

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year hereinabove written.

Attest:

CITY OF POMPANO BEACH

ASCELETA HAMMOND, CITY CLERK

By: _____
REX HARDIN, MAYOR

(SEAL)

By: _____
GREGORY P. HARRISON, CITY MANAGER

APPROVED AS TO FORM:

MARK E. BERMAN, CITY ATTORNEY

“CONTRACTOR”

Witnesses:

Ben Moore

Digitally signed by Ben Moore
Date: 2021.12.03 12:54:29 -05'00'

Benjamin Moore
(Print or Type Name)

Cleo A. Marsh
E13D1CE4A4CE45A...

Cleo Marsh
(Print or Type Name)

RS&H, Inc.
(Print or type name of company here)
Jay Turner
3D7C7C8A5207464...
By: Jay Turner, PE, Vice President

Business License No. BL-1703479

STATE OF Florida

COUNTY OF Broward

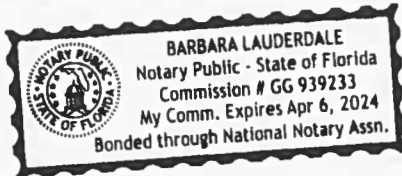
The foregoing instrument was acknowledged before me, by means of physical presence or online notarization, this 3rd day of December, 20 21 by Jay Turner as Vice President of

RS&H, Inc., a Florida corporation on behalf of the corporation OR a Florida limited liability company on behalf of the company. He/she is personally known to me or who has produced NA (type of identification) as identification.

Barbara Lauderdale

NOTARY'S SEAL:

NOTARY PUBLIC, STATE OF FLORIDA



Barbara Lauderdale

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

Exhibit "A"

VULNERABILITY ASSESSMENT

OVERVIEW

The City of Pompano Beach seeks to develop a Vulnerability Assessment that details the exposure of facilities, critical infrastructure, roadways and neighborhoods to climate change stressors such as sea level rise, precipitation events, and groundwater table changes.

This effort will leverage the City's existing Stormwater Management Plan (SWMP), which includes analyses of sea level rise flood impacts to the City's infrastructure. It will also incorporate information and analyses developed through the City's Sustainability Strategy and Baseline and Goals report. The project will incorporate socioeconomic metrics, such as low-income, senior and minority populations, to analyze social vulnerability, and include community outreach via two public meetings.

The Vulnerability Assessment will provide information needed to designate Adaptation Action Areas (AAAs) and identify preliminary adaptation projects. It will inform development of a sea wall ordinance which will establish new minimum required heights for sea walls. In addition, the project will provide guidance for roadway drainage improvements and raising critical roads and bridges.

The Vulnerability Assessment will be completed through four Tasks:

- Task 1 – Kick-off and Flood Hazard Data Collection
- Task 2 - Flood Vulnerability Assessment
- Task 4 - Public Outreach / Community Engagement
- Task 5 - Vulnerability Assessment Results and Final Report

PURPOSE AND BENEFITS

The City has a pressing need to understand its flood risk exposure and the vulnerability of its assets so that it can improve resilience. This project will build on previous planning efforts in the City and establish a foundation for effective adaptation planning and initiatives. These previous efforts include:

- Broward County's "Vulnerability to Sea Level Rise Assessment Report" (2013)
- Pompano Beach Stormwater Master Plan (2013)
- Pompano Beach Sustainability Strategy (2020)
- Pompano Beach Sustainability Baseline and Goals Report (2021)

The Vulnerability Assessment will allow the City to synthesize past efforts and gain a deeper understanding of the impacts, risks, and vulnerabilities to climate change, allowing risks to be analyzed and prioritized based on likelihood, cost, spatial extent, and time horizon. It will allow Pompano Beach to understand the flood risks associated with climate change and the City's capacity to adapt and become more resilient. It will also lay the groundwork for an Adaptation Plan by allowing the City to understand its vulnerabilities so that adaptation strategies can be chosen to address them.

FDEP ANNUAL PRIORITIES

Adaptation Action Areas

RS&H will develop recommendations for designating AAAs by means of a Comprehensive Plan update, an AAA resolution or ordinance, incorporation into the City's Capital Improvements Plan, and/or other available and appropriate means. Flood risk exposure and vulnerability analyses (Tasks 1 and 2) will be used to recommend areas for designation as AAAs. RS&H will conduct geographic analyses using an online mapping tool to identify and delineate the potential AAA extents. RS&H will solicit community input into the AAA designations through two public meetings (Task 3). Guidance and best practices from the AAA Planning Guidebook for Local Governments, the Southeast Florida Regional Climate Change Compact and Broward County will be followed when developing AAA recommendations. RS&H will develop recommended Goals Objectives, and Policies (GOPs) for potential adoption into the City of Pompano Beach's comprehensive plan. RS&H will coordinate with the City to develop a timeline for presenting GOPs to the relevant local governing body. The GOPs will be included in the Task 4 Vulnerability Assessment Report deliverable.

Social Vulnerabilities

RS&H will analyze social vulnerabilities through incorporating socioeconomic metrics (e.g., economic activity and income, employment, population and housing, and public services and social conditions) into the Vulnerability Assessment. Task 2 will evaluate impacts on socially vulnerable populations, as it relates to the Flood Vulnerability Assessment and projected economic losses. Public meetings (Task 3) will further address social vulnerabilities with the community and provide opportunity for public involvement in the vulnerability assessment process. Recommendations for reducing social vulnerability will be included in the Final Vulnerability Assessment Report (Task 4). Annual Priorities deliverable requirements will be met including graphical representation of sea level rise impacts and associated flooding on vulnerable populations, methodological descriptions, and GOPs recommended for adoption into the City of Pompano Beach's comprehensive plan.

Natural Resource Vulnerabilities

RS&H will address natural resource vulnerabilities by determining current and future exposure to climate change risks. Natural resources that will be evaluated include urban forestry, fresh water supply, the Intracoastal waterway and other natural water features, and the City's beach and dunes system. Adaptation recommendations for natural resource vulnerabilities will be addressed in the final Vulnerability Assessment Report (Task 4). Task 4 deliverables will include graphical representation of sea level rise impacts and associated flooding on vulnerable sectors, methodological descriptions, and GOPs recommended for adoption into the City of Pompano Beach's comprehensive plan.

PROJECT TASKS

Development of the Proposed Project will require Four Tasks, as detailed below.

Task 1 - Kick Off and Flood Hazard Mapping

A) Kickoff Meeting

RS&H will conduct a Kickoff meeting within two weeks of notice to proceed (NTP) with the City to review the scope of work, schedule, and deliverables. NTP is anticipated to be by or before December 30, 2021. Methodological details such as data sources and climate projections will be discussed at the kickoff meeting. A plan to obtain any needed data (i.e., lists of critical facilities to be included, etc.) will be established and a call for data will be issued following the meeting. RS&H will work with the City to track the data collection process through completion. RS&H will review and organize the data for subsequent analysis and for future use by the City. The City will be kept informed of progress throughout the project duration by regular virtual meetings and phone calls with the RS&H's project manager. The kickoff Meeting will be held remotely through an online meeting platform.

B) Interactive Online Mapping Tool

Using the results of the Stormwater Master Plan Addendum, RS&H will develop an interactive online mapping tool with flood hazard data. The tool will determine exposure to flood risks affecting critical City assets (i.e., facilities, infrastructure, roadways, neighborhoods, commercial districts, and natural resources). By combining this information with the flood hazard results, the tool will facilitate analysis of physical, economic and social vulnerabilities, including loss of access to assets. Once populated, the tool will provide a user-friendly, graphically rich interactive mapping interface. It will allow the user to view and analyze flood risk from various sources at any location in the City. RS&H will develop a brief one to two page memorandum summarizing flood hazard mapping results and will provide technical documentation of the data sources used to develop the tool.

Task 1 Deliverables

Task 1 deliverables will include:

1. Initial kick-off meeting agenda and sign-in sheets indicating location, date, and time of meeting
2. Agenda and any presentation(s) from the kick-off meeting
3. Brief summary report from the kick-off meeting including attendee input and meeting outcomes
4. Meeting minutes
5. Memorandum summarizing flood hazard mapping results
6. Technical Documentation of data sources/mapping analyses
7. Screenshots of the online mapping tool

Task 2 - Flood Vulnerability Assessment

A) Flood Vulnerability Modelling

RS&H will conduct flood hazard modeling as part of an Addendum to the 2013 Stormwater Master Plan (SWMP). RS&H will first review the previous master plan report, SWMM model and analysis and will update existing conditions to incorporate projects from the 2013 SWMP that have been constructed or are under construction. Analysis will not involve developing new alternatives for proposed improvements. The Addendum will include updated maps for land use, zoning, impervious area, soils, LIDAR, FEMA flood zones, drainage complaint data to take into consideration in the analysis. Tidal, storm surge levels, canal

waters, groundwater and other water levels will also be updated based on current information and projections. Stormwater evaluation and analysis will include modeling the depth of:

- A. Tidal flooding, including future high tide flooding, using thresholds published and provided by FDEP. To the extent practicable, the analysis should also geographically display the number of tidal flood days expected for each scenario and planning horizon.
- B. Current and future storm surge flooding using publicly available NOAA or FEMA storm surge data. The initial storm surge event used must equal or exceed the current 100-year flood event. Higher frequency storm events may be analyzed to understand the exposure of a critical asset.
- C. Rainfall-induced flooding using spatiotemporal analysis or existing hydrologic and hydraulic modeling results. Future boundary conditions should be modified to consider sea level rise and high tide conditions.
- D. Compound flooding or the combination of tidal, storm surge, and rainfall-induced flooding.

RS&H will follow the following scenarios and standards consistent with FDEP's requirements as outlined in s. 380.093 F.S.:

- All analyses will be in NAVD 88.
- Sea level rise scenarios will include 2017 NOAA Intermediate-Low and Intermediate-High projections.
- Planning horizons for the years 2040 and 2070 will be used.
- Local sea level data that has been interpolated between the two closest NOAA tide gauges will be used. Local sea level data may be taken from one such gauge if the gauge has higher mean sea level. Data taken from an alternate gauge may be used with appropriate rationale and FDEP approval, as long as it is publicly available or submitted to the department.

B) Flood Vulnerability Planning

Using model results and hazard mapping, RS&H will develop a Preliminary Vulnerability Assessment Memorandum that summarizes the vulnerability of City assets to flood hazards.

Vulnerability includes not only an asset's exposure to flood hazards, but also the asset's criticality and adaptive capacity. Criticality assesses how important the asset is to maintaining the City's normal operations. Adaptive capacity considers how well an asset can cope with an impact.

The Memorandum will include estimated economic losses for the assets addressed under several flooding scenarios modeled on existing and future conditions. Potential economic impact analysis will focus on changes in annual sales volume and employment associated with commercial properties vulnerable to flooding. The Memorandum will also discuss potential impacts to socially vulnerable populations and natural resources within the City. It will include map exhibits showing vulnerability at the census tract-level and tables ranking the vulnerability of critical assets.

The Memorandum will include a methodology appendix documenting the data sources and analysis steps used to develop the mapping tool and vulnerability assessment. Final versions of GIS mapping files and

associated tabular data will be provided. Methodology and deliverables will be consistent with FDEP Florida Resilient Coastlines Program requirements as outlined in Task 1 above, to the extent practicable.

Task 2 Deliverables

1. Preliminary Vulnerability Assessment Memorandum incorporating FDEP Florida Resilient Coastlines Program requirements as outlined in s. 380.093, F.S
2. A list of critical assets (as defined in s. 380.093, F.S.) and regional assets that are impacted by flooding and sea level rise as identified in the assessment
3. Data sets used to perform the Vulnerability Assessment
4. GIS Shapefiles of all electronic mapping data used to illustrate flooding and sea level rise impacts identified in the assessment

Task 3 – Public Outreach and Community Engagement.

RS&H will facilitate two Public Meetings, one following completion of the Preliminary Vulnerability Assessment Memorandum and one following the draft version of the Vulnerability Assessment Report. These public meetings will present findings and provide opportunity to gather additional information and input prior to finalizing project deliverables.

The Public Meetings will build understanding of climate risks and vulnerabilities and stakeholder support for the project. They will also be designed to solicit community input that will be used to verify the vulnerability assessment results, select locations for potential designation as AAAs, and initially prioritize high-level adaptation strategies. In addition, they will familiarize participants with the project findings and lay the groundwork for subsequent resilience planning efforts including an Adaptation Plan and related capital improvements. RS&H will coordinate with the City's Sustainability Coordinator regarding format and scheduling of the meetings. The meetings will be held in person, if conditions allow, with the option to hold them virtually if necessary. Live polling and/or survey tools will be utilized to supplement the presentation and ensure participants are able to contribute their feedback and ideas.

Meeting 1 will present initial results of the Preliminary Vulnerability Assessment Memorandum once it is completed. The meeting will identify assets, neighborhoods, infrastructure and natural resources vulnerable to flooding, as well as social vulnerabilities. Meeting 1 will also include a breakout session in which participants are asked to give their input on these results. They will also be asked for feedback on locations of proposed AAAs, and to prioritize a list of high level, conceptual adaptation strategies. Community input gathered through this activity will be incorporated into vulnerability assessment results and recommendations in the following task.

Meeting 2 will occur near the end of the project after the Task 4 deliverables have been drafted. This meeting will present the findings of the draft Vulnerability Results Report to the public, including recommendations. The meeting will ensure public awareness of the study results and flood vulnerabilities in the community and build stakeholder support for subsequent stages of adaptation planning, including policy changes and capital improvements. Participants will gain familiarity with the final recommendations, including for designation of AAAs, and with recommended projects for further

development and potential implementation. Feedback will be incorporated into the final Task 4 deliverable.

Task 3 Deliverables:

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)
6. Meeting minutes

Task 4 – Vulnerability Assessment Results

RS&H will deliver a final Vulnerability Assessment Report that summarizes vulnerabilities and includes recommendations for AAAs, natural resources, and social vulnerabilities related to potential climate impacts. The social vulnerability analysis will use the best available data from the U.S. Census or other sources. The Report will incorporate prior deliverables from Tasks 1-3 under a single cover. As a complement to the report, the City will also be able to view and analyze vulnerabilities using the online interactive mapping tool.

The Report will include a summary of vulnerability assessment results and provide recommendations for improving resilience of the City's assets. This will include an analysis of social vulnerability to flood hazards and initial resilience recommendations for affected populations. The analysis will also address critical facilities and access to them; infrastructure, including major roadways; neighborhoods; commercial districts and natural resources. Recommended strategies will consist of a combination of GOPs and flood mitigation strategies including protection, relocation, elevation or hardening of existing infrastructure. RS&H will also develop policy recommendations to ensure finished floor elevation requirements for private development consider SLR and flood risks.

RS&H will perform a qualitative cost / benefit screening for a limited number of conceptual adaptation strategies. The list of potential strategies will be developed collaboratively with the City's Sustainability Coordinator, and will also incorporate community feedback from the first public meeting (Task 3). Strategies will be prioritized based on qualitative ranking of costs and benefits into "high", "medium" and "low" categories. This effort will help identify and prioritize initial adaptation strategies for further development in a subsequent comprehensive Adaptation Action Plan. RS&H will develop a capital improvement checklist based on the cost-benefit analyses for the proposed adaptation strategies. The City will be able to use this checklist in conjunction with the online mapping tool to ensure capital project locations are reviewed for vulnerabilities prior to construction / renovation, and adaptation features are included in project designs.

Task 4 Deliverables:

1. Vulnerability Assessment Summary Report, including:

1. A list of critical assets (as defined in s. 380.093, F.S.) that are impacted by flooding and sea level rise as identified in the assessment. This list will not include regional assets outside the municipal boundary.
2. Locations for potential AAA designation
3. Capital improvement checklist
4. Qualitative summary of identified social vulnerabilities and potential economic losses
5. Qualitative cost-benefit analysis for proposed adaptation strategies
6. Screenshots of interactive mapping tool updates

Budget and Schedule

Budget

Task	Budget
1) Kick-off and Flood Hazard Mapping	\$63,000
2) Flood Vulnerability Assessment	\$96,000
3) Public Outreach and Community Engagement	\$12,000
4) Vulnerability Assessment Results	\$14,000
Total	\$185,000

Schedule

Task / Milestone	Month, Year
Notice to Proceed (NTP ¹)	On or before December 30, 2021
Draft Deliverable 1 (Tasks 1)	March 1, 2022
Final Deliverable 1 (Tasks 1)	April 1, 2022
Draft Deliverable 2 (Tasks 2-4)	June 1, 2022
Final Deliverable 2 (Tasks 2-4)	December 1, 2022

¹ Assumed NTP date. Dates may need to be adjusted if actual NTP differs significantly