

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANT WORK PLAN
DEP AGREEMENT NO.: R2130**

ATTACHMENT 3

I. TITLE PAGE

1. PROJECT TITLE: Assess Vulnerability of OSTDS to SLR and Storm Surge to Develop Adaptation Plans (Ph 1)

2. GRANTEE Contact Information:

Organization Name: City of St. Augustine

Name of Authorized Signer: John P. Regan, P.E.

Title: City Manager

Address: 75 King Street (Physical), P.O. Box 210 (Mailing)

City: St. Augustine

Zip Code: 32084 (Physical) 32085-0210 (Mailing)

Area Code and Telephone Number: (904) 825-1006 or (904) 825-1040 (Public Works)

E-mail Address: cosa@citystaug.com or PublicWorks@citystaug.com

3. GRANT MANAGER Contact Information:

Organization Name: City of St. Augustine

Name: Jessica L. Beach, P.E.

Title: City Stormwater Engineer

Address: 75 King Street (Physical), P.O. Box 210 (Mailing)

City: St. Augustine

Zip Code: 32084 (Physical) 32085-0210 (Mailing)

Area Code and Telephone Number: (904) 209-4227

E-mail Address: jbeach@citystaug.com

4. FISCAL AGENT Contact Information:

Organization Name: City of St. Augustine

Name: Jessica L. Beach, P.E.

Title: City Stormwater Engineer

Address: 75 King Street (Physical), P.O. Box 210 (Mailing)

City: St. Augustine

Zip Code: 32084 (Physical) 32085-0210 (Mailing)

Area Code and Telephone Number: (904) 209-4227

E-mail Address: jbeach@citystaug.com

5. FEID No. (a.k.a. Tax ID#): 59-6000420 Seq No. 005

6. WORK PERFORMED BY: (Select only one)

 Grantee ONLY
 X Subcontractor ONLY
 BOTH the Grantee & Sub-Contractor
 To Be Determined

7. SUBCONTRACTORS CONTACT INFORMATION: *(If applicable & known)*

Organization Name: University of Florida
Name: Stephanie Gray
Title: Assistant Vice President for Research
Address: 207 Grinter Hall, PO Box 115500
City: Gainesville
Zip Code: 32611
Area Code and Telephone Number: 352-392-9267
E-mail Address: ufawards@ufl.edu

8. PROJECT LOCATION:

The project location is the municipal boundary of the City of St. Augustine, Florida.

A. List of County(ies): St. Johns County

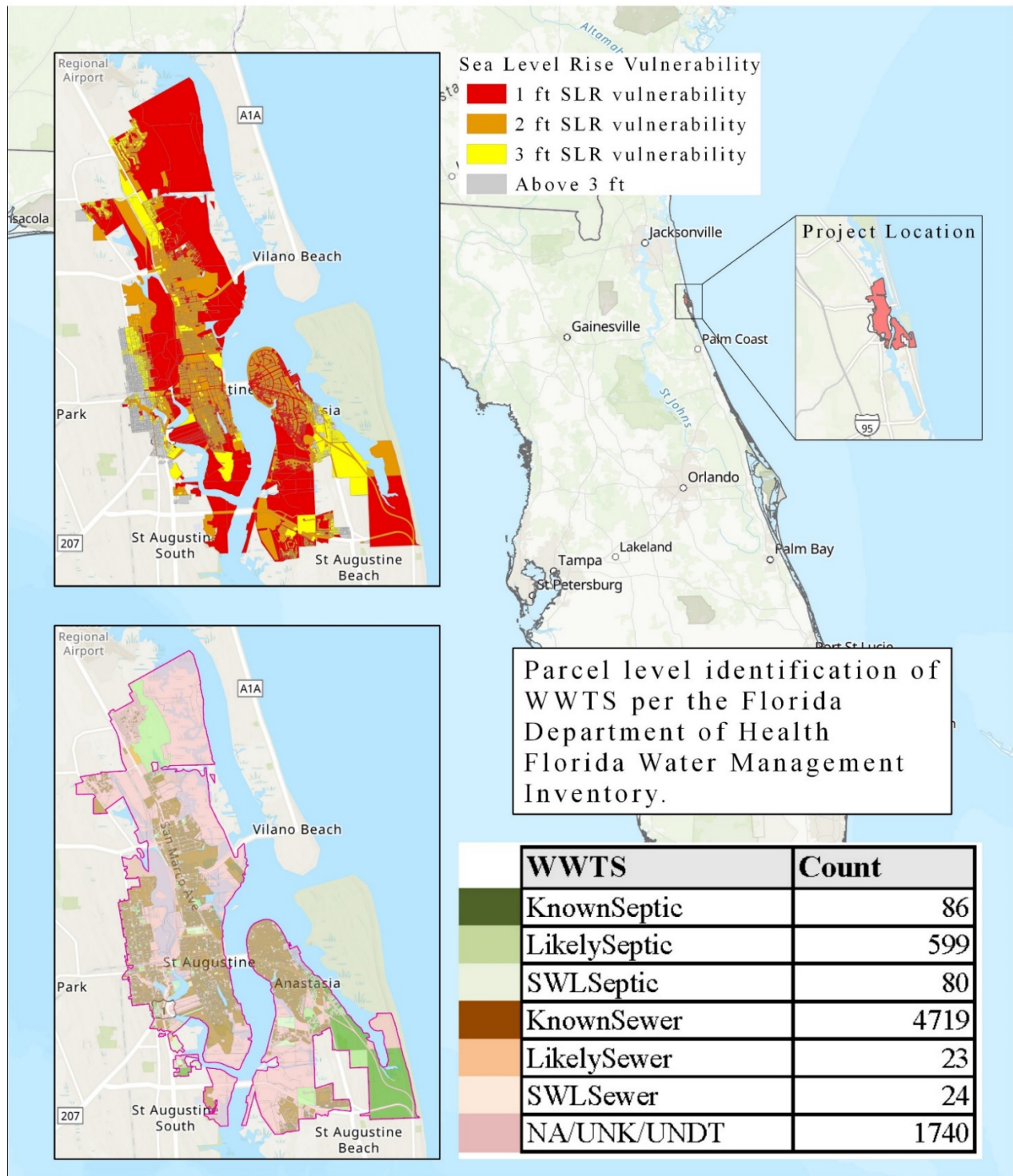
B. List of City(ies)/Town(s)/Village(s): City of St. Augustine

C. State Lands Lease Agreement Number(s): N/A

Provide lease agreement number(s) for any work that will be performed on State Lands. If work will not be on any state lands, please indicate N/A.

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ST. AUGUSTINE, FLORIDA POTENTIAL INUNDATION AREAS OF SEA LEVEL RISE AND WASTE WATER TREATMENT SYSTEMS



II. WORK PLAN

9. **PROJECT SUMMARY:** This Priority 3 project will assess the vulnerability and sensitivity of known and potential Onsite Treatment and Disposal Systems (OSTDS) to three potential sea level rise (SLR) scenarios and potential storm surge through comprehensive GIS modeling. Outputs include spatial analyses, a report of multiple wastewater treatment (WWT) technologies including costs and funding opportunities, and results of public meetings to identify focus areas. This project will also identify areas that are suitable for development of Adaptation Action Areas (AAA's) because they are at risk of SLR, storm surge, or elevated groundwater tables. Development of AAA's can be addressed in phase two of the project.

10. **PROJECT DESCRIPTION:** The objectives of this project are to:

- a. Identify areas at risk from near-term sea level rise or frequent inundation from significant weather events with special attention to locations served by OSTDS
- b. Calculate nutrient export estimates from OSTDS within study area
- c. Research, synthesize and present to stakeholders alternative wastewater treatment systems.
- d. Assist area stakeholders in development of adaptation plans to increase resiliency and reduce impacts of sea level rise on nutrient exports from OSTDS.
- e. Develop methodology that will be transferable to coastal regions of Florida and similar coastal areas of the US and possibly around the world

Spatial Analysis: Using publicly available GIS data, spatial analysis will be performed to identify 1-foot, 2-foot, and 3-foot sea level rise potential inundation, storm surge potential, and elevated groundwater potential areas within the City of St. Augustine. Analysis will also include identification of WWT systems (using Florida Department of Health Florida Water Management Inventory data) at the parcel level to identify known septic or unknown and potentially septic systems at risk of impact from sea level rise, storm surge, and/or elevated ground water impacts.

Nutrient Export Calculations: Using ArcNLET, nutrient export calculations will be performed for the following groups:

- all OSTDS in the study area (base calculations)
- OSTDS within the 1-foot, 2-foot, and 3-foot SLR scenarios
- OSTDS at risk for elevated groundwater levels
- OSTDS at risk of increased flooding
- non-homesteaded parcels with OSTDS
- non-homesteaded parcels with OSTDS within the 1-foot, 2-foot, and 3-foot SLR scenarios
- non-homesteaded parcels with OSTDS vulnerable to changes in the groundwater table

Report of WWT Technologies: A comprehensive report on the range of wastewater treatment systems available (including basic OSTDS, advanced treatment units, package plants, fully developed municipal sewer systems), including pros and cons, cost estimates, and funding options will be compiled and provided to community workgroups

Public Meetings and Identification of Priority Focus Items: The data developed in the three areas above will be presented to the public to: 1) inform of potential impacts to address, 2) solicit feedback on what additional information they would like to see, and 3) public action to identify priorities for further action. These meetings will be scheduled at various times and locations to make them accessible to as many people as possible, with a minimum of 4 meetings for this phase of the project. Project reporting will also be provided at area stakeholders meetings such as the Guana Tolomato Matanzas Research Reserve quarterly Oyster and Water Quality Task Force meetings.

Publicly Available Project Information: All data developed and presented as part of this project will be made available, free of charge, in publicly accessible formats such as the public meetings, websites/story maps, and email listserv.

11. PROJECT NEED AND BENEFIT:

- A. Explain the demonstrated need, which the project addresses.** A Coastal Vulnerability Assessment and Strategic Adaptation Plan was completed for the City through the Community Resiliency Initiative Pilot Projects (CRIPP) administered through the Florida Department of Economic Opportunity (DEO) and funded by the National Oceanic and Atmospheric Administration (NOAA). The overall effort with the CRIPP study was to assess community vulnerability to projected increases in coastal flooding and develop strategies to improve resilience to the associated impacts. This project will further support those efforts. Within the municipal boundary of the City of St. Augustine, there are a little over 7,000 parcels of land. For roughly one third of these the wastewater treatment system is potential septic or unknown. This area is low lying, ranging from 0 to 9 feet above mean sea level making it highly vulnerable to sea level rise impacts. Being a coastal city, it is also susceptible to significant weather events such as hurricanes, storm surge, high tide flooding, and excessive rain. Furthermore, rising groundwater tables add additional vulnerability for a community with a significant number of onsite treatment and disposal systems. Septic tanks and drain fields are at risk of inundation from above and below. When these systems are flooded, they can no longer provide treatment of wastes causing untreated waste to enter the environment, introducing bacteria and pathogens leading to extreme water quality and environmental quality issues.
- B. Explain how the proposed project meets the purpose of one or more of the Goals and Priorities for FRCP.** This project meets the purpose of Priority 3 by conducting an Exposure Analysis to identify areas vulnerable to sea level rise, a Sensitivity Analysis to identify properties with known septic or unknown wastewater treatment systems that have the potential to be exposed to sea level rise, and to work with the public to identify Focus Areas where Adaptation Strategies to address or prevent untreated wastewater or partially treated effluent from entering the environment.
- C. Discuss how the project is feasible and can be completed by the grant period deadline.** This project will be conducted by a grad student as part of their dissertation work under the direction of an urban storm water and water quality expert (a Ph.D. committee member) and other committee members who have conducted sea level rise research in this area previously. The student holds a certificate from the University of Florida in Geographic Information Systems, a Master's in Urban and Regional Planning, has been conducting land use and water quality research projects in this area for over three years, is knowledgeable of the study area and has existing relationships with stakeholders and cooperating agencies.
- D. Explain how this project is addressing social vulnerability or vulnerability of historic resources or stormwater management systems.** The study area includes the whole of the City of St. Augustine which includes socially and historically vulnerable places and populations. The City of St. Augustine identifies itself as 'The Oldest City in the U.S.' and recently celebrated its 450th anniversary. It has a long history of historical structures, cultural places, and a well-developed archaeological record. All of these historic resources are at risk from sea level rise because of its coastal and low-lying topography.

The location of the potential and known septic systems is predominantly within low-to-moderate income (LMI) areas on the western boundary of the City of St. Augustine (West Augustine). These populations are more vulnerable to the impacts of sea level rise as in many cases they may not have the resources or means to adapt their properties to accommodate for the increased risks and vulnerabilities that may result. This study will help to better identify areas in need where additional funding and/or grants could be sought to invest in these socially vulnerable areas to become more

resilient to the effects of sea level rise. Currently, the City has one project under construction within the Oyster Creek drainage basin in West Augustine. This project is aimed to raise the socio-economic status of West Augustine, improve groundwater and drinking water well quality, and increase storm hardening by constructing a sanitary sewer system in a portion of West Augustine. Approximately, 542 linear feet of gravity sewer (8-inch PVC), service laterals and connections is being constructed on a portion of West 2nd Street. This project is eliminating septic tanks that contribute to deterioration of groundwater quality and “float” during storm events, causing significant environmental and health hazards for the community. The City received State Legislative funds in 2018 for this project as part of the Springs Initiative. This most recent legislative session (2019), the City has applied for and is scheduled to receive additional funds to expand this effort in West Augustine. These types of projects demonstrate the City’s commitment to improving water quality and resiliency within this basin and looks forward to future projects that will contribute to similar goals. The results from this proposed study will further support the City’s efforts in improving water quality, resiliency and quality of life for these socially vulnerable areas.

12. DESCRIPTION OF PROJECT OUTCOMES:

Research Outcomes

- maps and tabular summaries of individual spatial datasets
- maps and tabular summaries of dataset combinations that communicate spatial variability in risk, exposure, or vulnerability
- a report on alternative wastewater treatment opportunities and associated costs
- additional information from all identified knowledge gaps

Research results will be compiled in a final report, available to all stakeholders in an online Executive Summary webpage for use in development of adaptation strategies. The final report will contain the following:

- public links to data files of research outcomes
- a description of the project process, research and analysis methods with data sources
- reports of stakeholder meetings, suggestions from stakeholders to community leaders, and any proposed or completed actions by local governments

Learning Outcomes

- Stakeholders will be informed about relative levels of vulnerability from nutrient exports from OSTDS due to sea level rise within the City of St. Augustine
- Stakeholders will be informed about what available wastewater treatment technologies, benefits and detractions, potential costs, and potential funding sources.
- Workshop participants will be informed about assets at risk and how to value and prioritize adaptation strategies to reduce risks.

Action Outcomes

Action Outcomes for this project include stakeholder prioritizations of action recommendations for further development in adaptation planning workshops.

13. BUDGET SUMMARY: Allowable budget categories and form of payment with the costs for this project are listed in the table below.

BUDGET SUMMARY BREAKDOWN

Budget Categories	Payment	Task 1	Task 2	Task 3	Task 4	Task 5	Grant Amount Awarded
Salaries & Fringe	Fixed Price	\$0	\$0	\$0	\$0	\$0	\$0
Contractual Services*	Fixed Price	\$17,680	\$17,680	\$17,680	\$10,980	\$10,980	\$75,000
GRANT AGREEMENT TOTAL		\$17,680	\$17,680	\$17,680	\$10,980	\$10,980	\$75,000

A. Describe how the project costs was determined: Costs are based on salary support of one (1) Ph. D. student for dissertation work through pursuit of this project. Costs include salary, fringe, travel, materials, tuition, and indirect costs.

B. Contractual Services Selection*: Upon a selected Sub-Contractor(s) (if applicable), the Grantee will Provide a signed certification statement giving a description of the procurement process that was utilized for the selection of the sub-contractors. The description must include:

- a. What procurement process was utilized
- b. Justification as to how & why you made your final selection.
- c. For competitively obtained Sub-Contractor also include:
 - i. A list of all entities that you received bids/quotes from,
 - ii. Names and addresses of those entities that provided bids/quotes,
 - iii. Actual amounts of the bids/quotes that were submitted.

14. PROJECT TIMELINE: All tasks are to be completed and submitted no later than the task/deliverable due date listed in the table below. Requests for any change must be submitted prior to the current task/deliverable due date listed in the project timeline. Requests are to be sent via separate email to the Department's Grant Manager, with the details of the request being made and the reason for the request.

PROJECT TIMELINE

Task No.	Task Title	Deliverable Due Date	Task Amount
1	Spatial Analysis	01/31/2021	\$17,680
2	Nutrient Export Calculations	02/28/2021	\$17,680
3	Report of WWT Technologies	02/28/2021	\$17,680
4	Public Meetings and Identification of Priority Focus Items	05/31/2021	\$10,980
5	Publicly Available Project Information	05/31/2021	\$10,980
Total			\$75,000

15. PERFORMANCE MEASURES: The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline. The Department's Grant Manager will review the task/deliverables to verify that they meet the specifications in the Grant Work Plan and this task description, to include any work being performed by any sub-contractor(s). Upon review and written acceptance by the Department's Grant Manager of all deliverables under this task, the Grantee may proceed with payment request submittal.

16. CONSEQUENCES FOR NON-PERFORMANCE: The Department will reduce each Task Funding Amount by 5% for every day that the task/deliverable(s) is not received on the specified due date in the most recent Project Timeline, for the Agreement. Should a Change Order or Amendment be requested on the date of or after the most current task/deliverable due date, the 5% reduction of that Task Funding Amount will be imposed until the date of the requested change is received, via email by the Department.

17. PAYMENT REQUEST SCHEUDLE: Grantee may submit a request for the Task Funding Amount to be paid using the Exhibit C, after all deliverables for that task have been approved by the Department. Request(s) for payment must include the Exhibit A showing 100% completion of that task and must be

submitted within 45 days of the task/deliverable due date. Please refer to the [website Grants page](#) for “How to Request Payment”, and “Checklist for Requesting Payment”.

Or

Grantee may submit one request for the Grant Amount Awarded, by using the Exhibit C, after the project is 100% completed. The request for the Grant Amount Awarded, must include an Exhibit A showing 100% completion for all tasks, and must be submitted within 45 days of the last task/deliverable due date.

- 18. FUNDING SOURCE:** Grantee agrees to include on all publications, printed reports, audiovisuals (including videos, slides, and websites except that unless required under special terms of this Agreement, this requirement does not apply to audiovisuals produced as research instruments or for documenting experimentation or findings and which are not intended for presentation to the general public) or similar materials must include the DEP logo (which can be found on the Department’s website at <https://floridadep.gov/resilience> or by contacting the Department’s Grant Manager for a copy) and the following statement on, the following language.

“This work was funded in part through a grant agreement from the Florida Department of Environmental Protection, Florida Resilient Coastlines Program, by a grant provided by the Office of Resilience and Coastal Protection. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies.”

The next printed line shall identify the month and year of the publication.

III. TASKS & DELIVERABLES

Task #1

- A. Title:** Spatial Analysis
- B. Goal:** Identify OSTDS at risk of inundation from sea level rise, storm surge, and/or rising groundwater tables. Develop visual materials to communicate areas and nature of risk to the public.
- C. Description:** Using publicly available GIS data, spatial analysis will be performed to identify 1-foot, 2-foot, and 3-foot sea level rise potential inundation, storm surge potential, and elevated groundwater potential areas within the City of St. Augustine. Analysis will also include identification of wastewater treatment systems (using Florida Department of Health Florida Water Management Inventory data) at the parcel level to identify known septic or unknown and potentially septic systems at risk of impact from sea level rise, storm surge, and/or elevated ground water impacts.
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department’s Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Map: Areas at risk of 1-foot, 2-foot, and 3-foot sea level rise
 - 2) Map: Areas at risk of storm surge inundation
 - 3) Map: Areas at risk of elevating groundwater tables
 - 4) Map: Known and suspected OSTDS
 - 5) Documentation of map development methods, results, and data sources

Task #2

- A. Title:** Nutrient Export Calculations (for the groups described in the Description below)

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- B. Goal:** Calculate nutrient exports for OSTDS systems under various vulnerability scenarios. Communicate potential impacts to public for improved understanding of elevated nutrient impacts and risk to health, safety, and the environment.
- C. Description:** Using ArcNLET, nutrient export calculations will be performed for the following groups:
- all documented/mapped OSTDS in the study area (base calculations)
 - OSTDS within the 1-foot, 2-foot, and 3-foot SLR scenarios
 - OSTDS at risk for elevated groundwater levels
 - OSTDS at risk of increased flooding
 - non-homesteaded parcels with OSTDS
 - non-homesteaded parcels with OSTDS within the 1-foot, 2-foot, and 3-foot SLR scenarios
- non-homesteaded parcels with OSTDS vulnerable to changes in the groundwater table
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Summary report including:
 - a. Software derived calculation outputs
 - b. Software derived calculation outputs summarized to spreadsheet format
 - c. Software derived calculation outputs translated into a plain English report

Task #3

- A. Title:** Report of WWT Technologies
- B. Goal:** Compile a comprehensive body of knowledge, understandable to a non-technical audience, of the variety, purpose, costs and funding opportunities of wastewater treatment technologies available. Information will be used by the public to develop informed and place appropriate adaptation plans to reduce or eliminate impacts to septic systems from sea level rise, storm surge and/or rising groundwater tables.
- C. Description:** A comprehensive report on the range of wastewater treatment systems available (everything from basic OSTDS, advanced treatment units, package plants, fully developed municipal sewer systems), including pros and cons, cost estimates, and funding options will be compiled and provided to community workgroups
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Report (MS Word and PDF formats) of WWT technologies, applications, costs, and funding opportunities

Task #4

- A. Title:** Public Meetings and Identification of Priority Focus Items
- B. Goal:** Present information developed in tasks 1-3 to the public to solicit feedback from the public on knowledge gaps they are interested in. In public meetings, use information developed to work towards identifying priority focus areas for resolution.
- C. Description:** The data developed in the three areas above will be presented to the public to: 1) inform of potential impacts to address, 2) solicit feedback on what additional information they would like to

see, and 3) public action to identify priorities for further action. These meetings will be scheduled at various times and locations to make them broadly accessible to the public (stakeholders). Project reporting will also be provided at area stakeholders meetings such as the Guana Tolomato Matanzas Research Reserve quarterly Oyster and Water Quality Task Force meetings.

- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Copies of all workshop/meeting announcements/advertisements
 - 2) Agendas and sign-in sheets from each workshop/meeting indicating location, date, and time of the meeting
 - 3) Presentations and other meeting materials/handouts
 - 4) Brief summary report from each workshop/meeting including attendee feedback and workshop outcomes
 - 5) Any materials created at each workshop/meeting (as applicable)

Task #5

- A. Title:** Publicly Available Project Information
- B. Goal:** Make available to the project community and other communities the results of research activities, findings, and outcomes in order to assist communities in the development of adaptation plans focusing on OSTDS at risk of impact from sea level rise, storm surge, and/or rising groundwater tables.
- C. Description:** All data developed and presented as part of this project will be made available, free of charge, in publicly accessible formats such as the public meetings, websites/story maps, and email listserv.
- D. Deliverable(s):** The Grantee will submit all deliverables for each task via **one pdf document** to the Department's Grant Manager on or before the Task/Deliverable Due Date listed in the Project Timeline.
- 1) Copies of all announcements/advertisements for workshops, meetings, publication of websites and/or story maps.
 - 2) Agenda and sign-in sheets from each workshop/meeting, indicating location, date, and time of workshop/meeting
 - 3) Presentation(s) and other meeting materials from each workshop/meeting
 - 4) Brief summary report from each workshop/meeting including attendee feedback and workshop/meeting outcomes
 - 5) Any materials created at each workshop/meeting (as applicable)
 - 6) Copies of all workshop/meeting announcements/advertisements
 - 7) URL of Website with description of project, activities, research results, data, and priority focus items identified in public meetings
 - 8) URL of Storymap with description of project, activities, research results, data, and priority focus items identified in public meetings