2735 - Centennial Golf Course - Flood Study

Application Details

Funding Opportunity:	2337-Virginia Community Flood Preparedness Fund - Study Grants - CY24 Round 5
Funding Opportunity Due Date:	Jan 24, 2025 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Jan 24, 2025 4:03 PM
Initially Submitted By:	Casey Kight
Last Submit Date:	
Last Submitted By:	

Contact Information

Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Mr. (Salutation) Casey (First Name) Middle Name Kight (Last Name)
Title:	
Email*:	casey.kight@kimley-horn.com
Address*:	11400 Commerce Park Drive
	Reston (City) Virginia (State/Province) 20191 (Postal Code/Zip)
Phone*:	703-214-2439 Ext. (Phone ###-###-####)
Fax:	###-###-####
Comments:	

Organization Information

Status*:	Approved
Name*:	Kimley-Horn
Organization Type*:	
Tax ID*:	56-0885615
Unique Entity Identifier (UEI)*:	V8PKGG6NLKV6
Organization Website:	

Address*: 421 Fayetteville Street Suite 600

Raleigh North Carolina 27601-
City State/Province Postal Code/Zip

Phone*: 919-677-2000 Ext.
###-###-####

Fax: ###-###-####

Benefactor:

Vendor ID:

Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: Town of Herndon

Your locality's CID number can be found at the following link: Community Status Book Report

NFIP/DCR Community Identification Number (CID)*: 510052

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Richard Smith
First Name Last Name

Mailing Address*: 777 Lynn Street
Address Line 1

Address Line 2

Herndon Virginia 20170
City State Zip Code

Telephone Number*: 703-435-6800

Cell Phone Number*: 703-435-6800

Email*: richard.smith@herndon-va.gov

Is the contact person different than the authorized individual?

Contact Person*: No

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

Project Description*:

Centennial Golf Course Flood Study & Nature Based Solutions Analysis

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

Census Block(s) Where Project will Occur*: 4808.01

Is Project Located in an NFIP Participating Community?*: Yes

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

Flood Zone(s)
(if applicable):

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

Eligibility - Round 4

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

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*: No

Yes - Eligible for consideration
No - Not eligible for consideration

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

Scope of Work - Studies - 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*: 2025_1_24_Town of Herndon CFPF Application Package - Centennial Golf Course.pdf

Comments:

Full Application

Budget Narrative

Budget Narrative Attachment*: 1.2 - Appendix B - Budget Narrative.pdf

Comments:

Scoring Criteria for Studies - Round 4

Scoring

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.

Revising Floodplain Ordinances*: No

Select

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.

Mapping Platform*: No
Select

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).

Hydrologic and Hydraulic Studies*: Yes
Select

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.

Updating Precipitation Data and IDF Information*: No
Select

Regional relative sea level rise projections for use in determining future impacts.

Projections*: No
Select

Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.

Vulnerability Analysis*: Yes
Select

Flash flood studies and modeling in riverine regions of the state.

Flash Flood Studies*: Yes
Select

Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.

Stream Gauge Monitoring*: No
Select

New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.

Delineations of Areas of Recurrent Flooding*: Yes
Select

Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.

Regional Flood Studies*: No
Select

Regional Hydrologic and Hydraulic Studies of Floodplains

Regional Hydrologic and Hydraulic Studies of Floodplains*: No
Select

Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.

Potential Land Use Strategies*: No
Select

Pluvial Studies

Pluvial Studies*: No
Select

Other proposals that will significantly improve protection from flooding on a statewide or regional basis.

Other Proposals*: No
Select

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 NFIP?

NFIP*: Yes

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

Comments:

Study intends to identify nature based solutions that will be reduce pollutant of concerns (POC) and support Chesapeake Bay TMDL Compliance needs.

Scope of Work Supporting Information - Studies

Scope of Work Supporting Information

Is the proposed study a new study or updates on a prior study?

New or Updated Study*: New Study

Describe the relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual

Relationship of Study to Priorities Contained in this Manual*:

An existing stormwater management pond located at the southeastern corner of the Centennial Golf Course property north of Herndon Parkway was installed as part of the development and construction of Herndon Parkway in 1999. The approved stormwater management facility plans show a contributing drainage area (CDA) of 5.17 acres which primarily consists of drainage from Herndon Parkway. The unnamed tributary to Folly Lick, which flows northwest to southeast, across the golf course originally drained directly to Folly Lick but has since been rerouted into the existing stormwater management facility adjusting the CDA for the stormwater management facility to 64.43 acres. Since this adjustment occurred, the Town has observed recurrent flooding along Herndon Parkway, increased sedimentation within the existing stormwater management facility, and significant erosion to the unnamed tributary to Folly Lick and downstream in Folly Lick due to periodic dam breach and overtopping.
Since the existing stormwater management facility appears to not meet quantity controls for the adjusted CDA, this study will analyze the following two scenarios:
? Leaving the unnamed tributary to Folly Lick in line with the stormwater management facility and increasing this facilities capacity
? Rerouting the unnamed tributary to Folly Lick to discharge directly into Folly Lick and leaving the stormwater management facilty as is.
Both scenarios will analyze approximately 4,000 linear feet of stream including the unnamed tributary to Folly Lick and Folly Lick. It will also analyze stream condition, the stream impacts on the floodplain and the adjoining infrastructure. Both scenarios will analyze stormwater management facility impacts on Herndon Parkway, the unnamed tributary to Folly Lick and Folly Lick. This analysis of the overall stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream. Utilizing the study results, the Town will have a comprehensive evaluation of the localized flooding within the study area and potential nature based, flood improvement solutions throughout the corridor.

Describe the qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

Qualifications of Individuals Conducting Study*:

The individuals conducting this study consist of professionals who have successfully met the requirements of their Virginia Department of Occupational Regulation (DPOR) licensure Board. Other non licensed individuals who may be assisting with this study, will do so under those licensed professionals.

Describe the expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach

Expected use of Study Results*:

The goal of the Centennial Golf Couse Flood Study is to provide a corridor-wide approach to better understand the current flood conditions as it relates to the existing stormwater management facilities overall capacity, the deteriorating stream channel conditions upstream and downstream of the stormwater management facility, and the overall infrastructure stress from flooding. A secondary goal for this study is to identify areas where nature-based solutions can be implemented to improve overall flood conditions throughout the corridor. For example, implementing a stream restoration along the unnamed tributary to Folly Lick, would stabilize the channel reducing the influx of sediment downstream into the stormwater management facility, thereby reducing the need for the Town to frequently maintain this facility. A third goal is to identify flood conditions on

adjacent properties where residential structures are impacted and identify flood improvements to reduce these impacts. This planning level document will provide the Town with the ability to better assess and develop an action-oriented approach to flooding and resiliency within the Centennial Golf Course property. The output of this task is a comprehensive evaluation of the existing localized flooding within the study area and the potential flood improvements for the two (2) potential scenarios stated above. Each scenario will identify implementable flood improvements within the corridor utilizing nature-based solutions to the maximum extent practical and best engineering practices for addressing flashy and recurrent flood conditions. Flood improvements will be quantified and estimated costs for each scenario will be derived, and a cost/benefit analysis will be generated to go with the flood improvement graphics/summary. This output will direct the Town for designing an implementable solution based on these scenarios. No other outputs are expected from this task.

If applicable, describe how the study may improve Virginia's flood protection and prevention abilities in a statewide context (type N/A if not applicable)

Statewide Improvements*:

N/A

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

Repetitive Loss and/or Severe Repetitive Loss Properties*: Repetitive Loss Properties.pdf

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 these structures in the project area

Residential and/or Commercial Structures*:

An existing conditions flood study for an unnamed tributary of Folly Lick, upstream of an existing stormwater management facility and an existing conditions flood study for Folly Lick, downstream of the same existing stormwater management facility. This flood study will be performed for two scenarios with the first one consisting of keeping the the stormwater management facility inline with the unnamed tributary and increasing its capacity and second scenario consisting of the stormwater management facility being offline with the unnamed tributary to Folly Lick . The flood study will be conducted to identify flood impacts to the Golf Course and the 46 residential structures.

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

Critical Facilities/Infrastructure*:

Critical infrastructure consists of the existing stormwater management facility located on Centennial Golf Course along with the storm sewers which drain to this pond, and Herndon Parkway.

Budget

Budget Summary

Grant Matching Requirement*: LOW INCOME - Flood Prevention and Protection Studies - Fund 90%/Match 10%

Is a match waiver being requested?

Match Waiver Request No

Note: Only low-income communities are eligible for a match waiver

***:**

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

Total Project Amount (Request + Match)*: $321,904.30

**This amount should equal the sum of your request and match figures

REQUIRED Match Percentage Amount: $32,190.43

BUDGET TOTALS

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

Match Percentage: 25.00%

Verify that your match percentage matches your required match percentage amount above.

Total Requested Fund Amount: $241,428.20

Total Match Amount: $80,476.06

TOTAL: $321,904.26

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
Consultant Proposal	$241,428.20	$80,476.06	Town Stormwater Fund
	$241,428.20	**$80,476.06**	

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source

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)		Detailed Map	3.1 - Drainage Area Exhibit.pdf	pdf	12 MB	01/24/2025 11:50 AM
FIRMette of the project area(s) (Projects/Studies)		Firmette	3.2 - FIRMETTE.pdf	pdf	775 KB	01/24/2025 11:51 AM
Historic flood damage data and/or images (Projects/Studies)		Historic Information	3.3 - Historical Images.pdf	pdf	4 MB	01/24/2025 11:51 AM
A link to or a copy of the current floodplain ordinance		Floodplain Ordinance	3.4 - Floodplain Ordinance.pdf	pdf	7 MB	01/24/2025 11:52 AM
Maintenance and management plan for project						
A link to or a copy of the current hazard mitigation plan						
A link to or a copy of the current comprehensive plan		Comprehensive Plan	3.5 - Herndon_2050_Staff_Presentation.pdf	pdf	1 MB	01/24/2025 11:53 AM
Social vulnerability index score(s) for the project area		Social Vulnerability	3.6 - VFRIS Social Vulnerability.pdf	pdf	1 MB	01/24/2025 11:53 AM
Authorization to request funding from the Fund from governing body or chief executive of the local government		Authorization	3.7 - Authorization to Request Funding.pdf	pdf	65 KB	01/24/2025 03:57 PM
Signed pledge agreement from each contributing organization		Pledge	3.8 - Pledge.pdf	pdf	57 KB	01/24/2025 03:57 PM
Maintenance Plan						
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.						
Benefit Cost Analysis						
Other Relevant Attachments		Stormwater Fund	3.9 - Stormwater Fund.pdf	pdf	688 KB	01/24/2025 11:54 AM

Letters of Support

Description	File Name	Type	Size	Upload Date
No files attached.				

Town of Herndon

Community Flood Prevention Fund – Centennial Golf Course Flood Study

Virginia Community Flood Preparedness Fund

Application Package

Round 5 - Virginia CFPF Grant Application

Table of Contents

Introduction

The Town of Herndon has prepared this Community Flood Preparedness Fund (CFPF) Application Package to request matching funds for the preparation of the Centennial Golf Couse Flood Study (CFPF). The Town of Herndon intends to apply for matching funds in the Study category. The Town of Herndon is a 4.29 square mile independent Town located within Fairfax County in northern Virginia. The Town is highly developed and is mainly compromised of residential and commercial lots.

Background

An existing stormwater management pond located at the southeastern corner of the Centennial Golf Course property north of Herndon Parkway was installed as part of the development and construction of Herndon Parkway in 1999. The approved stormwater management facility plans show a contributing drainage area (CDA) of 5.17 acres which primarily consists of drainage from Herndon Parkway. The unnamed tributary to Folly Lick, which flows northwest to southeast, across the golf course originally drained directly to Folly Lick but has since been rerouted into the existing stormwater management facility adjusting the CDA for the stormwater management facility to 64.43 acres. Since this adjustment occurred, the Town has observed recurrent flooding along Herndon Parkway, increased sedimentation within the existing stormwater management facility, and significant erosion to the unnamed tributary to Folly Lick and downstream in Folly Lick due to periodic dam breach and overtopping.

Since the existing stormwater management facility appears to not meet quantity controls for the adjusted CDA, this study will analyze the following two scenarios:

- Leaving the unnamed tributary to Folly Lick in line with the stormwater management facility and increasing this facilities capacity
- Rerouting the unnamed tributary to Folly Lick to discharge directly into Folly Lick and leaving the stormwater management facilty as is.

Both scenarios will analyze approximately 4,000 linear feet of stream including the unnamed tributary to Folly Lick and Folly Lick. It will also analyze stream condition, the stream impacts on the floodplain and the adjoining infrastructure. Both scenarios will analyze stormwater management facility impacts on Herndon Parkway, the unnamed tributary to Folly Lick and Folly Lick. This analysis of the overall stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream. Utilizing the study results, the Town will have a comprehensive evaluation of the localized flooding within the study area and potential nature based, flood improvement solutions throughout the corridor.

Scope of Work Narrative

Capacity Needs

The Town, in conjunction with an engineering consulting firm, will perform the Centennial Golf Course Flood Study. The Town currently lacks the capacity or in house expertise to undertake this effort singularly and thus outside resources are required for the completion of this task.

The existing stormwater management facility, which was originally designed for approximately five acres of drainage, now provides limited stormwater management for over sixty acres of drainage because of the unnamed tributary to Folly Lick being rerouted into this facility. The existing stormwater management facility fills quickly, and spills along the northern side of the dam or overtops of the dam during flashy rain events. During these same events, stormwater backs up into the storm sewer draining to this facility and eventually onto Herndon Parkway.

The unnamed tributary to Folly Lick is actively eroding horizontally and scouring vertically as a result of the pond filling quickly and the water having limited options to drain effectively. The loose sediment eventually makes its way to the existing stormwater management facility, which has required the Town to perform maintenance on this facility beyond routine to continuously provide the maximum capacity possible.

The limited capacity in the stormwater management facility has also contributed to deteriorating downstream channel conditions which has created stress for adjacent infrastructure and properties.

A detailed map showing the study area is provided in Attachment 3.1. A Firmette of the study area is provided in Attachment 3.2. Historic Flood Data and Images are provided in Attachment 3.3.

Goals and Objectives

The goal of the Centennial Golf Couse Flood Study is to provide a corridor-wide approach to better understand the current flood conditions as it relates to the existing stormwater management facilities overall capacity, the deteriorating stream channel conditions upstream and downstream of the stormwater management facility, and the overall infrastructure stress from flooding. A secondary goal for this study is to identify areas where nature-based solutions can be implemented to improve overall flood conditions throughout the corridor. For example, implementing a stream restoration along the unnamed tributary to Folly Lick, would stabilize the channel reducing the influx of sediment downstream into the stormwater management facility, thereby reducing the need for the Town to frequently maintain this facility. A third goal is to identify flood conditions on adjacent properties where residential structures are impacted and identify flood improvements to reduce these impacts. This planning level document will provide the Town with the ability to better assess and develop an action-oriented approach to flooding and resiliency within the Centennial Golf Course property.

Social Vulnerability

According to the Virginia Flood Risk Information System (VFRIS), approximately 50% of the Town has a moderate to high Social Vulnerability Index. Portions of two (2) Virginia Designated Qualified Opportunity Zones (51059481000 & 51107611700) are physically located in the Town and socially part of the Town. Both of these areas are also rated as having a Moderate or High Social Vulnerability Index. The VFRIS Social Vulnerability Index (SVI) Map for the Town of Herndon and immediately adjacent areas is provided in Attachment 3.5.

The Town of Herndon has a median household income of $141,418. The median household income for the Virginia Designated Opportunity Zones is $105,125 (51059481000) and $126,224 (51107611700) which is 74% and 89% of the Town's median household income.

Stakeholders

The primary stakeholders associated with the Centennial Golf Couse Flood Study is the Town of Herndon, as the Town owns and operates the Golf Course and is responsible for stormwater management facility operations and maintenance and is responsible for managing the Flood Zones within the Town. Secondary stakeholders are those adjacent property owners who may benefit from Flood Improvements throughout the corridor.

Implementation Plan and Timeline

The implementation of this plan will start in accordance with the timeline requirements set forth in the CFPF Manual and will continue to June 30, 2026. The Town would like to note this is an anticipated timeline and could be subject to change.

Outputs and Measures

The output of this task is a comprehensive evaluation of the existing localized flooding within the study area and the potential flood improvements for the two (2) potential scenarios stated above. Each scenario will identify implementable flood improvements within the corridor utilizing nature-based solutions to the maximum extent practical and best engineering practices for addressing flashy and recurrent flood conditions. Flood improvements will be quantified and estimated costs for each scenario will be derived, and a cost/benefit analysis will be generated to go with the flood improvement graphics/summary. This output will direct the Town for designing an implementable solution based on these scenarios. No other outputs are expected from this task.

Maintaining Capacity

At this time, the Town does not anticipate the need for continuing support for development of the Centennial Golf Couse Stream & Management Facility Flood Resilience Study.

Budget Narrative

Estimated Total Project Cost

The estimated total project cost for the development of the Centennial Golf Couse Flood Study is $321,904.25. The Town has coordinated with a consultant to provide an estimated summary of proposed services and associated cost. This document has been included in Attachment 2.1 and includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Centennial Golf Couse Flood Study.

Amount of Funds Requested

Per the 2024 CFPF Manual, the Town is requesting a 25% Town match and a 75% CFPF Grant match of the total project cost. Based on the Estimated Total Project cost highlighted above, the Town is requesting $241,428.20 with this grant application package. This match will be utilized to assist with the overall cost of developing the Centennial Golf Couse Stream & Management Facility Flood Resilience Study. As mentioned above, an estimated summary of proposed services and associated cost has been included in Attachment 2.1. This includes an hourly breakdown based on anticipated tasks to be conducted by a consultant in the development of the Centennial Golf Couse Stream & Management Facility Flood Resilience Study.

Amount of Cash Funds Available

The Town intends to allocate a portion of the Town of Herndon Stormwater Fund for this study. The study has been included within the approved 2024 proposed budget as “Flood Mitigation Planning & Resilience”, which has an available budget of $1.3 Million. The Town has reserved $200,000 of available matching funds from the Town of Herndon Stormwater Utility Fund as part of this application package. Stormwater Fund information is provided in Attachment 3.9. The Stormwater Fund is available to the Town’s Public Works division to complete engineering functions and manage capital improvement projects for stormwater related needs within the Town.

Attachment 1

CFPF Grant Narratives Supporting Documents

Attachment 1 – Outline

1. Appendix A - Application
2. Appendix B – Budget Narrative
3. Appendix C – Checklist
4. Appendix D – Scoring Criteria

Attachment 1.1

Appendix A: Application

Appendix A: Application Form for Grant and Loan Requests for All Categories

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

Name of Local Government:

Category Being Applied for (check one):

☐ **Capacity Building/Planning**

☐ **Project**

☐ **Study**

NFIP/DCR Community Identification Number (CID) 510052

Name of Authorized Official and Title: Richard Smith, P.E.

Signature of Authorized Official: 

Mailing Address (1): 777 Lynn Street

Mailing Address (2):

City: Herndon **State:** Virginia **Zip:** 20170

Telephone Number: (703) 435-6804 **Cell Phone Number:** (____) _____

Email Address: richard.smith@herndon-va.gov
Contact and Title (If different from authorized official):

Mailing Address (1): 777 Lynn Street

Mailing Address (2): _____

City: Herndon **State:** Virginia **Zip:** 20170

Telephone Number: (703) 435-6804 **Cell Phone Number:** (____) _____

Email Address: richard.smith@herndon-va.gov

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 activities that will be included in the project and used for scoring criterion):

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and integration of comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies, and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

☐ Other: _____

Study Grants (Check All that Apply)

☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.

☒ Conducting hydrologic and hydraulic (H&H) studies of floodplains. *Changes to the base flood, as demonstrated by the H&H must be submitted to FEMA within 6 months of the data becoming available.*

☒ Studies and Data Collection of Statewide and Regional Significance.

☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.

☒ Other relevant flood prevention and protection project or study.

☐ Pluvial studies.

☐ 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, freeboard, or other higher standards, RiskMAP public noticing requirements, or correcting issues identified in a Corrective Action Plan.

Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the "Nature-Based" and "Other" categories)

Nature-based solutions

☐ 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, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.

☐ Wetland restoration.

☐ Floodplain restoration.

☐ Construction of swales and settling ponds.

☐ Living shorelines and vegetated buffers.

☐ 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, or the acquisition of developed land for future conservation.

☐ Dam removal.

☐ Stream bank restoration or stabilization.

☐ Restoration of floodplains to natural and beneficial function.

Other Projects

☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

☐ Dam restoration.

☐ Beneficial reuse of dredge materials for flood mitigation purposes

☐ Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.

☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.

☐ Storm water system upgrades.

☐ Medium and large-scale Low Impact Development (LID) in urban areas.

☐ 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, and where the flood mitigation benefits will **not be** achieved as a part of the same project as the property acquisition.

☐ Other project identified in a DCR-approved Resilience Plan.

Location of Project or Activity (Include Maps): _____

NFIP Community Identification Number (CID#) : _____

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): Zone AE, Zone X

Flood Insurance Rate Map Number(s) (If Applicable): 510052

Total Cost of Project: $321,904.25

Total Amount Requested $241,428.19

Amount Requested as Grant $241,428.19

Amount Requested as Project Loan (Long-Term, not including short-term loans for up-front costs)

$0.00

RVRF Loan Amount Requested as Project Match (Not including short-term loans for up-front costs)

$0.00

Amount Requested as Short-Term loan for Up-Front Costs (not to exceed 20% of amount requested as Grant) $0.00

For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived? ☐ Yes ☐ No

For informational purposes only: Supplemental information for loan requests may include but are not limited to the following. This information will be collected AFTER a CFPF award is made, prior to the signing of a grant agreement.

- General Obligation
- Lease, Revenue
- Special Fund Revenue
- Moral obligation from other government entity)
- Desired loan term
- Since the date of your latest financial statements, any new debt
- Pending or potential litigation by or against the applicant
- Five years of current audited financial statements (FY18-22) or refer to website if posted
- Capital Improvement Plan
- Financial Policies
- List of the ten largest employers in the jurisdiction.
- List of the ten largest taxpayers in the jurisdiction

All loan requests are subject to credit review and approval by Virginia Resources Authority.

Attachment 1.2

Appendix B: Budget Narrative

Appendix B: Budget Narrative Template

Applicant Name: Community Flood Preparedness Fund & Resilient Virginia Revolving Loan Fund Detailed Budget Narrative

Town of Herndon

Period of Performance: Spring 2025 through Summer 2026

Submission Date: 06/30/2026

Grand Total State Funding Request	$241,428.20
Grand Total Local Share of Project	$ 80,476.06
Federal Funding (if applicable)	$
Project Grand Total	$321,904.25
Locality Cost Match	% 25

Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share					$80,476.06				$80,476.06
State Share – CFPF Grant					$241,428.20				$241,428.20
State Share – RVRF Match Loan									
Pre-Award/Startup									
Maintenance									
Total	$	$	$	$	$ 321,904.25	$	$	$	$ 321,904.25

Attachment 1.3
Appendix C: Checklist

Appendix C: Checklist All Categories

(Benefit-cost analysis must be included if the proposed Project is over $2 million.)

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

☒ Detailed map of the project area(s) (Projects/Studies)

☒ FIRMette of the project area(s) (Projects/Studies) FIRM Provided

☒ Historic flood damage data and/or images (Projects/Studies)

☒ A link to or a copy of the current floodplain ordinance

☐ Non-Fund financed maintenance and management plan for project extending a minimum of 10 years from project close

☒ A link to or a copy of the current comprehensive plan

☒ Social vulnerability index score(s) for the project area from VFRIS SVI Layer

☐ If applicant is not a town, city, or county, letters of support from affected localities

☐ Letter of support from impacted stakeholders

☒ Budget Narrative

☐ Supporting Documentation, including the Benefit-Cost Analysis tool or narrative (for projects over $2 million)

☒ Authorization to request funding from the Fund and/or RVRF Match loan from governing body or chief executive of the local government

☒ Signed pledge agreement from each contributing organization

☒ Detailed budget and narrative for all costs

Attachment 1.4

Appendix D: Scoring Criteria

Appendix D: Scoring Criteria

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

SCORING CRITERIA PER CATEGORY
Projects

Eligible Projects, up to 30 points.

- Acquisition *(30)*
- Wetland/floodplain restoration, Construction of swales and settling ponds, Living shorelines and vegetated buffers, Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia*'s "Floodplain and Flooding Resilience" layer or a similar data driven analytic tool, Dam removal, Stream bank restoration or stabilization, Restoration of floodplains to natural and beneficial function. *(25)*
- Other nature-based approach *(20)*
- Hybrid approach resulting in nature-based solution *(15)*
- All other projects *(10)*

Social Vulnerability Index Score, up to 10 points.

- Very High Social Vulnerability (More than 1.5) *(10)*
- High Social Vulnerability (1.0 to 1.5) *(8)*
- Moderate Social Vulnerability (0.0 to 1.0) *(5)*
- Low Social Vulnerability (-1.0 to 0.0) *(0)*
- Very Low Social Vulnerability (Less than -1.0) *(0)*

Community scale of benefits, up to 30 points.

- More than one census block *(30)*
- 50-100% of census block *(25)*
- 25-49% of census block *(20)*
- Less than 25% of census block *(0)*

Expected lifespan of project, up to 10 points.

- 10 -14 Years *(3)*
- 15 - 20 Years *(5)*
- Over 20 Years *(10)*

Remedy for NFIP probation or suspension *(yes 5, no 0)*
Proposed project part of a low-income geographic area *(yes 10, no 0)*
Proposed project implements a Chesapeake Bay TMDL BMP *(yes 5, no 0)*

SCORING CRITERIA PER CATEGORY
Studies

Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage, *30 points.*

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, *25 points.*

Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Change through the Federal Emergency Management Agency (FEMA), *15 points.*

Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the studies listed below, *Up to 45 points.*

- 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)*
- 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 projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors. *(45)*
- Regional flood studies in riverine communities that may include watershed scale evaluation, updated estimates of rainfall intensity, or other information. *(45)*
- Regional hydrologic and hydraulic studies of floodplains. *(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)*
- Other proposals that will significantly improve protection from flooding on a statewide or regional basis *(35)*

Social Vulnerability Index Score, up to 10 points.

- Very High Social Vulnerability (More than 1.5) *(10)*
- High Social Vulnerability (1.0 to 1.5) *(8)*
- Moderate Social Vulnerability (0.0 to 1.0) *(5)*
- Low Social Vulnerability (-1.0 to 0.0) *(0)*
- Very Low Social Vulnerability (Less than -1.0) *(0)*

Remedy for NFIP probation or suspension *(yes 5, no 0)*
Proposed project part of a low-income geographic area *(yes 10, no 0)*
Proposed project implements a Chesapeake Bay TMDL BMP *(yes 5, no 0)*

SCORING CRITERIA PER CATEGORY

<u>Capacity Building and Planning</u>

Eligible Capacity Building and Planning Activities. Up to 100 points.

Development of a new resilience plan *(95)*
Revisions to existing resilience plans and integration of comprehensive and hazard

mitigation plans *(60)*
Resource assessments, planning, strategies, and development *(40)*
Policy management and/or development *(35)*
Stakeholder engagement and strategies *(35)*
Goal planning, implementation, and evaluation *(25)*
Long term maintenance strategy *(25)*
Other proposals that will significantly improve protection from flooding on a statewide or regional basis approved by the Department *(15)*

Social Vulnerability Index Score, up to 10 points.

- Very High Social Vulnerability (More than 1.5) *(10)*
- High Social Vulnerability (1.0 to 1.5) *(8)*
- Moderate Social Vulnerability (0.0 to 1.0) *(5)*
- Low Social Vulnerability (-1.0 to 0.0) *(0)*
- Very Low Social Vulnerability (Less than -1.0) *(0)*

Community scale of benefits, up to 30 points.

- More than one census block *(30)*
- 50-100% of census block *(25)*
- 25-49% of census block *(20)*
- Less than 25% of census block *(0)*

Remedy for NFIP probation or suspension *(yes 5, no 0)*
Proposed project part of a low-income geographic area *(yes 5, no 0)*

Attachment 2

CFPF Grant Narratives Supporting Documents

Attachment 2 – Outline

1. Proposed Summary of Services

Attachment 2.1

Proposed Summary of Services

Kimley»Horn

Task Order Proposal for
Centennial Golf Course Flood Resilience, Pond Retrofit & Nature Based Solutions Study

Submitted to:

Town of Herndon, Virginia

November 9, 2024

PROJECT UNDERSTANDING

The existing stormwater management pond located at the southeastern corner of the Centennial Golf Course property north of Herndon Parkway (Figure 1) was installed as part of the development and construction of Herndon Parkway in 1999. The approved development stormwater management facility plans show a contributing drainage area of 506 acres which primarily consists of drainage from Herndon Parkway. The unnamed tributary to Folly Lick, which flows northwest to southeast, originally did not drain into this stormwater management facility. Rather it drained directly to Folly Lick, which flows south to north along the eastern golf course property boundary. Sanitary sewer also runs parallel to this unnamed tributary and Folly Lick

In 2013, the Town of Herndon performed a retrofit of this stormwater management facility and rerouted the unnamed tributary into the existing stormwater management facility. Along with this retrofit, minor modifications to the outlet structure and overall capacity were addressed. Since this retrofit, the Town has observed enhanced periodic flooding along Herndon Parkway, increased sedimentation within the existing stormwater management facility, and significant erosion to the unnamed tributary to Folly Lick.

This proposed scope of work intends to analyze the existing stormwater management's ability for resilience in its current arrangement as well as an analysis for keeping the stream in line with the existing stormwater management facility and an analysis for an off line stream system. This scope of work will also analyze each alternatives impacts and improvements and each alternatives overall resilience. This scope of work will also analyze impacts and improvements from daylighting the stream system to the maximum extent practical, for each alternative. The scope of work for this analysis is provided below.

SCOPE OF SERVICES

Kimley-Horn is pleased to submit the following task order proposal for the Centennial Golf Course Flood Resilience Analysis, Pond Retrofit & Nature Based Solutions Study located in the Town of Herndon (Town). This work will be contracted to Kimley Horn under Contract D-22-02 and will be billed on a lump sum basis. Kimley- Horn proposes the following scope of services:

Task 100: Project Management

A. Kickoff Meeting – Kimley-Horn will conduct a project kick off meeting with the Client to review the following items:
   1. Scope of Work
   2. Schedule
   3. Budget

   Kimley-Horn will take meeting minutes and provide the kickoff meeting minutes to the Client.

B. Progress Reports – Kimley-Horn will prepare progress reports for the Client to go along with our monthly billing. The progress reports will consist of the following information:

   1. Task Order Summary
   2. Schedule Review
   3. Budget Review
   4. Miscellaneous Coordination Needs

   Kimley-Horn has assumed 1.5 hours of time for progress report preparation, QA/QC and revisions for a period of up to 12 months.

C. Invoicing – Kimley-Horn has assumed 1.5 hours for invoice preparation, billing backup preparation, invoice QA/QC, and necessary invoice revisions for a period of up to 12 months.

D. Miscellaneous CFPF Assistance – Kimley-Horn has assumed up to ten hours to provide miscellaneous assistance to the Client for CFPF Grant processing.

Task 101: Data Collection & Existing Document Review

A. Client Coordination – Prior to the site visit Kimley-Horn will coordinate with the Client and Golf Course to determine the best days/times for conducting the field activities. Items that will be clarified with the Client & Golf Course through this coordination will consist of the following:
   1. Date of Field Activities
   2. Times on Site
   3. Parking Location
   4. Number of Participants
   5. Description of Field Work Activities
   6. Wetland & Waters of US Signature Forms
   7. Any other necessary Coordination

B. Data Collection (GIS, As-Builts, Permits, etc.) – Kimley-Horn will collect relevant publicly available data and request relevant data from local, state and federal jurisdictions.

C. Data Gap Analysis – Kimley-Horn will review all relevant publicly available data sources and Town provided data. Upon reviewing this data, Kimley-Horn will identify any data gaps necessary for performing this analysis. Identified data gaps will be documented, and any relevant assumptions related to those identified data gaps and how they related to executing this scope of work may be developed and will be provided to the Client.

D. As-Built Review – Kimley-Horn will review available and relevant as-builts for the existing pond and golf course. This as-built review will identify existing relevant storm infrastructure, impoundments, other utilities and infrastructure. The floodplain and drainage impact to the existing infrastructure will serve as the basis for this study and alternatives will be derived to address flood and drainage issues related to this existing infrastructure.

E. Site Visit & Opportunities & Constraints Analysis – Kimley-Horn will perform a site visit to document existing conditions. This site visit will document the following items using a submeter GPS and photographs:
   1. Access
   2. Storm Infrastructure
   3. Land Cover
   4. Existing Pond Conditions
   5. Existing Floodplain Conditions
   6. Other relevant infrastructure

   Upon completing the site visit, Kimley-Horn will prepare a opportunity & constraints analysis and photolog. The opportunity & constraints analysis will identify site specific items that will

need to be considered when developing the alternatives for this site. The photolog will consist of a map showing the photo locations, the photos and a description of each photo.

F. Summary Memorandum – Kimley-Horn will prepare a summary memorandum consisting of the results of the data collection, data gap analysis, as-built review, and site visit.

Task 102: Topographic Survey

A. Kimley-Horn's subconsultant will perform a topographic survey in accordance with proposal dated 8/14/2024 (Attachment 1). Kimley-Horn will provide survey coordination and survey completeness review.

B. Kimley-Horn assumes a total of eight (8) hours for project setup, invoicing, and subconsultant coordination.

Task 103: Wetland and Waters of the US Delineation

Kimley-Horn will perform a wetland and other surface waters/Waters of the US (WOTUS) delineation within a ten-acre section of the Centennial Golf Course located at 909 Ferndale Avenue Herndon, Virginia 20170 (Figure 1). The delineation will be conducted in general accordance with the methods outlined in the United States Army Corp of Engineers' (USACE) 1987 *Corps of Engineers Wetland Delineation Manual* and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).*

A. Client Coordination – Prior to the site visit Kimley-Horn will coordinate with the Client and Golf Course to determine the best days/times for conducting the field activities. Items that will be clarified with the Client & Golf Course through this coordination will consist of the following:
    1. Date of Field Activities
    2. Times on Site
    3. Parking Location
    4. Number of Participants
    5. Description of Field Work Activities
    6. Wetland & Waters of US Signature Forms
    7. Any other necessary Coordination

B. ArcGIS Online & Ecobot Setup – Kimley-Horn will create the requisite wetland and waters of the US, study area boundary, and other relevant GIS data layers in ArcMap and export those into ArcGIS Online. Once in ArcGIS Online, Kimley-Horn will create a basemap in ArcGIS online and deploy the basemap to a cloud based server where it will be made available for field data collection.

    Kimley-Horn will also upload the US Army Corps of Engineers Data Point Form into Ecobot where it will be populated with site specific wetlands and waters of the US data.

C. Desktop Research - Prior to field effort, Kimley-Horn will review the following readily and publicly available background materials:
    1. Topographic Mapping (USGS Quadrangle)
    2. Aerial Photographs (Present & Historical to 1980)
    3. National Wetland Inventory (NWI) Map
    4. National Hydrography Dataset (NHD) Map
    5. Natural Resources Conservation Service (NRCS) Web Soil Survey
    6. Federal Emergency Management Agency (FEMA) Firmette
    7. LiDAR (Fairfax County Best Available)

D. Site Visit - Following the desktop review, Kimley-Horn will perform a wetland delineation at the ten-acre subject property to locate wetlands and waters of the U.S. (WOUS). The delineation will be conducted in general accordance with methods outlined in the *USACE 1987 Wetland Delineation Manual* and applicable Regional Supplement. The outer limits of wetlands and WOUS boundaries located will be flagged, sequentially numbered and captured using a Trimble R1 GPS submeter receiver. Data regarding site soils, vegetation and hydrology will be observed at representative data locations (Data Points) and recorded utilizing the applicable USACE Regional Supplement Data Forms. Data Points will be recorded using a submeter GPS. This task is limited to the field effort to support the wetland delineation. It is assumed approximately ten USACE data forms will be generated to support the infield wetland delineation.

E. Exhibit Preparation – Kimley-Horn will export the data collected using ArcGIS Online to ArcMap to prepare the wetland and waters of the US exhibit which will consist of the following data:

    1. Relevant Town GIS Layers (Parcels, Storm Sewer Network, Topography, Etc.)
    2. Sequentially numbered wetland flags identifying the limits of the wetlands and waters of the US.
    3. Data Points identifying where specific information for hydrology, hydrophytic vegetation and soils was collected
    4. The limits of the wetlands and waters of the US.

The wetland delineation exhibit will be included in the “Figures” section of the wetland delineation submittal to the USACE

Kimley-Horn will prepare a wetland delineation package and deliver to the Client for review. The wetland delineation package will consist of the following items:

F. Threatened & Endangered Species Database Analysis - Kimley-Horn will review the following publicly available databases to identify potential threatened & endangered species within the project study area:
    1. Virginia Department of Wildlife Resources (VDWR);

2. Virginia Fish and Wildlife Information Service (VaFWIS) and Wildlife Environmental Review Map Service (WERMS)
3. Department of Conservation and Recreation (DCR) Natural Heritage Data Explorer (NHDE)
4. US Fish and Wildlife (USFWS) Information for Planning and Conservation (IPAC)

G. Historic & Cultural Database Analysis - Kimley-Horn will review the Virginia Department of Historic Resources (VDHR) database to identify known or suspected historic or archaeological sites within the project limits that are listed on the National Register of Historic Places (NRHP) or eligible or potentially eligible for listing on the NRHP. Kimley-Horn will provide a PDF of the results of this analysis to the Client.

H. Report Preparation – Kimley-Horn will prepare the wetlands and waters of US delineation report which will consist of the following items:
   1. Wetland and Waters of the US Delineation Summary (date/time of delineation, methodology, results)
   2. Wetland and Waters of the US Summary Table
   3. Map Figures (Desktop Review Items and Wetland and Waters of the US Exhibit)
   4. Data Forms for corresponding Data Points
   5. Pre- Application and/or Jurisdictional Waters Determination Request Form for Client Signature

I. USACE Confirmation - Following completion of the wetland delineation package and review by the Client, Kimley-Horn will submit the wetland delineation package and coordinate with the USACE for confirmation of the wetland delineation. Based on experience with similar projects, it is anticipated that the USACE will require up to eight (8) weeks to confirm the boundary. Kimley-Horn representatives will accompany the USACE representative on the site visit. One (1) round of comments on mapping or data will be addressed, after which Kimley-Horn will request a Preliminary Jurisdictional Determination (PJD).

Task 104: Existing Hydrology

A. Base Mapping – Kimley-Horn will prepare a base map using the best publicly available GIS data layers and may consist of the following:
   1. Fairfax County LIDAR
   2. USDA - Web Soil Survey
   3. Town of Herndon Storm Sewer Infrastructure
   4. Town of Herndon Land Cover
   5. Aerial Photography

B. Contributing Drainage Area Delineation – Kimley-Horn will utilize the best publicly available topographic GIS information to delineate the contributing drainage area for the unnamed

tributary to Folly Lick and Folly Lick to the northern jurisdictional boundary.

C. Land Cover Delineation & Curve Number Analysis – Kimley-Horn will perform a detailed land cover delineation and runoff curve number (RCN) analysis for the contributing drainage area using the Soil Conservation Service (SCS) TR-55 Urban Hydrology for Small Watersheds Methodology. The RCN will be derived by assigning the curve number value for the delineated land cover and the hydrologic soil group (HSG). A shapefile showing the delineated RCN and HSG will be prepared and utilized to develop an exhibit documenting the hydrology in the contributing drainage area.

D. Time of Concentration Analysis – Kimley-Horn will perform a time of concentration (Tc) and lag time analysis in accordance with the Soil Conservation Service (SCS) TR-55 Urban Hydrology for Small Watersheds Methodology. Kimley-Horn will delineate the flow path from the furthest point in the contributing drainage area and break up that flowpath into sheet flow, shallow concentrated flow and channel flow. The total Tc will be summated from the outputs for the individual flow types and utilized for deriving peak flows for the Q_1, Q_2, Q_{10}, & Q_{100} storm events.

E. Peak Flow Development (HEC-HMS) – Kimley-Horn will utilize the Army Corp of Engineer's HEC-HMS (Hydrologic Modeling System) software to simulate the hydrologic stream processes at junctions and design specific locations within the stream corridor.

F. Hydrology Exhibit Preparation – Kimley-Horn will prepare a hydrologic exhibit consisting of summary tables and various graphics providing the following information:

1. Contributing Drainage Area
2. Topography
3. Land Cover
4. Runoff Curve Number
5. Flowpath
6. Peak Flow Summary Tables

Task 105: Existing Conditions Hydraulics Analysis

Kimley-Horn will perform a hydraulic analysis for the unnamed tributary to Folly Lick leading into the existing pond and Folly lick between the W&OD trail and the northern jurisdictional boundary. The existing conditions hydraulics analysis will consist of the following items:

A. Regulatory Agency Coordination – Kimley-Horn will request the effective 100-year floodplain model from FEMA for map panel 51059C0110E effective 9/17/2010. Kimley-Horn will also request any Preliminary Products from FEMA along with relevant Historic Products. Kimley-Horn will also download relevant flood related products from the FEMA Flood Service Map Center, which may consist of the following:
   1. FIS Report

2. Letter of Map Amendments / Letter of Map Revisions
3. Flood Risk Products (GeoTiffs & Shapefiles)

A reimbursable fee of up to $500 has been incorporated into this should model information need to be purchased from FEMA.

B. Effective Model Review – Kimley-Horn will review the effective model inputs and results and identify any observed data gaps or inconsistencies. Identified data gaps and inconsistencies will be documented in the summary memorandum.

C. Duplicate Effective Model Preparation (HEC-RAS) – Using the data in the effective model, Kimley-Horn will generate a 1D duplicate effective 100-year flood model for the unnamed tributary to Folly Lick and Folly Lick between the W&OD trail and the northern jurisdictional boundary. Kimley-Horn will review the results of this duplicate effective model with the effective model data from the Flood Information Study (FIS) report. Kimley-Horn will identify any significant differences from comparing the models. The 100-year floodplain boundary will be mapped, and cross sections will be developed for this model along with the 100-year water surface elevations for each cross section. This model will be routed through the existing pond and the inundation 100-year limits within and around the pond will be analyzed.

D. Corrected Effective Model Preparation (HEC-RAS) – Kimley-Horn will update the Duplicate Effective Model and generate a 1D Corrected Effective HEC-RAS model for the unnamed tributary to Folly Lick and Folly Lick between the W&OD trail and the northern jurisdictional boundary. This corrected effective model will incorporate any updated topography, storm sewer infrastructure, hydrology, and land cover. The 100-year floodplain boundary will be mapped, and cross sections will be developed for this model along with the 100-year water surface elevations for each cross section. This model will be routed through the existing pond and the inundation 100-year limits within and around the pond will be analyzed.

E. Summary Memorandum – Kimley-Horn will prepare a summary memorandum consisting of the following items:
   1. Methodology
   2. 100-Year Floodplain Summary Table
   3. Results

F. Exhibit Preparation (CAD) – Kimley-Horn will prepare an exhibit consisting of the following information:
   1. Narrative
   2. Duplicate Effective Floodplain Boundary and Cross Sections
   3. Corrected Effective Floodplain Boundary and Cross Sections
   4. Floodplain Summary Table
   5. Pond Inundation Limits

Task 106: Existing Pond Hydraulic Model

A. Model Setup – Kimley-Horn will prepare a model for the stormwater management facility at located at Centennial Golf Course and adjacent to Herndon Parkway. This pond model will be generated using HydroCAD or Pond Pack. For this analysis, Kimley-Horn will utilize rainfall depths from NOAA Atlas 14 and the peak flows generated from the Existing Hydrology Task.

B. Stage Storage – Kimley-Horn will utilize the survey topography and any relevant as-built plans to derive a stage storage for the existing pond and input this into the model. Stage storage will be derived using the average area end method which calculates a volume based on surface areas for each contour.

C. Outlet Development – Kimley-Horn will model the outlet hydraulics for the pond and route the peak flows for the Q_1, Q_2, Q_{10}, & Q_{100} through the pond to model the inundation extents for these storm events.

D. Exhibit Preparation – Kimley-Horn will prepare and exhibit consisting of the following items:

1. Narrative
2. Pond Plan View showing storm infrastructure & inundation extent
3. Pond Cross Sections storm infrastructure & inundation extent
4. Routing Schematic
5. Relevant Outlet details
6. Relevant tabular information

E. Summary Memorandum – Kimley-Horn will prepare a summary memorandum describing methodology, input parameters and results for the pond model.

Task 200. BANCS Assessment, Soil Sampling & Nutrient Concentration Analysis

Kimley-Horn will perform a BANCS assessment for up to 1,300 linear feet of stream at the Centennial Golf Course (Figure 1). The BANCS assessment consists of the following subtasks:

A. Client Coordination – Prior to the site visit Kimley-Horn will coordinate with the Client and Golf Course to determine the best days/times for conducting the field activities. Items that will be clarified with the Client & Golf Course through this coordination will consist of the following:
   1. Date of Field Activities
   2. Times on Site
   3. Parking Location
   4. Number of Participants
   5. Description of Field Work Activities
   6. Any other necessary Coordination

B. Base Mapping & ArcGIS Online Setup – Kimley-Horn will utilize the most recent publicly available GIS data layers to develop a base map in ArcGIS. The base map will then be

converted to ArcGIS Online to capture field data. Kimley-Horn will create the following data layers that will be exported to ArcGIS Online:

1. BEHI (Point File)
2. Near Bank Stress (Point File)
3. Soil Samples (Point File)
4. Photograph Locations (Point File)

C. Bank Erosion Hazard Index Analysis - The BEHI Method for assessing stream bank erosion potential assigns point values to characteristics of stream bank condition. These scores will be used to inventory stream bank condition over large areas and prioritize stream restoration efforts. Kimley-Horn will utilize a Trimble R1 submeter GPS along with Arc Collector to collect information efficiently and accurately for each of the stream parameters shown in Figure 2 and listed below:

1. Bank length -Length of bank consisting of similar BEHI characteristics
2. Bank height – Height from toe of bank to top of bank
3. Bankfull height – Height from toe of bank to bankfull
4. Rooting depth – Depth of roots from top of study bank down
5. Root density – Percentage of study bank with roots
6. Bank angle – Angle of the bank
7. Bank surface protection – Percent vegetation/roots protecting study bank
8. Bank materials – Material consistency (Silt, Sand, Clay, Boulder, gravel)
9. Bank material stratification – Bank materials layered in study bank

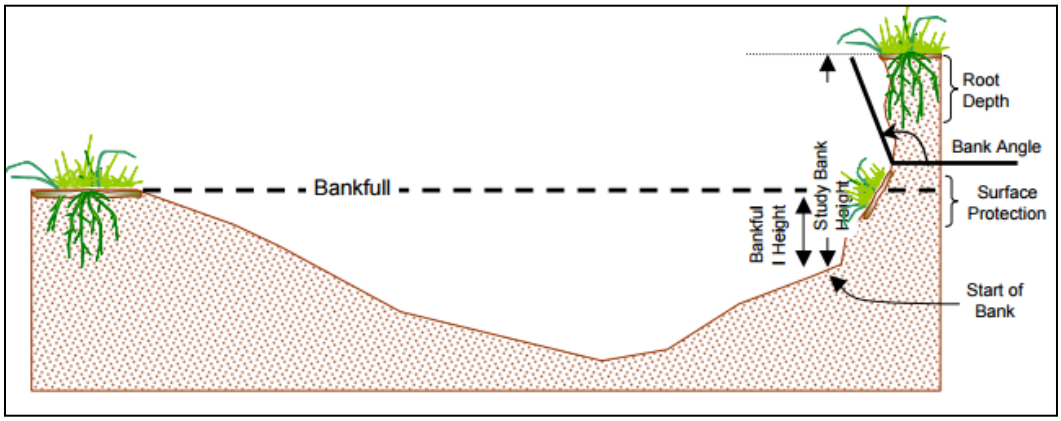

Figure 2

Kimley-Horn will record the results on the BEHI Worksheet 3-11 (Rosgen). An erodibility rating will be assigned for each study bank corresponding with those shown in Table 1.

Table 1. BEHI Score and Rating Table

Total BEHI Score	Erodibility Rating
5-9.5	Very Low

10-19.5	Low
20-29.5	Moderate
30-39.5	High
40-45	Very High
46-50	Extreme

D. Near Bank Stress Analysis – Kimley-Horn will also perform NBS assessments in the same general location as the BEHI assessments. The NBS is a protocol for estimating energy distribution in the near-bank region (1/3 of channel cross-section) associated with the bank being evaluated. Kimley-Horn will utilize NBS methods 2 and 5 for determining each study bank's NBS rating. Method 2 utilizes a ratio between an outer bend's Radius of Curvature and the Bankfull Width. For each NBS assessment the following parameters will be collected and/or calculated to develop NBS scores:

1. Radius of Curvature - the distance measured from the outside of the bankfull channel to the intersection point of two lines that perpendicularly bisect the tangent lines of each curve departure point

2. Bankfull Width – The surface width of the stream measured at the bankfull stage

The resulting ratio corresponds to the NBS erodibility rating shown in Table 2.

Table 2 – NBS Method 2 Ratio vs Rating Table

Near Bank Stress (NBS) Ratings	**Ratio**
Very Low	>3.00
Low	2.21 - 3.00
Moderate	2.01 - 2.21
High	1.81 - 2.00
Very High	1.50 - 1.80
Extreme	<1.50

Kimley-Horn will utilize NBS Method 5 for study banks which are not outer bends. Method 5 is a ratio between the Near Bank Max Depth and the Near Bank Mean Depth.

3. Near Bank Max Depth – The maximum depth from a stream's invert to the bankfull stage in the stream's near bank region (2/3 of channel cross-section)
4. Near Bank Mean Depth – The average of the depth measurements from a stream's invert to the bankfull stage in the stream's near bank region (1/3 of channel cross section).

The resulting ratio corresponds to the NBS erodibility rating shown in Table 3.

Table 3 – NBS Method 5 Ratio vs Rating Table

Near Bank Stress (NBS) Ratings	**Ratio**
Very Low	<1.00
Low	1.00 - 1.50
Moderate	1.51 - 1.80
High	1.81 - 2.50
Very High	2.51 - 3.00
Extreme	>3.00

The above-listed parameters will be collected using a Trimble R1 submeter GPS and ArcGIS Online to collect information efficiently and accurately for each parameter.

E. Soil Sampling - Kimley-Horn will collect up to eight (8) soil samples from the stream banks using a 4" soil sampling auger and performed in general accordance with the *Bulk Density and Soil Nutrient Concentration Methods Guidance* outlined in Chesapeake Stormwater Network (CNS) publication *A Unified Guide to Crediting Stream and Floodplain Restoration Practices in the Chesapeake Bay Watershed*. Soil samples will be spaced 200' to 500' apart. Kimley-Horn will collect samples from each soil horizon found in the stream bank (O, A, B, C, etc.), create a composite sample, and store in a ziploc bag for shipping to the laboratory. Kimley-Horn will photo document the stream bank where the soil sample was collected, and GPS locate each sample location using a Trimble R1 submeter GPS and Arc Collector. Soil samples will be sent to the Waypoint Analytics to determine Bulk Density and Nitrogen (TN) and Phosphorous (TP) nutrient concentrations.

F. Nutrient Analysis – Kimley-Horn will review the nutrient concentration results from the laboratory and consolidate the results into a quantifiable format to assist with quantifying pollutant of concern (POC) credits for any nature based solutions.

G. Develop Predicted Erosion Rate - After completing the BEHI and NBS field assessments, Kimley-Horn will utilize the Spreadsheet Tool for Erosion Rate Estimates (Appendix A. Bank Erosion Summary Table w-BEHI and NBS – with TMDL Phase 6 revisions) as outlined in publication "*A Unified Guide to Crediting Stream and Floodplain Restoration Practices in the Chesapeake Bay Watershed*." Kimley-Horn will also utilize the Colorado streambank erosion prediction curve and the BEHI and NBS erodibility ratings associated with that curve to predict the streambank erosion for each study bank and the total streambank erosion for the assessment reach. The Colorado curve and erodibility ratings are already built into the Spreadsheet Tool for Erosion Rate Estimates. The total bank erosion calculations will be summarized using a variation of the Bank Summary worksheet from Spreadsheet Tool for Erosion Rate Estimates to show the total predicted streambank erosion in tons/year/foot. Kimley-Horn will estimate the potential POC load reduction credits associated with restoring the stream as described in *"A Unified Guide for Crediting Stream and Floodplain Restoration Projects in the Chesapeake Bay Watershed."*

H. Report Preparation – Kimley-Horn will prepare the BANCS Assessment report that will consist of the following:

1. Narrative describing methodology and stream bank classifications
2. Exhibit showing stream bank classification, bank assessment location, and soil sample locations.
3. Bank Erosion Hazard Index Forms (Rosgen Worksheet 3-11)
4. Near Bank Stress Forms (Rosgen Worksheet 3-12)
5. Predicted Erosion Rate Form (Rosgen Worksheet 3-13)
6. Nutrient Concentrations
7. Pollutant of Concern Credit

I. Revisions – Kimley-Horn will provide one round of revisions to the BANCS Assessment Report based on Client feedback.

Task 201: Geomorphic Assessment

A. Client Coordination – Prior to the site visit Kimley-Horn will coordinate with the Client and Golf Course to determine the best days/times for conducting the field activities. Items that will be clarified with the Client & Golf Course through this coordination will consist of the following:
   1. Date of Field Activities
   2. Times on Site
   3. Parking Location
   4. Number of Participants
   5. Description of Field Work Activities
   6. Any other necessary Coordination

B. Base Mapping & ArcGIS Online Setup – Kimley-Horn will utilize the most recent publicly available GIS data layers to develop a base map in ArcGIS. The base map will then be

converted to ArcGIS Online to capture field data. Kimley-Horn will create the following data layers that will be exported to ArcGIS Online:

1. Pebble Count Locations (Point File)
2. Cross Sections Locations (Point File)
3. Stream Geometry (Point File)

C. Representative Pebble Count - Kimley-Horn will collect a representative pebble count for 1200 linear feet of stream located southeast of the intersection of Herndon Parkway and Elden Street. The representative pebble count is a stratified, systematic method to proportionally sample all the bed features present within the bankfull channel through a designated reach and is used to determine the stream type. It characterizes the channel and bed material throughout the stream reach through particle collection at evenly spaced intervals variable to the bankfull width.

Kimley-Horn will walk and measure the study stream reach and determine the percentage of pools and riffles. Kimley-Horn will collect ten (10) particles at ten (10) different cross sections throughout the study stream reach. To stratify and systematically sample the particles Kimley-Horn will locate three (3) of the ten (10) cross sections in pools and seven (7) of the ten (10) cross sections in riffles at equal intervals along the bankfull cross section. Kimley-Horn will measure each particles B-axis in millimeters and record the measurement in Table 2-3 (Rosgen). After particles have been measured, Kimley-Horn will plot the upper limit of each size class and the corresponding cumulative percent finer than values on the x-axis and primary y-axis for the pool, riffle and the composite of the pool and the riffle. Kimley-Horn will calculate the D16, D35, D50, D84, D95 and the D100 for the pool, riffle and the composite of the pool and the riffle

D. Active Bed Pebble Count - The active bed riffle pebble count characterizes the bed material at the surveyed riffle cross section. One hundred (100) particles are measured at evenly spaced intervals across the active bed of the surveyed riffle cross section. The active bed pebble count data is used for estimating velocity and sediment competence.

Kimley-Horn will locate three (3) cross section(s) in riffles and collect up to one hundred (100) particles at equal intervals along the bankfull cross section. Kimley-Horn will measure each particles B-axis in millimeters and record the measurement in Table 2-3 (Rosgen). After particles have been measured, Kimley-Horn will plot the upper limit of each size class and the corresponding cumulative percent finer than values on the x-axis and primary y-axis for the pool, riffle and the composite of the pool and the riffle. Kimley-Horn will calculate the D16, D35, D50, D84, D95 and the D100 for the pool, riffle and the composite of the pool and the riffle

E. Stream Geometry Data Collection - Under this task, Kimley-Horn will perform the existing conditions morphological assessment field work for the parameters below as required by the Army Corps of Engineers (COE) Nationwide #27 Permit. Kimley-Horn will import the topographic survey and appropriate Town/County GIS information into ArcGIS Online and

utilize a Trimble R1 GNSS submeter receiver to assist in locating and field documenting the following morphological parameters for the entire stream reach

1. Riffle Length – distance measured from start of riffle to end of riffle
2. Riffle Width – distance measured across riffle at bankfull
3. Pool Length – distance measured from start of pool to end of pool
4. Pool Width – distance measured across pool at bankfull
5. Riffle depth – depth measured from bed to bankfull at riffles
6. Riffle Width – depth measured from bed to bankfull at pools
7. Pool to Pool Spacing – distance between end of upstream pool and start of downstream pool

F. Cross Section Data Collection - Kimley-Horn will also perform cross sections for up three (3) riffles in the existing stream channel. The start and end for each cross section will be collected using the Trimble R1 GPS. The data collected for each cross section will consist of:

1. Channel Bottom
2. Water Depth
3. Bankfull Depth
4. Inner Berm (if present)

G. Desktop Geomorphic Analysis - After generating the geometric parameters and collecting the riffle and pool data, cross section data, and pebble count data, Kimley-Horn will compute the following information which will serve as the baseline stream conditions that will be used for analyzing and preparing the restoration design, and the morphological parameters associated with the Nationwide #27 permit.

1. Bankfull Cross Sectional Area
2. Bankfull Width
3. Bankfull Mean Depth
4. Bankfull Max Depth
5. Width Depth Ratio
6. Entrenchment Ratio
7. Point Bar Slope

Kimley-Horn will generate a series of CAD sheets for inclusion into the design plans and for documenting each morphological parameter and its derivation. The following information will be generated:

1. Geometric Parameters
2. Riffle/Pool Summary Sheet
3. Locations of Riffle/Pools
4. Length/Width/Depth
5. Particle Summary

H. Morphological Summary Table – Using the Geomorphic information collected, Kimley-Horn will prepare an existing conditions morphological summary table that will be used to developing the nature-based solutions. This morphological summary table will be prepared using Microsoft Excel and will be consistent with the minimum permitting requirements for a Nationwide #27 permit.

I. Memorandum Preparation – Kimley-Horn will prepare a memorandum summarizing the in field and desktop methodology used for this geomorphic assessment. Kimley-Horn will also provide the results of the geomorphic assessment.

Task 300: Alternative 1 Analysis– Stormwater Management Facility Retrofit In line with Stream & Nature Based Solutions

To analyze the stormwater management facility retrofit and in line stream restoration for resiliency, Kimley-Horn will prepare an alternative with the stream channel remaining in line with the existing stormwater management facility. This analysis will consist of the following assumptions:

- Stream Channel will remain in line with the existing stormwater management facility
- Stream Channel will be daylighted and restored to the maximum extent practical
- Stormwater Management Facility will be retrofitted in accordance with BMP Clearinghouse Standards and Specifications
- Stormwater Management Facility will comply with BMP Clearinghouse standards and specifications
- Stormwater Management Facility dam will remain unregulated
- Retrofit will not cause a rise in effective base flood elevation.

To adequately prepare this analysis with these assumptions, this scope of work will consist of the following:

A. Nature Based Solution – The basis for this analysis will be the Rosgen Natural Channel Design (NCD) methodology, as documented in the terms and conditions found in the most current version of the US Army Corps of Engineers Nationwide Permit #27. Using the BANCS Assessment and Geomorphic Assessment along with the existing hydrology and hydraulics, Kimley-Horn may modify the following items and analyze these modifications for their consistency with current flood resiliency requirements as and industry standard best practices:
    1. Stream channel pattern, profile, substrate material, stream bank conditions.
    2. Installation of plunge pools at outfall points along the stream
    3. Removal of culverts and daylighting where practical
    4. Flood Resilience improvements (ground cover, riprap, trees) in selected areas.

B. Pond Retrofit Modifications – The basis for this analysis will be the most current version of the Virginia Erosion and Sediment Control and Stormwater Management Handbook and the standards and specifications from the Virginia BMP Clearinghouse. Using the existing pond hydrology, hydraulics and completed nature-based solution analysis, Kimley-Horn will analyze

the pond capacity, hydraulics, inundation limits, and overall resiliency. Based on the contributing drainage area being much larger than the original or previous retrofit design, Kimley-Horn anticipates that the existing stormwater management facility's area and volume will significantly increase, and the existing outlet structure may be insufficient. If the existing outlet structure appears to be insufficient, Kimley-Horn will analyze a variety of outlet structures that appear to be best suited for adequately conveying peaks flows to help eliminate flooding concerns at the golf course, adjacent storm sewer network and Herndon Parkway.

C. Exhibit Preparation (CAD) – Kimley-Horn will prepare the following exhibits
    1. Nature Based Solution Improvements (Plan, Profile, Cross Sections, Relevant Details)
    2. Pond Retrofit Improvements (Plan, Profile, Cross Sections, Relevant Details)
    3. Floodplain & Inundation Impacts and Improvements

Kimley-Horn will perform one round of revisions for this alternative based on Client comments.

Task 301: Alternative 2 – Pond Retrofit Offline of Stream & Nature Based Solutions

To analyze the stormwater management facility retrofit and in line stream restoration for resiliency, Kimley-Horn will prepare an alternative with the stream channel being removed from the contributing drainage area and not draining into the existing stormwater management facility. This analysis will consist of the following assumptions:

- Stream Channel will be offline from the existing stormwater management facility.
- Stream Channel will be daylighted and restored to the maximum extent practical
- Stormwater Management Facility will be retrofitted in accordance with BMP Clearinghouse Standards and Specifications
- Stormwater Management Facility will comply with BMP Clearinghouse standards and specifications
- Stormwater Management Facility dam will remain unregulated
- Retrofit will not cause a rise in effective base flood elevation.

To adequately prepare this analysis with these assumptions, this scope of work will consist of the following:

D. Nature Based Solution – The basis for this analysis will be the Rosgen Natural Channel Design (NCD) methodology, as documented in the terms and conditions found in the most current version of the US Army Corps of Engineers Nationwide Permit #27. Using the BANCS Assessment and Geomorphic Assessment along with the existing hydrology and hydraulics, Kimley-Horn may modify the following items and analyze these modifications for their consistency with current flood resiliency requirements as and industry standard best practices:

    1. Stream channel pattern, profile, substrate material, stream bank conditions.

2. Installation of plunge pools at outfall points along the stream
3. Removal of culverts and daylighting where practical
4. Flood Resilience improvements (ground cover, riprap, trees) in selected areas

E. Pond Retrofit – The basis for this analysis will be the most current version of the Virginia Erosion and Sediment Control and Stormwater Management Handbook and the standards and specifications from the Virginia BMP Clearinghouse. Using the existing pond hydrology, hydraulics and completed nature-based solution analysis, Kimley-Horn will analyze the pond capacity, hydraulics, inundation limits, and overall resiliency. Based on removing the stream channel from the contributing drainage area, Kimley-Horn anticipates that the existing stormwater management facility's area, volume, and outlet structure may be sufficient for this analysis. If the existing outlet structure appears to be insufficient, Kimley-Horn will analyze a variety of outlet structures that appear to be best suited for adequately conveying peaks flows to help eliminate flooding concerns at the golf course, adjacent storm sewer network and Herndon Parkway.

F. Exhibits – Kimley-Horn will prepare the following exhibits

1. Nature Based Solution Improvements (Plan, Profile, Cross Sections, Relevant Details)
2. Pond Retrofit Improvements (Plan, Profile, Cross Sections, Relevant Details)
3. Floodplain & Inundation Impacts and Improvements

Kimley-Horn will perform one round of revisions for this alternative based on Client comments.

Task 302: Resilience Based Impact and Improvements Analysis for Alternatives 1 & 2

Kimley-Horn will utilize the two alternatives and perform a resilience-based impact and improvements analysis. This analysis will route the derived peak flows through the modified stream channel and stormwater management facility improvements for each alternative and the resilience-based impacts and improvements will be documented using the following process:

A. HEC-RAS Model Updates – Kimley-Horn will utilize the Corrected Effective model and update it for each alternative using HEC-RAS. The Q_1, Q_2, Q_{10}, & Q_{100} will be routed through the modified stream channel and stormwater management facility (depending on the alternative) and the inundation limits for each storm event will be mapped for the unnamed tributary to Folly Lick and for Folly Lick from the W&OD trail to the northern jurisdictional Town Boundary. Kimley-Horn will prepare cross sections showing the base flood elevations and a tabular summary showing the existing base flood elevations and the base flood elevations for each alternative.

B. Hydraulic Output Analysis – Kimley-Horn will perform a hydraulic output analysis for the the Q_1, Q_2, Q_{10}, & Q_{100} storm events will be analyzed between the existing conditions and each alternative:

1. Velocity
2. Shear Stress
3. Hydraulic Grade Line
4. Storm Sewer Capacity

C. Impacts and Improvements Exhibits – Kimley-Horn will prepare exhibits showing the impacts and improvements from the existing conditions analysis to each of the alternative's analysis. The exhibits will consist of a plan view graphics, cross sections, and tabular information for each of the alternatives. The impacts and improvements for each alternative will be highlighted and summarized on the exhibits.

Kimley-Horn will perform one round of revisions for this alternative based on Client comments.

Task 303: Pollutant of Concern Crediting Analysis

Kimley-Horn will perform a pollutant of concern (POC) crediting analysis for each alternative using the appropriate expert panel guidance manual for their respective crediting protocols.

A. Nature Based Solutions Credit Analysis – Kimley-Horn will utilize the *Consensus Recommendations for Improving the Application of the Prevented Sediment Protocol for Urban Stream Restoration Projects Built for Pollutant Removal Credit (February 2020)* to estimate crediting for each alternative. Kimley-Horn will prepare relevant tabular and graphical exhibits to support this analysis. The following crediting protocols will be analyzed:
   1. Protocol 1 Crediting
   2. Protocol 2 Crediting
   3. Protocol 3 Crediting

B. Pond Retrofit Credit Analysis – Kimley-Horn will utilize *Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects (January 2015)* to estimate stormwater management facility crediting for each alternative. Kimley-Horn will prepare relevant tabular and graphical exhibits to support this analysis.

C. Credit Narrative – Kimley-Horn will prepare a crediting narrative for each alternative consisting of a description of the crediting methodology and results. The narrative may consist of tabular or graphic representations supporting the credit methodology or summaries.

Task 304: Engineer's Opinion of Probable Construction Costs

Kimley-Horn will prepare a preliminary engineer's opinion of probable construction costs (EOPCC) for the alternatives using the most recent Fairfax County Unit Price list. These opinions will be extremely high level and based on items within the alternatives where quantities can easily be derived. A 25% contingency will be added to the total to cover unknown items or quantities that cannot be easily derived. The intent of this EOPCC is to provide a cost basis to help drive decision-making.

A. Quantity Takeoff – Kimley-Horn will calculate the readily available material quantities for each alternative. Quantities for unknown items will not be calculated and utilized for developing the costs for each alternative.

B. Cost Opinion Preparation – Kimley-Horn will utilize the most recent version of the Fairfax County Unite Price List to derive estimated costs for each those readily available items for each alternative. The cost for each for these items will be derived from the calculated quantities and the unit prices for these quantities. The costs will be summated and a 25% contingency will be added to the subtotal to account for any unknown costs.

Task 400: Consolidated Report Preparation

Kimley-Horn will prepare a consolidated Centennial Golf Course Flood Resilience, Pond Retrofit & Nature Based Solutions Study report consisting of the narratives and information from each of the relevant tasks provided in this scope of work. Kimley-Horn will provide this report to Client and will provide up to one (1) revision for the Client.

Task 401: Town Meetings & Coordination

A. Miscellaneous Client Coordination – Kimley-Horn will provide up to forty hours of miscellaneous client coordination.

B. Progress Meetings – Kimley-Horn will conduct monthly one-hour meetings for up to twelve months.

C. Meeting Minutes – Kimley-Horn will prepare meeting minutes for each of the meetings listed above and provide to the Client. Kimley-Horn assumes meetings will be attended by two (2) Kimley-Horn staff.

Should additional meetings and coordination be needed, Kimley-Horn will prepare an additional scope of work and cost estimate for these services.

Schedule

Upon being issued a task order, Kimley-Horn will work with the Town to develop a mutually beneficial schedule.

Fee

Kimley-Horn will perform the services as specifically requested by the Town under this Scope of Services on a lump sum basis not to exceed $321,904.25. Kimley-Horn will prepare an Amendment consisting of a labor estimate and scope of work for any tasks or items outside of this scope of work. Kimley-Horn will utilize the rate schedule as provided for in Town contract D-22-02 (Attachment 2).

Assumptions

For the purposes of developing this proposed scope of work and the accompanying cost estimate, we have made the following assumption:

- The Town will provide all known digital data, including CAD, PDFs, models from the previous or adjacent projects.
- Kimley-Horn assumes all information provided by the Town can be relied upon as accurate and utilized to supplement Kimley-Horn's execution of this scope of work.
- The Town will provide site access permission to Kimley-Horn for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- The Town will provide all coordination to adjacent properties.
- Town will provide all necessary data and information in a timely manner to accommodate completion of the work within the agreed upon schedule.
- Town will provide the most up to date, GIS shapefile and aerial photo information for the project.
- This analysis will be based on best publicly available data.

Exclusions

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal are the following:

- Boundary Surveys
- Property Research
- Subdivision, Right of Way Plats
- Construction Stakeout
- As-Builts
- Phase I, II, III Archaeological Investigations
- Environmental Site Assessments
- SWPPP Inspections
- FEMA CLOMR or LOMR Applications
- Geotechnical Studies and Soil Testing.
- Utility Design
- VDOT Design or Permitting
- Right of Way Permits
- Letters of Permission for any related off-site land disturbance
- Subsurface Utility Engineering (SUE) investigation of underground utilities
- As-built drawings
- Construction Administration
- Construction Inspection Services
- Construction Management Services
- Supplemental Project Insurance
- Development/Delivery of Presentations, Board of Supervisors, Committees, or the Public
- Notifications to Adjoining Property Owners
- All other services not explicitly stated in this scope of work

We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Attachment 1

August 14, 2024

Attn: Mr. Casey Kight
Kimley-Horn
11400 Commerce Park Drive Suite 400
Reston, Virginia 20191
Casey.Kight@kimley-horn.com

RE: Task 11: Centennial Golf Course Stream Restoration
JMT Job No. 22-02000-006

Dear Mr. Kight

Johnson, Mirmiran, and Thompson, (JMT) is pleased to submit this proposal to provide Centennial Golf Course Stream Restoration.

Initial Ground Control: JMT will set and value site control to create a traverse network that will be installed around the perimeter of the project area and used to locate topographic/boundary and SUE features. The project's horizontal and vertical datum will be referenced to the Virginia State Plane System North (NAD 83/2011) and a National Geodetic Vertical Datum (NGVD 29). Control points will be placed in locations selected for longevity and security for the project's duration and available for future use if necessary.

JMT will set 5/8" rebar with a plastic cap noting "JMT TRAVERSE POINT". Each point, situated within open areas, will be located using conventional and GPS methods. Primary control points located by conventional methods will adhere to a system of three (3) direct/reverse angles with distances recorded in each direction. Primary control points located by using GPS will be valued by using multiple observations.

Secondary control may be necessary to complete this project within areas inaccessible by the primary control. Secondary control will be tied into the primary network to minimize errors and identify blunders.

Topographic Surveying: JMT field crews will utilize primary and secondary control to locate ground features to create a topographic worksheet with 1-foot contours to be used for design. The limits for the survey are shown attached and highlighted. These surveys will be completed under the direct supervision of a Virginia Licensed Professional Land Surveyor. These location surveys will include, the following:

- Ground elevations are necessary to produce 1' contours.
- Edge of pavement, line paint, fences, driveways, signs, etc.
- Driveways, guide rails, street trees and trees 8" DBH & greater.
- Locate Storm Drainage Structures, Pipe Diameters, Inverts, Top Elevations
- Locate Dry Utilities including Poles, guy wires, gas/water valves, etc.
- Above ground visible utility appurtenances.

Stream Channel: JMT field crews will utilize primary and secondary control to locate and define Stream Features within the Survey Limits including the following:

- Thalweg, Bank Toe (right and left), and Top of bank (right and left)
- Location of Bridges, Deck Elevation, High Chord Elevation, Low Chord Elevation, Abutment location and elevation.

Outfalls and Outfall Channels: JMT field crews will utilize primary and secondary control to locate all outfalls and outfall channels located within the Survey Limits including the following:

- Location, Type, Size, Material, Invert, and top elevations of structures

- Location, Type, Diameter/Size of Pipes, Locate one structure outside of Limits
- Locate, Thalweg, Bank Toe, and Top of bank of outfall channel.
- Up to 4 Cross Sections at location of outfall channel.

Data Reduction and Processing: A Survey Technician will reduce Field data in the office and check for errors. Field notes on paper and electronic will be compiled and adjusted to create a final traverse. This final traverse will be used to process the field collected topographic features. The raw field data will be processed into an AutoCAD drawing file. All office calculations, drafting, data reduction, and adjustments will be under the direct supervision of a Virginia Licensed Professional Land Surveyor.

Quality Control/Quality Assessment: JMT employs many QA/QC measures to minimize the occurrence of errors inherent to the surveying process. Field collected traverse angles will be observed in a 3 direct/reverse method to minimize angular errors. Primary and secondary traverse lines will be adjusted mathematically to identify and eliminate errors. Field run topo will be inspected by both office and field personnel to check for correctness. Prior to delivery of the final product all deliverables will be checked by a Virginia Licensed Professional Land Surveyor.

Assumptions:

- This level of effort does not include boundary surveys.
- JMT assumes unrestricted access to all areas of the project area, receipt of all digital and bond copies of plat, maps, ALTA Surveys or plans relating to the project.
- JMT assumes one revision. Additional revisions are considered out of scope.
- JMT assumes no Subsurface Utilities will be designated as part of this task.
- JMT assumes no dewatering of structures or confined space entry under this contract.
- JMT assumes any activity related to litigation or the preparation thereof is considered out of scope and will be charged at hourly rates.
- JMT will make every attempt to meet the schedule stated herein unless field work is hampered by inclement weather.
- JMT assumes no test holes will be performed under this contract.

The lump sum fee is shown below for each service and is based on 4 days of field time to perform utility designation and survey. These services also include project management, CAD support and are broken out as:

Survey Services = $27,270.00

This price will remain in effect for a period of six months. Please review our standard terms attached hereto. JMT anticipates a start date within 15 days upon receipt of the enclosed signed authorization of notice to proceed. Final deliverables will be provided in a 3D AutoCAD format within 45 days of completion of field work.

If you have any questions or require additional information, please do not hesitate to contact me at (410) 891-4428 or by email: ecooper@jmt.com.

Very truly yours,

JOHNSON, MIRMIRAN & THOMPSON
Eric Cooper, Prof. L.S.
Vice President

cc: David Moyle, Prof L.S.

MANHOUR DERIVATION						
	PERSONNEL					
	PM	*ST*	*CC*	*FT2*	*TOTAL*	*PROJECT COST*
Survey Control	2	3	10	10	25	$2,620.00
Topographic Surveys	6	18	60	60	144	$14,790.00
Stream Channel	2	6	20	20	48	$4,930.00
Outfalls and Outfall Channels	2	6	20	20	48	$4,930.00
TOTAL	12	33	110	110	265	$27,270.00

FEE DERIVATION					
CLASSIFICATION	**MANHOURS**		**RATE**		**FEE**
Project Manager / Professional Land Surveyor	12	x	$155.00	=	$1,860.00
Survey Technician	33	x	$120.00	=	$3,960.00
Survey Crew Chief	110	x	$110.00	=	$12,100.00
Survey Field Tech 2	110	x	$85.00	=	$9,350.00
Total Direct Expenses					**$27,270.00**

Location Map

Attachment 2

Centennial Golf Course Flood Resilience

11/9/2024

TASK	TASK DESCRIPTION	Principal	Project Manager	Senior Engineer	Project Engineer	Junior Engineer	Senior Planner / LA	Project Planner / LA	Planner / LA	Senior Environmental Scientist	Project Environmental Scientist	Environmental Scientist	Administrative			Total Hours	Labor Total	Total Miles For Each Task	Mileage Cost (Current Federal Rate)	KH Expenses	Sub Expenses	Sub Markup	Total Fee (Labor Total + Mileage Cost + KH Expenses + Sub Expenses + Sub Markup)
		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Project Management																							
100	A. Kickoff Meeting		2		2											4	$ 750.00		$ -				$ 750.00
	B. Progress Reports		6		12											18	$ 3,090.00		$ -				$ 3,090.00
	C. Billing		6										24			30	$ 3,810.00		$ -				$ 3,810.00
	D. Miscellaneous CFPF Assistance		6		6											12	$ 2,250.00		$ -				$ 2,250.00
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	20	0	20	0	0	0	0	0	0	0	24	0	0	64	$ 9,900.00	0	$ -	$ -	$ -	$ -	$ 9,900.00
Data Collection & Existing Document Review																							
101	A. Client Coordination		1	2	4											7	$ 1,165.00		$ -				$ 1,165.00
	B. Data Collection (GIS, As-Builts, Permits, etc.)			2	6											8	$ 1,210.00	50	$ 33.50				$ 1,243.50
	C. Data Gap Analysis			2	6											8	$ 1,210.00		$ -				$ 1,210.00
	D. As-Built Review		1	4	4											9	$ 1,535.00		$ -				$ 1,535.00
	E. Site Visit Opportunities & Constraints Analysis		1	4	4											9	$ 1,535.00		$ -				$ 1,535.00
	F. Summary Memorandum		1	4	8											13	$ 2,095.00		$ -				$ 2,095.00
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	4	18	32	0	0	0	0	0	0	0	0	0	0	54	$ 8,750.00	50	$ 33.50	$ -	$ -	$ -	$ 8,783.50
Topographic Survey																							
102	A. Subconsultant Scope of Work													1		1	$ -		$ -		$ 27,270.00	$ 2,727.00	$ 29,997.00
	B. Sub Consultant Coordination		1	2		4								1		8	$ 1,065.00		$ -				$ 1,065.00
	C.																$ -		$ -				$ -
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	1	2	0	4	0	0	0	0	0	0	0	1	0	9	$ 1,065.00	0	$ -	$ -	$ 27,270.00	$ 2,727.00	$ 31,062.00

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

TASK	TASK DESCRIPTION	Principal	Project Manager	Senior Engineer	Project Engineer	Junior Engineer	Senior Planner / LA	Project Planner / LA	Planner / LA	Senior Environmental Scientist	Project Environmental Scientist	Environmental Scientist	Administrative			Total Hours	Labor Total	Total Miles For Each Task	Mileage Cost (Current Federal Rate)	KH Expenses	Sub Expenses	Sub Markup	Total Fee (Labor Total + Mileage Cost + KH Expenses + Sub Expenses + Sub Markup)
		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Wetland and Waters of the US Delineation																							
103	A. Client Coordination										2					2	$ 260.00		$ -				$ 260.00
	B. ArcGIS Online & Ecobot Setup										4					4	$ 520.00		$ -				$ 520.00
	C. Desktop Research											8				8	$ 880.00	50	$ 33.50				$ 913.50
	D. WOUS Field Visit		1							2	32					35	$ 4,735.00	50	$ 33.50				$ 4,768.50
	E. Mapping		1							2	16	8				27	$ 3,535.00		$ -				$ 3,535.00
	F. T&E Species Database Analysis											4				4	$ 440.00		$ -				$ 440.00
	G. Historic & Cultrual Database Analysis											4				4	$ 440.00	25	$ 16.75				$ 456.75
	H. Report Preparation		1							2	20	16				39	$ 4,935.00		$ -				$ 4,935.00
	I. USACE Confirmation									2	2					4	$ 600.00		$ -				$ 600.00
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	3	0	0	0	0	0	0	8	76	40	0	0	0	127	$ 16,345.00	125	$ 83.75	$ -	$ -	$ -	$ 16,428.75
Existing Hydrology																							
104	A. Base Mapping					2										2	$ 230.00		$ -				$ 230.00
	B. Contributing Drainage Area Delineation			2	4	2										8	$ 1,160.00		$ -				$ 1,160.00
	C. Land Cover Delineation			2	6	2										10	$ 1,440.00		$ -				$ 1,440.00
	D. Curve Number Analysis			2	4	2										8	$ 1,160.00		$ -				$ 1,160.00
	E. Time of Concentration Analysis			2	4	2										8	$ 1,160.00		$ -				$ 1,160.00
	F. Peak Flow Development (HEC-HMS)		2	2	8	2										14	$ 2,190.00		$ -				$ 2,190.00
	G. Hydrology Exhibit Preparation (CAD)		4													4	$ 940.00		$ -				$ 940.00
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	6	10	26	12	0	0	0	0	0	0	0	0	0	54	$ 8,280.00	0	$ -	$ -	$ -	$ -	$ 8,280.00
Existing Hydraulic Model Development																							
105	A. Regulatory Agency Coordination				4											4	$ 560.00		$ -	$ 500.00			$ 1,060.00
	B. Model Review			4	4											8	$ 1,300.00		$ -				$ 1,300.00
	C. Duplicate Effective Model (HEC-RAS)		1	8	24											33	$ 5,075.00		$ -				$ 5,075.00
	D. Corrected Effective Model (HEC-RAS)		1	8	24											33	$ 5,075.00		$ -				$ 5,075.00
	E. Summary Memorandum		4	12	40											56	$ 8,760.00		$ -				$ 8,760.00
	F. Exhibit Preparation (CAD)		4	8	24											36	$ 5,780.00		$ -				$ 5,780.00
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	10	40	120	0	0	0	0	0	0	0	0	0	0	170	$ 26,550.00	0	$ -	$ 500.00	$ -	$ -	$ 27,050.00

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

TASK	TASK DESCRIPTION	Principal	Project Manager	Senior Engineer	Project Engineer	Junior Engineer	Senior Planner / LA	Project Planner / LA	Planner / LA	Senior Environmental Scientist	Project Environmental Scientist	Environmental Scientist	Administrative			Total Hours	Labor Total	Total Miles For Each Task	Mileage Cost (Current Federal Rate)	KH Expenses	Sub Expenses	Sub Markup	Total Fee (Labor Total + Mileage Cost + KH Expenses + Sub Expenses + Sub Markup)
		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Existing Pond Hydraulic Model																							
	A. Model Setup				2											2	$ 280.00		$ -				$ 280.00
	B. Hydrologic Input				2											2	$ 280.00		$ -				$ 280.00
	C. Stage Storage Development				12											12	$ 1,680.00		$ -				$ 1,680.00
	D. Outlet Development				8											8	$ 1,120.00		$ -				$ 1,120.00
	E. Exhibit Preparation			4	12											16	$ 2,420.00		$ -				$ 2,420.00
106	F. Summary Memorandum		1	2	8											11	$ 1,725.00		$ -				$ 1,725.00
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	1	6	44	0	0	0	0	0	0	0	0	0	0	51	$ 7,505.00	0	$ -	$ -	$ -	$ -	$ 7,505.00
Bank Assessment for Non-point source Consequences of Sediment (BANCS), Soil Sampling, Nutrient Concentration Analysis																							
	A. Client Coordination				2											2	$ 280.00		$ -				$ 280.00
	B. Base Mapping & ArcGIS Online Setup				2											2	$ 280.00		$ -				$ 280.00
	C. Bank Erosion Hazard Index Analysis		1	4	16	12										33	$ 4,595.00		$ -				$ 4,595.00
	D. Near Bank Stress Analysis		1	4	16	12										33	$ 4,595.00		$ -				$ 4,595.00
	E. Soil Sampling			2	2											4	$ 650.00		$ -	$ 600.00			$ 1,250.00
200	F. Nutrient Analysis				4											4	$ 560.00		$ -				$ 560.00
	G. Develop Predicted Erosion Rate			2	4											6	$ 930.00		$ -				$ 930.00
	H. Summary Memorandum		1	4	16											21	$ 3,215.00		$ -				$ 3,215.00
	I. Revisions				16											16	$ 2,240.00		$ -				$ 2,240.00
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	3	16	78	24	0	0	0	0	0	0	0	0	0	121	$ 17,345.00	0	$ -	$ 600.00	$ -	$ -	$ 17,945.00
Geomorphic Assessment																							
	A. Client Coordination				2											2	$ 280.00		$ -				$ 280.00
	B. Base Mapping & ArcGIS Online Setup				4											4	$ 560.00		$ -				$ 560.00
	C. Representative Pebble Count		1	2						8	8					19	$ 3,005.00		$ -				$ 3,005.00
	D. Active Bed Pebble Count		1	2						8	8					19	$ 3,005.00		$ -				$ 3,005.00
	E. Stream Geometry Data Collection				16											16	$ 2,240.00		$ -				$ 2,240.00
201	F. Cross Section Data Collection			2	16	8										26	$ 3,530.00		$ -				$ 3,530.00
	G. Desktop Geomorphic Analysis			2	12											14	$ 2,050.00		$ -				$ 2,050.00
	H. Morphological Summary Table		1	2	4											7	$ 1,165.00		$ -				$ 1,165.00
	I. Summary Memorandum		2	4	12											18	$ 2,890.00		$ -				$ 2,890.00
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	5	14	66	8	0	0	0	16	16	0	0	0	0	125	$ 18,725.00	0	$ -	$ -	$ -	$ -	$ 18,725.00

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

TASK	TASK DESCRIPTION	Principal	Project Manager	Senior Engineer	Project Engineer	Junior Engineer	Senior Planner / LA	Project Planner / LA	Planner / LA	Senior Environmental Scientist	Project Environmental Scientist	Environmental Scientist	Administrative			Total Hours	Labor Total	Total Miles For Each Task	Mileage Cost (Current Federal Rate)	KH Expenses	Sub Expenses	Sub Markup	Total Fee (Labor Total + Mileage Cost + KH Expenses + Sub Expenses + Sub Markup)
		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Alternative 1: Pond Retrofit Inline with Nature Based Solutions																							
300	A. Nature Based Solution Modifications		2	16	32	24				4						78	$ 11,350.00		$ -				$ 11,350.00
	B. Pond Retrofit Modifications		2	24	40					4						70	$ 11,190.00		$ -				$ 11,190.00
	C. Exhibit Preparation (CAD)		2	24	60	80										166	$ 22,510.00		$ -				$ 22,510.00
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	6	64	132	104	0	0	0	8	0	0	0	0	0	314	$ 45,050.00	0	$ -	$ -	$ -	$ -	$ 45,050.00
Alternative 2: Pond Retrofit Offline with Nature Based Solutions																							
301	A. Nature Based Solution Modifications		8	24	60	16				12						120	$ 18,600.00		$ -				$ 18,600.00
	B. Pond Retrofit Modifications		2	8	24	8				4						46	$ 6,910.00		$ -				$ 6,910.00
	C. Exhibit Preparation (CAD)		2	24	60	80										166	$ 22,510.00		$ -				$ 22,510.00
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	12	56	144	104	0	0	0	16	0	0	0	0	0	332	$ 48,020.00	0	$ -	$ -	$ -	$ -	$ 48,020.00
Floodplain & Resilience Analysis for Alternative 1 & 2																							
302	A. HEC-RAS Model Updates		4	24	48											76	$ 12,100.00		$ -				$ 12,100.00
	B. Hydraulic Output Analysis		4	16	32											52	$ 8,380.00		$ -				$ 8,380.00
	C. Impacts and Improvements Exhibits		2	8	40	40										90	$ 12,150.00		$ -				$ 12,150.00
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	10	48	120	40	0	0	0	0	0	0	0	0	0	218	$ 32,630.00	0	$ -	$ -	$ -	$ -	$ 32,630.00

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

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		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Pollutant of Concern Crediting Analysis																							
303	A. Nature Based Solutions Crediting Analysis			4	24											28	$ 4,100.00		$ -				$ 4,100.00
	B. Pond Retrofit Crediting Analysis			4	16											20	$ 2,980.00		$ -				$ 2,980.00
	C. Credit Narrative			4	12											16	$ 2,420.00		$ -				$ 2,420.00
	D. Exhibit Preparation		4	4	24											32	$ 5,040.00		$ -				$ 5,040.00
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	4	16	76	0	0	0	0	0	0	0	0	0	0	96	$ 14,540.00	0	$ -	$ -	$ -	$ -	$ 14,540.00
Preliminary Opinion of Probable Construction Costs																							
400	A. Quantity Takeoff		4	8	60											72	$ 10,820.00		$ -				$ 10,820.00
	B. Cost Opinion Preparation		1	2	12											15	$ 2,285.00		$ -				$ 2,285.00
	C.																$ -		$ -				$ -
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	5	10	72	0	0	0	0	0	0	0	0	0	0	87	$ 13,105.00	0	$ -	$ -	$ -	$ -	$ 13,105.00
Consolidated Report Preparation																							
400	A. Report Preparation		4	12		40										56	$ 7,760.00		$ -				$ 7,760.00
	B.																$ -		$ -				$ -
	C.																$ -		$ -				$ -
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	4	12	0	40	0	0	0	0	0	0	0	0	0	56	$ 7,760.00	0	$ -	$ -	$ -	$ -	$ 7,760.00

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

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		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
Meetings & Coordination																							
401	A. Miscellaneous Client Coordination		20	20												40	$ 8,400.00		$ -				$ 8,400.00
	B. Progress Meetings		12	12												24	$ 5,040.00		$ -				$ 5,040.00
	C. Meeting Minutes				12											12	$ 1,680.00		$ -				$ 1,680.00
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	32	32	12	0	0	0	0	0	0	0	0	0	0	76	$ 15,120.00	0	$ -	$ -	$ -	$ -	$ 15,120.00
	A.																$ -		$ -				$ -
	B.																$ -		$ -				$ -
	C.																$ -		$ -				$ -
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ -	0	$ -	$ -	$ -	$ -	$ -
	A.																$ -		$ -				$ -
	B.																$ -		$ -				$ -
	C.																$ -		$ -				$ -
	D.																$ -		$ -				$ -
	E.																$ -		$ -				$ -
	F.																$ -		$ -				$ -
	G.																$ -		$ -				$ -
	H.																$ -		$ -				$ -
	I.																$ -		$ -				$ -
	J.																$ -		$ -				$ -
	K.																$ -		$ -				$ -
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ -	0	$ -	$ -	$ -	$ -	$ -

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

TASK	TASK DESCRIPTION	Principal	Project Manager	Senior Engineer	Project Engineer	Junior Engineer	Senior Planner / LA	Project Planner / LA	Planner / LA	Senior Environmental Scientist	Project Environmental Scientist	Environmental Scientist	Administrative			Total Hours	Labor Total	Total Miles For Each Task	Mileage Cost (Current Federal Rate)	KH Expenses	Sub Expenses	Sub Markup	Total Fee (Labor Total + Mileage Cost + KH Expenses + Sub Expenses + Sub Markup)
		$280.00	$235.00	$185.00	$140.00	$115.00	$185.00	$140.00	$115.00	$170.00	$130.00	$110.00	$100.00						$0.67			10%	
	A.																$ -						$ -
	B.																$ -						$ -
	C.																$ -						$ -
	D.																$ -						$ -
	E.																$ -						$ -
	F.																$ -						$ -
	G.																$ -						$ -
	H.																$ -						$ -
	I.																$ -						$ -
	J.																$ -						$ -
	K.																$ -						$ -
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ -	0	$ -	$ -	$ -	$ -	$ -
	A.																$ -						$ -
	B.																$ -						$ -
	C.																$ -						$ -
	D.																$ -						$ -
	E.																$ -						$ -
	F.																$ -						$ -
	G.																$ -						$ -
	H.																$ -						$ -
	I.																$ -						$ -
	J.																$ -						$ -
	K.																$ -						$ -
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ -	0	$ -	$ -	$ -	$ -	$ -
	A.																$ -						$ -
	B.																$ -						$ -
	C.																$ -						$ -
	D.																$ -						$ -
	E.																$ -						$ -
	F.																$ -						$ -
	G.																$ -						$ -
	H.																$ -						$ -
	I.																$ -						$ -
	J.																$ -						$ -
	K.																$ -						$ -
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ -	0	$ -	$ -	$ -	$ -	$ -
	Total	**0**	**126**	**344**	**942**	**336**	**0**	**0**	**0**	**48**	**92**	**40**	**24**	**0**	**2**	**1,954**	**$ 290,690.00**	**175**	**$ 117.25**	**$ 1,100.00**	**$ 27,270.00**	**$ 2,727.00**	**$ 321,904.25**
	Hour Percentage	0.00%	6.45%	17.60%	48.21%	17.20%	0.00%	0.00%	0.00%	2.46%	4.71%	2.05%	1.23%	0.00%	0.10%	100.00%							

*Year 1 rates per excuted contract amendment #1 dated 12/1/2022.

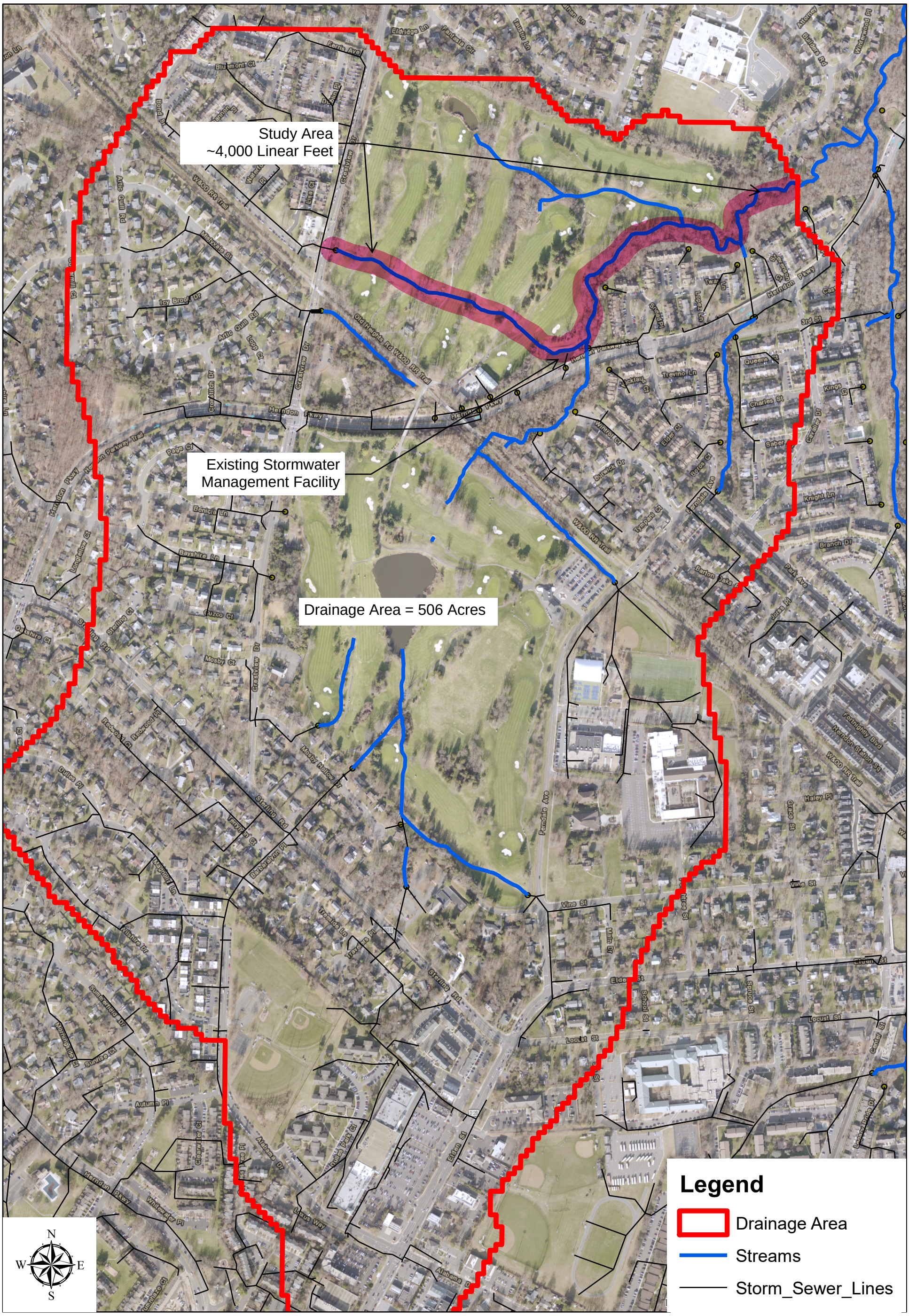
Attachment 3

CFPF Grant Narratives Supporting Documents

Attachment 3 – Outline

1. Detailed Map of Project Area
2. FIRM of the Project Area
3. Historic Flood Damage Data / Images
4. Town of Herndon - Current Floodplain Ordinance
5. Town of Herndon – Comprehensive Plan
6. Town of Herndon – Social Vulnerability Map & Index Score
7. Authorization to request funding from the Fund and/or RVRF Match loan from governing body or chief executive of the local government
8. Signed pledge agreement from each contributing organization

Attachment 3.1
Detailed Map of Project Area



Centennial Golf Course Stream & Management Facility Flood Resilience Study

Attachment 3.2

FIRM Map of Project Area

National Flood Hazard Layer FIRMette

FEMA

77°23'56"W 38°58'58"N

77°23'19"W 38°58'30"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/7/2025 at 11:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 3.3

Historic Flood Damage Data / Images

Kight, Casey

From: Chastain, Tammy <tammy.chastain@herndon-va.gov>
Sent: Tuesday, April 30, 2024 1:01 PM
To: Latour, Lawrence
Cc: Keebaugh, Scott
Subject: RE: Golf course pond

Follow Up Flag: Follow up
Flag Status: Flagged

Hey Lawrence,
I think David mentioned it last week, but thought I'd let you know that the pond filled back up rather quickly. It doesn't seem to be draining again but we'll check it out. However, we may want to investigate where the water is coming from since we haven't had much rain since the pond was drained.
Just my thoughts.
Thanks,
Tammy

From: Chastain, Tammy
Sent: Friday, April 12, 2024 10:14 AM
To: Latour, Lawrence <lawrence.latour@herndon-va.gov>
Cc: Keebaugh, Scott <Scott.Keebaugh@herndon-va.gov>
Subject: Golf course pond

Hey Lawrence,
The golf course pond has filled up and we're seeing some back up upstream of the pond.
We are going to rent a large pump to pump out the water so we can see what the issue is. A few years ago, we had that happen with some trash, so we suspect that's the problem again.
I wanted to let you know in case you wanted to come out while we're pumping it out and see what it looks like further down and to keep you in the loop.
If we can get the pump on Monday, we'll probably start pumping it out on Tuesday.
Let me know if you have any concerns or suggestions with our plan.
Thanks,
Tammy

Kight, Casey

From: Higgins, David <david.higgins@herndon-va.gov>
Sent: Tuesday, April 16, 2024 2:47 PM
To: Latour, Lawrence

Sent from my iPhone

Attachment 3.4

Town of Herndon – Floodplain Ordinance

Sec. 78-60.2. - Floodplain Overlay (FPO).

(a) *Purpose and intent*. This section is adopted pursuant to the authority granted to localities by Virginia Code § 15.2-2280. The town welcomes the dedication of floodplain to the town wherever possible for preservation of the floodplain and its use as green space. The floodplain overlay district (FPO) is intended to:

(1) Provide for safety from flood and other dangers;

(2) Protect against loss of life, health, or property from flood or other dangers;

(3) Prevent disruption of commerce and government services, the unnecessary expenditure of public funds for flood protection and relief;

(4) Preserve and protect floodplains in as natural a state as possible for the preservation of wildlife habitats, for the maintenance of the natural integrity and function of the streams, for the protection of water quality, and for the promotion of a zone for ground water recharge; and

(5) Prevent the impairment of the tax base by:

a. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

b. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

c. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood-proofed against flooding and flood damage; and

d. Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

(b) *Applicability*. The provisions of this section shall apply to all lands within the town identified as flood-prone, as follows:

(1) *Flood-prone land.* Flood-prone land shall not be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered on flood-prone land except in full compliance with the terms and provisions of this section and all other relevant chapters and regulations which apply to the development of the land, such as the Virginia Uniform Statewide Building Code, the town subdivision regulations, and applicable state and federal laws. Records of actions associated with administering this section shall be kept on file and maintained by the zoning administrator or designee.

(2) *100-year flood*. The FPO shall include all lands subject to inundation by waters of the 100-year flood. The basis for the delineation of the FPO shall be the flood insurance study for the town prepared by the U.S. Department of Housing and Urban Development, Federal Insurance

Administration, dated February 1979, as may be amended subsequently. The basis for the outermost boundary of the FPO shall be the 100-year flood elevations contained in the flood profiles of the flood insurance study as shown as zone A1—A30 on the accompanying flood insurance rate map, dated April 1, 1979, as amended. Areas designated as either zone A1—A30 or AE shall be that floodplain area for which base flood elevations have been provided in the FIS and FIRM but for which no floodway has been delineated. The delineation of any FPO lands may be revised by the town council where natural or manmade changes have occurred or more detailed studies are conducted or undertaken by the U.S. Army Corps of Engineers, another qualified public agency, or qualified individual professionals demonstrating the advisability of such change. Prior to town council's approval of such a change, approval shall be obtained from the Federal Insurance Administration.

(3) *Validity*. If any provision of the FPO is declared inapplicable as a result of any legislative or administrative action or judicial discretion, base underlying floodplain overlay district provisions shall remain applicable.

(c) *Definitions*. See Article XVIII, Definitions, for explanations of words, terms and phrases used in this section.

(d) *Overlay concept*. The floodplain districts described above shall be overlay to the existing underlying zoning districts as shown on the official zoning ordinance map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions. If there is any conflict between the provisions or requirements of the floodplain district and those of any underlying zoning district, the more restrictive provisions and/or those pertaining to the floodplain district shall apply. In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying zoning provisions shall remain applicable.

(e) *District boundaries and delineation*. The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study (FIS) and the flood insurance rate maps (FIRM) for Fairfax County and the Town of Herndon prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated September 17, 2010, and any subsequent revisions or amendments thereto, and as described below:

(1) *Special floodplain area district (AE zone)*. The special floodplain area district shall be those areas identified as an AE zone on the maps accompanying the flood insurance study for which 100-year flood elevations have been provided.

(2) *Approximated floodplain district (A zone)*. The approximated floodplain district shall be those areas identified as an A zone on the maps accompanying the flood insurance study. In these zones, no detailed flood profiles or elevations are provided, but the 100-year floodplain boundary has been approximated.

(3) *Shallow flooding district (AO or AH zone)*. The shallow flooding district shall be those areas identified as zone AO or AH on the maps accompanying the flood insurance study.

(f) *Official map*. The boundaries of the special flood hazard and floodplain districts are established as on the flood boundary and floodway map and/or flood insurance rate map which is declared to be a part of this section and which shall be kept on file at the town offices.

(g) *Administration*. The provisions of this section shall be administered as follows:

(1) *District boundary modifications*. The delineation of any of the floodplain districts may be revised by the town where natural or man-made changes have occurred and/or where detailed studies have been conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency, or an individual documents the need for modification. However, prior to any such modification, approval must be obtained from the Federal Insurance Administration.

(2) *Interpretation of the floodplain districts.* Interpretations of the boundaries of the floodplain district shall be made by the zoning administrator. Any individual or group disputing a floodplain district boundary interpretation shall have the right to appeal such interpretation to the board of zoning appeals.

(3) *Submission of technical data*. A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the town shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

(4) *Permit requirement*. All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a building permit subject to the following provisions.

a. Such development shall be undertaken only in strict compliance with the provisions of this section and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (VA USBC) and the town's subdivision regulations.

b. Prior to the issuance of any such permit, the zoning administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding.

c. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

(5) *Site plan and permit applications*. All site plan applications for development within the FPO any floodplain district and all building permits issued for the floodplain shall include the following:

a. An elevation of the base flood at the site;

b. An elevation of the lowest floor, including the basement;

c. Nonresidential only structures to be flood-proofed shall include the elevation to which the structure will be flood-proofed; and

d. Topographic information showing existing and proposed ground elevations.

(h) *District standard regulations*. Development in the district shall meet the following standards:

(1) *Building requirements*. New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

(2) *Manufactured homes*. Manufactured homes shall be prohibited in accordance with the regulations of this chapter.

(3) *Materials*. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(4) *Minimize flood damage*. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

(5) *Utilities*. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(6) *Water supply*. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

(7) *Sanitary sewage systems*. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

(8) *On-site waste disposal*. On-site waste disposal systems, if permitted, shall be located and constructed to avoid impairment to them or contamination from them during flooding.

(9) *Alterations, improvements, repairs and reconstruction*. Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this chapter shall meet the requirements of "new construction" as contained in this chapter. Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this section, shall be undertaken only if the nonconformity is not furthered, extended, or replaced.

(10)

Additional regulations for special flood hazard areas. In addition to the above regulations, the following shall apply to all special flood hazard areas:

a. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U.S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, in riverine areas, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administrator.

b. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

(i) *District specific regulations*. Development in the district shall meet the following specific standards:

(1) *Site plan and special exception requirement*. Uses, activities, and development occurring within the FPO shall be undertaken only upon the issuance of approval of a site plan and special exception pursuant to this section, other than restoration or replacement of single-family detached dwellings after casualty damage.

(2) *Uses*. Those uses that are allowed by right in the underlying zoning district are allowed upon the approval of a special exception pursuant to section 78-155.3, special exception, and section 78-155.3(e)(2), special review standards for the Floodplain Overlay District. Any special exceptions that are issued shall be noted in the annual report submitted to the federal insurance administrator.

(3) *Notification requirements*. In addition to the notification requirements described in Article XV, further notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Virginia Department of Conservation and Recreation (Floodplain Management Program) and the Federal Insurance Administration.

(4) *No change in carrying capacity/volume/velocity*. Under no circumstances shall any use, activity or development decrease the carrying capacity of, or increase the volume or velocity of inflow to, the channels of floodways of any watercourse, drainage ditch or any other drainage facility or system.

(5) *No increase in elevation of 100-year flood*. No new construction, or development shall be permitted within the floodplain overlay district unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, does not increase the elevation of the 100-year flood at any one point.

(6)

Alteration and relocation channels/watercourse. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within the town, a permit from the U.S. Army Corps of Engineers and certification from the Virginia State Water Control Board may be necessary. A joint permit application is available from one of these organizations. Further notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Floodplain Management Program) and the Federal Insurance Administration.

(7) *Submission requirements*. All applications for development in the floodplain overlay district issued for the floodplain shall comply with the submittal requirements described in section 78-155.3.

(8) *New construction*. The proposed building site must be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall meet the following standards:

a. Be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,

b. Be constructed with materials resistant to flood damage,

c. Be constructed by methods and practices that minimize flood damages, and

d. Be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(9) *Construction standards for enclosed areas below flood elevation*. New construction and substantial improvements with fully enclosed areas below the regulatory flood protection level that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be constructed entirely of flood resistant materials below the regulatory flood protection elevation and designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

b. The total net area of all openings must be at least one square inch for each square foot of enclosed area subject to flooding.

c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

d. The bottom of all openings shall be no higher than one foot above grade.

e. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

(10) *Elevation standards for residential structures*. New construction and substantial improvements of residential structures within zones A1—30, AE and AH zones on the flood insurance rate map shall have the lowest floor (including basement) elevated no lower than 18 inches above the base flood level.

(11) *Elevation standards and floodproofing standards for nonresidential structures*. New construction and substantial improvements of nonresidential structures within zones A1—30, AE and AH zones on the flood insurance rate map shall have the lowest floor (including basement) elevated no lower than 18 inches above the base flood level or, together with attendant utility and sanitary facilities, be designed so that below the base flood level plus one foot the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the zoning administrator.

(12) *Design criteria for utilities and facilities*. The following criteria shall apply in the district:

a. *Utilities*. All utilities and facilities, such as sewer, gas, electrical, telecommunication, and water systems being placed in flood-prone areas should be located, elevated (where possible), and constructed to minimize or eliminate flood damages.

b. *Drainage facilities*. All drainage facilities shall be designed to convey the flow of stormwater runoff in a safe and efficient manner. The system shall ensure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties. The town council may require a primarily underground system to accommodate frequent floods and a secondary surface system to accommodate larger, less-frequent floods. Drainage plans shall be consistent with local and regional drainage plans.

c. *Water facilities*. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and be located and constructed to minimize or eliminate flood damage and impairment.

d. *Sanitary facilities*. All new and replacement sanitary sewage systems, private package sewage treatment plants, and onsite wastewater treatment systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. In addition, they should be located and constructed to minimize or eliminate flood damage and impairment.

e. *Streets and sidewalks*. Streets and sidewalks should be designed to minimize their potential for increasing and aggravating the levels of flood flow. Drainage openings may be required to sufficiently discharge flood flows without unduly increasing flood heights.

(13) *Modification, alterations, repairs and reconstruction of existing structures*. The following standards shall apply in the district:

a. Existing structures in the floodplain area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.

b. In the floodplain overlay district, the modification, alteration, repair, reconstruction or improvement that amounts to less than 50 percent of its market value shall conform to the VA USBC.

c. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with this chapter and shall require the entire structure to conform to the VA USBC.

d. If the structure in the floodplain overlay district is designed and used as a single-family detached dwelling that is a permitted use in the zoning district pursuant to Table 78-70.2. D: Table of Principal Permitted and Allowed Uses, it may be restored in its location prior to casualty so long as:

1. The restoration is begun within 12 months and completed within 24 months of the casualty;
2. The modification, alteration, repair, reconstruction or improvement is elevated or flood proofed or both to the greatest extent possible;
3. The structure occupies the same space it occupied prior to the casualty; and
4. No dwelling units are added.

(14) *Recreational vehicles*. Recreational vehicles may be placed on sites for fewer than 180 consecutive days and must be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices.

(j)

Special floodplain district regulations and map revisions. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as zones A and AE on the flood insurance rate map, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the town. Development activities in zones A, AE, and AH, on the town's flood insurance rate map which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies with the town's endorsement for a conditional flood insurance rate map revision, and receives the approval of the Federal Emergency Management Agency.

(k) *Approximated floodplain regulations*. The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the flood insurance study. For these areas, the 100-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. It is recommended that the applicant refer to FEMA 265, "Managing Floodplain Development in Approximate Zone A Areas, A Guide for Obtaining and Developing Base (100-Year) Flood Elevations." Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Floodplain Information Reports, U.S. Geological Survey Flood-Prone Quadrangles, etc., an applicant for a proposed use, development and/or activity greater than 50 lots or five acres, whichever is lesser, shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the zoning administrator.

(l) *Shallow flooding district regulations*. The following standards shall apply in shallow flooding districts.

a. All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated to or above the flood depth specified on the flood insurance rate map, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than two feet above the highest adjacent grade.

b. All new construction and substantial improvements of nonresidential structures shall:

1.

Have the lowest floor, including basement, elevated to or above the flood depth specified on the flood insurance rate map, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least two feet above the highest adjacent grade; or

2. Together with attendant utility and sanitary facilities be completely flood-proofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

c. Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

(m) *Subdivision applications regulations*. All subdivision applications within the district shall:

(1) *Minimize damage*. All subdivision proposals shall be consistent with the need to minimize flood damage;

(2) *Utilities*. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(3) *Drainage*. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards; and

(4) *Flood elevation*. Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed 50 lots or five acres, whichever is the lesser.

(n) *Violations*. Violation of district regulations shall be addressed as follows:

(1) *Penalty for violations*. Any person who fails to comply with any of the requirements or provisions of this section or directions of the zoning administrator or any authorized designee of the town pursuant to this section shall be guilty of a civil violation and subject to the penalties in accordance with section 78-170.4(a) of this chapter.

(2) *Correction of violations*. In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the town to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

(o) *Variances*. See section 78-155.4(d)(2), variances in the floodplain overlay district, for regulations governing variances in floodplains.

(p) *Nonconformities*. See Article XVI, Nonconformities, for regulations governing nonconformities in floodplains.

(q) *Municipal liability*.

(1) *Limitations*. The degree of flood protection sought by the provisions of this section 78-60.2, floodplain overlay district (FPO), is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur. Flood heights may be increased by manmade or natural causes, such as ice jams and the restriction of bridge openings by debris. This section does not imply that areas outside the FPO, or that land uses permitted within those districts, will be free from flooding or flood damages.

(2) *Personal liability.* This section shall not create liability on the part of the town or any officer or employee of the town for any flood damages that result from reliance on this section or any administrative decision lawfully made under this section.

(r) *Conflict with other regulations*. In cases where the requirements of this section conflict with any other provisions of the Herndon Town Code, or state code regulations, the restrictions of this section shall apply in flood-prone districts.

(s) *Severability*. The subsections, paragraphs, sentences, clauses and phrases of this section are severable, and if any phrase, clause, sentence, paragraph or subsection of this section shall be declared unconstitutional or invalid by the valid judgment or decree of a court of competent jurisdiction, such unconstitutionally or invalidity shall not affect any of the remaining phrases, clauses, sentences, paragraphs or subsections of this section. The remaining portions shall remain in full force and effect.

(Ord. No. 17-O-13, 8-8-2017; Ord. No. 20-O-61, § 1, 11-17-2020)

Attachment 3.5

Town of Herndon – Comprehensive Plan

TOWN OF Herndon VIRGINIA

Herndon 2050 Comprehensive Plan

Process and Scope Introduction

Planning Commission Work Session

August 14, 2023

TOWN OF Herndon

What is a Comprehensive Plan?

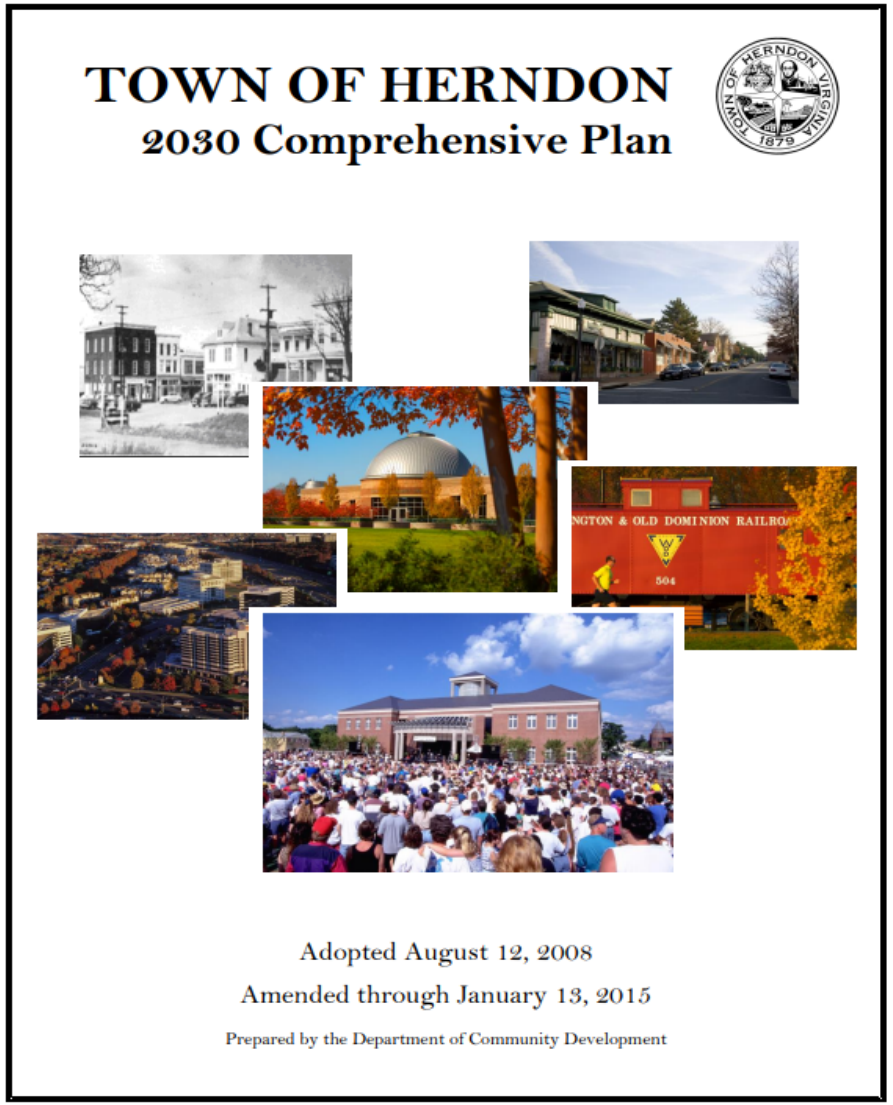
- An overarching policy and long-range landuse document establishing a vision, goals, and strategies to implement them.
- It Provides guidance on land use, transportation, housing, economic development, environment, public facilities, parks and recreation, and design and historic preservation.
- Lead document that guides decision-making, zoning, and budget decisions, (Capital Improvement Program -CIP)

Comprehensive Plans are required by the Code of Virginia;

- “The local planning commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction and every governing body shall adopt a comprehensive plan for the territory under its jurisdiction. "Section 15.2-2223 of the code
- The plan is intended to be general in nature and identify “approximate” locations & characters of major features
- The comprehensive plan should be based on a comprehensive survey and studies of the existing conditions and trends of growth, as well as extensive and iterative public outreach.

Town of Herndon 2030 Comprehensive Plan

- Adopted August 12, 2008;
- Nine significant amendments including three area plans since adoption.
- A lot has changed since 2008, including;
  - Demographics and Population
  - The opening of the Herndon Silver Line Metro Station
  - Post-Covid economics
  - Housings



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    - Town's Profile

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    - Built Environment
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    - Community Energy Plan
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Meaningful outreach to all sectors and communities

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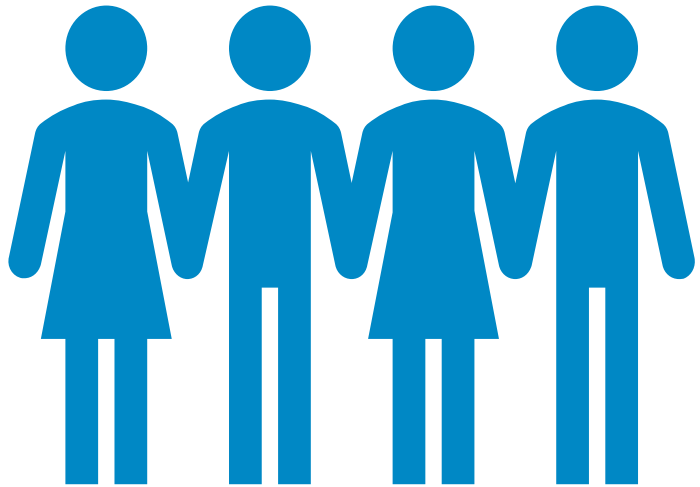
- Equity and the need to listen and incorporate



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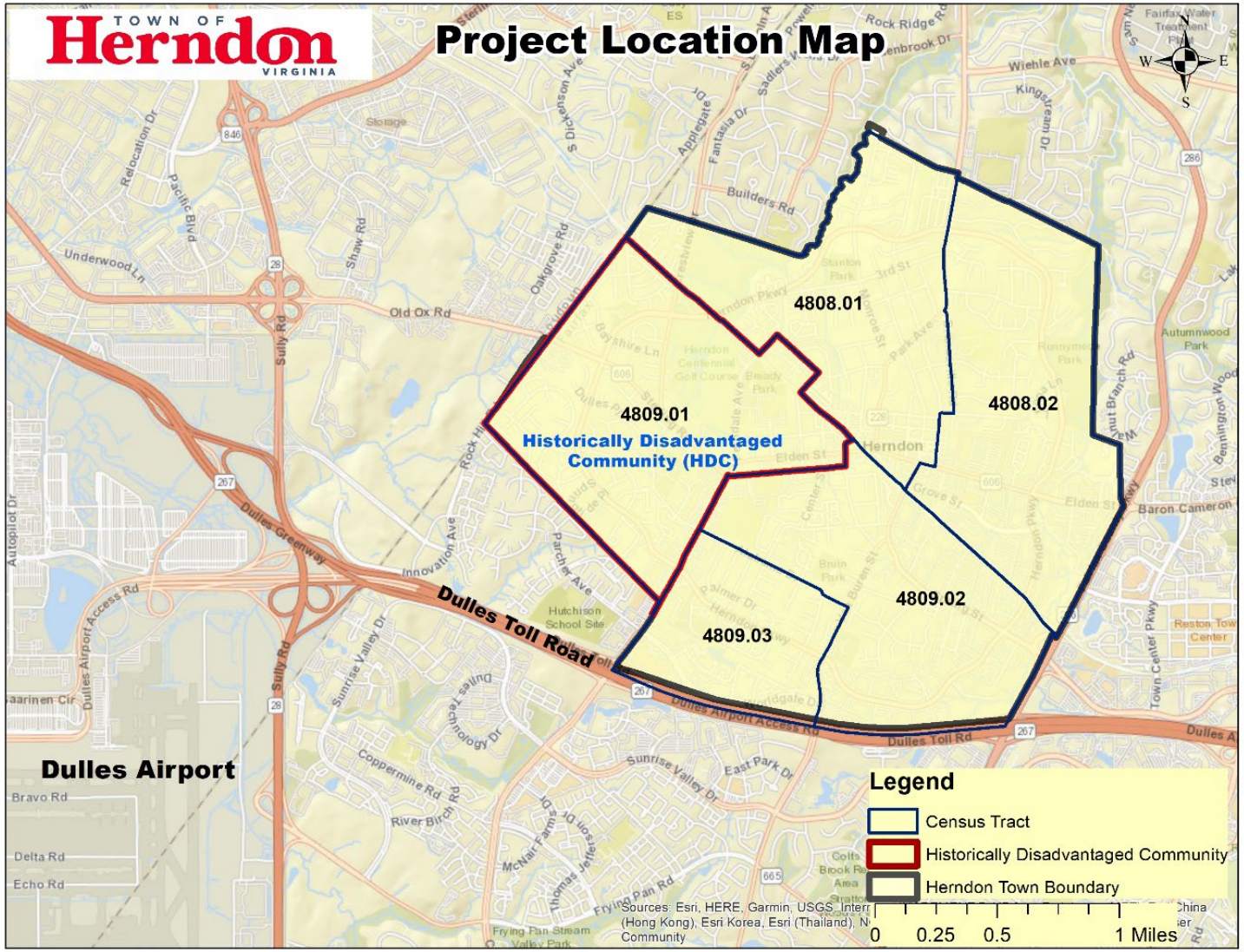

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- Ongoing consultation with community, groups, and committees including:
  - A Herndon 2050 Committee; and
    - Economic Development Advisory Committee (EDAC)
    - The Herndon Bicycle and Pedestrian Advisory Committee (PBAC);
    - The Herndon Diversity, Equity, and Inclusion Committee (HDEIC);

Early Considerations

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Questions or Comments?

TOWN OF Herndon VIRGINIA

Herndon 2050 Comprehensive Plan

Project Scope

Planning Commission
Work Session

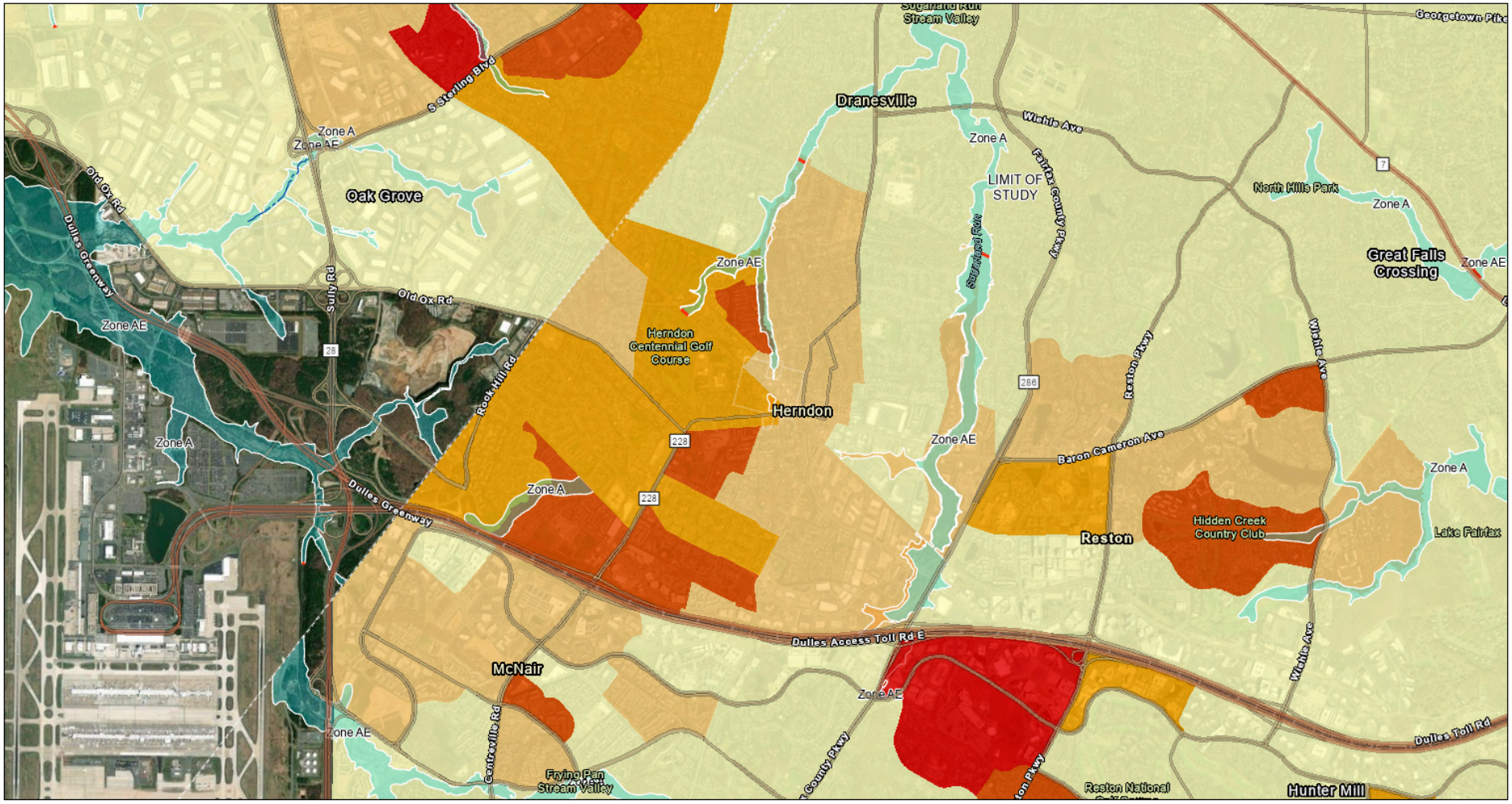
August 14, 2023

TOWN OF Herndon

Attachment 3.6

VFRIS Social Vulnerability Map & Index Score

VFRIS Exporter



1/7/2025, 6:28:46 AM

1:40,377

0 0.4 0.8 1.6 mi

0 0.5 1 2 km

Profile Baselines

Flood Hazard Boundaries

Limit Lines

Other Boundary

Flood Hazard Area

0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

Social Vulnerability Block Groups 2020

Very Low Social Vulnerability

Low Social Vulnerability

Moderate Social Vulnerability

High Social Vulnerability

Very High Social Vulnerability

Attachment 3.7

Authorization to request funding from the Fund and/or RVRF Match loan from governing body or chief executive of the local government

Authorization To Request Funding

Applicant Name & Address:	Town of Herndon Attention: Richard Smith, PE 777 Lynn Street Herndon, Virginia 20170 703-435-6800
Project Title:	Town of Herndon Resilience Resource Assessment
Match Funding Source:	Stormwater Fund
Match Contribution Amount:	Town - $80,476.06 (25%) / Grant - $241,428.19 (75%)

"I certify that I am requesting matching grant funds from the Virginia Community Flood Preparedness Fund on behave of the Town of Herndon in the Capacity Building/Planning category for the development of the Community Flood Prevention Fund – Town of Herndon Resilience Resource Assessment."

Signature

1/24/2025

Date

Attachment 3.8

Signed pledge agreement from each contributing organization

Pledge Agreement

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"I certify that the Town of Herndon pledges to utilize the Stormwater Fund to pay for this project in full or quarterly prior to CFPF reimbursement."

Signature

1/24/2025

Date

Attachment 3.9
Town Stormwater Fund

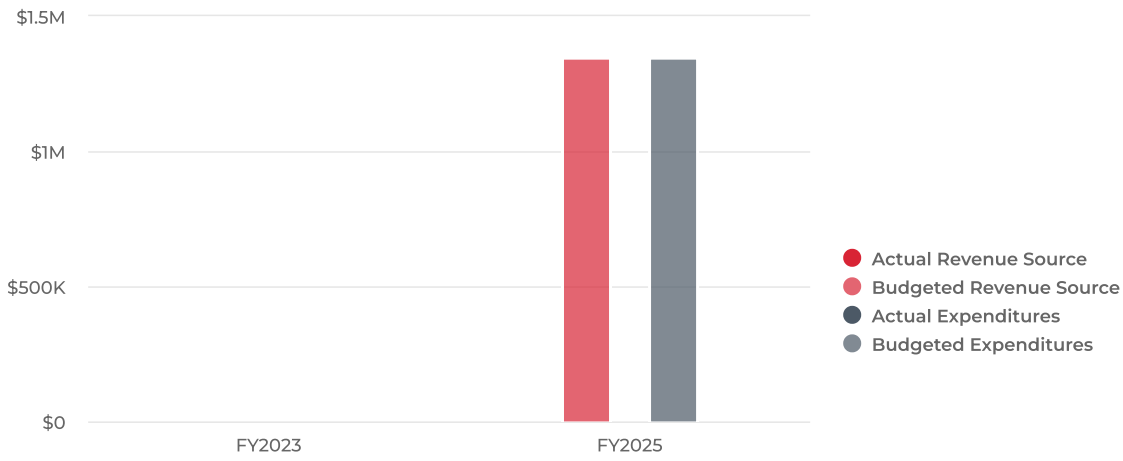
Stormwater Fund

The Stormwater Fund, a governmental special revenue fund has been established for FY 2025. Revenues for the fund consist of shared stormwater tax and grant revenues. These revenues will support the stormwater personnel, operating and project costs, including the stream restoration projects.

Stormwater management is the effort to reduce runoff of rainwater or melted snow into streets, lawns and other sites and the improvement of water quality. Goals of stormwater managment include protecting our environment, reducing flooding to protect people and property, reducing demand on public stormwater drainage systems, supporting healthy streams and rivers, and creating healthier, more sustainable communities.

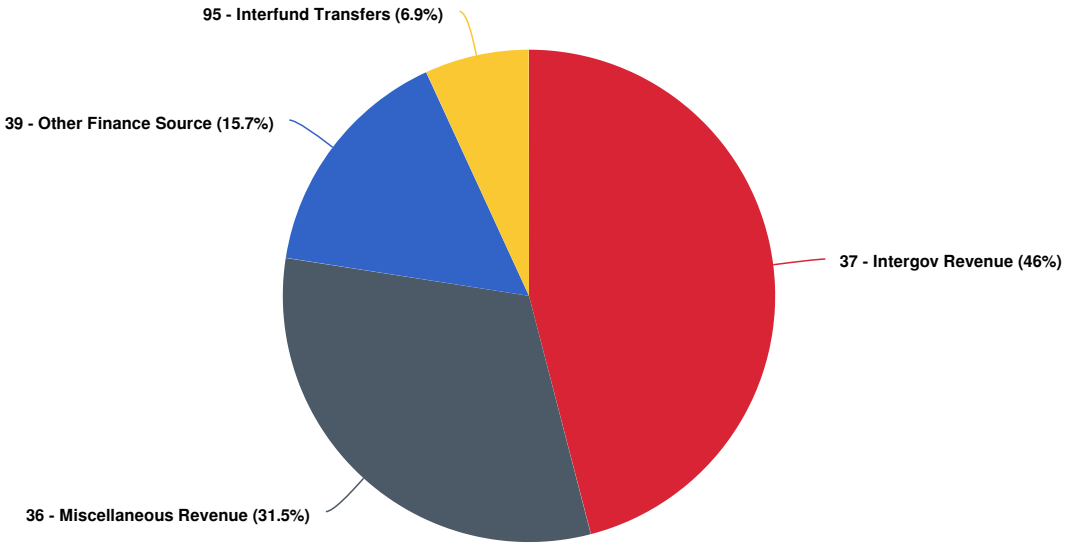
Summary

The Town of Herndon adopted $1.35M of revenue and expenditures in FY 2025 in the Stormwater Fund. Projects include the Sugarland-North stream restoration project ($620K).



Revenues by Source

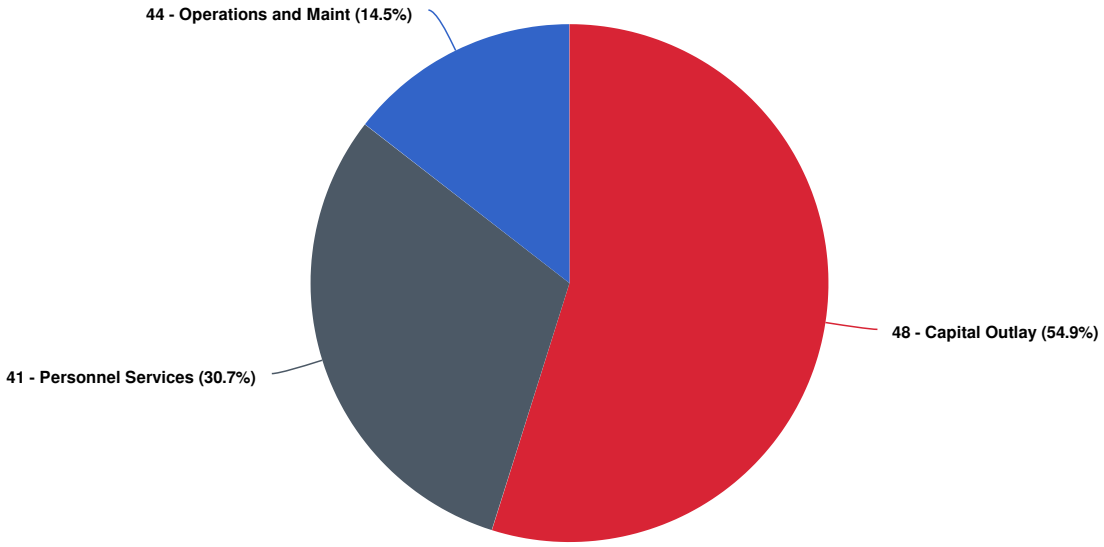
Projected 2025 Revenues by Source



Name	FY2025 Budgeted
Revenue Source	
36 - Miscellaneous Revenue	$425,000
37 - Intergov Revenue	$620,000
39 - Other Finance Source	$211,424
95 - Interfund Transfers	$92,400
Total Revenue Source:	**$1,348,824**

Expenditures by Expense Type

Budgeted Expenditures by Expense Type



Name	FY2025 Budgeted
Expense Objects	
41 - Personnel Services	$413,424
44 - Operations and Maint	$195,400
48 - Capital Outlay	$740,000
Total Expense Objects:	**$1,348,824**

Appendix B: Budget Narrative Template

Applicant Name: Community Flood Preparedness Fund & Resilient Virginia Revolving Loan Fund Detailed Budget Narrative

Town of Herndon

Period of Performance: Spring 2025 through Summer 2026

Submission Date: 06/30/2026

Grand Total State Funding Request	$241,428.20
Grand Total Local Share of Project	$ 80,476.06
Federal Funding (if applicable)	$
Project Grand Total	$321,904.25
Locality Cost Match	% 25

Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share					$80,476.06				$80,476.06
State Share – CFPF Grant					$241,428.20				$241,428.20
State Share – RVRF Match Loan									
Pre-Award/Startup									
Maintenance									
Total	$	$	$	$	$ 321,904.25	$	$	$	$ 321,904.25

Repetitive Loss Properties

1. Centennial Golf Course
2. Potomac Fairways Homeowners Association

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TOWN OF Herndon VIRGINIA

Herndon 2050 Comprehensive Plan

Process and Scope Introduction

Planning Commission Work Session

August 14, 2023

TOWN OF Herndon

What is a Comprehensive Plan?

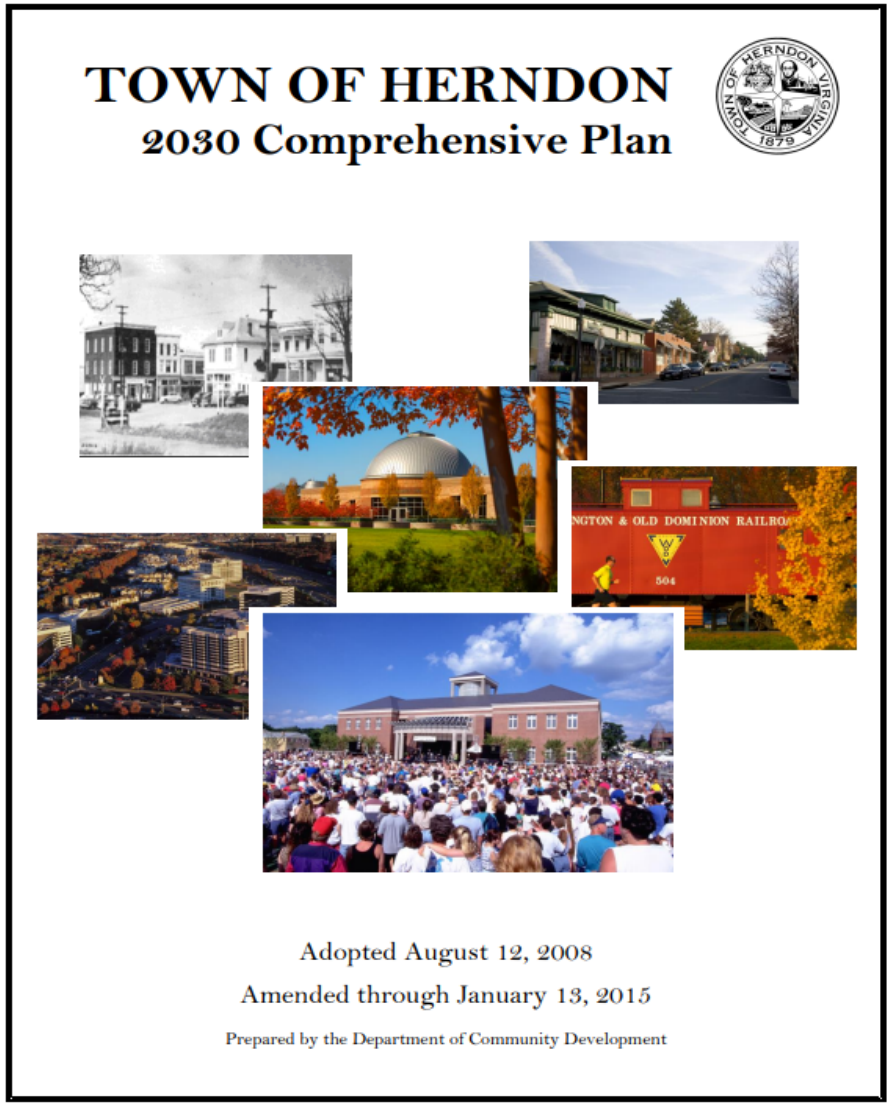
- An overarching policy and long-range landuse document establishing a vision, goals, and strategies to implement them.
- It Provides guidance on land use, transportation, housing, economic development, environment, public facilities, parks and recreation, and design and historic preservation.
- Lead document that guides decision-making, zoning, and budget decisions, (Capital Improvement Program -CIP)

Comprehensive Plans are required by the Code of Virginia;

- “The local planning commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction and every governing body shall adopt a comprehensive plan for the territory under its jurisdiction. "Section 15.2-2223 of the code
- The plan is intended to be general in nature and identify “approximate” locations & characters of major features
- The comprehensive plan should be based on a comprehensive survey and studies of the existing conditions and trends of growth, as well as extensive and iterative public outreach.

Town of Herndon 2030 Comprehensive Plan

- Adopted August 12, 2008;
- Nine significant amendments including three area plans since adoption.
- A lot has changed since 2008, including;
  - Demographics and Population
  - The opening of the Herndon Silver Line Metro Station
  - Post-Covid economics
  - Housings



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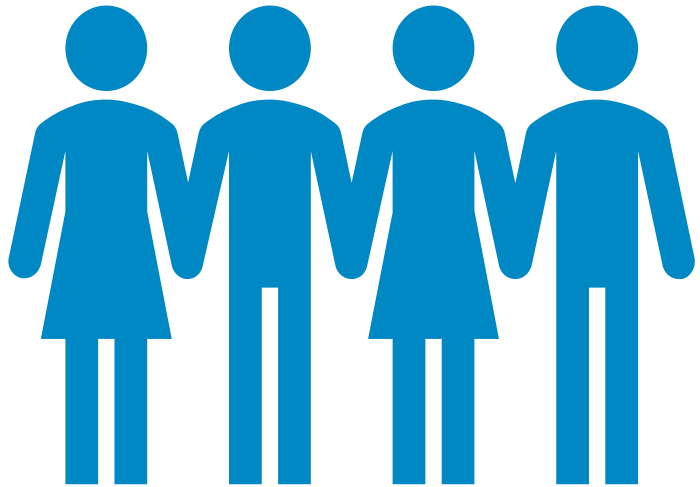

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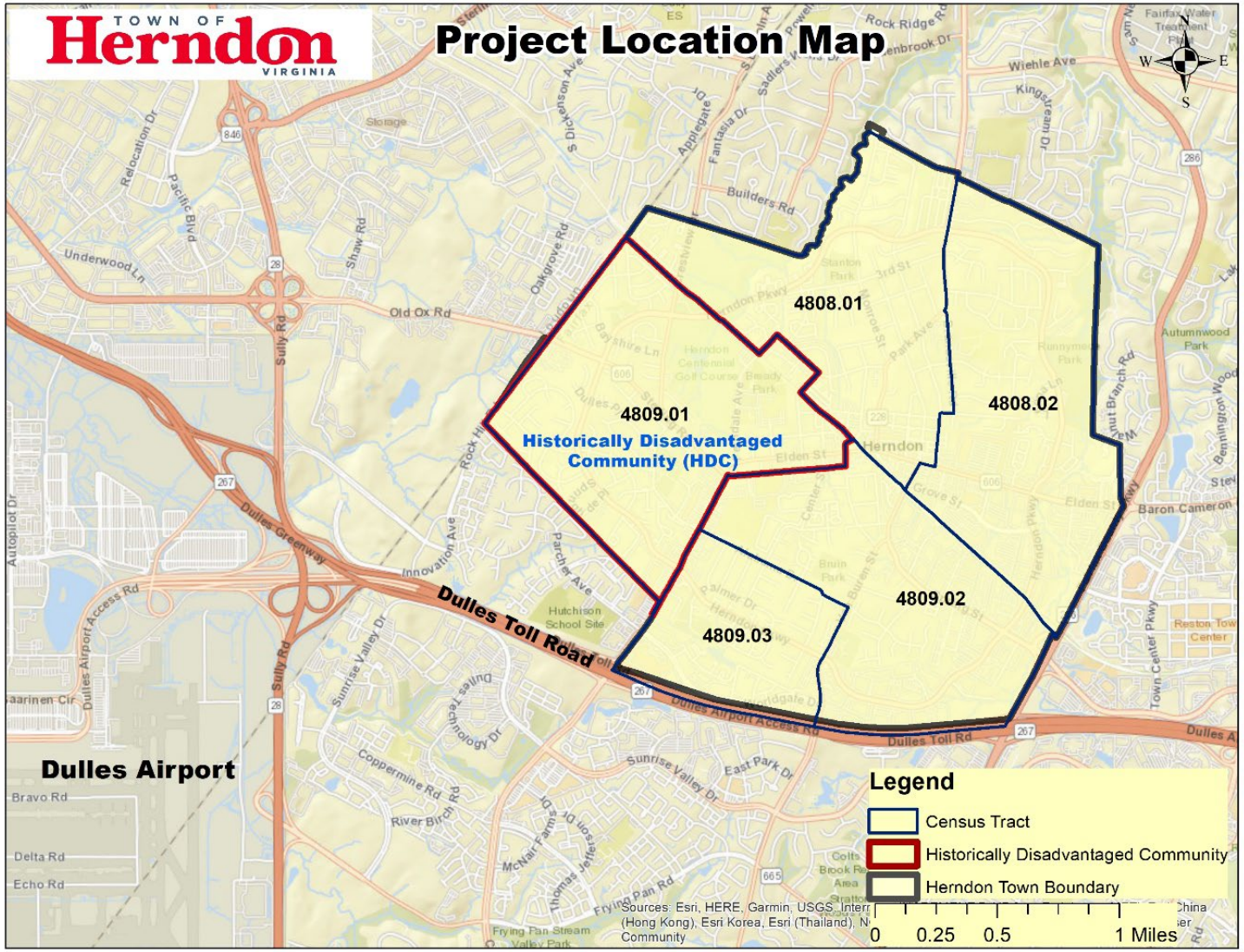

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TOWN OF Herndon VIRGINIA

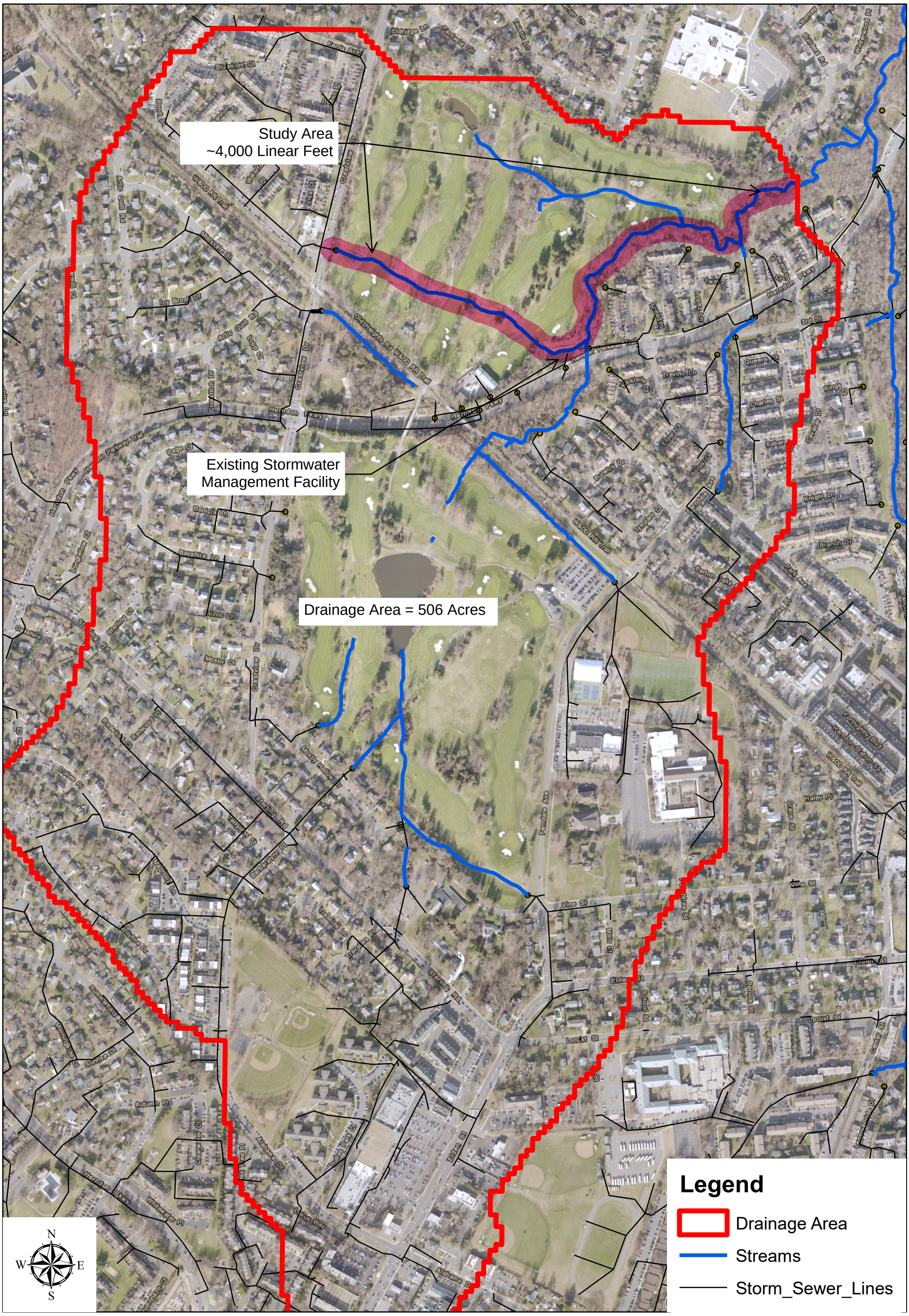
Herndon 2050 Comprehensive Plan

Project Scope

Planning Commission
Work Session

August 14, 2023

TOWN OF Herndon



Centennial Golf Course Stream & Management Facility Flood Resilience Study

National Flood Hazard Layer FIRMette

FEMA

77°23'56"W 38°58'58"N

77°23'19"W 38°58'30"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/7/2025 at 11:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Sec. 78-60.2. - Floodplain Overlay (FPO).

(a) *Purpose and intent*. This section is adopted pursuant to the authority granted to localities by Virginia Code § 15.2-2280. The town welcomes the dedication of floodplain to the town wherever possible for preservation of the floodplain and its use as green space. The floodplain overlay district (FPO) is intended to:

(1) Provide for safety from flood and other dangers;

(2) Protect against loss of life, health, or property from flood or other dangers;

(3) Prevent disruption of commerce and government services, the unnecessary expenditure of public funds for flood protection and relief;

(4) Preserve and protect floodplains in as natural a state as possible for the preservation of wildlife habitats, for the maintenance of the natural integrity and function of the streams, for the protection of water quality, and for the promotion of a zone for ground water recharge; and

(5) Prevent the impairment of the tax base by:

a. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;

b. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

c. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood-proofed against flooding and flood damage; and

d. Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

(b) *Applicability*. The provisions of this section shall apply to all lands within the town identified as flood-prone, as follows:

(1) *Flood-prone land.* Flood-prone land shall not be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered on flood-prone land except in full compliance with the terms and provisions of this section and all other relevant chapters and regulations which apply to the development of the land, such as the Virginia Uniform Statewide Building Code, the town subdivision regulations, and applicable state and federal laws. Records of actions associated with administering this section shall be kept on file and maintained by the zoning administrator or designee.

(2) *100-year flood*. The FPO shall include all lands subject to inundation by waters of the 100-year flood. The basis for the delineation of the FPO shall be the flood insurance study for the town prepared by the U.S. Department of Housing and Urban Development, Federal Insurance

Administration, dated February 1979, as may be amended subsequently. The basis for the outermost boundary of the FPO shall be the 100-year flood elevations contained in the flood profiles of the flood insurance study as shown as zone A1—A30 on the accompanying flood insurance rate map, dated April 1, 1979, as amended. Areas designated as either zone A1—A30 or AE shall be that floodplain area for which base flood elevations have been provided in the FIS and FIRM but for which no floodway has been delineated. The delineation of any FPO lands may be revised by the town council where natural or manmade changes have occurred or more detailed studies are conducted or undertaken by the U.S. Army Corps of Engineers, another qualified public agency, or qualified individual professionals demonstrating the advisability of such change. Prior to town council's approval of such a change, approval shall be obtained from the Federal Insurance Administration.

(3) *Validity*. If any provision of the FPO is declared inapplicable as a result of any legislative or administrative action or judicial discretion, base underlying floodplain overlay district provisions shall remain applicable.

(c) *Definitions*. See Article XVIII, Definitions, for explanations of words, terms and phrases used in this section.

(d) *Overlay concept*. The floodplain districts described above shall be overlay to the existing underlying zoning districts as shown on the official zoning ordinance map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions. If there is any conflict between the provisions or requirements of the floodplain district and those of any underlying zoning district, the more restrictive provisions and/or those pertaining to the floodplain district shall apply. In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying zoning provisions shall remain applicable.

(e) *District boundaries and delineation*. The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study (FIS) and the flood insurance rate maps (FIRM) for Fairfax County and the Town of Herndon prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated September 17, 2010, and any subsequent revisions or amendments thereto, and as described below:

(1) *Special floodplain area district (AE zone)*. The special floodplain area district shall be those areas identified as an AE zone on the maps accompanying the flood insurance study for which 100-year flood elevations have been provided.

(2) *Approximated floodplain district (A zone)*. The approximated floodplain district shall be those areas identified as an A zone on the maps accompanying the flood insurance study. In these zones, no detailed flood profiles or elevations are provided, but the 100-year floodplain boundary has been approximated.

(3) *Shallow flooding district (AO or AH zone).* The shallow flooding district shall be those areas identified as zone AO or AH on the maps accompanying the flood insurance study.

(f) *Official map.* The boundaries of the special flood hazard and floodplain districts are established as on the flood boundary and floodway map and/or flood insurance rate map which is declared to be a part of this section and which shall be kept on file at the town offices.

(g) *Administration.* The provisions of this section shall be administered as follows:

(1) *District boundary modifications.* The delineation of any of the floodplain districts may be revised by the town where natural or man-made changes have occurred and/or where detailed studies have been conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency, or an individual documents the need for modification. However, prior to any such modification, approval must be obtained from the Federal Insurance Administration.

(2) *Interpretation of the floodplain districts.* Interpretations of the boundaries of the floodplain district shall be made by the zoning administrator. Any individual or group disputing a floodplain district boundary interpretation shall have the right to appeal such interpretation to the board of zoning appeals.

(3) *Submission of technical data.* A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the town shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

(4) *Permit requirement.* All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a building permit subject to the following provisions.

a. Such development shall be undertaken only in strict compliance with the provisions of this section and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (VA USBC) and the town's subdivision regulations.

b. Prior to the issuance of any such permit, the zoning administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding.

c. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

(5) *Site plan and permit applications*. All site plan applications for development within the FPO any floodplain district and all building permits issued for the floodplain shall include the following:

a. An elevation of the base flood at the site;

b. An elevation of the lowest floor, including the basement;

c. Nonresidential only structures to be flood-proofed shall include the elevation to which the structure will be flood-proofed; and

d. Topographic information showing existing and proposed ground elevations.

(h) *District standard regulations*. Development in the district shall meet the following standards:

(1) *Building requirements*. New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

(2) *Manufactured homes*. Manufactured homes shall be prohibited in accordance with the regulations of this chapter.

(3) *Materials*. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(4) *Minimize flood damage*. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

(5) *Utilities*. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(6) *Water supply*. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

(7) *Sanitary sewage systems*. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

(8) *On-site waste disposal*. On-site waste disposal systems, if permitted, shall be located and constructed to avoid impairment to them or contamination from them during flooding.

(9) *Alterations, improvements, repairs and reconstruction*. Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this chapter shall meet the requirements of "new construction" as contained in this chapter. Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this section, shall be undertaken only if the nonconformity is not furthered, extended, or replaced.

(10)

Additional regulations for special flood hazard areas. In addition to the above regulations, the following shall apply to all special flood hazard areas:

a. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U.S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, in riverine areas, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administrator.

b. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

(i) *District specific regulations*. Development in the district shall meet the following specific standards:

(1) *Site plan and special exception requirement*. Uses, activities, and development occurring within the FPO shall be undertaken only upon the issuance of approval of a site plan and special exception pursuant to this section, other than restoration or replacement of single-family detached dwellings after casualty damage.

(2) *Uses*. Those uses that are allowed by right in the underlying zoning district are allowed upon the approval of a special exception pursuant to section 78-155.3, special exception, and section 78-155.3(e)(2), special review standards for the Floodplain Overlay District. Any special exceptions that are issued shall be noted in the annual report submitted to the federal insurance administrator.

(3) *Notification requirements*. In addition to the notification requirements described in Article XV, further notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Virginia Department of Conservation and Recreation (Floodplain Management Program) and the Federal Insurance Administration.

(4) *No change in carrying capacity/volume/velocity*. Under no circumstances shall any use, activity or development decrease the carrying capacity of, or increase the volume or velocity of inflow to, the channels of floodways of any watercourse, drainage ditch or any other drainage facility or system.

(5) *No increase in elevation of 100-year flood*. No new construction, or development shall be permitted within the floodplain overlay district unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, does not increase the elevation of the 100-year flood at any one point.

(6)

Alteration and relocation channels/watercourse. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within the town, a permit from the U.S. Army Corps of Engineers and certification from the Virginia State Water Control Board may be necessary. A joint permit application is available from one of these organizations. Further notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Floodplain Management Program) and the Federal Insurance Administration.

(7) *Submission requirements*. All applications for development in the floodplain overlay district issued for the floodplain shall comply with the submittal requirements described in section 78-155.3.

(8) *New construction*. The proposed building site must be reasonably safe from flooding. If a proposed building site is in a flood-prone area, all new construction and substantial improvements shall meet the following standards:

a. Be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,

b. Be constructed with materials resistant to flood damage,

c. Be constructed by methods and practices that minimize flood damages, and

d. Be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(9) *Construction standards for enclosed areas below flood elevation*. New construction and substantial improvements with fully enclosed areas below the regulatory flood protection level that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall be constructed entirely of flood resistant materials below the regulatory flood protection elevation and designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria:

a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

b. The total net area of all openings must be at least one square inch for each square foot of enclosed area subject to flooding.

c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

d. The bottom of all openings shall be no higher than one foot above grade.

e. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

(10) *Elevation standards for residential structures*. New construction and substantial improvements of residential structures within zones A1—30, AE and AH zones on the flood insurance rate map shall have the lowest floor (including basement) elevated no lower than 18 inches above the base flood level.

(11) *Elevation standards and floodproofing standards for nonresidential structures*. New construction and substantial improvements of nonresidential structures within zones A1—30, AE and AH zones on the flood insurance rate map shall have the lowest floor (including basement) elevated no lower than 18 inches above the base flood level or, together with attendant utility and sanitary facilities, be designed so that below the base flood level plus one foot the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the zoning administrator.

(12) *Design criteria for utilities and facilities*. The following criteria shall apply in the district:

a. *Utilities*. All utilities and facilities, such as sewer, gas, electrical, telecommunication, and water systems being placed in flood-prone areas should be located, elevated (where possible), and constructed to minimize or eliminate flood damages.

b. *Drainage facilities*. All drainage facilities shall be designed to convey the flow of stormwater runoff in a safe and efficient manner. The system shall ensure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties. The town council may require a primarily underground system to accommodate frequent floods and a secondary surface system to accommodate larger, less-frequent floods. Drainage plans shall be consistent with local and regional drainage plans.

c. *Water facilities*. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and be located and constructed to minimize or eliminate flood damage and impairment.

d. *Sanitary facilities*. All new and replacement sanitary sewage systems, private package sewage treatment plants, and onsite wastewater treatment systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. In addition, they should be located and constructed to minimize or eliminate flood damage and impairment.

e. *Streets and sidewalks*. Streets and sidewalks should be designed to minimize their potential for increasing and aggravating the levels of flood flow. Drainage openings may be required to sufficiently discharge flood flows without unduly increasing flood heights.

(13) *Modification, alterations, repairs and reconstruction of existing structures*. The following standards shall apply in the district:

a. Existing structures in the floodplain area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.

b. In the floodplain overlay district, the modification, alteration, repair, reconstruction or improvement that amounts to less than 50 percent of its market value shall conform to the VA USBC.

c. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with this chapter and shall require the entire structure to conform to the VA USBC.

d. If the structure in the floodplain overlay district is designed and used as a single-family detached dwelling that is a permitted use in the zoning district pursuant to Table 78-70.2. D: Table of Principal Permitted and Allowed Uses, it may be restored in its location prior to casualty so long as:

1. The restoration is begun within 12 months and completed within 24 months of the casualty;
2. The modification, alteration, repair, reconstruction or improvement is elevated or flood proofed or both to the greatest extent possible;
3. The structure occupies the same space it occupied prior to the casualty; and
4. No dwelling units are added.

(14) *Recreational vehicles*. Recreational vehicles may be placed on sites for fewer than 180 consecutive days and must be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices.

(j)

Special floodplain district regulations and map revisions. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as zones A and AE on the flood insurance rate map, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the town. Development activities in zones A, AE, and AH, on the town's flood insurance rate map which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies with the town's endorsement for a conditional flood insurance rate map revision, and receives the approval of the Federal Emergency Management Agency.

(k) *Approximated floodplain regulations*. The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the flood insurance study. For these areas, the 100-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. It is recommended that the applicant refer to FEMA 265, "Managing Floodplain Development in Approximate Zone A Areas, A Guide for Obtaining and Developing Base (100-Year) Flood Elevations." Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Floodplain Information Reports, U.S. Geological Survey Flood-Prone Quadrangles, etc., an applicant for a proposed use, development and/or activity greater than 50 lots or five acres, whichever is lesser, shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the zoning administrator.

(l) *Shallow flooding district regulations*. The following standards shall apply in shallow flooding districts.

a. All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated to or above the flood depth specified on the flood insurance rate map, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than two feet above the highest adjacent grade.

b. All new construction and substantial improvements of nonresidential structures shall:

1.

Have the lowest floor, including basement, elevated to or above the flood depth specified on the flood insurance rate map, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least two feet above the highest adjacent grade; or

2. Together with attendant utility and sanitary facilities be completely flood-proofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

c. Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

(m) *Subdivision applications regulations*. All subdivision applications within the district shall:

(1) *Minimize damage*. All subdivision proposals shall be consistent with the need to minimize flood damage;

(2) *Utilities*. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

(3) *Drainage*. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards; and

(4) *Flood elevation*. Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed 50 lots or five acres, whichever is the lesser.

(n) *Violations*. Violation of district regulations shall be addressed as follows:

(1) *Penalty for violations*. Any person who fails to comply with any of the requirements or provisions of this section or directions of the zoning administrator or any authorized designee of the town pursuant to this section shall be guilty of a civil violation and subject to the penalties in accordance with section 78-170.4(a) of this chapter.

(2) *Correction of violations*. In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the town to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

(o) *Variances*. See section 78-155.4(d)(2), variances in the floodplain overlay district, for regulations governing variances in floodplains.

(p) *Nonconformities*. See Article XVI, Nonconformities, for regulations governing nonconformities in floodplains.

(q) *Municipal liability*.

(1) *Limitations*. The degree of flood protection sought by the provisions of this section 78-60.2, floodplain overlay district (FPO), is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur. Flood heights may be increased by manmade or natural causes, such as ice jams and the restriction of bridge openings by debris. This section does not imply that areas outside the FPO, or that land uses permitted within those districts, will be free from flooding or flood damages.

(2) *Personal liability.* This section shall not create liability on the part of the town or any officer or employee of the town for any flood damages that result from reliance on this section or any administrative decision lawfully made under this section.

(r) *Conflict with other regulations*. In cases where the requirements of this section conflict with any other provisions of the Herndon Town Code, or state code regulations, the restrictions of this section shall apply in flood-prone districts.

(s) *Severability*. The subsections, paragraphs, sentences, clauses and phrases of this section are severable, and if any phrase, clause, sentence, paragraph or subsection of this section shall be declared unconstitutional or invalid by the valid judgment or decree of a court of competent jurisdiction, such unconstitutionally or invalidity shall not affect any of the remaining phrases, clauses, sentences, paragraphs or subsections of this section. The remaining portions shall remain in full force and effect.

(Ord. No. 17-O-13, 8-8-2017; Ord. No. 20-O-61, § 1, 11-17-2020)

Kight, Casey

From: Chastain, Tammy <tammy.chastain@herndon-va.gov>
Sent: Tuesday, April 30, 2024 1:01 PM
To: Latour, Lawrence
Cc: Keebaugh, Scott
Subject: RE: Golf course pond

Follow Up Flag: Follow up
Flag Status: Flagged

Hey Lawrence,
I think David mentioned it last week, but thought I'd let you know that the pond filled back up rather quickly. It doesn't seem to be draining again but we'll check it out. However, we may want to investigate where the water is coming from since we haven't had much rain since the pond was drained.
Just my thoughts.
Thanks,
Tammy

From: Chastain, Tammy
Sent: Friday, April 12, 2024 10:14 AM
To: Latour, Lawrence <lawrence.latour@herndon-va.gov>
Cc: Keebaugh, Scott <Scott.Keebaugh@herndon-va.gov>
Subject: Golf course pond

Hey Lawrence,
The golf course pond has filled up and we're seeing some back up upstream of the pond.
We are going to rent a large pump to pump out the water so we can see what the issue is. A few years ago, we had that happen with some trash, so we suspect that's the problem again.
I wanted to let you know in case you wanted to come out while we're pumping it out and see what it looks like further down and to keep you in the loop.
If we can get the pump on Monday, we'll probably start pumping it out on Tuesday.
Let me know if you have any concerns or suggestions with our plan.
Thanks,
Tammy

Kight, Casey

From: Higgins, David <david.higgins@herndon-va.gov>
Sent: Tuesday, April 16, 2024 2:47 PM
To: Latour, Lawrence

Sent from my iPhone

Pledge Agreement

Applicant Name & Address:	Town of Herndon Attention: Richard Smith, PE 777 Lynn Street Herndon, Virginia 20170 703-435-6800
Project Title:	Town of Herndon Resilience Resource Assessment
Match Funding Source:	Stormwater Fund
Match Contribution Amount:	Town - $80,476.06 (25%) / Grant - $241,428.19 (75%)

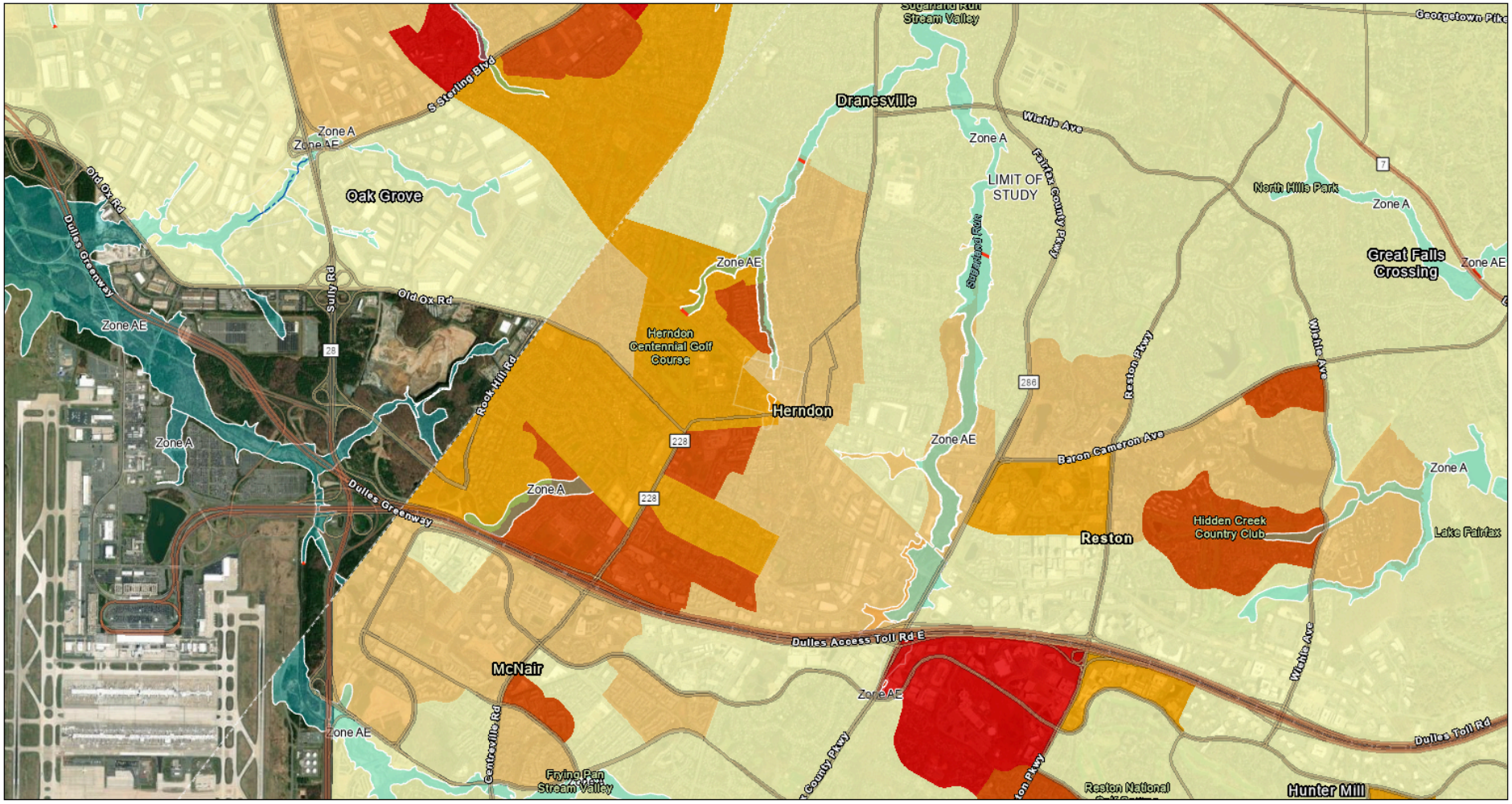
"I certify that the Town of Herndon pledges to utilize the Stormwater Fund to pay for this project in full or quarterly prior to CFPF reimbursement."

Signature

1/24/2025

Date

VFRIS Exporter



1/7/2025, 6:28:46 AM

1:40,377

0 0.4 0.8 1.6 mi

0 0.5 1 2 km

Profile Baselines

Flood Hazard Boundaries

Limit Lines

Other Boundary

Flood Hazard Area

0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

Social Vulnerability Block Groups 2020

Very Low Social Vulnerability

Low Social Vulnerability

Moderate Social Vulnerability

High Social Vulnerability

Very High Social Vulnerability

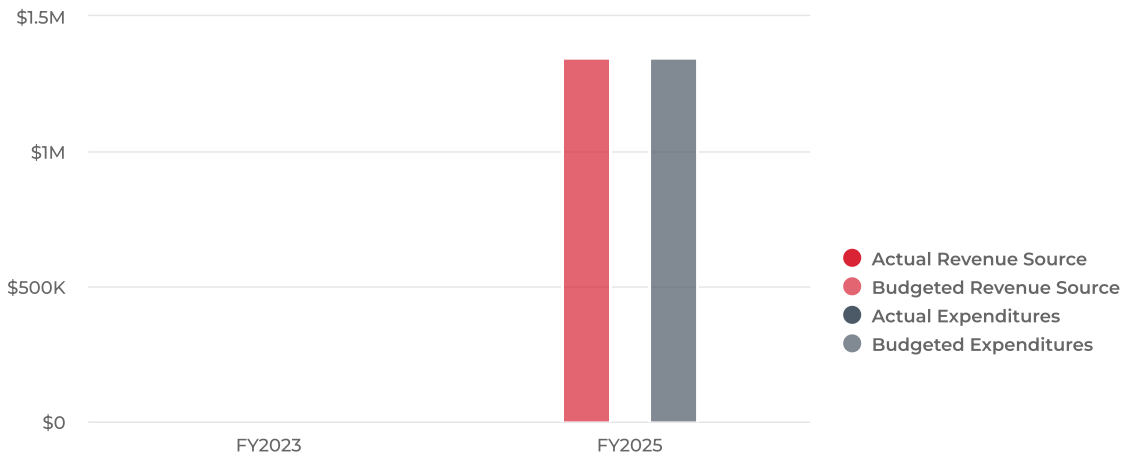
Stormwater Fund

The Stormwater Fund, a governmental special revenue fund has been established for FY 2025. Revenues for the fund consist of shared stormwater tax and grant revenues. These revenues will support the stormwater personnel, operating and project costs, including the stream restoration projects.

Stormwater management is the effort to reduce runoff of rainwater or melted snow into streets, lawns and other sites and the improvement of water quality. Goals of stormwater managment include protecting our environment, reducing flooding to protect people and property, reducing demand on public stormwater drainage systems, supporting healthy streams and rivers, and creating healthier, more sustainable communities.

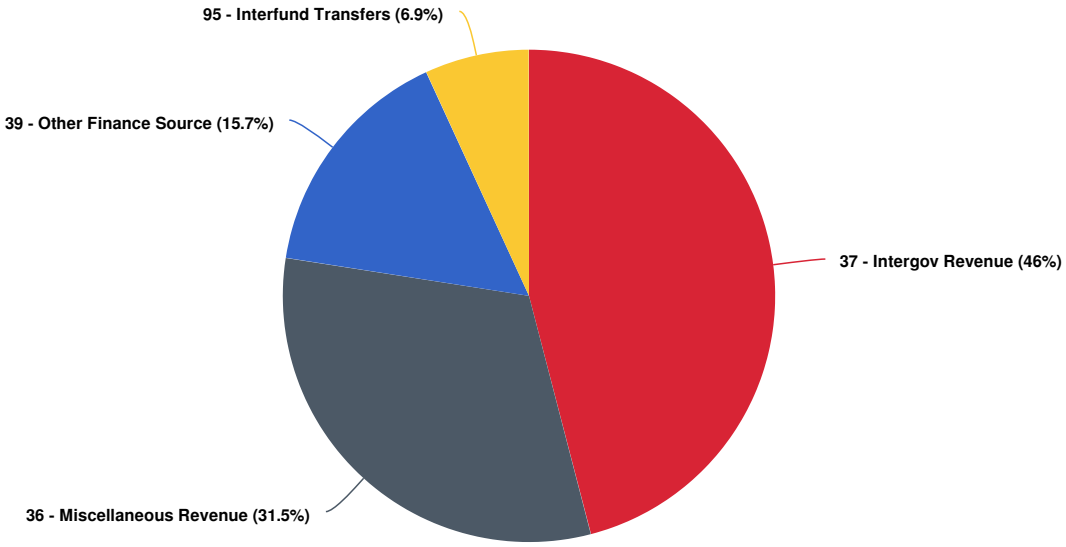
Summary

The Town of Herndon adopted $1.35M of revenue and expenditures in FY 2025 in the Stormwater Fund. Projects include the Sugarland-North stream restoration project ($620K).



Revenues by Source

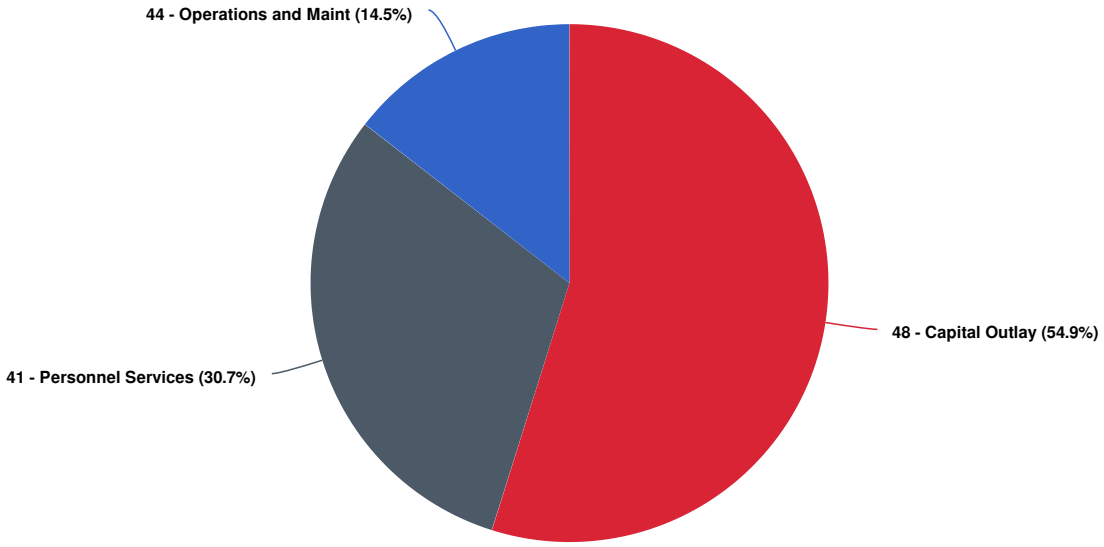
Projected 2025 Revenues by Source



Name	FY2025 Budgeted
Revenue Source	
36 - Miscellaneous Revenue	$425,000
37 - Intergov Revenue	$620,000
39 - Other Finance Source	$211,424
95 - Interfund Transfers	$92,400
Total Revenue Source:	**$1,348,824**

Expenditures by Expense Type

Budgeted Expenditures by Expense Type



Name	FY2025 Budgeted
Expense Objects	
41 - Personnel Services	$413,424
44 - Operations and Maint	$195,400
48 - Capital Outlay	$740,000
Total Expense Objects:	**$1,348,824**