehabilitation Project

**Owner:** Town of Palm Beach

**Description:** In 2012, members from The CPE Team completed a peer review of the Town’s coastal structures to consolidate findings of the previous coastal structure assessment. Tom Pierro and Michelle Pfeiffer led the engineering effort, which included field observations of all the coastal structures within Reaches 2-6 to inventory the structures and come up with a groin rehabilitation plan. The plan established regional management goals for the maintenance of the groins and beaches throughout the Town. The project was included in the FDEP Beach Management Agreement but required further analysis for federal permit authorization. Stacy Buck submitted the permit application to the USACE and facilitated extensive coordination with NMFS and USFWS in order to complete permitting. The DA permit was issued in 2018.

**Contact Info:** Rob Weber, Ph: 561-838-5440, [rweber@townofpalmbeach.com](mailto:rweber@townofpalmbeach.com)

**Duration:** 2012 – 2018

**Contract Amount:** \$191,397.00

### Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS)

**Owner:** USACE, Town of Palm Beach and Palm Beach County

**Description:** Stacy Buck managed the preparation of the EIS under direction of the USACE, which included development of NEPA documents, storm erosion modeling, DELFT3D hydrodynamic and sediment transport modeling, impact and mitigation assessments, and assisting in the coordination of

public scoping meetings. Analysis of the project included an extensive modeling effort led by Tom Pierro and Lindino Benedet. The EIS was prepared jointly for the Town and Palm Beach County.

**Contact Info:** Krista Sabin, USACE, Ph: 561-472-3506, [krista.d.sabin@usace.army.mil](mailto:krista.d.sabin@usace.army.mil)

**Duration:** 2013 – 2016

**Contract Amount:** \$1,072,600.00

### Delray Beach Fifth Periodic Renourishment Project

**Owner:** City of Delray Beach

**Description:** The Fifth Periodic Renourishment included the placement of over 1.1 million cy of sand from an offshore borrow area along 1.9 miles of Delray Beach in 2013. Tom Pierro was the Engineer of Record for this project, Tara Brenner performed during construction observations, and Stacy Buck led the environmental and permitting component of the project. The CPE Team assisted with all aspects of pre-, during- and post-construction coastal services for this renourishment project including a sand search, borrow area design, reef edge mapping, listed coral species surveys, permitting, construction support, and pre- and post-construction monitoring.

**Contact Info:** Cynthia Fuentes, Ph: 561-243-7196, [fuentesc@mydelraybeach.com](mailto:fuentesc@mydelraybeach.com)

**Duration:** 2010 – 2018

**Contract Amount:** \$942,751.20

### Delray Beach Sixth Periodic Renourishment Project

**Owner:** City of Delray Beach

**Description:** The CPE Team has started pre-design and permitting activities in preparation of the Sixth Periodic Renourishment with anticipated construction in 2020/21. The scope for this project to date includes a sand search, reef edge mapping, listed coral species surveys, borrow area design, permitting, funding assistance, public outreach, and physical monitoring. Tara Brenner is leading this effort as Project Manager/Senior Coastal Engineer with support from our multidisciplinary team to provide comprehensive services to the City.

**Contact Info:** Cynthia Fuentes, Ph: 561-243-7196, [fuentesc@mydelraybeach.com](mailto:fuentesc@mydelraybeach.com)

**Duration:** 2018 – Present

**Contract Amount:** \$989,427.53

### Delray Beach Seawall Vulnerability Analysis

**Owner:** City of Delray Beach

**Description:** Due to regularly occurring “sunny day” flooding, the City of Delray Beach recognized the need to assess the future vulnerability of seawalls and stormwater infrastructure along the Intracoastal Waterway to rising waters due to storm surge, tides, and sea level rise. Tara Brenner managed this project, which included analysis of historic water level data and sea level projections to assist the City in adopting 30-year and 75-year planning elevations to reduce coastal flooding. Doug Mann led the effort to assess the current conditions at City-owned and privately-owned seawalls and over 125 outfalls and their corresponding stormwater inlets along 21 miles of Intracoastal Waterway.

**Contact Info:** Cynthia Fuentes, Ph: 561-243-7196, [fuentesc@mydelraybeach.com](mailto:fuentesc@mydelraybeach.com)

**Duration:** 2018 – 2019

**Contract Amount:** \$198,473.00

### Delray Beach 2019 Sea Turtle Monitoring and Public Outreach

**Owner:** City of Delray Beach

**Description:** The City of Delray Beach has been conducting sea turtle monitoring along its beaches continuously since 1984. Immediately prior to the 2019 nesting season, the City expressed interest in conducting public outreach events to engage and educate the public regarding sea turtle nesting and the beach renourishment program. Tara Brenner and Stacy Buck managed this effort and contracted with Ecological Associates as the local permit holder to complete the sea turtle monitoring component. Ms. Brenner and Ms. Buck coordinated the public outreach events to include City educators and the public. The events included a brief history of the City's sea turtle and nourishment programs, followed by excavations of recently hatched nests. The public response to the outreach events was very positive and the City has requested additional events during the upcoming 2020 nesting season.

**Contact Info:** Cynthia Fuentes, Ph: 561-243-7196, [fuentesc@mydelraybeach.com](mailto:fuentesc@mydelraybeach.com)

**Duration:** 2019

**Contract Amount:** \$101,106.00

### Indian River County Sector 5 Beach and Dune Restoration Project

**Owner:** Indian River County

**Description:** The Sector 5 Project is a truck haul beach and dune nourishment that extends for approximately 3.1 miles (R-70 to R-86) and mostly includes the City of Vero Beach. The project included development of a feasibility study and engineering design, which was overseen by Tom Pierro. Stacy Buck managed the permitting effort and proactively engaged the regulatory agencies in order to generate a comprehensive permit application. The FDEP JCP application was deemed complete in less than 6 months and DA permit issuance quickly followed, which was supported by the Environmental Assessment we generated in compliance with NEPA. Project construction began on November 4, 2019 and is currently underway.

**Contact Info:** Quintin Bergman, Ph: 772-226-1648, [qbergman@ircgov.com](mailto:qbergman@ircgov.com)

**Duration:** 2016 – Present

**Contract Amount:** \$674,842.25

### Indian River County Sectors 3, 5 and 7 Storm Assessment

**Owner:** Indian River County

**Description:** Due to impacts from Hurricane Dorian, beach volumetric changes and contour changes were calculated in the Sector 3, Sector 5, and Sector 7 project areas using surveys that were collected prior to and following the impact of Hurricane Dorian. Beach contour changes were evaluated to document changes at the shoreline and the dune and volumetric changes were quantified above MHW (+0.6 ft NAVD) and above the depth of closure. The losses due to the storm impact were identified and storm repair costs were estimated to provide preliminary information to FEMA. Additionally, a previously calibrated SBEACH model was utilized to determine if upland infrastructure is at risk from a 5-year flood elevation, which may qualify the area for Category B FEMA assistance.

**Contact Info:** Quintin Bergman, Ph: 772-226-1648, [qbergman@ircgov.com](mailto:qbergman@ircgov.com)

**Duration:** 2019

**Contract Amount:** \$23,243.00

### Martin County St. Lucie Inlet South Jetty Engineering Investigation

**Owner:** Martin County

**Description:** An assessment of the St. Lucie Inlet south jetty was completed to document the overall condition of the structure and to recommend an approach for repair/replacement. After reviewing existing data and conducting a site visit with the County, an above- and underwater structural evaluation of the jetty was conducted along with a topographic survey and 3D scan to provide a baseline of the existing conditions. The 3D laser scanner provided a digital surface (3D point cloud) of the structure to capture a highly accurate, densely spaced data along with images to be transposed onto the 3D laser scan. The last phase of the fieldwork included use of sUAS (drone) equipment to gain full coverage of the waterward side of the jetty. A final Engineering Assessment Report recommended repair of the jetty and the findings of the investigation were presented to the USACE to initiate coordination for future projects involving the jetty and the shoreline immediately to the south. Tara Brenner managed this effort and coordinated field operations with the APTIM survey team.

**Contact Info:** Jessica Garland, Ph: 772-288-5795, [jgarland@martin.fl.us](mailto:jgarland@martin.fl.us)

**Duration:** 2018 – 2019

**Contract Amount:** \$30,818.20

### Manatee County 2020 (Planned) Beach Nourishment and Artificial Reef Construction

**Owner:** Manatee County

**Description:** Michelle Pfeiffer and Tom Pierro are managing the current effort to assist the County and USACE in the beach and borrow area design, permitting, and surveys needed to bid and construct the federally authorized project and Coquina Beach Nourishment Project in 2020. The federal project received 2018 supplemental funding, and by constructing it back-to-back with the Coquina Beach project the County will substantially reduce the mobilization costs as it did in 2014. The CPE Team is also providing mitigative artificial reef services to the County in support of both projects, including siting surveys, engineering design, construction oversight, and monitoring.

**Contact Info:** Charlie Hunsicker, Ph: 941-742-5923, [charlie.hunsicker@mymanatee.org](mailto:charlie.hunsicker@mymanatee.org)

**Duration:** 2018 – ongoing

**Contract Amount:** \$600,366.48

### 1.2.13 Proposers Certification / Signature

In compliance with RFQ No. 2020-02 - Coastal Engineering Services, Section 1.2.13, I attest and certify the following as an authorized member of Coastal Protection Engineering LLC:

- We understand all requirements of this solicitation and satisfy all legal requirements (as an entity) to do business with the Town.
- We hereby propose to furnish the Services specified in the Request for Proposal and agree to abide by all conditions of the solicitation and resulting contract.
- We acknowledge award of a contract may be contingent upon a determination by the Town that we have the capacity and capability to successfully perform the contract
- I have reviewed the information contained in this Solicitation and the information submitted is accurate.
- We agree that the action of electronically submitting our response constitutes:
  - An electronic signature on the responses, generally
  - An electronic signature on any form or section specifically calling for a signature, and
  - An affirmative agreement to any statement contained in the solicitation that requires a definite confirmation or acknowledgement.

Sincerely,



Thomas P. Pierro, P.E., D.CE  
Principal Engineer  
Coastal Protection Engineering LLC

Mobile: 561-756-2535

Email: [tpierro@coastalprotectioneng.com](mailto:tpierro@coastalprotectioneng.com)

## 1.3.1 Experience of Firm / Past Performance

### Company Credentials

Coastal Protection Engineering LLC (CPE) is a Boca Raton, Florida based coastal engineering firm founded in 2019 by well-established industry leading professionals with strong credentials and decades of experience in coastal programs from concept to construction. Our professionals have worked with the Town of Palm Beach (Town) consistently over the last 15 years, which has provided us with direct experience and in-depth knowledge of the unique needs of your coastal program. As a newly established firm dedicated to coastal engineering, CPE operates with a clear and direct focus on providing local government clients with highly specialized consulting services in support of projects that restore, manage, and protect coastal resources and infrastructure. CPE differentiates itself through a steadfast commitment to our clients and an uncompromising focus on technical excellence. Delivery of high-quality work products specifically for beach restoration and related coastal projects is our mission.

CPE's wide breadth of expertise and knowledge of your coastal program is further supported by the extensive depth of resources provided by Aptim Environmental & Infrastructure, LLC (APTIM) as our key subconsultant. APTIM and its family of affiliate companies have more than 120 years of service to public and private clients. Having grown from a series of mergers and acquisitions over the last 30 years, APTIM is a large, multinational engineering firm and highly respected provider of environmental solutions throughout the country and internationally. APTIM also includes the credentials of legacy firm Coastal Planning & Engineering, Inc., which has a long history of commitment to Florida's beaches and coastal communities throughout the state. With APTIM as our exclusive subconsultant for this contract, The CPE Team draws upon more than a century of experience and the expertise of employees worldwide, bringing a wide range of services and financial stability.

### The CPE Team

The CPE Team brings together the two firms of CPE and APTIM to serve the Town under this contract and our proposal herein presents the credentials of the combined team. Our professionals consist of coastal engineers, numerical modelers, coastal geologists, marine biologists, topographic and hydrographic surveyors, remote sensing and mapping scientists, computer-aided design (CAD) and geographic information systems (GIS) specialists, and a wide array of support staff. Our range of service offerings provide the full spectrum of expertise needed for coastal engineering projects including: coastal engineering design, coastal program management, inlet management plans, numerical modeling of coastal processes, coastal geology, marine hydrographic and geophysical surveys, state and federal permitting, project bidding and construction oversight, environmental assessments, and biological and physical monitoring for post-project performance evaluations and permit compliance.

Together as The CPE Team, our firms house the staff currently serving the Town of Palm Beach as coastal engineering consultants and are honored to have served the Town for the last 15 years. Our multidisciplinary approach is designed to handle all phases of coastal projects with the depth and breadth of expertise to go from reconnaissance studies through feasibility and design level analyses to construction management and post-construction monitoring. This foundation of engaging multiple scientific disciplines has delivered exceptional value to our clients through the entire process of project

implementation. Our professionals have extensive experience with all aspects of coastal engineering including beach nourishment, navigation projects, coastal structures (breakwater fields, groins, inlet jetties), marinas and boat facilities, numerical modeling of coastal processes, marine geophysical and geotechnical investigations, hydrographic surveys, NEPA compliance and permitting, and environmental monitoring.

Members of The CPE Team have provided professional coastal and marine engineering, hydrographic and geophysical surveys, and environmental services to Florida clients for decades. Over the years, we have earned an excellent reputation with local, state, and federal agencies responsible for permitting and overseeing marine and coastal programs. Our team's credentials include over 100 beach nourishment projects and over 30 coastal structure projects for municipal, state, and federal clients throughout Florida, the Gulf coast, and up the Atlantic seaboard.

Along the southeast coast of Florida, our professionals have worked with the City of Delray Beach, City of Deerfield Beach, City of Boca Raton, Palm Beach County, Indian River County, Martin County, Broward County, and Miami-Dade County on a number of large and small scale shoreline stabilization and restoration projects (ocean and bayside), as well as inlet management projects. The breadth of experience gained from these projects has provided our professionals with the knowledge and expertise to provide the Town of Palm Beach with creative solutions to solve complex coastal engineering issues.

### Local Government Experience

Our decades of experience collaborating with municipal and county governments has also instilled a responsibility to address each project with technical excellence, environmental consciousness, cost effectiveness, and public tax dollar budget-mindedness. We pride ourselves on developing cost-effective designs that meet requirements of regulatory and resource agencies and our proactive coordination with these agencies can facilitate a successful and timely permitting process. Our extensive experience designing and permitting coastal projects throughout Florida allows us to bring the expertise gained from other projects back to the Town so that you are always on the forefront of coastal matters and are getting the best service the industry has to offer.

This multidisciplinary technical staff is currently working with the Town of Palm Beach and has a great institutional knowledge of your coastal environment and experience with your Town government operations. We have a thorough understanding of the storm protection focus of the Town's Comprehensive Coastal Management Plan (CCMP), the benefits of the Town's participation in the Beach Management Agreement (BMA), and dynamic nature of the Town Council and the Shore Protection Board in an ever-changing regulatory climate.

Our team is based in Palm Beach County and organized to respond quickly to the Town's needs to address coastal engineering service requests, which is a distinct advantage we commit to the Town. Our comprehensive, interdisciplinary approach will facilitate project coordination with state and federal agencies and will help the Town develop and maintain cost-effective erosion control programs and preserve its valuable habitats.

Our entire team is available to work immediately on your projects and the capabilities of each of our departments are continually refined with the latest technologies, procedures, and equipment. With a robust organization dedicated to coastal services and a well-documented history of responsiveness to the Town, we are confident that The CPE Team can meet or exceed all of the requirements of the RFQ.

Summarized descriptions of our main disciplines are provided below:

### Coastal Engineering

The combined experience of The CPE Team's engineers is unmatched in the field of coastal engineering. Our projects are developed by a team of experienced coastal engineers and coastal scientists who are strongly grounded in coastal processes theory and applications. In doing so, we review our designs in the context of overall project objectives, and incorporate advanced numerical modeling analysis, where needed, as a tool to improve performance, cost-effectiveness, and longevity of projects. Our engineers have experience facilitating coordination between municipalities, local stakeholders, and the FDEP and USACE to obtain



*Mid-Town groin construction, 2018*

permits and funding for beach renourishment and coastal structures projects. We have assisted many of our clients with emergency storm damage response including rapid survey mobilization following a storm and coordination with FEMA, state, and federal agencies for emergency project authorization. Our team has also assisted some of our clients that have federal projects with development and coordination of language and funding requests for federal appropriation bills and legislation.

Our firm has engineered a variety of solutions for preserving coastal environments and protecting coastal infrastructure. In locations where nearshore hardbottom resources are known to exist, including the Town of Palm Beach, beach nourishment may require advanced design techniques aided by numerical models to optimize performance. In such cases, we have been very successful in designing modified projects to provide upland structures a level of protection without hardbottom impacts. We have also designed and managed construction of numerous dune restoration projects as emergency response measures as these projects can be rapidly permitted and constructed. If maintained through regular replenishments, dune restoration can help improve the storm protection function of the beach.

Our engineers are responsible for the study, planning, and design of beach and shoreline projects that include shoreline stabilization, habitat restoration, artificial reef construction, inlet/canal management, and coastal structures. Our success in providing engineering solutions is driven by application of proven methodologies combined with innovative design. Our engineers work closely with our biologists to provide timely, cost-effective solutions that meet our client's project goals while protecting the natural resources of the coastal ecosystem.

Through our comprehensive coastal management planning process, projects are approached in a prioritized, logical fashion, taking into consideration not only design alternatives but also cumulative effects, funding options, and the potential for cost savings through coordination between multiple municipalities.

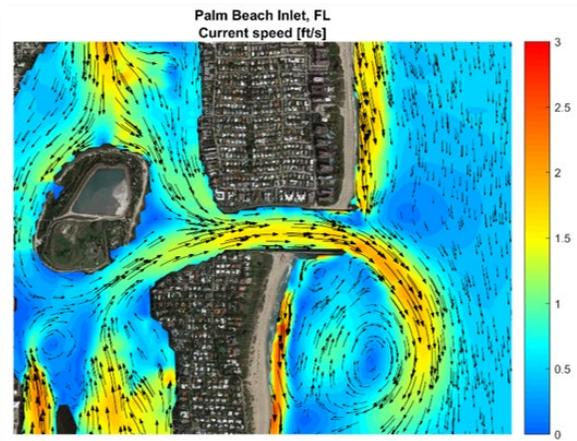
## Numerical Modeling

For over a decade, The CPE Team has continuously upgraded our coastal modeling capabilities to include models such as DELFT3D, XBEACH, MIKE21, and the complete suite of USACE numerical models, including the Boussinesq wave model BOUSS-2D. As a result, our professionals have emerged as industry leaders in coastal applications of DELFT3D, the most advanced process-based model in the world, used to simulate coastal change. Besides using the DELFT3D model in coastal studies across Florida, the CPE Team recently applied the DELFT3D model in the evaluation of the Southern Palm Beach Island Comprehensive Shoreline Stabilization project EIS, which was reviewed, accepted and published by USACE. This evaluation included the Town's Reach 8 Nourishment Project.

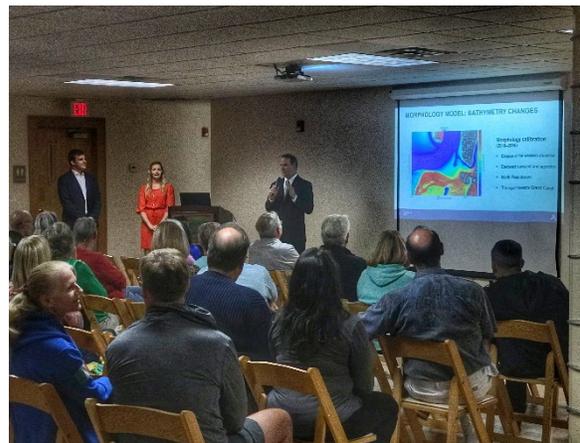
The CPE Team is on the forefront of coastal engineering numerical modeling and leads the industry in practical applications of advanced 3D morphology models. Our modeling studies are developed by coastal engineers and scientists who are strongly grounded in coastal process theory and applications.

We review our model results in the context of overall project goals and objectives and incorporate them into designs and analyses. We view these advanced models as tools to improve performance and longevity of the projects we design. The behavior of beaches, inlets, and intracoastal shorelines can be complex and dynamic. In order to overcome these complexities and test a wide range of solutions, we base each project design on proven engineering principles with the added benefit of state-of-the-art numerical models.

The CPE Team understands the value of communicating highly technical work such as numerical modeling, in a manner that is palatable to the public. We have experience performing complex coastal studies with local stakeholder participation. Our team presents professionally at both large and small group public meetings where we've found stakeholder input enlightening and valuable to the successful development of the project.



*Example of Lake Worth Inlet DELFT3D modeling*



*Presenting & Discussing Preliminary Modeling Results with Stakeholders in Pinellas County*

## Environmental

The CPE Team's staff of marine biologists are highly experienced in environmental permitting, habitat mapping, and biological monitoring in Florida. Our biologists have extensive experience monitoring nearshore hardbottom resources throughout Florida, including within the Town of Palm Beach. Each biologist has logged hundreds of scientific dives collecting benthic data for habitat assessments and mapping. This intensive experience has provided us with an understanding of the local ecology and effects of coastal projects. This knowledge is invaluable when permitting a project as we can easily convey the information the regulatory agencies need to conduct their review during permitting.



*Nearshore hardbottom resources in the Town*

Our biologists developed the BEAMR method, which is the State preferred monitoring protocol for impact assessments of reef and nearshore habitats. We are also experienced in the production of NEPA compliant documents, including Environmental Impact Statements (EIS) and Environmental Assessments (EA), as well as supporting documents including Biological Assessments (BA) and Essential Fish Habitat (EFH) Assessments.

Recently, staff of The CPE Team completed the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement (EIS), which evaluated shoreline stabilization alternatives for the Reach 8 project area. Additionally, we completed state and federal permitting for the Town for the Groin Rehabilitation project within the BMA thanks to our trusted relationships, comprehensive technical work products, and advanced coordination with the reviewing agencies.

Our biologists, engineers, and geologists work together to guide our clients through the permitting process based on a thorough understanding of current regulations and environmental resource concerns. Our team routinely prepares environmental resource permit (ERP) and joint-coastal permit (JCP) applications, coordinating with state and federal agencies to obtain authorizations for a range of marine and coastal projects throughout Florida. Our professionals have the reputation and technical expertise to provide comprehensive and accurate information to the regulatory agencies in a timely fashion and are highly experienced with the issues of primary concern to regulators evaluating marine and coastal projects.

## Survey & Mapping GIS/CAD

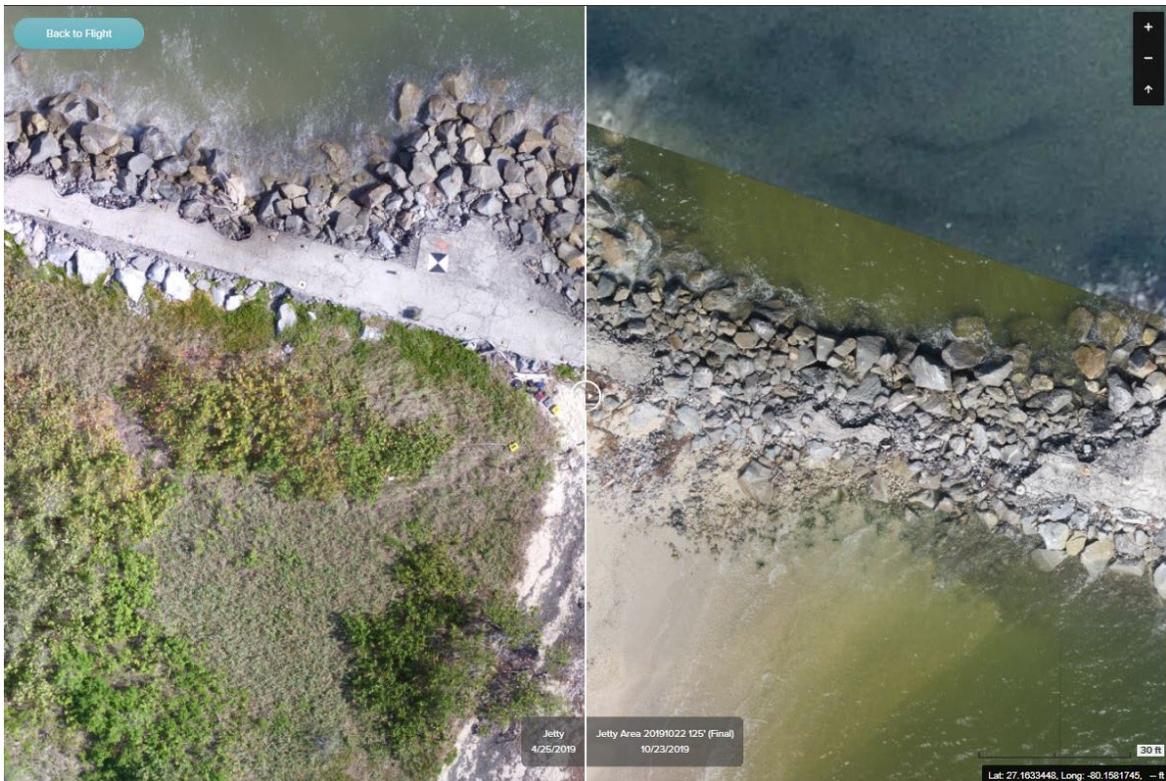
Our team of hydrographic surveyors performs beach and hydrographic surveys that exceed the State requirements and provide higher levels of data accuracy. Using RTK GPS, both on the boat and land, we integrate the land and sea measurements using real-time tidal and elevation corrections to obtain a seamless beach profile for volumetric analysis and engineering design.

Our survey crews also work with our in-house geologists and geophysicists to map geologic features such as sediment deposits, hardbottom habitats, and buried rock foundations for artificial reef construction.

The CPE Team recently added advanced laser scanning technology and drone usage as part of our already expansive list of tools and services. Utilizing these new technologies coupled with surveyed ground control, we are able to deliver signed and sealed digital elevation models (DEMs) in addition to high resolution imagery. A prime example of applying drone technology to save time and money, is in assessing storm impacts of coastal structures. Once baseline conditions are established, our crew is able to re-shoot a structure post-storm with a small crew and deliver highly detailed side by side comparison photographs in web based platforms such as, SiteScan3DR, as well as a precise DEM that can be evaluated for storm impacts to individual stones.



*Hydrographic surveying*



*Drone Imagery Slider Comparisons in SiteScan3DR*

Our GIS/CAD specialists integrate data from all disciplines for comprehensive analysis, data retention, and retrieval. All offshore investigations, seismic studies, sand and reef maps, environmental transects and quadrats are stored in a single platform and preserved for future use. Data products associated with the Town's coastal program can be easily and efficiently integrated with the Town's existing GIS infrastructure, which has proven to be very useful for Town staff in the past by providing quick access to our vast GIS database and creating large format maps for meetings and display. We support our clients with the most current GIS technologies and capabilities. Our team also has extensive experience creating interactive online GIS applications. The team's areas of expertise include Python language and the .Net Framework, Microsoft SQL Server, SQL Server File Stream, Microsoft SQL Server Reporting Services, ESRI JavaScript API and ESRI Python API.

## Geology

The CPE Team includes industry leaders in offshore marine sand search investigations and borrow area development for beach nourishment projects. Our coastal geologists have performed extensive mapping of your offshore environment and have located many sand deposits within the Town. Our offshore sand search study conducted for the Town years ago laid the groundwork for the high-quality sand used to construct the Phipps Ocean Park (Reach 7) Renourishment Project.



*Delray Beach sand search, 2019*

We combine state-of-the-art geomorphologic mapping with geophysical and geotechnical measurements to locate and define offshore beach-compatible sand deposits accurately and effectively. Our team has located billions of cubic yards of offshore sediments for coastal restoration projects throughout the nation. Our thorough understanding of the coastal environment and marine geology of the Atlantic Continental Shelf, combined with our extensive experience specific to sand source development, uniquely qualifies our team to perform marine sand searches for the Town. We own and operate the latest geophysical (sidescan sonar, interferometric sonar, seismic-reflection, magnetometer, single- and multibeam bathymetry surveys, 3D acoustic underwater inspection systems) and geotechnical (vibracore and benthic sediment samplers) equipment to map sediment resources, benthic habitat, and cultural resources.

In addition to our extensive experience in the Town of Palm Beach coastal area, our team members provided a technical review of the Southeast Florida Sediment Assessment and Needs Determination (SAND) Study Report developed by USACE's Jacksonville District to the Florida Department of Environmental Protection (FDEP). We also helped the State develop the "Reconnaissance Offshore Sand Search" (ROSS) database, which catalogs and makes publicly available all geophysical and geological data on potential sand resources within Florida waters in the Gulf of Mexico and Atlantic Ocean.

## Current Related Projects

Presented below is a sampling of our team's variety of related coastal projects. With the experience our two firms have working together, we commit to providing cohesive service to the Town with CPE subject matter experts leading tasks supported by APTIM's depth of professional resources and coordinating closely with the Town. For example, The CPE Team is currently working together on a truck haul beach nourishment project for Indian River County, which requires daily on-site engineering observations and construction support with responsibilities shared and communicated seamlessly among the team.

### City of Delray Beach Coastal Program

#### Sixth Periodic Renourishment

Since 1973, the City of Delray Beach has taken major strides to restore their eroded beach. Once at risk of being overtaken by the ocean, highway A1A and its neighboring properties have been protected by the wide beach and extensive dune system. Delray Beach is known through the U.S. as a wonderful beach destination and an important economic asset to the City and State.

To date, the City of Delray Beach (the City) has participated in eight beach nourishment projects. Approximately 7.9 million cy of sand from offshore borrow areas have been placed as a result of the City's beach preservation efforts. Since the initial nourishment in 1973, the City has maintained the beach through planned, periodic beach renourishments on five occasions, including 1978, 1984, 1992, 2002, and 2013.

Storm damage repair projects were constructed in 2005 and 2014 by the USACE in response to losses from the active 2004 hurricane season and Hurricane Sandy in 2012. Since the initial restoration in 1973, the project area retains approximately 5.1 million cy of beach compatible material, which is 64% of the total volume placed. The retention of material within the project area has continually improved, without significantly changing renourishment volumes of individual projects.



*Delray Beach absorbing the impact of H. Sandy in 2012*

The CPE Team is currently supporting the City in coordinating a Post-Hurricane Irma repair project through USACE and preparing for the Sixth Periodic Renourishment to follow. An offshore sand search investigation was completed earlier this year and the preliminary borrow area design has been drafted. Our biologists have mapped the landward edge of the offshore reef and are conducted a survey to identify ESA listed coral colonies along the reef edge. We are currently developing the permit modification request to extend the borrow area and anticipate project construction in 2020/21.

### Sea Turtle Monitoring and Public Outreach

The City of Delray Beach has been conducting sea turtle monitoring along its beaches continuously since 1984. Immediately prior to the 2019 nesting season, the City expressed interest in conducting public outreach events to engage and educate the public regarding sea turtle nesting and the beach renourishment program. Tara Brenner and Stacy Buck managed this effort and contracted with Ecological Associates as the local permit holder to complete the sea turtle monitoring component. Ms. Brenner and Ms. Buck coordinated the public outreach events to include City educators and the public. The events included a brief history of the City's sea turtle and nourishment programs, followed by excavations of recently hatched nests. The public response to the outreach events was very positive and the City has



*Public outreach event on Delray Beach during the 2019 nesting season*



*Tara Brenner in Protecting Paradise segment*

requested additional events during the upcoming 2020 nesting season. The CPE Team has aided the City Staff in educating the public about its coastal program in 2019 by hosting the Mayor at our offices, being interviewed and providing content for two segments of WPTV's 'Protecting Paradise' series, as well as developing FAQs and answers related to the upcoming beach renourishment events for use on the City's websites.

### Seawall Vulnerability Analysis

The City of Delray Beach is currently susceptible to sunny day flooding and wanted to assess the future vulnerability of seawalls and stormwater infrastructure along the Intracoastal Waterway to rising waters due to storm surge, tides, and sea level rise. Our team analyzed historic water level data and sea level projections to assist the City in adopting 30-year and 75-year planning elevations to reduce coastal flooding.

This work involved field assessment of the current conditions at City-owned and privately-owned seawalls, over 125 outfalls and their corresponding stormwater inlets along 21 miles of Intracoastal Waterway. The collected data was incorporated into a geodatabase for delivery and use by the City's GIS and engineering departments. The final phase of the work involved assisting the City to prioritize improvement projects and providing recommendations to implement future seawall elevation standards.



*Vulnerability assessments in Delray*



## Palm Beach County Coastal & Inland Programs

Members of The CPE Team have worked with the County on many aspects of their coastal and inland projects, including engineering, permitting, environmental monitoring, geotechnical and survey tasks for the projects described below.

### Palm Beach Island Comprehensive Shoreline Stabilization Project

Designed a shoreline stabilization project for Palm Beach County along the Towns of South Palm Beach and Lantana that used beach nourishment and groins. Since the County's project abuts the Town of Palm Beach's Reach 8 project area to the north, the USACE determined that these two projects would be a "major federal action" and should be evaluated together in one EIS in compliance with the NEPA. Members of The CPE Team worked closely with the USACE, the Town of Palm Beach, and the County to provide a comprehensive assessment of potential project impacts. This included coordination of scoping, identification of feasible alternatives, numerical modeling,



*Biological monitoring of hardbottom adjacent to the Reach 8 project area*

assessment and quantification of potential impacts to nearshore hardbottom, determination of appropriate mitigation, and support of ESA Section 7 consultation and the Magnuson-Stevens Act. The Final EIS was published in June 2016 and the Record of Decision is currently being drafted.

The goal of the project was to provide storm protection to the park and upland infrastructure, a stretch of beach that has been classified as "critically eroded." The project includes beach nourishment using sand from an upland mine and seven low-profile groins. The king pile and panel adjustable groins were designed to be level with the berm with panels that can be inserted or removed as needed to achieve the desired function. The project also included design and siting of an artificial reef as mitigation for potential impacts. Our geologists conducted a seismic survey to determine sediment depths over underlying rock that would provide a suitable location for placement of the boulder reef. APTIM biologists coordinated closely with FDEP to assess project impacts and provide a UMAM assessment to support the proposed mitigation.

### South Lake Worth Inlet Design and Permitting

The CPE Team was recently assigned to assist Palm Beach County in their preparations for dredging within the Intracoastal Waterway near the South Lake Worth Inlet (SLWI). Hydrographic surveys and grab sampling will be performed throughout the three dredge sites and two disposal areas. Sieve analyses will be performed within APTIM's CMEC accredited geotechnical laboratory. Engineering analyses will be performed to determine dredge volumes, expand the interior sand trap, and the disposal area capacities. Biologists will conduct pre-construction and post-construction surveys of seagrass distribution and abundance to the project area. Engineers, biologists, surveyors, geologists, and CAD/GIS specialists will work together to submit a permit modification request and prepare construction plans and technical specifications. The team will support the County through bidding and receipt of Notice to Proceed from the permitting agencies.

### South Lake Worth Inlet Sediment Budget Update

Our team is currently performing a periodic update to the sediment budget for the South Lake Worth Inlet in partial fulfillment of the FDEP adopted inlet management plan (IMP). This work includes volumetric analyses to quantify the measured volumetric changes north, south and within the inlet's area of influence, and participation in Technical Advisory Committee (TAC) meetings. Production rates were previously updated in 2018 and 2016 of sand bypassed by the sand transfer plant using pre- and post-dredge survey measurements. This effort will provide the County with an updated sediment budget based on a thorough analysis of historic and current data.

### Lake Worth Lagoon Cultural Resources Survey

Our geophysical specialists previously conducted a submerged cultural resource target clearance survey in association with a potential restoration project site within Bonefish Cove in the Lake Worth Lagoon. The goal of the survey was to locate, excavate and investigate targets within three avoidance areas previously identified as potentially significant and recommended for avoidance. Both magnetic and acoustic remote sensing methods were employed to survey the site, which identified 96 magnetic anomalies, three of which were identified as potentially significant submerged cultural resources and thus buffered for avoidance.

### Martin County St. Lucie Inlet South Jetty

Martin County requested an assessment of the St. Lucie Inlet south jetty to document the overall condition of the structure related to the jetty's design, condition and intended function. The jetty is located at the north end of St. Lucie Inlet Preserve State Park adjacent to the St. Lucie Inlet. It stabilizes the north end of Jupiter Island and is a popular recreation area for fishing and beach users.



*A mosaic of the South Jetty using drone imagery*

After reviewing existing data and conducting a site visit with the County, members of The CPE Team conducted an above- and underwater structural evaluation of the jetty along with an RTK topographic survey, 3D terrestrial laser scan, and sUAS (drone) photogrammetry to provide a baseline of the existing conditions.

The first phase included topographic data collection along the asphalt pathway and cross-sections of the jetty. The second phase of the survey consisted of a 3D laser scan and drone imagery collection to generate a digital surface (3D Point Cloud) of the structure. This phase utilized Terrestrial Laser Scanning (TLS) equipment, which allows for the collection of highly accurate, densely spaced data. An RTK GPS receiver was used to establish ground control points to register and geo-rectify the laser scan data. The laser scan does not penetrate the water surface; therefore, the laser scan was conducted at low tide to facilitate maximum data collection.

The 3D laser scan and sUAS photogrammetry data were merged to create a comprehensive topographic dataset for the jetty. A digital elevation model (DEM) was created and compared to the RTK GPS topographic data for comparison and validation. The collected data was used to generate an elevation contour map of the jetty.

An Engineering Assessment Report recommended repair of the jetty and the findings of the investigation were presented to the USACE in Jacksonville to initiate coordination for future projects involving the jetty and the shoreline immediately to the south.

With the baseline conditions documented in Spring 2019, Martin County was well positioned to evaluate potential storm impacts from Hurricane Dorian in Fall 2019. Once the conditions permitted, a small crew of surveyor and drone pilot were able to quickly collect post-storm conditions of the jetty. Pre- and Post-storm highly detailed drone image comparisons were created within an online project in SiteScan3DR for engineer and County review.

### Indian River County

Since 2012, The CPE Team's staff has been providing quality coastal engineering consulting services to Indian River County. During this time, we have successfully implemented major beach and dune management initiatives for the County. We provide comprehensive services to the County in support of their coastal program, including beach management, feasibility studies, design, engineering, permitting, construction management, biological monitoring, physical monitoring, grant writing assistance, and post-storm assessments.

#### Sector 3 Beach and Dune Restoration Project

The initial Sector 3 Beach and Dune Restoration Project was completed in three phases between 2010 and 2012. The initial project was 6.6 miles long and spanned from R-20 to R-55. Following completion of the initial project, the effects of Hurricane Sandy passing off the coast of Florida in October 2012 resulted in significant dune erosion to the project area. Members from The CPE Team designed, permitted, managed construction, and currently monitors the Sector 3 Dune Repair Project, constructed in the winter of 2014/15.

Instead of obtaining a new permit to address the damages, our staff was able to obtain an FDEP permit modification for a one-time truck haul sand placement project to quickly address this need. This provided a tremendous savings of time and money for the County.

Our team also developed a feasibility study to specifically address the damages that occurred from Hurricane Sandy. The renourishment project was to have "no impact" to the nearshore hardbottom communities fronting



*Pre- and post-construction of the 2014/15 Sector 3 Dune Repair*

the project area. The final project design entailed a modest dune feature and planting of dune vegetation from Treasure Shores Beach Park south to northern John's Island (R-24 to R-55). All construction activities occurred seaward of the existing dune vegetation line and above the Mean High Water Line (MHWL).

In total, the project placed approximately 173,068 cubic yards of sand. Following sand placement, the constructed dune crest was vegetated with Approximately 189,300 native plantings. Coastal engineers developed the post-construction physical monitoring report and continues to assist regarding post-project physical monitoring and biological monitoring support.

The CPE Team recently designed the next Sector 3 Beach and Dune Restoration Project with plans for 2020/21 construction. The project is anticipated to utilize sand from either upland sand mines and/or offshore borrow areas located offshore of the south end of the County. Field crews recently completed a sidescan sonar survey and diver verification of resources along the nearshore hardbottom edge, within the proposed pipeline corridors and within 400 m of the borrow area. This information is currently being processed to provide FDEP with a response to their request for additional information.

### Beach Preservation Plan (BPP)

In 2015, members of The CPE Team developed an update to the County's BPP, first adopted in 1988. The BPP details the County's strategies for the management and the long-term sustainability of its coastline. The purpose of this update was to reevaluate the condition of the County's coastline and identify cost effective alternatives to maintain and improve its sustainability. To accomplish this, the following goals were established: 1) avoid adverse impacts to environmental resources including nearshore hardbottom, 2) assess the vulnerability of upland property up to a 30-year storm event, 3) quantify the damages due to shoreline retreat over the next 30 years, and 4) determine the recreational value of the beaches.

To address these goals, several tasks were completed including updating the beach conditions by evaluating shoreline and volumetric change data and performing erosion and storm impact analyses. We also held public meetings to explain the objectives of the update to the BPP and to solicit public input into potential beach management strategies. Management strategies were developed and analyzed to identify cost effective alternatives to maintain and improve the sustainability of the County's beaches. Additionally, potential funding sources and mechanisms to fund these strategies were identified for the County's consideration.

### Post-Hurricane Matthew, Irma and Dorian FEMA Assistance

The CPE Team developed storm impact analysis reports for the efforts of securing FEMA Public Assistance disaster relief funding for the Sectors 3, 5 and 7 project areas after Hurricanes Matthew (2016), Irma (2017) and Dorian (2019). Beach volumetric changes and contour changes were calculated using surveys that were collected prior to and following the hurricanes. Beach contour changes were evaluated to document changes at the shoreline and the dune and volumetric changes were quantified above MHW and above the depth of closure.

The losses due to the storm impact were identified and storm repair costs were estimated to provide to FEMA. Additionally, a previously calibrated SBEACH model was utilized to determine if upland infrastructure is at risk from a 5-year flood elevation, which may qualify the area for Category B FEMA assistance.

### Sector 5 Beach and Dune Restoration Project

The CPE Team designed and permitted the Sector 5 Beach and Dune Restoration Project, which extends for approximately 3.1 miles (R-70 to R-86) and mostly includes the City of Vero Beach. The project included development of a project feasibility study and design, which was overseen by Tom Pierro. Stacy Buck managed the permitting effort and proactively engaged the regulatory agencies in order to generate a comprehensive permit application. The FDEP JCP application was deemed complete in less than 6 months and DA permit issuance quickly followed, which was supported by the Environmental Assessment we generated in compliance with NEPA. Project construction began on November 4, 2019 and is currently underway with construction observations and support being performed by members of both CPE and APTIM.



*Tom Pierro conducting an inspection of the newly constructed berm in Sector 5*

### Collier County 2019 Park Shore Truck Haul Project

In recent years, Collier County has been implementing their beach renourishment program through phased truck haul renourishments. Review of early 2019 monitoring data revealed that the Park Shore and Clam Pass Park reach was in need of maintenance. With multiuse permits and a sand purchase agreement already in place, construction plans and technical specifications were prepared expeditiously in order to bid the project for construction in late 2019. As part of the preparations for this project an erosion control line was surveyed and established within Clam Pass Park, which may increase the State's share in project funding.

The project was successfully bid and construction began in late October 2019 using truck haul and conveyor methods to deliver approximately 165,000 tons of material from an upland mine to the beaches. CPE and APTIM are currently supporting Collier County during construction by reviewing contractor submittals, conducting on-site observations, participating in weekly progress meetings and reviewing pay applications.



*Construction in Collier County*

### Lee County Coastal Engineering Services

Our Team provides diverse coastal engineering services to Lee County in support of various projects. Recent projects completed for the County's Natural Resource Division and an ongoing project for their Facilities Construction and Management Division are described below.

### Blind Pass Inlet Management Study

Blind Pass is located in Lee County and is bounded by Captiva Island to the north and Sanibel Island to the south. This area of the coast is characterized by a series of barrier islands and tidal passes that are separated from the mainland of Florida by various water bodies.

Members of The CPE Team prepared the Blind Pass Inlet Management Study for Lee County, with the primary focus to develop an updated sediment budget for the inlet and to evaluate strategies of inlet sediment management with the objective of balancing the sediment budget between the inlet and adjacent beaches pursuant to the requirements of Section 161.142, Florida Statutes. The Study evaluates options and provides a recommendation for the ongoing management of the Pass and the adjacent beaches within its area of influence, while considering the collective input of the appropriate federal, state, and local governmental agencies. The Study was developed and is being used collaboratively by Lee County, the Captiva Erosion Prevention District (CEPD), and the City of Sanibel. The primary goal of the Study is for FDEP to adopt an Inlet Management Plan for Blind Pass with the support of the affected local governmental entities.

The Study updated existing studies with the application of state-of-the-art models to address critical questions concerning the maintenance of Blind Pass and the performance and maintenance of adjacent beaches. An updated sediment budget was used to develop more efficient and effective regional sediment management approaches to improve the pass and adjacent beaches. It also used advanced numerical modeling to evaluate management alternatives that may employ interventions or enhance natural systems to the mutual benefit of Lee County, CEPD, the City of Sanibel, their residents, visitors and wildlife.

Stakeholder meetings for the public were held at study milestones to describe the technical portions, field questions from the public, and gather feedback for consideration in the Study. The meetings resulted in public understanding and overall support of the study. Our team also hosted Technical Advisory Committee (TAC) meetings via webinar at various stages during the development of the study to review and discuss the technical content, to present ideas, discuss options and gather feedback on the study.



*DELFT3D modeling of Blind Pass IMS alternatives*

### Gasparilla Island Shore Protection Project

The federally authorized Gasparilla Island Shore Protection Project includes multiple placements of beach quality sand along the shoreline of Gasparilla Island between FDEP reference monuments R-10.5 and R-24.5 on an as needed basis. Sand for each placement event will be dredged from the approved Gasparilla Ebb Shoal borrow area. CPE Team biologists assisted Lee County with the development and implementation of permit-required hardbottom monitoring for this project. In 2018, we coordinated with FDEP biologists to design a Biological Monitoring Plan for hardbottom and artificial reef resources. In 2018, we completed the baseline/pre-construction hardbottom survey and completed the initial post-construction monitoring event in August 2019 following construction of the Gasparilla Island SPP. The post-construction biological monitoring report was just submitted in November 2019.

### Sanibel Causeway Stabilization Project

The Sanibel Causeway is located in Lee County and connects the mainland to Sanibel Island in Fort Myers, providing the only access from the mainland to Sanibel and Captiva Islands. There are two islands along the causeway, Island A to the east and Island B to the west. Since 2017, CPE Team members have been assisting Lee County's Facilities Construction and Management Division with the design, surveys, and permitting for the Sanibel Causeway Shoreline Stabilization Project. The primary project purpose is to address chronic erosion of the San Carlos Bay and Pine Island Sound shorelines of Sanibel Causeway on Island B. The shoreline stabilization project aims to protect upland infrastructure by stabilizing the shoreline and addressing stormwater runoff, while considering the adjacent seagrass habitats and the recreational uses by the public. CPE Team biologists completed a baseline seagrass mapping and characterization survey in summer 2017. Based on these results, a no-impact project design on both shorelines was developed and the FDEP, South Florida Water Management District, and Department of the Army permit applications were submitted. Construction is scheduled to occur in 2020.

### Completed Commercial and/or Governmental Coastal Projects over \$5,000,000

The following details projects that both CPE and APTIM staff have worked on to bring from feasibility through construction. These projects exemplify the efficiency of our multidisciplinary team that can address every aspect of a coastal project. With CPE's breadth of experience supported by the depth of resources provided by APTIM, The CPE Team is unrivaled in completion of large-scale coastal projects that exceed \$5,000,000 in construction costs.

### Pinellas County Upham Beach Stabilization Project



*Post-construction of Upham Beach Stabilization Project, 2018*

Upham Beach is located on the west coast of Florida in Pinellas County at the northern end of the Long Key gulf coastline. In an effort to reduce the historical shoreline erosion downdrift of Blind Pass and to stabilize the beach, a temporary geotextile tube T-head groin field was installed following the recommendation for structural stabilization in the 1992 Blind Pass Inlet Management Plan.

On behalf of Pinellas County, our staff provided project design, permitting, bidding, construction management and observation, and certification services for the 2005 geotextile tube groin field construction project. Our engineers conducted periodic site visits to observe permit compliance, compliance with plans and specifications and to assist with project coordination between the project engineer, the County, and the contractor. Since the installation of the geotextile tube groin field, the performance of the groins has been monitored and proven to be effective in reducing erosion rates in the local area without negatively influencing downdrift beaches.

Since many of the geotextile tubes sustained damage during their service life, a 2010/11 repair project restored the groins as a temporary solution until the installation of the permanent structures. Our engineers acquired permits and developed plans and specifications for the Geotextile Tube Repair Project, performed on site construction observations and certified the project.

The County sought a permanent solution that maintained the storm protection and stabilization attributes of the initial geotextile tube T-head groin design, while minimizing impacts to beach users. Pinellas County selected a project consisting of four permanent rock structures in approximately the same location as the existing geotextile tubes. CPE Team members obtained the FDEP and USACE permits for this project and oversaw the successful construction from July 2017 to October 2018.

### Panama City Beach Renourishment Project

Engineers from The CPE Team were responsible for reformulation of the 17-mile, \$30 million Federal beach nourishment project designed to protect Panama City Beach. The project was constructed in 1998/99 and since that initial nourishment, we have provided the following services to Bay County: preparation of permit applications; assistance with state and federal funding applications; development of environmental documents for agency coordination; preparation of the supplement to the General Design Memorandum to modify the



*Construction of 2017 Panama City Beach Renourishment Project*

design; modification of upland drainage features and stormwater outfalls; preparation of plans and specifications; processing of the Erosion Control Line and assistance with upland easements; offshore geotechnical investigations including vibracores; construction inspection and beach and hydrographic surveys; environmental and physical pre-, mid- and post-construction monitoring; and public outreach. The 1998/99 project exceeded expectations and did not require renourishment at the anticipated 5-year design interval in 2004.

In 2005/06, we worked with the USACE Mobile District and the local sponsor to fast-track the emergency restoration of the beach following impacts from Hurricane Ivan. Our professionals quantified storm losses that qualified for FEMA and USACE emergency funding. Our surveyors conducted offshore sand investigations and bathymetric surveys and located additional local borrow area sites, which ultimately saved construction time and reduced local costs. We worked together with USACE and the Bay County TDC to expedite design and permitting, and continued to assist during construction, which began in April 2005 under the direction of USACE. A total of 3.3 million cubic yards of sand were placed along 17 miles of Panama City Beach, a portion of which included a truck haul project in Carillon Beach and Pinnacle Port Reach.

We assisted the USACE in assessing the 2005 hurricane impacts to the project area, which allowed for the planning of a project to address the storm losses (constructed fall 2011). In 2013, CPE Team

members assisted with obtaining a 15-year permit, which includes options for truck haul and dredging offshore sand sources.

Based on annual monitoring data, the need for a hot spot nourishment project was identified in 2016. In spring 2017 a hot spot renourishment project was constructed placing nearly 1 million cubic yards of high-quality sand on the beach to address four narrow areas and bring them back in line with the rest of the project. The 2017 project used three dredges, two borrow areas, and an innovative inline screening machine to reduce shell content.

Presently our staff is supporting the Bay County TDC with post-Hurricane Michael coordination with USACE for the Panama City Beach project area and conducting an offshore sand search to locate a sand supply for the restoration of Mexico Beach, which sustained a direct hit by this record-breaking storm.

### Collier County 2013/14 Beach Renourishment Project

For nearly 20 years, we have assisted Collier County in designing, permitting, implementing and monitoring their comprehensive shore protection project along 8.5 miles of coastline along the Gulf of Mexico. Members of The CPE Team obtained a flexible permit modification for the 2013-14 project, which provided the County the option to construct their project utilizing offshore dredged sand or upland truck hauled sand. The 2013-14 project was constructed using truck haul methods to place 240,000 cubic yards of sand on the County shoreline.



*Post-construction of Naples Beach in 2014*

During construction of the 2013/14 project, our team provided routine on-site construction management services. Following construction, CPE Team biologists completed post-construction biological monitoring with Collier County divers to establish and monitor permanent cross-shore transects annually. During each survey, we document the benthic communities and substrate cover along each transect. The protocol also includes tracking health and growth of a subset of stony coral colonies along each transect. Video and photo documentation is also collected along each transect.

This monitoring also included delineation of the nearshore hardbottom edge during each annual survey. The positioning data is recorded, and results of each post-construction hardbottom investigation are compared to the pre-construction hardbottom mapping survey to show changes in hardbottom exposure over time.

## Delray Beach Fifth Periodic Renourishment Project

Since 1973, the City of Delray Beach has taken major strides to restore their eroded beach. Once at risk of being overtaken by the ocean, highway A1A and its neighboring properties have been protected by the wide beach and extensive dune system in Delray. Delray Beach is known through the U.S. as a wonderful beach destination and an important economic asset to the City, Palm Beach County and State of Florida.



*During-construction of Delray Beach in 2013*

The Fifth Periodic Beach Renourishment Project was constructed in March and April 2013 and included the placement of approximately 1,158,500 cubic yards of sand along the 1.9-mile project area in Delray Beach. The project reestablished the federally authorized project based on the 2001 Limited Reevaluation Report, and replaced losses caused by Hurricane Sandy in October 2012.

During construction, engineers provided continuous construction oversight. The on-site observer constantly monitored sediment quality and verified that fill placement met the design template. During demobilization, engineers were present to ensure that the contractor returned the access and staging area to its original condition. Post-construction physical monitoring surveys, engineering monitoring calculations, and coordination for environmental compliance tasks are performed by CPE Team members.

Our biologists have provided numerous pre- and post-construction monitoring surveys to detect potential impacts associated with construction. This has included infaunal sampling at the fill and borrow area sites, quadrat-based benthic assessments, sediment monitoring, mapping the western boundary of the offshore reef edge and creating a DGPS-integrated video record of the reef. We also conducted a survey for the listed coral species *Acropora* spp. along the reef using the NMFS-recommended protocol.



*Reef resources offshore of Delray*

## Manatee County 2013/14 Shore Protection Project

In the winter of 2013-14, two projects were constructed on Anna Maria Island. The Anna Maria Island Shore Protection Project was constructed in the federally authorized project area and was administered by the U.S. Army Corps of Engineers (USACE), Jacksonville District. The Coquina Beach Nourishment Project was constructed by Manatee County at the south end of the island immediately following the Central Project utilizing the same contractor and dredging equipment to obtain sand from Passage Key Inlet. Both projects repaired damages from Tropical Storm Debby, which impacted the area in June 2012. The federally authorized project received FCCE funding, and the locally-constructed project received FEMA funding to replace the storm damages, thereby reducing the local cost share. In addition to the storm repair, the projects placed sand to re-fill the beach templates to their full capacity. The

projects placed about 1,148,000 CY of sand along about 5 miles of the island. APTIM assisted the County in coordinating the timing of the local renourishment to coincide with the federally-authorized project which resulted in substantial cost savings to the County.

### Shell Island Barrier Enhancement Project, Louisiana

Shell Island is located immediately west of the Empire Jetties in Plaquemines Parish and has undergone rapid shoreline retreat and disintegration. The CPE Team members developed a feasibility report for the Shell Island portion of the Barataria Basin Barrier Island Shoreline Restoration Study. We performed coastal engineering analyses including shoreline changes and volumetric changes due to longshore transport, cross-shore transport, overwash, and relative sea level rise. Updated relative sea level rise rates were calculated based on the latest NOAA measurements of subsidence along the Louisiana coast.



*Shell Island, LA construction*

An even-odd analysis was performed to investigate the effect of the jetties on shoreline retreat. Acreage values for a Wetland Value Assessment were developed for various target years following construction using the Barrier Island Community Model. A without project assessment was also made. The cross-shore model (SBEACH) was used to predict the cross-shore response of the with- and without-project conditions at various target years.

A marsh settlement analysis provided time settlement curves, which incorporate consolidation of the underlying soils and consolidation of the marsh fill material itself. The analysis highlighted the marsh elevations required at construction to maximize the period during which the marsh is in the intertidal zone.

The Mississippi River was targeted as a borrow source, and geophysical surveys and vibracores were collected to facilitate the development of several borrow areas. The project was designed with a 50-year life to provide benefits without requiring renourishment cycles. The CPE Team also performed construction oversight as the \$120 million project was implemented. Major tasks within this project included:

- Review of existing data and analysis of coastal processes
- Collection of additional geophysical, geotechnical, bathymetric, and magnetometer data
- Development of project alternatives and modeling of project future performance
- Development of Mississippi River borrow areas
- Analysis of borrow area impacts with numerical modeling in the Mississippi River
- Coordination with the Mississippi River pilots associations to share the River during construction
- Final engineering and design of preferred alternative
- Development of plans and specifications and detailed final construction cost estimate
- State and Federal permit application and support
- Construction administration and oversight

## Schedule/Budget Compliance of Previous Work

Staff with The CPE Team have been providing professional coastal engineering services for the Town of Palm Beach for decades and our track record with providing project deliverables on schedule and on, or under, budget speaks for itself. Furthermore, as a new firm located in Palm Beach County with staff fully dedicated to coastal engineering services, we are excited to demonstrate our ever-growing commitment to the needs of the Town. If awarded, we would be honored to have the Town of Palm Beach become our first governmental client as the newly formed CPE and commit to serving that responsibility with the utmost attention and technical excellence.

Our team is fully qualified to help the Town with optimizing costs for construction of coastal projects such as beach nourishments and coastal structures. A number of variables influence the cost of beach nourishment projects such as dredging market conditions, dredging conditions at the project site, seasonal influences and regulatory restrictions, among other items. The market conditions include an evaluation of the dredging industry to determine the level of utilization of the dredges that are capable of constructing the beach nourishment project.

Another variable is the location of the borrow area in relationship to the project area and is key in terms of determining what type of dredge may be used for construction of the project and the cost to use the dredge. If the distance is manageable, hydraulic dredges are more efficient and less costly than hopper dredges, both of which construct beach renourishment projects. Also, sand pumping distances influence the project cost with longer distances reducing the production level and increasing the unit cost.

Regulatory requirements will influence the project cost and are generally conditioned around environmental protection. More restrictions contained in the permits will increase the project cost, which will be reflected in an increased unit cost. Seasonal influences can also affect the project cost. Dredging during the fall and winter months, or dredging of shoals in open waters, presents construction difficulties in terms of increased wave heights at the dredge site that typically result in lower production rates.

In estimating the project cost, it is also important to carefully evaluate the potential disruptions to the dredging operation that may be reflected in the project cost. Other factors to be considered include the sediment characteristics, available staging areas, available dockage, overall living expenses of the areas where crews will be housed, relative fuel prices, requirements for the use of booster pumps in the pipeline and other similar considerations.

We take all of these factors into account in our cost estimating methodology so that the Town is not caught by surprise by unexpected bid prices or project constructability issues.

## Understanding of the Town's Needs

Palm Beach is a unique coastal community with a complex coastal environment that requires an in-depth understanding of the resources, challenges, and programs designed to protect it. Being an island community downdrift of Lake Worth Inlet, the Town's beaches have experienced erosion as a result of the interruption of littoral transport, storm impacts, and armoring of portions of the coastline. The Town has developed a Comprehensive Coastal Management Program (CCMP) to address these challenges. The CPE Team staff have worked on projects with the Town under the CCMP; we understand the Town's goals and are ready to assist with the implementation projects currently outlined in the CCMP and any new coastal projects that may arise in the future.

For management purposes, the shoreline in the Town of Palm Beach is divided into Reaches, referencing FDEP monument designations. These Reaches were defined considering both coastal zone features and local political boundaries with the intent of breaking up the complex task of Town-wide coastal protection into manageable elements. The primary goal is to implement shore protection projects, monitoring, and related tasks in a cost-effective and programmed manner within the Town's 10-year coastal management budget.

Previous work within the Town has allowed our staff to develop a deep understanding of the management required moving forward at both an island-wide and individual Reach scale. As a result, The CPE Team is uniquely positioned to draw on our prior project experience and the depth of knowledge of our seasoned professionals to review, research, design and plan all components of coastal engineering projects for the Town.



*Lake Worth Inlet, December 2019*



*Sand Transfer Plant, December 2019*

We understand that all work to be completed for the Town along the Atlantic Ocean needs to be within the CCMP framework. In addition to our experience with beach nourishment and coastal structures covered by the CCMP, The CPE Team also has experience with flood management, vulnerability assessments, sea level rise adaptation, and resiliency planning should those needs arise.

Our specific understanding and approach to the Town's coastal projects is described on the next pages of this document, on a Reach by Reach basis:

## Reach 1

Reach 1 extends 2,410 feet from Lake Worth Inlet to Onondaga Avenue (R-76 to R-78) and includes the discharge location of the Lake Worth Inlet Sand Transfer Plant, which is located south of the south jetty. Aerial photographs, site visits, and long-term physical monitoring have shown that inlet sediment bypassing efforts have benefited Reach 1 and this reach has a net gain of over 570,000 cy of sand since 1990.

The primary management approach for Reach 1 involves continued maintenance and operation of the sand transfer plant, supplemented by the placement of beach quality sand from the maintenance dredging of Lake Worth Inlet. Continued communication with the Port of Palm Beach and USACE relative to maintenance dredging and material placement above Mean High Water in Reach 1 is an ongoing need to ensure proper beach placement of dredged sediments.

The potential for the Corps to place sand in additional areas of need identified by the Town (Mid-Town, Phipps, etc.) should be evaluated. The annual physical monitoring reports conducted by the Town should also continue to monitor the shoreline north of the inlet to evaluate sand arriving at the sand transfer plant for bypassing into Reach 1. The potential for extending the sand transfer plant discharge into Reach 2 or expansion of the authorized sand placement area further south has been evaluated and incorporated as recommended strategies in the FDEP 2018 Strategic Beach Plan. If these strategies are to be implemented the exact location and potential impacts of the management alternatives need to be determined in an updated inlet management study. In the meantime, mechanical placement of bypassed sand from Reach 1 into Reach 2 to promote inter-reach management is a valuable approach to maintain a design storm protection berm within Reach 1 and Reach 2.



*Sand bypassing to Reach 1, December 2019*

## Reach 2

Reach 2 extends 13,660 feet from Onondaga Avenue to El Mirasol (R-78 to R-90+400') and contains extensive nearshore hardbottom. While the presence of hardbottom has limited the Town's ability to place sand directly in this area, the northern portion of the Reach has benefited from the sediment bypassing from the Lake Worth Inlet. These benefits are generally limited to the beach north of R-79 and dissipate in the central and southern portions of Reach 2. Activity in Reach 1 directly impacts the Reach 2 shoreline. Mechanical forepassing, extension of the sand transfer plant discharge into Reach 2, or expansion of the authorized sand placement area further south would benefit Reach 2.



*Reach 2, December 2019*

Likewise, the northern extension of the Mid-Town project will provide some relief to the erosion pressure at south end of Reach 2. The previously completed replacement of the North Ocean Blvd. seawall in this reach has stabilized the uplands in this area but shoreline response should be closely monitored. The Town should also work with residents to evaluate the current condition and level of protection from coastal storms afforded by private seawalls, which protects upland infrastructure and affects the Town's resiliency.

### Reaches 3 & 4

Reaches 3 and 4 generally comprise the Mid-Town Beach Nourishment project area and cover a combined area of 13,865 feet from El Mirasol (R-90+400') to near Banyan Road (R-102+300'). The Mid-Town project has been nourished in 1995-96, 2003, 2006, and 2015. The recent project placed 966,587 cubic yards of sand in Reaches 3 & 4. This project included a modified project footprint and an extension of the northern taper into Reach 2 to improve the performance of Reach 3, which may also provide some benefit to Reach 2 through natural processes. In conjunction with the existing groin field, the fill projects have been highly successful resulting in increased volume and beach width in Reaches 3 and 4, Reach 5, and into Reach 6 and to a lesser degree, Reach 7.



*Reach 3, May 2017*



*Reach 4, Mid-Town Beach, December 2019*

Prior to the impacts of Hurricane Irma, part of the long-term plan has been to move Mid-Town to an 8-year renourishment cycle that is offset from the Phipps (Reach 7) project by 4 years. This would allow the Town to construct nourishment projects on a 4-year reoccurring cycle to keep sand in the system while spreading out the costs over time frames that the beach management revenues can cover with limited debt service. The staggered schedule and stockpiling will also facilitate periodic nourishment in Reach 8, which is included in the EIS. As a cost savings to the overall program, the Town trucked 103,734 cubic yards of sand, dredged from the Mid-Town borrow area and stockpiled in Reaches 3 & 4, to Reaches 7 & 8 for dune construction.

Following the impacts of Hurricane Irma, the USACE received unprecedented funding for coastal protection projects. Due to the efforts of Town staff, the USACE is poised to construct the Mid-Town project and stabilize the nourishment cycle as a Federally authorized project. Going back in history, legacy staff of The CPE Team successfully worked on behalf of the Town to design, permit, and secure Federal funding for the Mid-Town nourishment project in the early 1990s. While the Federal project was not pursued by the Town at that time, the present staff of CPE is highly familiar with the process

required to collaborate with the USACE on Federally authorized projects in a cost-effective and timely manner.

In 2017/18, staff of The CPE Team completed an assessment of the Mid-Town seawall and assisted the Town with final design and construction administration to install a new rock groin in Mid-Town. Completion of this project was critical in providing added protection for the aging seawall and stabilizing the southern portion of the Mid-Town Public Beach.

The Breakers Hotel, located in Reach 4, is currently in discussions with the Town to modify its existing coastal structures (nearshore breakwaters and groins). Sand placement adjacent to the hotel and Clarke Beach may also be needed to stabilize the shoreline in this area. The Town should continue to thoroughly review the proposed plans and coordinate with FDEP to confirm the proposed project will not adversely affect Clarke Beach and other downdrift beaches. Should the Town choose to move forward with the Town-Wide Groin Rehabilitation Plan, coordination with the selected option for the Breakers will be a key factor to the success of both projects.

### Reach 5

Reach 5 is immediately downdrift from the Mid-Town project area and extends 9,065 feet from Banyan Road to Widener's Curve (R-102+300' to R-110+100'). Reach 5 experiences periods of recession and accretion, but over the long term, the Reach 5 segment has increased in volume and beach width due to the beneficial transport of sediment from the Mid-Town beach nourishment projects. The groin field in Reach 5 has also performed well over the long term, due primarily to the feeding of sediment from the Mid-Town projects over time evidenced by the Town's effective monitoring program.



*Reach 5, May 2017*

At this time, the management approach for Reach 5 is to continue monitoring to assess the benefits from the Mid-Town project and consider constructing restoration projects in environmentally suited areas. Improvements to performance may include a southerly expansion of the Mid-Town fill template to facilitate post-storm emergency repairs and rehabilitation of the existing groins as part of the Town's overall coastal structures maintenance (Groin Rehabilitation) plan in conjunction with the BMA. In the future, the Town may want to evaluate the potential to place inlet or upland sand for future maintenance or post storm projects, although the present condition is stable. As with other reaches, the Town should also work with residents to evaluate the current condition and level of protection from coastal storms afforded by private seawalls, which protect upland infrastructure and improve coastal resiliency.

### Reach 6

Reach 6 extends 6,685 feet from Widener's Curve to Sloan's Curve (R-110+100' to R-116+500') and is characterized by a narrow beach, rock revetment and low-profile groins. Reach 6 has benefitted from the southerly littoral transport of sand, specifically the Mid-Town project. Annual monitoring data suggests that the functional limit of this beneficial downdrift effect occurs in the vicinity of the FDOT revetment between R-111 and R-116, approaching the northern limit of Reach 7. Based on recent

conditions, this range may be achieved, or is soon to be. Even though the groin field and revetment in Reach 6 is likely retaining sand coming from the north, the recent monitoring reports suggest the downdrift movement of sand is benefiting the entire reach for the first time during the Town's shore protection program. As a result, the previous erosion stress on Reach 7 due to the hardened shoreline of Reach 6 may be relaxing. The structures appear to be effective at holding a modest amount sand to protect the toe of the revetment and should remain in place.



*Reach 6, December 2019*

At this time, the management approach for Reach 6 is to continue monitoring the beach width, sediment transport, and structural integrity of the revetment and groins. The Town's recent effort to obtain a permit for the repair of the southern end of the revetment was a wise approach; The CPE Team assisted with by providing photographs demonstrating previously exposed rock and allowed the Town to pursue an expedited permit.

### Reach 7

Reach 7 includes the Phipps Ocean Park Beach Nourishment project area and originally extended 8,725 feet from Sloan's Curve to The Ambassador Hotel (R-116+500' to T-125). The southern boundary was recently extended to the Lake Worth Pier based on a change in the management approach to allow the beach from the original south end of Reach 7 (T-125) to Kreisler Park to be nourished as part of the Phipps Park project moving forward. Reach 7 was first nourished in 2006, which included a dune restoration project that extended north of Phipps Ocean Park to Sloan's Curve. The project has benefited the central and southern portions of Reach 7. However, there is an apparent hotspot at the north end of Reach 7 attributable to the combined effects of the minimal sediment transport from Reach 6 and permit restrictions on fill placement. Adaptive management of Reach 7 has resulted in better performance of the recent project and continual community outreach are vital to effective management.

The beach nourishment project completed in March 2016 placed approximately 1,000,000 cubic yards of dredged sand on the beach. As a cost savings to the overall program, the Town stockpiled 25,000 cubic yards of dredged sand in Phipps Ocean Park with 10,000 cubic yards to be trucked to Reach 8 between the Bellaria Condominium and La Bonne Vie for a dune restoration project. As described above in the Mid-Town section, the long-term plan has been to move Phipps to an 8-year renourishment cycle that is offset from the Mid-Town project by 4 years. This would allow the Town to construct nourishment projects on a 4-year reoccurring cycle to keep sand in the system while spreading out the costs over time frames that the beach management revenues can cover with limited debt service. The staggered schedule and stockpiling will also facilitate periodic nourishment in Reach 8, which is included in the EIS.



*Reach 7, December 2019*

However, the upcoming project for Mid-Town is planned to include Reach 7 as additional work in the USACE contract for Mid-Town. This approach will bring sand to the Reach 7 shoreline at a far reduced mobilization cost and benefit from an economy of scale being bid with the Mid-Town project. Sand will be trucked (under separate contract by the Town) to Reach 8 and 9 in a collaborative arrangement with the Town of South Palm Beach. Staff of The CPE Team worked extensively on the South Palm Beach project with Palm Beach County and have great relationships with these local government and neighboring communities to facilitate further cost-saving collaboration as this creative phase of the project takes shape. As with other reaches, the Town should also work with residents to evaluate the current condition and level of protection from coastal storms afforded by private seawalls, which protect upland infrastructure and improve coastal resiliency.

## Reach 8

Reach 8 originally extended 10,690 feet from the Ambassador Hotel to La Bonne Vie (T-125 to T-134). The northern boundary was recently truncated at the Lake Worth Pier based on a change in the management approach as described above. Analysis of shoreline and volume changes indicates benefits from Reach 7 (Phipps Ocean Park) as a result of sand spreading downdrift; however, the magnitude of this benefit appears to lessen over time as the shoreline equilibrates. Overall volumetric losses occur in the northern portion of the reach with gains in the southern portion (ATM 2016). This trend is consistent with previous



*Reach 8, December 2019*

shoreline analyses, which showed the extent of the Reach 7 benefit appears to be limited to areas north of the Lake Worth Pier (CP&E, 2008). South of the pier, Reach 8 exhibits a narrow beach with intertidal and subtidal hardbottom resources, which necessitated the preparation of the EIS for the Southern Palm Beach Island Comprehensive Shoreline Stabilization project to evaluate potential impact on these resources.

In conjunction with the previously completed Phipps Ocean Park project described above, the stockpiled sand was trucked south to restore the dunes in April 2016 to provide temporary protection while the EIS is being finalized. Adaptive management of Reach 8, collaboration with neighboring communities, and continual community outreach are vital to its proper and effective management. The Town should continue to pursue environmental permits, utilizing the EIS, to manage Reach 8 in proactive coordination with Reach 9 for longevity and cost savings. The schedule is being set-up to coincide with the upcoming Mid-Town / Phipps Ocean Park project to utilize stockpiled dredged sand to save the cost of trucking from upland sand mines. The Town should also work with residents to evaluate the current condition and level of protection from coastal storms afforded by private seawalls, which protect upland infrastructure and improve coastal resiliency.

## Town-wide Efforts

In addition to the individual projects organized by Reach, the Town also conducts equally important Town-wide studies to continually improve the management of its coastal resources and enhance overall resiliency to coastal storms and sea level rise. These include annual monitoring studies and sediment budget updates, groin inventory and rehabilitation planning, and a recently completed vulnerability assessment.

Additional context on these subjects is provided below along with a conceptual idea for development of a “active model” as a proactive tool to support the future of the Town’s coastal program:

### Annual Monitoring and Sediment Budget Analysis

Each year, the Town surveys the beaches and nearshore waters from Lake Worth Inlet to the Town of South Palm Beach, covering the 12.2 miles of Town shoreline in increments of approximately 1,000 ft alongshore. This effort has created a highly valuable database for the Town to evaluate the health of its beaches, track the movement of sand throughout the Town, and measure the performance of the overall program by Reach over time. This data helps Town staff and its consultants evaluate and document impacts from tropical storms and hurricanes, track sand transport both alongshore and cross-shore, and provide a basis for the annual report regarding the maintenance of storm protection afforded by the coastal program, which is reviewed by the Shore Protection Board and submittal to Town Council.

Recognizing the importance of this dataset, we would offer to assist the Town in continuing to maintain this long-term record with a fresh look at the data and new graphics to better illustrate important features and findings. For example, recent monitoring reports prepared by our team for similar Florida communities have included looking at volume density changes by depth to get a better sense of the cross-shore distribution of sand in more refined intervals. This would allow the Town to account for dramatic visual changes to the beach observed after storm events and provide a basis for projecting where or when the sand may return to the beach. We would also propose to create a long-term (several years) and short-term (one year) longshore transport curve that can be updated over time to better define the updrift and downdrift effects of the Town’s coastal program initiatives, such as beneficial spreading of sand to adjacent beaches following beach nourishment events.

### Groin Inventory and Rehabilitation Plan

As of a July 2014 inventory update performed by CB&I (an APTIM legacy company), the Town has identified 124 coastal groins in various condition and function. Based on the assessment performed by staff of The CPE Team during that effort, it was anticipated that 75 of the existing structures would require some level of work to maintain functionality into the future. At the time, it was proposed that 34 groins should be planned for removal to the greatest extent practicable based on the condition of the beach at the time of construction, and the remaining 41 be removed and replaced with a concrete king pile and panel groins. The recommendations were mainly based on maintaining current level of function, improving aesthetics, and reducing hazards in a manner that works in concert with the beach nourishment program and other coastal protection efforts.

The resulting Groin Rehabilitation Plan was presented to the Shore Protection Board and Town Council and has received regulatory authorization from the State under the BMA and Federal Government via Department of the Army permit for implementation. Considering the large scale and potential cost of the program, implementation of the program has been conceptualized as a Town-wide effort with phased construction (multiple events) over the course of several years. This program is currently in a holding stage while ownership and liability are further evaluated. Should the Town Council decide to move this effort into priority status, The CPE Team will be prepared to assist as agents of the Town.

### Vulnerability Assessment

Recently, the Town embarked on a noble study to evaluate vulnerability of the Town-wide coastal infrastructure and potential risk of projected future changes in storm intensity and sea level. The assessment provided guidance to the Town for prioritizing and planning future flood mitigation projects

and suggested adaptations to improve coastal resilience now and into the future. The assessment relied on a probabilistic, dynamic model developed by Woods Hole Group, Inc. (WHG) specifically for the Town of Palm Beach.

The report provided Town staff results for a wide range of scenarios to assess and prioritize decisions using maps and tables from this coastal flood vulnerability assessment and recommended development of Implementation Plan to define the path forward. If the Town chooses to move the next phase of this study, The CPE Team can assist with additional site-specific analyses with storm modeling tools such as XBEACH from the developers of the DELFT3D model or by acting in a peer-review role to assist Town staff with assessing recommendations, reviewing results, and advising on future initiatives or focus areas.

### CCMP Update and Active Model of Palm Beach Island

Looking forward to the future of the Town's coastal program, a periodic update of the CCMP may be needed. The CPE Team is well prepared to assist the Town with that update but also can offer to bring the plan forward with modern technology and numerical model applications. Development, application, and maintenance of a regional (island-wide) wave and physics-based sediment transport model was also recommended by WHG in their 2013 peer review of the Town's CCMP. As a demonstration of this capability, our team previously set-up and ran a basic flow model for Lake Worth Inlet as a demonstration of our capabilities and interest. That flow model, while only conceptual in nature, demonstrates how an "active model" can be kept on standby for analyses on an as-needed basis.

Using our extensive numerical modeling capabilities, The CPE Team is well positioned to properly and cost-effectively initiate this innovative concept to manage the Town's shoreline. The regional model would allow the Town to quickly evaluate impacts to the shoreline from small or large projects when quick answers are needed to address inquiries from the Shore Protection Board, Town Council, or regulatory agencies. For example, nested morphodynamic grids could be added in areas of interest when needed to answer questions quickly, vet ideas, improve responsiveness, and provide decision making support to Town staff on the both the ocean and lagoon side of Palm Beach Island.

To test the validity of this concept, staff of The CPE Team set up a conceptual model and ran the flow simulations. An example of output from this preliminary numerical model are illustrated throughout this proposal and described further in the section below.

### Technical Approach to Address the Scope of Work

The CPE Team's professional services for the Town of Palm Beach have included coastal program planning and project administration, coastal engineering design, coastal numerical modeling, geotechnical investigations to locate sand, environmental investigations and NEPA compliance, State and Federal permitting, construction administration, and physical and biological monitoring.

For over 15 years, we have continued to provide coastal engineering and environmental support services to the Town. Experience gathered from working on these Town projects has allowed The CPE Team to understand the concerns of both the Town and stakeholders, which is critical to executing projects moving forward. We have secured environmental permits for the Groin Rehabilitation Plan and recently completed the EIS in support of the Town's application to nourish the south end of Reach 8. We have worked closely with Town staff on all facets of the Coastal Management Program projects, including the Mid-Town, Reach 7 and Reach 8 nourishment projects, the Palm Beach Inlet Management

and sand transfer plant, the construction of the artificial reef mitigation project, the Coastal Structures Plan Peer Review, and extensive offshore sand resource mapping. We also completed an economic analysis of the Town's coastal management budget in coordination with economist, Dr. Stronge, to conceptualize potential funding strategies to support the program.

The Town of Palm Beach's CCMP details the short- and long-term coastal management strategy of the Town. The services outlined below provide an overview of the approach The CPE Team would apply to CCMP projects so they can be planned, funded, designed, permitted, constructed, and monitored in a thorough manner within the defined project scope, schedule, and budget. We propose to continue to use a comprehensive multidisciplinary approach going forward to assist with developing coastal protection alternatives, feasibility studies, coastal strategic planning, engineering and permitting, construction managements, physical monitoring, providing advisory information, and to act as expert witnesses for the Town. The technical approach for each of the tasks outlined in the RFQ is summarized below:

### Coastal Protection Project Designs

Our engineers, geologists, and biologists are extremely familiar with the Town's coastal project area, including the coastal dynamics, geology, and ecology of Palm Beach Island and vicinity. We will continue to use our extensive experience, the historic data, and existing monitoring information as a basis for our analyses. We will use the information from the monitoring reports to improve project design prior to the scheduled renourishments. Any coastal or resiliency project design will take into consideration the performance of previous related projects.

Since the members of our team have previously designed and monitored many of the Town's nourishment projects, we have the historical knowledge to design future projects that achieve the best possible performance and longevity, resulting in savings for the Town of Palm Beach. Our institutional knowledge of the history of the island's shoreline, comprehensive understanding of regulatory requirements and available database will enable our engineers to continue to effectively design projects that meet the needs of the Town.

We have also carefully designed structures to stabilize highly erosional sections of beach. If required, we will use our expertise in the design and strategic placement of coastal structures to address site-specific problem areas or rehabilitate existing groins. Our peer review of the Coastal Structures Plan and recent work on the Groin Rehabilitation Project gives The CPE Team a thorough understanding of the existing coastal structures within the Town. Our coastal structure designs also include environmental considerations such as nearshore hardbottom, areas of previously mitigated hardbottom, as well as sea turtle and shorebird nesting on the island.

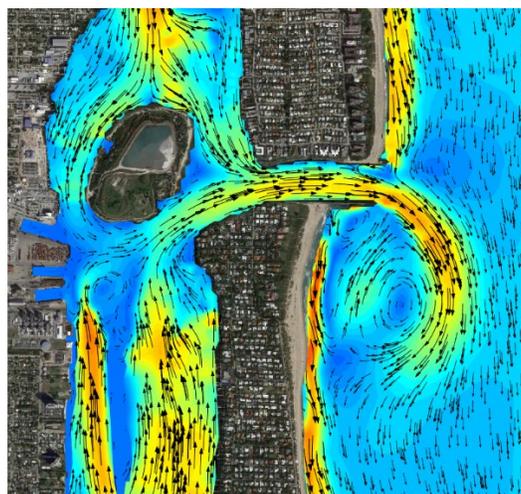
There are over 100 coastal structures within the Town. The groins are of multiple construction types and are in various states of stability and functionality. We recently worked with the Town to obtain permits under the BMA for the Groin Rehabilitation Project. In 2004, we designed and permitted the North Ocean Boulevard Seawall Stabilization Project to provide scour protection at the base of the seawall. While the seawall was recently replaced, we can offer the necessary engineering services to perform periodic structural assessments of the seawall, as well as other waterfront infrastructure. Our engineers would develop repair or replacement design, as necessary, to withstand service loads, storm loading, and sea level rise over the structure's design life.

## Coastal Modeling

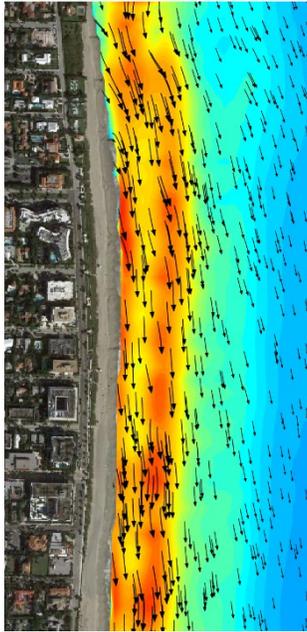
Numerical modeling has been part of our core business from the very beginning and we continue to be on the forefront in using models for engineering, design, and consulting. We are the first coastal engineering team in Florida to embrace the DELFT3D model, providing us more experience than any of our peers. DELFT3D is a process-based model that can simulate two-dimensional wave transformation, two and three-dimensional flows, two and three-dimensional sediment transport, beach erosion, scour, deposition, water quality, and inland storm surges. We also excel in the use of the U.S. Army Corps of Engineers' wave breaking model, BOUSS-2D, to assess the potential impacts of coastal engineering projects on the nearshore wave environment and surfing. Both of these models were extensively used in analyzing alternatives for the recently completed EIS for Reach 8 and South Palm Beach and Lantana Erosion Control Project. In addition to DELFT3D and BOUSS-2D, we are also experienced with various other models, including but not limited to XBEACH, STWAVE, ADCIRC, GENESIS, UNIBEST CL+, DNRBS, SBEACH, and the BEACH-fx economic storm damage model, which were developed by the U.S. Army Corps and the FDEP.

The behavior of beaches, inlets and coastlines can be complex and sometimes dramatic. To overcome these complexities and test a wide range of solutions, we base each project design on proven engineering principles with the added benefit of cutting-edge numerical models. Our modelers have contributed to the advancement of science by frequent application of the models to a diversity of coastal challenges. The combination of our modeling capabilities and practical engineering experience provide the tools needed to assess the performance of beach nourishment project alternatives and refine the design of coastal structures to optimize project performance.

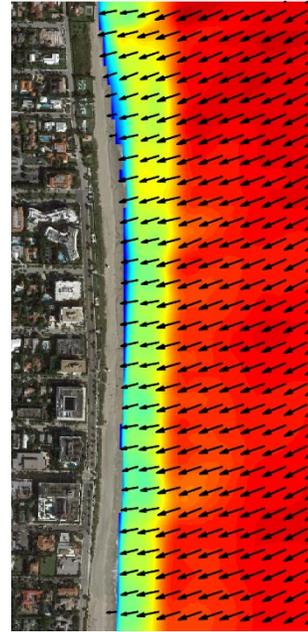
Development, application, and maintenance of a regional (island-wide) wave and physics-based sediment transport model was recommended by the Woods Hole Group in their 2013 peer review of the Town's CCMP. Using our extensive numerical modeling capabilities, The CPE Team is well positioned to properly and cost-effectively complete this invaluable project to manage the Town's shoreline. The regional model would allow the Town to quickly evaluate impacts to the shoreline from small or large projects. To test the validity of this concept, we already set up a conceptual DELFT3D model of the Town and ran preliminary flow simulations. An example of output from this preliminary numerical model are illustrated below, which can be refined for further use.



*Currents at Palm Beach Inlet using DELFT3D*



*Currents along Reach 4 using DELFT3D*



*Waves along Reach 4 using DELFT3D*

### State and Federal Permitting

One of the major benefits of having a multidisciplinary team is that our engineers, biologists, and geotechnical staff regularly coordinate on all beach renourishment and coastal structure projects in order to expedite issuance of FDEP and USACE permits. Our team has been permitting coastal construction projects for over three decades, which have included efforts for the Town of Palm Beach.

Our specialization in coastal projects with all the major professional disciplines participating in the process allows us to easily guide our clients through the joint-coastal permitting (JCP) process in particular. We are recently processed permits with FDEP for the Groin Rehabilitation Project under the Beach Management Agreement (BMA), and with USACE as a general permit. We also recently completed development of the EIS for Reach 8, which is nearing finalization by the U.S. Army Corps of Engineers (USACE). Previously, we successfully permitted the 2003 and 2006 Mid-Town Beach Renourishment Projects, and the 2006 Reach 7 (Phipps) Project, as well as the 0.8-acre artificial reef that was required as additional mitigation by the USACE for the Reach 7 Project. Our understanding of current regulations and environmental resource concerns expressed by regulatory personnel allows us to anticipate permit requirements and take a proactive approach during the application process.

We bring our diverse expertise to the Town of Palm Beach to lead the permitting needs of any and all of your coastal and estuarine projects. From large-scale to small-scale projects including beach nourishment, mitigative artificial reefs, recreational artificial reefs, coral transplantation programs, coastal structures, inlet navigation dredging, mangrove and seagrass restoration, marina construction/expansion, and individual dock construction, we have the experience and multi-disciplined expertise to lead the permitting process from permit application to construction completion.

With the signing of the BMA in September 2013 and update in process, the Town is well positioned to construct all of their planned beach nourishment projects moving forward with the renewal of the BMA. If the need to construct an emergency project arises, we are prepared to assist the Town in obtaining

emergency permits or permit modifications. Additionally, the Town may decide to pursue the use of inlet sands as an additional sand source for nourishments. Our team of engineers, biologists, and geologists is capable of performing all of the services necessary to obtain the permits including design, geotechnical analysis, bathymetric and topographic surveys, and agency coordination.

### Topographic and Bathymetric Surveying

Physical surveys are critical to improving the design of future beach nourishment projects and evaluating other potential erosion control solutions. We have assisted the Town of Palm Beach in developing a Town-wide monitoring program and sediment transport analysis to track sand migration. This monitoring program has provided a basis for assessing the overall effectiveness of the Town's coastal program since 2008.

Continuing with the Town-wide monitoring is essential to track sand migration year to year and over the long term. This will help identify problem spots, as well as areas that are benefiting from the Town's efforts. The data compiled will be integral to any permit application or modification the Town pursues for coastal protection in the future and should be used to update the regional model of the Town's coastal processes. Additionally, monitoring data could be used to analyze the performance of past projects and adjust the design of future projects to improve their performance. Our highly trained and licensed team of surveyors can provide the services necessary to perform the topographic and hydrographic surveys consistent with the standards of the State of Florida and the Town's previous monitoring efforts.

A significant portion of the Town relies on seawalls to protect their property from wave and flood damage and storm impacts. As part of the shoreline monitoring program, we would evaluate post-storm stability of existing seawalls and potential for failure by scouring. By taking a proactive approach, the Town may be able to help private property owners from avoiding severe losses due to structural failure. Additionally, as soon as the beach is accessible after a major storm, we will be immediately available to the Town to survey the post-storm beach profiles to determine the fill volumes and placement locations necessary to restore the beach. This monitoring data and documentation is also essential for obtaining FEMA funding when applicable.

### Offshore Sand Search/Geotechnical Investigations

Our geology professionals lead the industry in identifying beach compatible sand sources for beach nourishment projects. We have located sand sources in Florida, Alabama, New York, Louisiana, Georgia, Virginia, North Carolina, and Massachusetts, as well as in sand starved areas of the upper Texas coast. Our geophysicists and geologists are experts in the use of remote sensing techniques, marine geophysical data collection, processing and interpretation, combining geomorphological mapping with geotechnical measurements to locate and define sand deposits accurately and effectively. Our techniques are proven and efficient as we are able to modify field operations on the fly as data is collected and immediately analyzed.

The Town has previously identified offshore borrow areas which are currently used to implement the Mid-Town and Phipps Park projects. While these borrow areas appear to have sufficient volume for the next round of nourishment projects, The CPE Team is uniquely positioned to perform additional offshore sand searches for the Town if the need arises.

Our success in identifying beach compatible material is rooted in the systematic approach to marine sand searches developed over the years by our team of professionals. In a comprehensive marine sediment search, we organize the investigation into three sequential phases that the FDEP has adopted as a standard. This phased approach can be modified to meet the scope of the investigation and account for the level of work previously performed. Regardless of the phases executed during a sediment search, our investigation sequencing is preserved in order to maintain efficiency to provide confident results. Our regional sand search approach is so successful that it has also been incorporated into Louisiana's Office of Coastal Protection and Restoration (OCPR) "General Guidelines: Exploration for Offshore Sand Sources."

Related to this expertise, our team members provided a technical review of the Southeast Florida Sediment Assessment and Needs Determination (SAND) Study Report developed by the USACE Jacksonville District for the FDEP. The SAND Study analyzed areas offshore of St. Lucie, Martin, and Palm Beach Counties in order to better characterize and quantify sediment resources that could potentially be used for beach nourishment. The work conducted included a reconnaissance level vibracore investigation, which was used to supplement data that had been previously collected. The historic data that was used is currently housed in the Reconnaissance Offshore Sand Search (ROSS) database. As a result of this effort, our team has extensive data on APTIM servers regarding the available sand sources throughout Palm Beach County.

#### Construction Cost Estimates and Bidding Assistance

We will assist the Town with bidding projects for construction. We will obtain the Town's "boiler plate" contract documents for incorporation into a complete package to bid the project. The bidding documents will include the Town's front-end documents, the specifications which will include General Conditions, Technical Specifications and Environmental Provisions, and the project plans. We will coordinate with the Town's Coastal Coordinator or Purchasing Agent to implement the successful bidding of the project. We will provide the Town's Coastal Coordinator or Purchasing Agent with the names of dredge firms for beach renourishment, or marine construction firms for coastal structures to ensure that capable contractors are aware of the project so the Town can obtain competitive bids.

The Project Manager and Project Engineer will prepare for, and attend, the pre-bid meeting to discuss and clarify particular aspects of the project. If necessary, following the pre-bid meeting, we will assist the Town in preparation of addendums to the plans and specifications. Addendums will be provided to the Town to send to all registered bidders and will become part of the bid package and subsequent contract documents.

Included with the project design documents will be an estimate of project costs for the selected coastal project. Cost estimates for beach nourishment projects will include mobilization/demobilization cost, unit fill cost, beach tilling cost, and other unique components for a total cost for beach restoration. Similarly, cost estimates for marine structures may also include material costs including rock, concrete, steel, and timber, if required. Our engineers will contact potential construction contractors to evaluate project costs based on recently bid projects, construction contractor and equipment availability, sediment source location, material costs (if structures are required), and additional construction requirements.

For each project, we will review the bids presented to the Town for the proposed work. In addition to cost factors, the bids will be reviewed for technical completeness, contractor experience, work plan,

schedule, and other parameters deemed of importance. If requested by the Town, we will contact the contractors' references and make a final recommendation to the Town on the award to the lowest cost, qualified, and capable bidder.

### Construction Management

The CPE Team brings complete marine engineering project construction administration and observation experience to the Town. General services include contract and permit administration, agency and contractor coordination, plans and specification administration, construction supervision, quality control/assurance through daily reporting and various engineering services to monitor the project progress, contractor invoice review and recommendation, project completion certification, and public contact as required by the Town and other elements of the project. The extent of services can be tailored to support the Town's needs. Some clients have requested a site observer 24 hours per day, while other clients select to have an observer only visit once or twice per week and shoulder more of the day-to-day details with in-house staff. We will observe the project construction process to determine if the contractor is in substantial compliance with both contract documents and project permits. If not already being performed by the contractor, we can also conduct any water quality, protected species, and daily sediment quality control monitoring required.

Our technical personnel are trained and experienced in understanding compliance observation of coastal engineering projects. Our engineers will review all contractor submittals and will notify the contractor, the Town and the permitting agencies, as required, of any inconsistencies or problems with the submittals. We will also provide periodic reports to the Town that summarizes the progress of construction and compliance with the permit and contract, including but not limited to equipment issues, problems encountered during project construction, methods to correct problems, success in problem correction, errors, omissions, or deviations from the Contract Documents, and weather conditions, which may have affected project construction. Our staff can review project invoices and change order requests and provide recommendations to the Town and attend periodic progress meetings with the Contractor and regulatory agencies as appropriate during construction. We also are very familiar with the latest sediment QA/QC, dredge monitoring and environmental monitoring methods and requirements for permit compliance.

### Public Outreach

We have prepared numerous documents, exhibits and PowerPoint graphics for informational use at commission and public meetings for coastal projects in Florida and along the eastern seaboard of the US. Our GIS/CAD staff creates accurate images with data overlays to better explain geomorphic and biological coverage. We would provide the Town with informative and clear explanations about coastal processes, projects, project status along with photos for regular updates to the Town's website. We could also coordinate other public outreach venues such as social media sites and applications. During the Deepwater Horizon spill, we hosted a public education program sharing live updates about the presence of oil on the beach and the latest updates on the spill via website, hotline and iOS application for Okaloosa County.

The CPE Team embraces a corporate culture of safety that benefits our clients. We could develop an extension of our safety education program to inform residents about the necessary measures needed to reduce the risk of potential safety incidents associated with coastal projects and structures, construction areas, the coastal environment, and storm and coastal flooding impacts.

### State Funding Requests

As a routine component of our business, The CPE Team works with various funding sources as applicable to a particular project. This allows local governments to leverage other grants. Our staff have the ability, knowledge and professional relationships to provide additional assistance to the Town in coordinating with governmental or other agencies, and with the public.

An important step to gaining consensus and support for a project is education of the long-term trends, processes and benefits. Our engineers and biologists often participate in local stakeholder meetings to discuss proposed projects for clients. Our staff also has experience securing federal authorization for beach nourishment projects, which score higher in the State ranking system.

### Emergency Storm Damage Response

If the Town requires comprehensive emergency response services The CPE Team offers a vast range of disaster response and recovery services to commercial, state, and local clients with APTIM's expertise. Based on APTIM's similar experience, we can assist with the following:

- Damage Assessments
- State and local level program management or staff augmentation overseeing complex recovery/resiliency programs
- Strategic policy advice and management of federal grant programs, including:
  - FEMA Public Assistance (PA) and Hazard Mitigation Grant Program (HMGP)
  - U.S. HUD Community Development Block Grant - Disaster Recovery (CDBG - DR) (Provides funding for housing permanent repairs as well as state - local match to FEMA PWs)
  - U.S. DOT Federal Transit Authority - Emergency Relief (FTA - ER) and Federal Highway Administration - Emergency Relief (FHWA - ER) Programs
  - National Flood Insurance Program (NFIP)
  - Grant Closeout
- Advice and solutions on post disaster insurance issues
- Temporary and permanent housing solutions:
  - FEMA Shelter and Temporary Essential Power (STEP)
  - Renovation, Reconstruction, Elevation, and Mitigation (single/multi - family)
  - Small rental recovery programs
- Infrastructure support and repair services
  - Flood protection structures including failing dams, levees, and pumps
  - Recent experience with high-hazard potential dams/Emergency Protective Measures/Permanent Repairs/Ideas on solutions for funding of permanent repairs to South Carolina Dams
  - Water, wastewater, and sanitary treatment and distribution systems
  - Transportation facilities including: ports and harbors; bridges, roads and highways
- All services related to beach renourishment including engineering, modeling, geology, biology, surveying, and construction
- Debris Management and Marine Debris Removal
- Logistics Management

### Inter-governmental Coordination

Due to our vast experience working with various local governments all around the state, The CPE Team excels at facilitating inter-governmental coordination. At Longboat Pass in Manatee County, for example, we developed an Inlet Management Plan that resolved the objectives of both the Town of Longboat Key and Manatee County in a collaborative approach to share the sand from the inlet in an equitable fashion utilizing the DELFT3D numerical model as a critical part of the analysis. Blind Pass in Lee County is another example where our team employed the DELFT3D numerical model to conduct a science-based assessment of the inlet with inter-governmental coordination between Lee County, Captiva Island, the City of Sanibel and the FDEP. More recently and directly application to the Town, we worked with Palm Beach County, the Town of Palm Beach and the Town of South Palm Beach to assist with development of an interim plan to implement a combined dune project for Reach 8 and Reach 9 while the EIS is being finalized.

### GIS/Website Development

Our team of professionals has extensive experience using GIS along the Town's coast in various capacities. We have created a comprehensive interactive Geographic Information Systems (GIS) database for all of the Town's beach and offshore coastal environment that shows all project areas, coastal structures, reef and rock outcrops, sand resource areas, aerial photography and a complete laser bathymetry of the entire offshore area. The GIS team based out of Boca Raton, Florida is responsible for providing a wide range of information management services and product support to all of our clients. These services include GIS design and deployment, database design, web server applications, document and record management, mobile data collection support, map development, spatial analysis of coastal environments, GIS training and user manual creation. Our team is experienced with the suite of ESRI's GIS products and supporting software applications including Python, Oracle, MS SQL, Javascript API, Visual Studio, Silverlight, FLEX, SDE, .NET, Access and Microsoft sync technology for wireless field synchronization.

The CPE Team has been assisting the US Army Corps of Engineers (USACE) with their LiDAR and regional sediment management (RSM) programs. For the LiDAR projects, we developed custom tools using Python within ArcGIS that extract metrics like shorelines and quantifies volume change, which provides coastal managers with accurate data for coastal management planning. For RSM, we use Python to generate custom tools that ingest various USACE datasets to produce a national summary that indicates how sediments are being disposed for all inlet dredging projects. The RSM database is pushed online so that USACE District managers can review the results and provide additional information to improve the geodatabase.

### Estuarine Enhancement

We will assist the Town to implement estuarine enhancement projects along the Lake Worth Lagoon shoreline as needed. We recognize that management of this valuable resource is critical to both resiliency, storm protection, and habitat enhancement. Our legacy company permitted, designed, and managed construction of the Par 3 Golf Course Mangrove Habitat Restoration project in the Town which was completed in 2001 and included mangrove plantings and a rock breakwater. We will also draw from our extensive experience with many large-scale coastal restoration projects completed as part of the Louisiana Coastal Restoration Program, which include marsh restoration habitat restoration and storm protection.

## Shore Protection Board

We will continue to provide the Shore Protection Board the resources it needs to make informed decisions about coastal management. In recent years, we have prepared large-scale wall maps and interactive coastal GIS atlases for use at the meetings. We specialize in coastal engineering and each of our team members has unique expertise on a diversity of coastal projects to share with the Board. We frequently have internal seminars on successful project strategies, innovations in coastal modeling, and the latest most effective technologies and designs. We would offer to provide presentations to the board or assist in the coordination of presentations by Town staff and academic, environmental, or policy experts.

## Other Coastal Engineering Duties

### *Natural Resource Protection*

The CPE Team combines our understanding of local natural resources with GIS database tools throughout project design and planning to allow us to protect natural resources from potential impacts during and after construction. We often include measures for protection of onshore and offshore natural resources in our technical specifications.

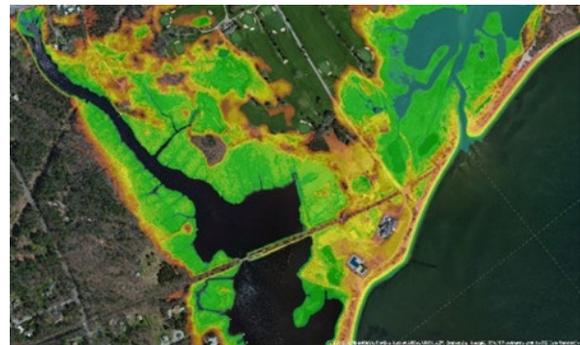
### *Coastal Resiliency Planning*

The CPE Team is also prepared to conduct comprehensive climate change vulnerability assessments and planning. We have experience with all the tools and disciplines needed to conduct such analyses including database management, GIS, numerical modeling, engineering, planning, outreach and project management. We have several resiliency projects under our belt and would welcome the opportunity to assist the Town in developing adaptation plans that are clear, concise and defensible.

Although the “resiliency” term has become popular only in recent years, our initial projects revolved around constructing beach nourishment projects that mitigated the effects of coastal erosion and coastal flooding caused by sea level rise and tropical storms. In order to design the best beaches and coastal structures, we have built a team of experts that understand coastal processes and the drivers for climate change. Our experts specialize in the analysis of sea level rise (SLR), storm surge, coastal sediment transport, remote sensing, and GIS to name a few. With a team filled with a diverse set of skills that apply to all facets of coastal change, there was a natural expansion of services to our clients that include scientific studies that focus on climate change.

### *Climate Change Vulnerability Assessment*

In order to fully understand how to apply modeling products to coastal vulnerability assessment, it is important to understand how to run and interpret the models that are producing the vulnerability results. As demonstrated throughout this proposal, we have a dedicated team that runs a wide range of coastal models for many of our clients. As an example of flood modeling capabilities, our team recently completed running the SLOSH model for the EPA who was concerned about how climate change will affect the water supply for the Mattapoissett



*SLOSH Model Results in Massachusetts*

area of southern Massachusetts. Several hypothetical storms were simulated under different SLR scenarios in more than 400 modeling runs to evaluate the vulnerability of the study area. The SLOSH results were then applied to the HEC-RAS model to predict how quickly the water supply would flush seawater should the dam protecting the water supply be overtopped by the combination of storms and sea level rise.

#### *Reporting*

Well-written documentation is an essential element of our communication system. The CPE Team has decades of experience preparing all types of reports and documents for our Florida clients. This experience has enabled us to develop reporting formats that provide clear, concise data for review and approval by the Town and your residents. Our comprehensive and organized reports are easy to understand. Prior to client review, each report is edited, formatted, and undergoes a peer review for content and quality.

#### *Post-Construction Services*

The CPE Team will continue to assist the Town beyond the construction phase of your projects. Depending on the project, state and federal permits may require post-construction physical and/or biological monitoring to ensure the project performs as designed without unanticipated environmental impacts. We can perform comprehensive post-construction survey and reporting to meet your specific project needs. In cases where projects involve unavoidable impacts to natural resources, such as seagrass, our biologists will monitor the mitigation to document the functional success of offsetting those impacts. Some projects may not have permit-required post-construction surveys, but the Town might choose to develop a regular underwater inspection program for your existing and future waterfront structures. Our team can assist in the development and implementation such a program which can extend the service life of existing structures and facilitate the Town's budgeting for the repair and replacement of this infrastructure.

#### *Hydrodynamic Data Collection*

The purpose of collecting hydrodynamic data is to identify coastal processes in a specific area that would contribute to the design of a coastal project. Additionally, collected hydrodynamic data is used to calibrate and verify accuracy of the numerical modeling efforts utilized in the beach nourishment and coastal protection project design phases. Hydrodynamic data collection typically consists of deploying Acoustic Doppler Current Profilers (ADCPs) to measure waves and currents in nearshore areas and within inlets.

Our team member, APTIM, owns and operates ADCPs and has divers that deploy and recover the gauges that can be set to collect data for as long as two months. Typically, a pair of devices is deployed to show the propagation of waves from offshore into the nearshore and through the inlets. We used this method in modeling and permitting improvements to inlets and coastal projects. ADCP data can also be used to evaluate seasonal variations or small-scale boat wakes for the design of marinas and mooring systems.

## Sustainability

CPE strives not only to reach sustainability goals, but to exceed them by making it part of our culture. We have incorporated green and sustainable activities into numerous areas within the organization, including our unique office building and campus in Boca Raton called the “Greenhouse.” The Greenhouse has implemented several sustainability initiatives to make our campus a more environmentally friendly place to work, including:

- The exterior and interior of the building have been painted a lighter and more reflective color, reducing heat absorption and increasing energy efficiency.
- The use of green technology for renovations and recyclable products has been implemented.
- Increased recycling material efforts by 100% since previous ownership.
- The most advanced energy efficient wireless thermostats have been installed throughout the building to control all HVAC and maximize effectiveness.
- Photo sensors were installed in the atrium to turn off unnecessary lighting when the atrium is lit by the sun.
- Motion sensors were installed in all restrooms to turn off lights for long periods of inactivity.
- LED lighting is being implemented throughout the building to reduce energy costs.
- Low maintenance landscaping was installed to reduce water consumption.

## Technical Soundness Statement

CPE commits to the highest level of service and technical excellence. We continually work to refine and make improvements to our product deliverables over time adapting with changing conditions and technology. We understand why this is important to the Town and we will work closely together with the Town’s staff to ensure that our products meet the highest standards of technical quality, technical soundness and exceed the Town’s expectations.

In summary, The CPE Team is well suited to assist the Town with all the required coastal engineering services related to the topics above, or with any unforeseen tasks that may arise during the term of the contract. We commit to provide the same exceptional level of effort to help you meet the day-to-day and programmatic challenges of your Coastal Management Program. We share your passion for protecting the Town of Palm Beach and are available to meet with your staff on a regular basis to enable informed and rapid decisions on critical technical issues.

## References

Reference for The CPE Team can also be found on the List of Current & Pertinent Professional Reference Form in Section 1.2.4.

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Manatee County

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**Jessica Garland**

Martin County

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**Patrick Bardes**

City of Deerfield Beach

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City of Sarasota

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**Gary McAlpin**

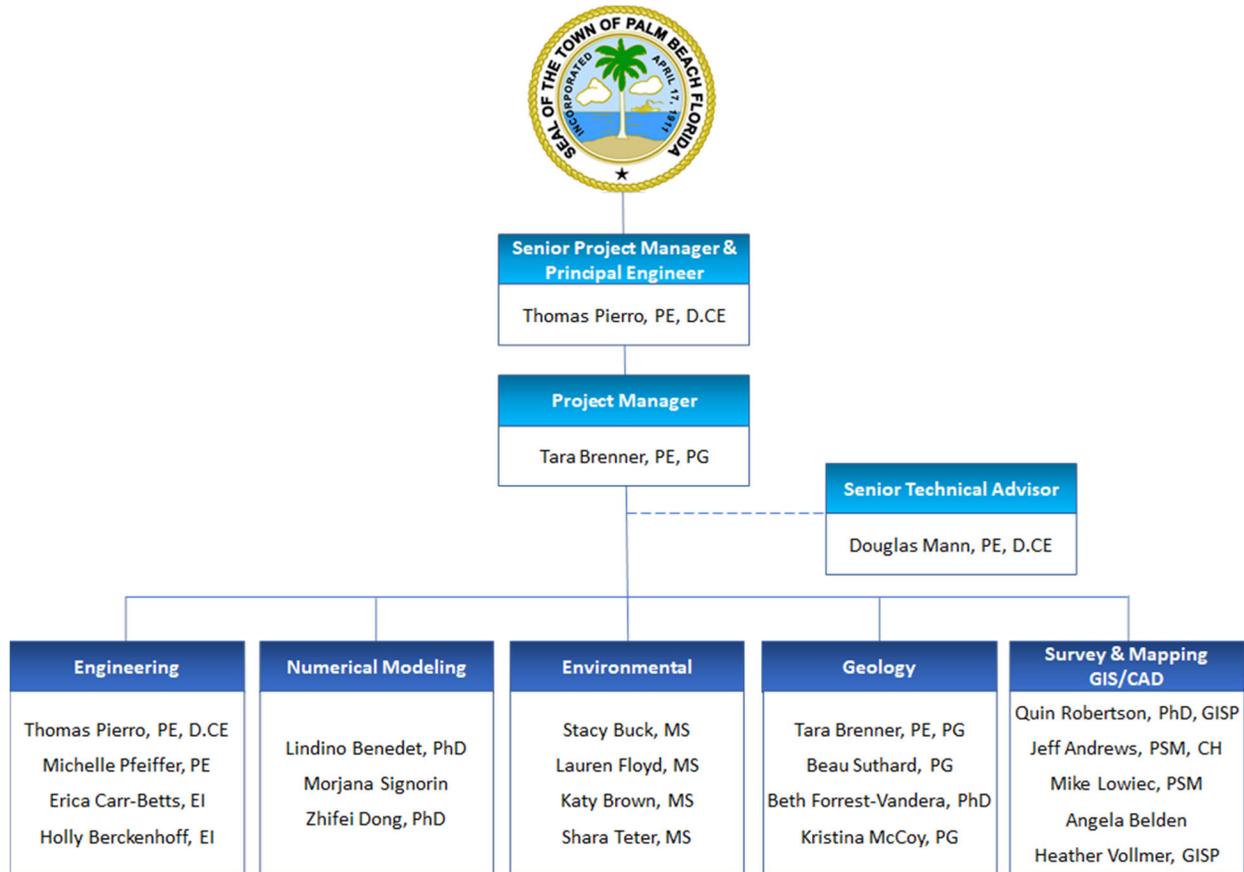
Collier County

239-252-5342

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## 1.3.2 Experience / Ability of Personnel

### Organization Chart



### Management's Credentials

Our management approach as shown in the organization chart is for **Thomas Pierro, PE, D.CE** to be the Town's primary point of contact as Principal Engineer and authorized member of the firm. Mr. Pierro has over 18 years of coastal engineering experience and has designed, permitted, and supervised construction of numerous beach nourishment and coastal structure projects in Florida. He directs complex analysis of beach/inlet processes, designs programs that control high erosion near coastal inlets and passes and promotes forward thinking throughout the team to support sustainable coastal programs. He has managed dozens of municipal contracts for coastal engineering services throughout the state of Florida and has worked on Town of Palm Beach projects for over a decade. Mr. Pierro maintains a positive working relationship with Town staff and works collaboratively to conceptualize, execute and deliver work products that meet the Town's high expectations for quality and responsiveness. His full credentials are described further in Section 1.2.12 and detailed in his enclosed resume. Mr. Pierro will receive direction from the Town and be responsible for communications with staff for development and execution of scopes of work.

To further enhance our responsive management credentials, Mr. Pierro will be supported by **Tara Brenner, PE, PG** for task order development and execution. Ms. Brenner is a Professional Engineer and Professional Geologist with more than 12 years of experience in coastal engineering projects. She excels in project management and public speaking, which will be an important asset to the Town. Ms. Brenner will manage delegation of task orders and will provide overall and project-specific updates to the Town on a monthly basis, or more frequently as needed.

Our management credentials are further supported on a technical level with the decades of experience of our Senior Technical Advisor, **Douglas Mann PE, D.CE**. Mr. Mann has designed and implemented a broad range of coastal and marine civil engineering projects over his 32-year career at APTIM. Mr. Mann can provide a wide range of coastal engineering expertise applied to a given problem and has extensive experience in all types of regulatory permitting. This experience will be highly valuable to the team, not only in technical execution but in developing managerial approaches to projects in a cost effective and proactive manner.

### Project Personnel Credentials

We have assembled a team that can complete the full spectrum of coastal services including coastal engineering, environmental assessments, biological monitoring, environmental permitting, hydrographic and terrestrial surveying, numerical modeling, coastal geology, GIS, funding program assistance, public outreach, bidding assistance, construction oversight, and post-project physical monitoring. The following resumes present the credentials of the individual project personnel who will be assigned to the Town.



**Thomas Pierro, PE, D.CE**  
**SENIOR PROJECT MANAGER/  
PRINCIPAL ENGINEER**

5301 N. Federal Highway, Suite 335, Boca Raton, FL 33487  
tpierro@coastalprotectioneng.com; 561-756-2535

### PROFESSIONAL QUALIFICATIONS

Thomas Pierro, PE, D.CE, is the Principal Engineer for Coastal Protection Engineering (CPE) and will serve as Sr. Project Manager and Principal Engineer for this contract. Since 2001, he has designed, permitted, and supervised construction of numerous beach nourishment projects in Florida. He directs complex analysis of beach/inlet processes, designs programs that control high erosion near coastal inlets and passes, and promotes forward thinking throughout his team to support sustainable coastal programs. In 2011, Mr. Pierro was awarded the Jim Purpura / T.Y. Chiu Award from the FSBPA for outstanding contribution to coastal engineering in the State of Florida. Mr. Pierro has supported the Town of Palm Beach on many components of their coastal program for over 13 years, which provides him with an in-depth understanding of the Town's project history and future project needs.

### RELEVANT EXPERIENCE

#### Town of Palm Beach, Florida

Mr. Pierro has worked on many facets of the Town's coastal program since 2006 and communicates frequently with Town staff on various coastal issues and history. In the earlier years, Mr. Pierro performed permit required physical monitoring and Town-wide analyses including an updated sediment budget and littoral transport evaluation. He developed a comprehensive engineering report and artificial reef design in support of the Reach 8 project. Mr. Pierro designed the 0.8-acre limestone boulder artificial reef, developed plans and specifications, and managed construction in 2007. More recently, Mr. Pierro performed a comprehensive coastal structures peer review and independent assessment for the Town's planned groin rehabilitations. He also provided technical and management oversight for the Southern Palm Beach Island Comprehensive Shoreline Stabilization EIS as Senior Project Manager under the direction of the USACE.

#### Southern Palm Beach Island Comprehensive Shoreline Stabilization Project, Palm Beach County & Town of Palm Beach, Florida

The project addresses erosion concerns by providing additional storm protection to upland property while minimizing impacts to nearshore hardbottom. Due to the potential for adverse impacts to hardbottom resources, an Environmental Impact Statement has been developed by

### Education

Master of Science, Ocean Engineering, Florida Atlantic University, Boca Raton, Florida, 2001

Bachelor of Science, Ocean Engineering, Florida Atlantic University, Boca Raton, Florida, 1999

### Highlights

Worked on many aspects of the Town's coastal program since 2006.

Recognized industry expert in Florida in the fields of coastal engineering, beach nourishment, coastal structures numerical modeling of coastal processes, and inlet management. Broad experience in project management, planning, design and permitting, engineering and modeling, plans and specifications, field investigation, construction oversight, and feasibility studies of coastal engineering projects.

### Registrations/Certifications

Professional Engineer, Civil, Florida, License No. 64683, Active  
Professional Engineer, Civil, New York, License No. 090464-1, Active

Diplomate, Coastal Engineering (ACOPNE), 2010, ASCE, Active, Nationwide

### Professional Affiliations

Member, American Society of Civil Engineers (ASCE)

Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

### Employment History

CPE 2019 – Present

APTIM 2001 – 2019

members of The CPE Team as required for permitting of the project, which includes advanced DELFT3D modeling. This requires close coordination with USACE, FDEP, Town and County to balance concerns and objectives. Mr. Pierro provided coastal engineering support and oversight in evaluating project alternatives, reviewing numerical modeling results, developing reports and permit documents, and coordinating with stakeholders. Mr. Pierro is also the Engineer of Record for the County's portion of this project and developed a unique way of assessing the potential for downdrift spreading, which may reduce the mitigation requirement.

**Delray Beach Erosion Control Program, Delray Beach, FL**

Mr. Pierro has been the Project Manager and Senior Engineer for Delray Beach's Federal Storm Damage Reduction Project since 2006. He served as Project Manager and Engineer of Record for the Fifth Periodic Beach Renourishment Project constructed in 2013. He managed the project design, permitting and construction on a reimbursable basis with USACE. Tasks included project administration, contractor selection, construction observation, verification of fill volume placement, compliance with project permit requirements and confirmed contractor requests for payment. He continues to oversee the management of City's program in close coordination with Palm Beach County and the USACE.

**Boca Raton Comprehensive Erosion Control Program, City of Boca Raton, FL**

Mr. Pierro was Senior Engineer on the three main coastal projects for the City (north, central and south) from 2004 to 2009. He provided construction oversight during beach projects, and structural work on the Boca Inlet Weir Relocation and Central Boca Raton Groin constructed in 2004. The City recently re-selected APTIM with Mr. Pierro as a Sr. Project Manager and Principal Engineer for the City's program.

**Comprehensive Coastal Erosion Control Program, Manatee County, FL**

Mr. Pierro directed the comprehensive feasibility study for Manatee County in 2007 to evaluate the cost and need for shore protection in areas outside the Federal (USACE) project area. Based on the recommendations of the report, the County constructed the Coquina Beach Nourishment Project, which included construction of a 5-acre mitigative artificial reef in 2011, designed and permitted by Mr. Pierro. He designed and managed the installation of geotextile tubes to sand tighten the Longboat Pass Jetty to improve the performance of the beach nourishment project and subsequently completed a comprehensive modeling study of Longboat Pass resulting in an updated Inlet Management Plan. He also worked with the County to remove three derelict groins along Cortez Beach and replace them with Permeable Adjustable Groins, a project which was designed with use of the Delft3D numerical model. Mr. Pierro assisted the USACE in design and permitting of the Manatee County Shore Protection Project constructed in 2014 and continues to play a key role in the management of the County's island-wide shore protection program in implementing the federally authorized and county-managed projects, including an ongoing Inlet Management Study for Passage Key Inlet, which is the primary sand source for the Anna Maria Island beach nourishment program.

**Upham Beach Groin Stabilization Structures, Pinellas County, FL**

Mr. Pierro worked with Pinellas County over the course of several years to evaluate options to install permanent groin stabilization structures to reduce erosion at Upham Beach. The project included development of engineering alternatives, advanced wave breaking modeling and permitting assistance. Additional efforts included project bidding and construction observations. The project construction was completed in 2018 with Mr. Pierro serving as Sr. Project Manager and the Engineer of Record.



## **Tara Brenner, PG, PE** **PROJECT MANAGER**

5301 N. Federal Highway, Suite 335, Boca Raton, FL 33487  
tbrenner@coastalprotectioneng.com; 631-896-9137

### **PROFESSIONAL QUALIFICATIONS**

Tara Brenner, PG, PE, is a Senior Coastal Engineer for Coastal Protection Engineering (CPE) and will serve as Project Manager for this contract. Since 2007, she has performed a variety of engineering services in support of beach nourishment projects throughout Florida, including permitting, engineering analysis, development of construction plans and specifications, construction observations, post-construction monitoring calculations and report preparation.

Ms. Brenner regularly presents at industry conferences, and public meetings in both formal and informal settings. As Project Manager, she works with clients to ensure project objectives and timelines are met, and that work products are of the highest quality.

Ms. Brenner also has experience with the application of drone and laser scanning technologies to supplement or replace in situ observations, where it can save time or money, and delivers cutting-edge interactive visual work products. Ms. Brenner has assisted with vibracore collection, hydrographic surveying, seismic data interpretation, and environmental monitoring for coastal projects. She has been responsible for data analysis, incorporating geotechnical requirements for state and federal permitting, and supporting borrow area design and project construction for a number of projects.

### **RELEVANT EXPERIENCE**

#### **Jupiter Carlin Engineering Monitoring, Palm Beach County, Florida**

Ms. Brenner performed engineering analysis, report writing and review to deliver engineering monitoring reports for the County's Jupiter Carlin project in 2016, 2017 and 2018.

#### **South Lake Worth Inlet (SLWI), Palm Beach County, Florida**

Oversaw surveying of the dredge pit and engineering analysis to estimate the production of the SLWI Sand Transfer plant in 2016 and 2018.

#### **2019 Coastal Services, City of Delray Beach, Florida**

As Project Manager, Ms. Brenner is performing a variety of coastal consulting tasks to support Delray's Beach Nourishment Program including: public outreach events, assisting in securing state and federal project funding, annual physical monitoring surveys and engineering analyses, coordination with USACE regarding Hurricane Irma and

### **Education**

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Master of Science, Civil Engineering, Florida Atlantic University, Boca Raton, Florida 2012

Bachelor of Science, Environmental Geosciences, University of Notre Dame, Notre Dame, Indiana, 2007

### **Highlights**

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More than 12 years of coastal engineering and geology experience

Regularly works on SE Florida coastal projects from feasibility through construction, including field investigations, engineering design and permitting

### **Registrations/Certifications**

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Professional Engineer, Florida License No. 82305, Active

Professional Geologist, Florida, License No. PG2828, Active  
BOEM and NMFS Protected Species Observer

PADI Open Water Diver, 2008  
PADI Enriched Air Nitrox Diver, 2009

### **Professional Affiliations**

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Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

Member, American Public Works Association – Gold Coast

Member, Divers Alert Network (DAN)

Member, University of Notre Dame Alumni Club – Boca Raton

### **Employment History**

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CPE 2019 – Present

APTIM 2007 – 2019

potentially Hurricane Dorian repair projects, a sand search investigation, and preparing for the City's 6th Periodic Beach Renourishment in winter 2020/21.

**Seawall Vulnerability Study, City of Delray Beach, Florida**

Ms. Brenner managed and completed a seawall vulnerability study to address frequent flooding experience in Delray along the Intracoastal Waterway. She led the study to predict future water levels, inventory seawall and outfall elevations, perform structural assessments, and analyze current backflow prevention devices. As part of this work, Ms. Brenner regularly collaborated with City engineers and presented study findings and recommendations to the City Commission.

**St. Lucie South Jetty Assessment, Martin County, Florida**

Ms. Brenner managed surveying, engineering and biological observations of the South Jetty. This work compared traditional survey methods with 3D laser scan and drone photogrammetry. The assessment deliverables included engineering assessment report, drone video, georeferenced drone imagery, survey data, and georeferenced point cloud in an online platform. Having this baseline assessment allowed for assessment of Hurricane Dorian impacts to the structure using post-storm drone imagery.

**2019 Park Shore Renourishments, Collier County, Florida**

Collier County's Park Shore beaches are currently being nourished with sand from an upland mine, delivered via truck haul methods. As Project Manager, Ms. Brenner prepared construction plans and technical specifications for the County to bid the project and is currently supporting the County through construction by reviewing contractor submittals, participating in weekly progress meetings and reviewing pay applications.

**Panama City Beaches Post-Hurricane Michael Assessment, Bay County, Florida**

Ms. Brenner is supporting the Bay County Tourist Development Council in assessing post-storm damages to the Panama City Beach nourishment project. Engineering analysis of storm damages based on aerial photographs, beach profile surveys, and other information as available, is currently underway and will be incorporated into a post-storm report to support coordination with USACE for a potential repair project.

**Panama City Beaches 2017 Beach Renourishment, Bay County, Florida**

As Project Manager, Ms. Brenner assisted with hot-spot identification and development of the project scope for this project. This hopper dredge and fill project was completed in May 2017 and placed approximately 835,000 cy along four separate reaches in Panama City Beach from offshore borrow areas. She also conducted coastal engineering design in development of the construction plans and technical specifications and led pre-bid, pre-construction and all during-construction progress meetings.

**Mexico Beach Sand Search, Bay County, Florida**

In support of a post-Hurricane Michael beach restoration project at Mexico Beach, Ms. Brenner is managing an offshore sand search investigation including geophysical and geotechnical data collection and processing, borrow area design, and a wave impact modeling study.

**Shell Key & Grand Canal Feasibility Study, Pinellas County, Florida**

Ms. Brenner is leading APTIM's team in performing a feasibility study and related field and modeling efforts to evaluate a highly dynamic area of Pinellas County. Shell Key has recently melded back onto the mainland along its northern coast. Residents are concerned about continued shoaling that has closed Shell Key North Pass and may threaten the entrance to Grand Canal. The feasibility study along with the Shell Key Morphology Study aim to evaluate potential management alternatives for this area. In support of this project, Ms. Brenner presents in public meetings and oversees work done by engineering, survey, and coastal modeling groups.



**Douglas W. Mann, PE, D.CE**  
**Lead Coastal Engineer**

2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
douglas.mann@aptim.com; Telephone: 561.361.3148

**Professional Qualifications**

Douglas Mann has worked as a coastal engineer with APTIM since 1987. He is experienced in all aspects of coastal engineering including dredge and fill projects for material disposal and beach nourishment, beach and inlet engineering, coastal structure design (including breakwaters, groins, seawalls, jetties, and Permeable Adjustable Groin (PAG) design and construction) as well as marine-related upland structures. He has been involved in the design of boat ramps, marina renovations, and other boating related projects. Mr. Mann is experienced in Joint Coastal permitting, Environmental Resource permitting, and Florida Department of Environmental Protection Coastal Construction Control Line permitting. Mr. Mann will perform technical advising on tasks assigned to the CPE Team as appropriate.

**Relevant Experience**

**South Lake Worth Inlet Sediment Budget Update, Palm Beach County, Florida**

Performing engineering analyses in support of updating the sediment budget for the South Lake Worth Inlet and sand transfer plant. This work includes presentations to a technical advisory committee.

**Senior Engineer, Seawall Vulnerability Analysis, City of Delray Beach, Florida**

Mr. Mann analyzed historic water level data and sea level projections to assist the City in adopting 30-year and 75-year planning elevations to reduce coastal flooding. This work involves assessment of current conditions of seawalls, outfalls and stormwater inlets along 21 miles of Intracoastal Waterway, incorporation of collected data into a geodatabase, and recommendations for the City to implement improvements.

**Lead Quality Control Reviewer, Southern Palm Beach Island Comprehensive Shoreline Stabilization Project Environmental Impact Statement, Palm Beach County, Florida**

Mr. Mann was the lead quality control reviewer for the EIS and supporting engineering documents (2017).

**Coastal Engineer, Cortez Groin Removal and Replacement Project, Manatee County, Florida**

Mr. Mann was engineer of record and supported the Cortez Groin replacement project for Manatee County. This project replaced derelict groins with PAGs to control end losses from the Federal beach nourishment project, and to protect upland emergency evacuation routes.

**Education**

Master of Science, Coastal and Oceanographic Engineering, University of Florida, 1987

Bachelor of Science, Civil Engineering, University of Delaware, 1985

**Highlights**

More than 30 years of experience in coastal engineering

**Registrations/Certifications**

Professional Engineer, Civil, Florida, License No. 44046, Active

Professional Engineer, Civil, Delaware, License No. 12949, Active

Professional Engineer, Louisiana, License No. 31121, Active

Professional Engineer, Civil, Massachusetts, License No. 46574, Active

Professional Engineer, Virginia, Active

Diplomate, Coastal Engineering (ACOPNE), 2010, America Society Civil Engineers, Active, Nationwide

**Professional Affiliations**

Member, American Society of Civil Engineers

Member, Academy of Coastal Ocean, Port, and Navigation Engineers

Member, Florida Shore and Beach Preservation Association

Member, American Shore and Beach Preservation Association

**Employment History**

APTIM, 1987 – Present

**Project Manager and Engineer of Record, North End Structural Stabilization Project, Town of Longboat Key, Florida**

Mr. Mann was project manager and engineer of record for two permeable adjustable groins, a terminal groin, and a small truck haul fill placement project to stabilize the shoreline adjacent to Longboat Pass.

**Initial Assessment of Vulnerability due to Sea Level Rise and Recurring Storm Events, Town of Longboat Key, FL.** Performed preliminary assessment of vulnerabilities to private and public infrastructure due to sea level rise and recurring storm events. (2018).

**Lake Worth Inlet Sand Bypassing Discharge Analysis, Palm Beach County, Florida**

Analyzed shoreline changes and other coastal processes occurring south of the Lake Worth Inlet to recommend extension of the sand bypassing plant discharge (2006).

**Lake Worth Inlet Sand Transfer Plant Replacement Analysis, Palm Beach County, Florida**

Assisted in the development of alternatives to determine if the existing sand transfer plant should be rehabilitated or replaced (2005).

**Town of Palm Beach Seawall (Midtown) Toe Protection Project, Palm Beach County, Florida**

Assisted in the design of a rock toe berm to prevent the toe failure of an exposed ocean front seawall. Provided construction observations (1989).

**Engineer of Record, Seawall Project, Eastpointe II Condominium Association, Florida**

Mr. Mann is engineer of record for design of a 300-foot long seawall to protect habitable upland improvements (2014-2015).

**Engineer of Record, Seawall Project, Seawinds Condominium, Florida**

Mr. Mann was the engineer of record for the design of a 900-foot long seawall to protect \$50 million of habitable upland improvements. He utilized grouted rock anchor systems (2012-2014).

**Project Manager, Broward County Segment II Shore Protection Project, Florida**

Project Manager for engineering, environmental, and geotechnical services associated with the design and permitting of the federal nourishment project (2012-2016).

**Coastal Engineer, Emergency Dune Restoration, Seawinds Property Owners Association, Florida**

Mr. Mann designed and permitted an emergency dune restoration for 500 linear feet of dune. Mr. Mann provided construction contract administration (2012).

**Project Manager, City of Deerfield Beach, Beach and Dune Restoration**

Mr. Mann was project manager for a truck haul beach and dune restoration project. Project utilized FEMA funding to address repairs to the beach from Hurricane Wilma (2007-2009).

**Project Manager, Curry Hammock State Park Beach Restoration, Florida**

Mr. Mann was project manager for the design of a truck haul beach nourishment for the restoration of a small recreational beach in the Florida Keys. This project involved the removal of the existing marl substrate to allow the possibility of sea turtle nesting (2006-2008).

**Project Manager and Engineer of Record, Pelican Landing Community Association Erosion Control Project, Big Hickory Island, Florida**

Mr. Mann was project manager and engineer of record for a beach nourishment and adjustable groin project for restoration of a portion of Big Hickory Island, Florida (2009-2013).



**Michelle Pfeiffer, PE**  
**SENIOR COASTAL ENGINEER**

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mpfeiffer@coastalprotectioneng.com; 772-971-0044

**PROFESSIONAL QUALIFICATIONS**

Michelle Pfeiffer, PE, is a Senior Coastal Engineer with Coastal Protection Engineering (CPE) who has managed beach nourishment and marine structure design, permitting, bidding assistance, construction plans and specifications, construction observation and monitoring for over ten years. She has worked on numerous projects throughout Florida since 2008 and will provide engineering support to the Town under this contract.

**RELEVANT EXPERIENCE**

**Indian River County Beach Management Program, Indian River County, Florida**

Ms. Pfeiffer served as the project manager for the County for 2016-2017. In that time, Ms. Pfeiffer managed the contract by developing and leading project work assignments. She has conducted coastal engineering analysis for multiple post-project monitoring reports for the Sector 3 Dune Repair Project. She provided technical review for the Sector 3/Sector 5/Sector 7 Hurricane Matthew Storm Damage Reports for FEMA. She has conducted coastal engineering analysis and technical review for the Feasibility Evaluation Report of the Sector 5 Beach and Dune Renourishment Project.

**2013 Fifth Beach Renourishment Project, City of Delray Beach, Florida**

Delray Beach's Fifth Periodic Renourishment was constructed by cutterhead dredge. Ms. Pfeiffer assisted as project engineer and performed daily observations, sediment QA/QC, documented construction activities, and participated in weekly meetings.

**2013 North End Dune Reconstruction, City of Delray Beach, Florida**

Delray Beach's 2013 North End Dune Reconstruction was constructed by truck haul. Ms. Pfeiffer was on-site during construction, collecting truck tickets and verifying that the fill placement met the engineered design. She also performed daily observations, sediment QA/QC, documented construction activities, and participated in weekly meetings.

**Education**

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Master of Science, Ocean Engineering, Florida Institute of Technology, Melbourne, Florida, 2009

Bachelor of Science, Ocean Engineering, Florida Institute of Technology, Melbourne, Florida, 2007

**Highlights**

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11 years of coastal engineering experience.

Broad experience in project management, planning, design and permitting, engineering and modeling, plans and specifications, field investigation, construction oversight, and feasibility studies of coastal engineering projects.

Conducts inlet management studies.

**Registrations/Certifications**

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Professional Engineer, Florida, License No. 76209, Active

**Professional Affiliations**

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Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

**Employment History**

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CPE 2019 – Present

APTIM 2008 – 2019

**Comprehensive Coastal Erosion Control Program, Manatee County, Florida**

Ms. Pfeiffer has provided engineering services and project management support to Manatee County's coastal program for over ten years. She assisted with the design and permitting and was the primary coastal engineer responsible for contractor coordination and construction oversight, for the Coquina Beach Nourishment Projects in 2011 and 2014 and City of Anna Maria Nourishment Project in 2011. Ms. Pfeiffer provided design, permitting and construction phase services for the 2011 Longboat Pass North Jetty Geotextile Tube Project and is supporting the County with the design of a permanent structure. She contributed to the Longboat Pass Inlet Management Study and the permitting to utilize material from Longboat Pass on adjacent beaches on Coquina Beach and the north end of Longboat Key. She also assisted with design and permitting to utilize the approximately 500,000 cubic yards of beach compatible sediment within the Port Dolphin pipeline corridor for placement along portions of the north end of Anna Maria Island. Ms. Pfeiffer provided support for the 2014 federally authorized Central Beach Nourishment Project and continues to coordinate with the County and USACE in preparation for the next renourishment. She oversaw the permitting and construction of the Cortez Groins Replacement Project and is currently working on a feasibility study to rehabilitate, remove and/or replace the Coquina Beach groins. She is also supporting the County to obtain FEMA funding reimbursements due to damage of the Coquina Beach nourishment project from 2016 Hurricane Hermine and 2017 Hurricane Irma. She is currently overseeing development of the Passage Key Inlet Study in support of upcoming Coquina Beach permitting and construction.

**Longboat Pass Maintenance Dredging Beneficial Use Project, Manatee County, Florida**

Ms. Pfeiffer prepared the design and permit application for the dredging of Longboat Pass, which is shared as a borrow source between the two neighboring islands, Anna Maria Island and Longboat Key. The design accounts for minimization of impacts to natural and artificial reef located in both project areas.

**Blind Pass Inlet Management Study, Lee County, Florida**

Ms. Pfeiffer is the project engineer for the development of the Blind Pass Inlet Management Study for Lee County. This study will provide a better understanding of the coastal dynamics of the Blind Pass inlet system and adjacent beaches using available met-oceanographic data and numerical modeling. The primary focus of this inlet management study is to develop an updated sediment budget for the inlet and to evaluate strategies of inlet sediment management with the objective of balancing the sediment budget between the inlet and adjacent beaches. Ms. Pfeiffer coordinates closely with the numerical modeling team in the use of the Delft3D model as a tool to evaluate management strategies. Ms. Pfeiffer assists with client and agency coordination and public outreach including stakeholder meetings.

**Redfish Pass Inlet Management Study, Lee County, Florida**

Ms. Pfeiffer is the project engineer for the modeling study. APTIM assisted the Captiva Erosion Prevention District with the development of the original Redfish Pass inlet management study in 1995. APTIM is assisting the District with an update to the study utilizing state-of-the-art numerical modeling technology and an updated sediment budget based on recent history. The study utilizes the Delft3D numerical modeling package to evaluate dredging designs and comparing them to a "no action" scenario to analyze the potential impacts of the conceptual designs. The conceptual borrow areas are being developed for a range of volumes that will be suitable for projects ranging from a modest emergency fill to a full beach nourishment project.



**Erica Carr-Betts, EI**  
**Coastal Engineer**

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**Professional Qualifications**

Erica Carr-Betts has been working in the field of coastal engineering since 1999. Her focus is on coastal engineering design, permitting, project management, funding assistance, and construction oversight. She assists with the annual FDEP Local Government Funding Requests (LGFR), which includes project descriptions and future planning elements, budget development and project, design, construction, and monitoring scheduling.

**Relevant Experience**

**Lido Key Beach Nourishment Project, Sarasota County, Florida**

Ms. Carr-Betts assisted with the design and permitting, Local Government Funding Requests, monitoring reports, and assisted with the Permit Application support. She also provided during construction observations for the 2019 Lido Beach Repair Project.

**Anna Maria Island Central Beach Nourishment Project, Manatee County, Florida**

Ms. Carr-Betts conducted on-site construction observation of the 2006 Central Anna Maria Island beach nourishment Federal project. She drafted the Limited Reevaluation Report, reviewed plans and specifications, and assisted with project permitting and construction observation for the 2014 re-nourishment of the Central Project area.

**City of Anna Maria and Coquina Beach Shoreline Protection Project, Manatee County, Florida**

Ms. Carr-Betts assisted with the 2011 beach restoration effort for the County on the north and south ends of Anna Maria Island. She assisted with the design, engineering, permitting, technical consultation and construction oversight services. Ms. Carr-Betts also assisted with the design and construction phase services for the 5-acre artificial reef located approximately 1,100 feet off the coast of Coquina Beach. She continues to assist with the permit required annual monitoring surveys and associated engineering calculations and reports.

**2014 Anna Maria Island Parking Study, Manatee County, Florida**

Ms. Carr-Betts conducted the 2014 parking study for Manatee County including presentations to the local city governments and coordination with state agencies.

**Education**

Master of Business Administration, Warrington College of Business, University of Florida, 2005

Engineering, Coastal and Oceanographic Engineering, University of Florida, 2002

Master of Science, Coastal and Oceanographic Engineering, University of Florida, 1999

Bachelor of Science, Civil Engineering, George Washington University 1997

**Highlights**

Over 19 years of coastal engineering experience

**Registrations/Certifications**

Engineer Intern (EI), Engineer in Training (EIT) Florida

**Professional Affiliations**

Member, American Society of Civil Engineers

Member, Association of Coastal Engineers Member

Member, American Shore and Beach Preservation Association

Member, Florida Shore and Beach Preservation Association

**Employment History**

APTIM, 2006 – Present

Erickson Consulting, 2004 – 2005

ATM, 2001 - 2004



**Holly Berckenhoff, EI**  
**Coastal Engineer**

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**Professional Qualifications**

Holly Berckenhoff joined APTIM as a Coastal Engineer in February 2018. Prior to joining APTIM, Ms. Berckenhoff gained experience through internships where she assisted a dredge company with surveying, dredge monitoring, QA/QC and general support. Ms. Berckenhoff has also provided construction coordination for a Dredged Material Area Management (DAMP) site and worked as a subconsultant to a team of engineers, scientists and economists in support of the development of the Coastal Master Plan for Texas.

**Relevant Experience**

**Sector 5 Beach and Dune Restoration Project, Indian River County, Florida**

Currently performing onsite engineering observations during beach and dune construction and dune planting operations.

**2019 Park Shore Truck Haul Renourishments, Collier County, Florida**

Assisted with preparation of construction plans and technical specifications. Performed volume calculations and assisted with permit compliance submittals during construction.

**Delray Beach Renourishment Program, City of Delray Beach, Florida**

Pre- and post-storm observations, storm impact calculations, and engineering analysis to support annual beach monitoring.

**Lido Key Beach Nourishment Project and Hurricane and Storm Damage Reduction Project, City of Sarasota, Florida**

Performed onsite engineering observations during construction.

**Collier Creek Post-Irma Dredge Project, Collier County, Florida**

Construction engineering support including engineering design, survey data review, volume calculations, and post-construction report writing.

**Wiggins Pass and Doctors Pass Maintenance Dredging Project, Collier County, Florida**

Construction engineering support including engineering design of dredge and disposal areas, volume calculations, permit compliance monitoring, dredge depth tracking, and on-site observations.

**Engineering and Benefits Analysis, Captiva Island, Florida**

Assist with engineering design, dune volume calculations, data management and report writing.

**Site Engineering Technical Intern, Great Lakes Dredge & Dock, Inc., Oakbrook, Illinois, 2017**

Completed land and hydrographic surveys, dredge production monitoring, quality control and quality assurance reporting, and general support for operations on the West Coast Hopper Project.

**Education**

Bachelor of Science, Ocean Engineering, Minor in Environmental Geoscience, Texas A&M University, 2017

**Highlights**

During-construction experience with inlet maintenance dredging, and beach renourishment from both offshore and upland sand sources

**Registrations/Certifications**

Engineer in Training (EIT), Texas, 62188

PADI Open Water Diver, 2016

SSI Enriched Air Nitrox, 2018

American Red Cross Instructor CPRE/AED for the Professional Rescuer

First Aid for the Professional Rescuer

Emergency O2 Administration

Blood Borne Pathogens Trained

**Employment History**

APTIM, 2018 – Present



**Lindino Benedet, Ph.D.**  
**PRINCIPAL**

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## PROFESSIONAL QUALIFICATIONS

Lindino Benedet is a Principal for Coastal Protection Engineering (CPE) with over 19 years professional experience dedicated to the coastal engineering practice. Lindino obtained his undergraduate degree at UNIVALI in Brazil, where he majored in Oceanography, received his master's degree at Florida Atlantic University in Marine Geology under Dr. Charles Finkl and obtained his Ph.D. at Delft Institute of Technology in Delft, Holland, with focus on Hydraulic Engineering under the supervision of Prof. Dr. Marcel Stive.

He is an Associate Editor Shore & Beach and of the Journal of Coastal Research. Lindino has worked on hundreds of consulting projects and published dozens of scientific papers in international journals and conferences. His expertise includes project and business management, process-based numerical modeling of coastal processes, marine met-ocean, navigation evaluations, port feasibility studies, dredging, beach nourishment, barrier island restoration, coastal structures, marine sand searches etc. Over the last couple of years Lindino has worked with many state and local governmental agencies in the states of Florida, Louisiana, Texas and North Carolina. He will provide modeling support to the Town under this contract, as needed.

## RELEVANT EXPERIENCE

### **Wiggins Pass Inlet Study, Collier County, Florida**

Dr. Benedet and his team performed numerical modeling of waves, currents, and sediment transport and beach-inlet morphology utilizing the DELFT3D model to evaluate inlet channel dredging strategies and the effect of inlet channel re-alignment alternatives on sedimentation rates and erosion of adjacent beaches.

### **Upham T-Head Groins Numerical Modeling, Pinellas County, Florida**

Dr. Benedet and his team Boussinesq Wave and Flor Modeling utilizing the USACE Bouss2D model to Evaluate the Effects of Proposed T-Head Groins and Artificial Reefs on recreational activities such as Surfing.

### **Town of South Palm Beach Breakwaters, Palm Beach County, Florida**

Dr. Benedet and his team performed numerical modeling of waves, currents, alongshore sediment transport and beach morphology change utilizing the numerical model Delft3D to evaluate performance and impacts of proposed breakwaters along the Town of South Palm Beach.

## Education

Doctor of Philosophy, Hydraulic Engineering, TU Delft, Delft, Holland, Defense Date: April 2016

Master of Business Administration, Business Administration, Fundação Dom Cabral, Belo Horizonte, Brazil, 2014

Master of Science, Marine Geology, Florida Atlantic University, Boca Raton, Florida, 2001

Bachelor of Science, Oceanography, Universidade do Vale do Itajai, Itajai, Brazil, 2000

## Highlights

More than 19 years of experience in coastal oceanography, geology and engineering

Recognized intentional expert in in the fields of coastal numerical modeling, coastal engineering, beach nourishment, marine sand investigations

## Professional Affiliations

Associate Editor, Journal of Coastal Research, Journal of the Coastal Research and Education Foundation

Editorial Board Member, Shore & Beach, Journal of the American Shore & Beach Preservation Association

Associated Editor, Brazilian Journal of Aquatic Sciences

Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

## Employment History

CPE 2019 – Present

APTIM 2001 – 2019

**Barrier Island Restoration Projects, Louisiana Department of Natural Resources (DNR), Louisiana**

Dr. Benedet led numerical modelling activities to evaluate project performance and borrow area impacts of many Barrier Island Restoration projects along the Louisiana Coast including the Shell Island Sandy Point Borrow area, West Belle Pass Restoration Project and the Cheniere Ronquille Barrier Island Restoration project. These projects involved numerical modeling of waves, currents, alongshore sediment transport and beach morphology utilizing the Delft3D model, under average conditions, tropical storms and hurricanes, to evaluate performance of Barrier Island Restoration (beach, dune and marsh) over timescales of years to decades.

**Figure Eight Island Restoration and Inlet Realignment Project, Figure Eight Island, North Carolina**

Dr. Benedet performed numerical modeling of waves, currents, sediment transport and beach-inlet morphology utilizing the numerical model Delft3D to evaluate performance of inlet re-location alternatives and terminal groins on the erosion of Figure Eight Island, NC.

**Panama City Nourishment, Panama City Tourism Development Council, Panama City Beach, Florida**

Dr. Benedet planned a waves and current data collection efforts where two ADCPs were deployed near the project location to collect oceanographic data to calibrate the numerical model, and conducted numerical modeling of coastal processes (waves, currents, sediment transport, morphology) utilizing Delft3D to evaluate the impacts on Hurricane Ivan on Panama City Beach and evaluate a proposed maintenance nourishment project.

**Louisiana Statewide Numerical Modeling as a Response to Deepwater Horizon, Louisiana Department of Natural Resources (DNR), Louisiana**

Dr. Benedet led a team of several numerical modelers that were tasked with developing a model that covers Most of the Louisiana Coast and Marshes. The model was conducted to refine the design of proposed sand berms to contain oil from the Deepwater Horizon oil spill from contaminating marshes, and to evaluate the effect of the berms on water quality (residence time), marsh salinities, waves and currents. It was an ambitious 24/7 modeling effort performed in parallel by several numerical modelers under the direct supervision of Dr. Benedet, in order to be able to provide results in an expedited manner to be used to support decisions in the aftermath of the environmental disaster.

**Longboat Key Islander Permeable Adjustable Groins, Longboat Key, Florida**

Dr. Benedet led Delf3D numerical modeling activities and coastal processes analysis development to evaluate the effect of proposed permeable structures to manage an erosional hotspot on Longboat Key Florida. The project was constructed after the study and it performed very similar to model prediction.

**Mearim Port, Maranhão, MA, Brazil**

Dr. Benedet led a project team that deployed 4 ADCPs in extreme conditions (21 ft tides, 6-12 ft/s currents), conducted bathymetric and geophysical surveys, performed the deployment of current drifters, and led extensive numerical modeling activities of coastal processes and channel shoaling with Delft3D, ship maneuvering modeling with PCRembrandt, mooring modeling with Optimoor, and the development of engineering design of a grains port terminal.



**Morjana Signorin**  
**Numerical Modeler**

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**Professional Qualifications**

Morjana Signorin is an Oceanographer with APTIM. Ms. Signorin graduated in Oceanography at University of Itajaí Valley (UNIVALI), Itajaí – SC, Brazil, with a research interest in wave numerical modeling. Ms. Signorin has 10 years of experience in assembly and operation of numerical models. She has conducted analysis and numerical modeling of coastal processes such as currents, water levels, waves, storm surge, sediment transport, morphology, and wave-current-structure interaction. Her responsibilities at APTIM include critical assessment on model stability and functioning, numerical model calibration and validation with measured data, generation of wave and wind data for numerical modeling of coastal processes, critical interpretation of modeling results, graphics development, performing detailed technical coastal engineering analyses through the application of coastal theory, organizing and interpreting engineering data to prepare clear and concise engineering reports and technical documentation, and the collection and interpretation of meteocean, hydrological, and geological data. Ms. Signorin also has extensive experience in GIS and will assist Ms. Brenner with executing tasks as the APTIM Project Manager.

**Relevant Experience**

**Beach Management Plan for the City of Deerfield Beach, FL, ongoing**

Currently working on the development of a Beach Management Plan that will outline objectives, options, and actions over the short and long term that the city could adopt and undertake to sustain the City's beaches. The study includes storm damage vulnerability analysis using the model SBEACH.

**Southern Palm Beach Island Comprehensive Shoreline Stabilization Project – Environmental Impact Statement, 2015**

Assisted and reviewed the numerical modeling of flow, waves, sediment transport, and morphology changes performed with Delft3D to evaluate the proposed beach management alternatives, including beach fill and groins, to assess the potential hardbottom impact.

**Golden Triangle Marsh Creation Project, Coastal Protection & Restoration Authority, Orleans Parish, Louisiana, May 2017 – 2018**

Ms. Signorin performs numerical modeling of flow, waves, sediment transport, morphological changes, residence and water quality with Delft3D to evaluate marsh creating and borrow area impacts in the study area.

**Inlet Management Study of Redfish Pass and Adjacent Beaches, Captiva Erosion and Prevention District, Captiva, Florida, October 2015 – 2017**

Ms. Signorin performs numerical modeling of flow, waves, sediment transport, and morphological changes with Delft3D to evaluate different borrow areas dredging alternatives to assess the impacts/benefits on the adjacent beaches.

**Education**

Master of Business Administration, Project Management, University of Itajaí Valley, 2013  
Bachelor of Science, Oceanography, University of Itajaí Valley, 2010

**Highlights**

Over 10 years of experience in coastal modeling and data analysis of meta-oceanographic data  
Worked in over 30 numerical modeling projects in her career in Brazil and the United States.  
Advanced GIS knowledge

**Employment History**

APTIM 2011 – Present  
Acquaplan Environmental Consulting, Balneario Camboriu, Brazil, 2010 - 2011

**Gateway Triangle Improvements Discharge Impact Study, Collier County, Florida, 2015**

Ms. Signorin conducted hydrodynamic numerical modeling of Naples Bay and its canals, Gordon Pass, and the northern portion of Dollar Bay using Delft3D. The model results were used as input for HEC-RAS model, which along with HEC-HMS were used to assess the hydrodynamics and flooding due to the operation of a pump station in the dead-end Brookside Marina Canal.

**Beach Preservation Plan Indian River County, FL, 2014**

Performed numerical modeling of flow, waves, sediment transport, and morphology changes with Delft3D to assess the benefits/impacts and assist in the development of specific beach management strategies (groins, breakwaters, beach fill) along Indian River County.



**Zhifei Dong, PhD**  
**Numerical Modeler**

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**Professional Qualifications**

Zhifei Dong has primarily focused on numerical modeling of the coastal processes such as waves, current, sediment transport, and storm surge since 2014.

**Relevant Experience**

**Palm Beach County South Lake Worth Inlet Sediment Bypassing Study, 2019**

Calculate longshore sediment transport rate based on the offshore wave data and USACE CERC equation; perform monthly, seasonal, and annual analysis of littoral drift time series; identify the major wave events that generate longshore transport anomaly.

**Cape Charles Harbor Wave Modeling Study, 2018**

Wind data time series analysis, Delft3D modeling of wave to specify the wind cases that generate unfavorable wave conditions within the harbor. Test five design alternatives to minimize the wave impact within the harbor.

**USACE Regional Sediment Management Project Phase III and Quantification of Coastal Resilience, 2017**

Extend the USACE dredging database to include inland dredging projects. The final deliverables are the updated web-based ArcGIS map showing dredging data statistics for all the districts. The pilot study of coastal resilience index focuses on the quantification of the resiliency of coastal communities against disturbances such as storms.

**Redfish Pass and Blind Pass Inlet Management Study, 2016**

Development of inlet management plan for Redfish Pass and Blind Pass based on the present condition. Numerical modeling of hydrodynamics at inlets, inlet morphology change and impacts of proposed dredging events on the adjacent area.

**EPA Sea Level Rise and Water Adaption, 2016**

Assessment of the vulnerability of coastal communities to the storm surge, hurricanes and projected sea level rise using SLOSH model. The study focuses on Bridgeport, Massachusetts and Norfolk, Virginia.

**USACE Regional Sediment Management Project Phase II, 2016**

Development of ArcGIS python scripts to manage and display USACE dredging database since 1998. The final deliverables are web-based ArcGIS map showing dredging data statistics for all the districts.

**EPA Water and Community Adaption Methods and Application, 2015**

Development of climate change adaptation methods and emergency preparedness for coastal communities facing the threat of disruptive storm surge, hurricanes and projected sea level rise using SLOSH model. The study focuses on Mattapoisett, Massachusetts and its adjacent communities.

**Education**

Doctor of Philosophy, Ocean/Coastal Engineering, University of Delaware, 2013

Bachelor of Science, Ocean Physics, Ocean University of China, 2009

**Highlights**

Over 6 years of numerical modeling experience

**Computational Skills**

Fortran

Matlab

Python

UNIX Shell Scripting (computer cluster interface)

SWAN

Delft3D

GENESIS

SBEACH

ArcGIS

**Employment History**

APTIM, 2013 – Present



**Stacy Buck, MS**  
**SENIOR MARINE BIOLOGIST**

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### PROFESSIONAL QUALIFICATIONS

Stacy Buck is a Senior Marine Biologist with Coastal Protection Engineering (CPE) and has conducted biological monitoring and provided permitting services for public and private sector clients throughout south Florida since 2004. She currently manages environmental tasks for several Town of Palm Beach Projects, and she will continue to oversee permitting and biological monitoring for the Town under this contract.

Ms. Buck has extensive experience in the design and implementation of monitoring programs for marine resources, including long-term programs for natural and artificial reefs, implementation of coral restoration and relocation programs, seagrass habitat assessments and marine wetland delineation. Ms. Buck is responsible for the complete management of biological monitoring projects from pre-permit application coordination through final report and compliance deliverables.

She has over 19 years of experience in biological and environmental science, the last 16 of which have focused on coastal and marine biology in south Florida. Ms. Buck began her career in marine biology in south Florida working on the Broward County Segment III SPP in 2004. Since then, she has conducted over 1250 scientific dives in south Florida. This intense and extensive experience provided Ms. Buck with a thorough understanding of this southeast Florida nearshore hardbottom habitat, the importance and sensitivity of this resource and how it is affected by construction activities. Stacy applies this first-hand knowledge during production of permitting documents for both beach nourishment and artificial reef components of coastal management projects, including biological monitoring plans, coral relocation plans and mitigation plan. Ms. Buck also leads production of environmental documents such as Environmental Impact Statements, Biological Assessments, and Essential Fish Habitat Assessments in support of NEPA, ESA Section 7 Consultation and the Magnuson-Stevens Fishery Conservation and Management Act.

### Education

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Master of Science, Coastal Zone Management, Nova Southeastern University, Dania Beach, Florida, 2007

Bachelor of Science, Marine Science, University of South Carolina, Columbia, South Carolina, 1999

### Highlights

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Over 19 years of biological and environmental science experience with the last 16 years focused on coastal and marine biology in South Florida.

### Registrations/Certifications

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SDI Dive Master, Dry Suit Specialty Diver, Enriched Air Nitrox Diver

PADI: Rescue Diver and Advanced Diver

NAUI Open Water Diver, 1997

Emergency First Responder (CPR, 1st Aid, AED)

DAN O<sub>2</sub> Administration

BOEM and NMFS Protected Species Observer

### Professional Affiliations

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Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

Member, Divers Alert Network (DAN)

### Employment History

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CPE 2019 – Present

APTIM 2006 – 2019

## RELEVANT EXPERIENCE

### **Mid-Town Groin Project, Town of Palm Beach, Florida**

Ms. Buck worked with the USACE and FDEP to expedite the permit modification for the Mid-Town Groin to ensure construction would not interfere with sea turtle nesting. Additionally, initial authorization did not include consultation with NMFS for Section 7 consultation since the groin was originally planned to be built on the newly nourished beach. Our Team designed the project so that construction of the groin would be built “in the dry”, otherwise consultation would have not made construction feasible for that season. The permit modification requests were submitted in late December 2017 and the project was deemed substantially complete in May 2018.

### **Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS, Florida**

Led the development of an EIS in compliance with NEPA and facilitated state and federal permitting, including development of biological monitoring, mitigation and coral relocation plans. Ms. Buck supported the Corps in ESA Section 7 and EFH consultation and led the assessment of the benthic habitat to support the EIS and environmental permitting.

### **Sector 5 Beach and Dune Restoration Project, Indian River County, Florida**

As lead biologist, Ms. Buck’s responsibilities include environmental permitting, development of mitigation and monitoring programs, coordination and implementation of field activities, data analysis and report preparation. Preparation of environmental documents in support of National Environmental Policy Act, as well as coordinating with federal resource agencies for Endangered Species Act Section 7 Consultation the and Magnuson-Stevens Fishery Conservation and Management Act. Monitoring/assessments of natural and artificial habitat function via in situ sampling and aerial analysis.

### **Coastal Program, Palm Beach County, Florida**

As lead biologist, Ms. Buck’s responsibilities include environmental permitting, development of mitigation and monitoring programs, coordination and implementation of field activities, data analysis and report preparation. Led the preparation of an Environmental Impact Statement, which detailed the potential impact of seven project alternatives. Provided extensive coordination between FDEP, USACE and the County.

### **Beach Nourishment Program, Delray Beach, Florida**

As lead biologist, Ms. Buck led state and federal permitting, ESA Section 7 consultation, EFH assessment, and development of an EA in compliance with NEPA. She led field investigations to map the reef edge and survey for the threatened coral species *Acropora* spp. east of the borrow areas. She also coordinated with the sea turtle monitoring team to ensure permit compliance and co-led public nest excavation events in 2019.

### **Coastal and Waterways Program, Deerfield Beach, Florida**

As lead biologist, Ms. Buck’s responsibilities include environmental permitting, development of mitigation and monitoring programs, coordination and implementation of field activities, data analysis and report preparation.



**Lauren Floyd, MS**  
**SENIOR MARINE BIOLOGIST**

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lfloyd@coastalprotectioneng.com; 954-551-2594

**PROFESSIONAL QUALIFICATIONS**

Lauren Floyd is a Senior Marine Biologist with Coastal Protection Engineering (CPE) and has managed state and federal permitting, biological monitoring programs, and mitigation assessments for coastal projects throughout Florida since 2006. Ms. Floyd regularly coordinates and develops environmental documents required in order to obtain State and Federal permits for coastal projects. She is trained and experienced in NEPA documentation, including preparation of Environmental Assessments and Environmental Impact Statements. Her extensive experience in permitting projects in Florida has led to strong ties with regulatory state and federal agency staff. Ms. Floyd will provide permitting and biological monitoring support to the Town under this contract.

Consultation and the Magnuson-Stevens Fishery Conservation and Management Act, as well as the production of the Segment II Environmental Assessment in support of NEPA.

**RELEVANT EXPERIENCE**

**Southern Palm Beach Island Comprehensive Shoreline Stabilization Project EIS, Florida**

Supported the development of an EIS in compliance with NEPA and facilitated state and federal permitting, including development of biological monitoring, mitigation and coral relocation plans. Ms. Floyd supported the Corps in ESA Section 7 and EFH consultation and conducted assessment of the benthic habitat to support the EIS and environmental permitting.

**Lido Key Hurricane and Storm Damage Reduction Project – Seagrass Mitigation, City of Sarasota, Florida**

Ms. Floyd managed the seagrass mitigation coordination for the federal Lido Key HSDR Project, including overseeing a seagrass survey in Big Sarasota Pass and performing a Uniform Mitigation Assessment Method (UMAM) analysis to determine the appropriate amount of mitigation for impacts to the seagrass in the borrow areas. She coordinated with the City of Sarasota, USACE, FDEP, NMFS, and USFWS to evaluate and identify a suitable mitigation site, determining that Manatee County’s Perico Preserve, located in the same watershed as the Lido Key HSDR Project,

**Education**

Master of Science, Marine Biology, Nova Southeastern University, Dania Beach, Florida, 2006

Bachelor of Science, Middlebury College, Middlebury, Vermont, 1997

**Highlights**

Nearly 14 years of biological monitoring and permitting in Florida, including hardbottom and artificial reef monitoring within Palm Beach County

**Registrations/Certifications**

Certified Environmental Professional, Candidate

PADI: Dive master, Dry Suit Specialty Diver, Rescue Diver, Enriched Air Nitrox Diver, Advanced Diver, Open Water Diver

Emergency First Responder (CPR, 1st Aid, AED)

DAN O<sub>2</sub> Administration

BOEM and NMFS Protected Species Observer

**Professional Affiliations**

Member, Florida Shore and Beach Preservation Association (FSBPA)

Member, American Shore and Beach Preservation Association (ASBPA)

Member, National Association of Environmental Professionals (NAEP)

Member, Florida Association of Environmental Professionals (FAEP)

Member, Divers Alert Network (DAN)

**Employment History**

CPE 2019 – Present

APTIM 2006 – 2019

has the optimal conditions for harvesting and transplanting 2.9 acres of seagrass. She assisted the City of Sarasota and Manatee County in developing a Site Agreement for management of the mitigation area, coordinated a boundary delineation of the site, and assisted Manatee County in modifying their Perico Preserve state and federal permits to incorporate the Lido Key seagrass mitigation area. The seagrass transplantation is currently scheduled for summer 2020, and Ms. Floyd will oversee the pre- and post-construction mitigation surveys.

**Sanibel Causeway Shoreline Stabilization Project, Lee County, Florida**

Ms. Floyd manages the environmental permitting for Lee County's Sanibel Causeway Shoreline Stabilization Project, which was designed to avoid impacts to nearshore seagrass resources in Pine Island Sound and San Carlos Bay. She oversaw the seagrass delineation and characterization survey and incorporated this information into permit applications. Ms. Floyd coordinated with FDEP, USACE, and NMFS to determine appropriate seagrass avoidance and minimization measures, including an updated pre-construction and post-construction survey.

**Comprehensive Erosion Control Program, Manatee County, Florida**

Responsible for all environmental permitting, agency coordination, development of monitoring plans, survey coordination, data analysis and report preparation. Conducted biological surveys of natural hardbottom and artificial reef habitats including in situ identification and abundance of flora and fauna, protected species observation and enumeration.

**Coastal Program, Collier County, Florida**

Responsible for all environmental permitting, agency coordination, development of monitoring plans, survey coordination, data analysis and report preparation. Prepared environmental documents in support of National Environmental Policy Act, Endangered Species Act Section 7 Consultation, and Magnuson-Stevens Fishery Conservation and Management Act. Conducted biological surveys of natural hardbottom and artificial reef habitats including in situ identification and abundance of flora and fauna, protected species observation and enumeration.

**Gasparilla Island, Lee County, Florida**

Responsible for all environmental permitting, agency coordination, development of monitoring plans, survey coordination, data analysis and report preparation.

**Lido Key Beach Nourishment Program, City of Sarasota, Florida**

Responsible for all environmental permitting, agency coordination, development of monitoring plans, survey coordination, data analysis and report preparation.



**Kathryn (Katy) Brown, MS**  
**Marine Biologist**

2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
kathryn.brown@aptim.com; Telephone: 561.361.3181

**Professional Qualifications**

Kathryn Brown has applied experience in biological and environmental science since 2005, with experience in Florida since 2007. This experience includes marine habitat characterization of natural and artificial reef communities, coastal wetland biological surveys, and protected species surveys. She also assists with preparation of environmental documents required in order to obtain State and Federal permits for coastal projects, including Environmental Assessments (EA), Environmental Impact Statements (EIS), Biological Assessments (BA) in support of ESA Section 7 Consultation and Essential Fish Habitat (EFH) assessments. She routinely leads field survey operations.

**Relevant Experience**

**Environmental Documentation & NEPA Compliance** - Prepared environmental documents in support of National Environmental Policy Act, Endangered Species Act Section 7 Consultation, and Magnuson-Stevens Fishery Conservation and Management Act on the following projects:

- Southern Palm Beach Island Comprehensive Shore Stabilization Project Environmental Impact Statement, Biological Assessment and Essential Fish Habitat Assessment, Palm Beach County, Florida
- Environmental Assessment, Sector 5 Beach and Dune Restoration Project, Indian River County, Florida
- Environmental Assessment, Golden Triangle Marsh Creation Project, Louisiana

**Biological Monitoring/Assessments** - Conducted biological monitoring/ assessments on natural and artificial reefs on the following projects:

- Delray Beach Sixth Periodic Renourishment, Florida
- Indian River County Sector 5 Beach and Dune Restoration Project, Florida
- Broward County Segment II Shore Protection Project, Florida
- Southern Palm Beach Island Comprehensive Shoreline Stabilization Project, Town of Palm Beach, Florida
- Lido Key Hurricane and Storm Damage Reduction Project
- Coquina Beach Restoration Project, Manatee County, Florida
- Collier County Beach Renourishment, Florida

**Education**

Master of Science, Marine Biology, Nova Southeastern University, 2016

Bachelor of Science, Environmental Science, Fordham University, 2006

**Highlights**

More than 10 years of marine biology experience

Experience includes marine habitat characterization of natural and artificial reef communities, coastal wetland biological surveys, and protected species surveys

**Registrations/Certifications**

PADI Dive Master, 2008

Enriched Air Nitrox Diver, 2006

PADI Rescue Diver, 2007

PADI Advanced Diver, 2006

AAUS Scientific Diver, 2008

PADI Open Water Diver, 2005

Emergency First Responder, CPR, 1st Aid, AED

DAN O<sub>2</sub> Administration

Divers Alert Network (DAN) Member, 2005

**Professional Affiliations**

AAUS Dive Control Board

Member, Ecological Society of America, 2016

Member, Associate Sigma Xi, 2006

Member, American Shore and Beach Preservation Association

Member, Florida Shore and Beach Preservation Association

**Employment History**

APTIM, 2013 – Present

Coastal & Marine Ecology, 2012 - 2013

- Borrow Areas VI-E and III-B Hardbottom Investigation, Captiva and Sanibel Islands Beach Restoration Project, Lee County, Florida
- Sarasota Bay Estuary Program, Artificial Reef Monitoring Project
- Walton County NRDA Artificial Reef Monitoring, Florida
- North Topsail Beach Shoreline Protection Project, North Topsail Beach, NC
- Elder Point Marsh Restoration Project, Jamaica Bay Unit, Jamaica Bay, NY
- Golden Triangle Marsh Creation Project, Lake Borgne, LA
- System Wide Assessment and Monitoring Program (SWAMP) Phase II, LA

**Protected Species Observation/Enumeration Surveys** - Conducted Protected Species Surveys on the following projects:

- Delray Beach Sixth Periodic Renourishment, ESA Listed Coral Survey
- Pompano Pier Replacement Project, NMFS Recommended Survey Protocol of *Acropora* spp., Broward County, FL
- Bahia Icacos Waterway Barrier System, Former Vieques Naval Training Range, Vieques Island, Puerto Rico



**Shara Teter, MS**  
**Marine Biologist**

2481 NW Boca Raton, Florida 33431  
shara.teter@aptim.com; Telephone: 531-631-3184

**Professional Qualifications**

Ms. Teter joined APTIM in February 2015, bringing with her extensive experience in marine and coastal biological surveying, scientific SCUBA diving, and Geographic Information Systems (GIS). Ms. Teter has 12 years of experience in marine and biological sciences, and her GIS experience spans over 10 years. She routinely conducts assessments in marine and estuarine habitats, including quantitative benthic assessments, fish census, habitat mapping using aerial imagery, in situ habitat mapping of resources, as well as statistical analysis and report production.

**Relevant Experience**

**Shore Protection Project Segment II, Broward County, Florida**

Conducted biological monitoring of the nearshore hardbottom. The monitoring included quadrat-based benthic characterization, quantification of coral colonies, sediment measurements and video documentation along cross-shore transects. Additionally, Ms. Teter conducted *in situ* mapping of the nearshore hardbottom utilizing Differential GPS linked to Hypack along the entire 18 km Segment II shoreline.

**2013-14 Beach Nourishment Post-Project Monitoring, Collier County, Florida**

Conducted biological monitoring of the nearshore hardbottom alongside County staff during Collier County's 2016 post-construction survey. The monitoring included quadrat-based benthic characterization, coral census for size and health, sediment measurements and video documentation. She also conducted *in situ* mapping of nearshore hardbottom resources utilizing Differential GPS linked to Hypack Navigational system.

**Coquina Beach Nourishment Project, Manatee County, Florida**

Conducted biological monitoring of the nearshore hardbottom for the Coquina Beach Nourishment Project. The monitoring included quadrat-based benthic characterization, quantification of coral colonies, sediment measurements and video documentation along cross-shore transects. Ms. Teter also conducted *in situ* mapping of the nearshore hardbottom along the project shoreline utilizing Differential GPS linked to Hypack Navigational system. Additionally, she conducted quantitative assessments of the artificial reefs in order to evaluate their function compared to the nearshore natural hardbottom. Other duties included data entry, statistical analysis and report development.

**Golden Triangle Marsh Creation Project, Orleans Parish, Louisiana**

Collected sediment samples in Lake Borgne, Louisiana using PONAR equipment in order to identify habitat suitable for the threatened Gulf Sturgeon (*Acipenser oxyrinchus desotoi*). Other duties included sediment analysis and creating habitat maps in GIS. Additionally, she conducted ground truthing investigations for oysters and submerged aquatic vegetation based on potential resources identified during the sidescan sonar surveys.

**Education**

Master of Science, Marine Biology and Coastal Zone Management, Nova Southeastern University, 2013

Bachelor of Science, Biology, Central Connecticut University, 2003

**Highlights**

Over 12 years of marine biology experience

**Registrations/Certifications**

Scuba Diver-Advanced, 2005, PADI, Active, Nationwide

Scuba Diver-Master, 2014, PADI, Active, Nationwide

Scuba Diver-Nitrox, 2009, PADI, Active, Nationwide

Scuba Diver-Open Water, 2003, PADI, Active, Nationwide

Scuba Diver-Rescue, 2006, PADI, Active, Nationwide

Scuba Diver-Scientific, 2013

**Employment History**

APTIM, 2015 – Present



**Beau Suthard, PG**  
**Geoscience Program Manager**

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beau.suthard@aptim.com; Telephone: 727.374.2150

**Professional Qualifications**

Mr. Suthard has over 18 years of experience in marine geosciences. He has conducted dozens of marine investigations and mapped hundreds of millions of cubic yards of beach compatible sand on the Atlantic and Gulf of Mexico continental shelves. Mr. Suthard recently completed a large-scale sand resource inventory mapping project for BOEM offshore of the Atlantic Coast of the United States from Massachusetts to Florida. This project has resulted in the identification of over 250 million cubic yards of beach compatible restoration materials for various coastal communities along the Atlantic seaboard.

**Relevant Experience**

**Florida Department of Environmental Protection (FDEP),  
Reconnaissance Offshore Sand Search (ROSS) Offshore Survey  
Operations**

Mr. Suthard served as both the Project and Technical Manager for an offshore geophysical survey in support of the FDEP ROSS database. During the eight days of surveying, APTIM collected a total of 655 line miles of geophysical (chirp sub-bottom, magnetometer, and fathometer) data off the northeast central-east coast of Florida, which included offshore Nassau, Duval, St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie and Martin Counties.

**Coastal Management Program, Pinellas County, Florida**

He has managed the design and implementation of both a reconnaissance-level sand search and a design-level sand search to locate and permit sand resources for the Sand Key Shore Protection Project. Mr. Suthard also managed and assisted with the development of a comprehensive Summary Planning Document, which described every one of the County's coastal program elements in terms of their history, current status and potential future needs as well as Capital Improvement budget predictions for each element through 2020.

**Geophysical and Geological Data Acquisition: Inventory of  
Potential Beach Nourishment and Coastal Restoration Sand  
Sources, the Atlantic Sand Assessment Project. Atlantic Outer  
Continental Shelf (OCS) – United States Bureau of Ocean Energy  
Management.**

Suthard served as both the Project Manager and Technical Manager for the Atlantic Sand Assessment Project (ASAP) to coordinate stakeholder and project needs and acquire geophysical and

**Education**

Master of Science, Geological Oceanography, University of South Florida College of Marine Science, 2005

Bachelor of Science, Marine Science (Geology Track), Eckerd College, 1997

**Highlights**

Over the last 18 years assisted in the identification of tens of millions of yards of beach-compatible sand resources

**Registrations/Certifications**

Professional Geologist, Florida, License No. 2615, Active

Professional Geologist, Virginia, License No. 2801001948, Active

Professional Geologist, Delaware, License No. S4-0001296, Active

Professional Geoscientist, Louisiana, License No. 746, Active

**Professional Affiliations**

Member, Florida Shore and Beach Preservation Association

Member, American Shore and Beach Preservation Association

Member, Society of Exploration Geophysics

Member, Geological Society of America

**Employment History**

APTIM, 2005 – Present

geological data, over three years along the east coast of the United States from Florida to Maine to support identification, characterization, and delineation of OCS aggregate mineral resources for use by coastal communities in future coastal restoration efforts. This project consisted of the collection of 7,089 km of new geophysical data, 340 new vibracores, and 100 surface grab samples over the course of two years.

**FDEP, United States Bureau of Ocean Energy Management (BOEM) Atlantic Sand Assessment Project (ASAP) Reconnaissance Data Processing and Interpretation**

Mr. Suthard processed and interpreted the geophysical and geotechnical data collected offshore Florida during the 2015 BOEM ASAP reconnaissance survey. APTIM was tasked with delineating preliminary borrow areas in six counties (eight study areas) that met a minimum cut thickness of 3 feet after applying a 2-foot buffer over incompatible material. APTIM processed and interpreted all chirp sub-bottom data to determine potential sand thicknesses and output of interpreted thickness for each area. Sidescan sonar and magnetometer data were processed to identify and avoid any potential hazards or protected resources.

Out of the eight study areas offshore six Florida counties, APTIM was able to delineate 16 preliminary borrow areas consisting 54,477,396 cubic yards of potentially beach-compatible sand resources. Each preliminary borrow area was reviewed and classified as a “Potential” or “Unverified” sand resource in accordance with the Southeast Florida Assessment and Needs Determination (SAND) study conducted by the USACE and FDEP.

**Town of Longboat Key Comprehensive Beach Management Program, Longboat Key, Florida, 2010 – Present**

Served as the Program and Project Manager of APTIM’s coastal projects with the Town’s Comprehensive Beach Management Program since 2010. His responsibilities include managing project proposals, budgets, and execution management with APTIM’s teams of engineers, geologists and biologists. In his Program Management role, Mr. Suthard has assisted the Town in many ways, including representing the Town at meetings with regulatory agencies and presenting project details to the Town Commission and at public workshops. Mr. Suthard also assisted the Town with review, comment and negotiation of impact solutions from a potential offshore infrastructure project (Port Dolphin) being developed through beach compatible sand resources identified by the Town. This resulted in an agreement allowing the Town time to dredge these resources prior to the project’s implementation with cost sharing funds from the developer.

**Anna Maria Island Shore Protection Program, Manatee County, Florida**

Served as Marine Geophysicist for a series of full geologic mapping studies, including both field operations and office-based data processing and interpretation. The goal of this project was to identify and define offshore borrow areas of beach-compatible sand in support of the Anna Maria Island Central Beach Storm Damage Repair Project, City of Anna Maria and Coquina Beach Nourishment Projects and Central Anna Maria Beach Renourishment Project. Mr. Suthard assisted with investigations to map and identify potential mitigative artificial reef construction sites. He also conducted mapping, planning, and regulatory and client coordination to determine the potential impact of a proposed natural gas submarine pipeline to Manatee County offshore sand resources.



**Beth Forrest, PhD, PG**  
**Project Geologist**

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**Professional Qualifications**

Beth Forrest, PhD, is responsible for assisting with data collection and analysis, permitting, product preparation and technical report and presentation preparation in support of beach and marsh habitat restoration projects throughout the Gulf coast and eastern United States including Alabama, Texas, Louisiana, Florida, New York and North Carolina. She has significant data management experience, having worked on several statewide geotechnical and geophysical databases for Louisiana, Florida and Texas.

Before joining APTIM, Dr. Forrest worked as a Coastal Geologist at the Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems. There, she was responsible for providing geological analyses and geotechnical review associated with beach erosion control, inlet management projects and other coastal construction projects. Dr. Forrest coordinated with regulatory staff, engineering staff, permit applicants, local, state and federal governmental agencies and other departmental agencies. She conducted and coordinated geologic reviews of Joint Coastal Permit (JCP) applications and the scopes of work associated with FDEP beach and inlet management contracts.

**Relevant Experience**

**Louisiana Sand Resource Database (LASARD), Coastal Protection & Restoration Authority, Coastal Louisiana, 2009 - Present**

Dr. Forrest has worked closely with the Louisiana Office of Coastal Protection and Restoration Authority (CPRA) to refine and standardize the Louisiana Sand Resource Database (LASARD), which was developed to help facilitate the identification and management of offshore sediment resources. She has reviewed, archived and overseen the processing of over 2,000 datasets for incorporation into the database. In 2013, Dr. Forrest took over the role of Project Manager for this project.

**Mississippi River Hydrodynamic and Delta Management Study (MRHDMS), Hydrodynamic and Delta Management Portions, Coastal Protection & Restoration Authority, Coastal Louisiana**

Dr. Forrest provided project management, data compilation, data formatting, data archiving and QA/QC (ongoing). She was responsible for project oversight including data formatting, data review, QA/QC and archiving.

**Broward County Shore Protection Project, Florida**

In 2009, Ms. McCoy logged vibracores, analyzed geotechnical data, and assisted with the borrow area designs for Borrow Areas 8 through 12. She also calculated design cut volumes, created composite grain size statistics, and compiled geotechnical data for submittal. In 2011, she assisted with the seismic review and design expansion of Borrow Areas 10/11 and 12, and calculated revised sand volumes.

**Education**

Doctor of Philosophy, Geology,  
Florida State University, 2007

Master of Science, Geology-  
Geochronology, McMaster  
University, 2003

Bachelor of Science, Geology,  
McMaster University, 2001

**Highlights**

Over 14 years of experience  
working on coastal projects

Manages data collection and  
analysis, permitting, product  
preparation and technical report  
and presentation preparation in  
support of beach and marsh  
habitat restoration projects  
throughout the Gulf Coast and  
eastern United States

**Registrations/Certifications**

BOEM Certified Protected Species  
Observer

Professional Geologist, New York

**Professional Affiliations**

Reviewer, Journal of Coastal  
Research, American Shore and  
Beach Preservation Association

**Employment History**

APTIM, 2007 – Present

FDEP, 2003 – 2007

**Additional Relevant Project Experience Includes:**

- Town of Palm Beach Geotechnical Investigations to Identify Offshore Sand Resources, Florida (2008)
- Coquina Beach Nourishment Project Geophysical and Geotechnical Investigations conducted at Longboat Pass, Manatee County, Florida (2008)
- Anna Maria Island Beach Nourishment Project Offshore Geotechnical and Geophysical Investigations to Identify Sand Sources, Manatee County, Florida (2009)
- Anna Maria Island Port Dolphin pipeline corridor beneficial use sand search investigation, Florida (2011)
- Sand Key Beach Nourishment Geophysical and Geotechnical Investigations to identify sand resources, Pinellas County, Florida (2008/2009)
- Town of Longboat Key Renourishment Project Reconnaissance Geotechnical and Geophysical Investigations, Manatee and Sarasota Counties, Florida (2008-2009)
- Town of Longboat Key Sand Search Investigation, Florida (2011)
- Collier County Emergency Sand Source Investigation: Phase III Geophysical and Geotechnical Investigations, Florida (2009)
- Lido Key Shore Protection Project: Regional Geotechnical Data Compilation, Florida (2010)
- Broward County Segment II Shore Protection Project: Phase I, II and III Sand Search Investigation, Florida (2008-2009, 2011)
- Panama City Beach Erosion Control Project, Phase III (Design Level) Investigations, Florida, (2009)
- Lido Key Marine Sand Search Investigation, Sarasota County, Florida (2007)
- Bay County Beach Nourishment Reconnaissance Geotechnical and Geophysical Investigations to identify offshore sand sources for in, Florida (2007)



**Kristina McCoy, PG**  
**Project Geologist**

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kristina.mccoy@aptim.com; Telephone: 561.361.3183

**Professional Qualifications**

Kristina McCoy has over 16 years of experience in the field of coastal geology assisting with geotechnical investigations for sediment renourishment projects along the Gulf and east coast states. Her current work includes borrow area development and design, bathymetric and isopach surface creation and evaluation, calculation of borrow area design cut and side slope volumes, and processing of geotechnical data for beach and marsh renourishment. She assists with vibracore collection and conducts detailed analyses of the vibracores, which includes logging, sampling, photographing, torvane testing, and sieve and carbonate analysis. She compiles and reviews sediment composite statistic spreadsheets for the borrow areas and existing beach. She creates borrow area permit and construction drawings that include plan and cross section views of sediment deposits, along with field maps and report figures. She creates design shapefiles with metadata for database submittals. She assists with compiling state and federal permits for approval of data collection. She prepares geotechnical design reports, finalizes all geotechnical data for client submittals, and coordinates with agencies on borrow area and sediment data needs. She is also responsible for certifying borrow area design permit and construction drawings, along with PG certification letters for sediment sample analysis.

**Relevant Experience**

**2019 Coastal Services, Delray Beach, Florida**

In support of Delray’s 2019 offshore sand search, Ms. McCoy oversaw all aspects of vibracore logging, sieve analysis, and borrow area design.

**BOEM Inventory of Potential Beach Nourishment and Coastal Restoration Sand Sources on the Atlantic Outer Continental Shelf, 2015-2016**

Ms. McCoy conducted vibracore and grab sample logging and photographing, vibracore sampling, sample archiving and geotechnical data review. Samples were processed from FL, GA, SC, NC, VA, MD, DE, NJ, NY, RI and MA.

**Lido Key Storm Repair Beach Renourishment Project, Sarasota County, Florida, 2013**

Ms. McCoy analyzed the geotechnical data, assisted with the borrow area design for the 2013 New Pass Borrow Area, and calculated the design cut volumes.

**Longboat Pass Maintenance Dredging and Beneficial Use Project, Manatee County, Florida, 2014**

In 2014, Ms. McCoy analyzed the geotechnical data, calculated dredge volumes for the Longboat Pass Dredge Area and created borrow area permit plan and cross section drawings.

**Education**

Master of Science, Geology,  
Florida Atlantic University, 2007

Bachelor of Science, Geology,  
Florida Atlantic University, 2003

**Highlights**

Over 16 years of experience  
working in coastal geology on  
sediment renourishment project  
in Florida

**Registrations/Certifications**

Professional Geologist, Florida,  
License No. PG2718, Active

PADI Open Water/Advanced/  
Nitrox Scuba Diver, 2007/2008

BOEM Protected Species  
Observer, 2007

**Professional Affiliations**

Professional Member, American  
Institute of Professional  
Geologists

Treasurer, Florida Association of  
Professional Geologists

Member, Southeastern  
Geological Society

**Employment History**

APTIM, 2003 – Present

**Broward County Shore Protection Project, Florida, 2009-2011**

Logged vibracores, analyzed geotechnical data, and assisted with the borrow area designs for Borrow Areas 8 through 12. Assisted with the seismic review and design expansion of Borrow Areas 10/11 and 12.

**Delray Beach Fifth Beach Renourishment Project, Florida**

Between 2009 and 2010, Ms. McCoy reviewed historic geotechnical data, assisted with the borrow area designs, and calculated design cut volumes for Borrow Areas I and II. She also compiled geotechnical data for permit approvals. In 2012, she assisted with a volume analysis for the borrow areas.

**Florida Department of Environmental Protection Sediment Analysis, Florida**

In 2016, 2015 and 2014, Ms. McCoy coordinated sediment sample testing and data needs with FDEP. She compiled the scope of work, logged samples, reviewed sediment sample sieve analysis data, created sample summary spreadsheets and compiled PG certification letters for the sample analysis.

**Collier County Beach Renourishment Project, Florida**

In 2014 and 2012, Ms. McCoy analyzed the geotechnical data and assisted in the re-development of the dredge cut designs for Borrow Area T1. She also calculated design cut volumes and compiled geotechnical deliverables.

**Captiva Island Renourishment Project, Lee County, Florida**

In 2014, Ms. McCoy analyzed the geotechnical data and assisted in the re-development of the dredge cut designs for Borrow Area III-B. She also calculated design cut volumes and updated borrow area permit plan and cross section drawings.

**Longboat Pass Maintenance Dredging and Beneficial Use Project, Manatee County, Florida**

In 2014, Ms. McCoy analyzed the geotechnical data, calculated dredge volumes for the 2014 Longboat Pass Dredge Area, and created borrow area permit plan and cross section drawings.

**Anna Maria Island Central Beach Nourishment Project, Florida**

In 2013, Ms. McCoy logged vibracores, analyzed geotechnical data, and assisted with the borrow area design for the 2013 AMI Borrow Area. She also calculated design cut volumes and created the geotechnical investigation report.

**City of Anna Maria Nourishment and Coquina Beach Restoration, Manatee County, Florida**

In 2013, Ms. McCoy processed geotechnical data for vibracore investigations and assisted with the borrow area design for the 2013 Coquina Borrow Area. She also calculated design cut volumes, created borrow area permit plan and cross section drawings, and updated construction plans.

**Lido Key Storm Repair Beach Renourishment Project, Sarasota County, Florida**

In 2013, Ms. McCoy analyzed the geotechnical data, assisted with the borrow area design for the 2013 New Pass Borrow Area, and calculated the design cut volumes.

**Southeast Florida Sediment Assessment and Needs Determination (SAND) Study, Florida**

Between 2012 and 2013, Ms. McCoy reviewed geotechnical data and the Sand Study report covering St. Lucie to Miami-Dade County. She provided suggested revisions for offshore sand resources, reviewed vibracore and seismic data with FDEP, and presented the results to county stakeholders.



**Quin Robertson, PhD, PG, GISP**  
**SENIOR SCIENTIST**

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**PROFESSIONAL QUALIFICATIONS**

Dr. Robertson’s research focuses on using conventional survey and remote sensing data to quantify change in coastal morphology and develop models from these results using GIS to aid in coastal mitigation. Dr. Robertson has several projects with the US Army Corps of Engineers conducting studies, compiling and disseminating online geodatabases, and creating tools for analyzing LiDAR data sets for both storm induced and long-term applications along with multiple projects with the Environmental Protection Agency (EPA) in applying SLOSH modeling to predict storm surge. Dr. Robertson utilizes his coastal geologic expertise to manage and supervise multiple sand search projects from New York to Texas. Under this contract, Dr. Robertson will oversee all survey, mapping, and GIS/CAD tasks needed by the Town.

**RELEVANT EXPERIENCE**

**Regional Sediment Management, Nationwide**

Dr. Robertson is currently Project Manager of an online GIS database developed for USACE’s Regional Sediment Management (RSM) program. RSM placement is quantified (beneficial use vs. disposal) under multiple categories. Tools were developed to improve use of sediments and identify RSM opportunities to compare sediment characteristics of channel and beach disposal areas. These tools were written to ingest USACE nationwide and District data, identify and standardize project names, assign disposal codes and quantify sediment placement metrics.

**LiDAR Elevation Change Analysis, Gulf of Mexico and East US Coastline**

Dr. Robertson was Project Manager for a Florida Gulf of Mexico to Maine LiDAR elevation change analysis for USACE’s Joint Airborne LiDAR Bathymetry Technical Center of Expertise (JALBTCX). The project quantified coastal change from more than 2,000 LiDAR data sets on 3,290 km of Gulf of Mexico and east US coastline utilizing a grid-based approach to measure shoreline and volume differences within GIS using a custom Python-coded system. Volume change was quantified by bins along the coastline and summarized in terms of the total positive, negative, net and normalized volume change. The final products were a geodatabase that contained the extracted metrics along with the series of tools that executed the quantifications to enable further scientific and engineering research.

**Education**

Doctor of Philosophy,  
Geosciences, Florida  
International University, Miami,  
Florida, 2007

Certificate, Geographic  
Information Systems, Florida  
International University, Miami,  
Florida, 2004

Master of Science, Geology,  
Florida International University,  
Miami, Florida, 2002

Bachelor of Arts, Geology,  
Skidmore College, Miami, Florida,  
1997

**Highlights**

Over 20 years of project  
management, GIS, sand search,  
remote sensing and conventional  
survey experience

**Registrations/Certifications**

Professional Geologist, NY, 1213  
Geographic Information Systems  
Professional, Nationwide, 45100

**Professional Affiliations**

Member, American Geophysical  
Union

Member, American Shore &  
Beach Preservation (ASBPA)

Member, Florida Shore and  
Beach Preservation Association  
(FSBPA)

Member, American Society for  
Photogrammetry & Remote  
Sensing

Member, Coastal Education &  
Research Foundation

Member, Surfrider Foundation

**Employment History**

CPE 2019 – Present

APTIM 2007 – 2019

International Hurricane  
Research Center 1999 –  
2007

Woods Hole Oceanographic  
Institution 1997 – 1999

### **Delray Beach, Florida**

Dr. Robertson generated bathymetric DEMs from existing LiDAR and bathymetry data sets for input into morphologic models, to determine locations of previous dredging, and aid in planning future nourishment projects. He collected, processed and displayed high-resolution multi-beam data to detect the edge and height of reefs. Dr. Robertson has supervised the 2019 geophysical and geotechnical borrow area data collection, along with the forthcoming 2019 borrow area permitting and design.

### **Broward County, Florida**

Dr. Robertson managed the 2008 LiDAR bathymetric data collection offshore of Broward County. More than 13 million points were used to generate a DEM illustrating the offshore geomorphic and benthic features. Bottom reflectance data were converted to grids that identified variations in sea bottom characteristics that aided benthic habitat classification.

### **Panama City Beach, Florida**

Dr. Robertson has participated in multiple projects for Panama City beaches. The most recent project involved utilizing existing LiDAR data to generate DEMs and contours of the beach and surrounding dunes. This required application of various types of custom filters to ensure that the beach morphology was preserved while non ground objects were removed. The bare earth contours were used to help design locations for dune planting and fence installation. Other projects include geophysical and geotechnical data collection, analysis, borrow area design and reporting.

### **Climate Change, Sea Level Rise, SLOSH and Saltwater Intrusion, MA, CT, VA, MS**

Dr. Robertson was project manager of multiple SLOSH modeling projects that addressed predicted climate conditions for the EPA. Multiple sea level rise scenarios, pressure gradients, wind radii, hurricane speeds and directions generated more than 6,500 SLOSH model runs. The results were combined to generate maximum of maximums (MOMs) and differenced from LiDAR derived DEMs. Developed the methodology and supervised the historical analysis and modeling, organized and attended client meetings and co-authored the final report. Potential effects of sea level rise and increased storm activity on the salinity distribution and its effect on surrounding aquifers were evaluated using HECRAS.

### **Southwest Florida ROSSI Borrow Area Update, Florida**

Dr. Robertson was Project Manager for updating FDEP's Regional Offshore Sand Source Inventory (ROSSI) database for southwest Florida. Assessed the sediment needs for several counties in southwest Florida. Historic bathymetric, seismic and geotechnical data were evaluated and used to identify offshore sand sources that meet predetermined sediment characteristics. Sediment sources were assigned categories and volumes for each source were calculated.

### **Fire Island Renourishment Project, New York**

Dr. Robertson was on-site Project Manager and helped develop a strategy for the beach restoration of the 6 affected communities in 2009 and the expansion of the project to five other neighboring communities, to achieve improved project performance, and maximize FEMA participation. Construction for the eleven-community project began on January 27, 2009. The 2009 project renourished four reaches of Fire Island, which encompassed over 26,000 linear feet of shoreline, with a renourishment volume of 1.8 million cubic yards. The 2009 project successfully brought 11 communities together in order to achieve one common goal of restoring the shoreline of Fire Island. Other than the FEMA storm aid, the communities' projects were privately funded to provide beach protection until the larger Federal project can be approved and implemented. Each Fire Island project required beach and bathymetric surveys to support design, permitting and monitoring all conducted or managed by APTIM.

 **Jeffrey L. Andrews, PSM, CH**  
**Director of Operations**  
**APTIM Coastal & Marine**  
2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
jeffrey.andrews@aptim.com; Telephone: 561.361.3149

### Professional Qualifications

Jeffrey Andrews is a Director of Operations for APTIM and oversees all survey projects. He has extensive experience in hydrographic and land surveying. He is well versed in undertaking surveys in a variety of environments using the latest state-of-the art equipment. He has conducted hundreds of marine investigations and mapped more than 100 million cubic yards of beach compatible sand on the continental shelf. Mr. Andrews directed hydrographic and land surveys in Florida, Georgia, North Carolina, Virginia, New Jersey, New York, Massachusetts, Alabama, Louisiana, Texas, Alaska, Puerto Rico, Brazil and the Bahamas. He prepared hydrographic and topographic survey reports, including technical writing and supervision of data analysis. With over 36 years of experience, he continues to manage and direct hydrographic, topographic and geophysical data collection along the Gulf and Atlantic coasts.

### Relevant Experience

#### Physical Monitoring & Permit Compliance Services, Anna Maria Island, Manatee County, Florida, 2017

The annual physical monitoring services include the permit required survey data and aerial photography collection and preparation of the survey report and engineering monitoring report submittals for the projects on Anna Maria Island, including the Central Beach Project (2014), Coquina Beach Project (2014), the Longboat Pass Geotextile Tube Project (2012), and the Cortez Groins Project (2016).

#### Captiva and Sanibel Annual Monitoring Surveys, Lee County, Florida, 2017

Directed the 2017 topographic and hydrographic monitoring surveys for the Captiva and Sanibel Nourishment project. The physical monitoring of these islands included topographic and hydrographic surveys of the beach and offshore areas. The monitoring data is necessary for both the CEPD and the FDEP to continually observe and assess beach conditions. Monitoring surveys are further needed to continually observe the performance of the nourishment project as well as assess effects of the project on adjacent shorelines.

#### Long Key State Park Topographic Survey, Long Key, Florida, 2017

Mr. Andrews was the surveyor of record and in charge of all field and office operations for the Long Key topographic survey. The survey included a mean high-water survey, location of improvements within the campsites, topography of the beach, and location of subsurface utility designations.

#### Barataria Basin Bathymetry, CPRA, Barataria Basin, Louisiana

As part of the System Wide Assessment and Monitoring Program (SWAMP) implementation in Barataria

### Education

Master of Science, Ocean Studies,  
Nova Southeastern, University,  
1995

Bachelor of Science, Marine  
Science, University of North  
Carolina, 1979

### Highlights

2018 Per Bruun Distinguished  
Service Award Recipient, FSBPA

Over 35 years of experience in  
hydrographic surveying

Well versed in undertaking  
surveys in offshore and navigable  
channel environments using the  
latest state-of-the art equipment

### Registrations/Certifications

Certified Inshore Hydrographer,  
License No. #104, 1998

Professional Surveyor and  
Mapper, Florida, License No.  
LS5805, 1998

### Professional Affiliations

Member, Hydrographic Society of  
America

Member, National Society of  
Professional Surveyors

Member, Florida Society of  
Professional Surveyors

### Employment History

APTIM, 1984 – Present

Basin, APTIM provided hydrographic and geophysical survey services within selected coastal lakes and bays. A full suite of hydrographic and geophysical instrumentation was deployed, including sub-bottom, sidescan sonar, magnetometer and single beam sounder. Data was collected within Baratavia Bay, Little Lake, Lake Salvador Lac des Allemands, The Pen, Lake Cataouache, Bayou Perot and Rigolettes and other major hydrographic pathways. Mr. Andrews served as the principal representative responsible for all matters pertaining to the project and project execution in accordance with the contract and the project's HSE, project security, quality, schedule and financial goals. Project challenges included collecting hydrographic and geophysical data in South Louisiana shallow bays, lakes and bayous to map oyster reef and potential sand deposits.

**Additional Relevant Projects Include:**

- Lido Key, Florida, Beach and Offshore Survey (2009, 2015)
- Manatee County, Florida, Beach Survey (2013, 2014, 2016)
- Delray Beach, Florida, Pre-Construction Hydrographic Survey (2013- 2016)
- Captiva Island, Beach and Offshore Surveys (2016)
- CPRA, Baratavia Basin (2015-2016)
- Manatee County Port Dolphin Pipeline, Florida, Offshore Survey (2010)
- Captiva and Sanibel Islands, Florida, Beach Survey (2014, 2015, 2016)
- Redfish Pass and Blind Pass Bathymetric Surveys (2015)
- Cameron Meadows, Louisiana, Sand Resource Investigations (2015)
- BOEM, Louisiana, CR at Significant Sand Extraction Areas (2015)
- CPRA, Louisiana, Delta Management LCA Miss. River (2014 - 2015)
- CPRA, Louisiana Sediment Resource Database (2014)
- Oyster Bayou, Louisiana, Offshore Geophysical Investigation (2013)
- Manatee County, FL, Offshore Geotechnical Investigation (2012 – 2013)
- Delray Beach, Florida, Cultural Resources Survey Dives (1998)
- Panama City Beach, Florida, Beach and Offshore Survey (1998, 2009)
- Anna Maria Island / Passage Key Shoal (1999)
- Anna Maria Island Offshore Survey (1998)
- Captiva Island Borrow Area Bathymetric Survey (2005, 2008)
- Dade County, Florida, Erosion Monitoring Hydrographic and Topographic Survey (2013)
- Port of Miami, Florida, Side Scan Sonar Survey and Multibeam Survey (2012)
- Atchafalaya River, Louisiana, Multibeam Survey (2011-2012)
- BP Oil Spill Berm construction and monitoring profile surveys, Louisiana (2010-2012)
- Shell Island, Louisiana, Borrow Area Bathymetric Survey (2011)
- LCA Gulf Stabilization at Point Au Fer Island, Louisiana, Beach and Offshore Survey (2010)
- Longboat Key, Florida, Beach and Offshore Survey (2010)
- Dauphin Island, Alabama, Beach and Offshore Survey (2010)
- Broward County Florida, Florida Offshore Geotechnical Investigation (2009)
- Manatee County, Florida, Offshore Geotechnical Investigation (2012-2013)
- Town of Palm Beach, Florida, Offshore Geotechnical Investigation (2007)



**Michael Lowiec, PSM**  
**Project Surveyor & Geomatics**  
**Manager**

2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
michael.lowiec@aptim.com; Telephone: 561.361.3182

### Professional Qualifications

Michael Lowiec is a registered Florida Professional Surveyor and Mapper in technical charge of field and office operations for our Geomatics Department. He is responsible for the design of field phases of all surveys and reviewing all topographic and hydrographic survey data including multi-beam and single beam sounder surveys, beach profiles, inlet and shoal surveys, borrow area surveys, port and harbor surveys, and coastal structure surveys. Mr. Lowiec prepares permit required physical monitoring survey reports, private and public sovereign submerged land leases and easements, certified survey maps and drawings. He oversees land-based survey tasks including boundary surveys, right of way verification, mean high water surveys and is involved with the platting of erosion control lines. Mr. Lowiec has extensive knowledge of conventional and GPS-based survey methods and is trained and approved to use the National Geodetic Survey OPUS-Projects for establishment of GPS networks and control monuments.

### Relevant Experience

#### Lido Key Beach Repair Project, Post-Construction Topographic and Hydrographic Physical Monitoring Surveys Manatee County, Florida, 2019

Mr. Lowiec was the surveyor of record and in technical charge of the 2019 Lido Key Beach Repair Project Post-Construction Topographic and Hydrographic Survey in compliance with Joint Coastal Permit (JCP) Number 0039755-003-JC. A fully certified survey report detailing the methods and results was delivered to the County.

#### Broward County Beach Profile, Mean High Water Survey and Erosion Control Line Establishment

Mr. Lowiec served as the surveyor of record and was in technical charge of field and office operations for the Broward County Beach Profile and Mean High Water Line survey for the establishment of an Erosion Control Line. Beach profiles were collected throughout the entire county as well as a Mean High Water survey in the area of the Segment II project area. Mr. Lowiec coordinated with the relevant state agencies and performed the work in compliance with Chapter 161.141 of the Florida Statutes. A final certified map was produced and delivered to the Florida Department of Environmental Protection and the Division of State Lands.

#### Collier County Beach Profile and Inlet Surveys, 2007 – 2010

Mr. Lowiec served as the lead surveyor in technical charge of all field and office operations for beach profile and inlet surveys conducted for Collier County from 2007 to 2010. Survey work included topographic and hydrographic beach profiles for FDEP. The work also included hydrographic surveys of Doctors Pass, Wiggins Pass, and Clam Pass. All work resulted in certified survey reports and maps submitted to FDEP.

### Education

Bachelor of Science, Marine Science, Coastal Carolina University, 2002

### Highlights

More than 15 years of mapping and surveying experience

### Registrations/Certifications

Professional Surveyor and Mapper, Florida, License No. #6846

National Geodetic Survey Opus-Project Manager

Hypack Certified

### Professional Affiliations

Member, Florida Surveying and Mapping Society

Member, National Society of Professional Surveyors

### Employment History

APTIM, 2004 – Present

**Captiva and Sanibel Annual Monitoring Surveys, Lee County, Florida, 2016**

Surveyor of record and in technical charge of the 2016 Topographic and Hydrographic monitoring surveys for the Captiva and Sanibel Nourishment project. The physical monitoring of Captiva and Sanibel Islands included topographic and hydrographic surveys of the beach and offshore areas. The monitoring data is necessary in order for both the CEPD and the FDEP to continually observe and assess beach conditions.

**Project Manager, Miami Dade County-Krome Detention Center Topographic and Boundary Survey**

Mr. Lowiec was the surveyor of record and Project Manager for a topographic and boundary survey for the Miami-Dade County Krome Detention Center expansion project. This survey was conducted for a 114-acre parcel according to the American Land Title Association Standards.



**Angela Belden**  
**GIS/CAD Director**

2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
angela.belden@aptim.com; Telephone: 561.361.3152

**Professional Qualifications**

Angela Belden has over 30 years of experience working with various GIS, CAD and engineering programs. She directs all GIS operations for APTIM’s coastal restoration offices, and is responsible for the management of personnel, software, and resources that provide GIS and Computer Aided Engineering/Drafting (CAE/CAD) service and product support to all of our regional offices and clients. She advises the groups Remote Sensing and Spectral Analysis Applications, including geoprocessing, archival in spatial databases and the creation of maps and visualizations. Ms. Belden has served as a Project Manager for many 3D scanning/BIM efforts where responsibilities included proposal preparation, scope of work development, level-of-effort and pricing determination, scheduling, BIM execution plans, and product development.

Ms. Belden possesses a broad range of experience with geospatial technologies ranging from database design, integration, data validation and integrity, specializing in complex GIS file translations between widespread digital formats. She also directs all CAD documentation development and software applications. She has successful project and resource management experience and has provided both geospatial and information management technical support on numerous projects.

Ms. Belden has served as a Project Manager for GIS-oriented projects where responsibilities included proposal preparation, scope of work development, level-of-effort and pricing determination, and scheduling and budget oversight. She has authored and presented papers at multiple GIS conferences.

Ms. Belden is experienced in a variety of information technologies, from ESRI’s suite of GIS products to graphic design packages such as Adobe Illustrator and Photoshop. In 2000, her project management experience began with environmental resource mapping in Broward County, and has extended to more than 17 GIS benthic habitat mapping projects from Texas to North Carolina. Ms. Belden specializes in customized GIS products that clients require for public distribution.

**Education**

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Associate of Science, Business Management, New Hampshire Technical Institute, 1985

**Highlights**

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30+ years of experience working with various GIS, CAD and engineering programs  
Licensed drone pilot

**Registrations/Certifications**

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AutoCad 2013 Certified Professional  
AutoCad 2011 Civil 3d Certified Associate  
Certification in Metadata for Geospatial and Biological Metadata-USGS 2002  
FAA Part 107 sUAS Airman Remote Pilot, 2016

**Training**

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ESRI Enterprise Dbase Development and Management, 2007  
Certified Autodesk Civil 3-D Training, 2006  
USGS Metadata for Geospatial & Biological Data Training, 2002  
ESRI GIS Training; University of Florida, 1995, 1996, 2000  
Certified Autodesk Training, 1995, 2000, 2001, 2006  
Certified Eaglepoint Survey Software Training, 1994, 2000  
Certified MicroStation Training, 1993

**Employment History**

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APTIM, 1992 – Present



**Heather Vollmer, GISP**  
**GIS Analyst**

2481 NW Boca Raton Boulevard, Boca Raton, Florida 33431  
heather.vollmer@aptim.com; Telephone: 561.361.3166

**Professional Qualifications**

Heather Vollmer is a GIS analyst with over 17 years of experience in GIS data creation, maintenance, data mining, remote sensing, spatial analysis, and GPS ground truthing. Since joining APTIM in 2006, Ms. Vollmer has been involved with the preparation of benthic and geologic resource mapping for numerous permit applications for beach nourishment projects along the coasts of Florida, North Carolina, Louisiana, New York and Alabama.

**Relevant Experience**

**Interactive GIS Database, Town of Palm Beach, Florida**

The goal of the Town of Palm Beach’s interactive GIS database was to provide a functional tool to explore the data that pertained to the Town’s coastal projects. Ms. Vollmer was in charge of creating the interactive interface, creating database structure, QA/QC the database, writing FGDC compliant metadata, performing data analysis for impacts and persistence of hardbottom resources.

**Delray Beach Seawall Vulnerability Analysis, City of Delray Beach, Florida, 2018**

APTIM was contracted by the City of Delray Beach to assess the ability of the existing seawalls to protect the City’s infrastructure and its citizens’ property from higher high tides. The Seawall Vulnerability Analysis recommendations will contribute to the City’s Strategic Plan by determining the most effective path to protect the City’s infrastructure from rising tidal impacts. Ms. Vollmer created online applications to improve field collection efficiency as well as developed the GIS database.

**Marquesas Benthic Habitat Mapping, Florida Keys National Marine Sanctuary, Florida Keys**

This project used remote sensing techniques to map large areas of the Florida Keys National Marine Sanctuary from Key West to the Marquesas/Quicksands area. Ms. Vollmer’s main role was to digitize interpreted habitats from IKONOS satellite imagery. She created codes for complex units, allowing end users to display units in their entirety or as simplified units. By utilizing additional remote sensing software, she was able to improve the interpretation of offshore reef benthic features within the imagery. She also assisted in processing in-situ video collection for verification of mapping units.

**Education**

Certificate of Geographic Information Systems, Stockton University, 2003

Master of Science, Environmental Studies, Florida International University, 2010

Bachelor of Science, Environmental Studies, Stockton University, 2003

**Highlights**

Over 17 years of GIS data creation, maintenance, remote sensing analysis, ground truthing, and field experience

More than 10 years of experience in ocean/coastal GIS in Florida

7 GIS scientific/technical publications

**Registrations/Certifications**

GIS Professional (GISP), GIS Certification Institute, Des Plaines, IL, 2011

Florida Master Naturalist, University of Florida, IFAS

**Training**

ESRI ArcGIS/3.2-10.4, ArcPublisher 9.1-10.4, ESRI ArcGIS Enterprise Server, 3D Analyst Extension, Spatial Analyst Extension, 9.1-10.4

ERDAS - IMAGINE

USGS Digital Shoreline Analysts overSystem (DSAS)

Microsoft Access

IDRISI-Taiga

AutoCAD 2012

**Employment History**

APTIM, 2006 – Present

CECOS 2006

## High Quality Level of Service to be Provided to the Town

Coastal Protection Engineering LLC (CPE) was recently founded in 2019 for the specific purpose of serving coastal communities with beach restoration and coastal protection expertise. The firm is comprised of industry leading experts with decades of experience in Florida coastal programs and a deliberate focus on providing governmental clients with highly specialized consulting services in support of projects that restore, manage, and protect coastal resources and coastal infrastructure. CPE differentiates itself through a steadfast commitment to coastal communities and an uncompromising focus on technical excellence and consistent delivery of high-quality work products valued by our clients.

Having worked with the Town of Palm Beach under multiple previous Professional Service Agreement (PSA) contracts for coastal engineering and related tasks through APTIM and its legacy companies, our staff has developed a deep understanding and respect for the need to deliver a high-quality level of services to the Town. We know that Town staff operates in a dynamic environment responding to requests and concerns of the Shore Protection Board (SPB), Town Council, and the Town's residents and visitors alike. Over the years, we have been inspired by your staff's dedication to this high level of public service for which we support, appreciate, and reflect in our own responsiveness.

As an example of our commitment, our staff attends SPB and Council meetings on a regular basis at our own discretion to remain up to speed on current issues affecting the Town. Likewise, we have been available to assist with preparation of back-up for technical agenda items and related support whenever needed. We also remain on call for service, often responding in the moment of need, for knowledgebase support, technical advice, task order execution, and proactive planning needs. As a demonstration of our past performance in this manner, our team recently coordinated with the Town to mobilize an APTIM survey crew and vessel to collect bathymetric data in the Lake Worth Lagoon to provide independent verification of dredging operations; the timeframe from the initial phone call request to delivery of results was only a matter of days and helped the Town address a critical public inquiry.

Furthermore, as a new firm located in Palm Beach County with staff fully dedicated to coastal engineering services, we are excited to demonstrate our ever-growing commitment to the needs of the Town. If awarded, we would be honored to have the Town of Palm Beach become our first governmental client as the newly formed CPE and commit to serving that responsibility with the utmost attention and excellence.

### 1.3.3 Financial Information

#### Financial Resources and Capabilities

CPE has the operating capital and cashflow to support our staff of seven (7) professionals for the foreseeable future and has no concerns with satisfying the requirements of the subject RFQ in serving the Town of Palm Beach. The firm was initially funded by its three founding members with personal investments to start the company and does not carry any debt from financial institutions or outside investors. As a result, the firm has financial resources to fund operations for the short term and anticipates meeting long term projections with operating cashflow. Additional evidence of our success as a new business can be found in the fact that we have already secured multiple contracts during our initial months with active projects that are equilibrating operational costs with revenue income. We have further strengthened our financial stability for this opportunity by adding APTIM as our key subconsultant, a large multinational corporation with thousands of employees and total revenue in excess of \$1B.

APTIM Environmental & Infrastructure, LLC's (APTIM) legacy coastal practice (Coastal Planning & Engineering, Inc.) has been in business since 1984. Through a series of mergers and acquisitions, the firm has fully integrated this industry leading team of coastal experts to become an integral part of APTIM. APTIM further draws from the expertise of approximately 4,500 employees throughout the U.S., bringing a wide range of services and financial stability.

APTIM has the financial resources and stability to perform the scope of services being sought by the Town of Palm Beach through RFQ No. 2020-02 for Coastal Engineering Services as a subcontractor to CPE. Attached, we have provided a statement from their bank (Santander) affirming that APTIM's accounts with them are handled satisfactorily and remain in good standing.

APTIM's accounting system, Oracle's JD Edwards Enterprise One®, is an integrated software solution designed to provide internal accounting controls. APTIM has worked with Oracle to customize Enterprise One to deliver integrated data across payroll, accounts payable, billings, procurement and job cost into one platform of accurate and timely financial data. These customizations also allow APTIM to produce client-specific tools and reports to enhance program management and provide full visibility. APTIM also offers the ability to incorporate Oracle Primavera, Quickbase, and other scheduling and reporting tools to accompany our accounting software to document project performance.

#### Evidence of Insurance Capability

CPE holds all the required insurances to operate a professional services firm as an engineering business in the State of Florida. As proof of the firm's insurance capability, we have provided our insurance certificates under Section 1.2.11, identifying the Town of Palm Beach as the certificate holder for:

- Comprehensive General Liability, with limits of liability not less than \$1,000,000 per occurrence.
- Professional Liability, with limits of liability not less than \$1,000,000 per occurrence and 2,000,000 in general aggregate.

- Business Auto Liability, with limits of 1,000,000 per occurrence and 2,000,000 in general aggregate.
- Workers compensation/employer liability with limits of \$1,000,000 for each accident, \$1,000,000 disease and \$1,000,000 (disease (policy limit), which exceeds the Town's requirements of \$100,000 for each accident, \$100,000 disease and \$500,000 (disease (policy limit))

APTIM also has the ability to meet the insurance requirements of the RFP, which is demonstrated by their active contract with the Town.

### Annual Report Submitted and Determined Adequate to the Town

As a newly formed business, CPE does not have a full year of financial information available; however, we are confident in the firm's ability to service the Town if awarded a contract under this solicitation. CPE is registered with DUN & Bradstreet under the DUNS #117214443 and with the Federal Government under the CAGE #8F2E5 for further reference. An income statement for the most recent month and an updated balance sheet can be provided to the Town of Palm Beach upon request. Furthermore, we are supported by our key subcontractor as additional assurance of The CPE Team's overall financial strength and can provide additional supporting information upon request of the Town.



April 4, 2019

To Whom It May Concern

Santander Bank acknowledges that Aptim Government Solutions, LLC has established several accounts with the bank, including Aptim Environmental & Infrastructure, Inc. Aptim is a client of our bank and their accounts currently are in good standing.

If you have any additional questions regarding our customer, please contact me at (617) 316-3912.

Sincerely

A handwritten signature in blue ink, appearing to read "JohnPaul Nuzzo", with a large, sweeping flourish extending to the right.

JohnPaul Nuzzo  
Portfolio Manager

## 1.3.4 Workload and Scheduling

### Overall Workload

Whenever we pursue a new project similar to the one issued by the Town, we evaluate whether we are adequately staffed to fulfill the project's scope. This evaluation is based on workload forecasts, which help us to project future workload and develop accurate project schedules. The proposed staff have ample time to dedicate to the Town. Furthermore, as a new firm located in Palm Beach County with staff fully dedicated to coastal engineering services, we are excited to demonstrate our ever-growing commitment to the needs of the Town. If awarded, we would be honored to have the Town of Palm Beach become our first governmental client as the newly formed CPE and we commit to serving that responsibility with the utmost attention and technical excellence.

### Project Scheduling Ability / Timely Completion of Work

At the onset of each new work order, The CPE Team will work with the Town to develop a detailed, realistic work plan that meets the Town's project needs and fits within your budget. We will start by developing a schedule that identifies when the most critical elements are required for each phase of the work and schedule all associated tasks accordingly. This procedure ensures adequate lead-time for proper coordination, development of scopes of work, Town approvals, contracting, and scheduling of field equipment and personnel, which ultimately results in timely completion of our work.

### Schedule will Accommodate this Project

The CPE Team commits to meeting the Town's schedules and deadlines for any requested services. We take pride in our proven success of completing our clients' projects on time and within budget. Project communication is a priority for our project managers and technical staff. We work with our clients to develop a detailed project schedule and track progress performance along the way, adjusting the overall schedule to accommodate any new developments as the project proceeds. The key to keeping a project on budget and on time is a detailed, realistic work plan that clearly identifies deliverables and key milestones. Our Project Manager and Senior Coastal Engineer, Tara Brenner, will provide the Town with monthly progress updates integrated with billing details as requested. Monthly reporting can also summarize the anticipated progress for the following month, as well as any critical issues that may affect the project schedule and budget. As in the past, The CPE Team will maintain open and timely communication and consult with Town staff, provide documents and recommendations for review, solicit feedback, and provide the services for communicating with agencies, stakeholders and the public.

### Applicability of the Services Offered

Based on the comprehensive services detailed in the Scope of Work provided by the Town within this RFQ, we are confident that our team can successfully implement each task of your coastal program. The items in this solicitation are, in fact, the core services that The CPE Team expertly provides to our clients. Our team is comprised of a full staff of qualified marine and coastal professionals and scientists, including engineers, geophysicists, geologists, biologists, certified hydrographers, and computer-aided design (CAD) and GIS specialists. These professionals handle all phases of coastal projects from

reconnaissance through feasibility and design level studies to construction management and post-construction monitoring. This foundation of engaging multiple scientific disciplines has delivered exceptional value to our clients through the entire process of project implementation. Our professionals have extensive experience with all aspects of coastal engineering including beach nourishment, navigation projects, coastal structures (breakwater fields, groins, inlet jetties), marinas and boat facilities, numerical modeling of coastal processes, marine geophysical and geotechnical investigations, hydrographic surveys, NEPA compliance and permitting, and environmental monitoring.

## Meeting the Town's Operation and Administrative Requirements

As a longstanding professional service provider to the Town, The CPE Team understands the Town's operation and administrative requirements for working with consultants. We are currently contracted with the Town under APTIM's existing Professional Services Agreement, which allows us to quickly respond to a Town request for a proposal for a variety of services, including those requested by the Shore Protection Board. Once received, the proposal must be approved by the Town Council prior to processing as a purchase order (PO). As required by Town procurement, we will not commence work until the PO is issued.

Our team's local presence and experience working with Town staff over the past 15 years has provided us with an in-depth knowledge of the unique needs of your coastal program. We understand the goals of the Comprehensive Coastal Management Plan (CCMP), which has been adapted over decades to address the objectives of the Town Council and recommendations of the Shore Protection Board in an ever-changing regulatory climate. Town staff have maintained the integrity of the program over time by clearly defining its projects, providing independent peer reviews, including stakeholder input, and coordinating with agencies and neighboring communities. This steadfast approach has been further strengthened by the Town's integral role in the development of the Beach Management Agreement (BMA), which has facilitated the permitting and construction of multiple beach nourishment projects within the Town's limits. The CPE Team has been part of the BMA from its inception and worked with FDEP to obtain an Individual Project Authorization (IPA) for the Town-wide Groin Rehabilitation Project. We also completed preparation of the Draft and Final Environmental Impact Statement (EIS) for the Southern Palm Beach Island Comprehensive Shoreline Stabilization Project, paving the way for a stabilization solution for the Reach 8 shoreline.

With a robust organization dedicated to coastal services and a well-documented history of responsiveness to the Town, we fully understand the Town's operation and administrative requirements and we are confident that we can meet or exceed all of the requirements of the work that may result from this Request for Qualifications (RFQ). Having worked with your staff on virtually every aspect of your coastal program over the years, we have extensive experience and knowledge of your past, ongoing, and planned coastal projects and we are in a good position to help you continue to successfully manage your coast.

## 1.3.6 Other

### Overall Completeness, Clarity and Quality of Proposal

We understand the importance of providing a high-quality proposal that clearly outlines our experience, financial stability, technical resources and approach. We take great pride in providing a comprehensive proposal that clearly demonstrates our understanding of your coastal program, addresses your needs and elucidates the breadth and depth of our capabilities. We are confident that the Town will recognize the effort we put forth to generate a complete proposal that is clear and concise.

### Accessibility of Firm

The coastal engineering headquarters of both CPE and APTIM are mutually located in Boca Raton, Florida where offices are staffed by professionals dedicated to coastal services alone. As a result, we are one of the few teams that can proudly demonstrate a local presence in Palm Beach County and direct experience with your program. Our personnel are available on a full-time basis in Palm Beach County to respond rapidly to the Town's needs. We are also available on an emergency basis, and we understand the importance of having surveys conducted before and immediately after storms to determine damages and secure state and federal funding for storm repairs.

### Present and Future Litigation or Dispute and Resolutions

CPE is a newly formed firm and has no ongoing litigation or dispute and resolutions.

As a major international construction and engineering company with operations around the world, APTIM, as a normal course of business, is engaged in legal actions in connection with engineering and construction projects, technology licenses and other matters. These claims include employment-related claims and contractual disputes or claims for personal injury or property damage, which occur in connection with services performed relating to project or construction sites. APTIM does not currently believe that pending contractual, employment-related personal injury or property damage claims will have a material adverse effect on our earnings or liquidity or ability to execute your project.



[Department of State](#) / [Division of Corporations](#) / [Search Records](#) / [Detail By Document Number](#) /

## Detail by Entity Name

Florida Limited Liability Company  
COASTAL PROTECTION ENGINEERING LLC

### Filing Information

**Document Number** L19000166989  
**FEI/EIN Number** NONE  
**Date Filed** 06/25/2019  
**State** FL  
**Status** ACTIVE  
**Last Event** LC AMENDMENT  
**Event Date Filed** 09/03/2019  
**Event Effective Date** NONE

### Principal Address

5301 N FEDERAL HWY  
SUITE 335  
BOCA RATON, FL 33487

Changed: 10/18/2019

### Mailing Address

5301 N FEDERAL HWY  
STE 335  
BOCA RATON, FL 33487

Changed: 09/03/2019

### Registered Agent Name & Address

NORTHWEST REGISTERED AGENT LLC  
7901 4TH ST N STE 300  
ST. PETERSBURG, FL 33702

### Authorized Person(s) Detail

#### **Name & Address**

Title AMBR

BENEDET, LINDINO  
5301 N FEDERAL HWY  
SUITE 335  
BOCA RATON, FL 33487

Title AMBR

CAMPBELL, THOMAS  
5301 N FEDERAL HWY  
SUITE 335  
BOCA RATON, FL 33487

Title AMBR

PIERRO, THOMAS  
5301 N FEDERAL HWY  
SUITE 335  
BOCA RATON, FL 33487

**Annual Reports**

**No Annual Reports Filed**

**Document Images**

[09/03/2019 -- LC Amendment](#)

View image in PDF format

[06/25/2019 -- Florida Limited Liability](#)

View image in PDF format


**Florida Department of State**  
**Division of Corporations**  
**Electronic Filing Cover Sheet**

**Note: Please print this page and use it as a cover sheet.** Type the fax audit number (shown below) on the top and bottom of all pages of the document.

(((H19000263691 3)))



H190002636913ABC4

**Note: DO NOT hit the REFRESH/RELOAD button on your browser from this page.** Doing so will generate another cover sheet.

To: Division of Corporations  
 Fax Number : (850)617-6383

From: Account Name : REGISTERED AGENTS INC.  
 Account Number : I20090000081  
 Phone : (307)200-2803  
 Fax Number : (855)330-1010

**\*\*Enter the email address for this business entity to be used for future annual report mailings. Enter only one email address please.\*\***

Email Address: \_\_\_\_\_

**LLC AMND/RESTATE/CORRECT OR M/MG RESIGN  
 COASTAL PROTECTION ENGINEERING LLC**

Certificate of Status	0
Certified Copy	0
Page Count	04
Estimated Charge	\$25.00

FILED  
 19 SEP -3 PM 12:50  
 DIVISION OF CORPORATIONS  
 TALLAHASSEE, FLORIDA

2019 SEP -3 AM 8:33

**ARTICLES OF AMENDMENT  
TO  
ARTICLES OF ORGANIZATION  
OF**

Coastal Protection Engineering LLC

(Name of the Limited Liability Company as it now appears on our records.)  
(A Florida Limited Liability Company)

The Articles of Organization for this Limited Liability Company were filed on 06/25/2019 and assigned Florida document number L19000166989.

This amendment is submitted to amend the following:

**A. If amending name, enter the new name of the limited liability company here:**

The new name must be distinguishable and contain the words "Limited Liability Company," the designation "LLC" or the abbreviation "L.L.C."

**Enter new principal offices address, if applicable:**

**(Principal office address MUST BE A STREET ADDRESS)**

**Enter new mailing address, if applicable:**

**(Mailing address MAY BE A POST OFFICE BOX)**

5301 N. Federal Highway, Suite 335

Boca Raton FL 33487

**B. If amending the registered agent and/or registered office address on our records, enter the name of the new registered agent and/or the new registered office address here:**

Name of New Registered Agent:

New Registered Office Address:

*Enter Florida street address*

Florida

*City*

*Zip Code*

**New Registered Agent's Signature, if changing Registered Agent:**

*I hereby accept the appointment as registered agent and agree to act in this capacity. I further agree to comply with the provisions of all statutes relative to the proper and complete performance of my duties, and I am familiar with and accept the obligations of my position as registered agent as provided for in Chapter 605, F.S. Or, if this document is being filed to merely reflect a change in the registered office address, I hereby confirm that the limited liability company has been notified in writing of this change.*

**If Changing Registered Agent, Signature of New Registered Agent**

If amending Authorized Person(s) authorized to manage, enter the title, name, and address of each person being added or removed from our records:

MGR = Manager  
 AMBR = Authorized Member

<u>Title</u>	<u>Name</u>	<u>Address</u>	<u>Type of Action</u>
AMBR	Thomas Pierro	7901 4th St N STE 300	<input checked="" type="checkbox"/> Add
		St. Petersburg, FL 33702	<input type="checkbox"/> Remove
			<input type="checkbox"/> Change
			<input type="checkbox"/> Add
			<input type="checkbox"/> Remove
			<input type="checkbox"/> Change
			<input type="checkbox"/> Add
			<input type="checkbox"/> Remove
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			<input type="checkbox"/> Change

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 SEC 10-3  
 12:00  
 Add  
 Remove  
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 Change

D. If amending any other information, enter change(s) here: (Attach additional sheets, if necessary.)

Multiple horizontal lines for amending information.

FILED  
19 SEP - 11 PM 12: 50  
-KHA

E. Effective date, if other than the date of filing: \_\_\_\_\_ (optional)

(If an effective date is listed, the date must be specific and cannot be prior to date of filing or more than 90 days after filing.) Pursuant to 605.0207 (3)(b) **Note:** If the date inserted in this block does not meet the applicable statutory filing requirements, this date will not be listed as the document's effective date on the Department of State's records.

If the record specifies a delayed effective date, but not an effective time, at 12:01 a.m. on the earlier of:  
(b) The 90th day after the record is filed.

Dated September 2 , 2019

*Morgan Noble*

Signature of a member or authorized representative of a member

Morgan Noble

Typed or printed name of signee



# TOWN OF PALM BEACH

## LIST OF CURRENT & PERTINENT PROFESSIONAL REFERENCE FORM

The following is a list of **at least FIVE (5)** current (within last two years) and pertinent professional references that the Town can contact in relation to Bidder's qualifications, financial stability, and experience. Failure to furnish this information may be grounds for rejection of the proposal.

1. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, sand search, survey, permitting, outreach
City of Delray Beach	<b>Date(s):</b>	1992 - Present
Swinton Operations Center	<b>Amount:</b>	\$1,870,850.27 (last 5 years)
434 South Swinton Ave	<b>Contact:</b>	Cynthia Fuentes
Delray Beach, FL 33444	<b>Telephone No:</b>	561-243-7196
	<b>Email:</b>	fuentes@c@mydelraybeach.com
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

2. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, sand search, geology, survey, modeling, permitting
Manatee County	<b>Date(s):</b>	1999 - Present
5502 33rd Avenue Drive West	<b>Amount:</b>	\$2,915,151.48 (last 5 years)
Bradenton, FL 34209	<b>Contact:</b>	Charlie Hunsicker
	<b>Telephone No:</b>	941-742-5923
	<b>Email:</b>	charlie.hunsicker@mymanatee.org
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

3. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, survey, geotechnical, modeling, permitting
Palm Beach County	<b>Date(s):</b>	2013 - Present
Department of Environmental Resources Management	<b>Amount:</b>	\$1,289,983.17 (last 5 years)
2300 North Jog Road, 4th Floor	<b>Contact:</b>	Andy Studt
West Palm Beach, FL 33411	<b>Telephone No:</b>	561-233-2539
	<b>Email:</b>	astudt@pbcgov.org
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

4. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, survey, modeling, permitting
Pinellas County	<b>Date(s):</b>	2001 - Present
Environmental Management	<b>Amount:</b>	\$771,169.40 (last 5 years)
22211 US Highway 10 North, Bldg 10	<b>Contact:</b>	Andy Squires
Clearwater, FL 33765	<b>Telephone No:</b>	727-484-4633
	<b>Email:</b>	asquires@pinellascounty.org
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

5. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, survey, permitting
Martin County	<b>Date(s):</b>	2018 - Present
Public Works Department	<b>Amount:</b>	\$194,770.10
2401 SE Monterey Road	<b>Contact:</b>	Jessica Garland
Stuart, FL 34996	<b>Telephone No:</b>	772-288-5795
	<b>Email:</b>	jgarland@martin.fl.us
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:



# TOWN OF PALM BEACH

## LIST OF CURRENT & PERTINENT PROFESSIONAL REFERENCE FORM

The following is a list of **at least FIVE (5)** current (within last two years) and pertinent professional references that the Town can contact in relation to Bidder's qualifications, financial stability, and experience. Failure to furnish this information may be grounds for rejection of the proposal.

1. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, permitting
City of Deerfield Beach	<b>Date(s):</b>	2005 - Present
401 SW 4th Street	<b>Amount:</b>	\$502,110.66 (last 5 years)
Deerfield Beach, FL 33441	<b>Contact:</b>	Patrick Bardes
	<b>Telephone No:</b>	954-480-1426
	<b>Email:</b>	pbardes@deerfield-beach.com
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

2. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, sand search, geology, survey, modeling, permitting
City of Sarasota	<b>Date(s):</b>	1998 - Present
Neighborhood and Development Services	<b>Amount:</b>	\$672,565.50 (last 5 years)
1565 First Street	<b>Contact:</b>	Alexandrea DavisShaw
Sarasota, FL34236	<b>Telephone No:</b>	941-365-2200 x4181
	<b>Email:</b>	Alexandrea.Davis-Shaw@sarasotafli.gov
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

3. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	Engineering, biology, sand search, geology, survey, modeling, permitting
Collier County	<b>Date(s):</b>	2002 - Present
Coastal Zone Management	<b>Amount:</b>	\$2,027,141.59 (last 5 years)
2685 South Horseshoe Drive, Unit 103	<b>Contact:</b>	Gary McAlpin
Naples, FL 34104	<b>Telephone No:</b>	239-252-5342
	<b>Email:</b>	GaryMcAlpin@colliercountyfl.gov
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

4. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	
	<b>Date(s):</b>	
	<b>Amount:</b>	
	<b>Contact:</b>	
	<b>Telephone No:</b>	
	<b>Email:</b>	
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments:

5. Name and Address of Firm, City, County, or Agency	<b>Scope of Work:</b>	
	<b>Date(s):</b>	
	<b>Amount:</b>	
	<b>Contact:</b>	
	<b>Telephone No:</b>	
	<b>Email:</b>	
For Town Use Only: Reference Verified: Yes <input type="checkbox"/> No <input type="checkbox"/>		Comments: