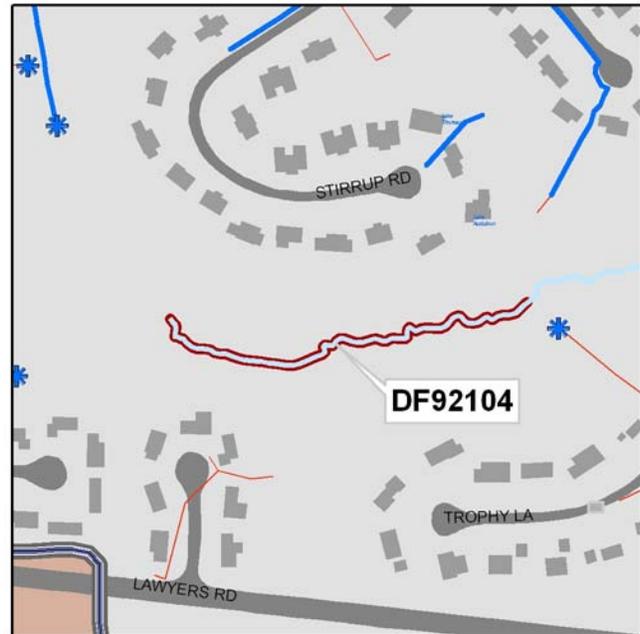


**Project Number:** DF92104  
**Catchment Code:** DFGL0001  
**Candidate Site:** S104

**Project Type:** Stream Restoration  
**Project Size:** 919 Linear Feet  
**Project Location:** This project is located between Stirrup Road and Trophy Lane.

**Project Description:** The stream is obstructed by three pieces of disconnected reinforced concrete stormwater pipe. Other areas of the streambanks are also eroding. The pipes will be removed and the stream will be reconstructed with a new pattern and profile. The invert will be raised to re-establish a connection with the floodplain. Buffers will be restored where they are deficient. **Portions of this project may be constructed or superseded by Reston Association work in this stream channel.**



**Potential Project Benefits:**

Stream Stability	Stream stability will be improved by restoring it to a pattern and profile better able to convey existing flow and sediment. Reconnection with the floodplain will reduce stress on the banks.
Water Quality	Water quality will be improved by reducing bank erosion.
Instream Habitat	Erosion reduction, creation of an aquatic channel, and the removal of the obstruction will improve instream habitat.

**Potential Project Constraints:**

Environmental	The site will require forest clearing and may have impacts to jurisdictional wetlands. However, it will require a permit from both the U.S. Army Corps of Engineers and VDEQ. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this facility will require an easement on private property and improvements in the project area.
Design / Construction	Design efforts are moderate compared to other stream restoration projects. Constructability is restrained by access.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Reconstruct new pattern and profile	919	LF	\$250.00	\$229,750
Buffer restoration	included above	LF	\$25.00	\$0
Add'l cost, first 500 LF	500	LF	\$200.00	\$100,000
<b>Base Construction Cost</b>				<b>\$329,750</b>
Mobilization (5%)				\$16,488
<b>Subtotal 1</b>				<b>\$346,238</b>
Contingency (25%)				\$86,559
<b>Subtotal 2</b>				<b>\$432,797</b>
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$194,759
<b>Estimated Project Cost</b>				<b>\$628,000</b>

**Concept Sketch**



**Site Photo:**

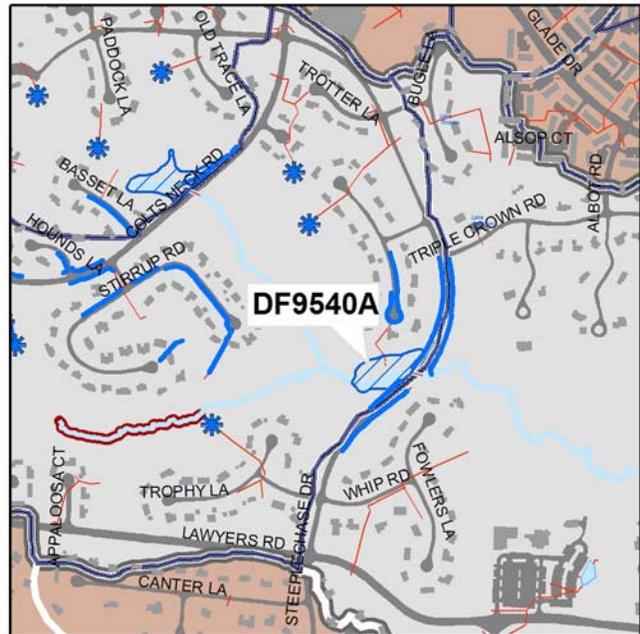


**Project Number:** DF9540A  
**Catchment Code:** DFGL0001  
**Candidate Site:** C40

**Project Type:** Culvert Retrofit  
**Project Size:** 1.3 acres  
**Treated Area:** 158 acres

**Project Location:** On the upstream side of Steeplechase Drive.

**Project Description:** This project would consist of a culvert retrofit where the north branch of this tributary crosses Steeplechase Drive. This retrofit would be designed to reduce erosive flows downstream by extended detention of smaller storms, and allow for settling and vegetative uptake of pollutants.



**Potential Project Benefits:**

Streamflow	This retrofit would provide approximately 50% of the channel storage volume for this location and help to reduce erosive flows downstream.
Water Quality	Improvements to water quality should be obtained through the reduction in scour forming discharges downstream and sedimentation and vegetative uptake at the site.

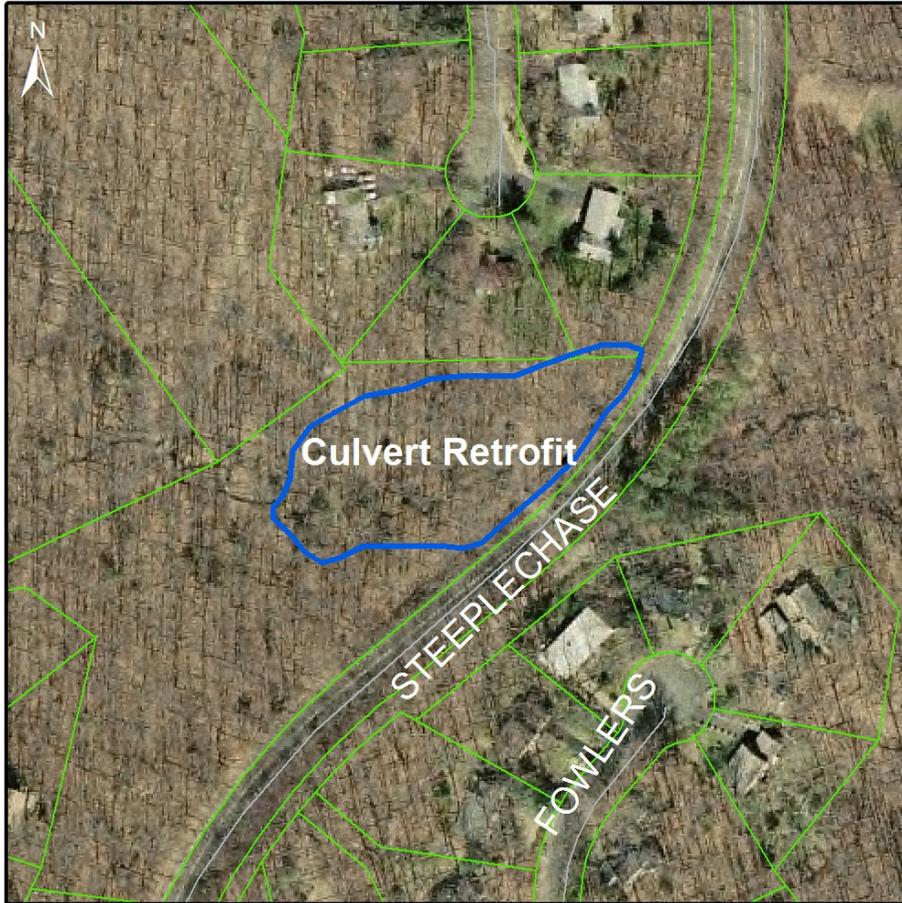
**Potential Project Constraints:**

Environmental	There may be some permitting issues associated with the temporary impoundment of runoff in the floodplain above this culvert. Some forest impacts would occur during construction. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this project is very good from the roadway.
Design / Construction	No unusual design or construction issues were found.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.3	AC	\$5,000.00	\$1,500
Excavation	1,260	CY	\$35.00	\$44,100
Impoundment Structure	1	LS	\$5,000.00	\$5,000
Landscaping	1,170	SY	\$2.50	\$2,925
Wetland Planting	390	SY	\$2.00	\$780
<b>Base Construction Cost</b>				<b>\$54,305</b>
Mobilization (5%)				\$2,715
<b>Subtotal 1</b>				<b>\$57,020</b>
Contingency (25%)				\$14,255
<b>Subtotal 2</b>				<b>\$71,275</b>
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$32,074
<b>Estimated Project Cost</b>				<b>\$103,000</b>

**Concept Sketch**

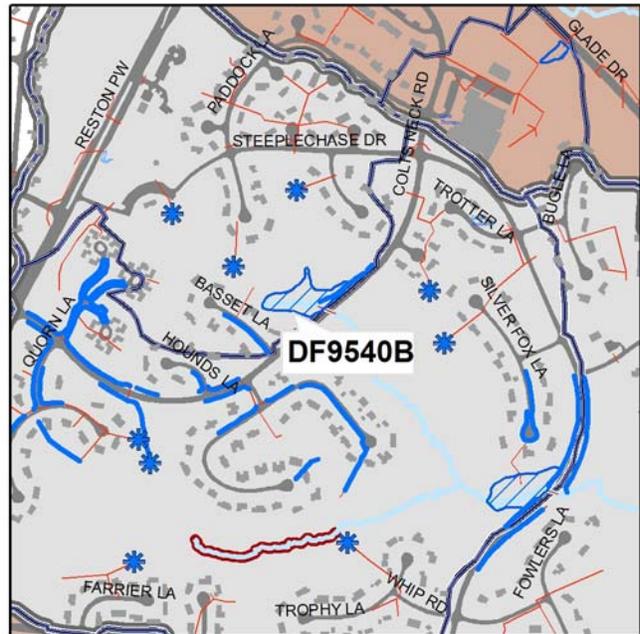


**Project Number:** DF9540B  
**Catchment Code:** DFGL0001  
**Candidate Site:** C40

**Project Type:** Culvert Retrofit  
**Project Size:** 1.2 acres  
**Treated Area:** 74 acres

**Project Location:** On the upstream side of Colts Neck Road.

**Project Description:** This project is a culvert retrofit in the headwaters of The Glade. The floodplain is relatively flat with an incised channel. This retrofit would be designed as an extended detention dry pond with a sediment forebay and micropool with the primary goal of reducing erosive flows downstream. By using the floodplain for storage, some settling and vegetative uptake of nutrients will occur.



**Potential Project Benefits:**

Streamflow	This retrofit would provide approximately 100% of the channel storage volume for this location and help to reduce erosive flows downstream.
Water Quality	Improvements to water quality should be obtained through the reduction in scour forming discharges downstream and sedimentation and vegetative uptake at the site.

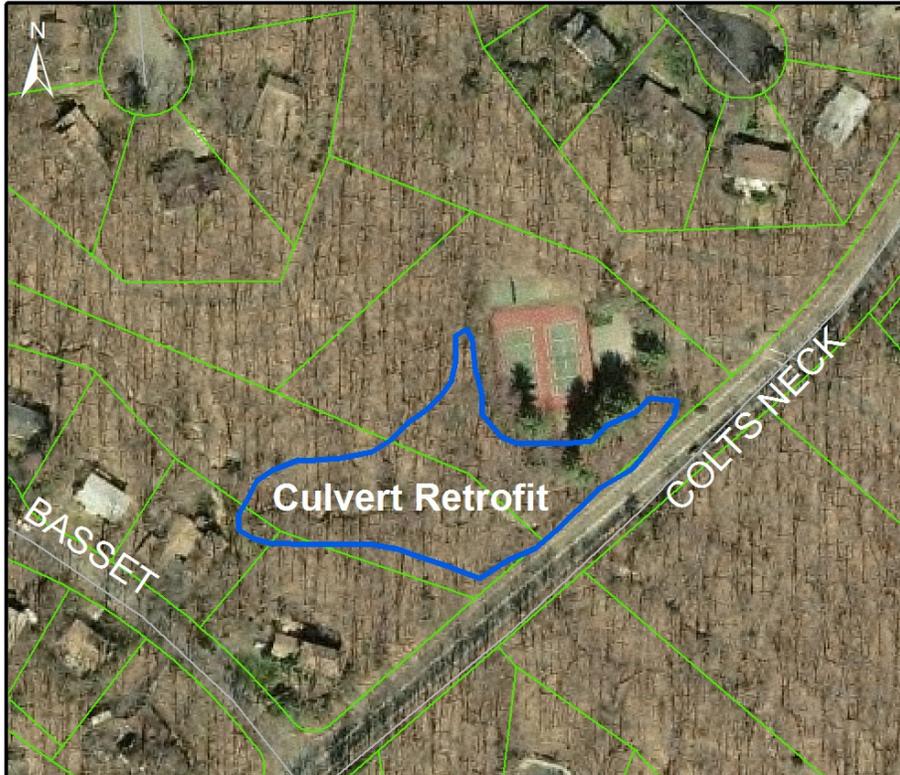
**Potential Project Constraints:**

Environmental	There may be some permitting issues associated with the temporary impoundment of runoff in the floodplain above this culvert. Some forest impacts would occur during construction. Projects in RPAs may require exceptions or waivers.
Facility Access	Access to this project is very good from the roadway.
Design / Construction	No unusual design or construction issues were found.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.3	AC	\$5,000.00	\$1,500
Excavation	1,500	CY	\$35.00	\$52,500
Impoundment Structure	1	LS	\$5,000.00	\$5,000
Landscaping	1,080	SY	\$2.50	\$2,700
Wetland Planting	360	SY	\$2.00	\$720
<b>Base Construction Cost</b>				<b>\$62,420</b>
Mobilization (5%)				\$3,121
<b>Subtotal 1</b>				<b>\$65,541</b>
Contingency (25%)				\$16,385
<b>Subtotal 2</b>				<b>\$81,926</b>
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$36,867
<b>Estimated Project Cost</b>				<b>\$119,000</b>

**Concept Sketch**



**Site Photo:**

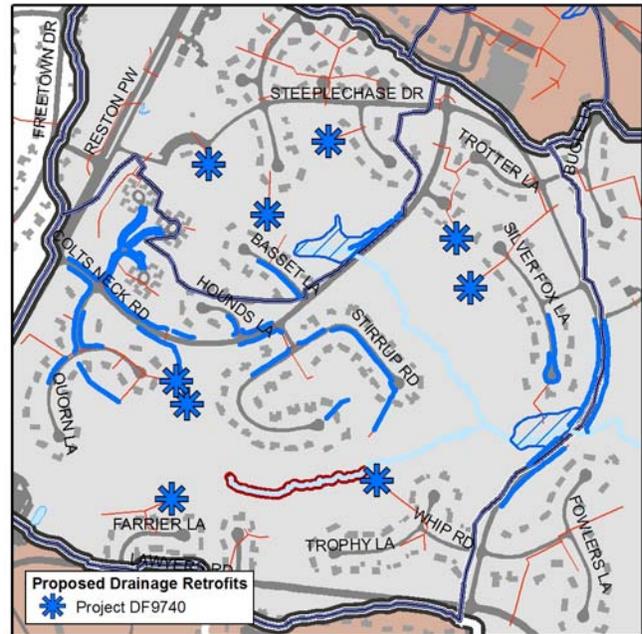


**Project Number:** DF9740  
**Catchment Code:** DFGL0001  
**Candidate Site:** C40

**Project Type:** Drainage Retrofit  
**Project Size:** 9 Outfalls, 9,836 feet of ditch

**Project Location:** This project is distributed throughout the catchment.

**Project Description:** This project would include the replacement of all concrete ditch channels with dry swales and improved outfall protection throughout the catchment. The primary impact of this project would be to reduce erosive velocities, promote infiltration, and provide a slower, less destructive drainage system to convey runoff to natural streams.



**Potential Project Benefits:**

Streamflow	The project will reduce velocity from the outfalls and erosive potential immediately downstream. Swales will reduce both volume and velocity.
Water Quality	Replacing ditches with swales will provide treatment before stormwater reaches the stream system. Water quality will also benefit from the reduction of sediment loads associated from scour at the outfall locations.

**Potential Project Constraints:**

Environmental	Environmental impacts and permit requirements are not anticipated for this project; however, projects in RPAs may require exceptions or waivers
Facility Access	Access to these sites can usually be obtained from the roadway and driveways.
Design / Construction	No unusual design or construction issues were identified.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Paved Ditch Demolition (Haul Away)	9836	LF	\$18.00	\$177,048
Dry Swale w/ Underdrain	9836	LF	\$50.00	\$491,800
Outfall Protection	9	EA	\$8,000.00	\$72,000
<b>Base Construction Cost</b>				<b>\$740,848</b>
Mobilization (5%)				\$37,042
<b>Subtotal 1</b>				<b>\$777,890</b>
Contingency (25%)				\$194,472
<b>Subtotal 2</b>				<b>\$972,363</b>
Engineering, Survey, Land Acquisition, Utility Relocations and Permits (45%)				\$437,563
<b>Estimated Project Cost</b>				<b>\$1,410,000</b>

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