REQUEST FOR PROPOSALS (RFP)
CHARLOTTE COUNTY THREAT AND HAZARD RISK ASSESSMENT (THIRA)

APTIM

PROPOSED TO:

CHARLOTTE COUNTY

Charlotte County Purchasing Division, Suite 344
Charlotte County Administration Center
18500 Murdock Circle
Port Charlotte, FL 33948-1094

PROPOSED BY:

APTIM ENVIRONMENTAL & INFRASTRUCTURE, LLC

6401 Congress Ave, Suite 140
Boca Raton, FL 33487

RFP# 2024000566
March 18, 2025

March 18, 2025

Aptim Environmental & Infrastructure, LLC
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487

Rhiannon Mills, Senior Contract Specialist
Charlotte County Purchasing Division, Suite 344
Charlotte County Administrative Center
18500 Murdock Circle
Port Charlotte, FL 33948

Subject: RFP NO. 2024000566 – Threat and Hazard Risk Assessment

Dear Ms. Mills and Selection Committee:

Aptim Environmental & Infrastructure, LLC (APTIM), a Louisiana Limited Liability Company incorporated on April 23, 2002 (22 years), is pleased to respond to the Request for Proposals (RFP) for the Threat and Hazard Identification and Risk Assessment (THIRA) for Charlotte County (the County). As a national environmental and engineering consulting firm, **APTIM is a recognized leader in environment, resilience, and sustainability services, committed to building a sustainable future for communities and natural world, accelerating the transition to a clean and efficient energy economy and creating a more inclusive and equitable environment that celebrates the diversity of our communities.** Our local offices have established a consortium of excellence to support delivery of the most useful threat and hazard risk assessments and resilience plans compliant with state and federal guidance.

APTIM fully understands the scope of work and services to be provided for the County's THIRA project. This important project aims to assist the County in identifying, assessing, and prioritizing risks from natural, technological, and human-caused hazards. By doing so, we strive to enhance the County's preparedness and resilience, ensuring that response and recovery plans are tailored to the specific risks the County faces. To exceed the County's expectations, our resilience team is ready, able, and committed to delivering the scope deliverables on time and within budget. I have assembled an experienced collective of resilience engineers, planners, and subject matter experts to ensure proper staffing for quality and responsiveness.

We look forward to leveraging our relationships, data and analytics from recent resilience projects in Florida including countywide vulnerability and energy reliability assessments, community adaptation plans for communities, floodplain policy development and resilience hub implementation planning. Our firm is known for the development of the Florida Adaptation Planning Guidebook for the state and coordinating logistics for FEMA and state in response to major hurricanes. Our history with the County includes assisting in addressing coastal threats and developing creative solutions to environmental problems like algae blooms in Sunshine Lake.

Congratulations on receiving your grant award and the chance to strategize for comprehensive resilience throughout your community; we have witnessed firsthand the benefits that arise from this effort. Upon award, we look forward to negotiation of mutually agreeable terms.

Kind Regards

Samantha Danchuk, PhD, PE
Climate and Coastal Resilience Lead
561 532 5882
Samantha.Danchuk@aptim.com

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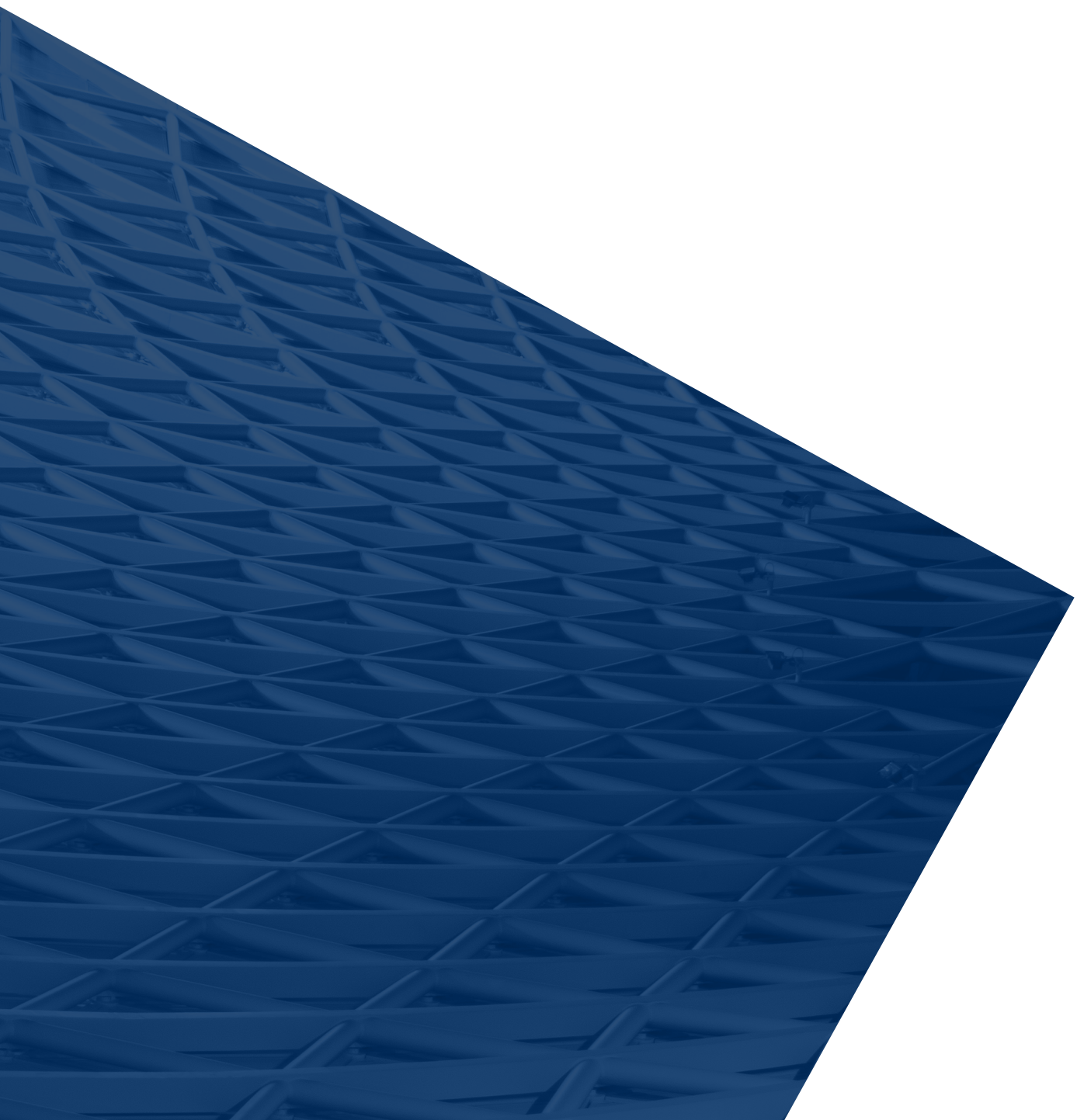

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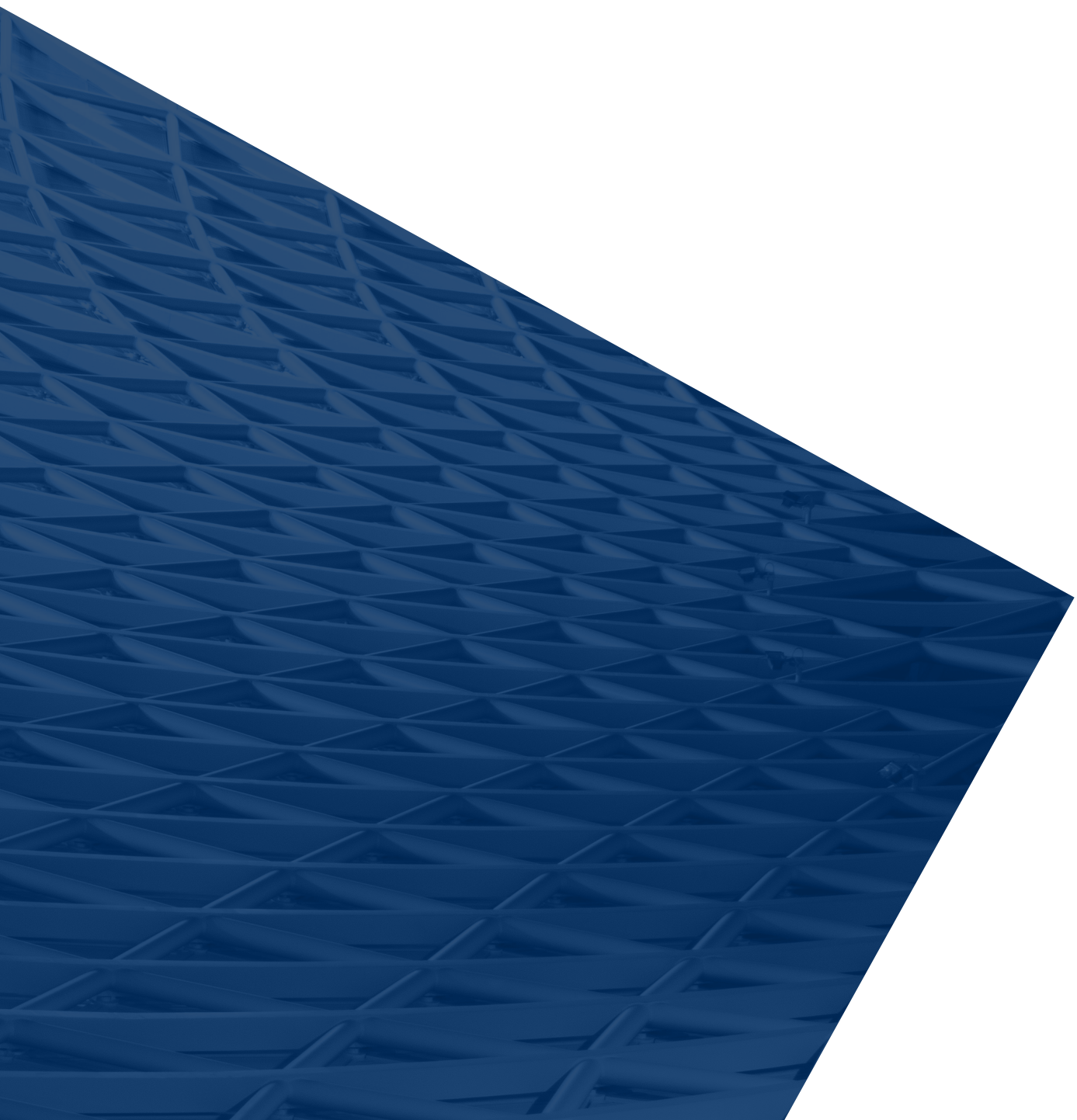

TAB A: QUALIFICATIONS & EXPERIENCE

QUALIFICATIONS

This section highlights our firm's experience, providing a detailed overview of the qualifications of our personnel, emphasizing their skills, and certifications.

Additionally, it showcases completed and ongoing, relevant experience through key projects that demonstrate our expertise and commitment to excellence.

"The APTIM Team provided high quality professional services for this project. Dr. Danchuk and her team are very well qualified, organized and thorough in their resilience-focused work. I highly recommend APTIM for their expertise not only in the field, but in their understanding of the local conditions as well."

— Sarah Marrs, Jacobs
Project: Miami-Dade Resilience Hubs Energy Resiliency Hub and Multi-Hazard Analysis

Aptim Environmental & Infrastructure, LLC (APTIM) offers the County the recent and relevant experience of a firm that has **successfully managed 35 grant-funded programs valued at over $30B** and was ranked by Engineering News-Record (ENR) as a top 7 environmental management firm.

As a national environmental and engineering consulting firm, **APTIM is a recognized leader in environment, resilience, and sustainability services.** We are committed to building a sustainable future for communities and the natural world, accelerating the transition to a clean and efficient energy economy and creating a more inclusive and equitable environment that celebrates the diversity of our communities.

Our local offices in Florida have established a consortium of excellence to support delivery of the most useful resilience and recovery plans in compliance with the Resilient Florida grant program and Community Development Block Grant program guidance.

Depth of Experience in Hazard Mitigation

APTIM's extensive experience includes managing projects that range from multi-million-dollar emergency preparedness plans to large-scale hazard mitigation initiatives. We have worked with numerous cities, states, and counties to address complex hazards such as hurricanes, coastal erosion, severe weather, and other climate-related threats. Our deep knowledge of FEMA guidelines enables us to seamlessly guide communities through every step of the risk assessment process, from threat identification to capability gap analysis and action planning. Our team has successfully managed a wealth of projects across similar domains, offering a wealth of experience that will directly benefit the County.

Focused Expertise with Threat and Hazard Identification and Risk Assessment (THIRA)

APTIM works to strengthen communities, so they are prepared to resist climate change, bounce back after crisis, and rapidly recover with minimal assistance. We have planned for and implemented programs that mitigate impacts to critical assets, manage economic stressors and protect people. We understand the process of building resilience from assessment to implementation to iterative performance improvements and leveraging grant funding to achieve greater outcomes.

APTIM brings decades of experience in delivering comprehensive threat and hazard identification, risk assessment, and resilience planning solutions to communities across the nation. Our firm has successfully supported numerous municipalities in preparing for and mitigating risks from natural, technological, and human-caused hazards, leveraging industry-leading expertise and an in-depth understanding of FEMA's THIRA and Stakeholder Preparedness Review (SPR) methodology. **With a proven track record of nearly 40 years in the disaster preparedness and resilience space,** APTIM is uniquely positioned to support the County in developing a robust and actionable THIRA/SPR plan.

The APTIM THIRA Team

The APTIM Team has a comprehensive understanding of hazard assessments and resilience planning best practices, including the criteria of regional and national ranking systems, relevant policy, resilience plans and research, and collaborative opportunities.

Our team consists of a variety of climate experts who specialize in local hazard modeling, assessments, and adaptation. Experts have experience modeling local flood conditions and employing rainfall predictions and change factors established by the Florida Department of Transportation and Southwest Florida Water Management District (SWFWMD) into scenario planning.

APTIM's resilience team primary focus is analyzing the impacts of flood, wind, heat and other hazards across the states for counties, cities and military installations. Our work includes hazard exposure analysis, detailed sector specific infrastructure sensitivity assessments, hazard risk modeling and local mitigation strategy planning and project evaluations. APTIM is uniquely qualified to analyze threats to energy infrastructure, housing stock and coastal communities because of our depth of experience in building and monitoring performance of flood control systems, conducting damage assessments for utilities and housing authorities and managing coastal protection programs.

As previously mentioned, APTIM has recently finalized hazard assessments in accordance with state guidelines across more than twelve coastal and inland counties. Adjacent to Charlotte County, APTIM has supported assessments in Lee and Sarasota Counties with similar threat and hazard profiles. In addition, APTIM has created assessments for areas **(Figure A-1)** within: Miami-Dade, Broward, Manatee, Monroe, Escambia, Santa Rosa, Palm Beach, Okaloosa, Walton, Bay, and Brevard, both at municipal and county levels.

Figure A-1. APTIM's Municipal and County-Level Vulnerability Assessments

APTIM employs a methodology for assessments, ensuring normalized and unbiased results. **Our process is known as AVA (Automate, Verify, and Activate).**

Data collection, mapping, analysis, ground-truthing and impact quantification have been refined and automated. Results of the automation process go through a verification process involving QA/QC, a dive into patterns, and a ground-truthing element where results are contextualized based on stakeholder and public experience.

Findings are organized and reported in a way that activates municipality discussion and implementation, ensuring all results are actionable.

The network of relationships available to support this project extends from grassroots social organizations to in-house staff at the state and federal agencies, water management districts, research and policy development partners at the United States Army Corps of Engineers (USACE) and the Florida Department of Transportation (FDOT).

National Best Practice & Applications

For decades, APTIM has been working in the region to protect the coast against catastrophic flooding. APTIM has collected all the best practices from the industry to develop this guidance and our staff are now leading the field in knowledge base in this area. The APTIM Team has also created multiple national assessment tools to understand risk with data available for the County.

The Atlas of Disasters (Figure A-2) was a first of its kind analysis of federal disaster funding spent, energy and infrastructure risk, and social vulnerabilities that may increase the return on investment for energy and flood infrastructure adaptation. APTIM has developed tools to assist affordable housing developments understand and prepare for risk. Our team has also designed and managed construction for flood mitigation projects in the region all adding to the resilience of the County.

Figure A-2. Atlas of Disaster

The **Enterprise Portfolio Protects Tool** helps owners, operators and developers of affordable housing understand which properties are at highest risk from flooding, fire, earthquakes and other natural hazards. This tool offers users the ability to identify highest risk properties and offers recommendations and resources to help minimize potential harm to your property or properties and keep residents' homes safe.

APTIM partnered with Enterprise Community Partners to develop a comprehensive hazard risk scoring methodology that fueled the tool's outputs.

APTIM developed the **Coastal Resilience Index (CRI)** in conjunction with the USACE and American Shore and Beach Preservation Association (ASBPA) to quantify storm damage reduction benefits due to beach restoration projects in the context of resilience. The CRI considers metrics of the beach and dune system and disturbance factors such as storm surge and waves.

PROPOSED PERSONNEL

With the vision and experience to lead this project for the County, **Samantha Danchuk, PhD, PE**, will serve as Project Manager and will oversee and spearhead all activities. She is one of the foremost technical and policy experts on resiliency in Florida. Dr. Danchuk has 19 years of program/project management and resilient engineering experience, including seven years as Broward County's Assistant Chief Resilience Officer and Capital Program Administrator and 12 years as a coastal resilience engineer with projects in nine states. **She has experience in risk and vulnerability assessments, coastal hazard modeling, strategic flood and energy resilience policy, and futureproofed infrastructure engineering** serving to support environmental sustainability and redevelopment of vulnerable regions. She was the technical advisor for the Southeast Florida Regional Climate Change Compact and is a **NIMS and TEEX trained THIRA and critical infrastructure risk specialist.**

Dr. Danchuk led the development of two regional sea level rise projections, multiple climate adaptation plans, heat and flood risk assessments, execution of two federal shore protection projects and implementation of national award-winning future conditions policy for redeveloping with sea level and groundwater rise. She is also a long-term consultant and former resident of the area with firsthand observations during major floods and changes in shorelines and development.

The APTIM Team's Key areas of expertise include:

- **Disaster Recovery and Preparedness Planning:** APTIM has managed hazard mitigation projects and emergency preparedness plans for local governments across Florida and nationwide. We have developed comprehensive THIRA/SPR plans for various jurisdictions, helping them to not only meet FEMA requirements but to significantly enhance their resilience to a wide array of threats.
- **Stakeholder Engagement and Public Outreach:** APTIM understands the importance of collaboration and inclusivity in the planning process. Our team has facilitated hundreds of stakeholder meetings and community workshops, ensuring that public input is effectively incorporated into the planning and decision-making process. This engagement strategy will be central to our approach in the County, ensuring all community voices are heard.
- **Proven Track Record in Hazard Mitigation:** With experience in managing multi-hazard assessments that include threats like hurricanes, wildfires, and public health emergencies, APTIM will apply this expertise to the County to ensure a comprehensive analysis of all relevant threats and hazards.
- **Integration of Innovative Tools and Technologies:** APTIM employs advanced modeling, data analysis, and geographic information systems (GIS) to provide real-time insights into potential risks and vulnerabilities. Our team is skilled at leveraging these tools to optimize decision-making and resource allocation, ensuring the THIRA/SPR process is data-driven and results-oriented.

With over 30 years of experience, APTIM has developed a robust operational framework for executing projects of this scale, ensuring that we meet deadlines, budget requirements, and regulatory compliance. Our multi-disciplinary team of experts, including emergency

management professionals, engineers, and resilience planners, will bring the County the tailored solutions needed to protect its residents, infrastructure, and assets. We are committed to supporting the County in building long-term resilience and strengthening its capacity to respond to future threats and hazards.

Below is an overview of our proposed team and their respective roles.

Cigdem Ozkan, PhD, PE, WEDG | THIRA Analyst

- ✓ 10 years of experience investigating innovative solutions to resiliency challenges
- ✓ Experience in collecting, analyzing, and interpreting data, estimating risks, and conceptualizing mitigation strategies
- ✓ Experience in stormwater modeling, flood and erosion control, and coastal modeling
- ✓ Experience with community outreach and engagement strategies

Hithaishi Hewageegana, PhD | THIRA Analyst

- ✓ Senior numerical modeler focused on hydrodynamics and morphodynamics in nearshore environments
- ✓ Experience with various flooding and coastal modeling projects from sediment transport to water quality collecting, from idealized conditions to multiyear hindcasts

Heather Vollmer, GISP | THIRA Analyst

- ✓ 25 years of GIS experience including maintenance, management, creation, quality control, spatial analysis of sediment resources, remote sensing, ground truthing and GPS field experience
- ✓ Creation of a geodatabase of sediment resources for the USACE Inventory of Regional Sediment Management

Doris Otero, PhD, CFM | Community Planning & Outreach

- ✓ Certified floodplain manager and experienced groundwater rise and saltwater intrusion modeler dedicated to assisting local governments plan shoreline and drainage projects to prevent coastal and inland flooding
- ✓ 12 years of experience managing diverse teams in coastal and beach nourishment projects throughout Florida
- ✓ Experience with community outreach and engagement strategies

Ayana Albertini-Fleurant | Community Planning & Outreach

- ✓ Experience with community engagement by intertwining local culture and environmentalism
- ✓ Experience with climate adaptation plans and urban planning

Terry Pruitt | HAZ MAT Specialist

- ✓ Seasoned emergency management leader and first responder with diverse experience in emergency and disaster preparedness, mitigation, response, and recovery

- ✓ Maintains current knowledge of emergency preparedness and response industry concepts and frameworks, including NIMS, ICS, SOC, EOC, FNSS, Web EOC, HAM, COOP, and VOAD
- ✓ Ensures strict operational and training compliance with OSHA, EHS, and NFPA guidelines, standards, and regulations

Amy Courville | Project SME - Preparedness

- ✓ 22 years of experience preparing communities to respond and recover from all hazards
- ✓ Over a decade of work in disaster management program development, implementation and execution in the United States Gulf coast and Northeast as well as internationally
- ✓ Experience helping communities maximize reimbursement funding and navigate complex federal requirements

Weiyuan Kelly Liang | Project SME - Economist

- ✓ Experience in socioeconomic analyses and resiliency assessments
- ✓ Experience in environmental costs and benefits analysis for resilience, mitigation, and infrastructure projects
- ✓ Experience enhancing risk modeling and insurance research through the application of AI-integrated flood maps

Our proposed team is fully available and committed to this project from start to finish. The APTIM Team understands the importance of this project to the County and is ready to dedicate the necessary time and resources to ensure its successful completion.

Our Organization Chart **(Figure A-3)** presents our proposed personnel. This team possesses diverse skills, including knowledge of and experience with local climate modeling, geographic information systems (GIS), risk assessment methodologies, local environmental policy insights, and public engagement. **Collectively, the proposed APTIM Team has advanced 16 vulnerability assessments and 17 resilience plans.** Full resumes of each team member follow the organization chart.

ORGANIZATION CHART

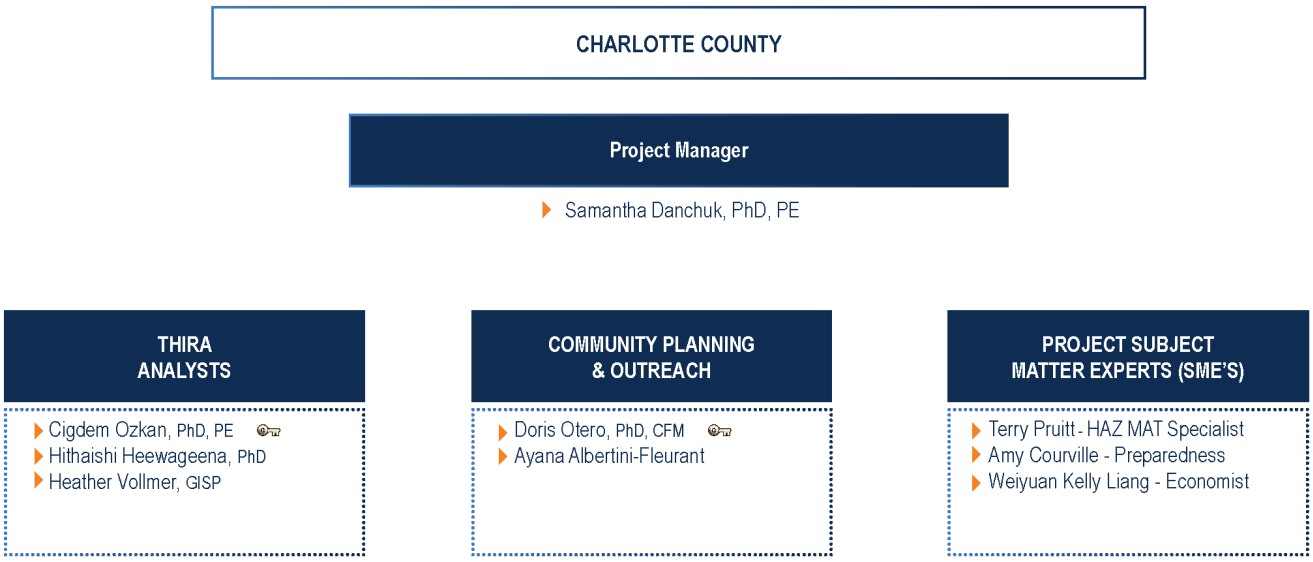

Figure A-3 Organization Chart

19 YEARS
EXPERIENCE

Education

- PhD Civil Engineering, Louisiana State University
- MS Environmental Engineering, University of California, Berkeley
- BS Environmental and Civil Engineering, Florida State University

Registrations/Certifications

- Professional Engineer, Civil, Florida
- LEED-Green Associate

Highlights

- Project Management
- Vulnerability/Risk Assessment
- Community Outreach
- Former Broward County Asst Chief Resilience Officer
- Resilience Capital Program Administrator
- Technical Advisor, SLR Projection Development and 12 RCAP implementation workshops

SAMANTHA DANCHUK, PHD, PE,

Project Manager | APTIM

Professional Summary

Ms. Samantha Danchuk, PhD, PE, is the Program Manager for APTIM's Florida Resiliency Program. She has experience in vulnerability and risk assessments, coastal hazard modeling, strategic flood/energy resilience policy, and futureproofed infrastructure engineering serving to support environmental sustainability and redevelopment of vulnerable regions. She also has a strong reputation as a trusted source amongst regional and national climate adaptation networks and credited as the technical lead for nationally recognized policy and project case studies.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Climate and Coastal Resilience Lead | June 2021 - Present

Project Manager; Captiva Island Flood Risk Flood Risk and Hazard Analysis

Responsible for coastal hazard vulnerability assessment, GIS risk mapping, resilient capital improvement plan and community adaptation strategy. Supported presentations to officials and special committee on sea level rise. Developed materials for public education on risk and coastal processes.

Project Manager; Longboat Key Sea Level Rise Flood Analysis

Resilience Engineer responsible for coastal hazard vulnerability assessment, risk mapping, resilient capital improvement plan and community adaptation strategy.

Project Manager; Albany Resilience Plan; Albany, GA

Led the development of a comprehensive Resiliency Plan for the City of Albany, GA. Managed a city-wide multi-hazard risk assessment, identifying key vulnerabilities to flooding, hurricanes, tornadoes, and power outages. Interview with over ten agencies to assess resilience gaps and emergency response procedures. Assisted in development of mitigation strategies and a Resilience Toolkit addressing infrastructure, utilities, and building codes to enhance the city's preparedness and long-term sustainability. Performed risk assessment, including a multi-hazard analysis, identification of threats, gap analysis, and capability assessments.

Project Manager; Virginia Department of Emergency Management Hazard Mitigation Program

Provided preliminary design services to locate and size the new culverts including a topographic survey, a site-scale stormwater model analysis, stormwater engineering, agency coordination for data collection and a field visit.

Project Manager; South Florida Military Installation Multi-Hazard Resilience Review (MIRR) and Data Collection

Environmental, socioeconomic, and future conditions vulnerability assessment of the ability of the military to carry out its missions on Homestead Air Force Reserve Base, SOUTHCOM, Naval Surface Warfare Center and Naval Air Station Key West that could be mitigated through community investments and solutions. Interviewed focus groups of data owners including utilities, local governments, and infrastructure owners to identify vulnerabilities.

Project Manager; Northwest Florida Military Installation Multi-Hazard Resilience Review (MIRR) and Data Collection

Environmental, socioeconomic, and future conditions vulnerability assessment of the ability of the military to carry out its missions on Eglin Air Force Base, Hurlburt Field, Naval Support Activity Panama City, Naval Air Station Pensacola, Tyndall Air Force Base, Naval Air Station Whiting Field, and major tenant units. Included data collection, modeling impacts of potential threats, resilience assessment, asset prioritization, and base and community engagement.

Project Manager; Resilient Florida Adaptation Planning Guidebook and Performance Metrics, Florida

State guidebook on adaptation planning and development of performance metrics and technical standards for projects funded by state resilience grants. Included engaging stakeholders statewide to incorporate feedback on best practices, legislative compliance review and guidebook development.

Project Manager; Central Florida Military Installation Resilience Review (MIRR)

Environmental, socioeconomic, and future conditions vulnerability assessment of the ability of the military to carry out its missions at Patrick Space Force Base, Cape Canaveral Space Force Station, Naval Support Activity Orlando, and related support facilities.

Project Manager; AARFRC Atlantic Council–Miami Dade County Resiliency Hub and Flood Hazard Analysis

Countywide risk assessment of electrical infrastructure and social vulnerabilities to support siting of resilience hub prototypes. Developed new methodology for weighting energy burden, local system reliability and infrastructure risk by census tract. Developed criteria and questions for stakeholder outreach and interviewed residents.

Project Manager; City of Delray Beach, Flood Risk and Hazard Analysis

Resilient Florida funded adaptation plan to address flooding across the city, both inland and along the intracoastal. Project included interviews to assess adaptive capacity, public outreach and staff engagement to inform adaptation strategies and plan development.

Project Manager; Escambia County Flood Hazard Analysis

APTIM, in collaboration with Jacobs, is performing exposure and sensitivity analysis to assess vulnerabilities for critical assets and resources. Project was Resilient Florida grant funded and in compliance with guidance.

10 YEARS
EXPERIENCE

Education
- PhD Civil and Environmental Engineering, University of Central Florida
- MS Civil and Environmental Engineering, University of Central Florida
- BS Civil Engineering, Middle East Technical University, Ankara, Turkey

Registrations/Certifications
- Professional Engineer, Civil, Florida
- Waterfront Edge Design Guidelines (WEDG) Associates

Training
- ICPR4, Online, 2022

Highlights
- Vulnerability Assessment
- Risk Assessment
- Data Collection / Analysis
- Technical Writing
- FEMA LOMR/CLOMR

CIGDEM OZKAN, PHD, PE

THIRA Analyst | APTIM

Professional Summary

Ms. Cigdem Ozkan, PhD, PE, has ten years of experience investigating innovative solutions to resiliency problems and energy demands through an environmentalist approach. Ms. Ozkan integrates nature-based solutions with engineered infrastructures to resolve complex environmental challenges.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Resilience Project Manager | January 2023 - Present

Climate and Coastal Resilience Engineer; AARFRC Atlantic Council–Miami Dade County Resiliency Hub and Flood Hazard Analysis

Evaluated the vulnerability of the energy infrastructure system to potential hazards and assessed the socioeconomic vulnerabilities related to energy. Conducted data collection and exposure analysis, led Geographical Information System (GIS) efforts, and contributed to building a scoring methodology to determine top priority areas to inform site-selection.

Resilience Engineer; Captiva Island Flood Risk and Hazard Analysis

Contributed to final submittal phase of the Vulnerability Assessment report via providing reviews and assisting with updates. APTIM updated the sea level rise vulnerability analysis necessary for state funding eligibility and additional immediate preparatory actions to support applications for resilience and coastal infrastructure funding.

Resilience Engineer; Longboat Key Sea Level Rise Flood Hazard Analysis

Played a key role in identifying hazard scenarios and running the vulnerability analysis and quality controlling the result. Developed an adaptation plan to address sea level rise and recurring flooding for the Town of Longboat Key. The Plan included capability assessments and adaptation strategies such as engineering and construction of public works, policy, and Town ordinance changes.

Resilience Engineer; South Florida Military Installation Multi-Hazard Resilience Review (MIRR) and Data Collection

Contributed to final submittal phase via mission critical data set refinement, data analysis & visualization. Performed QA/QC. APTIM identified the threats, hazards, and risks of concern as

it relates to the ability of the military to carry out its missions on the base that could be mitigated through investments and solutions.

Resilience Engineer; AARFRC Atlantic Council–Miami Dade County Resiliency Hub and Multi-Hazard Analysis

Evaluated the vulnerability of the energy infrastructure system to potential hazards and assessed the socioeconomic vulnerabilities related to energy. Conducted data collection and exposure analysis, led Geographical Information System (GIS) efforts, and contributed to building a scoring methodology to determine top priority areas to inform site-selection. The APTIM Team recommended actions or investments to mitigate risks of highest concerns and enhance military resiliency resilience.

Resilience Engineer; Northwest Florida Military Installation Resilience Review

Identified the risks, hazards, and vulnerabilities of concern on the energy infrastructure as it relates to the ability of the military to carry out its missions on the base that could be mitigated through investments and solutions.

Resilience Engineer; Albany Resilience Plan; Albany, GA

Helped lead the development of a comprehensive Resiliency Plan for the City of Albany, GA. Managed a city-wide multi-hazard risk assessment, identifying key vulnerabilities to flooding, hurricanes, tornadoes, and power outages. Interview with over ten agencies to assess resilience gaps and emergency response procedures. Assisted in development of mitigation strategies and a Resilience Toolkit addressing infrastructure, utilities, and building codes to enhance the city's preparedness and long-term sustainability. Performed risk assessment, including a multi-hazard analysis, identification of threats, gap analysis, and capability assessments.

Resilience Project Manager; FDEP Resilient Florida Adaptation Planning Guidebook

Played a key role in updating the Resilient Florida Adaptation Planning Guidebook with best practices, recent methodologies and research, and public outreach meeting outcomes. Developed new content on compound flooding, adaptive capacity, and several other chapters of the State's updated Adaptation Planning guidance.

Resilience Engineer; Terrebonne Parish Flood Elevation Review – Letter of Map Revision

Evaluated the quality of the input data and results of the Flood Insurance Study in response to the new effective FEMA Flood Insurance Rate Maps and base flood elevations for Terrebonne Parish, Louisiana. Identified areas within the Parish where the maps do not reflect likely flood zones and develop a strategy for pursuing amendments and revisions to the published maps.

Resilience Engineer; Virginia Department of Emergency Management Hazard Mitigation Program

Provided preliminary design services to locate and size the new culverts including a topographic survey, a site-scale stormwater model analysis, stormwater engineering, agency coordination for data collection and a field visit.

25 YEARS
EXPERIENCE

Education
- MS Environmental Studies, Florida International University
- BS Environmental Studies, Stockton University

Registrations/Certifications
- Certificate of Geographic Information Systems GIS Professional (GISP)

Highlights
- Ocean/Coastal GIS in Florida
- Story Mapping

HEATHER VOLLMER, GISP

THIRA Analyst | APTIM

Professional Summary

Ms. Heather Vollmer is a GIS professional with 25 years of experience in GIS data mining, engineering and maintenance, remote sensing, spatial analysis, supporting documentation and web app development. She is heavily involved in innovating the application of geospatial technologies to further advance the understanding of coastal management. Since joining APTIM in 2006, Ms. Vollmer has been charged with providing geospatial technological support to streamline and improve client projects and deliverables.

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Relevant Experience

Aptim Environmental & Infrastructure, LLC, Geospatial Systems Senior Specialist | October 2006 - Present

GIS Specialist; Town of Longboat Key Sea Level Rise Flood Hazard Analysis

Ms. Vollmer was responsible for data mining, data formatting. exposure analysis of assets for inundation scenarios, sensitivity analysis and QA/QC, supporting report documentation (figures, tables, technical write-ups).

GIS Specialist; Captiva Island Flood Risk and Hazard Analysis

Ms. Vollmer was responsible for data mining, data formatting. exposure analysis of assets for inundation scenarios, sensitivity analysis and QA/QC, supporting report documentation (figures, tables, technical write-ups).

GIS Specialist; South Florida Military Installation Multi-Hazard Resilience Review

Ms. Vollmer collected data for four local military installations across three counties via continuous outreach and research. Analyzed results and produced summary graphics and trends for the exposure, sensitivity, adaptive capacity, and risk analyses.

GIS Specialist; Atlas of Disaster

Assisted on analyzing critical infrastructure for hazard vulnerabilities and report documentation and maps. Our new report “Atlas of Disaster” – at over 650 pages with over 300 maps – provides a blueprint for equitable climate adaptation planning, offers new funding sources to invest in resilient infrastructure, and provides a framework for better decision-making for government, the private sector, philanthropy, and finance.

10 YEARS
EXPERIENCE

Education

- PhD, Coastal Engineering University of Florida
- MS, Coastal Engineering Delft University of Technology (TU Delft), The Netherlands
- BS Civil Engineering University of Moratuwa, Sri Lanka

Highlights

- Expertise in hydrodynamic, morphodynamic and water quality modeling and analysis
- Expert proficiency in numerical modeling with XBeach, ROMS
- Expert proficiency in programming with Python and ArcGIS
- Proficiency in numerical modeling with Delft3D and SWASH

HITHAISHI HEWAGEEGANA

THIRA Analyst | APTIM

Professional Summary

Mr. Hithaishi Hewageegana, PhD is a senior numerical modeler focused on hydrodynamics and morphodynamics in nearshore environments. He has gained experience in applying advanced numerical models to solve nearshore problems. He is also a competent programmer in MATLAB, FORTRAN, and Python and skilled in ArcGIS and programming using Arcpy modules. He has worked in various coastal modeling projects from sediment transport to water quality, from idealized conditions to multiyear hindcasts, and from 1D models to hundreds of square km coastal and estuarine systems.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Senior Numerical Modeler | March 2023 - Present

Numerical Modeler; Longboat Key Sea Level Rise Flood Hazard Analysis
Performing data review and flood modeling, summarizing GIS data. Wrote and run the scripts which extract data from the geodatabases to create the summarizations.

Numerical Modeler; Indian River County, Florida Modeling Memorandum Sebastian Inlet TAC
Performed quality control review of the IRC numerical modeling and implemented a series of modeling improvements, assisted the project manager in finalizing the deliverables to the client.

Numerical Modeler; Escambia County Flood Hazard Analysis
Performing data review and flood modeling, summarizing GIS data. Wrote and run the scripts which extract data from the geodatabases to create the summarizations.

Numerical Modeler; City of West Miami Flood Hazard Analysis
Performing data review and flood modeling, summarizing GIS data. Wrote and run the scripts which extract data from the geodatabases to create the summarizations.

Numerical Modeler; Sunset Beach Groin Evaluation Project (ongoing), Pinellas County
Detailed modeling of coastal hydrodynamics and morphodynamic to understand the processes and provide optimal alternatives to improve beach performance at Sunset beach.

Numerical Modeler; Terrebonne Parish Flood Insurance Study Preparation of LOMR (Letter of Map revision) (on going)
Wave propagation modeling for the entire Terrebonne parish and preparation of flood maps for the Terrebonne parish, LA.

6 YEARS
EXPERIENCE

Education

- MPS, Urban Sustainability and Resilience, University of Miami
- BA, Political Science and Environmental Studies, Howard University

Highlights

- Community Outreach
- ArcGIS Products
- Climate Change Adaptation
- Urban Planning

AYANA ALBERTINI-FLEURANT

Community Planning & Outreach | APTIM

Professional Summary

Ms. Albertini-Fleurant is a pioneering 'movement scientist' redefining traditional environmental narratives through the lens of social justice and cultural power. As the first graduate of Howard University's Environmental Studies program, she's deeply committed to making environmental justice education accessible to all.

Ms. Albertini-Fleurant's innovative approach led to the development of 'environmental liberation,' a concept that unifies Black liberation, climate justice, and environmental justice. Her commitment to this inclusive environmentalism is realized through Sustain the Culture, a culture lab and community hub she founded. Here, she amplifies Black environmental concerns and fosters community engagement by intertwining Black culture and environmentalism.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Resilience Planner | May 2024 - Present

Resilience Planner, City of West Miami Vulnerability Assessment, West Miami, FL

Supported data collection, flood hazard mapping, and risk analysis of critical community infrastructure. Assisted in drafting the final report and preparing materials for community outreach.

Resilience Planner, Captiva Bayside Adaptation Plan, Captiva Island, FL

Supported the development of adaptation strategies by assisting with data acquisition, hazard analysis, and public outreach materials.

Resilience Planner, City of Albany, Vulnerability Study, Albany, GA

Contributed to the development of housing resilience strategies for the City of Albany, researching climate risks and adaptation needs. Drafted key recommendations to enhance housing infrastructure resilience.

Resilience Planner, FDEP Adaptation Guidebook

Supported the outreach strategy for the FDEP Adaptation Guidebook, helping develop materials and engagement plans for community stakeholders. Conducted research to inform best practices for public involvement in resilience planning. Compiled and integrated the latest tools, software, and methodologies in resilience and adaptation into the guidebook, enhancing its relevance.

12 YEARS
EXPERIENCE

Education

- PhD, Environmental Engineering, Texas A&M University-Kingsville
- MS, Environmental Engineering, Texas A&M University-Kingsville
- BS, Environmental Engineering, Universidad Pontificia Bolivariana, Bucaramanga, Colombia

Registrations/Certifications

- Certificate Floodplain Manager

Highlights

- Coastal and Environmental
- Beach Nourishment
- Coastal Structures
- Numerical Modeling of Coastal Processes
- Inlet Management

DORIS OTERO, PHD, CFM

Community Planning & Outreach | APTIM

Professional Summary

Mrs. Doris Otero, PhD, CFM is a Project Manager providing a variety of management and engineering services. She has managed diverse teams in coastal and beach nourishment projects throughout Florida. Her expertise includes supporting projects with FEMA PA submittals. Her recent projects have included engineering analysis, development of construction plans and specifications, project administration, construction bidding support and administration, post-construction monitoring calculations, construction observations and report preparation. Additionally, she has also provided assistance in vulnerability studies, adaptation strategies, and resiliency plans, contributing to the development of solutions aimed at mitigating environmental risks and enhancing community resilience in coastal and urban areas.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Project Manager | December 2013 - Present

Resilience Planner, City of West Miami Vulnerability Assessment, West Miami, FL

Supported data collection, flood hazard mapping, and risk analysis of critical community infrastructure. Assisted in drafting the final report and preparing materials for community outreach.

Coastal Engineer; City of Delray Beach Flood Risk and Hazard Analysis, Delray Beach, FL

Assisted in assessment of City's vulnerability to future seasonal flooding and identified potential options to protect infrastructure and citizen's property. Reviewed available water level data, analyzed return periods of extreme events, and considered sea level rise guidance to determine water level projections for the City's requested 30-year and 75-year plan.

Coastal Engineer and Modeler; Texas Coastal Resiliency Plan for the Protection of Critical Infrastructure along the Texas Coast

Assisted in the coastal resiliency study for the State of Texas. Compiled information from 22 different coastal Texas counties. Organized information into a database to create online decision supporting tool.

Coastal Engineer; Captiva Island Post-Hurricane Ian Assessment and Reporting, FL

Developed and prepared the storm impact assessment engineering report. The report summarized and discussed post-storm survey data and impacts from Hurricane Ian on the

Captiva Island nourishment project. The data obtained from the beach profile topographic and hydrographic surveys was plotted and compared to the latest survey collected in November 2021.

Shoreline and volume changes relative to the November 2021 survey were computed. The report included graphical representations of volumetric comparisons and shoreline position changes. The background erosion since the pre-storm condition was also estimated using existing survey data and separated from storm-related impacts. A cost estimate to repair the damages using the measured changes was provided. The permitted sand sources were also listed in the report.

Project Manager; Coquina Beach Restoration; Manatee County, FL

Managed the project team that provided engineering services in support of Manatee County's coastal program. She was involved in the development of the bid documents, plans and specifications and provided coordination of the pre-construction conference with the County's Contractor for associated sub-contractors, FDEP and the Florida Fish and Wildlife Commission (FWC) staff, and others.

During the pre-construction phase, prepared documents and attended conference calls with FEMA to aid obtainment of FEMA funding. Coordinated funding document reviews with governmental, other agencies, to resolve technical questions related to the beach nourishment and dredging of Longboat Pass. Assisted with construction observations and project coordination and monitored daily progress of contractor operations. Provided visual assessment of the material placed in accordance with the FDEP approved quality assurance/quality control (QA/QC) plan for sediment quality. Reviewed contractors' daily reports from mobilization through demobilization from the project site, pay requests, contractor's change order requests and water quality monitoring reports.

Assisted in the weekly summary submittals of all water quality monitoring data to the FDEP and the appropriate District Office of the Department and assisted in the development of the post-construction engineering report. She assisted the County in meeting its requirement of FEMA to document operation and maintenance services for the beach nourishment project

Subject Matter Experts. The scope of services and project necessitate discipline-specific expertise in various disaster recovery-related fields. Our vast network of in-house and team-provided SMEs will contribute specialized expertise in **recovery, HAZ MAT, preparedness, and economics**, and will serve as resources for innovation and problem-solving. A summary of the SMEs anticipated on this project are included below.

Recovery	Offering expertise in key lifeline sectors, such as power, water, and housing, APTIM has supported disaster recovery operations from every type of declared event, including hurricanes, tornadoes, flooding, fires, earthquakes, and pandemics.
HAZ MAT	Assess the sites or processes to identify hazardous materials, such as chemicals, biological agents or radiological substances, that could pose a risk to human health, safety, or the environment.
Preparedness	The first step in emergency preparedness is to assess hazards and risks. In 2021 alone, the U.S. experienced 20 separate billion-dollar climate disasters with over 688 fatalities. It is crucial to determine potential hazards, how likely they are to occur, and their consequences.
Economics	Analyzing the economic impacts of various risks and assisting to quantify and manage risks from a financial perspective, including cost-benefit analysis, economic impact assessment, and risk quantification, to name a few.

20 YEARS
EXPERIENCE

Education

- MBA, Project Management & Process Improvement, University of Houston
- BS, Healthcare Administration, University of Phoenix

Highlights

- Emergency Management
- Disaster Preparedness
- IS815 ABC's of Temporary Emergency Power, Online, 2022
- IS1000 Public Assistance Program and Eligibility, Online, 2022

TERRY PRUITT

Project SME: HAZ MAT Specialist | APTIM

Professional Summary

Mr. Pruitt has more than 20 years of emergency management experience and knowledge with a diverse background in emergency and disaster preparedness, mitigation, response, and recovery, as well as fire service and emergency medical expertise. Expertly develops and implements safety prevention and emergency service crisis solutions in support of organizational objectives and compliance requirements. In addition, he has provided training to government sectors including the United States Army Corp of Engineers (USACE) and the Federal Emergency Management Agency (FEMA).

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Recovery Project Manager | August 2024 - Present

Paradise Irrigation District – Disaster Recovery and Grants Management

Primary activities include assisting PID with the FEMA Public Assistance recovery process, negotiating with FEMA and Cal OES for maximum eligible benefits under the program to facilitate and expedite the recovery of the water system. Assisting with the development of three HMGP/404 applications aimed at mitigating future fire damage. In addition to maximizing recovery and mitigation grant funds, we are working with PID's engineer partner and their field crews to ensure continued eligibility and funding.

Placer County Water Agency

Providing procurement consultation services for Placer County Water Agency under the Federal Emergency Management Agency (FEMA) and Hazard Mitigation Grant Program (HMGP). Overseeing contractors' procurement and installation of emergency generators.

Florida Department of Management Services – Florida DMS Program Management

Provides program management consulting services statewide including advice, assistance, guidance, and counseling in support of the customer's mission-oriented business functions, such as analyses, studies, and reports supporting proposed developmental, consultative, or implemented efforts in disaster management services.

El Dorado Irrigation District – FEMA Consulting Professional Services

Providing specific/targeted advice and policy interpretation to EID's Administration and Operational officials to enhance EID's plan of action for capturing and demonstrating proper emergency procurement, detailed supporting documentation, and FEMA-eligible work activities.

22 YEARS
EXPERIENCE

Education

- MS, Physiology, Louisiana State University
- BS, Biological Sciences, Louisiana State University
- Undergraduate Studies, Disaster Science Management (Minor)

Highlights

- 14 years at APTIM
- Emergency Management Accreditation Program (EMAP) Trained Business Consultant
- 50+ FEMA trainings including Homeland Security Exercise and Evaluation Program (HSEEP)
- Clients include state, local, federal, international government and private sector agencies
- Louisiana Emergency Preparedness Association (LEPA) Board Member

AMY COURVILLE, PHD, CPM

Project SME: Preparedness | APTIM

Professional Summary

Ms. Amy Courville brings thoughtful leadership and disaster science management acumen to plan, develop, and oversee large-scale disaster projects throughout the U.S. She is intimately familiar with local, state, and federal requirements. Ms. Courville is a problem solver who coordinates with all parties to identify and implement the best solutions to prepare communities to respond and recover from all hazards and liaison with agency representatives.

As one of APTIM's key consultative leaders, Ms. Courville utilizes her deep emergency management knowledge to provide comprehensive and cost-effective solutions to effectively plan, identify risks, organize, and execute to meet mission requirements, on time and in full contract compliance. She also serves as one of APTIM's lead advisors on federally funded emergency management and disaster services projects. Ms. Courville's oversight streamlines access to help communities maximize reimbursement funding and navigate complex federal requirements. Experience includes needs assessments, develop an effective and resourced plan, and execute emergency tasks in an Emergency Operations Center (EOC), Joint Field Office (JFO), Mobile Command Center, Virtual EOC, or other field office. Services include readiness planning, exercise development and execution, response housing and sheltering, emergency operations support, logistics, and grants management.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Emergency Management & Disaster Services (EMDS) Director of Preparedness | December 2009 - Present

Various Emergency Management Projects

Ms. Courville has provided program management oversight during her tenure at APTIM. Provides Senior level consulting and comprehensive and cost-effective emergency management and disaster recovery services focused on streamlining access and utilization of services for public and private-sector clients. Develops all hazard emergency response plans and programs, exercises, training, and debris management plans. Manage federal grant programs and provide strategic risk-based policy advisement. Applies operational experience, international planning, training, and exercise experience and commitment to continued education to provide emergency management response and recovery consultation in all areas of emergency management. Working knowledge of insurance claims, continuity of operations, direct support services to workforce, resilience and mitigation, public health surveillance

systems, pandemic preparedness and response, disaster response logistics and grants management of federally funded disaster response, recovery, and resilience programs.

Florida Disaster Services

Ms. Courville coordinated APTIM's Disaster Response for COVID-19 and Hurricanes Elsa (2021), Sally (2021), Ian (2022), Nicole (2022) and consulted the team on response to Hurricane Idalia (2023). She understands the risks throughout the state and has perspective of response solutions and mitigation needs. She deployed and stationed on-site in the state's Emergency Operations Center (EOC), deployed and managed APTIM's Mobile EOC, and coordinated in-field operations. For Hurricane Ian, the team was on-site at the State EOC prior to landfall to begin planning potential response activities and remained on-site throughout the response including management of barge operations to/from Fort Myers and base camps on Sanibel Island. Additionally, Ms. Courville provided oversight for support services throughout Florida including logistics staging area, base camp services, sanitation services, emergency power, and barging services.

Ms. Courville has provided program management in projects funded by FEMA (Individual Assistance, Public Assistance, Hazard Mitigation Assistance), CDBG-DR, and CDBG-NDR. She combined programs management, process, and procedures with grants management practices and principles. Deliverables included tracking systems for costs and schedules, assignment and oversight of grants management staff, development and submission of required reports, planning, programmatic duties, and general administrative services.

2 YEARS
EXPERIENCE

Education

- MS, Business Analytics, University of Wisconsin Madison
- BS, Mathematics, Southwestern University of Finance and Economics Baruch College 2+2 Exchange Program

Highlights

- Expertise Socioeconomic Analysis
- Climate Vulnerability and
- Resiliency Assessment
- Environmental Projects Costs and Benefits Analysis
- Investment Return Analysis
- Financial Modeling
- Financial Instruments
- Structuring and Valuation
- Market Research
- Financial Planning Analysis
- Financial Statements Analysis
- Operation System Design
- Programming (C++, Python, R, SQL, VBA)
- Machine Learning Modeling
- Data Science

WEIYUAN (KELLY) LIANG

Project SME: Climate Risk Economist | APTIM

Professional Summary

Ms. Liang is a Climate Risk Economist assessing economic impacts on climate change. She is specialized in analyzing and predicting sites' adaptive capacity by integrating diverse perspectives, including economics, policies, hazards, and societal impacts. She is developing advanced methodologies to evaluate the costs and benefits of resilience, mitigation, and infrastructure projects. Her work includes enhancing risk modeling and insurance research through the application of AI-integrated flood maps. She is responsible for researching adaptation financing strategies, such as bonds, mitigation banking, and public-private partnerships (PPP), while actively networking with industry experts.

Relevant Experience

Aptim Environmental & Infrastructure, LLC, Climate Risk Economist | May 2024 - Present

Climate Risk Economist; City of West Miami Economical Adaptive Capacity Assessment

By reviewing and analyzing city-adopted budgets, financial statements, tax reports, zoning reports, demographic reports, and data from the Census Bureau, carried out on a comprehensive economic assessment, focusing on various aspects such as government planning and policy analysis, infrastructure, social and community impacts, and economic evaluation. Through this detailed analysis, she provided valuable insights to inform decision-making processes.

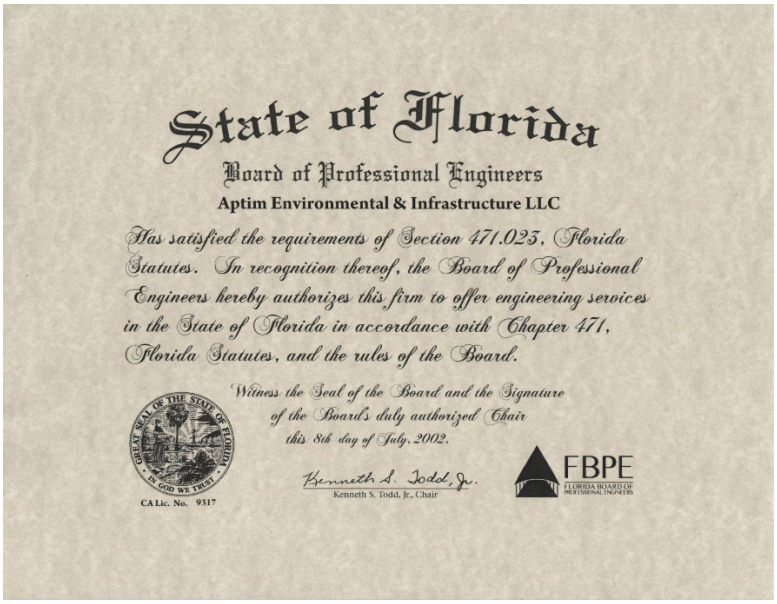
Climate Risk Economist; Captiva Island Costs and Benefits Analysis

Performed costs and benefits analysis grounded in FEMA and NOAA's principles and guidelines. Her analysis evaluated various strategies containing different mitigation actions and explored multiple scenarios. This work provided a comprehensive understanding of the potential impacts and effectiveness of the proposed mitigation strategies.

Climate Risk Economist; Delray Beach, Economical Adaptive Capacity Assessment

Performing reviews on government reports, infrastructure information, and city geographical information. And generate financial analysis and economical comments to summarize the financial health of the city.

LICENSES/CERTIFICATIONS



State of Florida

Board of Professional Engineers

Aptim Environmental & Infrastructure LLC

Has satisfied the requirements of Section 471.023, Florida Statutes. In recognition thereof, the Board of Professional Engineers hereby authorizes this firm to offer engineering services in the State of Florida in accordance with Chapter 471, Florida Statutes, and the rules of the Board.

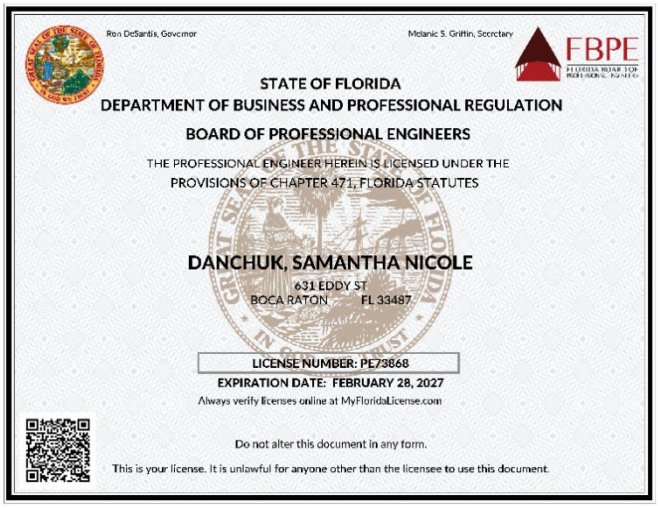
Witness the Seal of the Board and the Signature of the Board's duly authorized Chair this 8th day of July, 2002.

CA Lic. No. 9317

Kenneth S. Todd, Jr.

Kenneth S. Todd, Jr., Chair

FBPE



Ron DeSantis, Governor

Melanie S. Griffin, Secretary

FBPE

STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

DANCHUK, SAMANTHA NICOLE

631 EDDY ST

BOCA RATON FL 33487

LICENSE NUMBER: PE73868

EXPIRATION DATE: FEBRUARY 28, 2027

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Ron DeSantis, Governor

Melanie S. Griffin, Secretary

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STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

OZKAN, CIGDEM

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EXPIRATION DATE: FEBRUARY 28, 2027

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GIS Certification Institute

This is to certify that The Board of Directors of the GIS Certification Institute,
Upon the recommendation of the Executive Director, has conferred upon

Heather Marie Vollmer

the distinction of

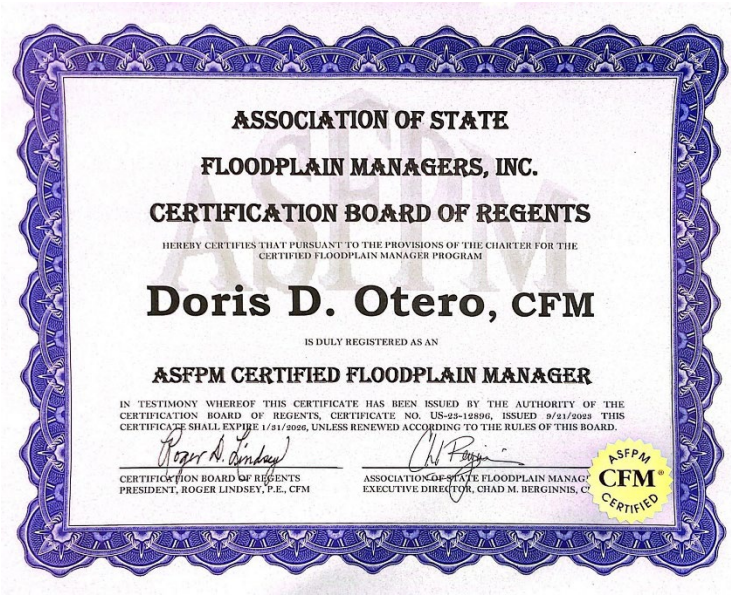
Geographic Information Systems Professional
GISP

Certificate Number 67043

Date of Initial Certification 1/25/2011 Date of Expiration 1/25/2028

Allen Ibaugh, AICP, GISP
GISCI President

Anthony Spicci, GISP
GISCI Executive Director



ASSOCIATION OF STATE
FLOODPLAIN MANAGERS, INC.
CERTIFICATION BOARD OF REGENTS

HEREBY CERTIFIES THAT PURSUANT TO THE PROVISIONS OF THE CHARTER FOR THE CERTIFIED FLOODPLAIN MANAGER PROGRAM

Doris D. Otero, CFM

IS DULY REGISTERED AS AN

ASFPM CERTIFIED FLOODPLAIN MANAGER

IN TESTIMONY WHEREOF THIS CERTIFICATE HAS BEEN ISSUED BY THE AUTHORITY OF THE CERTIFICATION BOARD OF REGENTS, CERTIFICATE NO. US-23-12896, ISSUED 9/21/2023 THIS CERTIFICATE SHALL EXPIRE 1/31/2026, UNLESS RENEWED ACCORDING TO THE RULES OF THIS BOARD.

CERTIFICATION BOARD OF REGENTS
PRESIDENT, ROGER LINDSEY, P.E., CFM

ASSOCIATION OF STATE FLOODPLAIN MANAG
EXECUTIVE DIRECTOR, CHAD M. BERGINNIS, C

ASFPM CFM CERTIFIED

EXPERIENCE

The APTIM Team possess experience in all areas required to analyze and recommend improvements to the County. We have provided descriptions of our most relevant projects on the following pages.

- ✓ Florida Department of Environmental Protection Adaptation Planning Guidebook
- ✓ Okaloosa County Vulnerability Assessment and Adaptation Plan
- ✓ Captiva Sea Level Rise Threat and Hazard Identification and Risk Assessment
- ✓ City of Delray Beach Vulnerability Assessment and Adaptation Plan
- ✓ South Florida Military Installation Multi-Hazard Resilience Review
- ✓ Virginia Department of Emergency Management Hazard Mitigation Program

State Guidance Development

Client
Florida Department of Environmental Protection

Award Amount
$39,945

Company Role
Prime

Current POCs
Ralph Perkins
FDEP
850 245 2460
ralph.perkins@floridadep.gov

RESILIENT FLORIDA PLANNING GRANT TASKS & UPDATES TO THE FLORIDA ADAPTATION PLANNING GUIDEBOOK

Florida | 2024

Project Overview

In 2024, APTIM supported Florida municipalities to reduce physical risks associated with climate change (e.g., hurricanes, intense rainfall, storm surge, compound flooding, and sea level rise). Our coastal resilience experts worked with the FDEP and engaged **300+ stakeholders** to **update the Florida Adaptation Planning Guidebook**. Using the most recent and best available information and advanced research methods, the team **developed a matrix of 30 metrics-driven and resilient adaptation strategies** categorized by relative cost. With every $1 invested in hazard mitigation efforts yielding up to $11 in societal savings aided by **50+ federal mitigation grants**, the tools provided by APTIM in this guidebook have the potential to deliver significant, scalable cost savings.

Project Description

The project involved extensive stakeholder collaboration through virtual workshops and interviews, and iterative feedback processes. By establishing emerging best practices, such as setting short-, medium-, and long-term community adaptation goals to apply for targeted grants, the guidebook aims to serve as a resource for communities pursuing funding and implementing resilient solutions. APTIM developed a **list of tasks and their deliverables allowable for Resilient Florida Grant Program** funding pursuant to s. 380.093(3)(b), F.S. It also equips communities with a broader range of project options for grant applications, along with a clear framework for deliverables to streamline the funding process.

This project received the 2024 Climate Change Business Journal Business Achievement Award.

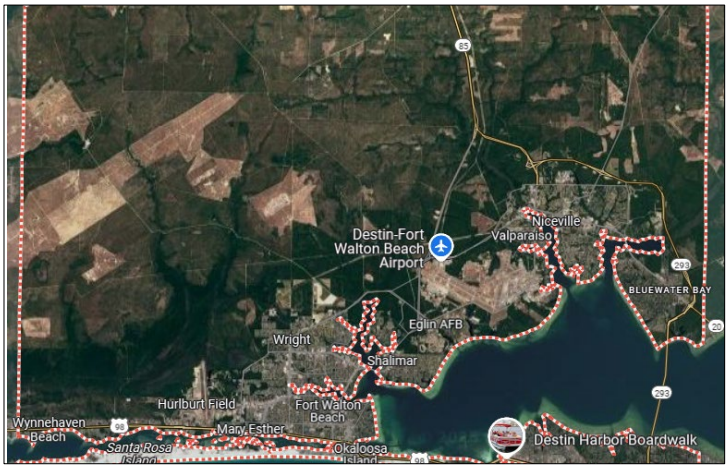
Relevant County Hazards Identified:
Hurricanes, Coastal Flooding, Extreme Wind, Wildfire, Erosion, Future Development

Client
Okaloosa County

Award Amount
$80,000

Company Role
Subcontractor to Jacobs

Current POCs
Tanya Gallagher
Jacobs
850 525 5941
tanya.gallagher@jacobs.com



COUNTY HAZARD ASSESSMENT & ADAPTATION PLAN

Okaloosa County, Florida | May 2024 – Aug 2025 (est.)

Project Overview

Okaloosa County, in the Florida Panhandle, is highly vulnerable to natural hazards such as hurricanes, flooding, and sea-level rise. Funded through the Florida Department of Environmental Protection's Resilient Florida Program, the project aims to create a countywide, including municipal, vulnerability assessment and adaptation plan as part of an initiative to identify and mitigate risks posed by environmental, social, and economic factors that affect the County.

Project Description

APTIM, as a subconsultant to Jacobs, is working to produce a comprehensive vulnerability assessment and an adaptation plan consistent with the Florida Adaptation Planning Guidebook and Okaloosa County's direct needs.

APTIM's role is to collaborate closely with Jacobs, plan and facilitate public meetings, and assist with initial data requests. APTIM will also outline the data compiled and data gaps, create context maps, and provide comprehensive feedback, ensuring the quality and accuracy of the project's outcomes.

APTIM is working with Jacobs to determine the methodological approach for assessment, reviewing the list of assets and hazards, and providing feedback. APTIM also reviews context maps, provides input, attends necessary meetings (via Teams), and coordinates with Jacobs throughout the tasks.

APTIM is also working with Jacobs on the draft adaptation plan report (including assistance with cost analysis, funding, etc.), collaborating to determine adaptation strategies for identified vulnerable assets and focus areas.

Southwest Florida Hazards & Storm Mitigation

Client
Captiva Erosion Prevention District

Award Amount
VA: $66,884
Adaptation Plan: $500,000

Company Role
Prime

Current POCs
John Riegert, Deputy Director
Captiva Erosion Prevention District
11513 Andy Rosse Lane
Captiva, FL 33924
239 472 2472
jriegert@mycepd.com

SEA LEVEL RISE THREAT & HAZARD IDENTIFICATION & RISK ASSESSMENT

Captiva Island | VA: 2022 – Apr 2023/AP: Nov 2023 – Apr 2025

Project Overview

In 2019, APTIM was contracted to conduct an island-wide vulnerability assessment for the Captiva Erosion Prevention District (CEPD) to support resilience and coastal infrastructure funding applications. The objective of this project was to form a deliverable, consistent with state guidance. APTIM was selected again to collaborate with CEPD in developing the next phase of work, an Adaptation Plan aimed at addressing the combined flooding risks from sea level rise, storm surge, rainfall, and combination flooding, as well as exploring strategies to reduce inundation, erosion, and the resulting flood damage.

Project Description

Risk Assessment | Flood and sea level scenarios were visualized and mapped to determine the extent of the island and the on and off island critical infrastructure that would be exposed. The potential impacts associated with each scenario were summarized by asset type including critical infrastructure, critical facilities, and valued resources on Captiva Island. The likelihood of occurrence of specific scenarios and the associated magnitude of impact of the flooding was analyzed island-wide and by asset to assess risk and rank vulnerabilities. The findings of the vulnerability assessment are intended to support subsequent funding pursuits and project conceptualization to increase community and coastal resilience and support the incorporation of future conditions planning into the CEPD's Beach and Shore Preservation Program.

Adaptation Plan | Based on prior vulnerability work and updates to work performed by CEPD, its partners, and public input, APTIM is producing a list of prioritized bayside adaptation areas to inform the way projects should be phased and the order in which they should be implemented if there are project interdependencies. APTIM will propose and assess the feasibility of a suite of strategies including structural (e.g living shorelines, breakwaters, rip rap, etc.) and non-structural/policy-based (e.g. best management practices, proposed ordinance changes to the Lee County Code of Ordinances and Comprehensive Plan, policy changes, implementation methods, etc.) and options that can be implemented for bayside adaptation areas.

HAZARD ASSESSMENT FOR SIMILAR COASTAL ENVIRONMENT

Client
City of Delray Beach

Award Amount
VA: $198,000
AP: $100,000

Company Role
Prime

Current POCs
Juan Moises Cuesta, P.E.
Stormwater Engineer
City of Delray Beach
434 S. Swinton Avenue
Delray Beach, FL 33444
561 243 7220
cuestaJ@mydelraybeach.com

VULNERABILITY ASSESSMENT & ADAPTATION PLAN

Delray Beach, FL | Jan 2024 - Jul 2024

Project Overview

APTIM performed a Citywide Intracoastal Waterway seawall and stormwater outfall inspection to quantify the vulnerability of private and public seawalls and the public stormwater system to sea level rise and recurring storm effects. APTIM is currently completing an Adaptation Plan for the city that includes an assessment of adaptive capacities, prioritization of adaptation needs, and identification of adaptation strategies.

Project Description

Vulnerability Assessment | These investigations included the surveying of 1,000 seawalls and over 100 stormwater outfalls. Recommendations for seawall elevation raising were provided to the City based on the combination of sea level rise for 30-year and 75-year time horizons and the effects of recurring storms. From this assessment, we outlined capital improvements for 58 public stormwater outfalls, 20 City-owned seawalls, and 800 privately owned seawalls. We also recommended that the City update their existing seawall ordinance to encourage private compliance with the findings of the study. APTIM participated in several public meetings to discuss the findings of the investigations (2017-2018). The City is implementing the highest priority recommendations.

Adaptation Plan | APTIM is developing an adaptation plan consistent with the Florida Adaptation Planning Guidebook and grant agreement requirements. After acquiring background data and evaluating the City and communities' capacity to address the impacts of sea level rise, APTIM will review local mitigation strategies, the Comprehensive Plan, floodplain management plans, master stormwater plans and previous sea level rise risk assessments. APTIM will interview key stakeholders to identify a list of the primary challenges facing the community related to sea level rise, storm surge and tidal flooding. A summary of findings will be compiled for inclusion into the final plan.

Multi-County Multi-Hazard Assessment; Regional Stakeholder Engagement

Client
South Florida Regional Planning Council

Award Amount
$184,000 (Contract Value)

Company Role
Subcontractor to Jacobs

Current POCs
Christina Miskis
South Florida Regional Planning Council
Principal Planner
1 Oakwood Blvd, Suite 250
Hollywood, FL 33021
954 924 3653
CMiskis@sfrpc.com

SOUTH FLORIDA MILITARY INSTALLATION MULTI-HAZARD RESILIENCE REVIEW

Miami Dade, Monroe, & Broward Cty | Nov 2022 – Jan 2023

Project Overview

The South Florida Regional Planning Council (SFRPC) was awarded $1.1M by the U.S. Department of Defense (DoD) Office of Local Defense Community Cooperation to conduct a regional Military Installation Resilience Review (MIRR) of four key military installations:

- Homestead Air Reserve Base (HARB), Miami-Dade County
- United States Army Garrison-Miami (USAG-Miami), Miami-Dade County
- USN Naval Surface War Center South Florida Ocean Measurement Facility (SFOMF), Broward County
- United States Naval Air Station Key West (NASKW), Monroe County

Project Description

APTIM performed environmental (flood, wind, heat, lightning, fire), socioeconomic (affordability of housing), and future conditions (age of infrastructure) vulnerability assessments for critical infrastructure, as it relates to the ability of the military to carry out its missions. Based on results, our team identified and recommend actions or investments to mitigate risks of highest concerns and enhance military resilience. APTIM is collaborating with local communities to develop a funding strategy to include federal, state, and local cost share, as well as defining proposed projects and developing a priority list and infrastructure project application packages. Community engagement was an instrumental part of this project.

Project Successes

- Completed exposure, sensitivity, and risk analyses.

- Identified top 10% critical infrastructure at risk for each installation and compiled a list of mission critical and infrastructure critical assets that installations rely on to function and remain operational.
- Conducted outreach with stakeholders and recommended adaptation strategies and funding sources.

PROGRAMATIC ASSESSMENT, SUPPORTING UNDERESOURCED COMMUNITIES

Client
Virginia Department of Emergency Management

Award Amount
$85,000.00 (Contract Value)

Company Role
Subcontractor to The Olson Group

Current POCs
Matthew Honza
Vice President-Texas Programs
The Olson Group
222 W. Las Colinas Blvd
Suite 1650E
Irving, TX 75039
817 793 7080
mhonza@olsongroupltd.com

VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT HAZARD MITIGATION PROGRAM

Various Locations | May 2024 – Aug 2024

Project Overview

Our team was tasked with providing engineering assistance for preparing FEMA applications. Each community identified an area they wanted to address stormwater related issues and brainstorm potential plan(s) of how they wanted to mitigate the issue. These initial conversations were conducted without our involvement. The Olson Group and each municipality would work to get this initial outline completed. Once the town and The Olson Group identified the stormwater solution they wanted for the application, we were brought in to discuss the feasibility of it from an engineering and construction standpoint and provide any engineering estimations needed for the application. Each town was different in scale.

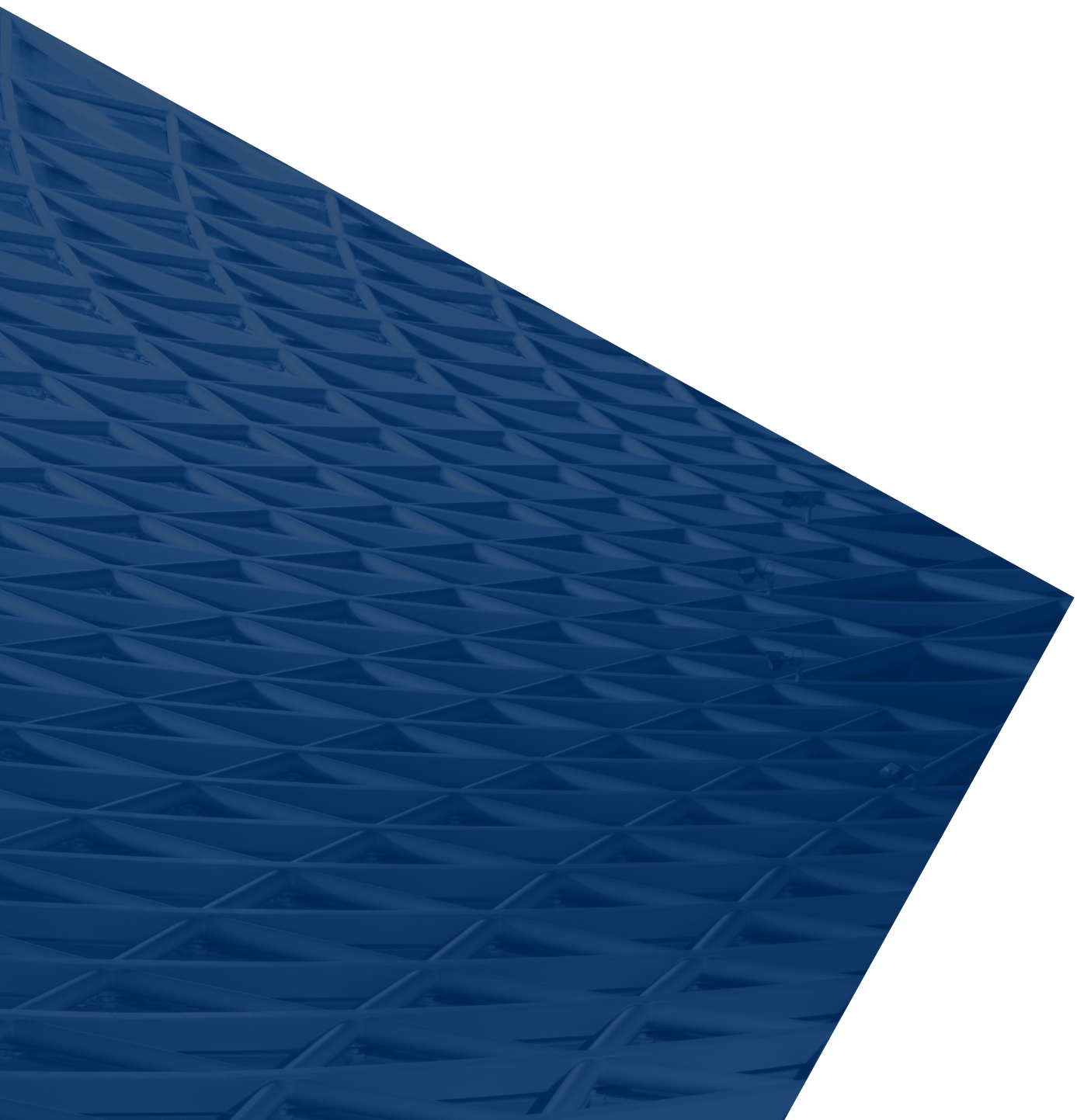
Project Description

Due to the wide variety of work included on these projects the amount we were needed on each project varied widely. Below are the types of projects that our team was involved with and the scope we were involved with each.

- Acquisition and demolition of homes within flood plain. Our team provided engineering estimations/cost estimations for the demolition properties. Provided project schedules for the acquisition process, permitting, demolition, and site restorations.
- Stormwater Sewer System Repairs & Modifications. Our team helped with two projects that fell into this category. Both being very different efforts.
- The town/city identified problem areas such as culverts, sewer pipes, or unaddressed flooded areas. Our team provided cost estimates and construction schedules for upgrades or new construction to address these areas.

- The Town of Waverly identified a flooding area to address but did not have ideas for how to due to limited right-of-way access and a poor understanding of the area's drainage. This project escalated to a full hydrologic and hydrogeologic investigation and preliminary design for the town to use on later application to fund the actual construction of the project.
- Storm Warning Alert System. We were not heavily involved but were brought into the conversations to provide some input. The town worked with a company that specializes in systems for installation costs and scheduling.
- Emergency generator system installations and elevations. Our team provided fuel source recommendations, cost estimation, and installation schedules for the installation of new/modifying existing emergency generators at critical infrastructure locations (i.e. schools and fire departments).

TAB B: REFERENCES



TAB B: REFERENCES

Please find below a list of references.

Juan Moises Cuesta, P.E.
Stormwater Engineer
City of Delray Beach
434 S. Swinton Avenue
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561 243 7220
cuestaJ@mydelraybeach.com

Project: City of Delray Beach VA & AP

Djenepha 'Jenny' Polynice-Hall
City Manager -Grants Division
Grants Manager
City of West Miami
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Project: City of West Miami Vulnerability Assessment

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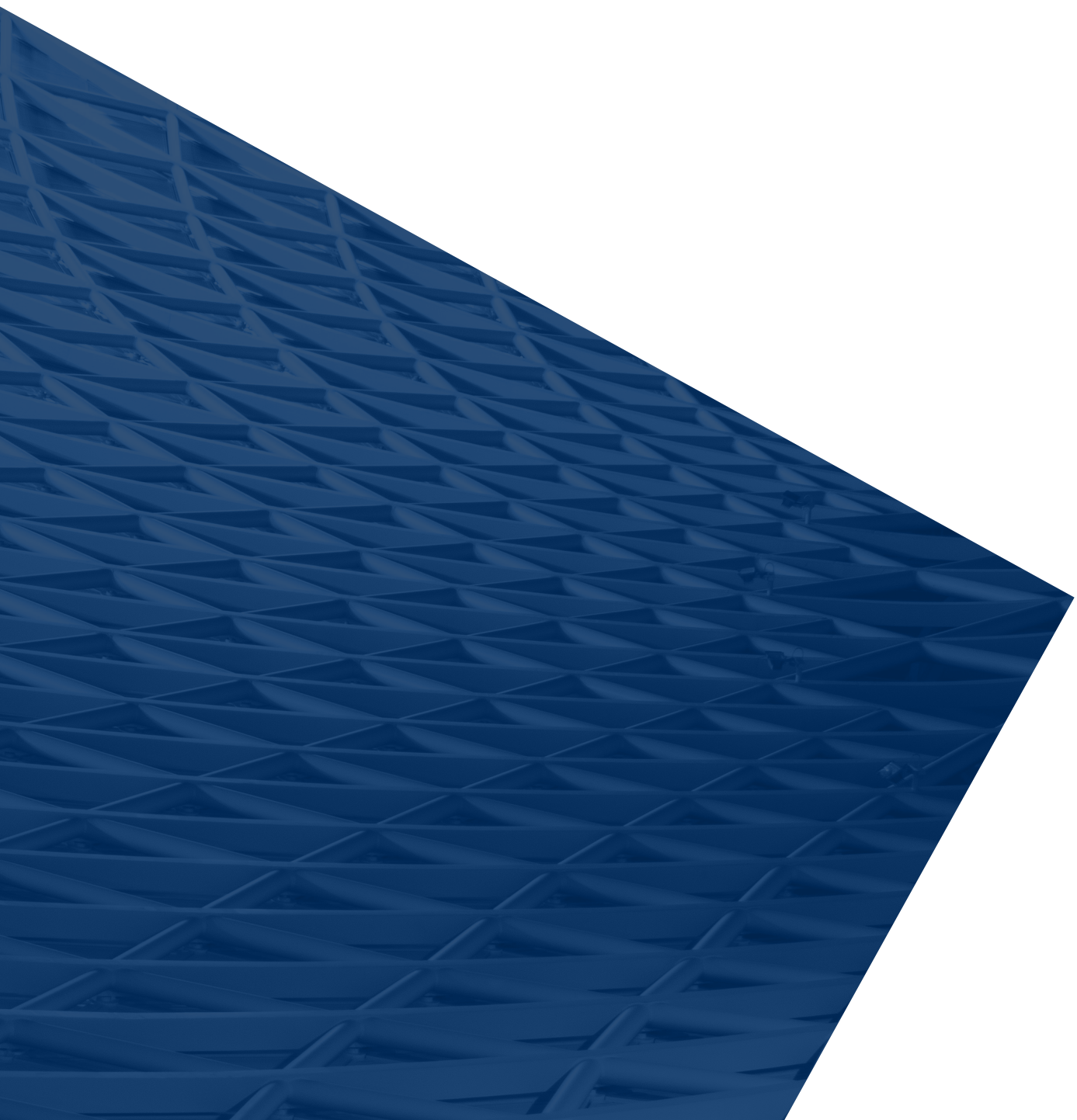
Project: Village of North Palm Beach Vulnerability Assessment

TAB C: APPROACH & METHODOLOGY



TAB C: APPROACH & METHODOLOGY

APTIM is committed to providing a comprehensive and collaborative approach to fulfill the requirements of the County's THIRA/SPR project. With extensive experience in hazard identification, risk assessment, and mitigation planning, APTIM will employ advanced, data-driven methodologies to systematically identify and assess natural, technological, and human-caused threats that could affect the community. Each identified hazard will be meticulously analyzed to estimate its potential impact on the County's population, infrastructure, and environment. Informed by this analysis, APTIM will establish specific, measurable response and preparedness targets to ensure the County is equipped to address each threat effectively. A critical component of this approach involves evaluating the County's current capabilities, identifying any gaps between these and the established targets, and developing targeted strategies to bridge those gaps. Furthermore, support these strategies and enhance overall preparedness.

Stakeholder engagement will be a central pillar of APTIM's process, ensuring that insights from key sectors—government agencies, emergency services, public health, private industry, and the community—are integrated into the risk assessment and planning process. Adhering to the latest FEMA guidelines, including Comprehensive Preparedness Guide (CPG) 201, APTIM will ensure the THIRA/SPR process aligns with national standards while remaining responsive to the County's unique needs. Through a combination of meticulous planning, rigorous analysis, and coordinated execution, APTIM is committed to providing the County with a plan that not only addresses immediate risks but also fortifies long-term resilience and preparedness.

We developed our approach based on:

1) **An experienced and well-integrated project team that embeds staff from our team members directly into our organization.**
2) **A responsive organizational structure with clearly defined lines of authority.**
3) **Proven project management procedures to enhance safety, quality, cost, schedule effectiveness, and coordination with stakeholders.**
4) **Experienced project management staff that has direct work experience associated with the scope of the contract.**
5) **Structured resource management processes to oversee workload fluctuations, maximize resource efficiencies, and control costs.**

APPROACH

APTIM's approach will be tailored to the County's specific challenges, addressing threats ranging from hurricanes, wildfires, and pandemics to cybersecurity risks and climate change. By working in close collaboration with county officials, emergency management, and local stakeholders, APTIM will ensure a well-rounded, dynamic strategy that equips the County to respond to both current and future hazards. This holistic and forward-thinking approach will empower the County with actionable strategies to safeguard lives, property, and critical infrastructure, ensuring the community remains resilient in the face of evolving threats.

APTIM has a thorough understanding of the scope of services and the THIRA/SPR requirements and is committed to fully implement and fulfill the requirements of the scope of services.

FEMA's THIRA/SPR methodology offers a structured framework for communities to evaluate and enhance their preparedness for a wide range of hazards. This approach provides a systematic method for identifying potential threats, assessing their impacts, and establishing community-specific capability targets. The THIRA process focuses on identifying the full spectrum of hazards—natural, technological, and human-caused—that could affect a community, and defines the capabilities required to mitigate and respond to them. The SPR component is an annual self-assessment that measures the community's progress in building those capabilities, assessing gaps, and identifying areas for improvement. The THIRA process involves three key steps **(Figure C-1)**:

1. **Identifying threats and hazards:** Communities recognize and catalog potential hazards, including natural disasters (e.g., hurricanes, wildfires), technological failures (e.g., cyber-attacks), and human-caused incidents (e.g., terrorism).
2. **Giving context to these hazards:** For each identified threat, the community estimates the potential impacts on the population, economy, critical infrastructure, and environment, providing a comprehensive context for the hazard. E.g. *For a severe tornado, the county assesses potential impacts such as damage to 40% of residential structures and disruption to essential services like power and communications for 72 hours.*
3. **Establishing capability targets to effectively manage those risks:** Based on the analysis of each hazard, specific capability targets are established. These targets define the levels of preparedness and response required to manage the hazard effectively. E.g., *setting a target to ensure that all critical county systems have cybersecurity protocols in place to detect and mitigate attacks within 30 minutes and restore operations within 24 hours.*

Figure C-1. Three Key Steps of the THIRA Process

The SPR is an annual, three-step self-assessment that examines a community's current capabilities in relation to the targets outlined in the THIRA. The capability targets set in the THIRA will form the foundation for the SPR evaluation. The three-step process **(Figure C-2)** for completing an SPR are:

1. **Assess Capabilities:** Communities assess their current capabilities to meet the established targets by reviewing their preparedness levels across various sectors, including public safety, health services, infrastructure, and emergency response systems. E.g.: *Evaluate the County's current ability to maintain communication during a wildfire, ensuring fire departments, emergency services, and public health agencies can coordinate effectively.*

2. **Identify and Address Gaps:** This step involves determining where there are deficiencies between existing capabilities and the established targets. Communities then develop strategies to close these gaps, focusing on resource allocation, training, and infrastructure improvements. E.g.: *Identify gaps in economic resilience following excessive heatwaves, such as insufficient support for local businesses impacted by infrastructure strain and develop strategies to enhance economic recovery initiatives*.

3. **Describe Impacts of Funding Sources:** Communities analyze how different funding streams (E.g., federal, state, or local grants) impact their ability to address identified gaps, ensuring that financial resources are aligned with preparedness goals. E.g.: *Assess how state and federal funding can support recovery of natural resources after coastal erosion, including the restoration of beaches and mangrove habitats.*

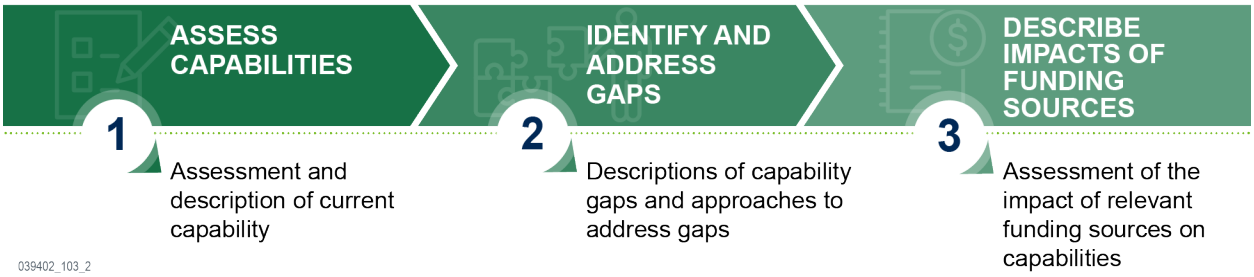


Figure C-2. Steps of Stakeholder Preparedness Review

METHODOLOGY

TASK 1: IDENTIFY THREATS AND HAZARDS OF CONCERN

APTIM will conduct a thorough identification of all relevant threats and hazards that could impact the County, aligning with FEMA's THIRA/SPR process and leveraging existing hazard assessments from Charlotte County's Local Mitigation Strategy (LMS), Hazard Identification and Risk Assessment (HIRA), and Climate Change Vulnerability Assessment (VA). This identification will encompass natural hazards (such as hurricanes, tornadoes, coastal erosion, drought, excessive heat, and wildfires), technological hazards (including cyber-attacks and infrastructure failures), and human-caused incidents (such as terrorism or civil unrest).

To select relevant threats and hazards for the THIRA/SPR, **Likelihood of a Threat or Hazard Affecting a Community** and **The Impacts of a Threat or Hazard** will be considered. APTIM has an extensive database of hazard layers through numerous vulnerability assessments conducted statewide. These data layers will be supplemented by resources like federal, state, local, and tribal strategic and operational plans, existing threat or hazard assessments, and models forecasting future risks due to changing weather, demographics, or emerging threats.
Additionally, **hazard mitigation plans, historical incident data, and relevant homeland security laws and procedures** will be considered. **Private-sector risk assessments,** particularly for **critical lifeline functions** like communications, energy, transportation, and water, also contribute to this comprehensive analysis.

The APTIM Team will align the number of threats and hazards to be included in the study with the outcome of Charlotte County's LMS, HIRA, and Vulnerability Assessments. Threats and hazards will challenge each of the 32 core capabilities, specifically the ones prioritized by the County as **listed in Section 2.1.3**.

Natural hazards highlighted in Charlotte County's 2020 LMS and THIRA are:

Natural Hazards:

The County faces significant risks from natural hazards, particularly due to its coastal location and tropical climate. Among the most critical hazards assessed in Charlotte County's 2020 LMS and THIRA are:

- **Hurricanes:** These are the most serious threat to the County, bringing high winds, storm surges, and widespread flooding. Recent hurricanes have caused significant damage to infrastructure and property
- **Tropical Storms:** Like hurricanes but typically less intense, tropical storms can still cause substantial flooding and wind damage, especially in low-lying areas
- **Coastal Flooding:** Rising sea levels and storm surges pose a major threat to areas along Charlotte Harbor, potentially causing property damage and threatening public safety
- **Coastal Erosion:** While a slower-onset hazard, coastal erosion is a persistent threat to the County's beachfront areas. This natural process can lead to the gradual loss of land, damage to coastal properties, and the degradation of vital ecosystems. Rising sea levels due to climate change are likely to accelerate this process, making long-term mitigation strategies necessary
- **Tornadoes:** While less frequent, tornadoes can occur with little warning and cause localized but severe damage to homes, businesses, and infrastructure
- **Flooding:** Heavy rainfall, especially during tropical storms and hurricanes, can lead to significant inland flooding, particularly in low-lying and poorly drained areas of the County
- **Droughts:** Periodic droughts in the region can strain water resources, impact agriculture, and increase the risk of wildfires
- **Wildfires:** These are a growing concern in areas with dense vegetation, particularly in the wildland-urban interface. Dry conditions and increased development in these areas elevate the risk of wildfires during certain times of the year
- **Excessive Heat:** Heat waves, exacerbated by climate change, are becoming more frequent, posing health risks to vulnerable populations, particularly the elderly
- **Extreme Cold and Freeze Events:** Though rare, cold snaps and freezes can harm agriculture, particularly citrus crops, and cause infrastructure issues

Technological Hazards:

Technological and human-caused hazards and threats that can be included in County's THIRA/SPR study are:

- **Chemical Spills:** Industrial accidents or transportation-related incidents involving hazardous materials could pose significant environmental and health risks
- **Infrastructure Failures:** Power outages, water shortages, and transportation disruptions are real concerns, especially given the aging infrastructure in some parts of the county. These failures are particularly dangerous in the aftermath of a natural disaster, when quick restoration of services is critical

- **Cybersecurity Threats:** The increasing reliance on technology for critical services makes the County vulnerable to cyberattacks. Disruptions to essential services like water, power, and communication networks could result in widespread impact on both public and private sectors

Human-Caused Incidents:

Human-caused incidents, while less frequent than natural or technological hazards, remain a potential risk. These include:

- **Active Shooter Events:** These incidents, unfortunately, have become more common and pose a significant public safety threat in the County
- **Civil Unrest:** Protests or riots can lead to property damage and disrupt essential services, posing challenges for law enforcement and public safety
- **Terrorist Attacks:** Though less likely, terrorist attacks targeting public spaces, critical infrastructure, or government facilities could result in mass casualties and create significant disruption
- **Epidemics and Pandemics:** The recent COVID-19 pandemic highlighted vulnerabilities in the County's public health systems. Future outbreaks of infectious diseases could overwhelm healthcare infrastructure, disrupt public life, and have severe economic consequences. The County must be prepared for potential public health emergencies to mitigate these impacts effectively

APTIM will coordinate with local stakeholders and use state-of-the-art modeling tools to ensure that the threats and hazards of concern are comprehensive, updated, and reflective of both past experiences and future projections, while ensuring **consideration of sufficient hazards and threats to most challenge each of the 32 core capabilities**. This process ensures that no potential hazard is overlooked, and all assessments are well-aligned with the latest FEMA guidelines and local assessments.

TASK 2: THREATS AND HAZARDS CONTEXT

Once the list of threats and hazards is finalized, APTIM will provide detailed context to understand their potential impacts on the County. This step will involve **Context Descriptions** and **Impact Estimates** quantifying the effects of each identified threat on the county's population, infrastructure, economy, and environment. Context descriptions provide essential details about a threat or hazard, such as its **location, magnitude, and timing**, which are crucial for determining the potential impacts it may have on a community. By using the **standardized impact language** established by FEMA, standardized target languages will be developed. An example standardized impact language can be *"An infrastructure failure resulting from a major power grid outage would lead to the disruption of electricity for 75% of the county's population, impact water treatment facilities causing a 40% reduction in potable water availability, and result in the closure of 60% of healthcare facilities for up to 48 hours until backup systems are fully operational."*

Drawing from our experience conducting numerous vulnerability assessment statewide, our team will conduct an **exposure** and **sensitivity** analysis to fully quantify the social, economic, and environmental impacts of the identified hazards and threats.

Per the Updates to THIRA Guidance…

APTIM will "estimate the impacts of each threat and hazard using **standardized impact language** (numerical entry), rather than providing free-text impacts, establishing a common language for describing impacts at all levels of government."

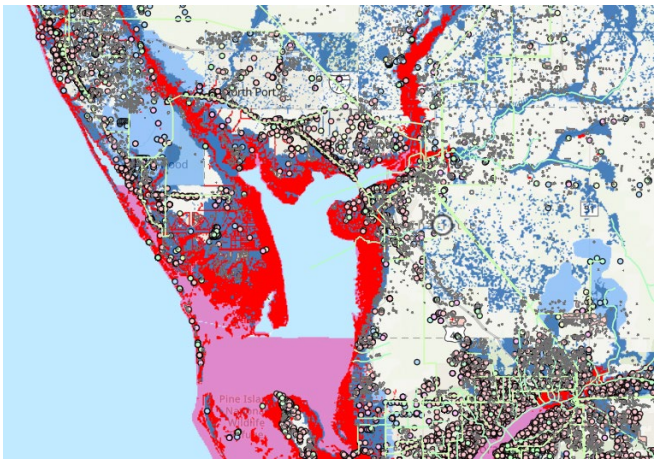


Figure C-3. Charlotte County Critical Asset Points Overlayed with Coastal Flooding data as an Example Hazard

Exposure Analysis – Context Descriptions

The Exposure Analysis evaluates the potential impact of various hazard scenarios on the study area's infrastructure and population. This analysis will inform the context description step by creating detailed, scenario-based descriptions of how these hazards may manifest and affect the community.

APTIM will utilize hazard data gathered in the previous step and overlay the results with the geospatial inventory of critical assets to identify the areas, populations, and infrastructure most exposed to each scenario.

This will allow for a clear visual representation of the extent, magnitude, and percentage of the County impacted by each threat and hazard, pinpointing the specific locations where they may occur. **Figure C-3** presents an example map showing dense corridors of infrastructure align with at risk areas.

Sensitivity Analysis – Impact Estimation

The Sensitivity Analysis translates the impact of hazard exposure into actionable data, informing the impact estimation step of the THIRA process. While the Exposure Analysis identifies where hazards may occur, the Sensitivity Analysis assesses the severity of those impacts on the County's critical assets. APTIM will analyze the impacts of each hazard scenario and relate them to infrastructure, system, and population-specific specifications obtained during the data collection process **(Figure C-4)**.

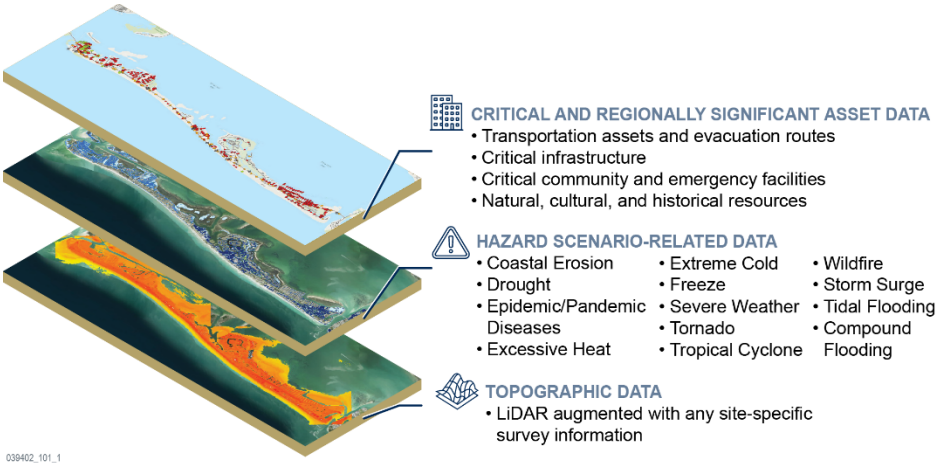


Figure C-4. APTIM's Approach to Spatial Layering of Data Used for Impact Estimation

This critical insight will allow the County to not only understand what is exposed but also how severe the impacts will be, driving informed decisions on prioritizing resources and response strategies.

TASK 3: ESTABLISH CAPABILITY TARGETS

APTIM will work with the County to set **bold, clear, and measurable** capability targets for each identified threat and hazard. These targets will be driven by the principles of FEMA's National Preparedness Goal and designed to ensure the County is fully prepared to face the most pressing risks. Each capability target will provide a precise level of preparedness, ensuring that the County cannot only **prevent, and mitigate** damages and **protect** their assets and community, but also **respond rapidly** and **effectively** to potential disasters, then **recover swiftly** in the aftermath of any disaster.

Capability targets will define the desired outcomes in concrete terms, establishing **specific, time-bound goals**. An example capability target for the County can be "*provide emergency shelter for 85% of the population within 48 hours of a hurricane"* or "*the capacity to treat 50 cases of heat-related illness per day during a severe heatwave."* These targets are not theoretical but **operational standards** that the County will use to ensure the safety and resilience of its citizens. The County's initial list of desired core capabilities is shown in **Table C-1.**

Prevention	Protection	Mitigation	Response	Recovery
Intelligence and Information Sharing		All Aspects of Mitigation	Infrastructure Systems	
	Risk Management		Situational Assessment	Natural and Cultural Resources
	Supply Chain Integrity and Security		Operational Communications	Economic Recovery
	Cybersecurity		Environmental Response/Health and Safety	

Table C-1. Charlotte County's Target Core Capabilities

APTIM will ensure that these targets are **rooted in real-world risk** by integrating the results of the comprehensive risk assessments, leveraging stakeholder input, and aligning with the broader strategic goals of **Charlotte County's Local Mitigation Strategy (LMS)** and **Hazard Identification and Risk Assessment (HIRA)** findings. **Each target will be crafted with precision**, ensuring it addresses critical needs such as **emergency sheltering, medical care, power restoration,** and **communication systems**—the lifelines of the County during disaster scenarios.

For example, during **wildfire response**, capability targets will focus on the rapid deployment of **firefighting units** to high-risk areas, ensuring response times are optimized to save lives and property. In the event of a **hurricane**, capability targets will include providing mass care and shelter for thousands of residents within a matter of hours, ensuring the County's most vulnerable populations are protected.

> **CAPABILITY…**
>
> …targets will be constructed using **standardized language** and **community-specific metrics** aligned with FEMA's **National Preparedness Goal**. E.g.: *"Within (#) hours of an incident, clear (#) miles of road"*

Cybersecurity will also be a top priority. Given the increasing threat of cyberattacks, APTIM will help the County set robust targets that ensure **critical infrastructure**—such as the County's water supply and electrical grid—can withstand and recover from a cyberattack within 24 hours, safeguarding essential services during moments of crisis.

Each capability target will be informed by **the County's local context** while adhering to FEMA's **Core Capabilities**. Key capabilities like **Operational Communications** and **Environmental Response/Health and Safety** will ensure the County cannot only meet **immediate, life-saving** needs but also recover effectively in the long term. These targets will be more than metrics—they will serve as the **cornerstones** of the County's resilience, ensuring that the community can respond, adapt, and thrive no matter what challenges arise.

TASK 4: ASSESS CAPABILITIES

Once the above three steps of THIRA process are completed, it will be important for the County to move forward with the Stakeholder Preparedness Review (SPR) steps, starting with assessing the capabilities on an annual basis.

To determine the County's current capacity to meet the established capability targets, APTIM will conduct a detailed assessment of existing resources, infrastructure, and operational capabilities. This will involve reviewing current emergency response plans, available assets, personnel, and interagency coordination mechanisms. This assessment will include the following steps:

1. **Quantitative Assessment of Capabilities** focuses on five key data points: **Beginning Capability** (the capability level at the start of the year), **Capability Lost** (what was lost through attrition or degradation), Capability Sustained (capabilities that remained operational throughout the year), **Capability Built** (new capabilities developed), and **Current Capability** (the community's current operational capability). This quantitative assessment helps communities measure gains, losses, and their ability to meet preparedness goals.

2. **Description of Current Capabilities and Capability Changes** expands on the quantitative capability changes from previous step by providing detailed descriptions of the **Planning, Organization, Equipment, Training, and Exercises (POETE)** areas where capabilities were lost, sustained, or built. APTIM will explain the causes behind capability losses, the actions taken to sustain capabilities, and the investments made to build new capabilities. Additionally, APTIM will describe how **mutual aid agreements** help address capability gaps. By providing these detailed narratives, the County can give context to the changes and highlight factors such as funding availability or external influences. This information supports future planning and investment decisions, ensuring alignment with real-world needs and the community's preparedness goals.

Context on Current Capability Estimations allows communities to provide additional context for the quantitative capability assessments made in steps 1 and 2. This includes describing the County's confidence in the accuracy of the assessment, identifying data sources used (such as real-world incidents or subject matter experts), and offering further explanations to clarify or enhance the quantitative data. APTIM will rate the County's confidence on a five-point scale and explain factors that influence their capability estimates, such as timeframe metrics or local conditions that could alter the results. This additional context helps planners better interpret the data, ensuring it is useful for future planning, prioritization, and incident response.

APTIM will further quantify impacts of threats and hazards identified in previous steps by accounting for the adaptive capacity of the County. Adaptive capacity, or capability, may be defined as the ability for an infrastructure or system to adapt or adjust to changing conditions or threats to avoid service disruption or system failure. In the capability assessment, data collected on emergency response facilities will be used in conjunction with findings from the impact analysis to assess the community's capability to respond in times of need.

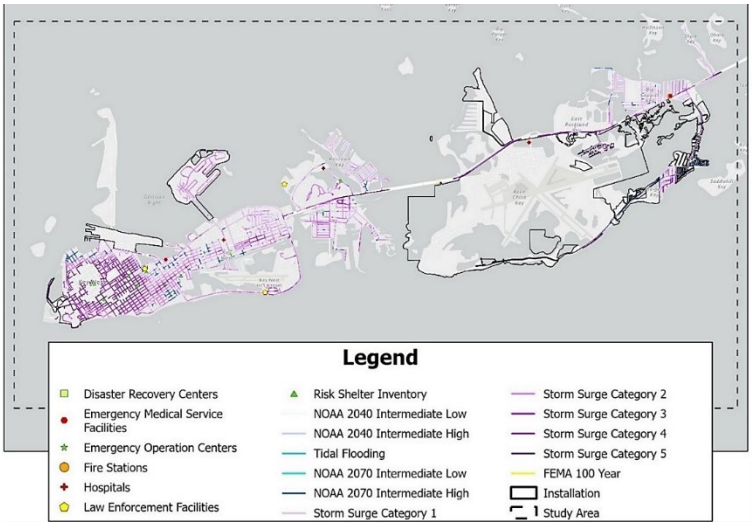


Figure C-5 Capability Assessment for Naval Air Station Key West

An example of an approach used in APTIM's Military Installation Resilience Review (MIRR) project for the Naval Air Station Key West to assess its adaptive capacity is shown in **Figure C-5**. To assess and depict the capabilities geographically, maps for the installation were created that show emergency response facilities as icons with surrounding critical roads that could have more than the threshold flood depth, which was determined by considering the level of impact on the installation's missions.

APTIM will also collaborate with local agencies to review their ability to respond to specific hazards. For example, our team interview staff to review effectiveness of mitigation actions to date and strength of post-disaster, recovery and mitigation plans in addressing remaining risks. Drawing on the **Charlotte County LMS** and **HIRA,** which already outline gaps in areas like flood response and infrastructure resilience, we will also examine areas such as **school, drainage and public health infrastructure**.

By using FEMA's Core Capabilities framework, APTIM will evaluate capabilities across mission areas like **Operational Coordination** and **Economic Recovery**, ensuring a holistic assessment that identifies both strengths and weaknesses. APTIM will also conduct scenario-based exercises and tabletop simulations with county stakeholders to validate these assessments and ensure that the County's capabilities are both scalable and adaptable to a variety of hazard scenarios.

TASK 5: IDENTIFY AND ADDRESS GAPS

Once the capability assessment is complete, APTIM will identify any gaps between the County's current capabilities and the established targets. For example, a lack of sufficient shelters for **severe**

weather events or gaps in **cybersecurity infrastructure** to protect against potential cyberattacks may be identified in this step.
Following steps will be taken at this phase of THIRA/SPR process:

1. **Identify and Describe Capability Gaps:** APTIM will work with the County to identify the specific gaps in its capabilities and explain why these gaps exist. This process involves examining the shortfall between the capability target and current capability, as well as determining which aspects of the **POETE areas** contribute to the gap. By doing so, we can add important context to prioritize capability building and sustainment activities.

2. **Describe Approaches to Address Gaps and Sustainment Needs:** After identifying the gaps, APTIM will outline the approaches intended to take to close these gaps or sustain their current capabilities. This involves planning for **investments, resource allocation, and partnerships**, specifying the timeframe for implementation. Not all gaps can be addressed immediately due to constraints like funding or resources, so communities prioritize based on urgency and strategic need.

Drawing from the **Charlotte County Climate Change Vulnerability Assessment,** which highlights critical gaps in coastal defenses and infrastructure resilience, APTIM will provide tailored strategies to close these gaps. For instance, if current wildfire response capabilities are insufficient, we will recommend investments in firefighting equipment, training programs, and mutual aid agreements with neighboring jurisdictions. In cases where **pandemic response** capabilities fall short, APTIM will propose strengthening partnerships with public health agencies and stockpiling critical medical supplies.

In addition to addressing physical infrastructure needs, we will also focus on **community resilience** by enhancing public awareness, improving evacuation planning, and promoting collaboration among local agencies. APTIM will propose both short-term and long-term solutions, including **leveraging federal and state funding** for capital improvements, ensuring that the County is better prepared for future hazard scenarios.

TASK 6: DESCRIBE IMPACTS OF FUNDING SOURCES

It is critical to evaluate the extent to which various funding sources have played a role in building and sustaining critical capabilities. This step is essential for understanding the impact of local resources, as well as state and federal grants, on achieving the capability targets identified through the THIRA process. For the County, this step involves a comprehensive analysis of how funding sources have contributed to sustaining current capabilities and building new ones, as well as assessing how these capabilities were used during real-world incidents over the past year.

Assess the Role of Funding for Building and Sustaining Capabilities

This process will start with an estimation of the degree to which various funding sources—local, state, and federal—have supported the building and sustainment of capabilities identified in the capability targets. This analysis will focus on how the County has allocated these resources to POETE activities, with particular attention to which funding sources contributed to maintaining existing capabilities and which enabled the development of new capabilities.

To complete this assessment, the following will be examined for the County:

- **Federal and State Grants:** Including FEMA Hazard Mitigation Grant Program, Pre-Disaster Mitigation funds, and other federal resources that have been used to bolster critical infrastructure resilience and emergency response systems.
- **Local Resources:** County budgets dedicated to public safety, stormwater management, and other infrastructure upgrades that enhance resilience against identified hazards, such as hurricanes and flooding.

The assessment will focus on specific POETE-related efforts that have been supported by these funding sources, identifying whether each investment was used primarily for sustaining existing capabilities or building new ones. For example, investments in stormwater infrastructure may have been directed toward both sustaining current systems and building new, more resilient flood mitigation systems. By tracking these investments, the County will gain insights into the return on investment from each funding source, helping to guide future resource allocation decisions to maximize the County's ability to meet its capability targets.

Additionally, this assessment will help reveal the broader picture of how funding is contributing to capability sustainment, even in areas where there may be no visible change in capacity. This is particularly important for emergency managers who are continuously working to maintain previously achieved capabilities. The analysis will demonstrate that a significant portion of funding is dedicated to ensuring that critical capabilities remain operational and ready for real-world incidents, not just to creating new capabilities.

CDBG COMPLIANCE

APTIM's experience includes more than 15 years administering CDBG-DR funded projects, with over $30B in disaster recovery programs completed to date. Our experience has taught us best practices for streamlining complex programs and navigating regulatory frameworks to accelerate recovery and resilience efforts.

APTIM routinely coordinates Section 3, Section 504, and Labor Standards compliance, including for CDBG-DR funded programs.

We have implemented file retention systems and data management processes to ensure recordkeeping and reporting are aligned with HUD-required Disaster Recovery Grant Reporting (DRGR) reporting and audit readiness requirements.

Assess the Role of Funding in Real-World Incidents

A qualitative analysis will then be conducted to detail how the capabilities built or sustained with the help of various funding sources were employed during real-world incidents over the past year. This analysis is crucial for capturing the real-world impact of past investments and determining how they have supported the County's response and recovery efforts during actual hazard events.

Key questions addressed in this step will include:

- **Was the capability used in a real-world incident?** The assessment will describe how specific capabilities—such as enhanced evacuation routes, upgraded stormwater management systems, or expanded emergency shelter capacities—were utilized during hazard events like hurricanes or heavy flooding.

- **What would have been the impact if funding had not been received?** This question will help the County evaluate how critical federal, state, and local funding has influenced the community's ability to maintain or build essential capabilities. For instance, without FEMA grants or state-level funding for flood mitigation projects, the county may have experienced more severe impacts from recent flooding events.

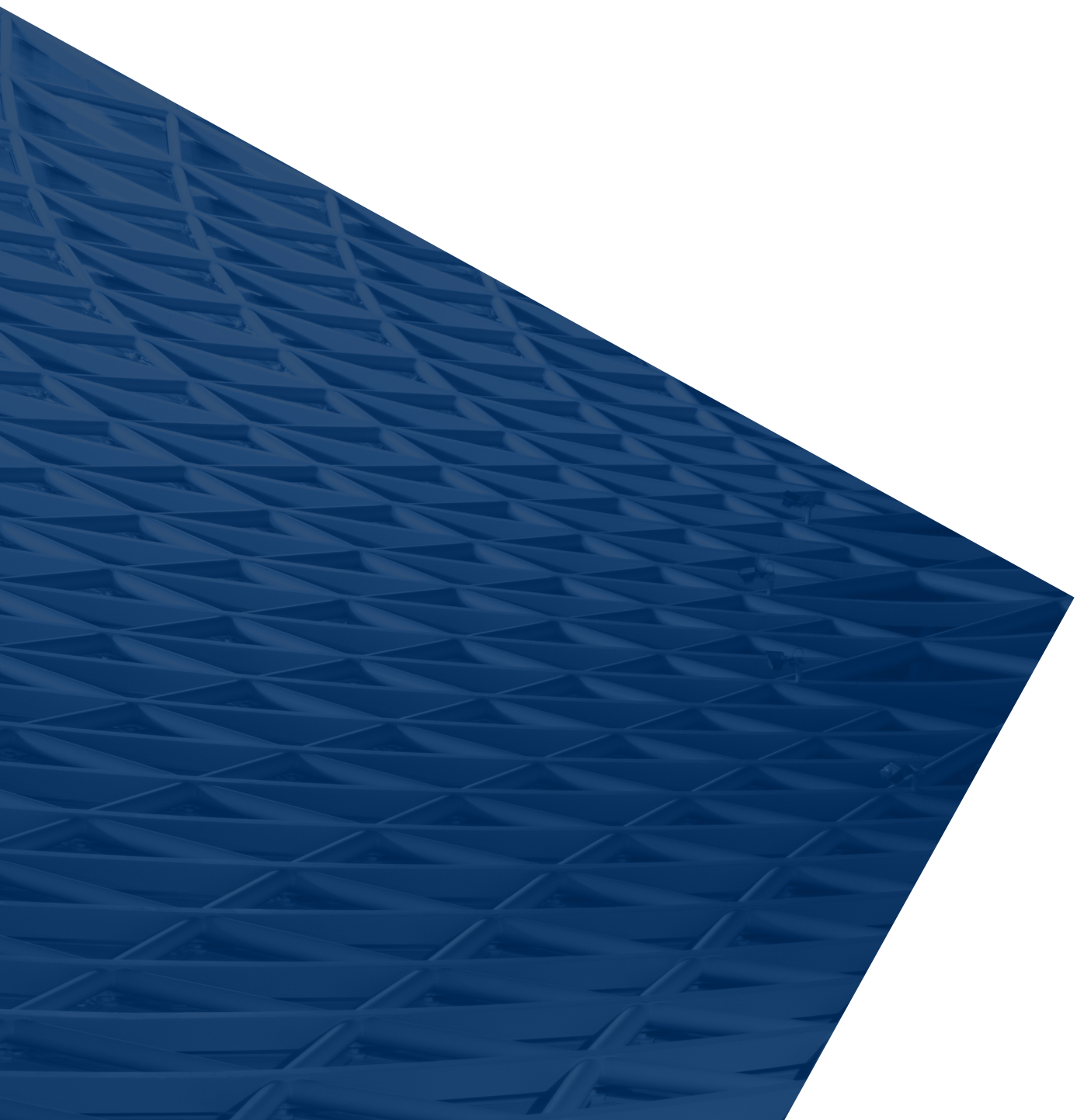
- **What impact did the funded capabilities have on survivors, infrastructure, or the overall response and recovery mission?** This part of the assessment will focus on the outcomes of using these funded capabilities. For example, investments in renewable energy systems that kept critical facilities operational during power outages may have had a direct impact on the effectiveness of the response and recovery efforts, ultimately improving outcomes for residents and reducing infrastructure damage.

Through this qualitative assessment, the County can report positive examples of how specific funding sources have directly increased or sustained preparedness capabilities, providing evidence to support continued investment in these areas. This analysis also allows the County to identify areas where reduced funding could negatively impact the sustainment of existing capabilities, even if no new capabilities were built. Understanding these dynamics will enable the County to think strategically about future funding allocations and to ensure that resources are used efficiently to maintain and enhance the community's preparedness and resilience.

Describing impacts of funding sources provides a comprehensive evaluation of how funding sources contribute to the building and sustainment of the County's critical capabilities. By assessing the role of specific funding streams in supporting POETE activities and how these capabilities have been employed during real-world incidents, the County will be better equipped to communicate the value of these investments to stakeholders and decision-makers.

This analysis will guide future resource allocation decisions, ensuring that the County continues to build and maintain the capabilities necessary to protect its residents and infrastructure from identified hazards.

TAB D: PROPOSED FEE SCHEDULE & COST

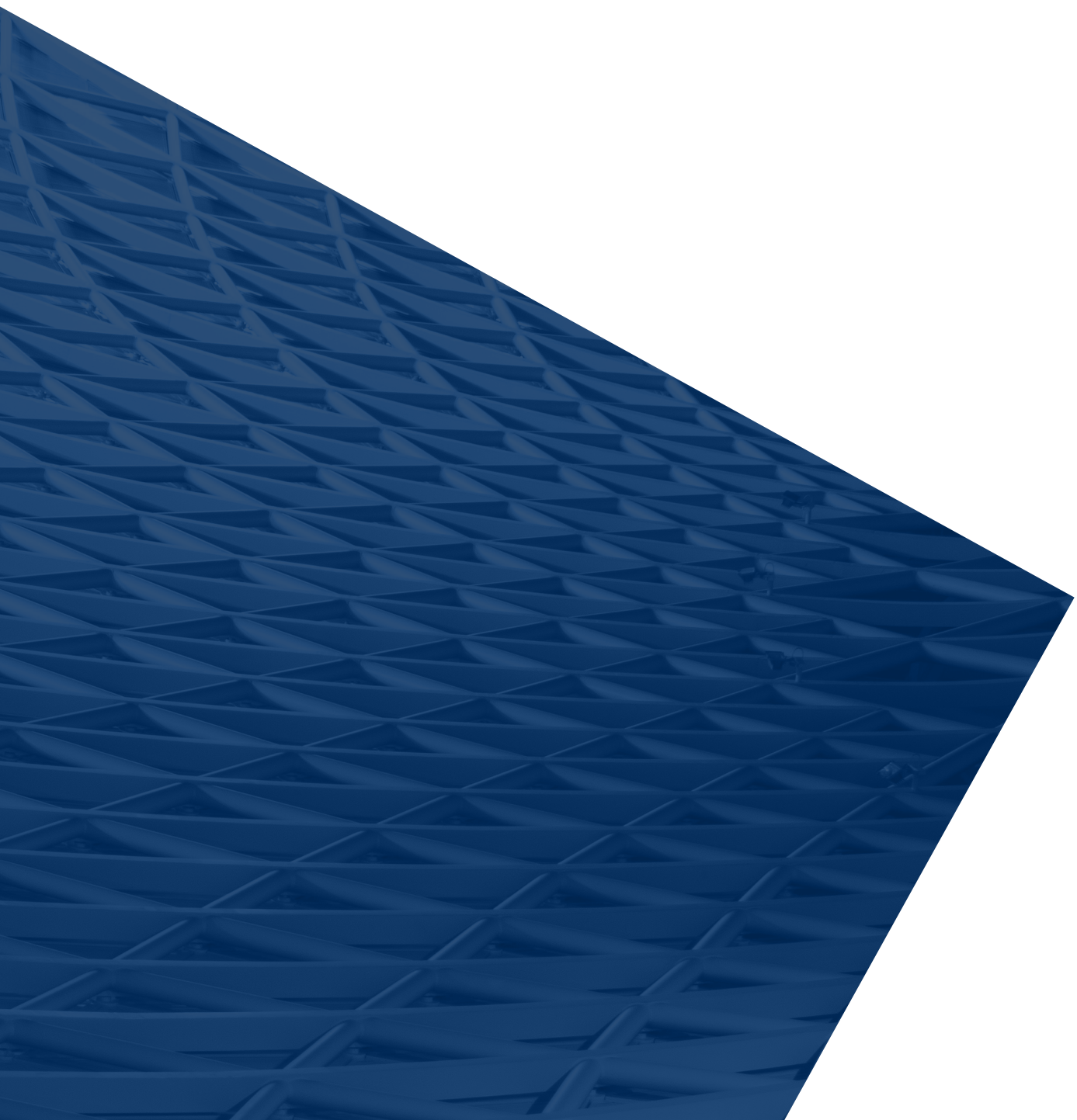


TAB D: PROPOSED FEE SCHEDULE & COST

FEE SCHEDULE

Task	Description	Cost
1	Identify Threats and Hazards of Concern	$5,000
2	Context	$10,000
3	Capability Targets	$10,000
4	Assess Capabilities	$15,000
5	Identify and Address Gaps	$15,000
6	Describe Impacts of Funding Sources	$5,000
	Total	**$60,000**

TAB E: REQUIRED FORMS



TAB E: REQUIRED FORMS

PART IV - SUBMITTAL FORMS
PROPOSAL SUBMITTAL SIGNATURE FORM

The undersigned attests to his/her authority to submit this proposal and to bind the firm herein named to perform as per contract, if the firm is awarded the Contract by the County. The undersigned further certifies that he/she has read the Request for Proposal, Terms and Conditions, Insurance Requirements and any other documentation relating to this request and this proposal is submitted with full knowledge and understanding of the requirements and time constraints noted herein.

By signing this form, the proposer hereby declares that this proposal is made without collusion with any other person or entity submitting a proposal pursuant to this RFP.

In accordance with section 287.135, Florida Statutes, the undersigned certifies that the company is not on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and does not have business operations in Cuba or Syria (if applicable) or the Scrutinized Companies that Boycott Israel List, or is not participating in a boycott of Israel.

As Addenda are considered binding as if contained in the original specifications, it is critical that the Consultant acknowledge receipt of same. The submittal may be considered void if receipt of an addendum is not acknowledged.

Addendum No. 1 Dated 3/4/2025 Addendum No. 3 Dated 3/13/2025 Addendum No._____ Dated_____
Addendum No. 2 Dated 3/11/2025 Addendum No._____ Dated_____ Addendum No._____ Dated_____

Type of Organization (please check one): INDIVIDUAL (_) PARTNERSHIP (_)
CORPORATION (X) JOINT VENTURE (_)

Aptim Environmental & Infrastructure, LLC — Firm Name
561.532.5882 — Telephone

N/A — Fictitious or d/b/a Name
77-0589932 — Federal Employer Identification Number (FEIN)

6401 Congress Avenue, Suite 140 — Home Office Address

Boca Raton, FL 33487 — City, State, Zip
22 — Number of Years in Business

Address: Office Servicing Charlotte County, other than above

Samantha Danchuk, Climate and Coastal Resilience Lead — Name/Title of your Charlotte County Rep.
561.532.5882 — Telephone

Samantha Danchuk, Climate and Coastal Resilience Lead — Name/Title of Individual Binding Firm (Please Print)

Samantha Danchuk — Signature of Individual Binding Firm
3/17/2025 — Date

samantha.danchuk@aptim.com — Email Address

(This form must be completed & returned)

DRUG FREE WORKPLACE FORM

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that Aptim Environmental & Infrastructure, LLC (name of business) _____ does:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Proposer's Signature

3/17/2025
Date

(This form must be completed & returned)

HUMAN TRAFFICKING AFFIDAVIT
for Nongovernmental Entities Pursuant To FS. §787.06

Charlotte County Contract #2024000566

The undersigned on behalf of the entity listed below, (the "Nongovernmental Entity"), hereby attests under penalty of perjury as follows:

1. I am over the age of 18 and I have personal knowledge of the matters set forth except as otherwise set forth herein.

2. I am an officer or representative of the Nongovernmental Entity and authorized to provide this affidavit on the Company's behalf.

3. Nongovernmental Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes.

4. This declaration is made pursuant to Section 92.525, Florida Statutes. I understand that making a false statement in this declaration may subject me to criminal penalties.

Under penalties of perjury, I declare that I have read the foregoing Human Trafficking Affidavit and that the facts stated in it are true.

Further Affiant sayeth naught.

Signature

Samantha Danchuk
Printed Name

Climate and Coastal Resilience Lead
Title

Aptim Environmental & Infrastructure, LLC
Nongovernmental Entity

3/17/2025
Date

END OF PART IV

(This form must be completed & returned)