Town of Occoquan, Virginia

Resilient Stormwater and Flood Management and Implementation Plan

Virginia Community Flood Preparedness Fund
FY2022 ROUND 3 GRANT APPLICATION
April 8, 2022

TOWN OF OCCOQUAN

Circa 1734 ● Chartered 1804 ● Incorporated 1874
314 Mill Street ● PO Box 195 ● Occoquan, Virginia 22125
www.occoquanva.gov

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Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

TOWN OF OCCOQUAN, VA

Category of Grant Being Applied for (check one):

____Capacity Building/Planning

_____Project

_X__Study

NFIP/DCR Community Identification Number (CID)__510124

If a state or federally recognized Indian tribe, Name of tribe_____

Name of Authorized Official: _KIRSTYN JOVANOVICH, TOWN MANAGER

Signature of Authorized Official: Kirstyn Jovanovich

Mailing Address (1): __PO BOX 195

Mailing Address (2): _314 MILL STREET

City: _OCCOQUAN____ State: __VA_____ Zip: ____22125_____

Telephone Number: (703) 491-1918__ Cell Phone Number: (571) 572-8411

Email Address: _KJOVANOVICH@OCCOQUANVA.GOV

Contact Person (If different from authorized official): _____

Mailing Address (1): _____

Mailing Address (2): _____

City: _____ State: _____ Zip: _____

Telephone Number: (____) _____ Cell Phone Number: (____) _____

Email Address: _____

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No _X_

Categories (select applicable project):

Project Grants (Check All that Apply)

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large scale Low Impact Development (LID) in urban areas.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- ☐ Dam restoration or removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.
- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- ☒ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

- [x] Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- [ ] Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- [x] Studies and Data Collection of Statewide and Regional Significance.
- [x] Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- [x] Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

- [ ] Floodplain Staff Capacity.
- [ ] Resilience Plan Development
  - [ ] Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - [ ] Resource assessments, planning, strategies and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.

Location of Project (Include Maps): WITHIN MUNICIPAL BOUNDARY OF TOWN OF OCCOQUAN, VA

NFIP Community Identification Number (CID#):(See appendix F) 510124

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): _____

Flood Insurance Rate Map Number(s) (If Applicable): 51153C0217D

Total Cost of Project: $175,000

Total Amount Requested $131,250

Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan

The Town of Occoquan (Town) is applying for this grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 3 'Study' category for a new study that evaluates the town's stormwater and flood resilience and ultimately results in an actionable plan that when implemented, increases the town's overall resilience and responds to the impacts of climate change within the community and region.

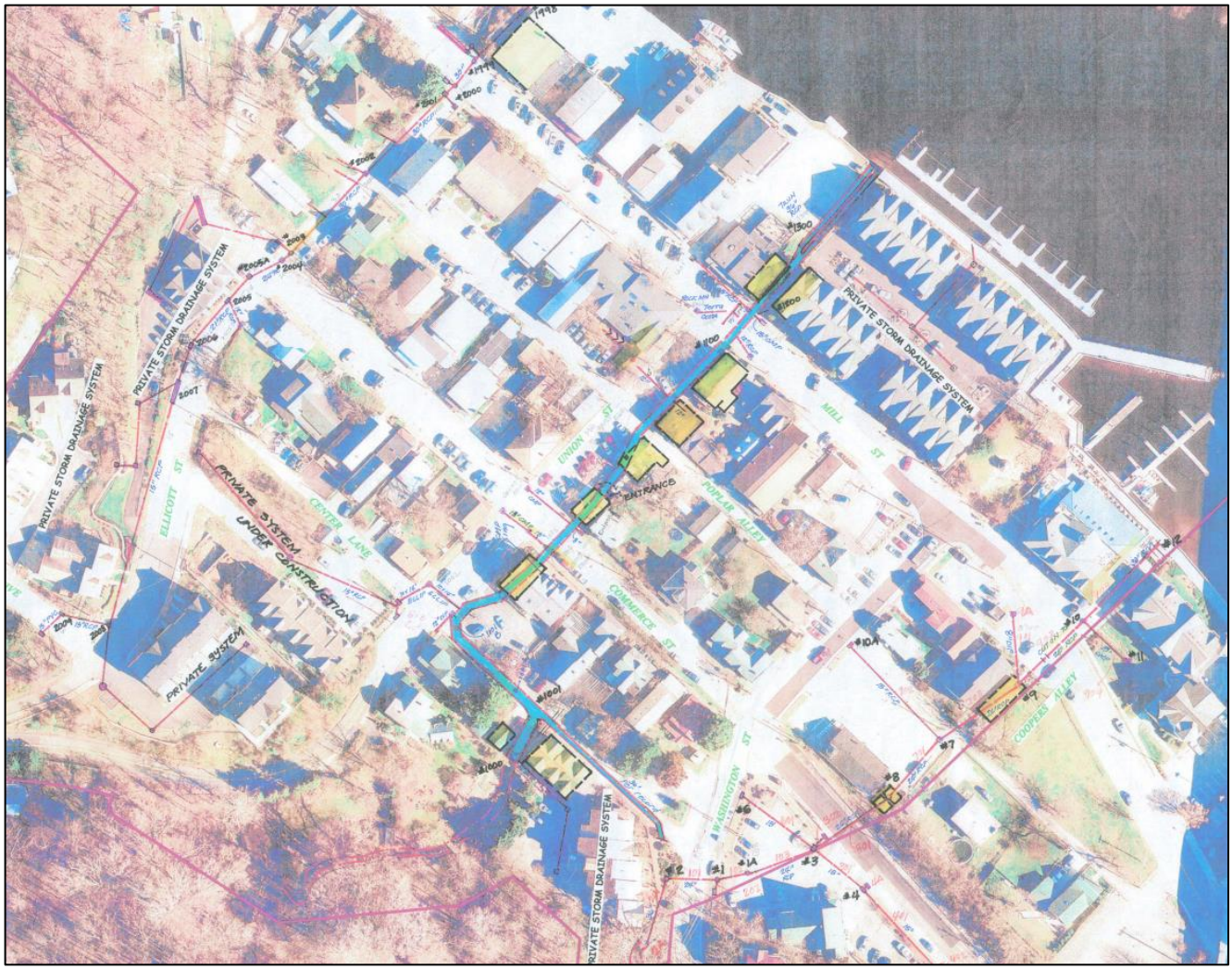
The project, *Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*, is focused on evaluating the town's existing conditions, future conditions, and provides an actionable plan that incorporates flood resilience goals, considers capacity, and identifies opportunities for green infrastructure throughout the community. This Plan will aid the Town in implementing a comprehensive stormwater and flood management program and guide investment into projects aimed at enhancing and supporting the town's resilience goals today and into the future.

While a community Resilience Plan is not required for submission under the 'study' category according to the 2022 Grant Manual for the Virginia CFPF, the Town will be submitting a Resilience Plan for consideration by DCR in April 2022. The Town has integrated flood mitigation and resilience goals across areas of the local government, with flood resistance and stormwater management a priority addressed through our comprehensive planning and town ordinances and policies. This project will advance the town's priorities identified in these plans and policies, especially as it relates to building a resilient stormwater and flood management program for the community.

I. Background Information

The Town of Occoquan experiences periodic flooding, particularly in the spring and fall, from two primary sources. First among these is the Occoquan River. Flooding associated with spring thaws and rains to the west, and fall hurricanes or tropical storms that create a tidal bore, are fairly common, occurring roughly every other year.

The second primary source of flooding in Occoquan is flash-flooding from two major streams that flow through town to the Occoquan River – Ballywhack Creek and Boundary Branch. This flooding is much less predictable, affects inland properties in town, endangers traffic on major streets in town, and threatens damage to the town's stormwater system. Each of these tributaries originates outside of town, thus drawing from watersheds well beyond town boundaries, and is significantly affected by development and stormwater practices beyond the town's control. Sitting at the bottom of hillsides along the banks of the Occoquan River, the Town of Occoquan and its stormwater management system is a recipient of runoff, some uncontrolled, from developments and roadways outside of Occoquan.



[Map 1] Town of Occoquan Downtown along the Occoquan River, 2018. Existing locations of the three main stormwater systems that run through Occoquan and exit into the Occoquan River: Ellicott Street system, Union Street System and Coopers Alley System. The Town of Occoquan has responsibility for management of its Stormwater Program.

The Town is responsible for managing and administering its stormwater program, including maintenance of existing stormwater structures, and planning for capital improvements to the system in response to existing needs and anticipated future needs caused by increased development in the region and impacts from climate change.

In 2018, the Town partnered with Prince William County to conduct a preliminary investigation and evaluation of the town's three main stormwater systems that run through the historic district and discharge directly into the Occoquan River. Since then, the Town has been working closely with Prince William County to assist the Town in performing a comprehensive review of the town's stormwater program, including mapping and evaluating existing public underground and surface infrastructure, locating and evaluating private facilities that feed into the town's system, as well as identifying opportunities for stream restoration and projects to combat impacts from climate change. The Town's intent is to incorporate natural elements to aid in stormwater management and to combat climate change. Part of this assessment includes evaluating the stormwater management program within the town and establishing a Stormwater Utility Fee to aid in maintaining and upgrading the town's infrastructure now and into the future.

II. Project Information

The Town of Occoquan is seeking this grant request to fund development of *Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*. The Town has been subject to various flooding events over the years and has limited historical or existing conditions information and data to evaluate and plan for the future of the town's stormwater program, including the community's flood resilience. This study, once completed, will provide the Town with invaluable data on existing conditions, future conditions, and provide an actionable plan that incorporates flood resilience goals, considers capacity, and identifies opportunities for green infrastructure throughout the community. This Plan will be the launching pad for the Town to invest in and modernize our stormwater program to reduce flood risk, incorporate green infrastructure that addresses stormwater quality and quantity, respond to climate change, as well as increase quality of life and natural beauty within our community.

a. Scope of Work

The following Scope of Work outlines the intended process and deliverables associated with the development of the *Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan*. The funding requested through this grant program will fund the development of this Plan.

Task 1. Project Kickoff

1.1 Project Kickoff Meeting
At the onset of the project, the Project Team will review and commit to a detailed proposed schedule, which outlines key milestones, including projected meeting dates. An agreed-upon schedule will ensure that the project keeps moving forward and is completed within the grant timeframe required by the funder, the Virginia Department of Conservation and Recreation. All of the FY23 activities will be completed by June 30, 2023, so that Occoquan can receive all Community Flood Preparedness funds allocated to them for FY23.

1.2 Collect Background Information
As much historical information as possible will be gathered and reviewed regarding the condition of the town's drainage system, where available.

Task 2. Flood Resilience Assessment

An assessment of flood vulnerability will be performed using a Hydraulic and Hydrologic model and a field survey of the current condition of the town's stormwater system.

2.1 Field Data Collection Survey
The purpose of the data collection efforts, identified in the following sub-tasks, is to minimize data gaps by collecting an appropriate level of data to cost-effectively estimate future project costs. Where insufficient data is available to develop a reasonable cost estimate for a particular project, the tasks and associated cost to obtain will be estimated. A data gap analysis will be used to identify projects that may not be ready to proceed during the early stages of the plan. It will also be utilized to identify data gathering tasks that could be added to early phases of the plan to facilitate future projects.

Two to three weeks of field effort will be conducted by two stormwater trained professionals to verify connectivity, as well as to establish an accurate and complete the town stormwater GIS layer. Collected data may include topography, drain manholes, catch basins, outfalls, and numerous other physical features such as roadways, parcels, and water ways. The Town will update their stormwater GIS data based on information obtained through this project's data gathering efforts.

The consultant will conduct surveys, geotechnical, and groundwater investigations to inform the design process and project feasibility. The following items are associated with this investigation task:

a. GPS all encountered drainage structures, and locations where historical structures reportedly existed;
b. Main channel and stream embankment debris, channel cross-section, slope, sinuosity, and existing erosion/deposition features, identify reference reaches along the channel for periodic flow and velocity measurements;
c. Locations of embankment erosion;
d. Type and condition of culverts and headwalls;
e. Types and location of aquatic and surrounding upland vegetation;
f. Photos documenting the condition of outlets to the Occoquan River and contributing drainage system;
g. Ground elevations and physical structures at numerous points of interest in the watershed in the project areas of interest (e.g., known areas of flooding, existing culverts, etc.); and
h. Geotechnical and groundwater surveys to further the understanding of given pilot project site constraints, concerns, and requirements.

Flood prone areas, as identified by municipal staff and residents, will also be evaluated to gain a better understanding of potential improvements required to mitigate flooding issues. It is estimated that the town has areas of localized flooding that will be evaluated as part of the project. A site visit will be conducted at each location to document existing conditions and identify potential solutions. This may also include meeting with impacted residents to gain a better understanding of flooding issues that directly impact them. At some locations, the solution may require a phased approach that includes evaluation, design, and construction phases. The goal at each location will be to eliminate localized flooding while incorporating green infrastructure/low impact development (GI/LID) practices, where feasible.

The purpose of the investigation of flood prone areas is to minimize data gaps by collecting an appropriate level of data to cost-effectively estimate future project costs. Where insufficient data is available to develop a reasonable cost estimate for a particular project, the tasks and associated cost to obtain will be estimated. A data gap analysis will be used to identify projects that may not be ready to proceed during the early stages of the plan. It will also be utilized to identify data gathering tasks that could be added to early phases of the plan to facilitate future projects.

All field collected data will provide condition assessment information that will be utilized to better predict future project costs. Condition information collected regarding the condition of the town's stormwater drainage system will be compiled in a format compatible with the town's existing GIS database and displayed on a series of maps. A visual representation of the

wide-ranging data will be used to understand the "big picture"; create a list of potential projects; develop rating criteria to prioritize the projects; identify gaps in the available data; and ultimately, present the *Town's Resilient Stormwater and Flood Management and Implementation Plan*. The maps and data will also provide a visual tool to help the public to better understand the nature and scope of the town's stormwater issues. Each site identified will have a project summary that will include the potential GI approach, brief narrative, benefits anticipated, and estimated cost for design and construction.

Deliverables:

- *Existing Conditions Memo*
- *GIS Layers*
- *List of actions to address data gaps*

2.2 Hydraulic & Hydrologic Study

The project consultant will develop a detailed Hydraulic and Hydrologic (H&H) model to assess the capacity of the town's stormwater system. The H&H model will assess the stormwater and riverine conditions.

The H&H model will evaluate flooding extents, depths, and durations throughout the study area. The model will include upstream drainage areas that are expected to contribute runoff in the study neighborhood. The anticipated drainage area is approximately 390 acres. That area will be broken up into several subcatchments based on watershed hydrology, topography, land use patterns, and the locations of outfalls, catch basins, and other stormwater infrastructure. Input parameters representative of those subcatchments will be derived from Occoquan's existing records.

The runoff hydrographs generated by these subcatchments will be routed into a 1D framework consisting of a series of nodes and conduits. Nodes define the rim and invert elevations of various manholes and catch basins or the channel bottom and bank elevations of open channels. These elevation data will be obtained from available town records, the latest available LiDAR, or during consultant field investigations. Nodes are connected by conduits, which may represent closed storm drain systems or open channel flow. The dimensions of these conveyances will be derived from existing town records, potentially from existing FEMA models, or from consultant field investigations.

The hydrologic and hydraulic (H&H) is expected to be conducted using the PCSWMM modeling platform. Based on the EPA's Storm Water Management Model (SWMM) model, PCSWMM can evaluate the land's runoff response to various rainfall events and the movement of runoff through open channel, closed pipe systems, and surface flooding in streets. Also, it is anticipated that the traditional 1D model framework of nodes and conduits will be overlayed with a 2D mesh to better understand the extents, depths, and durations of flooding and to better understand present and future flood impacts in the community. To ensure the model's accuracy and usefulness, it will be calibrated against historical observations of flooding within the project area.

If needed, the Project Team will collect additional information for input into the model through field investigations.

The model will be used to evaluate the magnitude and associated impacts of inland flooding during a range of design events (e.g. 2-, 10-, 25-, 100-year), under both baseline and future climate scenarios. Baseline design rainfall depths and temporal distributions for the neighborhood will be derived from NOAA Atlas 14 data. The specific rainfall events and scenarios, including planning horizons and storm recurrence intervals used to drive the inland flooding analyses will be selected in collaboration with the Town.

2.3 Green Infrastructure Assessment

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will include an assessment of the opportunities to implement green infrastructure. Green infrastructure (GI) and low impact development (LID) are considered climate resilience best management practices and will be considered as part of the action development. Green infrastructure experts will look for opportunities to capture runoff from large impervious areas and convert as much of that volume into infiltration loss or detention storage for slow release. By increasing infiltration through green infrastructure designs, up to the 95th percentile (2 inches of runoff) of all rainfall events that occur in a year can be captured and stored. On an annual basis, this can be a significant volume capture and removal of pollutant loads.

The addition of GI and more vegetative planting will also be assessed for reduction of the Heat Island Effect. The I-Tree tool may be used to quantify the Greenhouse Gas (GHG) emission reductions and stormwater runoff reduction due to adding plantings. The application of this tool will help Occoquan respond to higher temperatures by increasing the urban forest and tree plantings. This will also provide direction for future planning for tree plantings and expected benefits.

Deliverables:

- *Green Infrastructure Opportunities Analysis*
- *List of opportunities to implement green infrastructure*
- *I-Tree Tool Assessment*

Task 3. Public and Stakeholder Engagement

3.1 Public Engagement

The consultant, working closely with the Project Team, will develop an internal and external outreach program for presenting the *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* to the elected body and relevant town department, Prince William County and other surrounding localities, and external stakeholders. Target stakeholders are identified as property owners, businesses, residents, non-profit organizations, and other entities that have a direct interest in the outcome of the plan.

The Project Team will leverage existing platforms to disseminate new materials relating to the relationship between stormwater management and climate resilience, such as volunteer outings, the Town's website, mailings, and tabletop displays. The project team will also share public engagement material linking stormwater and climate resilience with the Northern Virginia Regional Hazard Mitigation Plan Committee and the Chesapeake Watershed campaign to reach the regional stakeholders. The Project Team will attend or host two to three public events or create tabling materials for existing events. The workshops will ground truth flooding and urban heat challenges, gather input for the plan, and inform participants about the link between stormwater flooding and climate change. Proposed updates to the town's

stormwater guidance and rules and regulations will be shared through public meetings and or an online portal with feedback which will be available for residents, developers, businesses and surrounding communities. The consultant will also work with the Town to present the final report to the public.

Deliverables

- *Event materials for two to three dual purpose tabling events or workshops to educate the public and collect input*
- *Informational and web content will showcase the climate resiliency components of the project and areas where the public can participate and will include:*
  - *Up to two fact sheets or promotional flyers*
  - *Website content*
- *Up to five promotional and educational social media posts on the:*
  - *Town of Occoquan, Facebook*
  - *Town of Occoquan, Instagram*
- *List of actions identified by the community*

Task 4. Action Identification

The consultant will generate a list of actions to review and discuss with the Town. The Town will further develop plan scope and add any additional projects that should be considered.

General project types will include:

- Inspection and/or rehabilitation of critical stormwater infrastructure (culverts, pipes, stream channels);
- Design of improvements to eliminate localized flooding issues, including retrofit of the existing drainage system, to incorporate BMPs that encourage green infrastructure practices and help improve water quality, reduce flooding, and reduce urban heat island effect; and
- Drainage system operation & maintenance needs so that the Town may ultimately move from a reactive to a proactive approach

Culverts identified for future repair will be included as separate projects within the Plan and will be assigned planning level repair costs. It is anticipated that many culverts will require a complete structural evaluation to fully understand the extent of repairs that will be required, and costs for additional evaluation will be incorporated into the Plan. An allowance will also be factored into repair deficiencies that may be identified during the evaluation.

Deliverables:

- *Plan scope*
- *List of culverts and planning level repair costs*
- *List of compiled project ideas*

Task 5. Action Prioritization

An equitable climate resilience-based approach will be utilized to analyze and prioritize the town's stormwater capital needs. The prioritization will be based on the probability of failure, climate change resilience potential, social impact, and the magnitude of the consequence of failure. The probability of failure will be based upon the age and the overall condition of the asset. Rating criteria will vary based on the asset type, but could include costs and operational feasibility. Consequence of failure

categories to be considered may include, but are not limited to, impacts to health and safety, potential for property damage, cost of deferred maintenance, the number of people impacted, impacts to traffic, and the impact on town development priorities. The consultant and the Town will discuss and finalize the selection of evaluation criteria under which each identified action will be ranked with the Project Team input.

Some of the factors may be weighted more heavily to arrive at a final project score and ranking. Action prioritization may not always be consistent with the rating system. In some respects, projects may be grouped together. If a project is critical to the success of another highly rated project, the two projects will be grouped and completed together. Other adjustments will be made, as needed, to decrease total project cost through economy of scale. The action priority ranking will be reviewed with the Project Team to arrive at a final consensus regarding the weighting and ranking of projects. A final combined ranked table will be presented. In addition, for priority actions with opportunities for natural drainage enhancement that are readily apparent, a separate field in the prioritization matrix will be added to highlight these projects. If two projects are closely ranked, the project that has known potential for natural drainage enhancement will be given priority in the implementation of the overall plan.

The recommended actions will be displayed on a series of maps and the following implementation chapter will focus on the recommended actions.

Deliverables:

- *List of recommended or prioritized actions*
- *Map showing locations of recommended actions identified under the Plan*

Task 6. Implementation Chapter

In developing a multi-year implementation chapter of the Plan, several factors will be evaluated to determine the appropriate length, for example, a fixed annual expenditure, a fixed plan length, or limitations on the amount of work that can reasonably be completed per year. The implementation chapter will guide the town's efforts to modernize its stormwater collection system, while ensuring that adequate funding is available. Development of an implementation chapter for prioritized actions will help ensure the protection of flood prone areas and improve overall water quality. By completing actual field reconnaissance during the plan's development to collect condition assessment data, as proposed, a more accurate assessment of future program costs can be generated. The implementation chapter will also include information about operation and maintenance.

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will include an operational assessment of the staffing, resources, equipment, and department organizational approach to implement stormwater services. The operational assessment will be based on a review of existing budgets, services conducted, and the organizational structure of the town departments that are involved in stormwater management. Recommendations for possible reorganization to improve stormwater management and services and a comparison of this reorganization against current conditions will be a part of the final deliverable. Recommendations will be presented based on improved integration, collaboration, performance, costs, and training needs. A cash flow diagram will be developed to assess the plan's compatibility with available funding sources. Recommended adjustments will be proposed as needed to help the Town balance the level of funding need with the capital and operation & maintenance recommendations outlined in the plan.

Deliverables:

- *Implementation chapter*
- *Operational assessment*
- *Cash flow diagram*

Task 7. Reporting and Grant Management

The Project Team will prepare regular reports to monitor the budget and schedule for submittal to DCR. The project team will draft the *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* report based on the work and findings of the previous Tasks. The *Resilient Stormwater and Flood Management and Implementation Plan* components will include the following:

- Summary of Existing Stormwater System Conditions and Projected Climate Impacts
- Green Infrastructure Opportunities Map and Recommendations
- Culvert Evaluation and Rehabilitation Project List
- Project Prioritization Methodology and Prioritization Matrix
- List of Prioritized Projects and Implementation
- Operational Assessment

Project Timeline

PROJECT SCHEDULE													
		2022						2023					
TASK DESCRIPTION	*Start date is dependent on grant award date and contracting*	JU	AU	SE	OC	NO	DE	JA	FE	MA	AP	MA	JU
Task 1: Project Kickoff													
Task 2: Flood Resilience Assessment													
Task 3: Public and Stakeholder Engagement													
Task 4: Action Identification													
Task 5: Action Prioritization													
Task 6: Implementation Chapter													
Task 7: Reporting and Grant Management													

b. Budget Narrative

The *Occoquan Resilient Stormwater and Flood Management and Implementation Plan* will be conducted as one study within FY2023. The total project is estimated to cost $175,000. The Town respectfully requests 75% of the estimated total project cost to be funded by this grant: $131,250. The Town has included the funding request, including a 25% Town match, in its FY2023 Capital Improvement Program Proposed Budget. The Town Council also passed a Resolution of Support committing to submit this grant request and identify and allocate the necessary funding depending on the success of this grant request.

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	TOWN OF OCCOQUAN, VA	
Eligibility Information		
Criterion	Description	Check One
1. 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)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application? N/A		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration	☐ Yes ☐ No

Applicant Name:	TOWN OF OCCOQUAN, VA

Scoring Information		
Criterion	**Point Value**	**Points Awarded**
6. Eligible Studies (Select all that apply)		
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	**30**	30
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	**15**	15
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	**35**	
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:		
☐ Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	**45**	
☐ Regional relative sea level rise projections for use in determining future impacts.	**45**	
☐ Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	**45**	
☐ Flash flood studies and modeling in riverine regions of the state.	**45**	45
☐ Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	**45**	
☐ New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include	**45**	45

projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.		
☐ Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	50	50
☐ Regional hydrologic and hydraulic studies of floodplains.	45	45
☐ Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	40	40
☐ Other proposals that will significantly improve protection from flooding on a statewide or regional basis	35	35
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	8
Low Social Vulnerability (-1.0 to 0.0)	0	0
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	X
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	X
10. 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?		
Yes	5	5
No	0	
Total Points		318

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

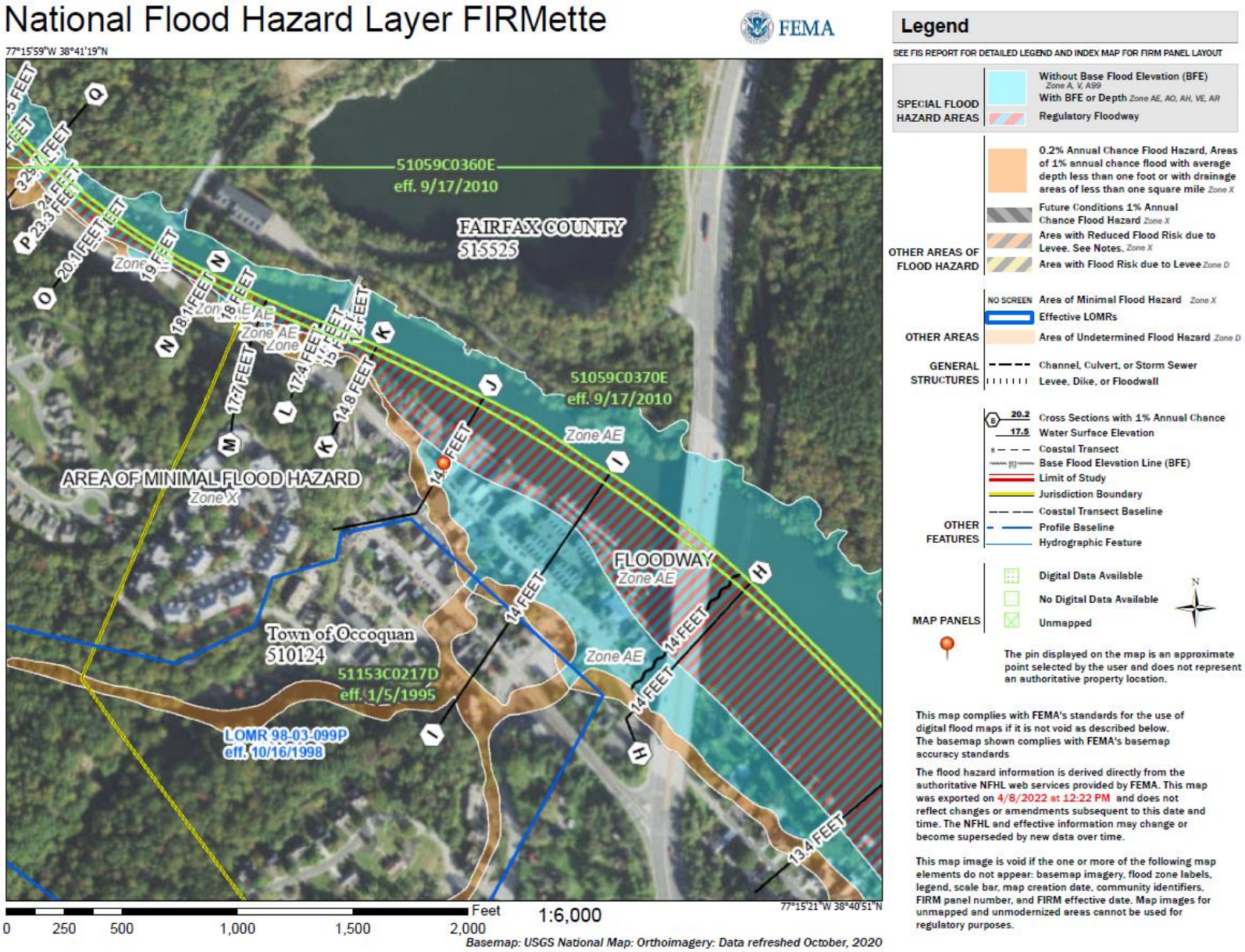
Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	**Included**
Detailed map of the project area(s) (Projects/Studies)	X Yes □ No □ N/A
FIRMette of the project area(s) (Projects/Studies)	X Yes □ No □ N/A
Historic flood damage data and/or images (Projects/Studies)	X Yes □ No □ N/A
A link to or a copy of the current floodplain ordinance	X Yes □ No □ N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	□ Yes □ No X N/A
A link to or a copy of the current hazard mitigation plan	X Yes □ No □ N/A
A link to or a copy of the current comprehensive plan	X Yes □ No □ N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	X Yes □ No □ N/A
If applicant is not a town, city, or county, letters of support from affected communities	□ Yes □ No X N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	X Yes □ No □ N/A
Budget Narrative	
Supporting Documentation	**Included**
Authorization to request funding from the Fund from governing body or chief executive of the local government	X Yes □ No □ N/A
Signed pledge agreement from each contributing organization	X Yes □ No □ N/A

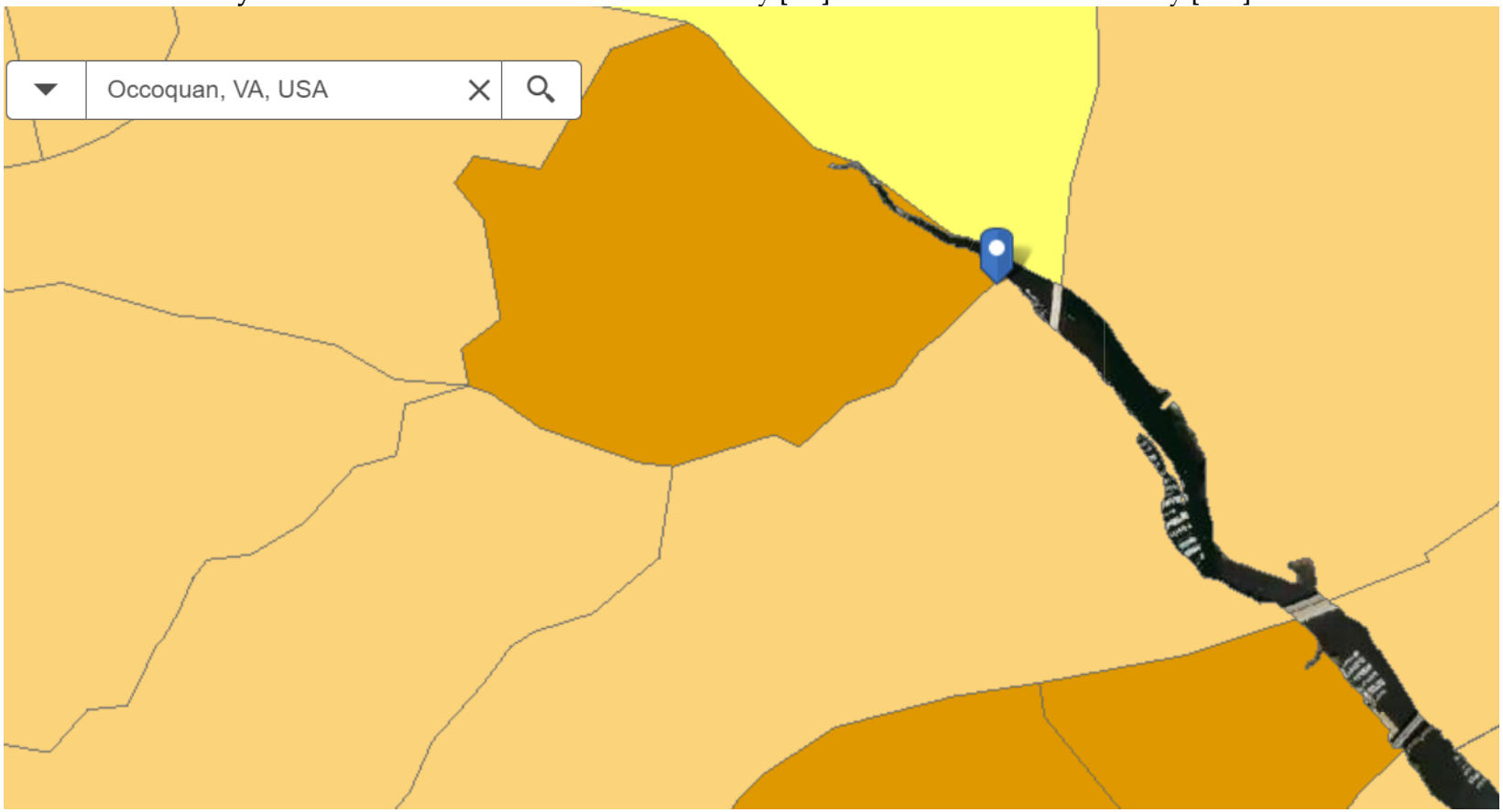
Supporting Documentation (Reference: Appendix D Checklist)

- **Project Map – Incorporated Boundaries of Occoquan, VA**

- [National Flood Hazard Layer FIRMette]



- **Floodplain Ordinance O-2016-01**
- **Northern Virginia Regional Hazard Mitigation Plan (2017)**
- **Vision 2026: Occoquan Comprehensive Plan 2016-2026**
- **Social Vulnerability Index Score:** Moderate Social Vulnerability [0.2] and Low Social Vulnerability [-0.0]



Adapt VA's Virginia Vulnerability Viewer – Occoquan, VA

TOWN OF OCCOQUAN, VIRGINIA
RESOLUTION

RESOLUTION ENDORSING SUBMISSION OF AN APPLICATION TO THE VIRGINIA COMMMUNITY FLOOD PREPAREDNESS FUND GRANT

WHEREAS, one of the highest natural risks to affect the Town of Occoquan according to the 2018 Northern Virginia Hazard Mitigation Plan is flooding and flash flooding; and

WHEREAS, since its inception, the Town of Occoquan has managed its stormwater program and participates regionally on planning efforts to increase community resiliency; and

WHEREAS, the Virginia Department of Conservation and Recreation (DCR) manages the Virginia Community Flood Preparedness Fund (CFPF) to provide support for regions and localities across Virginia to reduce the impacts of flooding by empowering communities to develop and implement action-oriented approaches to bolster flood preparedness and resilience; and

WHEREAS, DCR has solicited applications for competitive awards through three (3) eligible categories: planning and capacity building, flood prevention and protection studies, and projects; and

WHEREAS, the fund prioritizes the availability of funding for localities to develop and implement a comprehensive, whole community approach to flood preparedness and resilience to ensure coordinated mitigation efforts are maintained and enhanced by all stakeholders; and

WHEREAS, town staff has recommended that this funding be used to retain a firm to develop a Town of Occoquan Resilient Stormwater and Flood Management Study and Implementation Plan that focuses comprehensively on the town's stormwater program and integrates historical data, analyzes existing and future conditions, capacity, and mitigation concepts to enhance the Town's resilience to floods; and

WHEREAS, if awarded, the grant budget will be established on a reimbursement basis; and

WHEREAS, the CFPF grant requires a 25% funding match, totaling $37,500 for this application and has been incorporated into the Town of Occoquan FY2023 Capital Improvement Program.

NOW, THEREFORE, BE IT RESOLVED, the Occoquan Town Council, meeting in regular session this 5th day of April, 2022 endorses submission of an application for such purpose to the Virginia Department of Conservation and Recreation's Virginia Community Flood Preparedness Fund Grant.

Adopted by the Town Council of the Town of Occoquan, Virginia this 5th Day of April 2022.

MOTION: Vice Mayor Loges **DATE: April 5, 2022**
Town Council Meeting

SECOND: Councilmember Fithian

Votes
Ayes: Vice Mayor Loges
Nays: None
Absent from Vote: Councilmember Perkins
Absent from Meeting: Councilmember Perkins

BY ORDER OF THE TOWN COUNCIL

Attested:

Earnest W. Porta, Jr.
Earnest W. Porta, Jr., Mayor

Kirstyn Jovanovich
Kirstyn Jovanovich, Town Manager

Commonwealth of Virginia

CFPF, rr <cfpf@dcr.virginia.gov>

CFPF Submission - Round 3 - Town of Occoquan

2 messages

Kirstyn Jovanovich <kjovanovich@occoquanva.gov> Fri, Apr 8, 2022 at 1:51 PM
To: "CFPF@dcr.virginia.gov" <cfpf@dcr.virginia.gov>
Cc: Earnie Porta <eporta@occoquanva.gov>, "Bruce A. Reese" <bruce@legacy-eng.com>

Good afternoon,

Please see the Town of Occoquan's submission to the Virginia Community Flood Preparedness Fund – Round 3 Grant Program. Please confirm receipt.

Attachment: CID510124_OCCOQUANVA_CFPF.pdf

Thank you,

Kirstyn

Kirstyn Jovanovich, ICMA-CM

Town Manager

Town of Occoquan

314 Mill Street, PO Box 195

Occoquan, VA 22125

(703) 491-1918

www.occoquanva.gov

kjovanovich@occoquanva.gov

CID510124_OCCOQUANVA_CFPF.pdf
2561K

Kirstyn Jovanovich <kjovanovich@occoquanva.gov> Fri, Apr 8, 2022 at 3:40 PM
To: "CFPF@dcr.virginia.gov" <cfpf@dcr.virginia.gov>

Good afternoon,

In case the PDF did not get delivered via the email I sent at 1:51 p.m. on 4/8/2022, I have provided a link below to access the PDF grant application.

CID510124_OCCOQUANVA_CFPF.pdf

Thank you,

Kirstyn

Kirstyn Jovanovich, ICMA-CM

Town Manager

Town of Occoquan

(703) 491-1918

kjovanovich@occoquanva.gov

[Quoted text hidden]

TOWN OF OCCOQUAN

Circa 1734 ● Chartered 1804 ● Incorporated 1874
314 Mill Street ● PO Box 195 ● Occoquan, Virginia 22125
(703) 491-1918 ● Fax (571) 398-5016 ● info@occoquanva.gov
www.occoquanva.gov

October 14, 2022

Commonwealth of Virginia
Department of Conservation and Recreation
Attn: Wendy Howard Cooper, Director, Dam Safety and Floodplain Management
600 East Main St., 24th Floor
Richmond, VA 23219

Re: Community Flood Preparedness Fund (CFPF)
CY2022 Round 3 Grant Application: Grant Number CFPF-22-03-52
Application Category: Flood Prevention and Protection Studies
Community Name: Occoquan, Town of, CID: 510124
Primary Contact: Adam C. Linn, Interim Town Manager / alinn@occoquanva.gov

Dear Ms. Cooper,

In accordance with your letter, dated September 30, 2022, the Town of Occoquan, is acknowledging its interest for its application in the above referenced grant to be considered for funding. In addition, we are providing the supplemental information as requested in your letter, dated September 30, 2022.

Specifically, the Town is providing the following:

1. Applicant must provide detailed budget used as basis for cost estimate.

RESPONSE: After reviewing costs to complete the work with the proposed contractor, the Town of Occoquan is reducing its CFPF request to $127,353.75 with a revised total project cost of $169,805 and a match of $42,451.25. The Town has attached a detailed budget as a cost estimate for the grant application.

2. Applicant must submit cost breakdown of project activities which were previously funded.

RESPONSE: The Town of Occoquan has not had any project activities previously funded.

If you have any questions or need any further information, please feel free to email or call me.

Sincerely,

Adam C. Linn, J.D.
Interim Town Manager

BUDGET ESTIMATE (Summary)

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Subtotal
LABOR	7,960.00	93,235.00	13,850.00	11,570.00	11,640.00	14,710.00	13,750.00	***166,715.00***
OTHER DIRECT COSTS	240.00	1,680.00	300.00	300.00	270.00	300.00	-	***3,090.00***
TOTAL	**8,200.00**	**94,915.00**	**14,150.00**	**11,870.00**	**11,910.00**	**15,010.00**	**13,750.00**	**169,805.00**
							Match Amount:	**42,451.25**
							CFPF Amount Requested:	***127,353.75***

Occoquan VADCR Community Flood Preparedness Fund Grant Budget - Round 3

	GRANT																				Total Task (Grant)
	DIRECT LABOR																Direct Costs				
	Project Manager (Town)		Town Engineer (Town)		Principal in Charge (Contractor)		Sr Project Manager (Contractor)		Project Manager (Contractor)		Project Engineer (Contractor)		Engineer/Planner (Contractor)		Eng Support (Contractor)		Unit	Quanity	Unit Cost	Total	
Hourly Rate	$55.00		$175.00		$235.00		$180.00		$145.00		$155.00		$120.00		$90.00		X	X	X	X	
Task 1: Project Background and Kickoff	Hours	Total	Hours	Total	Hours	Total	Hours	Total	Hours	Total	Hours	Total	Hours	Total	Hours	Total	mileage, copies, etc.				
Sub-task 1.1 Project Kickoff Meeting	2	$110.00	2	$350.00	1	$235.00	1	$180.00	2	$290.00	2	$310.00	4	$480.00		$0.00				$0	**$1,955.00**
Sub-task 1.2 Review Existing Data and Reports	2	$110.00	8	$1,400.00	1	$235.00	1	$180.00	8	$1,160.00	8	$1,240.00	8	$960.00	8	$720.00	mileage	1	240	$240	**$6,245.00**
Total Task 1 Cost	**4**	**$220.00**	**10**	**$1,750.00**	**2**	**$470.00**	**2**	**$360.00**	**10**	**$1,450.00**	**10**	**$1,550.00**	**12**	**$1,440.00**	**8**	**$720.00**				**$240**	**$8,200.00**
Task 2: Flood Resilience Assessment																					
Sub-task 2.1 Field Data Collection Survey	2	$110.00	16	$2,800.00	1	$235.00	4	$720.00	16	$2,320.00	0	$0.00	120	$14,400.00	130	$11,700.00	mileage	5	240	$1,200	**$33,485.00**
Sub-task 2.2 Hydrologic and Hydraulic Study	2	$110.00	16	$2,800.00	1	$235.00	62	$11,160.00	16	$2,320.00	100	$15,500.00	40	$4,800.00	32	$2,880.00	mileage	1	240	$240	**$40,045.00**
Sub-task 2.3 Green Infrastructure Assessment	2	$110.00	16	$2,800.00	1	$235.00	26	$4,680.00	16	$2,320.00	40	$6,200.00	16	$1,920.00	32	$2,880.00	mileage	1	240	$240	**$21,385.00**
Total Task 2 Cost	**6**	**$330.00**	**48**	**$8,400.00**	**3**	**$705.00**	**92**	**$16,560.00**	**48**	**$6,960.00**	**140**	**$21,700.00**	**176**	**$21,120.00**	**194**	**$17,460.00**				**$1,680**	**$94,915.00**
Task 3: Public and Stakeholder Engagement																					
Sub-task 3.1 Public Engagement	16	$880.00	8	$1,400.00	2	$470.00	8	$1,440.00	24	$3,480.00	12	$1,860.00	30	$3,600.00	8	$720.00	miles/copies	1	300	$300	**$14,150.00**
Total Task 3 Cost	**16**	**$880.00**	**8**	**$1,400.00**	**2**	**$470.00**	**8**	**$1,440.00**	**24**	**$3,480.00**	**12**	**$1,860.00**	**30**	**$3,600.00**	**8**	**$720.00**				**$300**	**$14,150.00**
Task 3: Action Identification																					
Sub-task 4.1 Action Identification	8	$440.00	8	$1,400.00	2	$470.00	16	$2,880.00	8	$1,160.00	12	$1,860.00	16	$1,920.00	16	$1,440.00	miles/copies	1	300	$300	**$11,870.00**
Total Task 4 Cost	**8**	**$440.00**	**8**	**$1,400.00**	**2**	**$470.00**	**16**	**$2,880.00**	**8**	**$1,160.00**	**12**	**$1,860.00**	**16**	**$1,920.00**	**16**	**$1,440.00**				**$300**	**$11,870.00**
Task 5: Action Prioritization	**16**	**$880.00**	**10**	**$1,750.00**	**2**	**$470.00**	**4**	**$720.00**	**8**	**$1,160.00**	**12**	**$1,860.00**	**40**	**$4,800.00**	**0**	**$0.00**	miles/copies	1	270	$270	**$11,910.00**
Task 6: Implementation Chapter	**16**	**$880.00**	**10**	**$1,750.00**	**2**	**$470.00**	**4**	**$720.00**	**10**	**$1,450.00**	**16**	**$2,480.00**	**40**	**$4,800.00**	**24**	**$2,160.00**	miles/copies	1	300	$300	**$15,010.00**
Task 7: Reporting and Grant Management	**96**	**$5,280.00**	**16**	**$2,800.00**	**6**	**$1,410.00**	**6**	**$1,080.00**	**12**	**$1,740.00**	**0**	**$0.00**	**12**	**$1,440.00**	**0**	**$0.00**	miles/copies			$0	**$13,750.00**
TOTAL PROJECT COST																					**$169,805.00**