

Scope of Work Narrative

This section includes a summary of the project's background, goals, scope of work, and impact on the community, the qualifications of the individuals on the project team, and the application form for grant and loan requests for all categories of the CFPF grant.

Project Background & Need

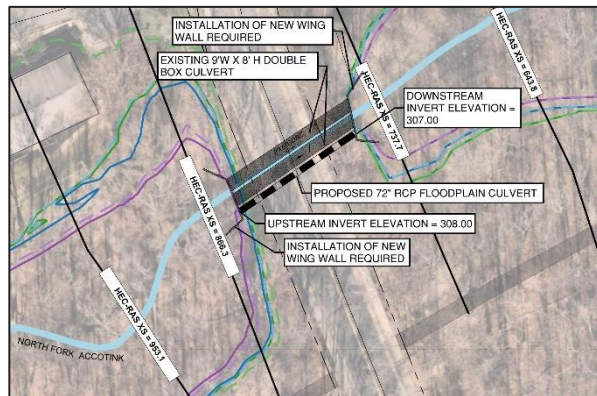


Figure 2 – Culvert Modeling as Part of Floodplain Improvements Study (Alternative 3)



Figure 3 – Location of Floodplain Culvert Relative to Stream Restoration Extents

The Mosby Woods Condominium neighborhood is located within and adjacent to the floodplain associated with the North Fork of Accotink Creek and has experienced historical flooding. The Mosby Woods Condominium neighborhood is located just upstream of the Stafford Drive stream crossing, which is currently a dual 9'W x 8'H concrete box culvert. This culvert is a point of interest in two recent efforts by the City of Fairfax to mitigate localized flooding: The Mosby Woods Floodplain Improvements Study and the Stafford Drive Stream Restoration project.

Mosby Woods Floodplain Improvements Study (Figure 2)

The Mosby Woods Floodplain Improvements Study was initiated by the City and funded by CFPF to explore potential flood relief options near the Mosby Woods Condominium neighborhood. This neighborhood is located within and adjacent to the floodplain associated with the North Fork of Accotink Creek, just upstream of the Stafford Drive stream crossing. This study focused on potential options and alternative configurations at the Stafford Drive stream crossing and found that there is potential for improving flood conditions along the North Fork of Accotink Creek in the Mosby Woods Condominium neighborhood with alterations to the culvert capacity and culvert configuration at Stafford Drive. Four alternative scenarios were modeled as part of the floodplain improvements study and two alternatives, outlined below, showed all units within the Mosby Woods Condominiums as being removed from the 10-year flood extent. For additional information beyond what has been included in this section, please see the copy of the Mosby Woods Floodplain Improvements Study that has been included in this grant application package.

- **Alternative 3** – A 72" floodplain culvert discharging to the right floodplain overbank area. This alternative reduced water surface elevations across all storm events and is less intrusive to existing infrastructure and the proposed stream restoration project. Installation of the additional floodplain bench culvert barrel is anticipated to be among the more feasible and cost-effective options of any of the analyzed alternatives to assist with flooding.
- **Alternative 4** – A third 9'W x 8'H box culvert at the existing stream invert. This alternative produced the greatest reductions in water surface elevations across all storm events of all the alternatives modeled. Potential constraints related to this alternative would be the effect on the proposed stream restoration project at the entrance and exit of the culvert system, sediment aggradation concerns, anticipated construction costs, and impact to the Stafford Drive roadway corridor.

Stafford Drive Stream Restoration (Figure 3)

Approximately 2,400 linear feet of stream along the Accotink Creek North Fork adjacent to Stafford Drive was reported to be “Extreme” for Bank Erosion Hazard Index (BEHI) and in poor overall stream health and was determined to be a viable candidate for restoration by the City. Stormwater Local Assistance Fund (SLAF) grant funding was awarded for the design and construction of this project, which will feature some of the following after construction is completed:

- Reconnection of the stream channel with the floodplain
- Natural Channel Design stream restoration techniques
- Log weirs, toe wood, and root wads, as nature-based solutions
- Re-established wetlands
- Removal of approximately 1,050 square feet of impervious surface from the floodplain through the removal of a deteriorated concrete wash pad and basketball court
- Yearly monitoring and maintenance, including the removal of invasive species

For additional information on the Stafford Drive Stream Restoration project beyond what has been included in this section, please see the Stafford Drive Stream Restoration Construction Documents that have been included in this grant application package.

Construction Plan Development: Stafford Drive Culvert



Figure 4 – Existing Stafford Drive Culvert

The Mosby Woods Floodplain Improvements Study and the Stafford Drive Stream Restoration are the first phase of flood mitigation efforts to benefit the Mosby Woods Condominium neighborhood and justify the next phase of developing construction plans for increasing the capacity and modifying the configuration of the Stafford Drive culvert.

There are risks associated with residential areas like the Mosby Woods Condominium neighborhood being located adjacent to or within a floodplain. A tangible measure of public safety risk reduction from implementing an alternative culvert design is reflected in the modeling results from the Mosby Woods Floodplain Improvements Study, which determined that both recommended alternatives will remove

all units of the Mosby Woods Condominiums from the 10-year floodplain. From a natural resource perspective, a new culvert, in combination with the Mosby Woods Floodplain Improvements Study and the Stafford Drive Stream Restoration, will aid in protecting natural resources by reducing erosive, high-velocity flow, particularly in the areas adjacent to the proposed culvert. It is anticipated that the lifespan of the culvert, once designed as part of this proposed grant application and constructed after plan approval, will exceed 20 years.

Working towards achieving flood mitigation in the Mosby Woods Condominium neighborhood has been a years-long process and being awarded a CFPF grant to build upon the efforts of the Floodplain Improvements Study and the Stafford Drive Stream Restoration would expedite the timeline of this project and get the City closer to preparing for construction and seeing change in flooding conditions in this area. The City of Fairfax has limited capability for in-house engineering design for large scale culvert and roadway projects, to include floodplain and riverine hydraulic modeling, underscoring their need for assistance on this project. If the City were not to receive CFPF funding, the City would still proceed with this project, but the timeline may be delayed and there may not be residual funding for further flood mitigation efforts.

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Goals, Objectives, and Work Plan

Table 1 contains the goals, objectives, and work plan items that have been identified for the proposed project. Additional information for this project can be found in the scope of services included in this section. Assuming Kimley-Horn receives a notice to proceed by July 1, 2025, Kimley-Horn anticipates completion of the scope of work and the items outlined in Table 1 by July 1, 2026.

This project is intended to develop construction plans for the Stafford Drive culvert. As such, a maintenance plan is not applicable to this project at this time.

Table 1 – Proposed Goals, Objectives, and Work Plan

Goals/Tasks	Objectives	Responsible Parties/Required Partners	Deliverable(s)
Geotechnical Evaluation and Review	<ul style="list-style-type: none"> ➤ Perform subsurface investigation, laboratory testing, and geotechnical engineering services ➤ Review geotechnical deliverable for completeness 	<ul style="list-style-type: none"> ➤ DMV (Geotechnical Consultant) ➤ Kimley-Horn ➤ City of Fairfax Department of Public Works 	<ul style="list-style-type: none"> ➤ Geotechnical report summarizing field and lab testing data, geotechnical analyses, and geotechnical recommendations for the proposed box culvert
Site and Project Due Diligence	<ul style="list-style-type: none"> ➤ Review as-built survey data ➤ Project site visit ➤ Base map development ➤ Review of pertinent City information outlined in the Scope of Services included in this section 	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ Geographic Information System (GIS) basemaps ➤ Data compilation based on reports and datasets included in the Kimley-Horn scope of services
Floodplain Culvert Design*	<ul style="list-style-type: none"> ➤ Build a hydraulic model for the existing culvert at Stafford Drive ➤ Perform routings to determine existing hydraulic characteristics ➤ Design elevated floodplain culvert under Stafford Drive to meet all applicable design requirements and to maximize allowable capacity 	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ Existing conditions hydraulic characteristics ➤ Culvert design
Roadway Improvement Plan Development	Develop the following plans to be incorporated into the overall construction documents package: <ul style="list-style-type: none"> ➤ Roadway plans ➤ Roadway profiles ➤ Cross sections ➤ Typical sections ➤ Signing and pavement markings For additional information, please see the Kimley-Horn scope of services that has been included in this section.	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ Roadway plans to be incorporated into the culvert replacement plans
Floodplain Culvert Construction Document Development	Develop the following plans: <ul style="list-style-type: none"> ➤ Site grading and layout ➤ Proposed site conditions ➤ Erosion & sediment control ➤ Planting plan ➤ Maintenance of Traffic For additional information, please see the Kimley-Horn scope of services that has been included in this section.	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ 60% Design Submittal ➤ 90% Design Submittal ➤ 100% Design Submittal ➤ GIS file geodatabase
City of Fairfax Plan Submittal	Complete the following requirements for submittal: <ul style="list-style-type: none"> ➤ Site Plan Checklist and Certification 	<ul style="list-style-type: none"> ➤ Kimley-Horn ➤ City of Fairfax Department of Public Works 	<ul style="list-style-type: none"> ➤ Site plan submittal elements required by the City

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Goals/Tasks	Objectives	Responsible Parties/Required Partners	Deliverable(s)
	<ul style="list-style-type: none"> ➤ Grading Permit Application ➤ Water Quality Impact Assessment (WQIA) Application 		
Conditional Letter of Map Revision (CLOMR) Submission	<ul style="list-style-type: none"> ➤ Prepare CLOMR application in accordance with NFIP and based on culvert design plans ➤ HEC-RAS analysis of existing and proposed conditions ➤ Coordination with FEMA to determine starting model for proposed analyses ➤ CLOMR package submittal 	<ul style="list-style-type: none"> ➤ Kimley-Horn ➤ FEMA 	<ul style="list-style-type: none"> ➤ FEMA submittal including anticipated items included in the Kimley-Horn scope of services
City of Fairfax Floodplain Permit Application Submission	<ul style="list-style-type: none"> ➤ Complete Floodplain Permit Application 	<ul style="list-style-type: none"> ➤ Kimley-Horn ➤ City of Fairfax Department of Public Works ➤ City of Fairfax Community Development and Planning 	<ul style="list-style-type: none"> ➤ Completed Floodplain Permit Application
Stormwater Pollution Prevention Plan (SWPPP) Development	<ul style="list-style-type: none"> ➤ Prepare a SWPPP compliant with the Stormwater Construction General Permit (VAR10) and all applicable City submittal requirements for VSMP 	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ SWPPP ➤ VSMP Permit Application Package
Engineer's Opinion of Probable Construction Costs	<ul style="list-style-type: none"> ➤ Derive probable construction costs for the estimated culvert installation 	<ul style="list-style-type: none"> ➤ Kimley-Horn 	<ul style="list-style-type: none"> ➤ Engineer's Opinion of Probable Construction Costs

Evaluation



Figure 5 – Stafford Drive Culvert Data Collection & Site Visit

An immediate indicator of success of this project will be developing construction documents for a culvert with increased capacity to provide relief to the Mosby Woods Condominium neighborhood. A long-term indicator of success of this project will be successfully going to construction, installing the new culvert, and seeing a reduction in flood incidents and flood risks for residents, infrastructure, and natural resources in this area.

Data that has been collected leading up to this grant application package includes the modeling scenarios performed as part of the Mosby Woods Floodplain Improvements Study and the survey, design, and additional floodplain modeling performed as part of the Stafford Drive Stream Restoration. Additional data that will be collected as part of this project includes, but is not limited to, geotechnical survey information, GIS basemaps of the project area, hydraulic modeling for existing and proposed conditions, culvert design calculations, and cost estimate information for construction.

The cost-effectiveness of this project will be evaluated based on the flood mitigation after the culvert has been constructed and if homes are removed from the flood inundation limits according to the Mosby Woods Floodplain Improvements Study.

Kimley-Horn staff will be available for up to four (4) project coordination meetings to discuss the project. In addition, Kimley-Horn will participate in calls to discuss the project with City staff to ensure the project is meeting the requirements of the agreement and will be delivered on time. Any delays over the course of the project will be discussed during project coordination calls.

Project Grant Supporting Documentation

The following items are based on the Supporting Documentation requirements outlined in the Round 5 CFPF Grant Manual for Project Applications.

Project Information

- a. **Population:** Provide population data for the local government in which the project is taking place, including identification of any low-income geographic area and the estimated number of residents that will be impacted by this project.

According to the City's Demographics and Statistical Profile, the City of Fairfax has a population of 24,835 residents and 10,040 housing units. Demographically, the City's population is 53.5% white, 18.7% Asian, 17.7% Hispanic, 4.4% Black, and 5.7% Multiracial or Other. According to the United States Census Bureau, the City's median household income is \$132,774 and Virginia's median household income is \$90,974. Because the City's median household income is approximately 46% higher than the Virginia median household income, it does not qualify as a low-income geographic area.

The extents of this project fall within a 'Very High Social Vulnerability' (Social Vulnerability Score - 1.595) zone, according to DCR's Virginia Flood Risk Information System (VFRIS) Social Vulnerability Block Groups 2020 layer.

The number of residents impacted by this project has been estimated by multiplying the number of units in the Mosby Woods neighborhood by an estimate of number of residents per unit. According to the Mosby Woods condominium website, there are 537 units in the neighborhood. Assuming there are three residents per unit, there are approximately 1,600 residents that could be affected by this project.

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

The proposed culvert project area is located in a mapped Zone AE and Zone X floodplain, effective as of November 16, 2023. The Mosby Woods Floodplain Improvements Study was initiated by the City and funded by CFPF to explore potential flood relief options near the Mosby Woods Condominium neighborhood, just upstream of the Stafford Drive culvert. Please see the copy of the Mosby Woods Floodplain Improvements Study for more information on flooding and flood mitigation options.

- c. **No adverse impact:** Studies, data, reports must demonstrate proposed project minimizes flood vulnerabilities and does not create or increase flooding to other properties.

The Mosby Woods Floodplain Improvements Study was initiated by the City and funded by CFPF to explore potential flood relief options near the Mosby Woods Condominium neighborhood. This neighborhood is located within and adjacent to the floodplain associated with the North Fork of Accotink Creek, just upstream of the Stafford Drive stream crossing. This study focused on potential options and alternative configurations at the Stafford Drive stream crossing and found that there is potential for improving flood conditions along the North Fork of Accotink Creek in the Mosby Woods Condominium neighborhood with alterations to the culvert capacity and culvert configuration at Stafford Drive. Four alternative scenarios were modeled as part of the floodplain improvements study and two alternatives showed all units within the Mosby Woods Condominiums as being removed from the 10-year flood extent. For additional information beyond what has been included

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in this grant application package, please see the copy of the Mosby Woods Floodplain Improvements Study.

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

The following items have been included as part of this grant application package to document available funding for this project:

- City of Fairfax FY2025 Adopted Budget, showing a line item for Mosby Road Drainage Improvements
 - City of Fairfax Adopted Capital Improvement Program, 'Flood Mitigation Planning & Resiliency' page
 - City of Fairfax Proposed Capital Improvement Program (FY26 – FY30), showing the growth of allocated funding to be used towards this project
- e. **Benefit-cost analysis or narrative of benefits must be submitted with project applications over \$2,000,000.** (<https://www.fema.gov/grants/tools/benefit-cost-analysis>)
Because this grant application has been submitted for the development of construction documents for the Stafford Drive culvert, the cost will not exceed \$2,000,000 so the requirement for a benefit-cost analysis is not applicable.
- f. **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.**
Because this grant application has been submitted for the development of construction documents for the Stafford Drive culvert, the cost will not exceed \$2,000,000 so the requirement for a benefit-cost analysis or narrative indicating risk reduction benefits is not applicable.
- g. **The administration of local floodplain management regulations – The Department will determine if the community is in good standing with the NFIP. If applicable, provide the Department with the current floodplain ordinance by link or attachment.**
The City of Fairfax floodplain ordinance can be accessed through the link provided in Section C.
- h. **Other necessary information to establish project priority:**

- **Repetitive Loss and/or Severe Repetitive Loss Properties**
 - Do not provide the addresses for these properties but include an exact number of repetitive loss and/or severe repetitive loss structures within the project area. Work with the local floodplain administrator or emergency manager to find this information. If they do not have a list of repetitive loss/severe repetitive loss structures, the Department can assist them in accessing these lists for NFIP insured structures.
 - Please note, that repetitive loss and/or severe repetitive loss often occurs outside of the SFHA and to properties not captured in NFIP reporting. All flooding involving these properties should be tracked and addressed by the community.

Within the City, there are ninety-six active flood insurance policies through the National Flood Insurance Program with an average premium of approximately \$1,380. There are also four repetitive loss properties within the City, with total paid claims of \$590,686. Of these four repetitive loss properties, three are within proximity of the Stafford Drive culvert.

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

The Mosby Woods Condominium neighborhood is impacted by the flooding in this area and will be impacted by the flood mitigation efforts of this project.

The following information has been sourced from the Mosby Woods Neighborhood Website:

The Mosby Woods Condominium is the largest neighborhood in the City and holds historical significance as one of the first multi-use communities to be developed in Fairfax County, before

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City-County boundaries were adjusted to what they are today. For this grant application it is assumed that there are 537 housing units in the project area.

- **Critical Facilities/Infrastructure:** Describe any critical facilities/infrastructure within the project area.

In addition to the Mosby Woods Condominium neighborhood, the primary critical infrastructure in the project area is Stafford Drive and the Stafford Drive culvert. Stafford Drive is a primary access to and from the Mosby Woods neighborhood and the Stafford Drive culvert is the only means of stream crossing under Stafford Drive.

➤ **Need for Assistance: Identify issues or problems that will be addressed by the project.**

- Explain the local government's financial and staff resources. Identify relevant staff members (floodplain administrators, planners, emergency managers, building officials, engineers) employed with the local government. Identify relevant software the local government has access to. Explain the local government's capabilities.

Working towards achieving flood mitigation in the Mosby Woods Condominium neighborhood has been a years-long process and being awarded a CFPF grant to build upon the efforts of the Floodplain Improvements Study and the Stafford Drive Stream Restoration would expedite the timeline of this project and get the City closer to preparing for construction and seeing change in flooding conditions in this area. The City of Fairfax has limited capability for in-house engineering design for large scale culvert and roadway projects, to include floodplain and riverine hydraulic modeling, underscoring their need for assistance on this project. If the City were not to receive CFPF funding, the City would still proceed with this project, but the timeline may be delayed and there may not be residual funding for further flood mitigation efforts.

- Include the project area's Social Vulnerability Score. Social Vulnerability Index (SVI) layer is available at this link: [Virginia Flood Risk Information System \(VFRIS\)](#). The index score for the census block that contains the project area should be used. If the project area falls within multiple census blocks, please average the score across the blocks. SVI scores are required and will be used in scoring. For more information, please see [ADAPT Virginia's fact sheet](#).

The extents of this project fall within a 'Very High Social Vulnerability' (Social Vulnerability Score -1.595) zone, according to DCR's Virginia Flood Risk Information System (VFRIS) Social Vulnerability Block Groups 2020 layer. A map identifying the project location within the City and the project location's vulnerability score has been included in Section C.

➤ **Alternatives:** If the project proposed does not employ a nature-based or hybrid solution and the total project cost is greater than \$2 million, describe at least one alternative that could reasonably address the issue identified. Please also consider the No Action Option as a third alternative as part of the analysis. Explain these alternatives and the reason the proposed project was selected.

This item is not applicable to the grant application package for the development of construction plans for the Stafford Drive Culvert.

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

The overarching goal of this project is to design and develop construction documents for a culvert with increased capacity to provide relief to the Mosby Woods Condominium neighborhood. Expected results of this project are increasing the floodplain culvert's hydraulic capacity and mitigating flood risk to nearby residential areas. For more information on goals and tasks of this proposed project, please see the Kimley-Horn scope of services included as part of this grant application package. For more information on expected results of this project, please see the Mosby Woods Floodplain Improvements Study.

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

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Please see the Goals, Objectives, and Work Plan section of this grant application package and the Kimley-Horn scope of services for more information on the approach, milestones, and deliverables associated with this proposed project.

- **If assistance is sought for a project that will be carried out in concert with a federal agency, provide evidence of an agreement with agency endorsing the project.**

This project will not be carried out in concert with a federal agency, and as such, this item is not applicable to this grant application package.

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

The project proposed as part of this grant application package is the second phase of resilience and flood mitigation efforts in the Mosby Woods Condominium neighborhood. The relationship between this project, the Mosby Woods Floodplain Improvements Study (received funding through Round 3 CFPF Grant), and the Stafford Drive Stream Restoration are described in further detail in the Scope of Work Narrative section of this grant application package.

Table 2 contains the City's history of grant applications and awards. This project, similar to the other grant applications awarded to the City, will be coordinated regularly to ensure the project is meeting the requirements of the agreement and will be delivered on time. Any anticipated delays over the course of the project will be discussed during regular project coordination calls.

Table 2 – City of Fairfax CFPF Grant Applications and Awards

Project	Grant Type	Application Round	Amount Awarded	Applicable Link(s)
Stafford Drive Culvert	Project	Round 5 (2024)	N/A	N/A – Current Grant Application Round
Accotink Creek Flood Study	Study	Round 5 (2024)	N/A	N/A – Current Grant Application Round
Large-Scale Storm Event Study	Study	Round 5 (2024)	N/A	N/A – Current Grant Application Round
CCTV Program Development	Capacity Building & Planning	Round 5 (2024)	N/A	N/A – Current Grant Application Round
Dwight Avenue and Virginia Street Drainage Improvements Study	Study	Round 4 (2023)	\$61,556.16	Grant Application Link
Study Grant - Mosby Woods Floodplain Improvements Study	Study	Round 3 (2022)	\$24,286.00	Grant Application Link
Resilience Plan	Capacity Building & Planning	Round 3 (2022)	\$119,755.00	Grant Application Link

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- **Maintenance Plan:** For ongoing projects or projects that will require future maintenance, such as infrastructure, flood warning and response systems, signs, websites, or flood risk applications, a maintenance, management, and monitoring plan for the projects must be provided demonstrating how they will be maintained, managed, and monitored after the lifespan of this award for a minimum of ten years or the expected lifespan of the project, whichever is longer.

This project grant application package proposes the development of construction plans for the Stafford Drive Culvert. As such, there will be no maintenance or monitoring associated with this portion of the project. The lifespan of the culvert system, once constructed, will exceed ten years, and funding for future construction may be applied for in a separate grant application package in future rounds.

- **Criteria:** Describe how the project meets each of the applicable scoring criteria contained in Appendix D and provide the required documentation where necessary. Documentation can be incorporated into the Scope of Work Narrative or included as attachments to the application.

A copy of Appendix D with projected scoring has been included in Section D of this grant application package and additional information regarding projected scoring has been included in this compiled grant application package.