

PELICAN BAY SERVICES DIVISION

Municipal Service Taxing and Benefit Unit

NOTICE OF PUBLIC MEETING

JANUARY 5, 2022

THE **CLAM BAY COMMITTEE** OF THE PELICAN BAY SERVICES DIVISION WILL MEET AT **2:00 PM** ON **WEDNESDAY, JANUARY 5** AT THE SUNTRUST BANK BUILDING, 801 LAUREL OAK DRIVE, SUITE 102, NAPLES, FLORIDA 34108.

AGENDA

1. Roll call
2. Agenda approval
3. Approval of 10/19/2021 meeting minutes
4. Audience comments
5. Clam Bay
 - a. Information on permits needed and estimated costs for hand-dug channels
 - b. Clam Bay monitoring
 - c. Osprey nest platform
 - d. 2021 Annual Clam Bay Report
 - e. County's exotic removal and dune restoration program, including possible PBSD participation
 - f. Boater safety signage
6. Clam Pass
 - a. Timeline for dredging
 - b. Tidal gauge at marker 14
 - c. Mitigating northward movement of Clam Pass
 - d. Date for 2021 Physical and Tidal Monitoring Report
7. Water Quality
 - a. Clam Bay water quality sampling sites and annual Clam Bay water quality report
 - b. Date for 2021 Water Quality Report
8. Adjournment

Link to the 2021 Clam Bay Report:

<https://eteflorida.com/clam-bay-monitoring-report-for-2021/>

ANY PERSON WISHING TO SPEAK ON AN AGENDA ITEM WILL RECEIVE UP TO THREE (3) MINUTES PER ITEM TO ADDRESS THE BOARD. THE BOARD WILL SOLICIT PUBLIC COMMENTS ON SUBJECTS NOT ON THIS AGENDA AND ANY PERSON WISHING TO SPEAK WILL RECEIVE UP TO THREE (3) MINUTES. THE BOARD ENCOURAGES YOU TO SUBMIT YOUR COMMENTS IN WRITING IN ADVANCE OF THE MEETING. ANY PERSON WHO DECIDES TO APPEAL A DECISION OF THIS BOARD WILL NEED A RECORD OF THE PROCEEDING PERTAINING THERETO, AND THEREFORE MAY NEED TO ENSURE THAT A VERBATIM RECORD IS MADE, WHICH INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH THE APPEAL IS TO BE BASED. IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS MEETING YOU ARE ENTITLED TO THE PROVISION OF CERTAIN ASSISTANCE.

**PELICAN BAY SERVICES DIVISION
CLAM BAY COMMITTEE MEETING
OCTOBER 19, 2021**

The Clam Bay Committee of the Pelican Bay Services Division met on Tuesday, October 19 at 9:00 a.m. at the SunTrust Bank Building, 801 Laurel Oak Drive, Suite 102, Naples, Florida 34108. In attendance were:

Clam Bay Committee

Susan O'Brien, Chairman
Denise McLaughlin

Michael Rodburg
Rick Swider

Pelican Bay Services Division Staff

Neil Dorrill, Administrator
Chad Coleman, Operations Manager
Darren Duprey, Assoc. Project Manager (*absent*)

Karin Herrmann, Ops. Analyst
Lisa Jacob, Project Manager
Barbara Shea, Admin. Assistant

Also Present

Jennifer Bobka, Earth Tech
Jennifer Brunty, Stantec Consulting (*by telephone*)

Mohamed Dabees, Humiston & Moore

APPROVED AGENDA (AS PRESENTED)

1. Roll call
2. Agenda approval
3. Approval of 07/13/2021 meeting minutes
4. Audience comments
5. Water Quality
 - a. Report for January-June 2021
 - b. Total phosphorus results for 2020 and 2021
 - c. Six-month and annual reports
 - d. Appendices for TP and TN data
 - e. Upland pond data for water management
 - f. Record keeping
6. Clam Pass
 - a. Timeline for dredging
 - b. Quantity of sand to be removed
7. Clam Bay
 - a. Mangrove monitoring
 - b. Stressed mangroves
 - c. Scaevola removal
 - d. Osprey nest
 - e. Canoe trail marker 8
8. Next meeting
9. Adjournment

**Pelican Bay Services Division Clam Bay Committee Meeting
October 19, 2021**

ROLL CALL

All members were present and a quorum was established

AGENDA APPROVAL

Mr. Rodburg motioned, Ms. McLaughlin seconded to approve the agenda as presented. The motion carried unanimously.

APPROVAL OF 07/13/2021 MEETING MINUTES

Ms. McLaughlin motioned, Mr. Rodburg seconded to approve the 07/13/2021 meeting minutes as presented. The motion carried unanimously.

AUDIENCE COMMENTS

None

WATER QUALITY

REPORT FOR JANUARY-JUNE 2021

Ms. O'Brien introduced Dr. Jennifer Brunty, Associate, Senior Environmental Scientist with Stantec, who prepared our Clam Bay Water Quality Analysis Report for January - June 2021, and participated in this meeting by telephone. Ms. O'Brien commented on the good news within the report including (1) total nitrogen continues to be nonproblematic, and (2) copper and dissolved oxygen is within compliance limits (and has improved during the last 6 months vs. 2020 data). Total phosphorus continues to be problematic, with the number of exceedances in these six months greater than in 2020.

Dr. Brunty commented that phosphorus is naturally high in Southwest Florida; it is naturally occurring and part of the geology. Unfortunately, the use of fertilizer adds to the naturally high level of phosphorus. Dr. Brunty commented that there is no correlation among the dissolved oxygen, total nitrogen, and total phosphorus results. She suggested that we keep an eye on total nitrogen levels as nitrogen is necessary in conjunction with phosphorus to form algae blooms.

Ms. McLaughlin questioned the benefit to be achieved from dredging the sediment out of stormwater ponds. Dr. Brunty commented that copper and phosphorus attaches to the sediment at the bottom of lakes. She commented that although lake bottom dredging is the ultimate way to remove phosphorus and copper from the system, it is expensive and difficult to find a waste disposal site. She would recommend dredging only if there was a particular lake that was largely contributing phosphorus and/or copper to the system. She noted that one or two of our stormwater lakes have higher levels of these nutrients. Ms. O'Brien commented that the PBSB has never dredged any of our lake bottoms. She also noted that we have data on lake bottom sediment in selected lakes.

Mr. Dorrill commented on the difficulties that would be encountered in attempting to dredge a lake bottom including the lack of a barrier that could be constructed to de-water and harvest the material from the lake bottom, and dispose of it at an appropriate site. Mr. Dorrill commented that about 8-10 years ago, the PBSB did several geotube projects for lake bank remediation, which used materials from the lake bottoms to fill the geotubes. He suggested that we look at copper and phosphorus levels in these specific lakes, to determine if the dredging during these projects resulted in improved nutrient levels.

Mr. Dorrill commented that the DEP has established site specific nutrient numeric criteria for Clam Bay (as opposed to the state-wide criteria), and asked Dr. Brunty if it would be possible to

Pelican Bay Services Division Clam Bay Committee Meeting
October 19, 2021

request that the DEP re-evaluate the standards that have been set. Dr. Brunty responded that we could present scientific reasons to the DEP and request that they re-evaluate the criteria.

APPENDICES FOR TP AND TN DATA

Ms. O'Brien requested that a graph showing the upper limit levels of phosphorus vs. actual monthly sampling data point results be included in an appendix to the report.

UPLAND POND DATA FOR WATER MANAGEMENT

Ms. O'Brien commented that three or four years ago we discontinued reporting on water quality data from stormwater ponds. She suggested that Ms. McLaughlin's Water Management Committee discuss this issue and determine the type and frequency of reporting, if any, to be prepared in the future. Ms. O'Brien suggested that the variables as described in the Clam Bay Management Plan that we are responsible for reporting are included in a Clam Bay Water Quality Report, and that a separate report is prepared for the upland stormwater management ponds. She suggested that we be consistent with the Clam Bay Management Plan.

RECORD KEEPING

Ms. Jacob commented that the County's Pollution Control Division uploads all of the sampling data to the FDEP's WIN database. Both Pollution Control and the PBSB maintain the data.

CLAM PASS

TIMELINE FOR DREDGING

Dr. Dabees, Coastal Engineer with Humiston & Moore, commented that Clam Pass continues to hover at a critical threshold. Our maintenance dredging project will be targeted to occur (1) during optimal tide levels, and (2) before or after the beach renourishment project at the North Beach Facility. When the time is appropriate, we will obtain the required permits and issue a notice-to-proceed to the contractor. The project is expected to occur at the earliest in November, and at the latest in April. Sand placement will be determined by the conditions at the time. Dr. Dabees noted that the South Beach Facility can continue to function while the project is on-going. He commented that he will coordinate with Earth Tech on the protection of the seagrass beds during the project.

QUANTITY OF SAND TO BE REMOVED

Dr. Dabees commented that a preconstruction survey, completed just prior to mobilization, will determine the quantity of sand to be removed. Currently the estimate is 10,000 cubic yards plus or minus 2,000 yards. Dr. Dabees estimates that the project will be completed in two to three weeks if all goes as planned.

CLAM BAY

MANGROVE MONITORING

Ms. Jennifer Bobka, Environmental Consultant with Earth Tech, commented that our mangrove plots show that we are seeing overall improvement, system-wide, in the health of our mangroves. She noted that just one plot, identified as "ET8" (located far north along the Strand) showed a decline in health. Ms. Bobka noted that Earth Tech completed extensive channel maintenance this year in this area.

STRESSED MANGROVES

**Pelican Bay Services Division Clam Bay Committee Meeting
October 19, 2021**

Ms. Bobka commented that Earth Tech has been tracking four identified stressed mangrove areas, located on the west side. Areas #2, #3, and #4 show stable to improving conditions. Ms. Bobka noted that area #1 has not improved and that there are no hand-cut channels in this area, which may be a contributing factor. She commented that the addition of hand-cut channels would require a permit, and that she will discuss the procedure for obtaining such a permit with her colleague, Mr. Sterk. Ms. O'Brien commented that we would need to explore the number of new hand-dug channels to be dug and the estimated cost. Mr. Dorrill commented that the Windstar community and Haldeman Creek community have similar mangrove areas. Ms. Bobka commented that she will discuss with Mr. Sterk whether these communities have experienced similar areas of mangrove die-offs.

SCAEVOLA REMOVAL

Ms. O'Brien commented that staff did not proceed with the Phase 1 scaevola project, adjacent to Bay Colony, as staff has learned that Bay Colony is not interested in removing scaevola from their property. Mr. Coleman explained that since scaevola is "seedling sourced," the project would not make sense, without Bay Colony and the Strand (in such close proximity) completing their own scaevola removal projects. Mr. Coleman commented that the County (Coastal Zone Management Division) has removed scaevola in some areas, but these projects are not a County priority. Ms. Bobka commented that if you remove scaevola, you will destabilize the dune until the replanting takes hold. She also noted that the burrows of gopher tortoises would be disturbed. Ms. O'Brien suggested that we invite the appropriate scaevola point person in the County's CZM Dept. to speak on this subject at a future committee meeting, in order to make a decision on this issue. Mr. Dorrill and Mr. Rodburg thought this would be very beneficial.

Mr. Dorrill questioned whether the County has treated any of the Brazilian Pepper on the eastern edges of the Clam Bay system. Mr. Coleman responded that he is not aware of any County Brazilian Pepper removal projects in this area.

OSPREY NEST

Ms. Bobka commented that the osprey platform located between North Beach and South Beach has been replaced and the platform located at the North Beach Facility will be installed after the end of turtle season (Oct. 31).

CANOE TRAIL MARKER 8

Ms. Bobka commented that she expects canoe trail marker 8 to be installed next week, based on recent contact with the County's CZM Dept.

ADJOURNMENT

The meeting was adjourned at 10:05 a.m.

Susan O'Brien, Chairman

Minutes approved [] *as presented* OR [] *as amended* ON [] *date*



EARTH TECH ENVIRONMENTAL

FROM
Jeremy Sterk
Earth Tech Environmental
10600 Jolea Avenue
Bonita Springs, FL 34135
www.etefflorida.com
PHONE
239-304-0030

FOR
Pelican Bay Services Division
TO
Lisa Jacob
EMAIL
Lisa.Jacob@colliercountyfl.gov
ADDRESS
801 Laurel Oak Drive, Suite 302
Naples
FL 34108

QUOTE NUMBER
2064
DATE
December 27, 2021
VALID UNTIL
January 27, 2022 at 2:00PM

ETE Proposal for Consulting Services - Clam Bay Hand Dug Channel Permitting

Project: Clam Bay Estuary - Hand Dug Channels

Environmental permitting assistance for additional had dug channels in the clam bay estuary. Environmental Engineering contract 18-7432.

Thank you for the opportunity.

Earth Tech Environmental, LLC (ETE) appreciates the opportunity to provide you with the following agreement for professional environmental consulting services.

Scope of Professional Services:

ETE is proposing the following Scope of Services for this project:

Task 1: General Purpose Protected Species Survey (Timed):

ETE will perform a protected species survey within the subject property boundary according to agency criteria. The protected species survey will determine the potential presence of state and federally listed species and other site-specific environmental concerns. This task includes performing pedestrian transects within the boundaries of the project site. The distance between the transects will be established to cover a minimum of 80% of each area surveyed. Locations of listed species will be flagged in the field, and located by GPS. ETE will prepare a report summarizing the findings to the client. This report can be used for permitting through the State/Federal Agencies and Collier County. If necessary, a supplemental scope may be necessary to address any required management plans for observed listed species. Environmental Specialist @ \$109 per hour.

109.00
x 20
2,180.00

<p>Task 2: Mangrove Channel Staking (Timed):</p> <p>ETE will work with the clam bay committee to determine the appropriate new pathways for hand dug channels. Potential pathways will be staked/flagged in the field and located by sub-meter GPS. Environmental Specialist @ \$109 per hour.</p>	<p>109.00 x 60 6,540.00</p>
<p>Task 3: SFWMD & USACE Environmental Resource Permitting (Timed):</p> <p>ETE will coordinate with South Florida Water Management District (SFWMD) & the US Army Corps of Engineers (USACE) and prepare the required permit applications necessary to obtain an Environmental Resource Permit for the subject properties. ETE will prepare environmental GIS exhibits required for applications, including FLUCCS mapping, wetland limits/D maps, NRCS mapping, and impact/preserve maps. OWNER will be responsible for any SFWMD fees associated with this submission. OWNER understands that environmental resource permitting is a regulatory function and ETE cannot guarantee the issuance of any permit. This is a timed task and is billed hourly as work is completed-the amount shown is the estimated fee for completion (permit issuance). Environmental Specialist @ \$109 per hour.</p>	<p>109.00 x 110 11,990.00</p>
<p>Task 4. US Fish & Wildlife Services Informal Consultation (Timed):</p> <p>ETE will coordinate with the USFWS regarding consultation of federally listed species that may be impacted by the project (including but not limited to Florida bonneted bat, manatee, wading birds, and smalltooth sawfish). ETE will coordinate with the FDEP and USFWS regarding consultation of federally listed species that may be impacted by the project. This includes preparation of a wood stork foraging analysis for submittal to the USFWS and submittal/follow-up of Bonneted Bat reports completed in tasks 5 & 6. This is a timed task and is billed hourly as work is completed-the amount shown is the estimated fee for completion (permit issuance). Environmental Specialist @ \$109 per hour.</p>	<p>109.00 x 30 3,270.00</p>
<p>Task 5: Meeting and Coordination (Timed):</p> <p>ETE will attend meetings on an as needed basis in support of above applications. These include meetings with Client, Engineer, or agency staff. ETE will coordinate directly with Engineer in support of permitting and provide environmental data as needed. This is a timed task and is billed hourly as work is completed-the amount shown is the estimated fee for completion (permit issuance). Environmental Specialist @ \$109 per hour.</p>	<p>90.00 x 36 3,240.00</p>
<p>Total</p>	<p>\$27,220.00</p>

NOTES:

1. If the USFWS requires additional specific purpose species surveys during consultation (bonneted bat, etc), ETE will provide a supplemental scope for those services.

We appreciate your business!

Thank you for allowing Earth Tech Environmental LLC to provide you and your community with environmental services. This proposal can be authorized by digitally signing below. You can also print a PDF version of this agreement, sign, and return a copy to us.

3.3.1 Stressed Mangrove Areas

Utilizing the aerial drone monitoring and the annual Infrared photographs, four (4) areas of stressed mangroves were initially identified on the west side of Inner Clam Bay in 2019. These areas have been assessed biannually since September 2019 to track changes over time and attempt to determine the cause(s) of stress. In March 2021, fixed panoramic photo stations (SP) were established with a PVC pipe within each area.



FIGURE 6. Stressed Mangrove Areas Originally Identified in 2019



EARTH TECH ENVIRONMENTAL

FROM
Jeremy Sterk
Earth Tech Environmental
10600 Jolea Avenue
Bonita Springs, FL 34135
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PHONE
239-304-0030

FOR
Pelican Bay Services Division

TO
Lisa Jacob

EMAIL
Lisa.Jacob@colliercountyfl.gov

ADDRESS
801 Laurel Oak Drive, Suite 302
Naples
FL 34108

QUOTE NUMBER
2058

DATE
December 27, 2021

VALID UNTIL
January 28, 2022 at 10:00AM

ETE Proposal for Environmental Consulting Services- Clam Bay Environmental (2022)

Project: Clam Bay Environmental (2022)

Environmental monitoring for the clam bay estuary according to the approved management plan.

Thank you for the opportunity.

Earth Tech Environmental, LLC (ETE) appreciates the opportunity to provide you with the following agreement for professional environmental services.

Scope of Professional Services:

ETE is proposing the following Scope of Services for this project:

MANGROVE MONITORING

Bi-annual monitoring of at least twenty-one (21) existing plot locations and eight (8) photo stations.

30,000.00
x 1
30,000.00

EXOTIC & NUISANCE VEGETATION MONITORING

Annual inspection of NRPA including berms, boardwalks, and waterway areas to identify Category I and II invasive plant species as defined by the Florida Exotic Pest Plant Council. For the purposes of obtaining exotic and nuisance vegetation removal quotes, contractor is expected to provide project manager with a GIS map of identified areas where Category I and II Invasive plant species are found and recommend methods and frequency for treatment and removal.

3,000.00
x 1
3,000.00

<p>COASTAL SCRUB & CABBAGE PALM HAMMOCK MONITORING</p> <p>Annual monitoring of four (4) existing plots. Observations, data, and recommendations from this section should be included in the annual report.</p>	<p>3,000.00 x 1 3,000.00</p>
<p>SEAGRASS MONITORING</p> <p>Annual monitoring of six (6) existing transects. Observations, data, and recommendations from this section should be included in the annual report.</p>	<p>6,200.00 x 1 6,200.00</p>
<p>PROTECTED SPECIES MONITORING</p> <p>Annual identification of floral and faunal species and associated habitats.</p> <ul style="list-style-type: none"> • Annual identification of gopher tortoise burrows. • Obtain Collier County sea turtle nesting data from appropriate County division. • Observations, data, and recommendations from this section should be included in the annual report. 	<p>4,800.00 x 1 4,800.00</p>
<p>RECREATIONAL FACILITIES MONITORING</p> <p>Bi-annual inspection of 32 canoe trail markers. Inform project manager of any damages.</p> <ul style="list-style-type: none"> • Observations, data, and recommendations from this section should be included in the annual report. 	<p>1,000.00 x 1 1,000.00</p>
<p>ARCHAEOLOGICAL SITES MONITORING</p> <p>Annual inspection of three (3) archaeological sites for signs of disturbance</p> <ul style="list-style-type: none"> • Observations, data, and recommendations from this section should be included in the annual report. 	<p>500.00 x 1 500.00</p>
<p>HAND DUG CHANNELS INSPECTION & MAINTENANCE</p> <p>Annual pre-clearing (March) and post-clearing (April or prior to start of rainy season) inspections of existing hand-dug channels.</p> <ul style="list-style-type: none"> • For the purposes of obtaining quotes and hiring contractor to perform maintenance clearing work, Inform project manager of troubled areas. • Observations, data, and recommendations from this section should be included in the annual report. 	<p>6,000.00 x 1 6,000.00</p>
<p>WATER LEVEL MONITORING</p> <p>Quarterly monitoring of three (3) groundwater level devices at existing well point locations. Devices shall be provided and maintained by ETE.</p> <ul style="list-style-type: none"> • Obtain site-specific rainfall data from Club Pelican Bay • Observations, data, and recommendations from this section should be included in the annual report. 	<p>3,000.00 x 1 3,000.00</p>
<p>TIDAL GAUGES STATION MAINTENANCE</p> <p>Monitor four (4) tidal gauges stations to maintain equipment, reset modems, check or replace batteries, clean solar panels, etc. Probes at each station should be removed on a quarterly basis for cleaning and reinstalled promptly.</p> <ul style="list-style-type: none"> • Observations, data, and recommendations from this section should be included in the annual report. 	<p>4,000.00 x 1 4,000.00</p>

<p>ANNUAL CLAM BAY MONITORING REPORT & PRESENTATION</p> <p>Prepare and present to the PBSB Board an annual Clam Bay monitoring report detailing the state of the system for the monitoring period.</p>	<p>7,000.00 x 1 7,000.00</p>
<p>GENERAL & MISCELLANEOUS SERVICES</p> <p>General consulting services as requested.</p> <ul style="list-style-type: none"> • Attendance at monthly PBSB Board and Committees meetings, and/or Board of County Commissioners' meetings as requested. • Coordination of permitting activities to include pre-application meetings, application preparation and submittals, and post-issuance reporting. • Monitoring activities in excess of the number of included events. 	<p>12,000.00 x 1 12,000.00</p>
<p>Total</p>	<p>\$80,500.00</p>

We appreciate your business!

Thank you for allowing Earth Tech Environmental LLC to provide you and your community with environmental services. This proposal can be authorized by digitally signing below. You can also print a PDF version of this agreement, sign, and return a copy to us.

Payment Options:

ETE accepts cash, check, or credit cards for services. A 3.8 % convenience fee is added to all credit card transactions.

Reviews [See all reviews](#)



Earth Tech Environmental is one of the most professional and knowledgeable companies in the industry. They have gone above and beyond my expectations on every job I have done with them. They are highly recommended!

by Luis Sanchez



Great company; they did a wonderful job with our gopher tortoise permitting and services. Andrew was very helpful and easy to work with. We would definitely use their services again, if needed.

by Dina Roth



Jeremy and Adam are some of the most knowledgeable and hard working members of Earth Tech Environmental and working with them is always a pleasure. They can ALWAYS find a solution to any issue and are very easy to communicate ...

by Christopher Dorrill

REQUEST FOR QUOTE (RFQ)

15-6397-3 CLAM BAY MONITORING AND MANAGEMENT

Requested By: Lisa Jacob, Project Manager RFQ Date: 1/14/19

Collier County, Pelican Bay Services Division

801 Laurel Oak Dr, Suite 302

Naples, FL 34108

Email: ljacob@colcountygov.com

CONTRACTOR'S QUOTE SUBMISSION

NOTE: DETAILED PRODUCT SPECIFICATIONS ARE REQUIRED WITH QUOTE SUBMISSION

QUOTES DUE: FEBRUARY 19, 2019 BY 4 P.M.

CONTRACTORS SUBMITTING A QUOTE, MUST FILL IN THE INFORMATION BELOW.

Contractor Name: Earth Tech Environmental, LLC Quote Submission Date: 2/14/19

Contact: Jeremy Stark Quote Valid For: 2 weeks
 Print Name - Contractor representative w/ authority to submit quote

Email: _____ Phone No.: 239-304-0030

Base Bid Description	Price	
	1 year	3 years
Task 1: Mangrove monitoring (Lump sum)	\$ 38,000	64,500.00
Task 2: Exotic and nuisance vegetation monitoring (Lump sum)	\$ 3,000	9,000.00
Task 3: Coastal scrub and Cabbage Palm hammock monitoring (Lump sum)	\$ 3,000	9,000.00
Task 4: Seagrass monitoring (Lump sum)	\$ 6,200	12,000.00
Task 5: Protected species monitoring (Lump sum)	\$ 4,800	13,500.00
Task 6: Recreational facilities monitoring (Lump sum)	\$ 1,000	3,000.00
Task 7: Archaeological sites monitoring (Lump sum)	\$ 500	1,500.00
Task 8: Hand-dug channel mapping, inspection, and maintenance (Lump sum)	\$ 6,000	24,000.00
Task 9: Water level monitoring (Lump sum)	\$ 3,000	6,750.00
Task 10: Tidal gauges station maintenance (Lump sum)	\$ 4,000	12,000.00
Task 11: Annual Clam Bay monitoring report and presentation (Lump sum)	\$ 7,000	21,000.00
Total Base Bid Price (total of tasks 1-11 / award to lowest responsive quote)	\$ 68,500	176,250.00
Bid Alternate Description	Price	
Bid alternate task 12: General and miscellaneous services (Time and Materials)	\$ 12,000	36,000.00
Total Bid Alternate Price (price not included in award formula)	\$ 80,500	212,250.00

Attachment: (3) ETE-Quote-15-6397-3-Clam-Bay-Monitoring-Management-2-14-19 (8175 : Recommendation to authorize a Work Order under

12.0 SUMMARY

The Clam Bay estuary experienced fairly "normal" weather conditions throughout 2021. The system experienced Tropical Storm Elsa in early July which brought an unseasonable amount of wind and rain.

The following are brief summaries of work completed by Earth Tech Environmental (ETE) in 2021 and recommendations for each major monitoring category:

Mangrove Monitoring

ETE monitored 21 mangrove plots within the Clam Bay estuary. In each plot, the mangrove species, diameter and condition were recorded. Generally, the 2015 mangrove die-off areas (ETE plots) have stabilized and do not appear to be expanding. Overall, the health of the majority of the mangrove plots appears to have slightly improved and/or stabilized from 2020. Hand dug channel maintenance appears to have a direct effect on the health of the mangroves. The four (4) photo stations along the berm were installed following Hurricane Irma in 2017 and are demonstrating continued recruitment and recovery.

Four (4) new areas of stressed mangroves were identified in 2019 west of Inner Clam Bay. Fixed photo stations were established in March 2021 to photo-document changes over time. Areas 3, 4 and to a lesser extent Area 2, appear to be improving, possibly because of targeted hand dug channel maintenance in 2020 and 2021. Area 1 continues to exhibit abundant signs of stress. There are no hand dug channels in the vicinity of Area 1- it could be experiencing stagnant water and a lack of drainage, potentially contributing to the stress factors. It is recommended to consider creating new hand dug channels between the stressed area and Inner Clam Bay to allow flushing of Area 1. Extending the channels around Area 4 to reach the stressed area should also be considered. Regular channel maintenance in and around Areas 2, 3 and 4 should be continued.

In 2021, Earth Tech Environmental conducted aerial mangrove monitoring (droning) for the Clam Bay estuary. A protocol was created in 2019 to obtain consistent aerial views at nine (9) monitoring locations in order to monitor mangrove health over time, and to potentially identify new areas of stressed mangroves. No significant new stressed areas were identified from the drone imagery in 2021. It is recommended to continue biannual droning of the mangroves in 2022.

Hand Dug Channel Maintenance

Using field observations from mangrove monitoring in 2020 and March 2021 as a guide for areas within the Clam Bay system that may need channel maintenance, ETE targeted specific networks of channels around mangrove plots that appeared to be in decline due to lack of proper flushing. Additional areas were maintained where visible blockages/debris were noted previously in the field. Specifically, channels in the vicinity of plots TH-1, TH-4, TH-10, TH-6, PS1, PS2, SP2, SP3, and SP4 were identified for maintenance.

In June 2021, ETE conducted hand dug channel maintenance whereby approximately 1.81 miles of channels were cleared of vegetation, muck and debris to allow more sufficient drainage within the estuary. The channel maintenance was conducted with hand tools and chainsaws to remove fallen and leaning logs, trees, limbs, muck and detritus from above and within the channels. Debris material was moved away from the channels, though left in the estuary.

Channel maintenance for 2022 will again be targeted around stressed plots/areas and observed blockages. It is recommended to conduct maintenance earlier in the year (i.e. April) due to inclement weather and high water levels.

Coastal Scrub Monitoring

Overall, the coastal dune vegetation in Clam Bay is stable. There is continued presence of beach naupaka (*Scaevola*

taccada) within the coastal scrub habitat in Clam Bay. Beach naupaka is a Category 1 exotic plant as defined by the Florida Exotic Pest Plant Council's list of invasive plant species. It is known for supplanting native coastal vegetation, forming dense monoculture areas. ETE still recommends removal of beach naupaka from the coastal scrub habitat. The coastal scrub habitat is home to a significant population of gopher tortoise.

Seagrass Monitoring

Overall seagrass coverage in 2021 was greater than previous years: 3.55 acres in 2021; 3.21 acres in 2020; and 3.53 acres in 2019. The southern portion of Clam Bay (Transect 1) had minimal seagrass (paddle grass) for the first time since 2016. The time of year when monitoring occurs could contribute to the varying coverage over time, due to the ephemeral nature of seagrass. The increase in overall seagrass coverage in 2021 could be attributed to a number of other factors including low red tide and storm events, though most important among these is likely the health and structure of the mouth of Clam Pass (open and flowing versus blocked and slowed). A wide variety and abundance of benthic organisms were observed during this year's monitoring.

Listed Species Monitoring

ETE conducted a specific purpose survey to determine gopher tortoise (*Gopherus polyphemus*) utilization of habitat within the Clam Bay NRPA. A total of 184 potentially occupied burrows were identified during the survey. The gopher tortoise population was estimated at 92 individuals (adults & juveniles). This is an increase from the 2020 results: 152 potentially occupied burrows/76 individuals. Abandoned burrows were also noted in the survey, which may include old, collapsed burrows or potential armadillo burrows. The number of abandoned burrows decreased from 57 in 2020 to 33 in 2021. The 24% increase in the estimated population in 2021 could partially be attributed to a growing population and reduced storm/flooding events, in addition to a more liberal classification of potentially occupied burrows, rather than abandoned, in order to avoid potential adverse impacts to tortoises during the planned beach naupaka removal within the dune habitat.

Management of foraging habitat within the coastal scrub is key to maintaining and growing the existing gopher tortoise population. See Coastal Scrub Monitoring summary above for recommendations on beach naupaka.

ETE droned the bird rookery on the north end of the estuary in 2021 and observed a number of species utilizing the island for nesting and roosting. Continued monitoring is recommended in 2022 to further determine the population(s) of birds using the island.

Exotic Vegetation Monitoring

Aquagenix was responsible for exotic maintenance in the NRPA and additional areas through October 2021, while ETE was responsible for exotic maintenance only in the NRPA as of November 2021. The majority of exotic and nuisance vegetation in Clam Bay is located along the "margins" – the east side of the mangroves along the tram berm, the dune swale west of Bay Colony, and the west side of the NRPA in the beach dunes. One area, just west of the Commons is still getting intensive treatments to kill large trees and re-sprouts in this area. These areas have been targeting these fringe areas (exclusive of beach naupaka). These areas are adjacent to the most human activity around the system. Exotics identified during the course of treatment events included but were not limited to shoebutton ardisia, Brazilian pepper, Cuban laurel fig, Bishopwood, seaside mahoe, Java plum, carrotwood, old world climbing fern, umbrella tree, and primrose willow.

As the mangrove areas along the eastern side of the system continue to recover from Hurricane Irma, it may be necessary to add new exotic treatment areas into the exotic removal regimen. Continued quarterly and/or biannual treatment is recommended to be continued in perpetuity.

Beach naupaka was mapped along the dunes and 1.11 acres were identified within the NRPA along/within the dunes from Clam Pass to the Strand. An additional 0.10 acres were mapped around the north and south restaurants (Pelican Bay Foundation).

Water Level Monitoring

Three (3) water level wells are monitored within the NRPA. All three well loggers, though primarily MW-3, have experienced inconsistent technological difficulties and failure from 2019 through early 2021. ETE has worked diligently with the manufacturer to diagnose and attempt to remedy the issues. All three sensors have been replaced multiple times, the latest being MW-1 and MW-2 in March 2021, and MW-3 in November 2021. Since the latest replacements, the issues appear to be remedied. The next quarterly download event is scheduled for March 2022; if equipment issues continue to arise, ETE will look into a new equipment manufacturer.

Recreation Facilities Monitoring

Canoe channel marker #8 has had a new fiberglass pole installed, though is in need of a sign. Many of the signs are quite faded from the elements and are becoming difficult to read. Replacement, or potentially repainting, of all signs is recommended in the near future. Channel markers #28 and #29 have mangroves growing over them, obstructing visibility. Markers #13 and #15 have lost their reflector tape.

The four (4) tide gauge stations located on channel markers #4, #14, #26, & #32 were maintained by ETE throughout 2021. In general, there were minimal tide gauge issues in 2021. The sensor at #14 failed and was replaced on December 13, 2021. After the toppling of the pole and loss of equipment on marker #14 in 2020, ETE is recommending that the other channel marker poles for the tide stations are replaced before they potentially fail.

Archaeological Site Monitoring

No obvious signs of shell mounds were observed in the locations identified and no signs of human disturbance was observed in 2021.



FIGURE 18. 2021 Beach Naupaka (Scaevola) Areas Map

CLAM BAY NRPA MANAGEMENT PLAN
Pelican Bay Services Division
October 2014
Ver. 6.5



Figure 17: Historic Water Quality monitoring locations within and adjacent to the NRPA Boundary



Figure 18: Proposed Water Quality monitoring locations within and adjacent to the NRPA boundary