

1979 - Steamboat Creek Living Shoreline Design

Application Details

Funding Opportunity: 1447-Virginia Community Flood Preparedness Fund - Project Grants - CY23 Round 4
Funding Opportunity Due Date: Nov 12, 2023 11:59 PM
Program Area: Virginia Community Flood Preparedness Fund
Status: Under Review
Stage: Final Application

Initial Submit Date: Nov 12, 2023 4:45 PM
Initially Submitted By: Justin Shafer
Last Submit Date:
Last Submitted By:

Contact Information

Primary Contact Information

Active User*: Yes
Type: External User
Name*: Mr. Justin Shafer
Salutation First Name Middle Name Last Name
Title: Project Manager, Water Quality and Green Infrastructure
Email*: justin.shafer@norfolk.gov
Address*: 2223 McKann Avenue

Norfolk Virginia 23505
City State/Province Postal Code/Zip

Phone*: (757) 823-4048 Ext.
Phone

Fax: ### ### #####

Comments:

Organization Information

Status*: Approved
Name*: NORFOLK, CITY OF
Organization Type*: Local Government
Tax ID*: 546001455
Unique Entity Identifier (UEI)*: RS6DCM873FA3

Organization Website: <https://www.norfolk.gov>

Address*: 810 Union Street
Suite 1101

Norfolk Virginia 23510-
City State/Province Postal Code/Zip

Phone*: (757) 282-8383 Ext.
#####

Fax: ### #### #####

Benefactor:

Vendor ID:

Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: City of Norfolk

Your locality's CID number can be found at the following link: [Community Status Book Report](#)

NFIP/DCR Community Identification Number (CID)*: 510104

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Patrick Roberts
First Name Last Name

Mailing Address*: 810 Union Street
Address Line 1
Suite 1101
Address Line 2
Norfolk Virginia 23510
City State Zip Code

Telephone Number*: 757-664-4242

Cell Phone Number*: 757-664-4242

Email*: city.manager@norfolk.gov

Is the contact person different than the authorized individual?

Contact Person*: Yes

Contact: Justin Shafer
First Name Last Name
501 Boush St
Address Line 1
Address Line 2
Norfolk Virginia 23510
City State Zip Code

Telephone Number: 757-282-8383

Cell Phone Number: 757-282-8383

Email Address: justin.shafer@norfolk.gov

Enter a description of the project for which you are applying to this funding opportunity

Project Description*:

The Steamboat Creek Living Shoreline Design project will design restoration of approximately 4500 linear feet of eroding shoreline in Steamboat Creek, a tributary of the Eastern Branch of the Elizabeth River in the low-income, at risk Campostlla area of Norfolk. Rock sill, sand fill, marsh and riparian plantings, and oyster seeding will be included in the design. Topographic modifications to provide enhanced flood protection will also be assessed and included where feasible.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area*: Yes

Information regarding your census block(s) can be found at [census.gov](https://www.census.gov)

Census Block(s) Where Project will Occur*: Tract 51 - Blocks 1000, 1001, 1014, 1024, 1025, 1026, and 1027

Is Project Located in an NFIP Participating Community?* Yes

Is Project Located in a Special Flood Hazard Area?* Yes

Flood Zone(s) (if applicable): AE

Flood Insurance Rate Map Number(s) (if applicable): 5100340008D

Eligibility CFPF - Round 4 - Projects

Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

Local Government*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration

Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?

Resilience Plan*: Yes
Yes - Eligible for consideration under all categories
No - Eligible for consideration for studies, capacity building, and planning only

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support*: N/A
Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Not applicable

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded*: No
Yes - Not eligible for consideration
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Match not required

Scoring Criteria for Flood Prevention and Protection Projects - Round 4

Scoring

Category Scoring:

Hold CTRL to select multiple options

Project Category*: Living shorelines and vegetated buffers

Is the project area socially vulnerable? (based on ADAPT Virginia's Social Vulnerability Index Score)

Social Vulnerability Scoring:

Very High Social Vulnerability (More than 1.5)

High Social Vulnerability (1.0 to 1.5)

Moderate Social Vulnerability (0.0 to 1.0)

Low Social Vulnerability (-1.0 to 0.0)

Very Low Social Vulnerability (Less than -1.0)

Socially Vulnerable*: High Social Vulnerability (1.0 to 1.5)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NRP?

NFIP*: No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Low-Income Geographic Area*: Yes

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

Reduction of Nutrient and Sediment Pollution*: Yes

Does this project provide community scale benefits?

Community Scale Benefits*: More than one census block

Expected Lifespan of Project

Expected Lifespan of Project*: Over 20 Years

Comments:

Social Vulnerability Score was based off Virginia Flood Risk Information System viewer. The ADAPT viewer uses older data that only delineates to the census tract level. In Norfolk social vulnerability can vary greatly between blocks within a tract.

Scope of Work - Projects - Round 4

Scope of Work

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

Scope of Work*: [Steamboat Creek Living Shoreline Design- Scope of Work.docx](#)

Comments:

Budget Narrative

Budget Narrative Attachment*: [Steamboat Creek Living Shoreline Design Budget Narrative.docx](#)

Comments:

The attached narrative includes a proposal from a City of Norfolk on call consultant

Scope of Work Supporting Information - Projects

Supporting Information - Projects

Provide population data for the local government in which the project is taking place

Population*: 232995.00

Provide information on the flood risk of the project area, including whether the project is in a mapped floodplain, what flood zone it is in, and when it was last mapped. If the property or area around it has been flooded before, share information on the dates of past flood events and the amount of damage sustained

Historic Flooding data and Hydrologic Studies*: [Norfolk Flooding Data and Hydrologic Studies Link.docx](#)

Include studies, data, reports that demonstrate the proposed project minimizes flood vulnerabilities and does not create flooding or increased flooding (adverse impact) to other properties

No Adverse Impact*: [No Adverse Impacts Assessment of Living Shorelines.docx](#)

Include supporting documents demonstrating the local government's ability to provide its share of the project costs. This must include an estimate of the total project cost, a description of the source of the funds being used, evidence of the local government's ability to pay for the project in full or quarterly prior to reimbursement, and a signed pledge agreement from each contributing organization

Ability to Provide Share of Cost*: [CFPF FY24 - Document Transmittal Form.pdf](#)

A benefit-cost analysis must be submitted with the project application

Benefit-Cost Analysis*: [Steamboat Creek Living Shoreline- Benefit Cost Analysis.docx](#)

Provide a list of repetitive loss and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area

Repetitive Loss and/or Severe Repetitive Loss Properties*: [Steamboat Creek Living Shoreline - Repetitive Loss Data.docx](#)

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of residential structures and commercial structures in the project area

Residential and/or Commercial Structures*:

There are 42 residential properties and 8 non-residential properties within the project area. All structures are in the Campostella Heights Historically Underutilized Business (HUB) Zone. Residential properties are a mixture of styles built between the 1910s and 1970s. Nonresidential properties include a church, a sanitary pump station, an environmental and materials management company supporting local shipyards, a security company, a major commercial waste management company, a marine contractor, a concrete plant, and an underwater marine services contractor. Many of these properties are wholly or partially within the 100 or 500 year floodzone.

If there are critical facilities/infrastructure within the project area, describe each facility

Critical Facilities/Infrastructure*:

A regional sanitary pump station supporting Norfolk and Chesapeake is located along the water at the southern end of project area and includes an aboveground water crossing near eroding shorelines.

Explain the local government's financial and staff resources. How many relevant staff members does the local government have? To what relevant software does the local government have access? What are the local government's capabilities?

Financial and Staff Resources*:

The City of Norfolk has numerous professional and operational staff across multiple departments to provide support for project and grant management. In particular, the Office of Resilience and Division of Environmental Storm Water Management have more than 15 engineers, scientists, and inspectors who focus on design, construction, and monitoring of flood reduction, water quality projects, and green infrastructure projects. Storm Water has a two crews dedicated to maintenance of Best Management Practices, including living shorelines. The Department of Public Works has a dedicated Financial Management team who assist with project budget management, including a staff member who focuses on grants. Additional staff from the Bureau of Environmental Services support project inspection and staff from the Department of Parks and Recreation support project maintenance. Additional contracting, budget, and grant support is provided by staff in the City Manager's Office, Budget Office, Grant Management Office, and Public Works Design Division.

The City uses a variety of specialized software to manage all aspects of projects.

Overall project management is through the E-Builder web application. Budgets are managed in the AFMS web application. Grants are managed through the E-Civis web application. Contracting is managed through the OpenGov web application. Assets and maintenance work orders are managed in the Lucity application and ArcGIS.

Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

Goals and Objectives*:

The goals and objectives of the Steamboat Creek Living Shoreline Design project are a combination of protection and enhancement efforts benefitting the surrounding at risk, low-income community.

Goal 1: Complete design and permitting for a project to halt erosion of shoreline and restore tidal wetlands in Steamboat Creek between Indian River Road and the Elizabeth River

Goal 2: Review and design options to combine living shorelines with low berms or other topographic elements to provide additional flood reduction benefit that still allows marsh migration.

Objective 1: Finalize the project design within 2 years of grant agreement signing

Objective 2: Develop methodology for shoreline designs that incorporate enhanced flood reduction within three years of grant agreement signing

Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other project partners

Approach, Milestones, and Deliverables*: [Steamboat Creek Living Shoreline- Approach Milestone and Deliverables.docx](#)

Where applicable, briefly describe the relationship between this project and other past, current, or future resilience projects. If the applicant has received or applied for any other grants or loans, please identify those projects, and, if applicable, describe any problems that arose with meeting the obligations of the grant and how the obligations of this project will be met

Relationship to Other Projects*:

The Steamboat Creek Living Shoreline meets goals of Norfolk's Resilience Strategy, Green Infrastructure Plan, Climate Action Plan, Comprehensive Plan, and TMDL Action Plan. The City has nearly 15 years experience implementing living shorelines and other nature based solutions to meet multiple goals. Nearby projects include the recently completed Ohio Creek Watershed Project and proposed Grandy Village Living Shoreline directly across the Eastern Branch of the Elizabeth River, several subtidal oyster reefs near the mouth of the creek, and ongoing maintenance and solar projects at the upstream Campostella Landfill.

Norfolk has successfully applied for several projects and studies under the CFPF grant, including several studies, a living shoreline project at Riverside Memorial Cemetery, and support for the Coastal Storm Risk Management project. These awards are in various stages of completion. Norfolk does not anticipate any delays that would impact the schedule of the proposed project.

For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance, management, and monitoring plan for the projects must be provided

Maintenance Plan*: [Living Shoreline Maintenance Plan.docx](#)

Describe how the project meets each of the applicable scoring criteria contained in Appendix B. Documentation can be incorporated into the Scope of Work Narrative

Criteria*:

Eligible Projects: The planned project is a living shoreline

Social Vulnerability Index Score: The project area has High SVI and a score of 1.47 per the Virginia Flood Risk Information System viewer

Community Scale of Benefit: The project provides direct benefits to seven blocks within Block Group 1 of Tract 51.

Expected Lifespan of Project: The project is being designed with sea level rise in mind and is expected to survive for more than 20 years. The City also continues to research options to sustain green infrastructure assets in the long-term.

Remedy for NFIP probation or suspension: The City is not in probation or suspension status.

Proposed project part of a low-income geographic area: The project is in a low-income area. Norfolk as a whole is low-income compared to the state and the project area has even greater socioeconomic risk.

Budget

Budget Summary

Grant Matching Requirement*: LOW INCOME - Projects that will result in nature-based solutions - Fund 95%/Match 5%

I certify that my project is in a low-income geographic area: Yes

Total Project Amount*: \$351,663.00

REQUIRED Match Percentage Amount: \$17,583.15

BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

Match Percentage: 5.00%
Verify that your match percentage matches your required match percentage amount above.

Total Requested Fund Amount: \$334,079.00

Total Match Amount: \$17,584.00

TOTAL: \$351,663.00

Personnel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Travel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Equipment

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Supplies

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Construction

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

Contracts

Description	Requested Fund Amount	Match Amount	Match Source
Project Design by On-Call Consultant	\$334,079.00	\$17,584.00	Resilience and Water Quality CIP
	\$334,079.00	\$17,584.00	

Maintenance Costs

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Long and Short Term Loan Budget - Projects - VCFPF

Budget Summary

Are you applying for a short term, long term, or no loan as part of your application?

If you are not applying for a loan, select "not applying for loan" and leave all other fields on this screen blank

Long or Short Term*: Not Applying for Loan

Total Project Amount: \$0.00

Total Requested Fund Amount: \$0.00

TOTAL: \$0.00

Salaries

Description	Requested Fund Amount
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No Data for Table

Fringe Benefits

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Travel

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Equipment

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Supplies

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Construction

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Contracts

Description	Requested Fund Amount
-------------	-----------------------

No Data for Table

Other Direct Costs

Description	Requested Fund Amount
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No Data for Table

Supporting Documentation

Supporting Documentation

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
Detailed map of the project area(s) (Projects/Studies)		A map showing the project area and currently proposed shoreline restoration areas is attached	Steamboat Creek Living Shoreline - Project Area Map.docx	docx	2 MB	11/12/2023 11:20 AM
FIRMette of the project area(s) (Projects/Studies)		The attached map shows the majority of the project area within the AE flood zone.	Steamboat Creek Flood Hazard Area.pdf	pdf	1 MB	11/12/2023 03:33 PM
Historic flood damage data and/or images (Projects/Studies)		The attached images shows erosion along the shoreline in multiple locations around the creek	Steamboat Creek Living Shoreline - Damage Photos.docx	docx	4 MB	11/12/2023 03:53 PM
A link to or a copy of the current floodplain ordinance		A link to Norfolk's floodplain ordinance is provided in the attached file.	Norfolk Floodplain Ordinance.docx	docx	12 KB	11/09/2023 05:10 PM
Maintenance and management plan for project		A general description of living shoreline maintenance is attached and an SOP is provided in supporting documents.	Living Shoreline Maintenance Plan.docx	docx	12 KB	11/12/2023 03:34 PM
A link to or a copy of the current hazard mitigation plan		In 2022, the Hampton Roads Planning District Commission updated the Hampton Roads Hazard Mitigation Plan. The City of Norfolk worked with other local communities to develop the plan and it serves as the Hazard Mitigation Plan for Norfolk. Links to the plan and Norfolk's latest annual report are in the attached file.	Hazard Mitigation Plan.docx	docx	12 KB	11/09/2023 05:10 PM
A link to or a copy of the current comprehensive plan		A link for Norfolk's comprehensive plan is found in the attached word document.	Norfolk Comprehensive Plan Link.docx	docx	12 KB	11/09/2023 05:10 PM
Social vulnerability index score(s) for the project area		The project area has High Social Vulnerability	Steamboat Creek Social Vulnerability.pdf	pdf	1 MB	11/12/2023 11:20 AM
Authorization to request funding from the Fund from governing body or chief executive of the local government		The attached Transmittal Form provides permission from the City Manager for the grant application and approval of use of CIP funds as match.	CFPF FY24 - Document Transmittal Form.pdf	pdf	1 MB	11/09/2023 05:10 PM
Signed pledge agreement from each contributing organization		The attached form authorizes application for the grant and use of funds if awarded.	CFPF FY24 - Document Transmittal Form.pdf	pdf	1 MB	11/12/2023 03:35 PM
Maintenance Plan		Living shorelines are considered BMPs in the City of Norfolk and are inspected and maintained annually by the Division of Environmental Storm Water Management as part of their routine BMP programs. When necessary, guidance and more detailed monitoring and maintenance are provided by additional environmental staff from the Office of Resilience and Bureau of Environmental Services.	SOP 654 Storm Water BMP Inspection_Finalized 2020.pdf	pdf	4 MB	11/09/2023 05:10 PM
<p><i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. In lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i></p>						
Benefit Cost Analysis						
Other Relevant Attachments						

Letters of Support

Description	File Name	Type	Size	Upload Date
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No files attached.

Resilience Plan

Resilience Plan

Description	File Name	Type	Size	Upload Date
The attached document includes descriptions and links for all required elements of a resilience plan per CFPF guidelines and was approved by DCR in August 2021.	Resilience Planning Overview for the City of Norfolk - DCR Approved Aug 2021.pdf	pdf	288 KB	11/09/2023 05:10 PM

Resilience Planning Overview for the City of Norfolk

In response to the resilience planning requirements of the **Community Flood Preparedness Fund** (“the CFPF” or “Fund”) outlined within the [2021 CFPF Grant Manual](#) (Appendix G: Elements of Resilience Plans), the City of Norfolk (“the City”) has prepared the following Resilience Planning Overview of formal and relevant plans utilized for resilience planning efforts by the City to prioritize potential projects and to assist the City in its efforts to secure funding for such critical resilience plans, studies and projects.

The **Elements of Resilience Plans** taken from Appendix G of the 2021 CFPF Grant Manual, from which communities are expected to highlight the stated resilience planning contents as they related to CFPF grant applications, are as follows:

1. *It is project-based with projects focused on flood control and resilience.*
2. *It incorporates nature-based infrastructure to the maximum extent possible.*
3. *It includes considerations of all parts of a locality regardless of socioeconomics or race.*
4. *It includes coordination with other local and inter-jurisdictional projects, plans, and activities and has a clearly articulated timeline or phasing for plan implementation.*
5. *Is based on the best available science, and incorporates climate change, sea level rise, storm surge (where appropriate), and current flood maps.*

Norfolk’s resilience planning elements are not contained within an adopted “stand alone” plan. However, Norfolk’s utilizes various plans within a resilience repertoire, which altogether serve multiple needs for various audiences; from technical to public-facing to operational. This Resilience Planning Overview will expressly identify to the grant reviewer, and to the public, how various resilience planning documents of the City of Norfolk satisfy all the CFPF Resilience Plan elements.

The following plans for the City of Norfolk will contribute to this Resilience Planning Overview:

- [plaNorfolk2030](#) (2013, as amended)
- [Vision2100](#) (2016)
- [Hampton Roads Hazard Mitigation Plan](#) (2017)
- [Combined Coastal and Precipitation Flooding Master Plan](#) (2017)
 - Appendix A: [Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development](#) (Fugro Atlantic)
 - Appendix B: [City-wide Drainage and Watershed Master Plan](#) (Timmons Group)
- [A Green Infrastructure Plan for Norfolk](#) (2018, as amended)
- [USACE Coastal Storm Risk Management \(CSR\) Feasibility Study and Environmental Impact Statement](#) (2019)
- [Zoning Ordinance of the City of Norfolk](#) (2018, as amended)

Responses are provided below in red based on the various Norfolk plans for the following example resilience elements outlined in Appendix G of the 2021 CFPF Grant Manual:

- ***Equity based strategic polices for local government-wide flood protection and prevention.***
The [Hampton Roads Hazard Mitigation Plan](#) recommends the highest priority of protection to be reserved towards protection projects for severe repetitive loss areas (Mitigation Actions 8 &

11) in Norfolk. Research in Norfolk has shown that these areas are often places where the most vulnerable residents are housed.

Additionally, Mitigation Action 12 recommends Norfolk begin risk/hazard mitigation efforts equitably by first implementing a major flood control project within the historically black community of Chesterfield Heights; implementation of a \$112M HUD project awarded through the National Disaster Resilience Competition (construction currently underway).

- **Proposed projects that enables communities to adapt to and thrive through natural or human hazards.**

The [Combined Coastal and Precipitation Flooding Master Plan](#) (Norfolk's "Flooding Master Plan") is based on a major multi-year study effort supported by technical analyses and recommendations from Fugro Atlantic within the [Norfolk Preliminary City-wide Coastal Flooding Mitigation Concept Evaluation and Master Plan Development](#) (the "Fugro report"). The Flooding Master Plan is also supporting by a thorough analysis and priority ranking technical guide of the City's drainage conveyance system, [City-wide Drainage and Watershed Master Plan](#) by Timmons Group.

Together, with this technical supporting documentation, the [Flooding Master Plan](#) provides the framework for Norfolk to intelligently review and prioritize flood protections project to enable Norfolk to adapt and thrive to current and future flood threats.

- **Documentation of existing social, economic, natural, and other conditions present in the local government.**

The [USACE Coastal Storm Risk Management \(CSRM\) Feasibility Study and Environmental Impact Statement](#) presents a robust analysis of the best recommendations for City-wide flood protection measures for the City of Norfolk. This report includes 10% engineered designs for the various flood protection measures recommended throughout the entire community, and a preliminary Environmental Impact Statement is included outlining the existing social, economic, natural conditions, vulnerabilities and stressors within the natural and social environment, as well as proposed impacts. See the various CSRM appendices for these detailed conditions and impact reports.

- **Review of the vulnerabilities and stressors, both natural and social in the local government.**

See CSRM comment above. Additional overview of the vulnerabilities and stressors can be found in the [Hampton Roads Hazard Mitigation Plan](#).

- **Forward-looking goals, actionable strategies, and priorities through as seen through an equity-based lens.**

Norfolk remains committed to presenting all action plans through an equity-based lens, as found within the actionable strategies of [A Green Infrastructure Plan for Norfolk](#) and the [Hampton Roads Hazard Mitigation Plan](#). Both plans are tactical, and recommendation are based on a 5-year forward-looking outlay. Recommendations of the Fugro report are based on a 50-year outlay, and recommendations of [Vision2100](#) geared towards the year 2100.

- **Strategies that guides growth and development away from high-risk locations that may include strategies in comprehensive plans or other land use plans or ordinances or other studies, plans or strategies adopted by a local government.**

[Vision2100](#) is serves a land use guide for the City. The plan divides Norfolk up into four main areas by which the City will focus new investments and make necessary steps to prepare for a changing environment:

 - ✓ Purple: Low Flood Risk / Low Degree of Civic Assets: Establishing Neighborhoods of the Future
 - ✓ Green: Low Flood Risk / High Degree of Civic Assets: Designing New Urban Centers
 - ✓ Yellow: High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters
 - ✓ Red: High Flood Risk / High Degree of Civic Assets: Enhancing Economic Engines (protect!)
- **Proposed acquisition of land or conservation easements or identification of areas suitable for conservation particularly areas identified as having high flood attenuation benefit by *ConserveVirginia* or similar data driven tools.**

[Vision2100](#) provides the framework for selecting the areas suitable for conservation easements. The [Norfolk Zoning Ordinance](#) provides the mechanism for purchasing land conservation easement credits from the [Coastal Resilience Overlay](#) through transferring [Resilient Quotient points](#) to the [Upland Resilience Overlay](#) (requires extinguishment of a density unit – developable dwelling unit). The conservation easement, while recorded on the deed and kept on file with the Planning Department, can be held by the property owner, the Zoning Ordinance also permits it to be placed in a land trust.
- **Identification of areas suitable for property buyouts in frequently flooded areas.**

See [Vision2100](#) “Yellow” areas (High Flood Risk / Low Degree of Civic Assets: Adapting to Rising Waters) and Coastal Resilient Overlay areas on the [Norfolk Zoning Map](#).
- **Identification of critical facilities and their vulnerability throughout the local government such as water and sewer or other types identified as “lifelines” by FEMA.**

A list of all critical facilities is contained within the *Norfolk Emergency Operations Manual (2020)*. See Mitigation Action 5 from [Hampton Roads Hazard Mitigation Plan](#): “Purchase and install generators or other continuous power sources for critical facilities and infrastructure. This action may include, but is not limited to pump stations, EOC (Emergency Operations Center), shelters, underpasses and important traffic signals.” The critical facilities list is available upon request.
- **Identified ecosystems/wetlands/floodplains suitable for permanent protection.**

See [A Green Infrastructure Plan for Norfolk](#), this includes an *Action Plan Appendix for Threatened and Endangered Species* within critical floodplain habitats, as well as a detailed ecological inventory with recommendations for floodplain protection measures within an connected open space corridor network.

- **Identified incentives for restoring riparian and wetland vegetation.**
 - The City’s Public Works Division of Stormwater Management offers the [Stormwater Fee Reduction Program](#) for homeowners and businesses who opt to implement water quality improvements on their private property including riparian buffer and shoreline management improvement.
 - [Environmental Conservation Consulting](#) – Norfolk annually funds a contract to coordinate with residential property owners for implementation of water quality improvements on their private property including riparian buffer and shoreline management improvement through a cost-share program. Property owners get a percentage of the project paid through the contractor via the Environmental Conservation Consulting services contract.
 - Norfolk regularly applies for grants to partner with community organizations for implementation of green infrastructure of public lands – projects are reviewed by the **Watershed Management Task Force** to ensure that projects are furthering the goals and objectives of the adopted [Green Infrastructure Plan for Norfolk](#).

- **A framework for implementation, capacity building and community engagement.**

The **Watershed Management Task Force** and the recently created Program for Public Information committee are two groups made up of joint staff/citizen/technical expert members, which collectively drive the City’s ongoing programming for green infrastructure projects and flood mitigation messaging. Capital Improvement Project funding recommendations from the [Green Infrastructure Plan for Norfolk](#) are also reviewed monthly by the Watershed Management Task Force.

- **Strategies for creating knowledgeable, inclusive community leaders and networks.**

The 12-member Norfolk Coastal Management Review Board (CMRB) provides recommendations to the 7-member Erosion Advisory Commission, which is partially comprised of members of the CMRB. The CMRB is made up of elected leaders, civic league presidents/community leaders and technical experts from the Virginia Institute of Marine Science, Virginia Marine Resources Commission, Army Corp of Engineers, Old Dominion University Department of Ocean, Earth and Atmospheric Sciences, and city technical staff, providing workshops, seminars and project assessments of coastal mitigation and erosion projects; specifically intended to build grassroots technical capabilities and citizen champions within the community. The Norfolk CMRB and Erosion Advisory Commission is established by [City Code](#) and guided by the City’s adopted [Sand Management Plan](#).

- **A community dam safety inventory and risk assessment posed by the location and condition of dams.**

Not applicable in Norfolk – not at dam risk.

- **A characterization of the community including population, economics, cultural and historic resources, dependence on the built environment and infrastructure and the risks posed to such infrastructure and characteristics by flooding from climate change, sea level rise, tidal events or storm surges or other weather.**

This general characterization is well documented within the general/comprehensive plan for the City of Norfolk – [plaNorfolk2030](#). This includes dozens of resiliency recommendations for flood risk reduction and communication.

- **Strategies to address other natural hazards that would cause, affect or result from flooding events including:**
 - **Earthquakes.**
 - **Storage of hazardous materials**
 - **Landslides/mud/debris flow/rock falls.**
 - **Prevention of wildfires that would result in denuded lands making flooding, mudslides or similar events more likely.**
 - **Preparations for severe weather events including tropical storms or other severe storms, including winter storms.**

The [Hampton Roads Hazard Mitigation Plan](#) is a FEMA-accredited all-hazards plan.



**DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENVIRONMENTAL
STORM WATER MANAGEMENT
STORM WATER BMP INSPECTIONS**

DATE WRITTEN: March 8, 2005
DATE REVISED: June 28, 2017; September 18, 2018; November 25, 2019; February 10, 2020
PREPARED BY: Kyle Quick, Environmental Specialist; June Whitehurst, Environmental Programs Manager
REVIEWED BY: John M. White, Storm Water Engineer
FILE PATH: Enter Link Here
DISTRIBUTION: Operations Personnel

PURPOSE / OBJECTIVE:

To define guidelines for the inspection and enforcement for the installation and maintenance of all private and city-owned storm water structural best management practices (BMPs). BMPs reduce unwanted contaminants and/or the volume of storm water entering the City MS4 system and local waterways. BMPs are regularly inspected to ensure they are working as designed and maintained in such a manner to not cause flooding, become a nuisance, or impose a threat to health and safety.

RESPONSIBILITIES:

Division – The Department of Public Works, Division of Environmental Storm Water Management is the administrator of the MS4 VPDES Permit, VA0088650. Environmental staff ensures compliance with the VPDES permit associated with BMP inspections to the storm water system. State law requires BMPs to be inspected once every 5-years. The City's MS4 permit requires city-owned BMPs be inspected and maintained once per year.

Environmental Staff develop and maintain a list of BMPs within the geographic boundary of the City of Norfolk. This list is routinely updated following site plan review. Environmental staff conduct routine inspections of both private and public storm water BMPs.

OTHER:

BMPs are used to reduce pollution in and/or volume of storm water runoff, thereby protecting area waterways. Some examples of structural storm water BMPs include infiltration trenches, grass swales, detention basins, retention ponds, oil/grit separators, bioretention basins, manufactured BMPs, etc.

REQUIREMENTS:

1. BMPs are approved for installation after an extensive site plan review by a designated storm water engineer. All pertinent information pertaining to the BMPs are entered into the current BMP tracking database.
2. As part of the site plan approval process, a Declaration of Covenants for Storm and Surface Water Facility and System Maintenance (BMP Maintenance Agreement) should be signed and notarized by the owner or responsible party of the private property being developed to maintain the BMP after construction. That party will remain responsible for all maintenance until the property is sold; at which time the new owner is responsible for maintaining the BMP. A copy of the agreement is filed with the clerk of the court by the owner or responsible party. A copy of the agreement is also maintained in the site plan file at the Division.
3. Storm water management (SWM) facilities or BMPs are required to be installed in accordance with the approved plans, and manufacturers' specifications where applicable. The City of Norfolk Planning Department, Building Safety Bureau will inspect the installation of onsite stormwater piping and structures. The Department of Public Works, Environmental Storm Water Management



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staff will inspect the installation of BMPs. Additionally, they also inspect stormwater piping and structures within the City Right-of-Way and piping that ties into the City's MS4 system. During construction, environmental staff will have completed the following procedures:

- a. A pre-construction meeting will be scheduled to go over expectations. Pre-construction meetings will be documented.
 - b. Follow up inspections with the contractor will occur throughout the construction process to verify that the BMPs are installed in accordance with the approved plans. These inspections should take place before any backfilling occurs and should include pictures for documentation. If there is a tie-in to the city system, a storm water inspector will inspect the tie-in.
 - c. A construction record drawing ("As-built" submission) signed and sealed by a professional registered in Virginia will be reviewed by a storm water engineer or their designee to verify the SWM facilities have been installed per the approved plan.
 - d. A final inspection will be performed by the environmental staff to ensure that the BMP and contributing drainage areas are stabilized. The inspector will also ensure that the site is free of excessive litter or debris, sediment build up, or erosion, and no deviations from the approved construction record drawing.
 - e. Upon approval of the construction record drawing and the final inspection, the environmental staff will approve the release of the Certificate of Occupancy (if required) and approval to terminate bonds for stormwater improvements.
4. All privately-owned and city-owned BMP inspections are tracked in the current BMP tracking database. The database enables the Division to maintain inspection data and to ensure inspections are completed on a routine schedule.
5. When an inspection is conducted, the following items are checked to ensure that the BMP will consistently perform its water quality improvement and/or runoff reduction functions.
- a. *Sediment Buildup*: Sediment buildup can reduce the effectiveness of the BMP by blocking inlets and outlets, reducing infiltration rates, and reducing effectiveness of pretreatment practices.
 - b. *Erosion*: Erosion can lead to reduced volume of the BMP and/or structural failure. Erosion is a common problem around inlets and outlets of BMPs, and may also be caused by roots of woody vegetation and animal burrows.
 - c. *Debris and Litter Removal*: Regular removal of litter and debris is essential to ensure the BMP is working properly. The BMP must be free from debris and litter in or around the BMP structure.
 - d. *Vegetation*: Vegetation must be established and maintained to guard against erosion and sediment buildup, and to maintain designed pollutant removal rates where applicable. Excessive vegetation clippings must be removed from the BMP and disposed of properly.
 - e. *Deviation from the Construction Record Drawing*: Verify a property owner, tenant, or other responsible party has not modified a post-construction BMP without written approval from the City of Norfolk Department of Public Works storm water engineer, or their designee.



**DEPARTMENT OF PUBLIC WORKS
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- f. *Manufactured BMPs*: The owner or responsible party are required to maintain manufactured BMPs in accordance with the manufacturer's specifications, and to provide evidence of continued maintenance by copies of maintenance records and/or photographic proof.
 - g. *Other Maintenance Concerns*: Refer to the Virginia Department of Environmental Quality Stormwater Design Specifications for other BMP maintenance concerns.
6. The environmental staff will complete an inspection report and track inspections in the current BMP tracking database. The responsible party will either be sent an email or a letter that lists the BMP maintenance discrepancies and includes a copy of the inspection report, if necessary. The responsible party will have a specified time-period to complete the maintenance after the report has been sent. A re-inspection will occur after the allotted time-period to ensure all corrections have been made. If the inspector has had no contact from the property owner, if letters have been returned, or if the discrepancies have not been addressed a Notice of Violation (NOV) may be sent or issued. If no progress occurs after the NOV has been issued, further legal actions should be taken. The City also holds the right to conduct the corrections after proper warning, and then charge the responsible party for any financial obligations. If the BMP is working properly and does not appear to have any maintenance discrepancies, a note will be made in the file and no report will be sent to the responsible party.
7. Routine maintenance for any City-owned BMP is conducted by the Division which is submitted in a service request and put into the work management tracking system. The City-owned BMPs must also follow all the guidelines established above.
8. The Norfolk Public Schools BMPs are inspected by the environmental staff, however, the school board facilities manager is the main point of contact for any discrepancies regarding BMP maintenance at school facilities. The school board is responsible for maintaining the BMPs and if major work is required beyond the capabilities of facilities personnel, then they will hire a contractor.

Approved:

John M. White
Storm Water Engineer
Public Works, Division of Environmental Storm Water Management

THE CITY OF NORFOLK

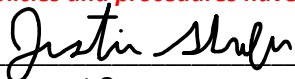



DOCUMENT TRANSMITTAL FORM

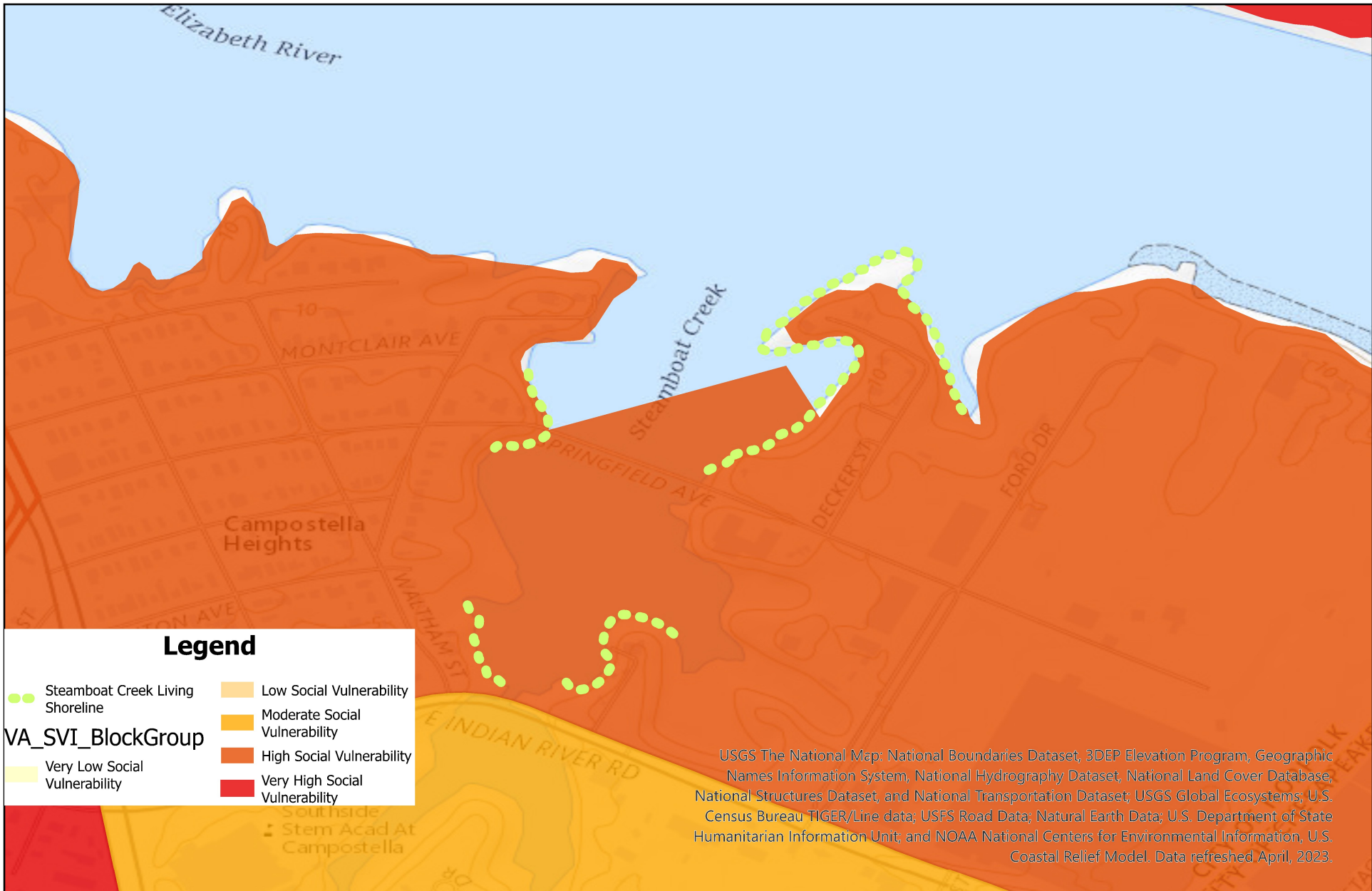
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Use for All City Documents Which Require the City Manager's Staff Approval

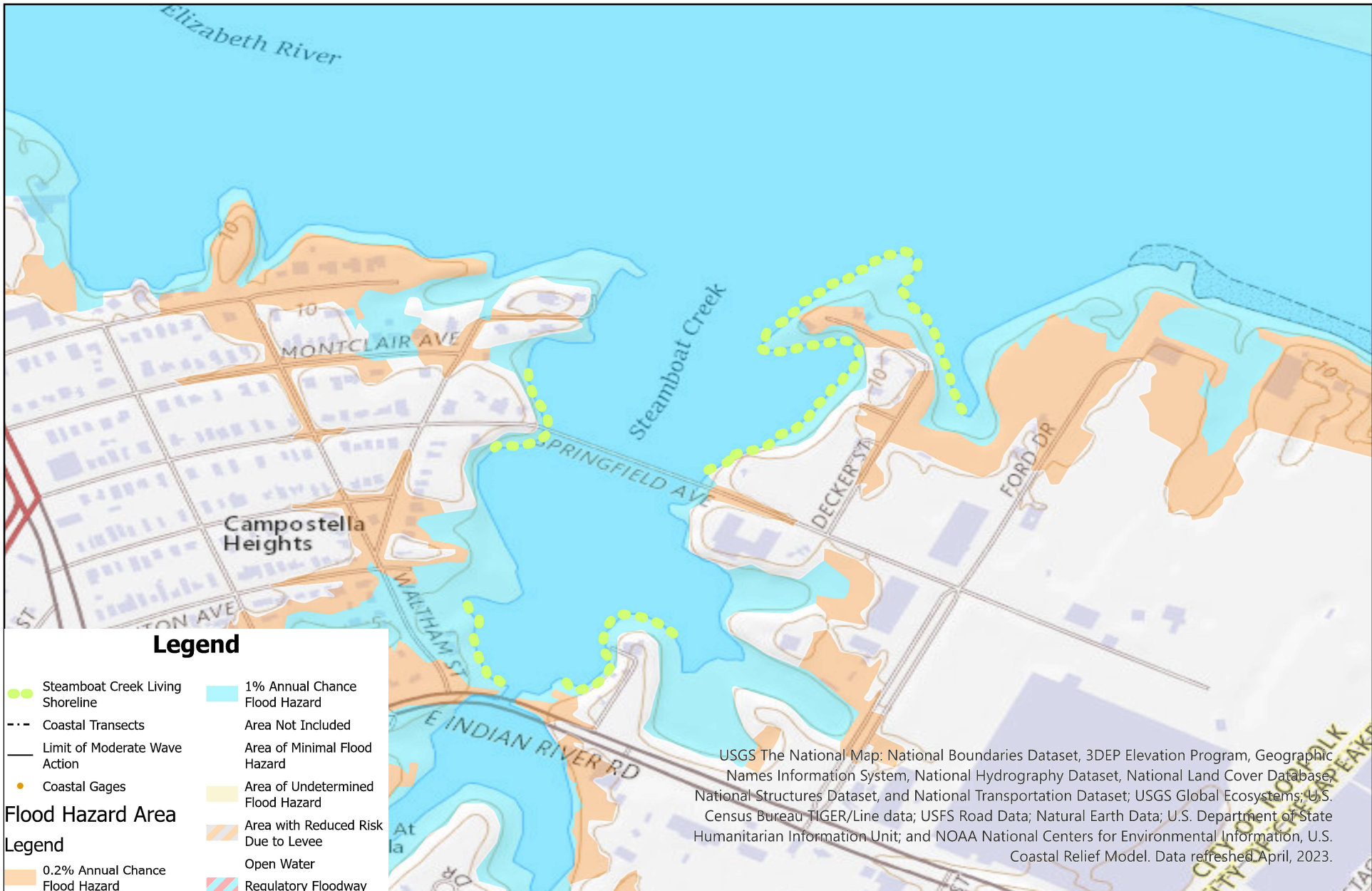
* PLEASE INDICATE IF THERE IS A LEGITIMATE DUE DATE BY WHICH THE CITY MANAGER MUST RESPOND *	
Due Date: <u>11/10/23</u> (submittal by <u>11/12/23</u>) _____ Return Completed Document To: <u>Justin Shafer</u>	
DEPARTMENT	OFFICE OF RESILIENCE
A. TO BE COMPLETED FOR CONTRACTS, AGREEMENTS, RFPs, AND GRANTS:	
TITLE	FY24 Community Flood Preparedness Fund Grant
PARTY (Company and principal's names with which the City is entering into the agreement.)	Virginia Department of Conservation and Recreation
EFFECTIVE DATES (Start & end dates)	March 15, 2024 – March 15, 2027 (estimated based on expected award announcement and agreement dates)
TOTAL DOLLAR VALUE	\$6,695,610 (\$6,360,829 grant award & \$334,781 match)
FUNDING SOURCE (Operating or capital budget; budget year; grant or other source. Show account information)	SOURCE: RESILIENCE CIP ACCOUNT: 4000-2-4361-5501-FY24
TYPE (New or extension)	New
SUMMARY OF SCOPE OF SERVICE/ PROGRAM	Grant to support design and construction of living shorelines at Grandy Village and East Ocean View Community Center, and design of living shorelines in the Steamboat Creek area of Campostella. Projects will support resilience, water quality, and green infrastructure goals, including CSRM and Bay TMDL.
CALL OUTS (Indicate any unique circumstances regarding provisions such as procurement protest pending, emergency purchase or other time sensitivity, so forth, along with any other pertinent information)	
B. TO BE COMPLETED FOR HUMAN RESOURCES DOCUMENTS:	
TYPE OF DOCUMENT:	N/A
BRIEF DESCRIPTION: N/A	
Certificate of Satisfaction: <i>I (We) hereby certify that all reasonable due diligence has been performed to sufficiently develop the contents and implications of the attached document in a manner to protect and account to the public. Further, all City policies and procedures have been adhered to and therefore, I (we) recommend the City Manager execute this document.</i>	
 _____ Justin Shafer Document Owner	 _____ Matt Simons Department Signature
11/8/23 Date	11/8/2023 Date
Review by DCM <small>3FC1317F31EF46A...</small>	Review by CM <small>E88E1B3EDF5842D...</small>
<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove <input type="checkbox"/>	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove <input type="checkbox"/>
 _____ Douglas Beaver Deputy City Manager	 _____ City Manager
11/8/2023 6:31 PM EST Date	11/9/2023 4:21 AM PST Date



Steamboat Creek Living Shoreline
Social Vulnerability
High Social Vulnerability
(Index Score: 1.47)

N
 Date: 11/09/2023

 0 275 550 US Feet



Legend

- Steamboat Creek Living Shoreline
- Coastal Transects
- Limit of Moderate Wave Action
- Coastal Gages
- 1% Annual Chance Flood Hazard
- Area Not Included
- Area of Minimal Flood Hazard
- Area of Undetermined Flood Hazard
- Area with Reduced Risk Due to Levee
- 0.2% Annual Chance Flood Hazard
- Open Water
- Regulatory Floodway

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.



**Steamboat Creek Living Shoreline
Flood Hazard Area**

N
 Date: 11/09/2023
 0 275 550
 US Feet

THE CITY OF NORFOLK

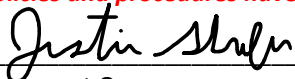



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