City of St. Marks

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June 6, 2019

Ms. Angel Baratta
Contracts & Grants Manager
Florida Coastal Office
Florida Department of Environmental Protection
3900 Commonwealth Blvd.
Douglas Building 854E, MS325
Tallahassee, FL 32399

RE: **CM 738 Agreement- Task IX Deliverable – Final Project Report**
City of St. Marks

Dear Ms. Baratta:

The City is pleased to submit the enclosed CD, which contains Task IX Deliverable – Final Project Report based on the requirements of the CM 738 Agreement executed by the Department and City of St. Marks. The City previously submitted its Task IX Deliverable on May 30, 2019 but had not formatted the Final Project Report in accordance with the CM738 Agreement instructions. Attached is the correctly formatted Final Report for your review.

If you have any questions regarding this submittal, please do not hesitate to contact me. If you have any questions of a technical nature, we will coordinate with our consultant, Ken Metcalf, at Stearns Weaver Miller or feel free to contact him directly if you prefer at 850-329-4848.

Sincerely,

Zoe A. Mansfield
City Manager

DEP AGREEMENT NO. CM738

City of St. Marks Coastal Resiliency Grant Project

City of St. Marks

Final Project Report

This report funded in part, through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program, by a grant provided by the Office for Coastal Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. **NA16NOS4190120**. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of their sub-agencies.

May 2019

Final Project Report for CM738

City of St. Marks Coastal Resiliency Grant Project

Executive Summary

The Scope of Work divided the Grant work tasks into two major phases. Phase I (Tasks 1-6) included sea level rise modeling and GIS analysis to conduct a vulnerability analysis at the parcel level, conducting a public workshop to inform City officials and the public of the results and obtain input on potential strategies to reduce and mitigate sea level rise. Phase 1 culminated with a detailed Phase 1 Evaluation Report. Phase II (Tasks 7-9) focused on evaluation of the City's future land use map, existing comprehensive plan policies and its floodplain regulations to identify any potential conflict with potential strategies to reduce and mitigate sea level rise (SLR) impacts, classifying and grouping potential strategies by topic (i.e., land use, regulation, engineering, etc.) and drafting policies for each type of strategy, and conducting a public workshop to present the evaluation, strategies and policies in order to obtain public input. Phase 2 culminated in the preparation of this Final Report (Task 9).

The SLR analysis is based on the C-2 (Intermediate) and C-4 (High) forecast scenarios. The C-4 scenario resulted in much more extensive inundation as compared to the C-2, although water depths were not significantly differently with only a .7' difference. The spatial pattern is similar between the C2 (Intermediate) and C4 (High) scenarios, as would be expected, with flooding occurring primarily in the relatively low lying wetland areas and along creeks. Low density residential areas were impacted as well as a mixed use area near the City's historic commercial/industrial waterfront where the City has planned for higher density redevelopment. The analysis confirms that most of the affected areas will experience flooding of one foot or less with the C-4 scenario with limited areas flooding at up to two feet, typically proximate to creeks. Neighborhood roads were subject to inundation, and the analysis identified the need for more effective stormwater management, particularly within low lying neighborhoods where drainage swales were not maintained adequately. The City's wastewater treatment plant was unaffected.

Project outcomes resulted in the City Commission concurring with the need to adopt intervention policies focused on directing development and density away from the most vulnerable areas, pursue continued land acquisition in vulnerable areas, improving drainage capacity and conveyance, and potentially adopting more stringent regulations, such as freeboard requirements to increase the elevation of structures where it was not feasible to relocate development. The City supported the concept of a SLR Overlay where more stringent policies and regulations would apply, including clustering requirements to direct densities outside of the Overlay. The policy evaluation recognized that existing policies did not conflict with SLR strategies, but were focused on floodplain management as related to storms and not potential inundation due to the SLR. Regulatory strategies included adoption of maximum impervious surface ratios, allowance for pervious materials, and similar techniques to reduce flooding potential. The analysis confirmed the need for complementary strategies to pursue grant funding and to direct capital investment to support engineering studies and implementation of select engineering solutions, particularly along the City's waterfront where a public/private partnership could effectively integrate a riverwalk and plaza concept with elevated seawall construction. Finally, the strategies included public education regarding the insurance benefits of elevating above minimum requirements and incentive programs to encourage landowners to reduce development potential through TDRs.

Methodology

2040 USACE Intermediate (C2) and High (C4) Sea Level Rise projection data layers were acquired and converted to a polygon coverage incremented at 1 ft. depth intervals. Intersect overlays were generated within the Wakulla Property Appraisers Parcel GIS and the City of St. Marks Future Land Use Map & Utility/Infrastructure GIS layers for analysis, which resulted in a vulnerability analysis identifying the

following attributes within the C2 (Intermediate) and C4 (High) inundation areas; existing land use, future land use and structure type, condition, age and assessed value.

Outcomes

Summary of Vulnerability Analysis

The SLR Risk/Vulnerability Analysis identified the relative vulnerability of existing and future development and infrastructure to inundation due to forecasted SLR through 2040. This target year was selected to correspond with the City's Comprehensive Plan horizon. The SLR analysis was based on the C-2 (Intermediate) and C-4 (High) forecast scenarios, which forecast a .5' and 1.2' increase, respectively. The C-4 scenario inundates 164 acres or about 13% of the City, impacting 39 developed parcels out of 582 total parcels citywide. This represents about three times the acreage affected by the C-2 scenario and about twice the number of affected developed parcels. However, the spatial pattern is quite similar between the C2 (Intermediate) and C4 (High) scenarios with most flooding occurring with low lying wetland areas and along creeks.

Existing Land Use within SLR

The existing land uses impacted by both the C-2 and C-4 consist mostly of public lands, right of way, timberlands, vacant residential and light manufacturing. These categories collectively comprise about 90% of the affected acreage in both scenarios. From a land use perspective, vacant residential lands represent the most significant impacted acreage where land use strategies, such as clustering or density transfer, could be potentially effective in reducing long term vulnerability. The "powder" site is a large munitions parcel where flooding occurred and accounts for most of the affected acreage in the light manufacturing category.

Future Land Use within SLR

The designation and extent of future land use categories generally follow the spatial pattern of existing land uses. The greatest extent of inundation occurs within the Agricultural category, followed by the Recreation/Conservation category, which together account for about three-fourths of all inundated land use for the C-2 and C-4 scenarios. These areas have the lowest development potential at one unit per five acres and one unit per three acres, respectively. Most vacant residential land occurs within the Residential category, which allows four units per acre. This is the primary area where the strategies focus on directing densities outside of the SLR Overlay through mandatory clustering and an incentive-based TDR program. Right of way and other linear public lands not otherwise included under Public Buildings/Grounds are not represented by a FLUM category, but represent 12% and 9% of the total inundation area, respectively, for the C-2 and C-4 scenarios.

The Comprehensive Plan designates the Riverfront Redevelopment (RR) land use category for the existing mixed use waterfront area, which consists of marinas, seafood markets, restaurants and limited housing. This is a designated area Community Redevelopment Area targeted as an economic development opportunity and is planned as the highest density land use category at 16 units per acre. While most of the RR category occurs outside of the SLR inundation area, the RR will be impacted to some degree by the 2040 sea level rise forecast. Those areas occur along the canal and should be avoided through cluistering. The City has contemplated the inland expansion of the RR land use category, which would be appropriate as a potential TDR receiving area, but the City should reconsider its current exemption of the RR category from pre-post runoff standards. The City's Mixed Use category occurs along Port Leon Road, which is the main roadway leading into the City. Most of the MU category would also be appropriate as a TDR receiving area where densities would be transferred from the SLR Overlay.

Impact on Structures

The analysis classifies the age of structures into three categories. Of the 39 structures impacted by the C-4 scenario, only 13 structures pre-dated the City's participation in the floodplain management program. The parcel database includes the assessed value of the structures located within inundation areas based on the

C-2 and C-4 scenarios. The aggregate value of all structures within the C-4 inundation area totals to about $4 million with the highest value structures approaching $500,000. Like the other variables, these structures were classified as residential, commercial and industrial and cross-tabulated by assessed value. Residential ($2.3MM) accounts for about 59% of the value, while commercial ($1.5MM) accounts for about 38% of the value. The City includes many nonconforming structures constructed at grade or below current base flood elevation requirements. The policy evaluation recommended that the City adopt a cumulative definition of substantial improvement for the purpose of calculating improvement value against the 50% standard for triggering compliance with elevation requirements.

Infrastructure
Several roadways serving the residential neighborhoods to the west of Port Leon Road are forecasted to flood in both the C-2 and C-4 scenarios. The right of way flooding is nominal in the C-2 category, but the C-4 scenario is forecast to inundate nearly eight acres of right of way with about 75% flooding at 0-1' and 25% at 1-2' in depth. The roadways and adjacent lots within this area are not served by a designed stormwater system. The swales serving these neighborhoods essentially function as very limited drainage retention areas, which will not provide effective stormwater management or significantly reduce the potential extent of inundation. The wastewater treatment plant was built on filled land and is not forecast to flood. Five lift stations exist within the City, but are not located within the forecasted inundation area. The electrical panels for two lift stations are a few feet above ground, and should be further elevated.

Summary of Strategies by Type
The Comprehensive Plan should maintain the wetland restrictions, but should also more assertively coordinate land use, regulatory and infrastructure policies to direct development away from the areas vulnerable to sea level rise. The following strategies were grouped by type and formed the basis for proposed recommended policies to address land use, direct capital investment, identify funding strategies to support engineering studies and implementation of engineering solutions, and incentive programs to encourage voluntary actions by landowners. Public education programs are also recommended.

Land Use Strategies
Land use strategies were necessary to minimize the extent and density/intensity of future development within forecasted inundation areas. These strategies include: pursuing land acquisition in the low lying areas within the Residential Conservation and Residential land use categories; adopting policy language to prohibit amendments that would increase density within these areas; clustering policies for future development that shift development to the portion of a parcel not subject to forecasted inundation; incentives to reduce density within inundation areas through a proposed TDR program; amending the Riverfront Redevelopment land use category based on the 2040 sea level rise forecasted inundation areas or applying regulations to avoid those areas; re-evaluating area north of Wilson Street from a land use and regulatory perspective to limit development at that location, cluster to south of Wilson Street and to maintain as a recreational area; and incentives to encourage offsite parking.

Infrastructure Policy Findings
The policies should be amended to limit public infrastructure expenditures for water and sewer within the Recreation Conservation and Agricultural areas. The policies planning for the Riverwalk, Plaza and Riverfront Redevelopment area should be re-evaluated to provide additional direction for implementing engineering solutions. The RR policy should be reevaluated to develop alternatives to the exemption from stormwater standards.

Capital Improvements and Investment/Funding
Capital improvement policies should direct infrastructure improvements in a manner that would improve stormwater management within existing developed areas located within forecasted inundation areas, while avoiding investments that would support new or expanded development within forecasted areas. This

would mean that the City avoid infrastructure investments in inundation areas in the Residential and Agricultural land use categories. Policies should require that the landowner bear the cost of infrastructure improvements that would serve development within areas vulnerable to sea level rise inundation.

Potential Engineering Solutions
Potential engineering solutions are limited in St. Marks, but could potentially include: construction of seawalls, strengthening existing seawalls, stormwater management, improving the swale system, curb and gutter improvements, floodproofing wastewater treatment facilities, elevating electrical systems for lift stations, engineering analysis, and route floodwaters away from existing structures.

Land Development Regulations
Land development regulations should be evaluated to determine the feasibility of more stringent standards as related to: stormwater standards in inundation areas; placement of fill within forecasted flood areas; change the non-cumulative standard to a cumulative time period (e.g. five years) for calculation of substantial improvements to nonconforming structures; increase the freeboard requirement within vulnerable areas; and implement the recommended clustering and TDR policies.

Incentive and Education Programs
Incentive-based approaches are preferable over imposing downzoning/density reduction policies and regulations that would result in litigation and inefficient takings. Land acquisition is a more effective strategy, particularly when combined with the recommended TDR program as a means to compensate landowners for the transfer of density from sender sites located within forecasted inundation areas (SLR Overlay) to receiver sites located outside of forecasted inundation areas. Construction incentives were also identified, such as reducing or waiving application fees to induce voluntary improvements such as elevating, floodproofing or relocating existing development. Policies should require periodic evaluation of the City's Community Rating System scores and pursue strategies to increase the score, which could potentially prioritize the sea level rise vulnerability areas.

Public Participation
Two workshops were held in accordance with the scope of work to ensure the public was well informed regarding the grant process and to encourage public participation throughout the process. The first public workshop was held on November 28, 2018 following completion of the Vulnerability Analysis and the second public workshop was held on February 14, 2019 and continued on March 18, 2019 following completion of the policy evaluation to obtain public input on potential policy strategies. The public was highly engaged at the workshops and supported the City's adoption and implemented of the strategies discussed above.

Further Recommendations

The City obtained a grant from the Department of Economic Opportunity to further the vulnerability analysis by combining Spring Tide events with SLR to determine the compounding effect and to hold public hearings to adopt the "Peril of Flood" comprehensive plan amendments, which incorporated many of the recommendations from this DEP grant, including the clustering requirement and TDR program, as well as nearly all of the specific policy recommendations. The next step for the City should be to proceed with the implementation phase, which should include administrative actions to pursue supporting grants as the first priority. Grant funds would be utilized to support adoption of implementing land development regulations, conducting engineering studies, implementing public education programs and working on a public-private partnership to leverage City/grant funds by securing matching private investment funds for construction of seawall improvements along the City's mixed use waterfront in conjunction with a riverwalk/plaza.