xGeographic Aqua | *Draft Scope of Work*

2022-2023 Florida Resilient Coastlines Program Grant

Core Deliverable

Deliverable 1: Vulnerability Assessment / Analytics Report

Budget: $17,500

Overview: The analytics report deliverable consists of a complete vulnerability assessment that breaks down the posed risk from *1) sea level rise, 2) storm surge, 3) the 100-year flood, and 4) 2070 storm surge plus sea level rise for category 1, 3 and 5 hurricanes,* to numerous community features, as described below. Sea level rise is analyzed for years 2040, 2070 and 2100 using the NOAA "High" curve, all storm surge is analyzed by hurricane category (1 through 5) as modeled by the Tampa Bay Regional Planning Council GIS tool, the 100-year flood is analyzed using the latest FEMA DFIRM data, and future storm surge utilizes TBRPC model and NOAA data.

Report Sections

1.1 | Vulnerability to Property Values & Buildings

The four aforementioned natural hazards *(in italics)* are overlaid with parcels, and summary analytics show impacts in map and table form to land value, assessed value, taxable value, and the number of buildings located within each hazard zone. An analysis of areas with high vulnerability is completed through the lens of adaptation strategies; potential adapt or retreat strategies will be identified, by location.

1.2 | Vulnerability to Points of Interest and Essential Services

The four aforementioned natural hazards *(in italics)* are overlaid with points of interest, with summary analytics depicting the vulnerability across numerous categories in map and table form. Points of interest analyzed for vulnerability to the three natural hazards include grocery stores, markets and convenience stores, gas stations, restaurants and fast food, banks, bars and entertainment venues, public parks, hotels, malls (if applicable), and other major destinations. A written analysis identifies communities most affected by losses of essential services.

1.3 | Vulnerability to Critical Facilities & Infrastructure

The four aforementioned natural hazards *(in italics)* are overlaid with critical facilities, and summary analytics show impacts to assisted living facilities, heavy industrial facilities, hospitals, fire stations, libraries, life stations, municipal buildings, operations centers, police stations, post offices, schools, storm shelters, and other individual, non-categorical critical facilities. Maps and tables outline major risk, per critical facility category, and highly vulnerable facilities are analyzed on a one-by-one basis for potential countermeasures.

1.4 | Vulnerability to the Transportation Network

The four aforementioned natural hazards *(in italics)* are overlaid with the transportation network, with map summaries and tables showing vulnerabilities posed to roadway segments, trails, bus stops and airports. Roadway segment vulnerability is broken down by critical factors such as FDOT functional classification and daily traffic, and an analysis of cut-off or otherwise potentially impacted neighborhoods is completed. The county transit system is also analyzed for vulnerabilities along bus routes.

1.5 | Vulnerability by Land Use Type (Risk Profiles)

The four aforementioned natural hazards *(in italics)* are overlaid with the municipal zoning and future land use maps, and a complete analysis of the number of buildings, and acreage, vulnerable to the three identified natural hazards is completed. A written analysis identifies non-vulnerable areas that could potentially be up-zoned in order to drive future population away from damage-susceptible areas, and vulnerable areas that could potentially become adaptation action areas with additional strategies and community input on the use of public dollars for adaptation.

1.6 | Vulnerability to Lower Income Residents

The four aforementioned natural hazards *(in italics)* are overlaid with 2020 U.S. Census data, and a demographic analysis is completed to identify vulnerable residents in damage-susceptible areas. Demographic indicators examined include median family income, percent of households with zero vehicles, and age. All analytics are viewable in map and table format, with a written analysis.

1.7 | Coastal Protection Profile

A coastal protection profile is completed in order to gauge the community's susceptibility to storm surge, wind-action flooding (VE flooding zone), and coastal erosion. Specifically, the community's coastline is surveyed by typology. Coastline typologies include sand beach (greater than 200 feet in length during high tide), sand beach (less than 200 feet in length during high tide), constructed sea wall, jetty or rock wall, mangrove, other green infrastructure, and other coastline types as identified during the survey.

Optional Deliverables

Deliverable 2A: Comprehensive Plan Coastal Element Update

Budget: $10,000

Summary

The community's Comprehensive Plan Coastal Element will be updated to be in accordance with Florida's Peril of Flood legislation. Maps, tables and report assessments developed within the Vulnerability Assessment (deliverable 1) will be inserted into the Coastal Element in order to save resources while meeting legislative requirements. Policies will be drafted using other Florida coastal cities as a template, specifically the City of Satellite Beach, Florida and the City of Fort Lauderdale, Florida. xGeographic will meet with municipal staff to gauge community priorities and on-the-ground realities. Policies will be reviewed with City staff three times following these meetings in 1) preliminary, 2) draft, and 3) final draft stages.

Deliverable 2B: Public Workshops & Resilience Strategy Preferences

Budget: $7,500

Summary

Two public workshops will be held with members of the community with three major goals: 1) inform residents on municipal and landowner strategies for reducing the impacts of natural hazards; 2) inform residents on the specific vulnerabilities posed to their community from sea level rise, storm surge and flooding, using the maps developed in the Vulnerability Assessment (deliverable 1); 3) collect input on preferred adaptation strategies that the community would like to see implemented. The adaptation strategies used would be identical to those drafted as part of Resilient Titusville, a Resilience Planning Grant funded by the Florida Department of Environmental Protection in 2018-19.

Deliverable 2C: Green Design Solutions

Budget: $5,000

Summary

Using the information gathered in the Vulnerability Assessment (deliverable 1), the project team will design four green street concept plans, two conceptual park retrofit plans, and two living shoreline conceptual plans for publicly-owned property. The green street concepts will use green infrastructure components such as bioswales and native vegetation while maintaining design requirements by the state. The park retrofit plans will identify potentially vulnerable parks, and will use a minimalist design approach to retrofit the parks' ability to store, absorb and/or move water. The living shoreline concepts will be completed for two publicly-owned parcels selected by City staff.

Budget Breakdown

Deliverable	**Amount**
Deliverable 1:	$17,500
Deliverable 2A:	$10,000
Deliverable 2B:	$7,500
Deliverable 2C:	$5,000
Maximum Total:	**$40,000**