STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANT WORK PLAN
DEP AGREEMENT NO.: R1913

ATTACHMENT 3

Project Title: Integrating Future Storm Surge into Emergency Management Planning

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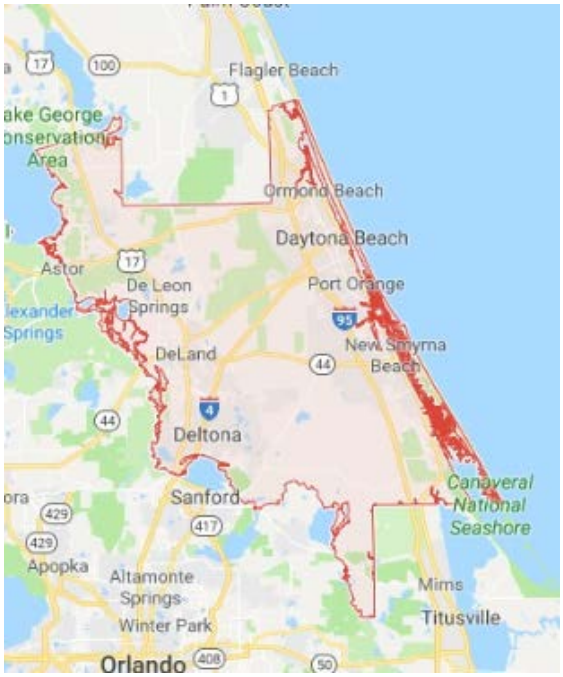
FEID No.: 59-6000-885

DUNS No.: 06-784-9901

PROJECT LOCATION: The project will focus on the entirety of the Volusia County, Florida. However, the project team will include engagement from agencies across the region and state to participate in the project efforts.



WORK PLAN

1. **Project Summary:** In partnership with the East Central Florida and Tampa Bay Regional Planning Councils, Volusia County will examine future sea level rise impacts on storm surge extent and depth. The TBRPC will recalibrate a model developed for Brevard County to utilize the Jacksonville Basin and develop outputs for Volusia County. Using this model, the team will assess various facilities across the county, including mitigation projects, in an effort to develop strategies for facilities and projects based on future conditions. This project will complete the toolbox of currently available assessment tools for surface impacts of sea level rise in Volusia County.

2. **Project Description:** Volusia County and its partners have been providing its jurisdictions and departments with tools and county-wide assessments of sea level rise, as well as sea level rise combined with a 100-year coastal flood. This proposal advances those tools to provide a new perspective of looking at future conditions, one vital to the planning undertaken by emergency management divisions. As part of this grant, the Tampa Bay Regional Planning Council will recalibrate a model they developed for projects funded by FDEP Coastal Resilience Program for Brevard County jurisdictions, to utilize the Jacksonville Basin for Volusia County. By using the Jacksonville SLOSH basin, the model will be able to analyze not only new surge levels along the coast but will also include impacts along the St. Johns River, and the Tomoka, Halifax and Indian Rivers. The output from the model will include new surge extents and depth as a result of sea level rise. Using, a minimum of Level 1, 3 and 5 storm surge, the team will analyze the change in extent and depth of surge levels and impacts on shelters and other critical facilities and evacuation routes as well as vulnerable populations. The County's mitigation projects will also be assessed in an effort to provide a new perspective to mitigate future conditions in the area and provide water depth information to aid the County in determining appropriate levels of elevation or other strategies that could be implemented in the project plan. The findings will be compiled into a report, complete with maps and tables with the data (GIS shapefiles) will be made available in a GIS database for use by the County and others in planning purposes. After project, completion, the

tool will be made available to the County GIS department for their use and transference to the other jurisdictions in the county.

As part of this process, the project team will host a workshop with the Volusia County Local Mitigation Strategy Working Group to review the findings of the assessment and the impacts on mitigation projects. The working group will also work through strategies to increase mitigation techniques on projects in which additional surge is anticipated. Additionally, as part of the workshop, the team will bring in a guest speaker to facilitate conversation about integrating future conditions into mitigation planning.

3. Project Need and Benefit:

a. Explain the demonstrated need, which the project addresses.

A function of the emergency management division is to plan for the protection of life and property in the event of a hazard. Florida has been progressive since 2007 when it first began the Statewide Regional Evacuation Study in which all regional planning councils worked with local emergency managers to develop a statewide approach to plan for hurricane evacuations across regions within Florida. Prior to this, each RPC was on it's own cycle for updating socio-economic data and clearance times. This project placed all counties in Florida on the same cycle and established consistent base data across the state. Since 2007, when the process began and the completion of the first SRES storm tide atlas in 2010, subsequent updates have taken place to provide more information to help emergency managers plan for evacuation response. Updates include a depth atlas which provides information concerning surge depth at specific locations and a directional atlas which allows emergency management directors to assess impacts of storms approaching or exiting the region from different directions. The TBRPC developed these ArcGIS extension models for storm surge and recently developed a model to assess future sea level rise conditions on surge based on new "super basins" that provide greater resolution of data for storm surge modeling. The model is currently being completed for Brevard County as part of the various projects funded by FDEP through the recent Resilient Coastline program. The ECFRPC is using the model to add more depth to the vulnerability assessments on a local scale in Brevard County. Now that Brevard County is part of the South Florida Super Basin, and Volusia County is included in the Jacksonville Basin in order to show surge from the St. Johns River, unfortunately, the same model calibrations cannot be used to assess both Counties. Over the past 3 years, the ECFRPC has been working to advance both Counties to make sure they are on the same page in terms of availability of resources, tools and efforts when addressing resilience. Funding of this project will not only ensure that both counties' emergency management divisions, which work diligently to coordinate response activities across county lines, have access to the same tools to aid in resilience and mitigation efforts and hurricane evacuation planning, but it will provide the local jurisdictions with additional information in which they can plan for future conditions. This will also provide insight changes in the evacuating and vulnerable populations as well as where the new coastal high hazard area (Category 1 storm surge) may advance to, which may impact allowable development in the area due to evacuation clearance times.

b. Explain how the proposed project meets the purpose of one or more of the Goals and/or Priority Areas for the funding source you are applying for.

This proposal fulfills priority area #3 of the Resilience Planning Gr4ant. The efforts of the team will result not only in a next level vulnerability analysis of impacts that sea level rise will have on the extent and depth of storm surge, but will also delve into mitigation planning. While the project area is limited to Volusia County, the workshop in which we will invite speakers to facilitate conversation and education about how mitigation projects can be developed with future conditions in mind, will be aimed at both Volusia and Brevard County Local Mitigation Strategy Working Groups. Therefore, priority area #4, Regional Collaboration, will also be an area of focus. The Regional Resilience Action Plan, funded by FDEP in 2017-2018, developed various actions

local stakeholders should undertake to across the region (Brevard and Volusia counties) to improve regional resilience. Providing educational opportunities for local jurisdictions concerning various mitigation and adaptation strategies, especially green infrastructure, was one of the actions. This proposal's outreach and education component will help to fulfill this directive.

c. Discuss how the project is feasible and can be completed by the Deadline.

This project is feasible and can be completed by June 19, 2020. The project team associated with this grant has extensive history of successful completion of numerous time-sensitive projects including those funded by FDEP. It is anticipated that upon contract execution, the model will be developed by late fall of 2019. During this time, critical facilities assessed for the Resilient Volusia project will be provided to the County and local jurisdictions to determine if any facilities have been altered or added since 2016. Since the ECFRPC just completed an extensive process in which all mitigation projects in the counties were collected and mapped, the team will ensure the list is complete and includes all projects the jurisdictions wish to assess. The project team will also work during this time to plan the mitigation workshop for the spring (late February – early April). After the model is complete, the collected data will be assessed using the model outputs. This process and the vulnerability analysis will occur in the winter (November – January) with the findings presented at a scheduled Volusia County LMS working group meeting early in 2019 (month to be determined as they meet quarterly). During the spring, the project team will work through recommendations from best practice research and the input from the LMS Working Group, as appropriate, for enhancing mitigation strategies for County mitigation projects, which will be included in the final Vulnerability Assessment and Recommendations Report which will be completed by June of 2020. The process for this project will ensure that while the model is being developed in the fall, subsequent data finalization and workshop planning will take place simultaneously to make the best use of time.

4. **Budget Summary:** Allowable budget categories and costs for this project are listed in the table below.

FIXED PRICE	Grant Amount Awarded
AGREEMENT TOTAL	**$40,000**

5. **Project Timeline:** All tasks are to be completed and submitted no later than the Deliverable due date listed in the table below. Request for any change must be submitted prior to the current deliverable due date listed in the project timeline. Request 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	Funding Amount
1	Model Development	12/15/2019	$10,000
2	Stakeholder Engagement	04/15/2020	$10,000
3	Vulnerability Assessment and Recommendations Report	04/30/2020	$20,000
Total			**$40,000**

6. **Performance Measure:** The Department's Grant Manager will review the 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. All deliverable documents must be provided in an electronic downloadable format.

7. **Consequences for Non-Performance:** The Department will reduce each Task Funding Amount by 5% for every day that the 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 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.

8. **Payment Request Schedule:** 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 Deliverable Due Date.

   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 Deliverable Due Date.

TAKS & DELIVERABLES

Task #1

A. Title: Storm Surge & Sea Level Rise Model

B. Description: The Tampa Bay Regional Planning Council will recalibrate a model currently developed for Brevard County to assess impacts of sea level rise on storm surge. The model will allow users to analyze certain levels of sea level rise (ex: 4 feet) and the impact that this rise has on the extent and depth of surge from the SLOSH model. The tool also has other capabilities that will be important for emergency managers including the modeling of extreme precipitation events. In order to recalibrate the model, TBRPC will need to collect all existing LIDAR/Digital Elevation Models to include in the model. Additionally, as Volusia County is now in a new SLOSH Basin (the Jacksonville Basin), this basin data will need to be included as well. Once the model is developed, the TBRPC will conduct test runs to be examined by the project team and others brought in by the county to ensure the results are valid. Upon model validation, scenarios determined by project team to assess will include at a minimum, the recommended regional approach to sea level rise for East Central Florida (lower boundary of USACE High and upper boundary NOAA 2017 High) and planning horizons of 2040, 2070 and 2100.

C. Deliverable: ArcGIS based Add-In extension model available for download via perilofflood.net; sample output; documented request for comments of initial model output for validation and summary of comments received.

Task #2

A. Title: Stakeholder Engagement

B. Description: As part of this process, the project team will participate in a Volusia County LMS Working Group meeting to discuss the project and its overall goals. At this time, we will review with the group the mitigation projects that will be assessed and request any additional projects they foresee coming down the pipeline that they would also like to include in the

assessment. The working group will also be provided the sample output, along with other technical experts identified by the County, to provide validation for the model. During the early spring of 2020, the project team will reconvene with the Volusia County LMS working group and interested public (to include any private property owners who have projects on the mitigation list) to review the findings of the modeling and conduct a working session to work through potential adaptation/mitigation strategies of the highly vulnerable mitigation projects that would be economically feasible in light of the new information. The project team will also reach out to agencies such as the Florida Division of Emergency Management, FDEP, US Army Corps of Engineers, FDOT District 5, St. Johns Water Management District, Department of Economic Opportunity and the River to Sea TPO to invite said agencies to the meeting to solicit input concerning feasible mitigation enhancements or other recommendations the County and jurisdictions can consider to advance resilience in local and regional projects. The project team will contact the Brevard Emergency Management Department to extend the notice of the workshop to the County's LMS Working Group to learn about the project and ways to improve mitigation strategies on projects with the anticipation that such a process can be undertaken in Brevard County since they have the model available for their use. The strategies for the prioritized projects will be included in the recommendation section of the Vulnerability Analysis and Recommendation Report.

C. Deliverable: Submit the following for each meeting: agendas, and sign-in sheets, presentation(s), meeting announcements, and meeting summaries.

Task #3

A. Title: Vulnerability Assessment and Recommendations Report

B. Description: Using the model developed in Task 1, the project team will assess vulnerabilities to critical infrastructure and mitigation projects based on new surge information impacted by future sea level conditions. The database developed during the FDEP grant funded project, Resilient Volusia, will be utilized as the base critical facilities file. This file will be provided to all the local jurisdictions to provide any updates to the data including new or decommissioned facilities. The database developed during the Resilient Volusia project also includes transportation facilities that will also be assessed, thus creating an enhanced, comprehensive database to be shared with local jurisdictions, FDOT, the River to Sea Transportation Planning Organization and the Florida Division of Emergency Management for their use in planning and policy development. The current LMS project list will be provided the by the county to be assessed for vulnerabilities. Depth of inundation will be included in the analysis at site locations. The project team will also provide a comparison of overall county impacts from sea level rise alone, current storm surge and surge with sea level rise. An analysis will also be conducted using mySidewalk to assess increased social vulnerability, especially of vulnerable populations (elderly, households in poverty, limited English speaking, etc.) As the tool will also include a extreme precipitation event, the team will pilot the findings as a chapter in the report to illustrate areas vulnerable to flooding from these types of events. Through best practice research, findings from the vulnerability analysis and discussion derived from the LMS working group meetings, recommendations for assessing mitigation projects; enhancing projects and policy and planning strategies will be developed and included in the final report.

C. Deliverable: Vulnerability Assessment and Recommendation Report to include text, tables and maps illustrating vulnerabilities, comparisons and newly vulnerable areas as well as recommendations for projects and processes. PDF and word format.